

MOBOTIX IOT Camera Software Reference Manual

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TOC

Frequently Asked Questions	26
Quick Links	26
Getting Started	29
Views of the MOBOTIX Camera	29
The Most Important Settings of the MOBOTIX Camera	32
Saving the Configuration	33
General Remarks on Storing Camera Settings	34
News in This Release	35
The System Platform MOBOTIX 7	35
Starting the MOBOTIX Camera	35
Activating the Boot Menu	35
Keys of the MOBOTIX Cameras	36
Recovery Operating System	36
Additional Information	37
Reference	38
Screens of the MOBOTIX Camera	38
The Live Screen of the MOBOTIX Camera	38
The Elements of the Live Screen	38
Elements of the Title Bar	38
Screens of the Camera	39
Image Control Elements	41
Other Elements	45
The Softbuttons	46
The Image Area	49
The Image Programs of the MOBOTIX Camera	53
Selectable Image Programs of the MOBOTIX Camera	53
The MxPEG ActiveX Plug-in for Internet Explorer	54
Prerequisites for Using the MxPEG ActiveX Plug-in	54
Installing and Running the MxPEG ActiveX Plug-in	55
Options of the MxPEG ActiveX Plug-in	55

The Best Frame Rate	57
Fast Images	57
High Resolution and Quality	57
The Focusing Aid of the Camera	57
Store Configuration	58
The Player of the MOBOTIX Camera	58
The Elements of the Player Screen	58
Elements of the Title Bar	59
Screens of the Camera	59
Elements of the Player Controls	61
The Event Story Buttons	64
The Softbuttons	65
The Image Area	68
Store Configuration	69
The MultiView Screen of the MOBOTIX Camera	69
The Elements of the MultiView Screen	69
Elements of the Title Bar	70
Screens of the Camera	71
Image Control Elements	72
The Softbuttons	73
The Image Area	77
Store Configuration	77
The Multiwatcher	77
Information on the Screen	78
The Live Image	78
The Last Stored Alarm Image	78
The Alarm List	78
Configuring Multiwatcher Screens	78
More Features	79
Setting the Screen as Start Page	79
Playing Sounds on Alarms	79
Stopping the Multiwatcher Screen	79
Storing the Configuration	79
Configuring the Multiwatcher	79
Changing the Configuration	79

Creating a New Screen	80
Deleting a Screen	80
Storing a Screen	80
The Guest Screen of the MOBOTIX Camera	80
The Elements of the Guest Screen	80
Elements of the Title Bar	81
Screens of the Camera	82
The Image Area	83
Image Control Elements	84
The Menu Link	84
Other Options	84
Register Other Cameras	85
Manually Entering Cameras	85
Automatically Searching Cameras	85
Deleting Entries	85
Manual Connection Test for All Cameras	85
Storing the configuration	86
The Admin Menu	86
Video Door Station	86
Bell Behavior and Video Mailbox	86
Storing the configuration	86
Managing MxBus Modules	87
MxBus Interface	87
Service Functions	87
Device	87
Notes on the Classic Mode	87
Assign Wires	90
Inputs	90
Outputs	90
Ringing	91
Negation	91
Output Defaults	91
Storing the configuration	91
Automatic Configuration	92
Description of Parameters	92

Storing the configuration	92
Entry Log	92
System Information	92
Information About This Camera	92
Temperature Table	93
Displayed Temperatures	93
Current Temperatures	93
Temperature History	93
Description of Parameters	93
Storing the configuration	93
System Messages	94
Structure of System Messages	94
Managing System Messages	96
DHCP Leases	96
List of DHCP Leases	96
Error Notification	97
Notification	97
Attaching Detailed Error Messages	98
Notification After Reboot	98
Storing the configuration	99
Security	99
Managing Users and Passwords	99
Creating New Users	100
Setting the Group	100
Deleting Users	100
Protecting a Camera From Public Access	101
Scheduled Access Control (Supervisor)	101
Super PIN	101
Storing the configuration	101
Locking out all Administrators by the "Owner"	101
Activating System Protection	101
Deactivating Scheduled Access Control	102
Managing User Groups and Access Rights	102
Creating New Groups	103
Deleting Groups	103

Setting the Access Rights	103
Screen	103
Function	105
Configuration	106
Minimum Access Rights	106
Setting Public Access	107
Protecting a Camera From Public Access	107
Scheduled Access Control (Supervisor)	107
Storing the configuration	107
Scheduled Access Control by Supervisor	107
Activating Scheduled Access Control	108
Deactivating Scheduled Access Control	108
Configuring Scheduled Access Control	109
Global Rule	109
Group Rules	109
Supervisor Status and Password	109
IP-Level Access Control	109
Allowing/Denying Access	110
Rules for Specifying Computers	110
Resolving IP Addresses and Domain Names	111
Order of Processing	111
Sample Configuration	111
Storing the configuration	112
Web Server Logfile	112
Table Description	112
Hardware Configuration	113
Manage Hardware Expansions	113
Connecting/Disconnecting Expansion Hardware	114
Diagnostics	114
Storing the Configuration	114
Saving and Restoring the Configuration of MxBus Modules	115
Saving the Configuration	115
Restoring the Configuration	115
Signal Out Profiles	115
Description of Parameters	115

Storing the configuration	116
Image Sensor Configuration	116
Store Configuration	117
Lens Configuration	117
Store Configuration	117
Page Administration	117
Language and Start Page	117
Start Page	117
Page Design	118
Page Options	119
Storing the configuration	120
Managing Softbutton Functions	120
Defining Softbuttons	120
Configuring a Softbutton	121
Editing Softbutton Functions	122
Storing the configuration	122
MultiView Screens	123
Screens	123
Cameras	123
Display Options	123
Actions	123
Actions Without Defined Cameras	123
Additional Actions With Defined Cameras	124
New Screen	124
Image Areas of a MultiView Screen	125
Configuring an Image Area	125
Selecting the Display Mode	127
Storing the configuration	128
Network Setup	128
Test Current Network Configuration	128
The Ethernet Interface	129
Quick Installation	129
The Ethernet Interface Dialog	129
General Interface Setup	129
IPv4 Ethernet Parameters	130

IPv6 Ethernet Parameters	131
Ethernet Hardware Options	131
Caution	131
Routing	132
Domain Name Service (DNS)	132
Zeroconf	132
IEEE 802.1X	132
IEEE 802.1Q	134
Storing the configuration	134
TCP Dump	134
General Options	134
Storing the configuration	135
Web Server	135
General Interface Setup	135
HTTPS Settings	136
MxWeb Settings	137
Replace the X.509 certificate and private key currently used by the camera	138
Replace the X.509 certificate and private key currently used by the camera	138
Generate self-signed X.509 certificate and X.509 certificate request	139
Procedures for Using and Creating X.509 Certificates	141
HTTPS with SSL/TLS is not Being Used	141
HTTPS with the Factory Default X.509 Certificate	141
HTTPS with an Individual, Self-Certified X.509 Certificate	141
HTTPS with an Individual, Externally Certified X.509 Certificate	141
Intrusion Detection Settings	142
Storing the configuration	144
SNMP Configuration	144
General SNMP Agent Configuration	145
SNMPv2c Configuration	145
SNMPv3 Configuration	146
Storing the configuration	146
Routing	146
Introduction	146
The Default Route	147
Network Routes	147

Using the Camera as a Router	147
Backup Internet Gateway	147
IP Forwarding	148
NAT for Outbound Traffic	148
NAT for Inbound Traffic	148
Additional Information	149
Storing the configuration	150
Dynamic DNS	150
Introduction	150
Configuring the DynDNS Client	151
Description of Parameters	151
Testing the Configuration	152
Ethernet Connection	152
Storing the configuration	152
General Settings of the Network Client	152
Description of Parameters	153
Storing the configuration	153
OpenVPN Configuration	153
Requirements	153
General OpenVPN Setup	153
Authentication	155
Logging Options	156
Manage VPN Certificates	156
FAQs and Error Messages	157
Frequently Asked Questions	157
Error Messages	157
Additional Information	158
Storing the configuration	158
MxMessageSystem	158
Network Distribution of Messages	159
General Interface Setup	159
Settings Depending on the Distributor Type	159
Storing the configuration	160
Message Configuration for MxBus Modules	160
Managing Messages	160

Configuring the MxMessageSystem of the Devices	161
Inputs	161
Outputs	162
RFID Modules	162
Audio feedback	162
Visual feedback	162
Keys	162
KeypadRFID	163
Sensors of the MX-GPS-Box	163
Sensors of the MxMultiSense	163
Radar Sensor of the MX-Proximity-Box	164
Storing the Configuration	164
Loading the Configuration	164
Generating a Default Configuration	164
Factory Defaults	164
Storing the configuration	165
Message Profiles for Action Groups	165
Storing the configuration	165
Storage	165
Storage on External File Server / Flash Device	165
An Overview of the Storage Methods	165
The Storage Methods in Detail – Configuring, Updating, Storage Structure, Maintenance, Best Practices	169
RAM Storage With Ring Buffer	169
Storage in a Folder/File Structure on File Server	169
Description	169
Configuration	170
Storage on SMB/CIFS File Servers – Configuring the Camera	170
Storage on NFS File Servers – Configuring the Camera	172
Storage on Flash Device	173
Description	173
Configuration	174
Storage on Flash Device With Additional MxFFS Archiving on File Server/USB Device	174
Description	174
Configuration	175

Configuring the MxFFS Archive Options	176
Storage in MxFFS Archive With SD Card as a Fallback Buffer	177
Description	177
Configuration	177
Configuring the MxFFS Archive Options	178
Further Information Regarding Storage	179
Formatting Flash Devices for Storage Using MxFFS – Steps and Options	179
Formatting the Storage Target	180
Setting the Storage Limits	180
External Logging (File Server Storage Only)	182
Testing the Storage on the External File Server	182
Event Logging	183
Storage on SMB/CIFS File Servers – Configuring the Server	183
Storage on NFS File Servers – Configuring the Server	183
Updates, Maintenance and Best Practices Regarding MxFFS Archives	184
Exchanging Flash Devices With Activated MxFFS Archiving	184
Deactivate Recording and Synchronize MxFFS Archive	184
Formatting SD Card, Activating MxFFS Archiving and Recording	185
Measures to Take Upon a File Server Failure in Conjunction With MxFFS Archiving	185
Changing the Size of an MxFFS Archive	186
Storing the configuration	187
Archive Statistics	187
Displayed Charts	187
Storage Failure Detection	190
Configuring the Tests	190
Description of Parameters	190
Notification	191
Description of Parameters	192
Storing the configuration	193
Logos and Image Profiles	193
Managing Image Files	193
Upload Image File	193
View system images	194
Stored User Images	194
Displayed Information	195

Download Image Files	195
Images Loaded From URL	195
Storing the configuration	196
Logo Profiles	196
Logo Display	196
Profiles & Options	196
Adding a Profile	198
Deleting Profiles	198
Creating Frames	198
Storing the configuration	200
Image Profiles	200
Global Options	200
Profiles & Options	201
Adding a Profile	204
Deleting Profiles	204
Storing the configuration	204
Transfer Profiles	204
FTP Profiles	204
What is FTP?	204
Using the MOBOTIX Camera for FTP Transfers	204
Global Options and Profile Options	205
Streaming FTP	205
Profiles & Options	205
Testing Profiles	208
Adding a Profile	209
Deleting Profiles	209
Saving Created Profiles	209
Variables and Placeholders for Directory and File Names	209
Additional Possibilities for Creating Dynamic Directory and File Names	211
Storing the configuration	211
E-Mail Profiles	211
Using the MOBOTIX Camera for Sending Emails	211
Global Options and Profile Options	211
Profiles & Options	211
Testing Profiles	215

Adding a Profile	215
Deleting Profiles	216
Saving Changed Profiles	216
Examples for Dynamic Text in Subject Lines	216
Storing the configuration	217
IP Notify Profiles	217
Profiles & Options	217
Errors When Sending IP Messages	221
Testing Profiles	221
Adding a Profile	221
Deleting Profiles	221
Example Profiles	221
Storing the configuration	222
Audio and Phone	222
Microphone and Speaker	223
Audio Input	223
Audio Output	223
Announce Network Data	223
Echo Cancellation	223
Deactivating the Microphone	223
Storing the configuration	224
Manage Audio Messages	224
Recording an Audio File Using the Camera	224
Recording an Audio File Using a Computer	225
Stored Voice Messages	225
Download Voice Messages	226
Upload Voice Messages	226
Sound Profiles	227
Profiles & Options	227
Adding a Profile	228
Deleting Profiles	228
Storing the configuration	228
VoIP Settings	228
Introduction to SIP Telephony	228
Setup Mode	229

General Phone Settings	229
SIP Accounts	230
Network Settings	232
Audio Message Settings	233
OSD Settings	234
Audio Codec Settings	234
Video Settings	235
VoIP Messages and Call Log	236
LED Signals When in VoIP Mode	236
Video Telephony On-Screen Menu	236
Storing the configuration	236
VoIP Messages and Call Log	237
Phone Profiles	237
Testing the Phone Profiles	237
Description of Parameters	237
LED Signals When in VoIP Mode	239
Adding a Profile	239
Deleting Profiles	240
Storing the configuration	240
Incoming Calls and Camera Remote Control Using VoIP	240
Incoming Calls Settings	240
Description of Parameters	240
Security Recommendations	242
LED Signals When in VoIP Mode	242
Camera Remote Control	243
Keypad Commands of the Main Menu	243
Storing the configuration	244
Camera Phone	244
LED Signals When in VoIP Mode	245
SIP Server Settings	245
SIP Server	246
SIP Accounts	246
Storing the configuration	247
RTP Pager	247
General	247

Enable	247
Receiver Settings	247
Multicast IP	247
Port	248
Storing the configuration	248
General Administration	248
Date and Time	248
Description of the Dialog	249
Time Settings	249
Time Status	250
Time Server Check	250
Storing the configuration	251
LED and Signal Output Setup	251
LED Settings	251
Designation of the Camera LEDs	254
LED Signals	254
Other Settings	256
Storing the configuration	256
Time Tables	256
Custom Days	257
Time Tables	257
The Columns of a Time Table	258
Deleting Profiles	259
Storing the configuration	259
Time Control	259
Configuring Time Tasks	259
Actions and messages that can be executed as time tasks	260
Numeric Values of the Time Fields	262
Combined Time Field Entries	263
Examples	264
Options	266
Storing the configuration	266
Integration Protocols	267
Integration Protocols	267
Protocol	267

Optimize Settings	268
Global Settings	269
Multicast Interface	269
RTSP Port	269
RTSP-over-HTTP Tunnel	269
RTSP User Configuration	269
Image Source	269
Aspect Ratio	270
Stream Settings	270
Codec	271
Frame Rate (fps)	271
Image Size	271
Enable Audio	271
Activate Multicast	271
Multicast Autostart	271
Multicast IP	271
Multicast Port	272
Multicast TTL	272
Quality	272
Keyframe Interval	272
Profiles	272
Bit Rate Control	272
Genetec Settings	272
PTZ	272
ONVIF Settings	273
Discoverable	273
Scopes	273
Profiles	273
User	273
Changing the User Level	274
Changing the Password	274
Deleting Users	274
Adding Users	274
General Notes	274
Smart Data Logging	275

Configuration	275
Enabled	275
Adding Smart Data Sources	275
Remove	276
Status	276
Refresh	276
Storing the configuration	276
Serial Interface	276
The Serial Interface	277
Selecting the Operating Mode	277
The Data Operating Mode	277
The Modem Operating Mode	279
The Weather Operating Mode	283
Weather Variables	285
Storing the configuration	294
Configuration	294
Configuring the Camera	294
The Basic Configuration of the MOBOTIX Camera	295
Saving the Configuration	295
Working with the Configuration File	295
Keeping Parts of the Configuration	297
System Backup and Restore	297
Backing Up the System Configuration	297
Restoring the System Configuration	297
Notes on the Dependency between the Backup Feature and the Super PIN	298
Delete All System Configuration Backups	298
System Update	298
Updating the Camera Software	298
Loading the Update File	298
The Setup Menu	299
Image Control	299
General Image Settings	299
Description of Parameters	299
Storing the configuration	305
Exposure Settings	305

Description of Parameters	305
Predefined exposure windows	307
Custom exposure windows	308
Using Custom Windows	310
Parameter	311
Storing the configuration	312
Color Settings	312
Description of Parameters	312
Storing the configuration	314
JPEG Settings	314
Description of Parameters	315
Storing the configuration	316
Text and Display Settings	316
Description of Parameters	316
Storing the configuration	324
vPTZ Settings	325
Description of Parameters	325
Storing the configuration	326
The OnScreen Control	327
Overview	327
Control Surfaces – Overview	327
Thermal Sensor Settings	329
Description of the Parameters in the Thermal Image Overlay Section	329
Description of General Parameters	330
Storing the configuration	333
Thermal Radiometry	333
Edit Measurement Area	334
Measurement Mode	335
Trigger Mode	336
Alarm Type	336
Editing the Reference Area	336
Tolerance	337
Temperature Unit	338
Trigger Values	338
Comparison	338

Action Type	338
Show Measurement Area	338
Storing the configuration	339
Event Control	339
General Event Settings	339
Description of Parameters	339
Main Event Arming	339
Custom Signals	340
Master/Slave	341
Event LEDs	342
Arming Delay	342
Storing the configuration	343
Event Overview	343
Modifying Existing Events	343
Deleting Events	344
List of Events	344
Storing the configuration	347
Event Control Example	347
Scenario	347
Settings	347
Additional Information	348
Environment Events	348
Using Meta Events to Avoid False Alarms	348
General Settings	348
Description of Event Sensor Types	349
Storing the configuration	352
Thermal Reference Window	352
Edit Measurement Area	353
Trigger Mode	354
Editing the Reference Area	355
Comparison	356
Action Type	356
Show Measurement Area	356
Storing the configuration	357
Thermal Spotmeter	357

General Settings of the Thermal Spotmeter	358
Show Crosshairs	358
Alarm Type	358
Temperature Unit	358
Trigger Values	358
Comparison	358
Action Type	359
Storing the configuration	359
MxActivitySensor	359
General MxActivitySensor Settings	359
MxActivitySensor 2.x Settings	360
The Perspective Compensation	360
Defining the Size Windows for MxActivitySensor 2.x	361
Window Definitions	362
Using Comments to Deactivate Window Definitions	364
Detection Threshold	364
Select Direction Triggers	364
Copy Window Definitions	364
Dual Lens Video Motion	364
Storing the configuration	365
Image Analysis Events	365
Using Meta Events to Avoid False Alarms	365
General Settings	365
Description of Event Sensor Types	366
Storing the configuration	366
Behavioral Detection	366
General Settings of Behavioral Detection	367
Main Direction	367
Activate Visualization of Alarms	367
Show Object Speed	367
MxAnalytics – Shared Settings	367
Selectable Behavior Profiles	367
Storing the configuration	371
Video Motion Detection	371
Visualization of Video Motion Detection Windows	371

VM Window Elements	371
Video Motion Window Definitions	372
Using Reference Windows to Avoid False Alarms	375
Using Comments to Deactivate Window Definitions	375
Auto-Generated VM Windows	375
Variables	377
Copy Window Definitions	378
Dual Lens Video Motion	378
Low-Light Suppression	378
Video Motion Window Suppression Time	378
Hide Unused Windows	378
Storing the configuration	379
Internal Events	379
Using Meta Events to Avoid False Alarms	379
General Settings	379
Description of Event Sensor Types	379
Storing the configuration	381
Meta Events	381
General Settings	381
Event Counter	381
Logical AND Event	383
Event Logic	384
Event Logic Examples	385
Storing the configuration	387
GPS Center Coordinates	387
Message Events	387
Using Meta Events to Avoid False Alarms	388
General Settings	388
Description of Event Sensor Types	388
Storing the configuration	390
Signal Events	390
Using Meta Events to Avoid False Alarms	390
General Settings	391
Description of Event Sensor Types	391
Storing the configuration	392

Timer Events	393
Using Meta Events to Avoid False Alarms	393
Description of Event Sensor Types	393
Storing the configuration	394
Action Group Overview	394
Modifying Existing Action Groups	394
Creating Action Groups	395
Deleting Action Groups	395
Storing the configuration	395
Action Group (Detail View)	396
General Settings	396
Actions	398
Creating Actions	399
Deleting Actions	399
Storing the configuration	399
Recording	399
The Recording Process	400
Process Description: Regular Recording	400
Process Description: Retrigger Recording	400
Process Description: Stop Recording	401
General Settings	401
Description of Parameters	401
Storage Settings	403
Description of Parameters	403
Full image recording	406
Description of Parameters	406
Storing the configuration	406
Data Sheets for Certified Apps	407
Certified App Settings	407
General Settings	407
App Settings	407
Storing the configuration	408
Visage Technologies Face Recognition	408
Settings	408
Storing the configuration	408

Remote-Controlling the MOBOTIX Camera	409
The HTTP API	409
Modifying the Settings of the Setup Menu	409
Using the vPTZ Features	409
Executing Camera Functions	409
Command Conventions	410
Command With One Instruction	410
Command With One Instruction and a Parameter/Value Pair	410
Command With One Instruction and Several Parameter/Value Pairs	410
Several Values for One Parameter	410
Newline Characters in Commands	410
Special Characters in Commands	410
Table of Color Values	411
The control Command	411
Instructions for the control Command	411
Accessing Profile Parameters	412
List of Sections of the control Command	413
The click.cgi Interface	413
The rotorcgi Interface	413
The rcontrol Command	413
Sections of the control Command	414
Contents	414
Parameters for Section 'actionhandler' ↑	414
Parameters for Section 'actions' ↑	425
Parameters for Section 'audio' ↑	435
Parameters for Section 'color' ↑	435
Parameters for Section 'event_env' ↑	436
Parameters for Section 'event_ima' ↑	436
Parameters for Section 'event_int' ↑	438
Parameters for Section 'event_met' ↑	438
Parameters for Section 'event_msg' ↑	438
Parameters for Section 'event_sig' ↑	438
Parameters for Section 'event_tim' ↑	439
Parameters for Section 'eventcontrol' ↑	439
Parameters for Section 'exposure' ↑	447

Parameters for Section 'exposurecontrol' ↑	449
Parameters for Section 'general' ↑	451
Parameters for Section 'imagecontrol' ↑	452
Parameters for Section 'imageprogram' ↑	458
Parameters for Section 'jpeg' ↑	460
Parameters for Section 'mxpegparam' ↑	461
Parameters for Section 'quickcontrol' ↑	462
Parameters for Section 'quickcontrolreset' ↑	464
Parameters for Section 'recording' ↑	472
Parameters for Section 'settings' ↑	475
Parameters for Section 'text' ↑	479
Parameters for Section 'thermal' ↑	480
Parameters for Section 'videomotionanalysis' ↑	482
Parameters for Section 'vptzcontrol' ↑	482
Parameter Overview of the rcontrol Command	483
The Remote Configuration API	490
Using the Remote Configuration API	490
Explanation of the HTTP POST Request in the Example	491
Commands of the Remote Configuration API	492
Available Commands	492
Output of the Remote Configuration API	497
Example: Activating the Microphone	497
Output of the command sequence with the following data:	498
Example: Returning a List of Commands Using help	499
Output of the command sequence with the following data:	500
Example: Changing a Profile Line Using write	501
CGI Parameters of the MOBOTIX Camera	505
Parameters for image.jpg	506
Parameters for faststream.jpg	506
Parameters for event.jpg	507
Parameter Overview of the image.jpg Command	507
Parameter Overview of the faststream.jpg Command	510
Parameter Overview of the event.jpg Command	512
Additional Information	515
The MxWeb Interface	515

MxManagementCenter, MxControlCenter, and MxEasy	515
The Privacy Mode	516
Activating the "Privacy Mode"	516
Effects Of The "Privacy Mode"	516
Signaling by the Camera LEDs	516
Deactivating the Privacy Mode	517
Description of Parameters	517
Graphically Entering Image Areas	517
Defining New Windows	517
Definition of Counting Corridors in MxAnalytics	518
Using Variables	518
Variable Description	519
Formatting Options	535
Formatting Commands	535
Formatting Switches	536
Placeholders for Dynamic Image Texts	537
Description of Placeholders	537
Storing the configuration	548
Abbreviations Used in the MOBOTIX Camera	548
Event Names	548
Color Coding of Event Names Using the UserClick Example	548
Action Symbols	549
Color Coding of Action Symbols Using the EM (Email) Example	549
List of Action Symbols	549
Status Symbols	550
Additional Symbols	550
Informational Symbols	550
Configuration Service and Manual Configuration	551
Deactivating the Configuration Service	551
Activating the Configuration Service	552
Download Camera Report for Support	552
Description of the Report Sections	552
Regular Expressions	553
Special Characters	554

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Frequently Asked Questions

What should I do after the camera has started for the first time?

Read the [Getting Started, p. 29](#) chapter to get to know your MOBOTIX camera and to adjust the first settings.

How secure is the camera?

If you haven't set a new administration password yet, you should start the [Getting Started, p. 29](#) by pressing the softbutton. This wizard will help you adjust the most important settings to run a secure camera.

Which setting should I change next?

If you want the camera to react to events and to record images, you should press the [Arm & Record, p. 46](#) button next. This wizard will set everything you need for this feature and will store the settings in the camera's permanent memory. If you want to move the motion detection window to a different spot in the image, for example, you should read the [Event Overview, p. 343](#) topic.

Where can I find information on the MOBOTIX 7 Apps?

The MOBOTIX 7 Apps open up virtually unlimited possibilities to use the MOBOTIX 7 platform. For more information on the pre-installed Certified Apps of the MOBOTIX 7 platform, please see [Data Sheets for Certified Apps, p. 407](#).

Quick Links



[Manuals \(PDF\)](#)



[Drilling Template \(PDF\)](#)



[Video Tutorials](#)



[Software Downloads](#)



Popular Topics



MOBOTIX Community

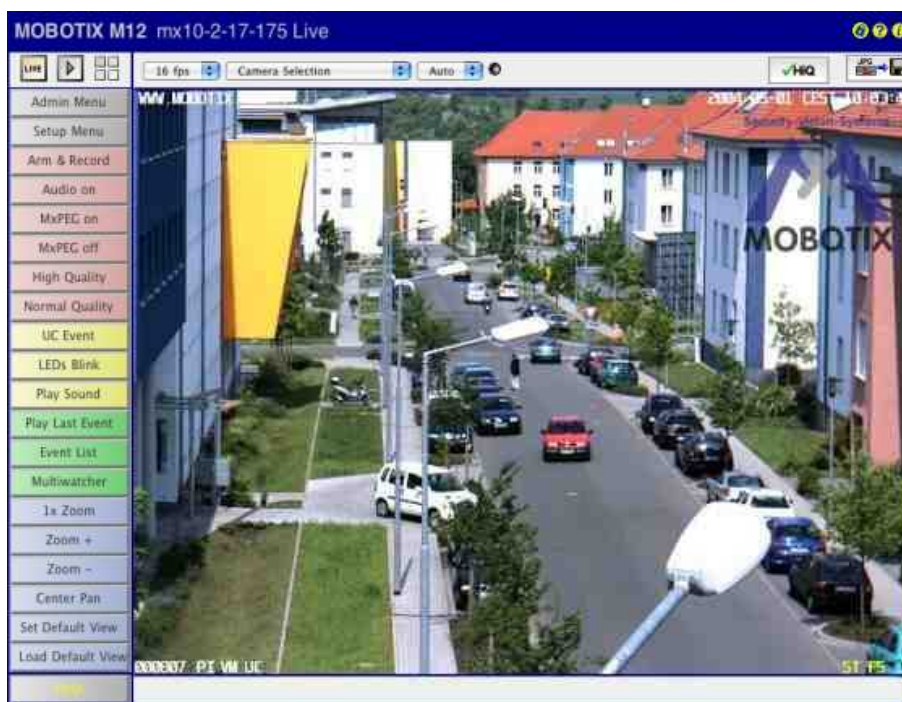
Getting Started

Views of the MOBOTIX Camera



The “Live” View

Per factory default, the MOBOTIX camera automatically shows the [Live](#) screen once the power supply has been attached.

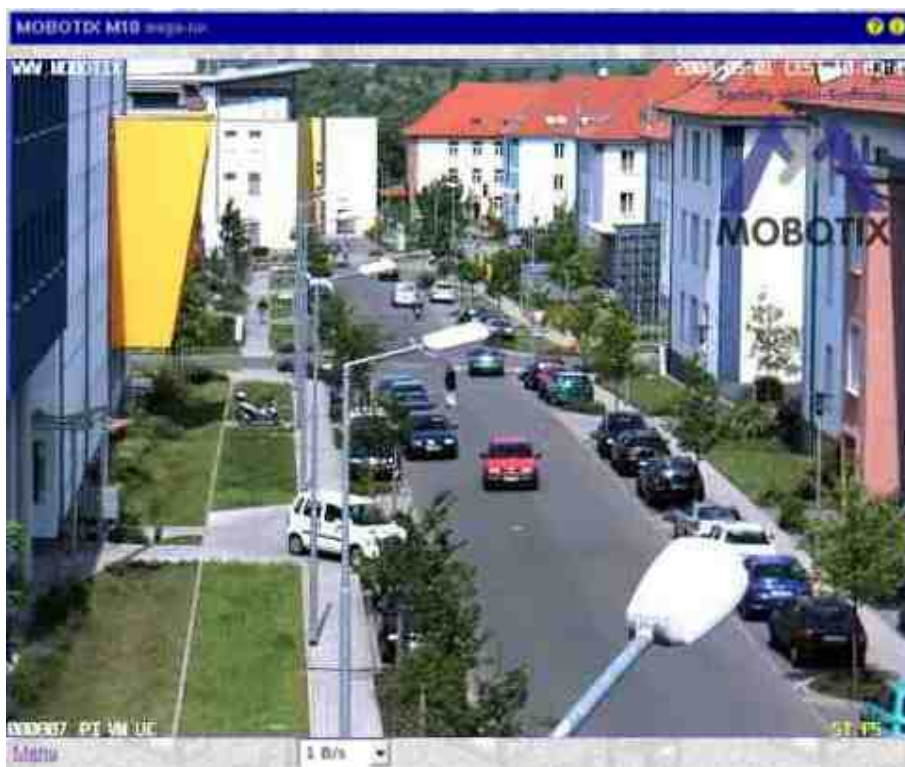


Getting Started

Views of the MOBOTIX Camera

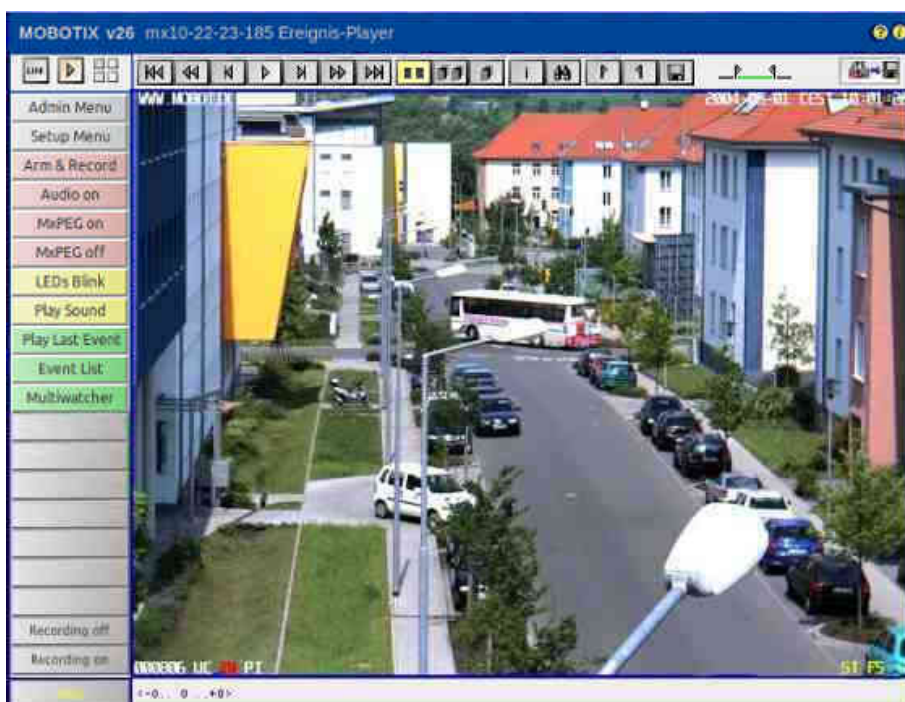
The “Guest” View

You can set a different start page (e.g. the [Guest](#) screen) in [Admin Menu > Language and Start Page](#) as this screen only shows the current live image without any further controls:



The “Player” View

The [Player](#) view can play back the recorded image and video sequences:



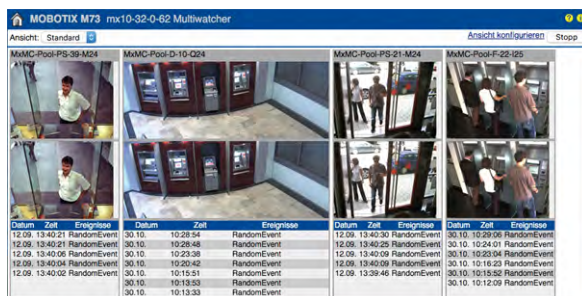
The “MultiView” View

MultiView shows multiple cameras in Live or Player view mode:



The “Multiwatcher”

In addition to the views above, the **Multiwatcher** allows using one camera as a proxy camera. This camera can be accessed from outside of the network and can show cameras from inside of the network. This is useful especially when accessing a network from the outside using low-bandwidth connections.



The Most Important Settings of the MOBOTIX Camera

Configuring the MOBOTIX Camera

All views except [Guest](#) show a row of buttons at the left-hand of the browser window, the so-called *soft-buttons*.

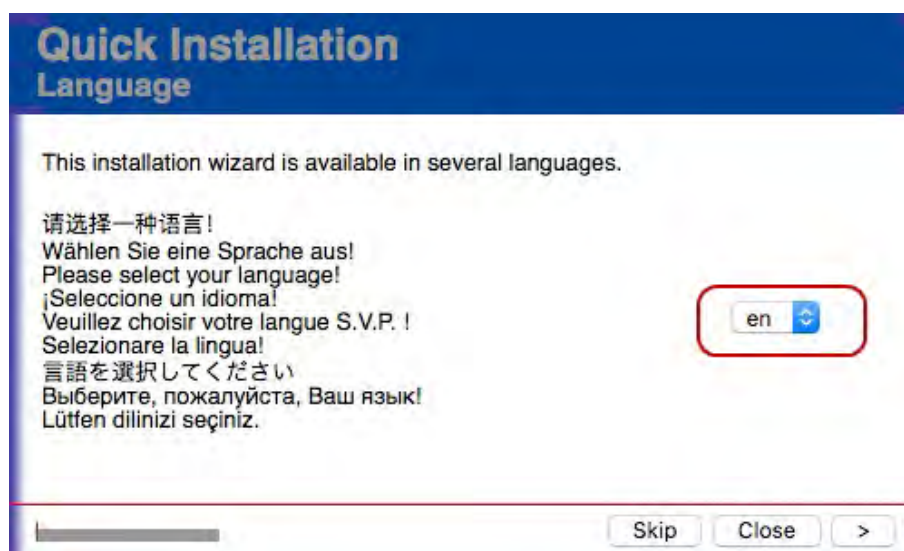
The two most important softbuttons are **Admin Menu** and **Setup Menu**:

- : This menu allows changing administrative base settings for using the camera (users and passwords, network settings, software updates, ...). When accessing this menu for the first time, the [Quick Installation](#) wizard opens: it helps to make the first configuration changes to the camera. See [The Admin Menu, p. 86](#) for additional information.
- : This menu contains the settings you need to configure image processing, text overlays, actions and recordings, among other things. See [The Setup Menu, p. 299](#) for additional information.

You can also adjust the softbuttons to your needs. For more information on this topic, see [Managing Soft-button Functions, p. 120](#).

Starting the Quick Installation

When accessing the **Admin Menu** for the first time, the camera will ask for the “admin” user password. Enter the default password “meinsm”. The Quick Installation wizard opens:



Select the desired language from the list (e.g., “it” for Italian) and click on > (Next Page).

Follow the instructions for configuring these basic settings (among others):

- Discard or keep the existing configuration.
- Change the default password “meinsm” for the “admin” user. Enter a strong password (upper and lower case letters, special characters and digits), jot down this password and store it in a safe place.
- Allow or deny public access.
- Set the integration mode (Genetec, ONVIF, ...).
- Set the time zone.
- Set the camera name (“talking” names, such as “ParkingLotEntrance” will allow identifying the camera more easily later on).
- Set the network interface to automatic (default) or manual mode.
- Configure an FTP server for transferring images to a website (leave empty if you do not need this feature).

Saving the Configuration

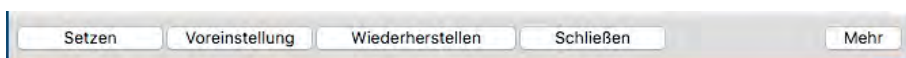
Once you have completed all pages of the **Quick Installation** wizard, it will show an overview of the changed settings. Click on **Store Configuration** to save the configuration of the camera in its permanent memory. The camera will reboot in the next step. Note that you will have to use the **new password** when again accessing administrative functions of the camera.

General Remarks on Storing Camera Settings

What should I take into account when storing configuration changes?

If you have changed settings of the MOBOTIX camera, chances are that you want to keep them. There are a couple of things to remember.

Important! Changes to the configuration are first stored in the *volatile* memory of the camera. This means that they will be lost if you are rebooting the camera. It is only when storing the configuration to the camera's *permanent* memory that these settings will be persistent. For this purpose, most of the dialogs have a bar at the bottom for managing the settings:

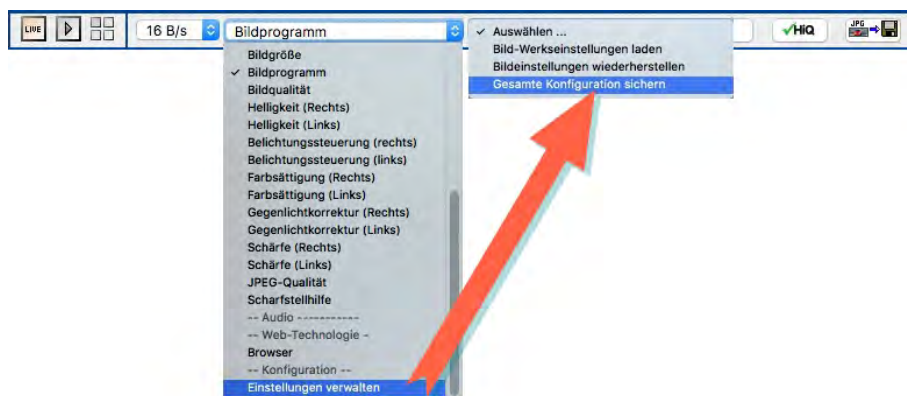


- **Set:** Immediately applies the settings of the dialog without storing them in the camera's permanent memory.
- **Factory default:** Retrieves and applies the default values for this dialog.
- **Restore:** Retrieves and applies the settings in this dialog from the camera's permanent memory.
- **Close:** Closes the dialog and offers to store the entire configuration in the camera's permanent memory.
- **More:** If this button appears at the bottom of a dialog, you can display more settings.

Storing the Configuration in the Camera's Permanent Memory

Use one of the following methods for storing the configuration in the camera's permanent memory.

- First click on **Set**, then on **Close** and answer the prompt by clicking on **OK**.
- In one of the camera's view, click on **Admin Menu > Store current configuration into flash memory** and follow the instructions.
- In the Live view of the camera and in the second dropdown element, click on **Manage Settings**, then in the third dropdown element, click on **Store Entire Configuration** and follow the instructions.



Saving the Configuration to a Local Computer

Once you finished configuring the camera, you should store the settings not only in the camera's permanent memory, but also on your computer (**Admin Menu > Saving the Configuration, p. 295**).

You can use this file to restore the configuration later on: **Admin Menu > Working with the Configuration File, p. 295**.

News in This Release

The System Platform MOBOTIX 7

The openness of the MOBOTIX 7 platform delivers ultimate individuality. MOBOTIX 7 will change video surveillance. Starting now, you can precisely address the challenges of the most diverse industries. Limitlessly scalable, intelligent and modular thanks to the support of tailor-made apps. This opens up new potential that goes far beyond conventional video security applications.

- **Certified Apps:** Certified Apps are professional, deep learning-based MOBOTIX apps and solutions from renowned partners that are explicitly verified and certified by MOBOTIX. All Certified Apps meet the highest cyber security requirements. Thanks to their high modularity, customers can use exactly the apps in their video systems that they need to meet their requirements. The Certified Apps are all pre-installed on the MOBOTIX 7 platform and can be **can be tested free of charge for 30 days**. The selection of apps will grow with the requirements.
- **Custom Apps:** It is possible for partners, customers or users to develop and program their own solutions based on the MOBOTIX Software Development Kit (SDK) for the MOBOTIX 7 platform. They can use them as "Custom Apps" for special requirements that are not yet available as Certified App. In a second step, these apps can be certified by MOBOTIX and other customers can also purchase them as "Certified Apps." Developers can therefore open up additional sources of income with attractive "Custom Apps" for the MOBOTIX 7 platform.

Starting the MOBOTIX Camera

The camera starts automatically as soon as the power supply (or a network or ISDN cable with inline power) has been plugged in.

By default, the camera starts as DHCP client and automatically tries to get an IP address from a DHCP server. To start the camera in a mode different from the default mode, you can activate the boot menu of the camera.

Activating the Boot Menu

1. **Prepare the Camera**
 - Depending on the camera, remove the housing ring and dome (see [Keys of the MOBOTIX Cameras](#)).
 - Disconnect the camera's power supply.
 - Reconnect the power supply of the camera.

2. Activate the Boot Menu

- The red LED lights up 5 to 10 seconds after establishing the power supply and will stay on for 10 seconds. Press the key as indicated by the red circle in the figure (see [Keys of the MOBOTIX Cameras](#)). The camera enters the boot menu, ready for selecting one of the boot options.
- The LED now flashes once and repeats the flash signal after pausing for one second (the number of flashes indicates the current boot option). To go to the next menu position, briefly press the key again (< 1 sec). After the last boot option, the camera returns to the first boot option (LED flashes once).
- Available Boot Options:

LED flashes	Boot Option	Meaning	Audio Confirmation*
1 x	Auto Configuration	Starts the auto configuration in order to operate this camera as a door station (not supported on all camera models).	Phone ringing
2 x	Factory Reset	Starts the camera with factory defaults (factory default IP address, users and passwords will not be reset).	Boing
3 x	Automatic IP Address	Starts the camera as DHCP client and tries to obtain an IP address from a DHCP server. If a DHCP server cannot be found or no IP address can be obtained, the camera starts with its factory default address.	Boing-Boing
4 x	Recovery System	Starts the camera with the recovery operating system , e.g., in order to recover from a failed update of the camera software.	Alarm Sound
*Only on cameras with audio option and installed speaker.			

3. Select a Boot Option

- To select the current boot option, press the key longer (> 2 sec). The camera confirms the selection by flashing rapidly for 3 seconds. After 20 sec, the camera will play a sound according to the table above.
- If nothing is selected, the camera will resume its normal boot process after a certain time.

Keys of the MOBOTIX Cameras

Recovery Operating System

If the regular operating system is damaged while [Updating the System Software](#), the camera will automatically use the fully functionally recovery operating system when booting the next time. All previous settings will remain intact. The camera will hence remain reachable after the next reboot although it is running on the recovery operating system.

The recovery operating system always shows the software version at the time when the camera had been delivered. The recovery system *cannot* be overwritten.

If [Updating the System Software](#) has failed, you should open the **Camera Status** to check the **Software Version** of the camera. If the software version corresponds to the version at the time of the delivery, you should **restart the upload process** with the new version.

Additional Information

For additional information on MOBOTIX products, please see the MOBOTIX website www.mobotix.com.

Reference

Screens of the MOBOTIX Camera

You can access the views of the MOBOTIX camera using the following buttons in the top left corner of the browser:

-  : [The Live Screen of the MOBOTIX Camera](#), p. 38
-  : [The Player of the MOBOTIX Camera](#), p. 58
-  : [The MultiView Screen of the MOBOTIX Camera](#), p. 69

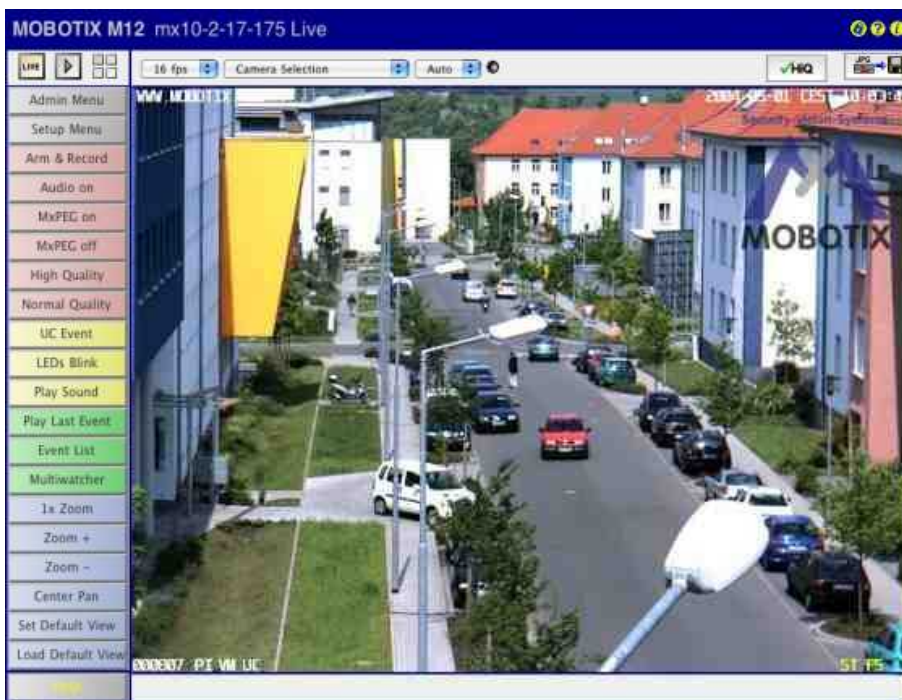
To use a different start page as the [Live view](#) of the camera or to change the default language of the user interface, open [Admin Menu > Language and Start Page](#).

The *Live* Screen of the MOBOTIX Camera

The camera automatically opens the **Live** screen when you access the camera for the first time. Use this screen to change image settings, to use the softbuttons, to open the **Setup Menu** or to access the password-protected **Admin Menu**.

The Elements of the *Live* Screen

Hold your mouse over the elements of the user interface to see the bubble help. Click on the element to go to the description.



Elements of the Title Bar

Name

Camera Model

Element

MOBOTIX M16

Description

Displays the model of the MOBOTIX camera.

Name

Camera Name

Element

mega-lux

Description

Shows the camera name as set in the **Quick Installation** wizard or in the **Ethernet Interface** dialog in the **Camera name** field.

Name

Privacy Mode

Element



Description

Signals that the **Privacy Mode** is active. This mode prevents access to the camera in order to guarantee privacy. For additional information on this topic, see the [Privacy Mode](#) help page.

Name

Open Help

Element



Description

Opens the online help for the current screen or dialog. If no help page is available, the [Table of Contents](#) page will be displayed.

Name

Camera Information

Element



Description

Displays information on the hardware, software and the most important settings of the camera.

Screens of the Camera

Name

Live

Element



Description

The **Live** screen of the MOBOTIX camera displays the current images of the camera.
Use the [dropdown menus](#) to access certain functions of the image controls and the camera administration or open the **Setup Menu** to see links to all image and event control dialogs.
The **Admin Menu** (password-protected) contains all dialogs for configuring the camera.

Name

Player

Element



Description

Use the **Player** screen to view and download the events stored in the internal or the external image storage of the camera.

See also [The Player](#)

Name

MultiView

Element



Description

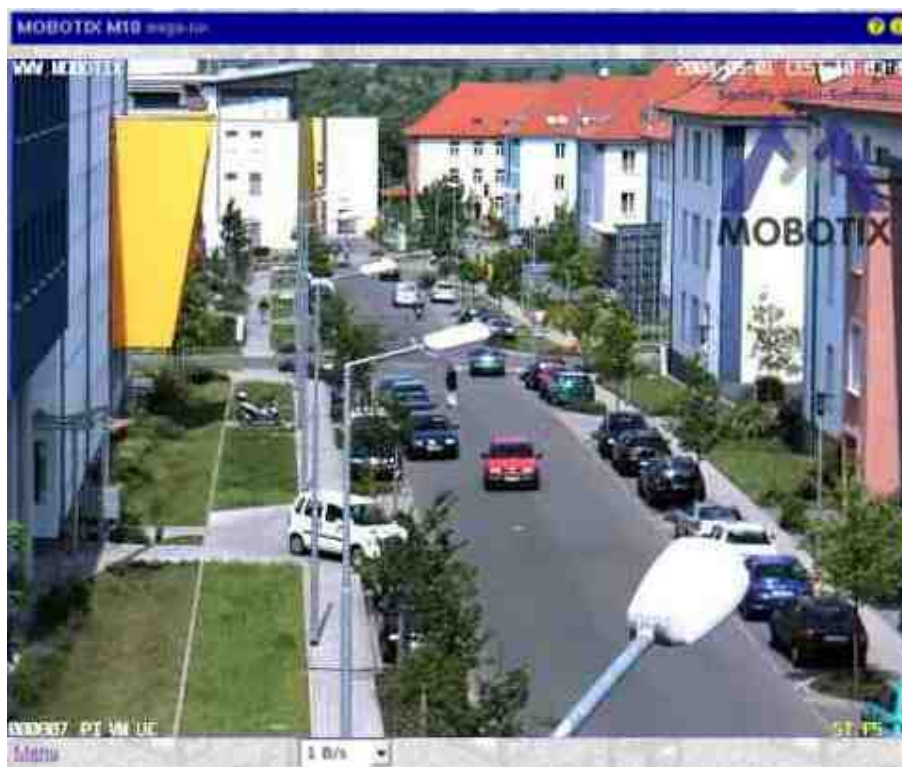
Use the **MultiView** screen to combine several cameras in different patterns and to assign special functions (highlighting, focus on alarm, ...) for the individual cameras.

See also [The MultiView Screen](#)

Name

Guest

Element



Description

The **Guest** screen allows viewing the camera's live image, setting the [frame rate](#) within the preset limits and accessing the [Live](#) screen by clicking on the **Menu** link at the bottom of the page.

See also [The Guest Screen](#)

Image Control Elements

Name

Frame Rate

Element



Description

Select the desired frame rate for the Live screen.

Please note that the frame rate depends to a large degree on the bandwidth of the transmission path, the selected resolution and the video codec used (MxPEG or Motion JPEG).

See also [The Best Frame Rate](#)

Depending on the camera model, the maximum frame rate in the browser may be limited to 1 fps.

Name

Function Selection

Element



Description

Use the image control functions to adjust the Live screen to your preferences:

Camera Selection

Select the right, the left or both image sensors, or the automatic Day/Night switch (only available in dual-lens models).

Display Mode

Depending on the camera model, you can use this option to display either different picture-in-picture views or various views of corrected (i.e. undistorted) images (see [General Image Settings > Display Mode](#)).

--vPTZ-----

Installation

This command assists when configuring a camera for the first time.

1. Depending on where the camera has been mounted, select *Wall*, *Floor* or *Ceiling*.
2. Click with your mouse into the live image to turn the image into the desired direction.
3. Depending on the camera model, select *Set Focus* or *Set North*.

Load View

Select the stored view you would like to see. A view is the combination of a direction and a zoom factor.

Save View

Select the number of a view for which you would like to store the current direction and the zoom factor.

Auto Mode

This feature allows automatically moving between stored positions.

- *Jump N/E/S/W* (only for the *Ceiling* and *Floor* mounting types): Switches between the North, East, South and West views. Corresponds to the *Auto Move on* softbutton.
- *Surround Clockwise* (only for the *Wall* mounting type): Automatically moves through the four defined views as defined by the *Set Focus* command. Corresponds to the *Auto Move on* softbutton.
- *Views 1-15*: Automatically loads the first 15 views that have been stored using the **Save View** command, one after the other.

- **Off**: Deactivates the Auto Mode. Corresponds to the **Auto Move off** softbutton.

Zoom

Allows setting a defined zoom level, defining a rectangular zoom area, activating/deactivating the mouse wheel zoom (*off* by default) and can reset the pan/tilt features (corresponds to the **Center Pan** softbutton).

--Recording-----

Recording

Use this command to activate the recording features. In addition, you can select some pre-defined settings for continuous recording and event recording in this section. The *Add Video Motion Window* and *Set Video Motion Window* allows adding a new video motion window or setting a new Video Motion Window by defining a rectangle in the live image by [Shift]-click, click, respectively. In addition, you can activate full image and live image recording and show/hide the [Event](#) and [Action Symbols](#) at the bottom of the image area.

--Image-----

Image Size

Select the desired image size or draw a rectangle ([Shift]-click, click) in the camera's live image, then use **Define Custom Image Size** to create an image with the dimensions of the rectangle.

Image Program

Highlight the desired [image program](#).

Image Quality

Sets the level of detail that is used when reading the image sensor.

Brightness

Use this parameter if you would like to brighten up the entire image area (see [Exposure Settings](#)).

Exposure Control

Select either the *Visible Image Area* or the *Full Image Area* exposure mode. The camera displays more options if you have selected the *Full Image Area* exposure mode. For one thing, you can use one of the predefined exposure windows to adjust the exposure control. Furthermore, you can use a [Shift]-click, click to define a rectangle in the live image and to use it as the new exposure window (*Replace Exposure Window* option) or to add it to the existing exposure windows (*Add Exposure Window* option). In addition, you can show/hide the currently used measurement windows in this exposure mode.

Color Saturation

Use this parameter to influence the color saturation of the image. The higher the saturation, the more intense are the colors. The value -10 produces a gray-scale image (see [Color Settings](#)).

Backlight Correction

This parameter (like **Brightness**) also is used for adjusting the brightness of an image. However, it only affects the darker portions of an image ([Exposure Settings](#)).

Sharpness

Use this parameter to set the desired value for sharpness control. A lower value results in a

smoother (less crisp) image (see [General Image Settings](#)).

JPEG Quality

Select the desired JPEG quality of the generated images.

Focusing Aid

This feature provides a visual aid for properly [setting the focus](#) of a MOBOTIX camera lens.

--Audio-----

Speaker Volume

This parameter sets the volume of the camera speaker.

Microphone Sensitivity

This parameter sets the sensitivity of the camera microphone.

--Web Technology-----

Browser

Select how the browser gets the images from the camera:

- **Internet Explorer:** *JavaScript* (default), *Java*, *ActiveX* (only for Windows)
- **Netscape/Mozilla/Firefox:** *JavaScript*, *Server-Push* (default), *Java*

--Configuration-----

Managing Settings

Use this function to *load the image factory defaults*, *restore the image settings* from flash, and to *store the complete configuration* (requires administrative access).

Depending on the camera model, some of the listed features may not be available.

See also [The MxPEG ActiveX Plug-in for Internet Explorer](#)

Name

Status Display

Element



Description

Displays the current status of the camera:

	<i>Black:</i> Normal state of the camera.
	<i>Yellow blinking:</i> The camera switches from one state to another (e.g. from the left to the right image sensor).

	<i>Green:</i> A process has been completed successfully (about one second).
	<i>Red:</i> A process could not be completed successfully (about one second).

Other Elements

Name

Activate/Deactivate Pan/Zoom

Element



Description

This button allows or forbids vPTZ actions in all panorama and multi-window display modes. This includes loading and saving of views.

The Panorama and multi-window display modes may not be available on all camera models.

Name

Preview Quality

Element



Description

This button turns the preview mode on or off. The availability of this button can be toggled in the **Language and Start Page** dialog.

Name

High Quality

Element



Description

This button opens the *High Quality image program*.

Name

Store JPEG image

Element



Description

This button stores the current live image from the camera as a JPG file.

The Softbuttons

Name

Softbuttons

Element

Description

The softbuttons at the left-hand side of the screen execute certain functions, most of which can be used by users with *User* level access.

If you have administrative access to the camera, you can assign new functions to existing softbuttons by *[Shift]*-clicking the desired softbutton.

- See also
- [Defining Softbuttons](#)
 - [Managing Users and Passwords](#)

Name

Admin Menu

Element

Description

Opens the **Administration menu** of the MOBOTIX camera, allowing you to change the most important system settings. You need a user name and password of an `admins` user group (**Users and Passwords** dialog) to access this menu.

Name

Setup Menu

Element

Description

Opens the **Setup menu** with its dialogs for changing the image and event settings.

Name

Arm & Record

Element

Description

This wizard [arms the camera](#), activates [event recording](#), the [camera microphone](#), the [MxPEG video codec](#), one [Video Motion Detection](#) window, the [User Click](#) event, the [visual alarm](#) and opens the [MultiView screen](#) of the camera.

Name

Audio on

Element

Description

This Wizard activates the [camera microphone](#) and the audio output on the computer (only when using

Internet Explorer on Windows computers).

Name

MxPEG on

Element

Description

This softbutton activates the [MxPEG video codec](#), which guarantees fast transmission of video and audio data while using as little bandwidth as possible.

Name

MxPEG off

Element

Description

This softbutton deactivates the [MxPEG video codec](#) in order to produce JPEG images with the best possible quality. This is the preferred setting for webcam applications.

Name

Open Door

Element

Description

This softbutton triggers the door opener (door station only).

Name

Light ON/OFF

Element

Description

This softbutton button turns the lights on or off (door station only).

Name

UC Event ("User Click")

Element

Description

This softbutton triggers the [User Click \(UC\)](#) event.

Name

LEDs Blink

Element

Description

This softbutton will prompt the camera to blink with its [camera LEDs](#) for five seconds.

Name

Play Sound (on camera speaker)

Element

Description

This softbutton plays back a [sound](#) on the camera speaker. For additional information on recording and using your own audio messages, see the [Manage Audio Messages](#) help page.

Name

Play Last Event

Element

Description

Plays back the last event recorded by the camera.

Name

Event List

Element

Description

Click on this button to display the **Event List** dialog. This dialog displays a list with the last 20 events with the corresponding navigation links.

Click on one event link to show the corresponding event image in the player or select a date and time to list the events of that point in time.

Name

Multiwatcher

Element

Description

The **Multiwatcher** displays the live/event images of this and other MOBOTIX cameras by means of a "[proxy camera](#)". This means that only one camera needs to be accessible from outside of the network and this camera allows you to see live images and event lists of this and other cameras within the network.

Name

Zoom buttons

Element

Description

Use these buttons to control the digital zoom and the panning functions for moving the visible area within a zoomed image:

1x Zoom

Switches the digital zoom off and returns to the regular camera view. This setting will deactivate the **Center Pan**.

Zoom +

Increases the zoom level (i.e. enlarges the size of the displayed objects). From zoom level [1.1x] on, clicking in the image will move the visible image area within the full image.

Zoom –

Reduces the zoom level (i.e. reduces the size of the displayed objects).

Center Pan

Moves the visible image area to the center of the full image, if zoom level [1.1x] or higher has been activated.

See also ■ [General Image Settings](#)

■ [The Best Frame Rate](#)

Name

Display mode buttons

Element

Description

These buttons control specific image features of hemispheric cameras and are thus only available on these models:

Normal Image

Switches to the standard display mode that allows zooming and panning.

Panorama Image

Switches to the Panorama display mode.

Surround Image

Switches to the Surround display mode.

Auto Move on

Activates the *N/E/S/W* auto mode (*Ceiling* and *Floor* mounting types), which automatically moves to the North, East, South and West views. If the mounting type has been set to *Wall*, this button activates the *Surround Clockwise* auto mode, which automatically moves to the four views that have been set using **Set Focus**.

Auto Move off

Deactivates the auto mode.

See also [General Image Settings](#)

The Image Area

Name

Image Area

Element



Description

The image area shows the live images of the camera as well as logos, texts and symbols of the camera.

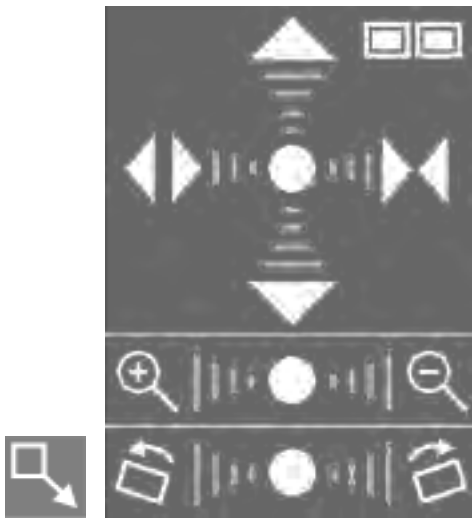
In addition, you may choose from the following options:

- If the [digital zoom](#) has been activated, you can move the visible image area by clicking with the mouse (panning). If you have activated the **Mouse Wheel Zoom** settings in the **vPTZ Settings** dialog, you can use the mouse wheel to zoom in and out of the image.
- If you are using [MxManagementCenter](#), [MxControlCenter](#), [MxEasy](#) or the [MxPEG ActiveX Plug-in for Internet Explorer](#), you can also use a joystick to control these features.
- By using a [Shift]-click, click, you can define windows for several features of the camera ([video motion detection](#), [obscuring image areas](#), ...) as described in the [Graphically Entering Image Areas](#) topic.

Name

OnScreen Control

Element



Description

The [OnScreen Control](#) provides for convenient configuration of the *Panorama*, *Double Panorama* and *Panorama/Focus* display modes (if available). This control allows panning, tilting and zooming the camera's image to find the optimum image section for your purposes. Moreover, the trapezoid correction allows adjusting the skewed (vertical) lines on the image that are common for this type of lens.

Name

Logo

Element

Description

The functions for [managing image files](#), [logo definitions](#) and [creating image profiles](#) will enable you to use graphic files stored on the camera or from other URLs as logos with transparent areas or as watermark in every image of the camera. Using several logos will allow you to display these logos as banners at a definable interval.

If you are using [Time Tables](#), you can also activate/deactivate the logos in a scheduled manner.

Name

Text Display

Element

WWW.MOBOTIX.COM

Description

Open the [Text and Display Settings](#) dialog to change the text that is displayed in the top left corner of the image area.

Using [variables](#) and [placeholders for dynamic image texts](#), you can display the current temperature within the camera or text received via the serial interface in every image, for example.

Name

Date Display

Element

5/1/2015 CEST 10:01:22

Description

Open the [Text and Display Settings](#) dialog to change the date and time information that is displayed in the top right corner of the image area.

Name

Event Symbols

Element

000807 UC VM PI

Description

Open the [Text and Display Settings](#) dialog to change the symbols that are displayed at the bottom of the image area.

The *event symbols* in the lower left corner of the image area show the event number (in this case **000807**) and the symbols for the **activated sensors** at the time of the recording. In this image, PI (PIR sensor), **VM** (Video Motion Detection) and **UC** (User Click) had been activated.

If an event occurs, the corresponding symbol (e.g. **VM**) is displayed in red.

Name

Action Symbols

Element

REC FS

Description

Open the [Text and Display Settings](#) dialog to change the event symbols that are displayed at the bottom of the image area.

The yellow symbols in the lower right corner of the image area show all actions that are active on the camera. In this case, **REC** (Storage) and **FS** (File Server storage) are active.

If one of the actions is carried out, it is displayed in blue (e.g. **ST**); a failed action is shown in red (e.g. **FS**).

Deactivated messages are shown in gray (e.g. **EM** in the detail view of the **Action Group Overview** using [Time Tables](#)).

If a [Time Table Profile](#) has been selected in **General Event Settings** to control the **Arming** of the camera, **off** is appended to the displayed action symbols if the time table has deactivated the camera's arming switch.

Caution

If **General Events > Arming** has been set to *off*, event/action symbols and error messages are *not displayed* in the image.

For failed actions, an error message will appear above the symbols. Open the [Text and Display Settings](#) dialog to deactivate the error messages in the image.

See also [Abbreviations Used in the MOBOTIX Camera](#)

Name

Archiving Status

Element

AS07%/42h

Description

Open the [Text and Display Settings](#) dialog to change the symbols that are displayed at the bottom of the image area.

If [Archiving](#) is activated, the archive status symbol **AS** is displayed to the left of the action symbols.

This symbol shows two values that show the archiving status separated by /. The value to the left shows the space used of the internal camera storage as a percentage value. The value to the right shows the estimated time available to bridge an archive failure before data is lost, based on the available capacity of the internal camera storage. The time unit at the end shows either minutes, (**m**), hours (**h**), days (**d**) or years (**y**).

If the camera detects a problem while archiving, the symbol color changes from yellow to red (**AS07%/42h**).

Name

Error Icon

Element



Description

The camera displays the error icon in the upper left corner of the live image, if the camera detects a possible hardware error. Please proceed as follows if this icon appears.

- First, check the camera image (live image and recording) for abnormalities, such as image errors or artifacts. Next, check the **System Messages** for critical messages (*magenta* text color) concerning hardware defects and follow the instructions (if applicable).
- Create a complete **Camera Report** of your MOBOTIX camera and send the report to the MOBOTIX support team (for further information, please go to the MOBOTIX website www.mobotix.com and open the **Support** section).

- In order to deactivate the error icon in the meantime, you can add the following text in the **configuration** of the MOBOTIX camera:

```
SECTION imageimprover_extend
error_symbol_live_display=0
ENDSECTION imageimprover_extend
```

Next, save the modified configuration in the permanent storage and reboot the camera.

The Image Programs of the MOBOTIX Camera

The image programs are selected using the pull-down lists above the camera's live image (Quick Controls) in the browser. These programs adjust the relevant parameters of the MOBOTIX camera to the application scenario; any basic configuration should thus begin by selecting one of the image programs.

In a webcam scenario, for example, moving objects can become blurred when illumination fades, i.e. the camera can use longer exposure times when the scene gets darker so as to provide images with good exposure for as long as possible.

If fast images are required, the camera should use a maximum (longest) exposure time of 1/60s in order to obtain a high frame rate. Likewise, the camera should use the MxPEG codec instead of the JPEG codec, since MxPEG will only transfer the changed portions of the image, resulting in higher image rates and reduced network loads.

In order to check or change the settings performed by the different image programs, open the corresponding dialogs in the **Setup Menu**.

Selectable Image Programs of the MOBOTIX Camera

- **Fast:**

This image program prepares the camera for delivering live images as fast as possible. This means that the **image quality** is set to *Fast*, the camera will use the **MxPEG video codec**, **JPEG quality** is set to 40% and the **maximum exposure time** is set to 1/60s. Please note that the highest image rates will only be reached using either Internet Explorer on Windows computers with installed MxPEG ActiveX plug-in or when using MxManagementCenter, MxControlCenter or MxEasy.

- **Security Application:**

This is the preferred image program for security applications. It uses *Normal* **image quality**, the **MxPEG codec**, a **JPEG quality** of 60%, a **maximum exposure time** of 1/5s and the **exposure program** -2 to avoid blurred rendering of moving objects as much as possible when the illumination decreases.

- **Quality:**

This image program constitutes a good compromise between high-quality and fast images as illumination decreases. It uses *Normal* **image quality**, the **MxPEG codec**, a **JPEG quality** of 60% and a **maximum exposure time** of 1/5s.

■ High Quality:

This image program puts higher priority on high image quality even when illumination decreases. It uses *Fast image quality*, the **MxPEG codec**, **JPEG quality** is set to *80%* and the **maximum exposure time** is set to *1/5s*. By using the **+1 image program**, moving objects may shown a little blurriness when illumination gets lower, but image quality is better.

■ Webcam:

Image quality is the key factor for webcam applications. This image program hence uses *High image quality*, the **JPEG codec** for creating full JPEG images with a **JPEG quality** of *80%*. The other settings (**Night Improvement: Off**, **maximum exposure time: 1/1s**, **minimum average brightness Off** and the **image program +2**) allow generating sufficiently bright images for as long as possible; even though the longer exposure times may lead to moving objects that are blurred.

The MxPEG ActiveX Plug-in for Internet Explorer

If you are using Internet Explorer (from version 5.5) on a Windows computer (from Windows 2000), you can use the **MxPEG ActiveX plug-in** for viewing the live camera images. This plug-in allows you to combine the advantages of MxPEG with the browser-based user interface:

- Lower bandwidth requirements due to MxPEG video compression
- Smooth movements in the video stream thanks to high [frame rates](#)
- Audio channel of the camera available on the local computer
- Additional scaling functions in the browser
- Panning (moving the visible image area within the full image) with activated digital zoom by clicking in the image.

If fast movements occur in the image, you may see tiles in the image if MxPEG is activated. If you prefer better image quality, you should deactivate MxPEG as described in [High Resolution and Quality](#).

See also [MxManagementCenter](#), [MxControlCenter](#) and [MxEasy](#)

Prerequisites for Using the MxPEG ActiveX Plug-in

Make sure that the following prerequisites are fulfilled if you intend to use the MxPEG ActiveX plug-in:

- MOBOTIX camera model IT or higher
- Windows computer from Windows 2000
- Installed Internet Explorer from Version 5.5
- Administrator or Power User access on the local computer (for installing the plug-in)

- Suitable security settings in Internet Explorer to install and to execute ActiveX plug-ins. In Internet Explorer, open **Tools > Internet Options > Security** (tab) and make sure that the following settings are active for the current security level:
 - **Execute ActiveX controls that are safe for scripting:** *Activate or Prompt*
 - **Execute ActiveX controls and plug-ins:** *Activate or Prompt*
 - **Download signed ActiveX controls:** *Activate or Prompt*
- Access to the camera with a `user` or `admin` login as described in [Managing Users and Passwords](#).

Installing and Running the MxPEG ActiveX Plug-in

Proceed as outlined in the following:

1. Start Internet Explorer and enter the address of a MOBOTIX camera (from software version 2.0).
 2. Open the [image controls](#), select the **Browser** option and set *ActiveX* as value.
 3. You will be asked if you would like to accept the installation of the signed ActiveX plug-in. Click OK to install the plug-in.
 4. Click on the **MxPEG on** button on the user interface or activate MxPEG in the **JPEG Settings** dialog to use the advantages of MxPEG video encoding.
- Right-click in the [image area](#) to check if the ActiveX plug-in is running. You should now see the context menu explained in the [Options of the MxPEG ActiveX Plug-in](#) section, not the standard context menu of Internet Explorer.
 - If you have completely closed Internet Explorer, you will need to restart the plug-in the next time you would like to access the camera by again selecting the **Browser** and *ActiveX* options in the [image controls](#).

Options of the MxPEG ActiveX Plug-in

If the MxPEG ActiveX plug-in has been installed, right-clicking the image will display a context menu with the following options:

Option

Zoom

Values

1x / 2x / 4x Center Pan

Description

Use these options to control the digital zoom and the panning functions for moving the visible section within a zoomed image. The functions are the same as for the [zoom buttons](#).

Option

Default View

Values

Set Default View / Load Default View

Description

Use these options to control the functions for moving the visible section within a zoomed image (panning). The functions are the same as for the [zoom buttons](#).

Option

Scale image

Values

0.5x / 1x / 2x

Description

Scales the image of the ActiveX plug-in to the desired size.

Option

Audio from camera

Values

—

Description

Activate this option to listen to the audio channel of the camera.
If the camera's microphone is deactivated, this entry is shown in gray and cannot be selected. If this is the case, open the **Speaker and Microphone** dialog and activate the microphone.

Option

Audio to camera

Values

—

Description

Activate this option to listen to the audio channel of the camera.
If the camera speaker is deactivated, open the **Speaker and Microphone** dialog and activate the speaker.

Option

Change access level

Values

—

Description

Changes the access level used by the ActiveX plug-in to access the camera. *User* access can use all functions of the ActiveX plug-in, *Guest* disables the audio functions and the zoom controls.
If a password has been assigned for the *user* or the *guest* level, the plug-in will again ask for login credentials to access the camera. This authorization is required for security reasons and cannot be circumvented.

Option

About MxPEG ActiveX

Values

Description

Displays information about the version of the MxPEG ActiveX plug-in.

The Best Frame Rate

Depending on the camera application (e.g. bandwidth of the data connection), the frame rate requirements may vary greatly.

Fast Images

For security applications that require fast images, you should use a Windows computer (from Windows XP) and Internet Explorer (from version 6) in conjunction with the [MxPEG ActiveX plug-in](#), [MxManagementCenter](#), [MxControlCenter](#) or [MxEasy](#) for viewing the live camera images. Furthermore, you should provide a data link with sufficient bandwidth for the camera's images.

Set the following parameters to the values listed below:

- Use the [image controls](#) to set these parameters:
 - **Resolution:** 320x240
 - **JPEG Quality:** 80%
 - **Sharpness:** 0-2
- Right-click in the image area (this will show the context menu described in [Options of the MxPEG ActiveX plug-in](#)) and select the **Scale image > 2x** option.
- Select a [Frame rate](#) of 25 fps.
- Click on the **MxPEG on** button on the user interface or activate **MxPEG** in the **JPEG Settings** dialog.

High Resolution and Quality

If the frame rate is not the most important criterion of an application, you can set the focus on image quality:

- Use the [image controls](#) to set these parameters:
 - **Resolution:** 640x480 or 1280x960
 - **JPEG Quality:** 70%
 - **Sharpness:** 4 (default)
- Click on the **MxPEG off** button on the user interface or deactivate **MxPEG** in the **JPEG Settings** dialog.
- Adjust the frame rate to the other factors of the application (especially the available bandwidth) and to your preferences:

The Focusing Aid of the Camera

This feature provides a visual aid for properly setting the focus of a MOBOTIX camera lens. The focusing aid is especially useful when settings up a lens of a MOBOTIX D16, D26 or when exchanging a MOBOTIX standard lens for a tele lens of a MOBOTIX M26, for example.

To activate the focusing aid, select the **Focusing Aid** Quick Control and set the value to *Enable*; the focusing aid will be displayed in the live window. The camera displays a rectangle with a white and black border. This is the image area used by the camera to determine the best focus of the lens (focusing window). The focusing window can be tuned to the area to be focused by using Shift-Click. In addition, the camera shows a green bar. This bar shows the best focus value obtained in the focusing window so far. When changing the focus of

Reference

Screens of the MOBOTIX Camera

the lens, the green bar grows as the focus improves. If the focus decreases again, a red bar appears. The focus of the lens is set to the best value if the red bar covers as little as possible of the green bar or disappears at all.

- Under some circumstances it is not possible to make the red bar vanish completely. The focus of the lens is nevertheless set to the best value if the red bar covers as little of the green bar as possible.
- For best results when setting image sharpness you should use *full image* display mode, *high* image quality and 1x Zoom!
- In addition to the visual focusing aid, you can activate the *audio output*: The pitch of the tone corresponds to the level of sharpness. This can help you to focus the lens without having to see the camera image.

Store Configuration

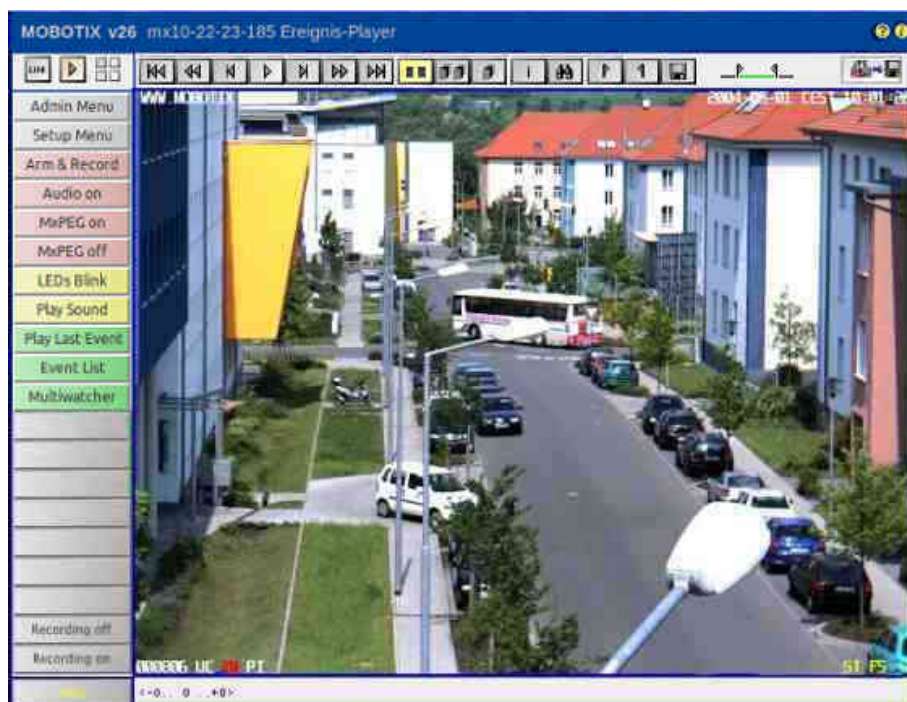
Using the controls of the *Live* screen to adjust the camera configuration will keep these changes until the next reboot of the camera, it will not automatically store them permanently. If you have administrative access to the camera, you should **store the current configuration into flash memory**.

The Player of the MOBOTIX Camera

Open the **Player** to play back the recorded events and image sequences of the camera, to open the event list and to download images in a package with the offline player.

The Elements of the Player Screen

Hold your mouse over the elements of the user interface to see the bubble help. Click on the element to go to the description.



Elements of the Title Bar

Name

Camera Model

Element

MOBOTIX M16

Description

Displays the model of the MOBOTIX camera.

Name

Camera Name

Element

mega-lux

Description

Shows the camera name as set in the **Quick Installation** wizard or in the **Ethernet Interface** dialog in the **Camera name** field.

Name

Open Help

Element



Description

Opens the online help for the current screen or dialog. If no help page is available, the [Table of Contents](#) page will be displayed.

Name

Camera Information

Element



Description

Displays information on the hardware, software and the most important settings of the camera.

Screens of the Camera

Name

Live

Element



Description

The **Live** screen of the MOBOTIX camera displays the current images of the camera.

Use the [dropdown menus](#) to access certain functions of the image controls and the camera administration or open the **Setup Menu** to see links to all image and event control dialogs.
The **Admin Menu** (password-protected) contains all dialogs for configuring the camera.

See also [The Live View](#)

Name
Player
Element



Description
Use the **Player** screen to view and download the events stored in the internal or the external image storage of the camera.

If you click on  again in the Player and [Storage on External File Server / Flash Device](#) is activated, the camera displays a list containing the current storage size of the **Internal Recorder** and of any cameras that are storing their images on the same file server into the same directory.

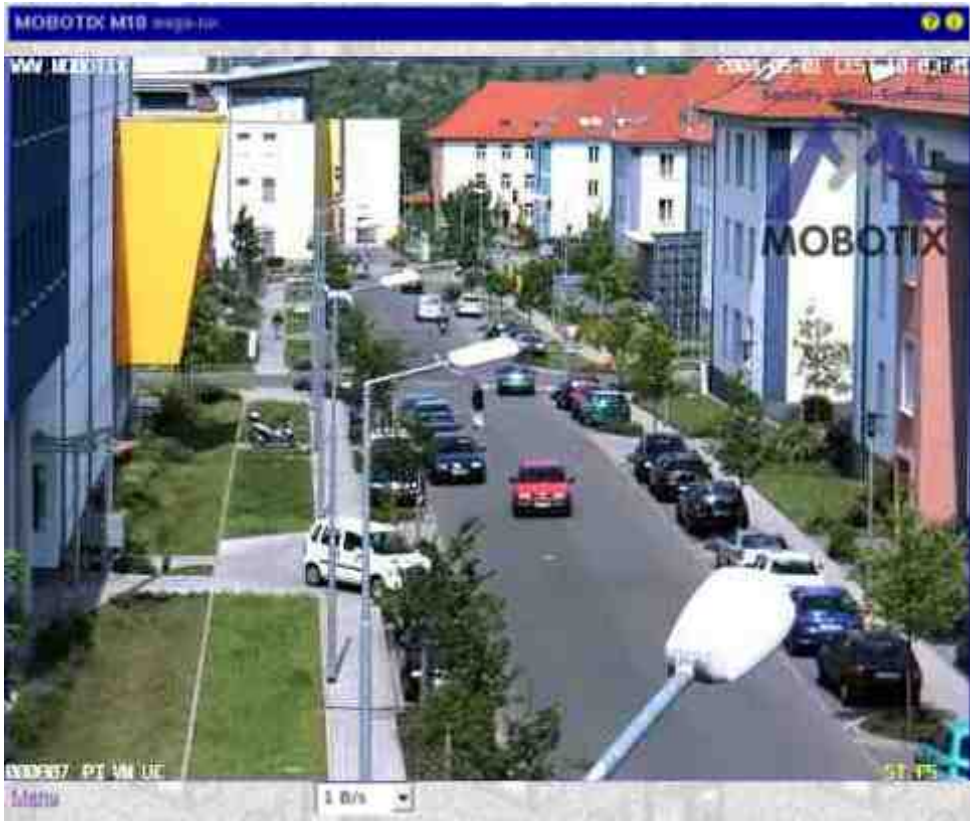
Name
MultiView
Element



Description
Use the **MultiView** screen to combine several cameras in different patterns and to assign special functions (highlighting, focus on alarm, ...) for the individual cameras.

See also [The MultiView Screen](#)

Name
Guest
Element



Description

The **Guest** screen allows viewing the camera's live image, setting the [frame rate](#) within the preset limits and accessing the [Live](#) screen by clicking on the **Menu** link at the bottom of the page.

See also [The Guest Screen](#)

Elements of the Player Controls

Name

First event

Element



Description

Displays the first event that is stored.

Name

Fast Backward

Element



Description

Starts fast rewind from the current image in endless loop mode. Shows only the event images, all events including event story or one event story only, depending on the settings of the [Event Story](#) buttons.

Name

One frame backward

Element



Description

Shows the previous event image or the previous image of an event story. Shows only the event images, all events including event story or one event story only, depending on the settings of the [Event Story](#) buttons. If the first image has been reached, the next click will show the last image.

Name

Play

Element



Description

Starts playing back the images in endless loop mode. Shows only the event images, all events including event story or one event story only, depending on the settings of the [Event Story](#) buttons.

Name

Stop

Element



Description

Stops an active playback in progress that had been started using the **Play** , **Fast Forward**  or **Fast Rewind**  buttons.

Name

One frame forward

Element



Description

Shows the next event image or the next image of an event story, depending on the settings of the [Event Story](#) buttons. If the last image has been reached, the next click will show the first image.

Name

Fast forward

Element



Description

Starts fast playback of the images in endless loop mode. Shows only the event images, all events including event story or one event story only, depending on the settings of the [Event Story](#) buttons.

Name

Last event

Element



Description

Displays the last event that is stored.

Name

Show image information

Element



Description

Displays the information of the current image.

Name

Event List

Element



Description

Shows the **Event List** that allows you to pull up specific events in the camera Player.

In this dialog, click on the **Download** link to download the desired events with an integrated event player. You can also set the range (start and end points) of the events you would like to download. Click on **Set Event Range** to display the size of the packed archive file together with other information in the upper half of the dialog.

- If you opened the **Download** dialog using the [Event Download](#) softbutton, the download range is always preset to all sequences.
- Note that the number of sequences to download is limited to 25,000.
- To display the content of the downloaded `.tar` archive file, you can use e.g. WinZip, Stuffit or PowerArchiver.

Name

Set the beginning and the end of the download range.

Element



Description

Select the desired range you would like to download using these buttons. Use the **Set Download**

Range Start  button to set the start and the **Set Download Range End**  button to set the end of the download range to the image that is currently displayed. [Shift]-click on one of these buttons to navigate to the corresponding image.

Once you have defined the range, the indicator shows the position of the current image:

	Current image is <i>before</i> the selected download range.
	Current image is <i>within</i> the selected download range.
	Current image is <i>after</i> the selected download range.

Click on the **Event Download** button  to open the **Download** dialog; the selected range is already entered in the corresponding fields.

Name

Event Download

Element



Description

Shows the **Download** dialog, which allows saving the recorded events of the camera as a TAR archive or MxPEG stream to a computer or a mobile storage device (USB keydrive, SD card, etc.).
If the beginning and the end of the download range have been set using the corresponding [buttons \(see above\)](#), this range has been preselected in the **Download** dialog.

Name

Preview Quality

Element



Description

This button turns the preview mode on or off. The availability of this button can be toggled in the **Language and Start Page** dialog.

The *Event Story* Buttons

Click on these buttons of the Player controls to change the manner in which the Player plays back event stories (i.e. pre-alarm images, the event image itself and the post-alarm images). The [Status bar](#) indicates the image of an event story that is currently displayed.

In order to change the settings for recording event stories, open the **General Event Settings** dialog. This dialog will also allow you to specify if you would like to save an event story with every event or only when specific events occur.

Name

Events only (no story)

Element



Description

(Default) Only shows the event images starting from the current image; pre- and post-alarm images are skipped.

Name

With event story

Element



Description

Shows all images (pre-alarm, event and post-alarm images) of all events starting from the current image.

Name

One event story only

Element



Description

Shows all images (pre-alarm, event and post-alarm images) of the current event in endless loop mode.

The Softbuttons

Name

Softbuttons

Element

Description

The softbuttons at the left-hand side of the screen execute certain functions, most of which can be used by users with *User* level access.

If you have administrative access to the camera, you can assign new functions to existing softbuttons by *[Shift]*-clicking the desired softbutton.

See also ■ [Defining Softbuttons](#)

■ [Managing Users and Passwords](#)

Name

Admin Menu

Element

Description

Opens the **Administration menu** of the MOBOTIX camera, allowing you to change the most important system settings. You need a user name and password of an `admins` user group (**Users and Passwords** dialog) to access this menu.

Name

Setup Menu

Element

Description

Opens the **Setup menu** with its dialogs for changing the image and event settings.

Name

Arm & Record

Element

Description

This wizard [arms the camera](#), activates [event recording](#), the [camera microphone](#), the [MxPEG video codec](#), one [Video Motion Detection](#) window, the [User Click](#) event, the [visual alarm](#) and opens the [MultiView screen](#) of the camera.

Name

Audio on

Element

Description

This Wizard activates the [camera microphone](#) and the audio output on the computer (only when using Internet Explorer on Windows computers).

Name

MxPEG on (MxPEG on)

Element

Description

This softbutton activates the [MxPEG video codec](#), which guarantees fast transmission of video and audio data while using as little bandwidth as possible.

Name

MxPEG off (MxPEG off)

Element

Description

This softbutton deactivates the [MxPEG video codec](#) in order to produce JPEG images with the best possible quality. This is the preferred setting for webcam applications.

Name

LEDs Blink

Element

Description

This softbutton will prompt the camera to blink with its [camera LEDs](#) for five seconds.

Name

Play Sound (on camera speaker)

Element

Description

This softbutton plays back a [sound](#) on the camera speaker. For additional information on recording and using your own audio messages, see the [Manage Audio Messages](#) help page.

Name

Play Last Event

Element

Description

Plays back the last event recorded by the camera.

Name

Event List

Element

Description

Click on this button to display the **Event List** dialog. This dialog displays a list with the last 20 events with the corresponding navigation links.

Click on one event link to show the corresponding event image in the player or select a date and time to list the events of that point in time.

Name

Multiwatcher

Element

Description

The **Multiwatcher** displays the live/event images of this and other MOBOTIX cameras by means of a ["proxy camera"](#). This means that only one camera needs to be accessible from outside of the network and this camera allows you to see live images and event lists of this and other cameras within the network.

Name

Recording off

Element

Description

Deactivates the [recording features](#) of the MOBOTIX camera.

Name

Reference

Screens of the MOBOTIX Camera

Recording on

Element

Description

Activates the [recording features](#) of the MOBOTIX camera.

The Image Area

Name

Image Area

Element



Description

The image area shows the event images of the current camera.

Click into the image to open the information window for the current image.

Name

Text Display

Element

WWW.MOBOTIX.COM

Description

Shows the text that had been defined in the [Text and Display Settings](#) dialog at the time of the recording.

Name

Date Display

Element

5/1/2015 CEST 10:01:22

Description

Displays the date and time information of the current image.

Name

Event Symbols

Element

000806 UC **VM** PI

Description

Shows the event number (in this case **000806**) and the symbols for the [activated sensors](#) at the time of the recording. In this image, the **UC** (User Click), **VM** (Video Motion) and **PI** (PIR sensor) had been

activated.

Since a video motion window triggered the recording, the **VM** symbol is shown in red.

Name

Action Symbols

Element

REC FS

Description

This shows the symbols of the actions that had been active at the time of the recording. In this case, **REC** (Storage) and **FS** (File Server storage) had been active.

If one of the actions is carried out, it is displayed in blue (e.g. **REC** in every last image of an event story); a failed action is shown in red (z. B. **FS**).

Name

Status Bar

Element

<-1..0...+2>

Description

The Status bar shows, whether or not an event story had been stored for the current event image. In this case, one pre-alarm image (-1) and two post-alarm images (+2) had been stored. The number in the middle (0) shows the current image's position (in this case, the event image itself).

See also [The Event Story Buttons](#)

Store Configuration

If you have made adjustments to e.g. the softbuttons (using [Shift]-click), the camera will keep these changes until the next reboot, but it will not automatically store them permanently. If you have administrative access to the camera, you should **store the current configuration into flash memory**.

The *MultiView* Screen of the MOBOTIX Camera

The **MultiView** screen provides a way of grouping several cameras in different patterns or shows one camera with its latest events.

The Elements of the *MultiView* Screen

Hold your mouse over the elements of the user interface to see the bubble help. Click on the element to go to the description.

Reference

Screens of the MOBOTIX Camera



Elements of the Title Bar

Name

Camera Model

Element

MOBOTIX M16

Description

Displays the model of the MOBOTIX camera.

Name

Camera Name

Element

mega-lux

Description

Shows the camera name as set in the **Quick Installation** wizard or in the **Ethernet Interface** dialog in the **Camera name** field.

Name

MultiView Screen Name

Element

Quad

Description

Displays the name of the current MultiView as set in the **MultiView Screens** dialog.

Name

Open Help

Element



Description

Opens the online help for the current screen or dialog. If no help page is available, the [Table of Contents](#) page will be displayed.

Name

Camera Information

Element



Description

Displays information on the hardware, software and the most important settings of the camera.

Screens of the Camera

Name

Live

Element



Description

The **Live** screen of the MOBOTIX camera displays the current images of the camera.

Use the [dropdown menus](#) to access certain functions of the image controls and the camera administration or open the **Setup Menu** to see links to all image and event control dialogs.

The **Admin Menu** (password-protected) contains all dialogs for configuring the camera.

See also

[The Live View](#)

Name

Player

Element



Description

Use the **Player** screen to view and download the events stored in the internal or the external image storage of the camera.

See also

[The Player](#)

Name

MultiView

Reference

Screens of the MOBOTIX Camera

Element



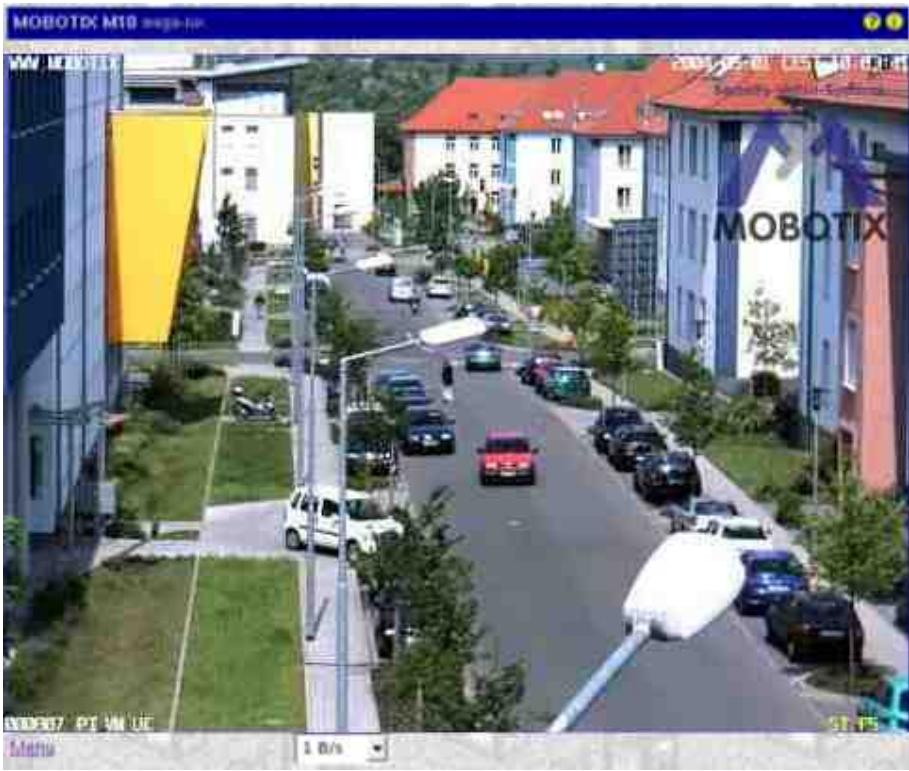
Description

Use the **MultiView** screen to combine several cameras in different patterns and to assign special functions (highlighting, focus on alarm, ...) for the individual cameras.

Name

Guest

Element



Description

The **Guest** screen allows viewing the camera's live image, setting the [frame rate](#) within the preset limits and accessing the [Live](#) screen by clicking on the **Menu** link at the bottom of the page.

See also [The Guest Screen](#)

Image Control Elements

Name

Stop / Restart

Element



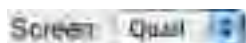
Description

Use these buttons to stop or restart the display of images from all cameras shown on this MultiView screen.

Name

Select MultiView screen

Element



Description

Select the desired MultiView screen from the pulldown list.

Name

Define new screen

Element



Description

Click on this link to [define a new MultiView screen](#).

The Softbuttons

Name

Softbuttons

Element

Description

The softbuttons at the left-hand side of the screen execute certain functions, most of which can be used by users with *User* level access.

If you have administrative access to the camera, you can assign new functions to existing softbuttons by *[Shift]*-clicking the desired softbutton.

See also ■ [Defining Softbuttons](#)

■ [Managing Users and Passwords](#)

Name

Admin Menu

Element

Description

Opens the **Administration menu** of the MOBOTIX camera, allowing you to change the most important system settings. You need a user name and password of an `admins` user group (**Users and Passwords** dialog) to access this menu.

Name

Setup Menu

Element

Description

Opens the **Setup menu** with its dialogs for changing the image and event settings.

Name

Arm & Record

Element

Description

This wizard [arms the camera](#), activates [event recording](#), the [camera microphone](#), the [MxPEG video codec](#), one [Video Motion Detection](#) window, the [User Click](#) event, the [visual alarm](#) and opens the [MultiView screen](#) of the camera.

Name

Audio on

Element

Description

This Wizard activates the [camera microphone](#) and the audio output on the computer (only when using Internet Explorer on Windows computers).

Name

MxPEG on (MxPEG on)

Element

Description

This softbutton activates the [MxPEG video codec](#), which guarantees fast transmission of video and audio data while using as little bandwidth as possible.

Name

MxPEG off (MxPEG off)

Element

Description

This softbutton deactivates the [MxPEG video codec](#) in order to produce JPEG images with the best possible quality. This is the preferred setting for webcam applications.

Name

Open Door

Element

Description

This softbutton triggers the door opener (door station only).

Name

Light ON/OFF

Element

Description

This softbutton button turns the lights on or off (door station only).

Name

UC Event ("User Click")

Element

Description

This softbutton triggers the [User Click \(UC\)](#) event.

Name

LEDs Blink

Element

Description

This softbutton will prompt the camera to blink with its [camera LEDs](#) for five seconds.

Name

Play Sound (on camera speaker)

Element

Description

This softbutton plays back a [sound](#) on the camera speaker. For additional information on recording and using your own audio messages, see the [Manage Audio Messages](#) help page.

Name

Play Last Event

Element

Description

Plays back the last event recorded by the camera.

Name

Event List

Element

Description

Click on this button to display the **Event List** dialog. This dialog displays a list with the last 20 events with the corresponding navigation links.

Click on one event link to show the corresponding event image in the player or select a date and time to list the events of that point in time.

Name

Multiwatcher

Element

Description

The **Multiwatcher** displays the live/event images of this and other MOBOTIX cameras by means of a ["proxy camera"](#). This means that only one camera needs to be accessible from outside of the network and this camera allows you to see live images and event lists of this and other cameras within the network.

Name

Zoom buttons

Element

Description

Use these buttons to control the digital zoom and the panning functions for moving the visible area within a zoomed image:

1x Zoom

Switches the digital zoom off and returns to the regular camera view. This setting will deactivate the **Center Pan**.

Zoom +

Increases the zoom level (i.e. enlarges the size of the displayed objects). From zoom level [1.1x] on, clicking in the image will move the visible image area within the full image.

Zoom –

Reduces the zoom level (i.e. reduces the size of the displayed objects).

Center Pan

Moves the visible image area to the center of the full image, if zoom level [1.1x] or higher has been activated.

See also ■ [General Image Settings](#)

■ [The Best Frame Rate](#)

Name

Display mode buttons

Element

Description

These buttons control specific image features of hemispheric cameras and are thus only available on these models:

Normal Image

Switches to the standard display mode that allows zooming and panning.

Panorama Image

Switches to the Panorama display mode.

Surround Image

Switches to the Surround display mode.

Auto Move on

Activates the *N/E/S/W* auto mode (*Ceiling* and *Floor* mounting types), which automatically moves to the North, East, South and West views. If the mounting type has been set to *Wall*, this button activates the *Surround Clockwise* auto mode, which automatically moves to the four views that have been set using **Set Focus**.

Auto Move off

Deactivates the auto mode.

See also [General Image Settings](#)

The Image Area

Name

Image Area

Element



Description

The image area shows the images of one or more cameras, as defined in the [Configure MultiView Screens](#) dialog. In addition, you may choose from the following options:

- [Shift]-click on one of the image areas to open the **Configure MultiView Image Area** dialog for this area.
- Clicking one of the image areas will open the camera, provided that it actually is a MOBOTIX camera.

See also [Multi View Screens](#)

Store Configuration

Changes to the *MultiView* screen that you performed in the **MultiView Screens** dialog or by [Shift]-clicking one of the image areas will only be valid until the next reboot of the camera. If you have administrative access to the camera, you should **store the current configuration into flash memory**.

The Multiwatcher

The **Multiwatcher** screen offers a user-friendly and configurable view of several cameras that is actually running on one camera only. This approach allows accessing one camera using a DynDNS-capable router, for example, to see all other cameras behind the router/firewall.

The cameras are displayed in a table layout, with one camera occupying one column. Each column consists of four rows, which display the following for each camera (top to bottom):

- Name of the camera
- Preview image of the **live image**
- The **last stored alarm image** as preview image
- An **alarm list** with the last alarm that triggered an alarm recording

When you are accessing one of the displayed cameras, the camera is actually accessed by the camera running the Multiwatcher (*proxy camera*). This is always the camera that is running the Multiwatcher. The Multiwatcher screen on the proxy camera hence even works if the corresponding camera is running in a network

behind a firewall or router. The only requirement is that the proxy camera has to be accessible from the outside, i.e. the firewall has to be configured accordingly. Once this has been set up, you can access the camera from the outside and from within the network, since the proxy camera collects the live and alarm images from the other internal cameras.

It is also possible to store authentication information (user name and password) for each camera in the proxy camera, allowing you to show password-protected cameras without entering the required passwords every time you open the Multiwatcher screen. A one-time authentication of the user at the proxy camera when accessing the Multiwatcher screen is sufficient.

Make sure that **Zeroconf** has been activated on all cameras (**Ethernet Interface > Zeroconf**), since the proxy camera uses this method to find all available cameras. For additional information on **Zeroconf**, open the [Ethernet Interface](#) help page.

Information on the Screen

The Live Image

The live image of each camera is shown as preview image (160x120 pixels) and is updated periodically. You can select the update interval in the **Multiwatcher Configuration** dialog. Click on the image to see the image in its original size in a separate window.

The Last Stored Alarm Image

The last stored alarm of each camera is shown as preview image (160x120 pixels). Click on the image to see the alarm image in its original size in a separate window.

When an **initial alarm** occurs (i.e. an alarm that triggers a recording), the camera automatically updates the image.

If an event occurs that has been activated in the **Recording** dialog in the **Start Recording** list and in the **Retrigger Recording** or the **Stop Recording** list, the camera will not trigger a new recording. Such an event will not trigger an *initial alarm* and will hence not appear in the alarm list.

The Alarm List

The alarm list contains all information on the latest alarm images that have been recorded by an initial alarm. Clicking on an entry in the list displays the alarm image in its original size in a separate window.

The camera automatically updates the list every time it detects an initial alarm. New list entries are briefly shown in red. If you have activated the **Notification** in the **Multiwatcher Configuration** dialog, the alarm will stay red until the user acknowledges the alarm by clicking on it.

If **Audio Notification** has been activated (button reads **On**) and the browser supports sounds, the camera will play an alarm sound. To deactivate the feature temporarily, click on the button **On** (the button changes to **Off**).

Configuring Multiwatcher Screens

You can define several Multiwatcher screens with different cameras, with each page showing a different set of cameras. To change between screens, select a different Multiwatcher screen in the **Screen** dropdown box. If you would like to configure the current screen, open the corresponding configuration dialog by clicking on the **Configure Screen** link.

After changing a Multiwatcher screen, the **Store** button appears beneath the alarm list. Click on this button to permanently store the entire configuration in the camera's Flash memory.

More Features

Setting the Screen as Start Page

The **Language and Start Page** dialog allows setting the Multiwatcher as **Start Page**. This page will be displayed automatically when a browser connects to the camera.

Playing Sounds on Alarms

If the ActiveX control is used to display the camera's live and event images (only Internet Explorer on Windows), the plugin will automatically play a sound if one of the cameras in a MultiView layout has detected an event. Clicking on the corresponding button will deactivate or activate this feature.

Stopping the Multiwatcher Screen

The **Stop** button stops the camera process that updates the camera images. To restart the Multiwatcher screen, simply click on the **Start** button.

Storing the Configuration

If you have changed the Multiwatcher screen in the **Multiwatcher Configuration** dialog, you can save the entire configuration of the camera by clicking on the **Store** button.

Configuring the Multiwatcher

Open the **Multiwatcher Configuration** page by clicking on the **Configure Screen** link in any Multiwatcher screen.

You can use the configuration dialog to change the screen (add new cameras, change settings, etc.) or you can rename or delete it. In addition, you can create new screens.

In order to add new cameras to a screen, the cameras need to be registered in this camera. Click on the **Register Other Cameras** link and add a new camera manually or have the camera scan the local subnet for additional MOBOTIX cameras.

Changing the Configuration

The configuration dialog is structured similar to the corresponding Multiwatcher screen. Every camera occupies one column in the table. The rows contain the parameters that can be configured.

To change the name of a screen, simply enter the desired name in the **Screen** text field. You can only use letters, digits, blanks, underscore ("_") and hyphen.

If you have defined more than one screen, you can set the current screen as the default screen that appears when clicking on the **Multiwatcher** button. Activate the **Set as default screen** checkbox to achieve this.

You can change the following settings for each camera:

Parameter	Description
Camera	Select the camera you would like to display from the dropdown box. The Preview image shows the live image of the selected camera.
Refresh Rate	Set the desired refresh rate for the live image in this dropdown box. The refresh rate can be set to 1 second and up.
Notification	Switch the sound notification and the visual hint when a new initial alarm occurs on or off.

To add new cameras to the screen, click on the **Add** button. The camera adds a new column to the table, allowing you to select a new camera and to configure it.

To delete a camera from the screen, click on the **Delete** button of the corresponding column.

Click on the **OK** button to activate your settings and to save them until the camera is rebooted. Click on **Cancel** to return to the Multiwatcher screen without changing anything.

Creating a New Screen

Click on the **New Screen** link to create a new screen. The camera opens a new configuration dialog. Change the preset name and then add new cameras to the screen.

Deleting a Screen

If you have defined more than one screen, you can delete the current screen by clicking on the red **Delete** button at the top of the configuration dialog behind the name of the screen.

Storing a Screen

Click on **OK** to store the changed Multiwatcher screen and to return to the **Multiwatcher** view. If the Multiwatcher screen has changed, you can store the screen and the complete configuration of the camera.

Click on the **Cancel** button to discard all changes to the configuration.

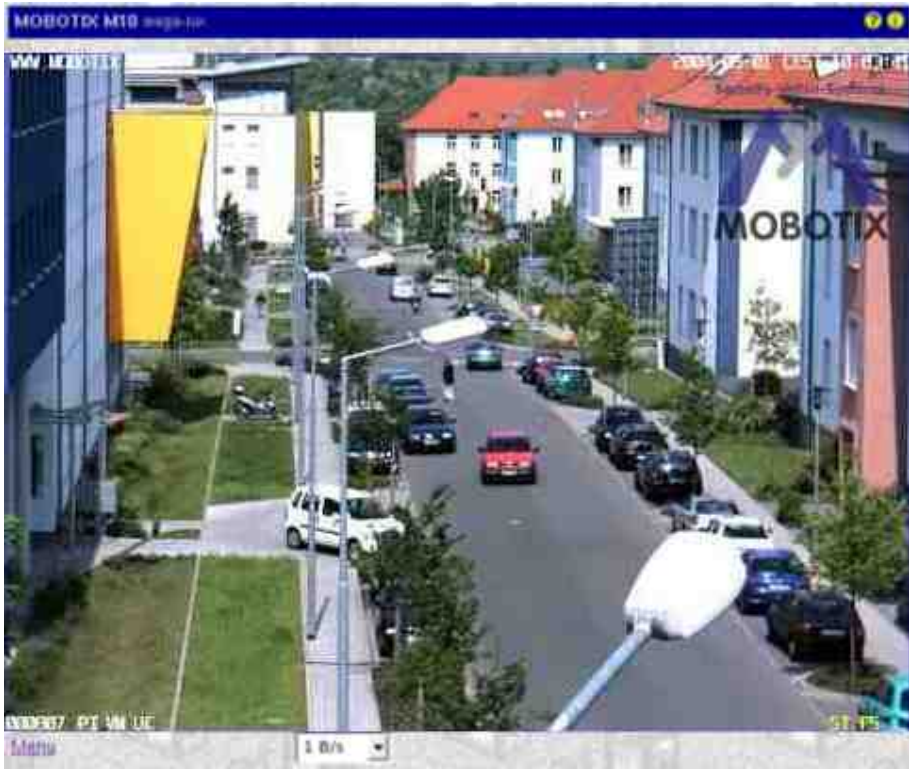
The Guest Screen of the MOBOTIX Camera

The **Guest** screen of the camera is a restricted screen without any access to administrative functions or image settings.

This screen only allows setting the [frame rate](#) within the preset limits and accessing the [Live](#) screen by clicking on the [Menu](#) link at the bottom of the page.

The Elements of the Guest Screen

Hold your mouse over the elements of the user interface to see the bubble help. Click on the element to go to the description.



Elements of the Title Bar

Name

Camera Model

Element

MOBOTIX M16

Description

Displays the model of the MOBOTIX camera.

Name

Camera Name

Element

mega-lux

Description

Shows the camera name as set in the **Quick Installation** wizard or in the **Ethernet Interface** dialog in the **Camera name** field.

Name

Open Help

Element

?

Description

Opens the online help for the current screen or dialog. If no help page is available, the [Table of](#)

[Contents](#) page will be displayed.

Name

Camera Information

Element



Description

Displays information on the hardware, software and the most important settings of the camera.

Screens of the Camera

Name

Live

Element



Description

The **Live** screen of the MOBOTIX camera displays the current images of the camera.
Use the [dropdown menus](#) to access certain functions of the image controls and the camera administration or open the **Setup Menu** to see links to all image and event control dialogs.
The **Admin Menu** (password-protected) contains all dialogs for configuring the camera.

See also [The Live View](#)

Name

Player

Element



Description

Use the **Player** screen to view and download the events stored in the internal or the external image storage of the camera.

See also [The Player](#)

Name

MultiView

Element



Description

Use the **MultiView** screen to combine several cameras in different patterns and to assign special

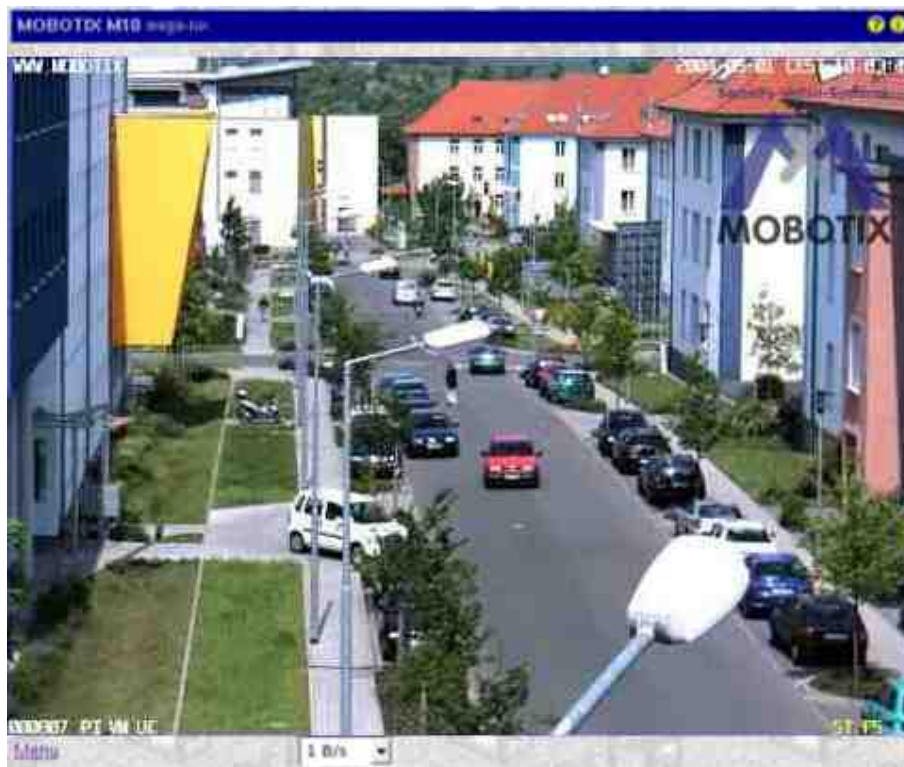
functions (highlighting, focus on alarm, ...) for the individual cameras.

See also [The MultiView Screen](#)

Name

Guest

Element



Description

The **Guest** screen allows viewing the camera's live image, setting the [frame rate](#) within the preset limits and accessing the [Live](#) screen by clicking on the **Menu** link at the bottom of the page.

The Image Area

Name

Image Area

Element



Description

The image area shows the current image of the camera.

Reference

Screens of the MOBOTIX Camera

Name

Text Display

Element

WWW.MOBOTIX.COM

Description

Shows the text defined in the [Text and Display Settings](#) dialog.

Name

Date Display

Element

5/1/2015 CEST 10:01:22

Description

Displays the date and time information of the current image.

Name

Event Symbols

Element

000807 UC VM PI

Description

Show the event number (**000807** in this case) and the symbols for the [activated sensors](#).

Name

Action Symbols

Element

REC FS

Description

This shows the symbols of the activated actions. In this case, **REC** (Storage) and **FS** (File Server storage) are active.

Image Control Elements

Name

Frame Rate

Element



- **Locking access levels:** [Users and Passwords](#)
- **Setting the start page of the camera:** [Language and Start Page](#), [Web Server Ports](#)

Register Other Cameras

The **Register Other Cameras** dialog allows defining the cameras you would like to use in the **Multiwatcher** screen. You can enter the cameras either manually or automatically (using Zeroconf/Bonjour).

To open the configuration dialog, click on the **Manage Cameras** link in the configuration page of the Multiwatcher.

Manually Entering Cameras

Enter one of the following pieces of information for the camera:

- IP Address
- The symbolic DNS name (provided that DNS has been configured in the **Ethernet Interface** dialog)
- The Zeroconf name (provided **Zeroconf** has been enabled in the same dialog)

If the camera's web server uses a port other than 80, add the corresponding port. Enter the port behind the actual IP address or name of the camera followed by a colon (e.g. 192.168.1.233:23335 or mycam.mynet.net:8080).

If you would like to use a camera that is password-protected, enter the corresponding credentials as well. Make sure that you enter the proper **User Name** and **Password**.

Click on the **Set** button to activate your settings and to save them until the camera is rebooted. If you have added cameras or changed existing entries, the camera will automatically start a connection test, which will check if the cameras can be reached.

Automatically Searching Cameras

The automatic camera search feature uses the Zeroconf/Bonjour technology. Make sure that **Zeroconf** has been activated on all other cameras in the **Ethernet Interface** dialog so that the cameras can actually be found.

Click on **Scan network** to start the camera search. The search takes about five seconds.

If new camera are found on the network, the camera enters their Zeroconf names in this dialog. New entries are highlighted in yellow. Click on the **Set** button to enter the defined cameras and to save them until the camera is rebooted. The camera will automatically start a connection test, which will check if the cameras can be reached.

If the camera finds no cameras or only cameras that are already listed, a popup window will inform you of this fact.

Deleting Entries

To delete one or more entries, activate the **Remove** option and confirm your selection by clicking on the **Set** button.

Manual Connection Test for All Cameras

New or changed entries will be tested automatically. To test the connection to all cameras, activate the **Test all entries** option and click on **Set**.

The connection test will check if it can reach all other cameras listed in this dialog. When doing so, this camera will get and display the camera information, a preview image and information on the last alarm.

If errors occur, you should make the appropriate changes. The error message will give you a hint, which column of the entry requires corrections.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

The Admin Menu

This menu allows changing administrative base settings for using the camera (users and passwords, network settings, software updates, ...). When accessing this menu for the first time, the [Quick Installation](#) wizard opens: it helps to make the first configuration changes to the camera.

Note: You need access credentials of a user with administrative privileges to access this menu.

Video Door Station

The dialogs in this section allow configuring the most important settings of the MOBOTIX IP Video Door Station.

This feature is not available on all MOBOTIX cameras!

Bell Behavior and Video Mailbox

This help page is currently in preparation.

For information on operating and configuring the **MOBOTIX IP Video Door Station**, please read the system manuals available on www.mobotix.com in the **Support > Manuals** section.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Managing MxBus Modules

Open the **Manage MxBus Modules** dialog to view information on the MxBus modules that are attached to the camera.

MxBus Interface

This section allows activating/deactivating the MxBus interface. The section also lists the current status of the attached MxBus modules and allows opening the status log.

Service Functions

This section allows resetting all attached MxBus modules to their factory defaults. In addition, you can backup the configuration of each MxBus module or restore the configuration from a backup you created earlier.

On cameras with door station functionality, you can also start the initial operation of the door station modules (e.g., **KeypadRFID** and **MX-DoorMaster**).

Device

This section shows information on the attached MxBus modules (**serial number**, **software version**, **hardware version**) and allows activating/deactivating the **Classic Mode** for some MxBus modules.

Notes on the *Classic Mode*

Some MxBus modules can be used in *Classic Mode*, some modules can only be used in classic mode, others only in *MxMessageSystem mode* ("non-classic mode").

The following table shows the differences between the classic mode and the MxMessageSystem mode:

Classic Mode

- Direct communication with the corresponding module (without having to configure MxMessageSystem message).
- Direct processing of the information from the corresponding module in the camera's web interface:
 - Using an **MX-GPS-Box** as [time server](#)
 - [Switching](#) the signal outputs of an **MX-232-IO-Box** connected via MxBus or use the signal inputs for [event control](#).

Mode

- It is not possible (or only with restrictions) to process the information from the corresponding module in the camera's web interface, since the communication with the module is based entirely on MxMessageSystem messages.

- Additional information:
 - [Network Distribution of Messages](#)
 - [Message Configuration for MxBus Modules](#)
 - [Message Profiles for Action Groups](#)
 - For an introduction and examples on this subject, please see the ***Technical Note: MxMessageSystem*** from the MOBOTIX [Download Center](#) in the Marketing & Documentation > Brochures & Guides > Compact Guides section.

The **Status Details** column shows the current communication status of the camera and the MxBus module:

Value

Active

Explanation

The module is properly attached to the system and communication is encrypted.

Value

Available

Explanation

The module is available, but communication is not yet encrypted.

Value

Not available

Explanation

Communication with this module has been disrupted.

Click on **Remove** to permanently remove the corresponding module from the configuration.

Value

Invalid Encryption

Explanation

Communication with this module has been disrupted.

Restore the configuration using the appropriate encryption data or reset the module to factory defaults.

Note that you can change individual parameters of the configuration for the modules that are marked by an

🔧 icon. Click on the icon or the module name to see the parameters that are available for this module:

Parameter

Cable Termination

Description

This parameter allow configuring the MxBus cable termination. Termination needs to be activated in the last module of the chain.

Parameter

Output Mode

Description

Sets the operating mode of the outputs of the *MX-DoorMaster*. You can set the following options:

Self-powered

The door opener is powered by the *MX-DoorMaster*. Output 2 provides 12 V/1 A for this purpose. The theft protection can be attached to output 1.

Relay

Use this mode to power door openers with up to 24 V/1 A. Note that you need an additional power adapter for this mode. The theft protection can be attached to output 1.

Mediator

Use this mode to power the self-locking *Mediator* door lock. Since the lock uses both outputs, you need to implement the theft protection using a separate hook-up.

This parameter is only available for the *MX-DoorMaster*.

Parameter

Backup Power

Description

This section allows checking the status of the backup power supply by the *MX-DoorMaster*. Note that the backup power supply allows opening the door even in case of a power failure.

This parameter is only available for the *MX-DoorMaster*.

Parameter

RFID Encryption

Description

This parameter allows setting the RFID encryption type for the *KeypadRFID* and *BellRFID* modules. By factory default, this has been set to *3K3DES*, which combines good reading range of RFID transponders with high security. If required, you can use *AES encryption*, but you should consider that this reduces the effective RFID reading range.

This parameter is only available for *KeypadRFID* and *BellRFID*.

Parameter

Background Illumination

Description

This parameter allows setting the background illumination for the *KeypadRFID* and *BellRFID* modules.

You can choose a specific level of illumination or an automatic setting, which adjusts to the ambient illumination.

This parameter is only available for *KeypadRFID* and *BellRFID*.

Assign Wires

Open the **Assign Wires** dialog to let the camera know how the wires of expansion modules are connected. This information is used to flexibly adjust the display and control of the standard inputs and outputs of door station cameras. Even if you are not using the camera as a door station, you can control the signal outputs using VoIP calls to the camera, via MxManagementCenter, MxControlCenter, MxEasy or the MOBOTIX App.

Inputs

The camera can show the status of the following inputs in the different applications, if the inputs are properly assigned in this dialog:

Input

Door Position Contact

Description

Using a door position sensor, the applications can show if a door is open or closed.

Input

Bolt Position Contact

Description

Using a bolt position contact, the applications can show if a door is locked or not.

Outputs

The camera can show the status of the following outputs in the different applications, if the inputs are properly assigned in this dialog:

Output

Door opener

Description

A door buzzer connected to this output is used from the remote station to open the door for guests at the door station. Note that you can specify a switching time if it takes too long to walk the door station to the actual door.

Please note that many door openers are not built for continuous operation and can thus melt down if they are operated for too long. The MX-DoorMaster thus limits the switching time to 10 seconds.

When calling the camera on the phone, you can use the [Signal output A on Key 1](#).

Output

Light

Description

A light switch (and the corresponding lamps) connected to this output can illuminate the surroundings of the camera or the entrance of the building, for example. This output can be switched persistently or it can be switched on and automatically off again after the specified switching time has expired.

When calling the camera on the phone, you can operate the time-controlled switching function using [Signal output C on Key 3](#).

Output

Internal Lights

Description

Only on door stations! If present, the MOBOTIX Info module should be attached to this output. The camera can then control the background illumination of the module in conjunction with its own illumination.

Ringling

Only on door stations!

These settings specify the inputs or keys that are to be used as doorbells. Using their given names, these bells are assigned to remote stations later on, when setting up the door stations. You should set names that reflect the bell position, e.g. "Bell_top", "Bell_center", and "Bell_bottom" when using a bell module with three bells. Using meaningful names makes it easier to assign the proper bell buttons later on.

Negation

If required, you can negate (reverse the logic of) the inputs and outputs. You will need to use this option if the devices you would like to switch are reacting differently than expected and are thus not properly displayed or operated by the camera.

You probably should not need to use this parameter.

Output Defaults

Outputs operated by the camera or the attached expansion modules are without current when the camera is booting. If you need to have current persistently at an output (except when switching), you need to create an entry for this output in this list. Note that the camera switches off the output temporarily when rebooting. Only after the camera has finished booting will the output be switched to the state defined in the corresponding profile.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Automatic Configuration

Use the **Automatic Configuration** dialog to specify if this MOBOTIX camera is supposed to be used as IP Video Door Station and if the automatic configuration is available or not.

This dialog is only available on cameras with door station functionality.

Description of Parameters

Parameter

Use camera as door station

Description

This parameter determines if the camera is advertising its door station functionality in the network. If this is the case, the camera will provide special door station features for other applications.

Parameter

Automatic Configuration

Description

Use this parameter to activate/deactivate the automatic configuration. Once the parameter has been deactivated, you cannot execute it, thus preventing accidental or unauthorized changes.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Entry Log

The **Entry Log** lists all successful and failed access attempts. It also shows the method used for identification (PIN or RFID) for every attempt. If an access attempt is successful, the log also contains the user name (ID).

Use one of the links at the bottom of the dialog to view the log as plain text, to delete all log entries and to switch off logging.

System Information

The dialogs in this section provide information about the state of the camera.

Information About This Camera

In the **Information About This Camera** dialog, the main features of this camera are listed in detail.

When you are contacting our support team, make sure to have this information on hand.

Temperature Table

The **Temperature Table** dialog presents the temperatures measured by the camera or a corresponding hardware expansion (e.g. a MOBOTIX ExtIO) in a structured table.

If your MOBOTIX camera is attached to such a hardware expansion, open the [Manage Hardware Expansions](#) dialog to configure the expansion.

Displayed Temperatures

Current Temperatures

The **Current Temperatures** section shows the current time/date and the measured temperatures (reloading the page will update these temperatures). In addition, you can set an [offset](#) (positive or negative) that will be added to the measured temperature (and thus also to the **Temperature History**).

Temperature History

The **Temperature History** section lists the temperatures measured every hour during the last four days in a table.

- **Rows:** Time (hours)
- **Columns:** Days (format MM-DD)

If a temperature field contains ---- the camera could not obtain any temperature measurements (e.g., because the camera or the hardware expansion had been switched off).

Description of Parameters

Option

Offset °C

Parameter

You can use the temperature offset (in degrees Centigrade) to correct small deviations from the temperatures measured by the camera or hardware expansion to the actual temperatures. The camera applies the offset to the current temperature as well as all measurements recorded in the temperature table.

See also **Displaying the text in the camera images:**

- [Placeholders for Dynamic Image Texts](#)
- [Variables](#)

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

System Messages

Open the **System Messages** dialog to view information on the services running on the camera. For every service, up to 10 success and 10 error messages are displayed.

Use the features of the [Error Notification](#) dialog to set the desired notifications in case of errors (live image, camera LEDs, audio message, FTP, email, phone call, IP Notify network message).

Structure of System Messages

Column

Time

Description

The system message's date and time

Column

Service

Description

Displays the service that has issued the system message:

BOOT

Activity from the camera's boot processes

CONCIERGE

Activity from IP Video Door Station

CONFIG

Activity from the ConfigService

DOT1X

Activity from IEEE 802.1X

DYNDNS

Activity from dynamic DNS

EMAIL

Activity from Email messages

EVENT

Activity from event detection and control

FTP

Activity from FTP transmissions

IPMSG

Activity from sending/receiving network messages (IP Notify)

IMG-LNK

Activity from single image requests

MXBUS

Activity of the MxBus interface

MXM

Activity of the hardware manager of the camera (**USB storage devices, Signal I/O, CamIO**)

STATUS

Activities from the camera's status process

STORAGE

Activity from image storing on a file server

STREAM

Activity from transferring images to other computers for viewing

VOIP

Activity from VoIP connections

Column

ID

Description

Internal process name and - if available - process number of the service

Column

Message

Description

Color-coded message text of the service:

Black

Status messages

Green

Success messages

Orange

Warnings

Red

Error Messages

Pink

Critical error messages

Managing System Messages

You can **view** the system messages as an unformatted file. The structure corresponds to structure described above. The first column refers to the message type, which is abbreviated as follows:

- S**
Status messages
- I**
Success messages
- W**
Warnings
- E**
Error Messages
- C**
Critical error messages

In addition, you can **download** the displayed system messages to your computer and **delete** old messages.

DHCP Leases

The **DHCP Leases** dialog lists the IP addresses assigned to other network devices by the camera's internal DHCP server.

If addresses have been assigned, you can reset the DHCP service of the camera by clicking on **Delete**.

List of DHCP Leases

Column
Date
Description
Expiration date of leased address.
Column
Time
Description
Expiration time of leased address.
Column
MAC address
Description
MAC address of the device that received the lease.
Column
IP Address

Description

Assigned IP address.

Column

Host Name

Description

Host name of the device that received the lease.

Error Notification

The **Error Notification** dialog provides several options for getting notifications on errors that are detected within the different systems of the camera. You can be notified according to different levels of priority:

- *Critical*: Notifications are only sent on critical errors such as hardware defects. Critical errors require immediate actions of the administrator.
- *Error*: Notifications are sent on critical and general errors. General errors can occur when sending an email, for example.
- *Warning*: Notifications are sent on critical errors, general errors and warnings.

Once a notification has been sent, the camera will ignore all subsequent error messages during the time defined in the **Deadtime** field. This deadtime prevents the camera from causing a flood of messages (denial of service) in case several errors occur shortly after one another. You can enter values from 1 to 999 minutes. Leave this field empty to use the default value of one minute.

Notification

Select the method(s), which are to be executed in case of an error.

Parameter

Live Image

Description

If this function is activated, the camera will display the triggering error message in the live image for about one minute.

Parameter

Camera LEDs

Description

If the LED signal has been activated, the camera **LEDs** will light up in a special pattern during the messaging deadtime. The LED patterns are same as for the **Storage Failure Detection**.

Parameter

Audio Message

Description

Plays back the selected sound file on the speaker if an error occurs.

Parameter

FTP

Description

Executes the selected FTP profile if an error occurs.

Parameter

E-Mail

Description

Sends an email to the address(es) specified in the selected profile if an error occurs.

Parameter

Phone Call

Description

Executes the selected phone profile if an error occurs.

Parameter

Network Message

Description

Sends a network message to the address(es) specified in the selected profile if an error occurs.

- The notifications by LEDs, in the live image and sound file are executed immediately after recognizing the error. The execution of other notification methods is delayed by one minute to allow the camera to include all system messages, which is especially valuable when several errors occur.
- Notifications via FTP, emails or network messages can include live images and freely definable text with variables. This, however, assumes that the camera's image processing works. Since certain hardware defects may actually shut down image processing, it is recommended to set these notification profiles to include the **System messages** as file to include in the notification.

Attaching Detailed Error Messages

When using the **FTP Notification**, **Email Notification** and **IP Notify** methods, the camera can append the error message, which caused the notification to the file specified in the selected profile. Activate the checkbox below the selection box of the corresponding notification method. When using **Email Notification**, the error message appears as additional attachment of the email, independent of the other attachments. When using **FTP Notification** or **IP Notify**, the error message will only be appended if the transferred file contains custom text, the system messages or the web server logfile. When transferring image file, the error message will not be appended, as this would destroy the JPEG file format.

Notification After Reboot

Independent of error notification, the camera can also send notifications when the camera reboots. To use this feature, activate the desired profiles in the **Reboot Alarm** section. To be able to differentiate this alarm from the error notifications, you should use different profiles than for the error notifications above.

By factory default, the camera automatically reboots every Monday between 03:00 and 03:59 hours (this can be deactivated in the **Time Tasks** dialog).

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Security

Open the dialogs in this section to set the security options of the camera.

Managing Users and Passwords

The **Users and Passwords** dialog allows managing the user names and passwords for granting access to the camera. The [Group Access Control List](#) dialog allows creating and editing groups and the corresponding access rights later on.

Rules for User Names and Passwords

- The maximum number of users is 100.
- Minimum length for user names is 3, maximum length is 16 characters.
- Minimum length for passwords is 8, maximum length is 99 characters.
- Please note that you cannot use the space (" ") character.
- Allowed characters are "A-Z", "a-z", "0-9", "." (dot), "-" (hyphen), "_" (underscore) and all other printable characters of the [US-ASCII character set \(7 Bit\)](#).
- Note that all entries are case-sensitive.

Notes

■

- Once you have finished configuring users, passwords and groups, you should always store the settings in the camera's permanent memory. Otherwise, the modified configuration will only be used until the next camera reboot. Use the **Close** button at the end of the dialog as it will automatically ask you to store the camera configuration to the camera's permanent memory.

- Make sure that you store your password information in a secure place. Special care should be taken to retain the password of at least one user of the `admins` group. Without the password, administrative access to the camera is not possible any more and there is no possibility to circumvent the password. It is likewise impossible to retrieve the password from a permanently saved configuration.

Caution

If the administrator password is no longer available, you will have to send the camera back to MOBOTIX for a factory reset!

- Per factory default, most of the camera's screens and functions are publicly accessible. If you would like to protect the camera from public access, proceed as described in section .

Caution

Resetting this dialog to factory settings will not only reset the options of this dialog, but also those of the **Group Access Control Lists**! If you are asked to enter a user name and password after resetting to factory defaults, remember to enter `admin` as user name and `meinsm` as password.

Creating New Users

You will need to enter the same password twice when creating new users or when modifying the user name; this is done to make sure that the passwords are matching.

There has to be at least one user of the `admins` group. The `admin` user of the `admins` group (password is `meinsm`) is the factory-preset administrator of the camera.

Setting the Group

Modifying a user's group does not require entering a new password.

Per factory default, three groups have been preset (`admins`, `users`, `guests`). The access rights of these groups are managed in the [Group Access Control Lists](#) dialog. This dialog also allows creating new groups and editing existing ones.

Users may also be assigned the `undefined` group; this may be done to temporarily deactivate users or to create users before their group has been created. Users of this group do not have any access rights.

If a group has been deleted in the [Group Access Control List](#) dialog, all users assigned to the deleted group will be assigned to the `Undefined` group.

Deleting Users

Activate the **Remove** option behind the user(s) you would like to delete and click on **Set** at the bottom of the dialog.

Caution

Once you have finished configuring users, passwords and groups, you should always store the settings in the camera's permanent memory. If the configuration is not stored in the camera's permanent memory, all deleted user names and passwords will again be valid after the next camera reboot!

Protecting a Camera From Public Access

To prevent the camera from unauthorized access, you should execute the following steps:

1. If you would like to reset all users, passwords and groups ([Group Access Control Lists](#) dialog), it may be useful to load the factory settings.

Caution

This will also reset the `admin` user's password to `meinsm!`

2. Make sure that you change the password for the `admin` user!
3. In the [Group Access Control List](#) dialog, deactivate all checkboxes of the **Public Access** row.
4. Create the required user groups (in [Group Access Control List](#)) and users.

Scheduled Access Control (Supervisor)

Open the **Scheduled Access Control** dialog to restrict access to the camera to a specific user group or control organs in highly regulated work environments, for instance. For additional information on this topic, see the [Scheduled Access Control by the Supervisor](#) help page.

Super PIN

If you are changing the Super PIN while the Admin password is still the factory default or corresponds to the current Super PIN, the Admin password will be changed to match the new Super PIN.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Locking out all Administrators by the "Owner"

Open the **System Protection** dialog in order to prevent all users with administrator rights from accessing the camera. Only users that are `Owners` can access the **System Protection** dialog once this mode has been activated.

Activating System Protection

Click on the **Set** button to **permanently activate the system protection mode**.

Deactivating Scheduled Access Control

Click on the **Set** button to **permanently deactivate the system protection mode**.

Managing User Groups and Access Rights

The **Group Access Control Lists** dialog allows managing the camera's user groups that are assigned in the [Users and Passwords](#) dialog.

The **Public Access** row makes the corresponding screens and functions publicly available, i.e. accessing them does not require a user name and password. If a checkbox in this row is activated, editing the group access rights below is not possible. If you would like to set individual access rights for certain screens or functions, you need to deactivate the checkbox in this row, then set the access rights for the individual groups.

- The maximum number of groups is 25.
- Minimum length for group names is 3, maximum length is 16 characters.
- Allowed characters are "A-Z", "a-z", "0-9", "." (dot), "-" (hyphen) and "_" (underscore).
- Note that all entries are case-sensitive.
- It is not possible to rename or delete the **admins** group.

- Once you have finished configuring the groups, you should always store the settings in the camera's permanent memory. If the configuration is not stored in the camera's permanent memory, the changed groups will **only be valid until the next camera reboot**. Be careful as this may create security issues.
Use the **Close** button at the end of the dialog as it will automatically ask you to store the camera configuration to the camera's permanent memory.
-

- Per factory default, most of the camera's screens and functions are *publicly accessible*. If you would like to protect the camera from public access, proceed as described in section [Protecting a Camera From Public Access](#).

Creating New Groups

By default, new groups are created without any access rights. If the desired checkboxes are not accessible (gray), deactivate the corresponding checkbox in the **Public Access** row at the top of the dialog.

When activating a **Screen**, the software will set the required *minimum access rights* in the **Function** section automatically. Click on the **More** button at the bottom of the dialog if this section is not visible. These checkboxes will remain checked even if the screen has been deactivated for this particular group; they have to be removed one by one, if required.

Deleting Groups

Activate the **Remove Group** option behind the groups you would like to delete and click on **Set** at the bottom of the dialog.

Once you have finished configuring the groups, you should always store the settings in the camera's permanent memory. If the configuration is not stored in the camera's permanent memory, all deleted groups will **again be valid after the next camera reboot!**

If a group has been deleted, all users assigned to the deleted group in the **Users and Passwords** dialog will be assigned to the **undefined** group.

The **admins** group cannot be deleted. Users of this group *always* have access to the administration menu.

Setting the Access Rights

The access rights are split into three sections:

- [Screen/View](#) controls access to the camera's screens.
- [Function](#) controls access to specific functions of the camera.
- [Configuration](#) controls access to the camera's configuration parameters.

Screen

Access to the camera screens in this section can be set individually for every group.

In order to ensure that the minimum access rights are granted, the corresponding access rights in the [Function](#) section will be granted automatically when activating a certain screen (even if the checkboxes are gray as they are publicly accessible). When *deactivating* a screen or view, these access rights will remain checked and have to be unchecked *one by one*. For additional information on this topic, see the [Minimum Access Rights](#) section.

Access Right

Guest

Description

The **Guest** screen allows viewing the camera's live image, setting the [frame rate](#) within the preset limits and accessing the [Live](#) screen by clicking on the **Menu** link at the bottom of the page.

See also

[The Guest Screen](#)

Access Right

Live

Description

The **Live** screen of the MOBOTIX camera displays the current images of the camera.

Use the [dropdown menus](#) to access certain functions of the image controls and the camera administration or open the **Setup Menu** to see links to all image and event control dialogs.

The **Admin Menu** contains all dialogs for configuring the camera.

Access Right

Player

Description

Use the **Player** screen to view and download the events stored in the internal or the external image storage of the camera.

See also [The Player Screen](#)

Access Right

MultiView

Description

Use the **MultiView** screen to combine several cameras in different patterns and to assign special functions (highlighting, focus on alarm, ...) for the individual cameras.

See also [The MultiView Screen](#)

Access Right

Eventstream

Description

This right grants access to the camera for applications such as MxMC, MxWeb, MxBell App and other video management systems that use the MOBOTIX Eventstream SDK. Likewise, MxDisplay and MxThinClient use the Eventstream interface for accessing the camera.

Users of a group with the **Admin** right always have access to the Eventstream interface.

See also [The MxManagementCenter](#)

Access Right

HTTP API

Description

Controls the access rights required for using MxControlCenter and MxEasy.

See also [MxCC and MxEasy](#)

Function

The access rights in this section are required by the different [Screens](#) for proper operation, but can be removed one by one, if required. Click on the **More** button at the bottom of the dialog if this section is not visible.

Access Right

Info

Description

The **Info** function of the MOBOTIX camera provides access to the **Camera Status** dialog showing various information on the camera (model, version, software version, network configuration, ...).

Access Right

Guest Image

Description

This function is required to see the live image of the **Guest** screen (see above) of the MOBOTIX camera. It shows the current live image with a reduced frame rate.

Access Right

Live Image

Description

This function is required to see the live image of the **Live** screen (see above) of the MOBOTIX camera. It shows the current live image with maximum frame rate.

Access Right

Image Link

Description

This function allows getting images from the MOBOTIX camera's CGI interface that delivers different images.

See also [CGI Parameters of the MOBOTIX Camera](#)

Access Right

Events

Description

The **Player** and **MultiView** screens require this function for displaying the stored event images.

See also ■ [The Player Screen](#)

■ [The MultiView Screen](#)

Access Right

API (QC, SB)

Description

This function allows accessing the camera's HTTP API interface, which allows remote-controlling the camera. This interface is also used by the Quick Controls (pulldown lists above the live image) and the softbuttons of the different screens.

See also [The HTTP API](#)

Configuration

The access rights in this section provide access to different configuration sections of the MOBOTIX camera.

Access Right

Admin

Description

This rights grants access to the **Admin** menu of the MOBOTIX camera and all of its configuration dialogs (network parameters, event storage on file servers, transmission profiles, audio and phone settings, ...).

See also [Administration Menu](#) section in the Table of Contents of the online help.

Access Right

Image Settings

Description

This rights grants access to the image control dialogs of the MOBOTIX camera's **Setup Menu**.

See also [Setup Menu > Image Control](#) section in the Table of Contents.

Access Right

Event Setup

Description

This rights grants access to the event control dialogs of the MOBOTIX camera's **Setup Menu**.

See also [Setup Menu > Event Control](#) section in the Table of Contents of the online help.

Minimum Access Rights

Specific [screens](#) require certain [functions](#) for proper operation. For example, the **Guest** screen requires the Guest Image function, the **Live** screen requires the *Live Image* function (see [Function](#) table).

To facilitate setting access rights, all required functions of a screen will be set automatically if a certain screen is being activated for a group (the required [Function](#) checkboxes are activated automatically). The access rights added automatically comprise all required functions for a screen to work properly.

Once set, the checkboxes can be deactivated again manually. One group may thus have access to the **Live** screen, using the functions controlled by **API (QC, SB)** is not allowed. Likewise, it is possible to grant access to the **Guest screen** for a group using the **Guest Image** function and also allow accessing the **Info** function.

Setting Public Access

The checkboxes of the **Public Access** row grant public access to camera screens, functions and configuration sections, i.e. you will not need a user name or password to access these areas of the camera. An exception is the **Admin** configuration section, which *cannot* be opened for public access.

If you would like to set individual access rights for certain screens or functions, you need to deactivate the checkbox in the **Public Access** row, then set the access rights for the individual groups.

Protecting a Camera From Public Access

To prevent the camera from unauthorized access, you should execute the following steps:

1. It is recommended to start by resetting *all* users, passwords and group definitions to the **Factory** default settings.

Caution

This will also reset the **admin** user's password to `meinSM` (**Users and Passwords** dialog)!

2. Deactivate all checkboxes of the **Public Access** row.
3. Create the required user groups in this dialog and the users in the **Users and Passwords** dialog.
- 4.

Scheduled Access Control (Supervisor)

In order to restrict access to a camera to a specific user group or control organizations in highly regulated work environments, you can open the **Scheduled Access Control** dialog. For additional information on this topic, see the [Scheduled Access Control by the "Supervisor"](#) help page.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Scheduled Access Control by Supervisor

Open the **Scheduled Access Control** dialog to restrict access to the camera to a specific user group or control organs in highly regulated work environments, for instance. This is accomplished by rules which are either set globally ([Global Rules](#) section) for all groups or only for single groups ([Group Rules](#)).

- Only the special `Supervisor` user can access the **Scheduled Access Control** dialog. If the `Supervisor` has not been activated, this dialog cannot be accessed.
- All rules defined in this dialog are referring to the groups defined in the **Group Access Control Lists** dialog.
- Note that the `Supervisor` user name is case-sensitive and should be entered as shown here.
-

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Activating Scheduled Access Control

You can enable this dialog in the **Users and Passwords** dialog by checking the **Activated** checkbox in the **Supervisor** line and entering a password for the special `Supervisor` user. Click on the **Set** button to *permanently activate this feature*.

Deactivating Scheduled Access Control

If you would like to deactivate this feature, enter the Supervisor password twice in the **Users and Passwords** dialog. This will prevent unauthorized deactivation of the scheduled access control feature. Click on the **Set** button to *permanently deactivate this feature*.

Configuring Scheduled Access Control

In the **Scheduled Access Control** dialog, the Supervisor can restrict access to the camera as follows:

- Access can be permanently denied to all groups.
- Access can be permanently allowed to all groups.
- Access can be allowed to all groups for a specific time span.
- Access can be permanently allowed to specific groups.
- Access can be permanently denied to specific groups.
- Access can be allowed to specific groups for a specific time span.

Global Rule

This section of the **Scheduled Access Control** dialog allows defining global rules, which have priority over the individual [Group Rules](#).

The **Allow scheduled access** option allows setting a time span for allowing access to the camera. The start time can be in the past and can reach max. one year into the future. The end time has to be at least three minutes in the future, but may not be in the future for more than a year (365 days).

To simplify setting the time, the dialog provides an option to set a value for the **from now for x (minutes/hours/days)** parameter. The time starts counting as soon as you click Set; the end time is computed from the duration you entered. For technical reasons, the start and end times are rounded to full five minutes.

If you would like to use the individual group rules below, make sure that you activate the **Allow access as set in the Individual Group Rules** option.

Group Rules

This section allows setting individual access rules (allow/deny) for specific groups. All rules defined in this dialog are referring to the groups defined in the **Group Access Control Lists** dialog.

The available rules for the individual groups correspond to the rules introduced in the [global rules](#) section.

Supervisor Status and Password

This section of the dialog provides a method for the Supervisor to change the password by entering it twice in the password fields. Likewise, you can deactivate the Supervisor mode by deactivating the **Activated** checkbox in this section. Deactivating the Supervisor will void the password and this dialog is not accessible any more. Only a user of the `admins` group can activate the Supervisor feature again in the **Users and Passwords** dialog.

IP-Level Access Control

The **Access Control** dialog allows managing the IP addresses, subnets and domain names, which are allowed to access the camera or which are prevented from accessing the camera. This possibility to control access to

the camera uses the IP protocol level, is independent of password-based user authentication on HTTP protocol level and supersedes password-based authentication. If a computer does not have IP-level access to the camera, there is no possibility to reach the camera from that computer. If a computer has IP-level access to the camera, password-based user authentication follows as next step, as specified in the **Users and Passwords** dialog.

The rules (IP addresses, subnets and domain names) are specified in the **Access Rules for Allow** and **Access Rules for Deny** sections of the dialog. The **No Match** section controls all IP addresses, subnets and domain names, which are not mentioned in one of the other access rules.

Allowing/Denying Access

Access Rule

Allow

Description

If the rule (i.e. IP address/subnet/domain name) applies, access to the camera is granted.

Access Rule

Temporary Allow

Description

If the rule applies, access to the camera is granted. This rule is only used until the next camera reboot.

Access Rule

Deny

Description

If the rule applies, access to the camera is denied.

Access Rule

Temporary Deny

Description

If the rule applies, access to the camera is denied. This rule is only used until the next camera reboot.

Access Rule

Inactive

Description

This rule will be ignored.

Access Rule

Delete rule

Description

This option is only available for existing rules. Activate this checkbox to delete the rule.

Rules for Specifying Computers

- A single IP address in the commonly used notation (xxx.xxx.xxx.xxx, e.g. 192.168.1.163).
- A complete subnet as IP/MASK, where IP and MASK are specified in the commonly used notation (xxx.xxx.xxx.xxx/nnn.nnn.nnn.nnn, e.g. 192.168.1.0/255.255.255.0).
- A single computer as fully qualified domain name, e.g. ftp.mobotix.com.
- All computers in a DNS domain, where the domain has to start with a dot (full stop), e.g. .mobotix.com.

Resolving IP Addresses and Domain Names

If you would like to use domain names, make sure that a **DNS server** has been set in the **Ethernet Interface** dialog.

Order of Processing

Processing starts when a network device (e.g. computer) tries to establish a TCP/IP connection to the camera's web server. The camera first processes the **Access Rules for Allow**. If the accessing computer (device) is found in the rules, the camera grants access to the web server. If none of the **Access Rules for Allow** applies, the **Access Rules for Deny** are applied. If a Deny access rule applies, the HTTP connection will be closed with an error message. If none of the Allow/Deny rules apply, access is controlled by the setting of the **No Match** section.

Sample Configuration

- The computer ftp.mobotix.com should be able to directly access the camera.
- All other computers of the domain mobotix.com should not be able to access the camera.
- All other computers not belonging to the domain mobotix.com should also be able to access the camera.

Example 1: Configuration

Access Rule

Allow

Mode

Allow

Rule

ftp.mobotix.com

Access Rule

Deny

Mode

Deny

Rule

.mobotix.com

Access Rule
No match
Mode
<i>Allow</i>
Rule
-

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Web Server Logfile

The **Web Server Logfile** dialog presents the log file of the web server in a structured table. This file logs all access attempts and the date/time information with the corresponding status messages of the web server as well as the host name of the accessing computer.

After opening the dialog, the camera will sort the table according to the **Date & Time** column in descending order (the last entry is at the top of the table). Clicking on the table heads shown as links will sort the table either according to the **Status** or the **Host Name**. The column that is currently used for sorting is marked by two arrows "↕".

- Click on the **More** button at the bottom of the dialog to display all entries with the HTTP error numbers.
- Click on the **Reload** button to see the entries that have been logged since opening the dialog.
- The web server logfile is automatically *deleted* upon each reboot of the camera. Per factory default, the *camera will reboot* every Monday between 03:00 and 03:59 hours as defined in the corresponding **Time Task**.

Table Description

Column
Host Name
Description
Lists the host name or IP address of the accessing computer.

You can use this column for sorting.

Column

URL

Description

Object of the camera, which had been accessed with a browser.

Column

Status

Description

Shows the status messages of the web server (with error numbers in More mode).

You can also use this column for sorting.

Column

User Name

Description

Displays the user name that had been used for logging in. A hyphen ("-") means that no user name is required for accessing the corresponding object. This is the case, i.e if users are accessing the camera's live screen without having defined a password for the user level (factory default).

For additional information on how to protect certain areas of the camera with passwords, see the [Users and Passwords](#) help page.

Column

Count

Description

Lists the number of access attempts for a specific camera object.

Column

Date & Time

Description

Shows the date and time information of the last access attempt from a specific host for a specific object. Another access attempt of this host for the same object will increment the **Count** and will update the time of the last access.

This column is used for sorting when opening the dialog (the last entry is at the top of the table).

The *Unauthorized Access* message does not automatically mean that camera objects have been accessed without permission. The web server always handles access attempts on protected objects as authorization errors. Once valid user credentials have been entered, the *Successful* message will be listed for this host. Only if this is *not* the case, someone had been trying to access the object without permission.

Hardware Configuration

Open the dialogs in this section to set the hardware options of the camera.

Manage Hardware Expansions

Open the **Manage Hardware Expansions** dialog in order to connect/disconnect expansion hardware to/from your camera.

Warning

Some MOBOTIX interface ports such as the M26 USB host connector can be operated outside the official specifications in order to support extended functionality. Since this results in the risk of potential damage to standard hardware, it is imperative that you connect or disconnect expansion devices to and from you camera only when prompted to do so.

This procedure ensures that non-standard signals are routed properly to the corresponding connectors only when adequate MOBOTIX hardware is connected.

Connecting/Disconnecting Expansion Hardware

Depending on the actual camera model that you are using, the dialog's main area will display the available expansion devices in sections.

Each section contains a list of expansion device options that can be connected to this particular connector. Next to each option there is a button labeled in either of the following ways:

- **Connect:** This means that the respective expansion device is currently not connected. If you wish to connect it, click on the button and follow the instructions displayed on the screen.
- **Disconnect:** This means that the corresponding expansion device is currently connected to the camera and may even be used at the moment. If you wish to disconnect the device, never unplug it right away! Instead, click on the **Disconnect** button first and follow the instructions displayed onscreen.

These connect/disconnect procedures also dynamically load and unload the corresponding hardware drivers in the background. For this reason, the **Manage Hardware Expansions** dialog also lists internal expansion connectors such as the CF card slots of the M26 - the camera can thus unload the CF card drivers in order to preserve camera resources when CF support is not required.

Diagnostics

When problems arise during normal operation, the camera's expansion device manager automatically runs a diagnostics routine. Any issues that have been detected since the camera was initially booted will also be displayed in the **Manage Hardware Expansions** dialog in order to assist you in tracking down potential problems. Note, that even opening the dialog will trigger the diagnostics routine.

Storing the Configuration

Due to the potential hazards to expansion hardware described above, the camera cannot allow the actual device configuration and the camera's configuration in its permanent flash memory to get out of sync. Therefore, the user does not need to manually store changes to the expansion device setup. Instead, the camera immediately stores any changes in the camera's permanent flash memory.

Clicking on the **Set** button is *not* necessary to activate your settings.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Saving and Restoring the Configuration of MxBus Modules

The **Backup and Restore** dialog enables you to backup the current configuration of your MXBUS modules, and to restore the configuration from backups created previously. The **KeypadRFID/BellRFID** and **MX-DoorMaster** modules support this functionality.

Saving the Configuration

Select **Backup** to save the configuration. You can select the desired MxBus module as well as the data record in the next step. Pressing **Backup** will initiate the backup process. Depending on the size of the data record selected, this may take several minutes. As soon as all data has been read successfully from the MxBus module, you will be prompted to store the file on your computer.

Restoring the Configuration

Select **Restore** to load a previously saved configuration. Then, select the file containing the backup data. Pressing **Upload** will initiate the restore process. After the file has been successfully transferred to the camera, you can select the desired MxBus module as well as the data record you want to restore. Pressing **Restore** will transfer the data to the MxBus module. Depending on the size of the data record selected, this may take several minutes. Please stand by until the status window closes itself.

User data can be shared between *KeypadRFID/BellRFID* and *MX-DoorMaster* modules. This is not possible for configuration data.

Signal Out Profiles

The **Signal Out Profiles** dialog allows creating and managing different profiles for controlling the camera's signal outputs. The profiles thus created are used in the detail view of the **Action Group Overview** dialog to execute the **Signal Out** action.

Description of Parameters

Parameter

Profile Name

Description

Enter a unique profile name.

Parameter

Delete

Description

To delete a stored profile, click on **Delete** and confirm your selection by clicking on the **Set** button.

Parameter

Signal Output Duration

Description

Switches the signal output to *high* for the desired duration.

Value range: 1 second.. 5 minutes

Parameter

Signal Output Pin

Description

Select a signal output pin for this profile.

The available signal output pins are depending on the camera model and the attached hardware expansions (see **Manage Hardware Expansions**).

Parameter

Signal Output Mode

Description

State of the signal output pin on alarm. The initial value on camera start is the opposite state.

Click on **Add new profile** at the bottom of the dialog to create a new signal output profile.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Image Sensor Configuration

Open the **Image Sensor Configuration** dialog (only available on dual cameras) to configure the image sensors of the camera that are to be used for the right and the left camera image. The MOBOTIX cameras M16, S16, S26 and V16 are automatically listing the installed or attached sensor modules.

- 5MP
- 6MP
- Thermal
- MxDigitizer (S16 and S26 only, see below)

The **MxDigitizer** is an analog digital converter and allows using analog cameras with an S16 or an S26. For the camera, the device behaves like a regular sensor module.

On **D16 models with 6MP image sensors**, you can also set the type of lens carrier if a different one than the factory default setting has been installed. For example, if a camera had been delivered as **180°** model ("*Panorama*"), you can later install separate lens units.

- This dialog is only available on camera models with connectors for external sensor modules (e.g. **D16**, **M16**, **S16**, **S26**).
- You cannot use the same image sensor for the right *and* the left image sensor.
- If the camera should use only one image sensor, you need to select the sensor in the dropdown box for the right camera image.
- If you select **No sensor** for both camera images, the camera will automatically detect the image sensors when rebooting. While doing so, the camera will set the attached image sensors for the right and the left camera image in this order:
 - External sensor Cam1 (highest priority)
 - External sensor Cam2
 - On-board sensor (lowest priority)

Caution

If you have installed different lenses, make sure that you are selecting these lenses in the **Lens Configuration** dialog, so that the lens correction works properly.

Store Configuration

Click on the **Set** button to permanently accept this setting. In order to enable these settings, you need to **reboot the camera**.

Lens Configuration

The **Lens Configuration** dialog allows specifying the lenses that have been installed on this camera. This information is required for the distortion correction feature of the camera, since every lens type has its own distortion characteristics.

Store Configuration

Click on the **Set** button to permanently accept this setting. In order to enable these settings, you need to **reboot the camera**.

Page Administration

Open the dialogs in this section to set the options of the browser user interface and the views of the camera.

Language and Start Page

Open the **Language and Start Page** dialog to define the camera's behavior when a browser connects to the camera. You can modify the start page, the camera's language and certain page options of the camera.

Start Page

Select the start page that will be displayed when a browser connects to the camera.

Option

Guest

Description

The **Guest** screen displays the camera's current image (possibly with a reduced frame rate; see [Page Options](#)). The camera configuration cannot be changed. However, the frame rate can be modified temporarily within the defined limits.

This page should be set as start page in the [Users and Passwords](#) dialog, if user names and passwords have been set for all three access levels (**admin**, **user**, **guest**) in order to protect the camera from unauthorized access.

Option

Live

Description

The **Live** screen displays the camera's current image. The camera displays a set of softbuttons to the left of the live image. The drop-down menus above the image allow changing certain image parameters. Access to administrative functions is password-protected.

This page has been preset as the default start page.

Option

Player

Description

On the **Player** screen, you can play back the stored events. The events will be played back automatically, regardless of the storage location (internally in the RAM or externally on a file server; see also [Storage on External File Server / Flash Device](#)).

Option

MultiView

Description

The **MultiView** screen displays multiple cameras or events on one screen. Open the **MultiView Screens** dialog, if you would like to configure a screen.

Option

Multiwatcher

Description

The **Multiwatcher** screen can display several cameras, the last event and an alarm list for each camera and also offers sound notification and alarm acknowledgment.

A camera's Multiwatcher can be used to show the images from several cameras and to work as a *proxy* for these cameras. This feature is especially interesting behind a firewall or a router, since you only need to open one port for access the Multiwatcher camera from the outside to see the images and the events of all displayed cameras.

Option

MxWeb

Description

The new **MxWeb** web interface provides access to the camera's live image and to the recordings. For additional information on the topic, see the [The MxWeb Interface](#), p. 515 help page.

Page Design

Set the **Background Image** that will be displayed on any page of the camera user interface in the browser. You can use any image file that has been loaded into the camera using the **Manage Image Files** dialog. Image files loaded from a URL (e.g. your own web site) are not available as background image.

Page Options

Set the desired options for displaying camera pages in this section.

Option

Language

Description

Select the language for the user interface.

Option

Pull-Down Menus for Image Control

Description

Display or hide the pull-down menus (Quick Controls) of the **Live** screen.

These menus are used for quickly configuring frequently used parameters.

Option

Refresh Rate for Guest Access

Description

Set the maximum and the default refresh rate for the Guest screen.

This setting does *not* affect the refresh rate of the Live screen.

Depending on the camera model, the maximum frame rate in the browser may be limited to 1 fps.

Option

Refresh Rate for User Access

Description

Set the maximum and the default refresh rate for the user access (the **Live** screen).

Depending on the camera model, the maximum frame rate in the browser may be limited to 1 fps.

Option

Operating Mode

Description

Select how the browser gets the images from the camera:

- **JavaScript:** The browser executes a JavaScript that pulls the images from the camera using the

desired frame rate. This operating mode is available for all JavaScript-capable browsers.

- **Server Push:** The camera sends ("pushes") the images to the browser in one image stream. This operating mode is available for all Netscape-type browsers (Netscape, Mozilla, Firefox).
- **Java:** The browser downloads and runs a Java applet, that shows the camera's images. This operating mode should only be used if none of the other methods seem to work.
- **ActiveX:** Uses the integrated ActiveX plug-in, if Internet Explorer on Windows computers is being used. Besides other enhanced options, the ActiveX plug-in also offers the possibility to hear the lip-synchronous sound as it is recorded by the camera microphone. Read [The Live Screen of the MOBOTIX Camera](#) help page for further information.

Option

Preview Buttons

Description

Select whether the preview buttons should be displayed on the **Guest**, **Live**, and **Player** pages. This enables every browser to request space and bandwidth saving preview images.

Option

Web Crawler Restrictions

Description

Using this parameter, you can prevent Web search engines, other automatic robots and web crawlers from scanning the contents of the camera's webserver. Usually, you would not want a search engine to index all the images and pages found on a camera. Make sure that you only allow crawling if you are aware of the additional security risks and the extra network traffic generated by the crawlers.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Managing Softbutton Functions

On the left side of the user level screens (**Live**, **Player** and **MultiView**) you can find several pre-defined soft-buttons on the left-hand side of the image.

You can customize these buttons in order to facilitate certain work processes or to simplify the access to certain actions or dialogs. For example, you can define a softbutton for calling the URL of an external alarm plan in an emergency or for sending IP Notify messages to other computers or cameras. Also, you can use these buttons to control the features of the pan/tilt head via the serial interface.

Defining Softbuttons

- You can [configure a softbutton](#) in the screen of your choice by [Shift]-clicking the button.
- In order to [edit softbutton functions](#), go to the **Manage Softbutton Functions** dialog and edit, add or delete features in the list.

Configuring a Softbutton

Hold down *[Shift]* and click on one of the softbuttons on the **Live**, **Player** or **MultiView** screens.

Set the function for the softbutton:

List Box

Replace button with

Description

Specify the action to be performed.

Replace button with

Replaces the current softbutton feature by the one selected in the right list.

Insert button above

Inserts a new softbutton with the function defined in the right list above the selected button.

Insert button below

Inserts a new softbutton with the function defined in the right list underneath the selected button.

Delete this button

Deletes the selected softbutton from the softbutton menu.

List Box

No Function

Description

Select a function for the selected softbutton.

List Box

Set

Description

Click on this button to temporarily store the configuration of this softbutton.

Always remember to permanently store any modifications of the configuration in the **Store current configuration into flash memory** dialog so that the buttons are still available even after rebooting the camera.

- **Default Menu:** Click on this button to reset the menu of this page to its factory default settings.
- **Copy Menu:** Click on this button to copy the menu of this page to the other side of the camera.

- **Define Function:** Displays the **Manage Softbutton Functions** dialog so that you can edit the features in the list as described under [Editing Softbutton Functions](#).

Editing Softbutton Functions

Use the **Manage Softbutton Functions** dialog to edit, add and delete softbutton functions.

Column

Name

Description

Enter a short unique name that can be selected later on in the feature list of the **Define Softbutton** dialog.

Column

Color

Description

Set the color of the softbutton.

Column

Function

Description

Select the desired function.

Column

Parameter

Description

Some features require parameters. Once you have selected a feature, the related parameters are displayed here. Use spaces to separate multiple parameters and enter the parameter values with preceding "=" characters. For more information on the required parameters, see the [HTTP API](#) help topic.

Column

Options

Description

To delete a softbutton, select the *Delete this button* option of the button and click on **Set**.

- To add a new function, fill in the fields of the last row and click on the **Set** button. This will temporarily store the definition and add a new, empty row.
- Click on either the **Function** or **Name** link to sort the table accordingly.
- Once you have added a new function, you can select it for a softbutton as described under [Define Softbutton](#) by [Shift]-clicking a button.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

MultiView Screens

Open the **MultiView Screens** dialog to define the settings of the **MultiView** screen for displaying multiple cameras or events.

The dialog consists of the **Screens**, **Cameras** and **New Screen** tabs.

Screens

The **Screens** tab gives an overview of all configured MultiView definitions. On this tab, you can select the default view the camera should display when opening the **MultiView** screen and you can delete previously configured MultiView definitions.

Cameras

Before you can select a camera in a MultiView screen, the camera needs to be defined. To do so, either enter the camera manually on the **Cameras** tab or let this camera search automatically for all cameras on the *same subnet*. Click on the **Set** button to add the camera to the list.

Display Options

You may select one or multiple cameras and define **Display options...** for the camera(s). These options become active as soon as they have been selected.

Option

Show selected camera images inline

Description

A 160x120 image of the selected cameras is displayed on the tab.

Option

Hide camera images

Description

No camera images are displayed.

Actions

You may select one or multiple cameras and perform actions on them. Select an action from the list and click on the **OK** button.

Actions Without Defined Cameras

If no cameras have been defined yet, you can choose one of the following actions:

Action

Add a new camera

Description

Enter the IP address of the camera you would like to add to the list in this text box.

Action

Search for new cameras on the subnet

Description

The camera searches the subnet for MOBOTIX cameras and displays a list of cameras.

Click on the **Set** button to temporarily store the cameras as camera list.

Additional Actions With Defined Cameras

If cameras are listed, the following actions are available as well:

Action

Get information about the selected cameras

Description

The software version and model name of the selected cameras are retrieved and displayed.

Action

Change the host names of the selected cameras

Description

A text box is displayed for the selected cameras for you to enter a new camera name.

Action

Remove selected cameras

Description

The selected cameras are deleted from the local camera list.

Action

Copy configuration to the selected cameras

Description

Select this option to copy the configuration of the local camera to other cameras. Click on the **OK** button to display a new dialog. You may now select which section of the configuration you would like to copy. For authentication purposes, you can either select the *Use my current authentication tokens* option for the local camera or you may enter the remote camera's user name and password.

- The configuration of the Ethernet interface cannot be copied.
- In order to avoid complications, it is recommended that all cameras use the same version of the software.
- When manipulating several cameras, you should have set the same password for the **admin** user on all cameras.

New Screen

Use the **New Screen** tab to define new MultiView screens.

Select a screen layout and assign a *unique* name.

In addition, you can activate the following options:

Option

Default

Description

When opening the **MultiView** screen, the new screen is displayed.

Option

Add softbutton

Description

Adds a new softbutton with the name of this screen to the existing softbuttons of the **MultiView** screen.

Image Areas of a MultiView Screen

Click on the **MultiView** button  button to display the MultiView screen.

In order to display a camera in the image area, hold the *[Shift]* key down and click with the mouse into the image area of your choice.

The **MultiView Screens** dialog is displayed. It consists of the following two parts:

- **Current Configuration:** Contains the current configuration of the selected image area (camera and IP address).
- **New Configuration:** Allows you to select a different camera and to set the desired options for this image area (see below).

Configuring an Image Area

If you have not defined a camera yet, open **MultiView Screens > Cameras** (tab) and add a new camera or have the camera search the local subnet for additional MOBOTIX cameras.

Parameter

Camera

Description

Select a camera from the list.

Parameter

Auto Zoom

Description

No matter which action(s) you have selected, you can always activate the **Auto zoom** setting. If you move the mouse over the image area, the image is enlarged.

Parameter

On Alarm

Description

Select an action to be triggered upon an alarm:

Off

The camera does not perform any action.

Highlight

If an alarm occurs, the image area is highlighted using a color.

Message

If an alarm occurs, you are informed in a new window which camera has triggered the alarm.

Highlight & message

Combines the *Highlight* and *Message* actions.

Focus

Select this setting to display a camera that normally is displayed in a small image area in the main image area when an alarm occurs. Make sure that *Focus* has been selected for the main image area.

Highlight & focus

Combines the *Highlight* and *Focus* actions.

Message & focus

Combines the *Message* and *Focus* actions.

Highl. & msg. & focus

Combines the *Highlight*, *Message* and *Focus* actions.

Parameter

On Click

Description

Select an action to be triggered when clicking on the camera image:

Goto Guest Screen

Displays the **Guest** screen.

Goto Live Image

Displays the **Live** screen.

Goto Multiview

Displays the **MultiView** screen.

Goto Player

Displays the **Player** screen.

Remote softbutton

This option allows executing a softbutton function when clicking the corresponding image area.

This could mean opening an emergency procedures list or any other HTML page on a web server, for example:

In the **Softbutton** dropdown list, select the softbutton function that is to be executed upon clicking the image area.

If you have selected the *Show all softbuttons* option from the **Softbutton** list, the small **Remote softbutton** dropdown list is opened when you click on the image. Select the desired softbutton function from the list and click on **OK**. To close the list, click on the image again.

- If one of the image areas has been defined as **Focus area**, the remote softbutton feature will not work.
- Open the **Configure Softbuttons** dialog to create new softbutton functions or to edit existing functions.

Selecting the Display Mode

Option

Live Image (fast)

Description

The camera image is displayed that you have set as default image.

To set the refresh rate of your choice, modify the **Refresh** parameter accordingly.

Option

Special Format (slow)

Description

Select this option in order to display a different image than the one displayed on the Live screen. This display mode is slower than the **Live Image (fast)** mode.

Set the **Refresh** parameter and select the camera lens to be displayed by means of the **Sensor** parameter.

Option

Event

Description

Select this option to display the latest event images in the image area.

Number 0 is the latest event image.

Option

Focus

Description

A **Focus** image area allows displaying all screens configured for the same image area in a rotating manner.

The **Focus** image area should have 640x480 pixels while the camera images are displayed in the small image areas (320x240 pixels) on the left.

Set the desired display duration by selecting a value for the **Focus Period** parameter.

Option

Image URL

Description

Use this option to display any image that can be called using a valid URL. This is a very good method to show images from any network camera that is accessible via a URL.

You can set the **Refresh** and the **URL** options for this parameter.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Network Setup

The dialogs in this section are used to configure the network settings and the extended, network-related features of the camera.

Test Current Network Configuration

Since the interface settings are sometimes rather complex, checking if a specific setting works may become a rather tedious task. In order to check specific connections, the camera provides several tests in the **Test Current Network Configuration** dialog.

This dialog offers individual tests for the connections that have been configured so far. These tests comprise:

- **Routing:** Checks the network connection to the **gateways** (using `ping` commands).
- **Network Services:** Checks the network connection to the specified **DNS servers** and tries to resolve a symbolic name.
- **Image Transfer:** Lists all **email** and **FTP profiles** that have been configured; you can test them one by one and analyze the results.
- **IP Notify:** Lists all **IP Notify profiles** that have been configured; you can test them one by one and analyze the results.
- **Miscellaneous:** enter a computer name or IP address to test if it can be reached (using the `ping` command).

You should run all tests one by one starting from the top and carefully analyze the test results. While the tests are running, the test output is displayed in the small popup window. The test result is displayed in the dialog itself.

If a test detects an error or fails completely, a message in red will alert you. Check the corresponding settings if this happens.

- Make sure that the camera has been rebooted after you have changed the configuration before running the tests.
- When using `ping` commands, firewalls or other network devices may block these IP packets. Ask your network administrator if you suspect this to be the case.

The Ethernet Interface

Your MOBOTIX camera is equipped with an integrated 10/100 Mbps Ethernet interface to connect the camera to local networks.

From the factory, the camera is pre-configured for a class A subnet:

IP Address:	10.x.x.x
Subnet mask:	255.0.0.0

Quick Installation

The **Quick Installation** wizard is the easiest and most secure way for initially configuring the camera. It is performed automatically when the **Admin Menu** is opened for the first time.

Once you have selected the language, this wizard helps to configure the following basic settings:

- Factory Reset
- Network Settings (using Ethernet as well call-in and dial-out using VoIP)
- Camera Name
- Ethernet Interface (IP address and network mask of the camera)
- Gateway (e.g. for storing images on websites using an Ethernet connection)
- Domain Name Service (DNS)
- Image Transfer to FTP Server
- Store configuration permanently

Depending on the settings you have selected, not all dialogs mentioned above will be displayed.

The Ethernet Interface Dialog

It is recommended that you use the **Ethernet Interface** dialog only if you feel comfortable with the terms and services involved. **Invalid entries may render your camera unreachable!**

General Interface Setup

Parameter	Description
Ethernet	Enable/disable the Ethernet interface. The factory default setting is <i>On</i> .
Camera Name	You can assign a host name to the camera that should describe e.g. the camera's location in more detail. Using this name, it is easy to identify a specific camera (e.g. when configuring a MultiView screen). Note In order to access the camera on your local network using its host name, a DNS service needs to be available and a DNS server has to be specified.
BOOTP/DHCP	Provided these services are available on your network, the camera can use them to automatically obtain its network configuration. Ask your network administrator whether these services are available. If the configuration using BOOTP/DHCP has been successful, all other settings in the menu are ignored. If the configuration using BOOTP/DHCP fails, your settings or the factory default settings are used.

IPv4 Ethernet Parameters

Parameter	Description
Additional IPv4 Address	The camera can manage two different network configurations. If you configure your camera for your network, select <i>On</i> in order to store the factory default configuration as alias configuration. This will ensure that you can still access the camera using the factory default IP address. Note Note that you cannot configure the second IP address; it is <i>always</i> the factory default IP address of the camera.
IP Address	You can access the camera in the network via its IP address. Ask your network administrator for a suitable IP address.
Network Mask	In order for computers to be able to communicate in a network, the IP address needs to be assigned a matching network mask. Again, it is your network administrator who will tell you which network mask to use.
Lower Limit of DHCP Range	If the camera's DHCP server feature has been activated, it automatically assigns up to 150 IP addresses to other devices. Enter the first (lowest) IP address in this field. Make sure that you follow these rules: ■ The lower limit has to be in the same subnet as the camera. The subnet is determined by the IP address and the network mask. ■ The lower limit must not be the lowest address of the subnet (i.e., the address of the network). ■ The lower limit must not be the broadcast (highest) address of the subnet. ■ The lower limit has to be lower than the upper limit. ■ The IP address of the camera must not be within the range of leased addresses [lower limit; upper limit].

Parameter	Description
Upper Limit of DHCP Range	If the camera's DHCP server feature has been activated, it automatically assigns up to 150 IP addresses to other devices. Enter the last (highest) IP address in this field. Make sure that you follow these rules: ■ The upper limit has to be in the same subnet as the camera. The subnet is determined by the IP address and the network mask. ■ The upper limit must not be the lowest address of the subnet (i.e., the address of the network). ■ The upper limit must not be the broadcast (highest) address of the subnet. ■ The upper limit has to be higher than the lower limit. ■ The IP address of the camera must not be within the range of leased addresses [lower limit; upper limit].

IPv6 Ethernet Parameters

Parameter	Description
IPv6 Operating Mode	Determines whether or not the camera should use IPv6 connections. In <i>Auto</i> mode, the camera automatically obtains an address from a router in the network. The obtained address is usually created on the base of the camera's MAC address.
IPv6 Address	Manually assigned IPv6 address of the camera. Usually, the IPv6 address of the camera is assigned automatically. Ask your network administrator for an IPv6 address that you can use. If no other address has been assigned, the camera by factory default uses a local IPv6 address in the form of fd00::10.x.y.z .
Prefix-Length	This parameter sets the size of the network of an IPv6 address (similar to the network mask of an IPv4 address). Ask your network administrator for the proper value.

Ethernet Hardware Options

Parameter	Description
Power Supply	Power to the camera is usually supplied via the network cabling (Power-over-Ethernet). The selected PoE class of the camera also controls the power supply of the PoE switch. This setting also controls the power supply of the expansion modules attached to the camera. When using PoE Class 2, for example, you can connect only one expansion module (MxBus) to the camera. If you would like to connect more than one expansion module, you need to set the camera to PoE Class 3. Click on Change to start the Power over Ethernet (PoE) wizard. This wizard shows additional information and will guide you through the process step by step. Caution If the total power consumption of the camera and attached modules exceeds the power provided by the switch for the selected class, the switch can disconnect the camera from the power supply. <i>In this case, you need to remove all connected modules, reboot the camera and select a higher PoE class before you try to reconnect the MxBus modules!</i>

Parameter	Description
Link Speed and Duplex	This parameter should be left at its <i>default</i> setting in order to guarantee the best connection quality for this camera and software version. When connection problems with a switch occur, you can try to see if a different setting produces better results.

Routing

Parameter	Description
Default Route and Gateway IP Address	A gateway acts a relay between individual networks and it coordinates the data traffic between these networks. The default route sets the gateway that is to be used if no other gateway has been specified for a special route .

Domain Name Service (DNS)

Parameter	Description
DNS Servers	In some dialogs (e.g. FTP Profiles), you can replace the IP address by a symbolic name (e.g. <code>ftp.mycompany.com</code>). In order for symbolic names to be transformed to IP addresses, at least one DNS server has to be registered. In the Quick Installation wizard, you can select a DNS server or enter a DNS server of your Internet provider.
Domain	If you enter the host name without the domain name, the camera will automatically add the domain name specified here.

Zeroconf

Parameter	Description
Zeroconf	Activates the camera features for automatically finding other network devices using Zeroconf (also called <i>Bonjour</i>). This service provides a means for network devices in a local network to communicate with one another without requiring centralized management if IP addresses, names, etc. In addition, these devices announce the services they provide within the network. This feature also means that the camera activates a Multicast DNS service and publishes a service directory. These functions are independent of specifying a DNS servers in the Domain Name Service (DNS) section further above.
Zeroconf Name	Enter a name in this field if you would like the camera to use a Zeroconf/Bonjour name that is different from the Camera Name defined at the beginning of the dialog.

IEEE 802.1X

This international standard is used for port-based network access control (NAC). This procedure requires that all network devices (i.e., also the MOBOTIX camera) need to authenticate themselves at the switch to obtain a network connection. Network devices without proper authentication will be rejected.

Parameter	Description
IEEE 802.1X	Activates the camera as IEEE 802.1X supplicant with the specified authentication procedure. Ask your network administrator whether IEEE 802.1X is supported or required. Make sure

Parameter	Description
	that the switch to which the camera is connected (authenticator) has been configured accordingly. In general, the switch (authenticator) also needs an authentication server, such as a RADIUS server. The authentication procedure is controlled by the authentication server. Make sure that the camera and the authentication server <i>always</i> use the same procedure.
Identity	The IEEE 802.1X network identifier or the name of the local network, to which the camera is connected.
User Name	The user name of the camera at the authentication server (only required for the EAP-MD5, EAP-PEAP and all variants of EAP-TTLS; EAP-TLS does not need a user name).
Password	The password of the camera at the authentication server (only required for the EAP-MD5, EAP-PEAP and all variants of EAP-TTLS; EAP-TLS does not need a user name).
CA X.509 certificate	This X.509 root certificate is needed to verify the X.509 certificate of the Authentication Server (required by all authentication procedures except EAP-MD5). If there already is an X.509 root certificate in the camera, the relevant data ("issuer", "subject", validity) are shown in the comment next to the dialog box. This X.509 root certificate, the supplicant X.509 certificate and the corresponding private key will be deleted from the camera if you deactivate IEEE 802.1X.
Supplicant X.509 certificate	This is the X.509 user certificate of the camera (only required for the EAP-TLS authentication procedure). If there already is a supplicant X.509 certificate in the camera, the relevant data ("issuer", "subject", validity) are shown in the comment box. This X.509 root certificate, the supplicant X.509 certificate and the corresponding private key will be deleted from the camera if you deactivate IEEE 802.1X.
Supplicant X.509 private key	This is the private key of the camera (only required for the EAP-TLS authentication procedure). This X.509 root certificate, the supplicant X.509 certificate and the corresponding private key will be deleted from the camera if you deactivate IEEE 802.1X.
Supplicant X.509 private key, passphrase	Contains the passphrase of the camera's private key. (Only used by the EAP-TLS authentication procedure.)

Contact your network administrator to obtain the required information regarding IEEE 802.1X. Note, that it is not possible to create the certificates required for all authentication procedures within the camera itself (exception: EAP-MD5).

When using IEEE 802.1X in an installation, it is recommended to assign individual user names and passwords/X.509 user certificates for every network device.

If you are using the same user name and password or X.509 user certificate for every network device, one stolen device will compromise the security of the whole network. In this case, you would have to exchange the authentication information on all remaining network devices. If every network device uses individual authentication information, you can lock the authentication information of the stolen device on the authentication server. Reconfiguring the remaining devices is thus not required.

The *EAP-MD5* authentication procedure is considered insecure and should not be used.

IEEE 802.1Q

This international standard is used for virtual local networks (VLANs). Such a network splits a single physical network into several logical networks. Devices in different VLANs are behaving as if they would be attached to different switches. Communication between devices (this includes MOBOTIX cameras) in different VLANs is only possible using a gateway that connects both VLANs.

Using tagged VLANs, several VLANs can be used via a single switch port. The Ethernet frame gets a tag with the *VLAN ID* and that identifies the VLAN to which the frame belongs.

Parameter	Description
VLAN Tagging	Activates IEEE 802.1Q VLAN Tagging with the specified VLAN ID on the camera. Ask your network administrator whether IEEE 802.1X is required. Make sure that the switch to which the camera is connected has been configured accordingly.
VLAN ID	The IEEE 802.1Q VLAN identifier of the local network, to which the camera is connected.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

 **In order to enable these settings, you need to [store the configuration](#) and reboot the camera!**

TCP Dump

Open the **TCP Dump** dialog to record the network traffic for subsequent analysis. Note that you do not need any other tools, such as a hub or external network analysis tools. You can start the recording by clicking on **Start/Stop**. The camera will record the network traffic for the specified period of time or until you click again on **Start/Stop**.

General Options

Network Interface

You can use the following network interfaces:

- `eth0`: Ethernet Interface
- `ppp0`: UMTS/3G or modem connection
- `tun0`: VPN connection

Protocol

This dropdown field allow recording all or only specific packet types. In order to keep the amount of collected data as low as possible, it is recommended to record a specific protocol.

- *TCP*: Only record TCP packets
- *UDP*: Only record UDP packets
- *All protocols*: Record all network packets

Capture Duration

Set the duration of the recording. The camera starts recording as soon as you click on **Start/Stop**. Once the camera has stopped the recording, the browser offers to store the `<IP address>.cap` file. You can now import the file into commonly used network analysis tools (e.g. Wireshark).

Ignore IP Address

It is highly recommended to enter the IP address of the computer used to open the **TCP Dump** dialog (this address has already been entered in the field). This prevents capturing the network traffic that is generated by the subsequent download. In order to record the network traffic between computer 1 and the camera, you should start the **TCP Dump** dialog from a different computer (computer 2). This will ensure that the camera only record the network traffic between computer 1 and the camera itself.

Network Capture

The color of the LED shows the status of the network capture:

-  Status is updating (this may take up to two seconds).
-  Ready to capture network traffic.
-  Capture of network traffic is running.

Click on **Start/Stop** to start a new network capture or to stop a running capture before the capture duration has been reached.

Once the camera has stopped the recording, the browser offers to store the `<IP address>.cap` file. You can now import the file into commonly used network analysis tools (e.g. *Wireshark*).

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Web Server

Open the **Web Server** dialog to set the camera's web server options.

For further information on working with certificates, see the [Procedures for Using and Creating X.509 Certificates](#) section.

General Interface Setup

Parameter

Port or ports for web server

Description

Per factory default settings, browsers can reach the camera's web server using port 80 (standard port for HTTP requests).

However, if the camera needs to be accessible from the local network (Intranet) and from the Internet, two web server ports can be defined for security reasons, so that local network and Internet access can be clearly separated.

Example 1. Access From the Local Network and From the Internet

Within the local network, the camera is accessible via port 80 and can be integrated in a MultiView display, for example. Access from the Internet uses a router connection with a mapped port to the camera. As port 80 is used already on the local network, the router channels access from the Internet to a different camera port (e.g. 8080).

In this case, you would have to enter the values *80* and *8080* for the ports.

- Modify these settings only if you are fully aware of the consequences. A single invalid setting may render the camera unreachable!
- Any modifications of this setting require you to **Reboot** the camera to become effective.
- If no ports have been specified, you can reach the camera using the default port 80.

Parameter

Enable HTTP

Description

Select this setting if you would like to enable *unencrypted* connections to the camera's web server. In this case, the web server opens the port(s) specified in **Port or ports for web server** for HTTP requests.

Make sure that at least one of the **Enable HTTP** and **Enable HTTPS** options is activated, since the web server of the camera will not accept any connections otherwise.

HTTPS Settings

Parameter

Enable HTTPS

Description

Select this setting if you would like to enable *encrypted* connections to the camera's web server. In this case, the web server opens the port specified in **SSL/TLS port for HTTPS server** for HTTPS requests.

Make sure that at least one of the **Enable HTTP** and **Enable HTTPS** options is activated, since the web server of the camera will not accept any connections otherwise.

Parameter

SSL/TLS port for HTTPS server

Description

Specify the TCP port for SSL connections in this field. You can set only one port for HTTPS. If this field is empty and **Enable HTTPS** is activated, the web server will use port 443 (default) for HTTPS requests.

Parameter

Download X.509 certificate

Description

This button is only active if the camera contains an individual X.509 certificate. Use this button to download the X.509 certificate and the corresponding private key in PEM format currently used by the camera's web server to your computer.

Parameter

Download X.509 certificate request

Description

This button is only active if the camera has generated an X.509 certificate request before (see [Generate self-signed X.509 certificate and X.509 certificate request](#)). Use this button to download a certificate request in PEM format to your computer, which corresponds to the generated private key. This certificate request can be signed by an external certification authority and the resulting X.509 certificate can be uploaded to the camera (see [Replace the X.509 certificate and private key currently used by the camera](#)).

MxWeb Settings

Parameter

Activate MxWeb

Description

Select this option to activate the **MxWeb** user interface. When rebooting the next time, the camera will start a special web server for MxWeb. This will not interfere with the standard user interface in the browser, which can be used just like before.

Since MxWeb and **ONVIF** are using the same web server, this setting is selected automatically after rebooting if the ONVIF interface is active.

Parameter

Port for the MxWeb HTTP/WS server

Description

Enter the TCP port for the HTTP and WS (*Web Socket*) connections used by MxWeb. If this field is empty, the web server will use port **8080** for MxWeb HTTP and WS connections.

Parameter

Port for the MxWeb HTTPS/WS server

Description

Enter the TCP port for the HTTPS and WSS (*Secure Web Socket*) connections used by MxWeb. If this field is empty, the web server will use port **8081** for MxWeb HTTPS and WSS connections.

Replace the X.509 certificate and private key currently used by the camera

This section contains the information of the certificate currently used by the camera.

Parameter

Issuer

Description

Displays the information of the certifying institution. The encoding of the information corresponds to the fields in the [Generate self-signed X.509 certificate and X.509 certificate request](#) section.

Parameter

Subject

Description

Displays the information of the certified body (e.g. you). The encoding of the information corresponds to the fields in the [Generate self-signed X.509 certificate and X.509 certificate request](#) section.

Parameter

Validity period

Description

Displays the validity period of the currently used certificate.

Replace the X.509 certificate and private key currently used by the camera

Parameter

Delete the X.509 certificate

Description

Deletes the X.509 certificate and corresponding private key currently used by the camera. After rebooting the camera, it will use its factory-supplied self-signed X.509 certificate again (factory default).

Parameter

Upload the X.509 certificate and private key

Description

Replaces the X.509 certificate and corresponding private key currently used by the camera. This X.509 certificate and the corresponding private key have to be created and signed by an external certification authority.

Parameter

Upload X.509 certificate

Description

Replaces the currently used X.509 certificate while keeping the currently used private key. Use this function to upload a X.509 certificate that has been generated from a previously created certificate request (see [Generate self-signed X.509 certificate and X.509 certificate request](#)).

Parameter

Generate

Description

Creates a new, self-signed X.509 certificate, the corresponding private key and a certificate request according to the information entered in the [Generate self-signed X.509 certificate and X.509 certificate request](#) section.

Parameter

Upload X.509 certificate from file

Description

In order to upload a X.509 certificate, enter the file name of the certificate file (in PEM format) on your computer. If you would like to upload a X.509 certificate and the corresponding private key stored in one file, you can enter the file name to the file in this field.

Parameter

Upload X.509 private key from file

Description

In order to upload the corresponding private key for a X.509 certificate, enter the file name of the file (in PEM format) on your computer. If you would like to upload a X.509 certificate and the corresponding private key stored in one file, you can enter the file name to the file in this field.

Parameter

Passphrase

Description

Enter the passphrase if the private key has been encrypted with a passphrase.

Generate self-signed X.509 certificate and X.509 certificate request

The fields of the form correspond to the fields of a X.509 certificate.

Parameter

Common name

Abbreviation

CN

Description

This is the only required information in this section of the dialog. Enter the complete DNS name (Fully Qualified Domain Name) of this camera. It is also possible to enter an IP address, but this is not recommended. Make sure that this field really matches the DNS name, which you use in a web browser to access the camera since the certificate would be invalid otherwise.

Parameter

Country

Abbreviation

C

Description

Nationality of the certificate owner (optional).

Parameter

State or province

Abbreviation

ST

Description

State/province of the certificate owner (optional).

Parameter

Locality

Abbreviation

L

Description

City/location of the certificate owner (optional).

Parameter

Organization

Abbreviation

O

Description

Company, organization, etc. of the certificate owner (optional).

Parameter

Organizational unit

Abbreviation

OU

Description

Department/work group of the certificate owner (optional).

Parameter

Email address

Abbreviation

-

Description

Email address of the certificate owner (included in CN, optional).

If an external certification authority should sign the certificate request generated using this function, make sure that you follow the guidelines of the certification authority on the optional and required fields and not the recommendations of this form. The self-signed X.509 certificate has a validity period of 10 years. The key pair is 2048 bits long.

Procedures for Using and Creating X.509 Certificates

HTTPS with SSL/TLS is not Being Used

The X.509 certificates used in this dialog do not affect other areas of the camera and will be ignored if HTTPS with SSL/TLS has not been activated.

HTTPS with the Factory Default X.509 Certificate

As soon as HTTPS has been activated and the camera has been rebooted, you can use HTTPS. The camera will then use its factory-supplied, self-signed X.509 certificate that is identical for all MOBOTIX cameras. **This certificate will not offer much security as it cannot guarantee the authenticity of the camera. This would allow a potential attacker to manipulate the data stream even though the camera uses a high-performance encryption scheme ("Man-in-the-middle" attack).**

HTTPS with an Individual, Self-Certified X.509 Certificate

In the section [Replace the X.509 certificate and private key currently used by the camera](#), click on **Generate** and enter the appropriate information in section [Generate self-signed X.509 certificate and X.509 certificate request](#). Next, click on the **Set** button. The camera will generate an individual, self-signed X.509 certificate (this may take some time). The certificate request created at the same time will not be used. After rebooting the camera, it will use the new self-signed X.509 certificate.

Make sure that you save the changes permanently before **rebooting** the camera (click **Set**, click on **Close** and approve the prompt).

When first accessing the camera after the reboot, your web browser will tell you that it cannot verify the certificate and will ask you, if you would like to accept the certificate anyway. The next step is relevant for security: Make sure that you only accept the certificate if you are absolutely sure that you are actually connected to the certified camera (e.g. by directly connecting the camera to the computer using a crossover cable). Note that you will have to accept the certificate for each accessed camera. **This certificate is sufficient for securing the data transmission, but it is not the optimum yet. The authenticity of the camera can only be verified if the certificate of the camera is known beforehand.**

HTTPS with an Individual, Externally Certified X.509 Certificate

Option 1: You can upload an X.509 certificate and the private key to the camera. To do so, use the function **Upload the X.509 certificate and private key** in the section [Replace the X.509 certificate and private key](#)

[currently used by the camera](#). You can purchase an X.509 certificate and private key from an external authority or you can run your own certification authority, e.g. by using OpenSSL. In this case, it is not required to generate a certificate request beforehand. A certificate request already present in the camera will be deleted upon executing this function. Every camera requires an individual certificate from the certification authority.

Option 2: Create a certificate request on the camera. The certificate request will be created together with the self-signed X.509 certificate (see [HTTPS with an Individual, Self-Certified X.509 Certificate](#)). As soon as the camera has created the certificate request, you can download this file in the **Web Server** section by clicking on the **Download** button next to **Download X.509 certificate request**. Send this certificate request file to the certification authority for signing. Until you receive the X.509 certificate from the certification authority, the camera will use its self-signed X.509 certificate.

Upload the X.509 certificate signed by the certification authority using **Upload X.509 certificate from file** in the section **Replace the X.509 certificate and private key currently used by the camera** to the camera you would like to certify. This option has the advantage that the private key does not leave the camera, again enhancing its trustworthiness. Every camera requires an individual certificate from the certification authority. The certificate request, the certificate and the private key belong together. It is not possible to upload a certificate into a camera that matches the certificate request created by a different camera.

Such a certificate guarantees the optimum security for data transmission, since the camera's authenticity can be verified against the root certificate of the certification authority. "Man-in-the-middle" attacks are not possible any more. Moreover, it is not necessary to download the certificate of every camera as is the case with the self-signed X.509 certificate. All you need to do is to import the root certificate of the certification authority into the browser, once. The root certificates of commercial certification authorities are usually already present in modern browsers.

Intrusion Detection Settings

Parameter

Enable intrusion detection

Description

This setting provides an automatic defense against attacks. If an intruder should try to access the camera using "brute force" methods to guess user names and passwords, the camera send an alert and can automatically lock out the offending IP address after a certain number of failed attempts, if required.

Parameter

Notification threshold

Description

The **Notification threshold** controls the number of allowed failed attempts when trying to establish a connection to the camera (minimum value is 5). The alert will be sent off, if this number is exceeded.

Caution

Even if a user with valid credentials accesses the camera for the first time, this causes a failed attempt. The browser on the user's computer needs this first failed attempt to recognize that this website need authentication credentials, prompting the browser to show its user name/password dialog. This weakness of the HTTP protocol is "by design" and hence unavoidable.

Parameter

Timeout

Description

Successive attempts of a user when trying to access a URL will be combined to one entry in the **Web Server Logfile**. This entry only contains information on when the user accessed the camera and how many access attempts of this user have been recorded during the specified time span. If a user accesses the camera again within the time span specified in **Timeout** after the last access, this additional access will be added to the existing entry in the **Web Server Logfile** (increase access counter by one, update date and time of the last access).

If the new access of a user occurs after the time span specified in **Timeout**, this access creates a new entry in the **Web Server Logfile**. This procedure will be applied to all authorized and unauthorized accesses.

A **Timeout** value of a few minutes will make distinguishing the individual access attempts easier. On the other hand, this will also increase the possibility of false alarms, since a successful access attempt cannot be added to a preceding failed attempt. The default value is 60 minutes, which is a good compromise.

Parameter

Deadtime

Description

The **Deadtime** controls the minimum time between two successive alert notifications. Once a notification has been sent, a new notification will only be sent if the deadtime has expired and the number of failed attempts has again exceeded the notification threshold. The default value is 60 minutes. Setting this parameter to 0 will prompt the camera to send a notification on every access attempt.

Parameter

Block IP Address

Description

If **IP-Level Access Control** has been set up, the camera can use the **Block IP Address** feature to automatically block the IP address from which the unsuccessful logins had been attempted. This lock will be triggered if the **Notification Threshold** is reached; it is temporary and will be lifted upon the next reboot of the camera.

If an IP address has been granted access in the **IP-Level Access Control** dialog, this IP address **cannot** be locked automatically. If you would like to activate the automatic locking of any IP address, you should delete all **Allow** access rules in the **IP-Level Access Control** dialog.

Parameter

Email Notification

Description

Sends an email according to the address and login information specified in the selected **email profile**.

When sending an email notification, the camera will always append the **Web Server Logfile** as an attachment, independent from the attachment specified in the email profile.

Parameter

Phone Call

Description

Places a phone call according to the options specified in the selected **phone profile**.

Parameter

Network Message

Description

Sends an IP Notify (network) message according to the address and login information specified in the selected **IP Notify profile**.

The alerts triggered by **Intrusion Detection** are independent of the other alerting mechanisms and the event storage of the camera. If an alert triggered by **Intrusion Detection** should appear in the event storage for camera images, you should proceed as follows:

- Create a **IP Notify** alert from the camera to itself (new profile in the **IP Notify Profiles** dialog to itself, e.g. by using `127.0.0.1:8000` as the **Destination Address**).
- In the **Event Settings** dialog, activate and configure the **IP Receive (RC)** event accordingly.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

SNMP Configuration

SNMP is an abbreviation of *Simple Network Management*. This feature allows using an SNMP management console to query camera properties, but does not allow changing them. Open the **SNMP Configuration** dialog to set the information that is to be revealed.

The MOBOTIX-specific values that are available via SNMP are specified in the MOBOTIX MIB. If the SNMP agent is active, you can obtain the MOBOTIX MIB from the **SNMP Configuration** dialog. Make sure that you are always using the MOBOTIX MIB of the corresponding MOBOTIX camera software.

General SNMP Agent Configuration

Parameter

Agent

Description

The SNMP agent can offer authentication according to SNMPv2c or SNMPv3. Note that you can use both versions concurrently or switch off SNMP as a whole.

Parameter

System Location

Description

Contents of the SNMP **System Location** variable (SNMPv2-MIB::sysLocation, OID.1.3.6.1.2.1.1.6).

Parameter

System Contact

Description

Contents of the SNMP **System Contact** variable (SNMPv2-MIB::sysContact, OID.1.3.6.1.2.1.1.4).

Parameter

System Description

Description

Contents of the SNMP **System Description** variable (SNMPv2-MIB::sysDescr, OID.1.3.6.1.2.1.1.1).

If this field is left empty, the camera automatically sets the variable to the model name of the camera (e.g. S16).

SNMPv2c Configuration

Parameter

Community

Description

Community description (password) for read access according to SNMPv2c.

Parameter

IP Filter

Description

You can limit the access to specific ranges of IP addresses. To do so, enter a valid IP address range in this field.

Syntax: <Base IP>/<net mask length>

Example 1.

10.0.0.0/8 or 192.168.1.0/24

Leave this field empty to grant access to all IP addresses.

SNMPv3 Configuration

Parameter

Username

Description

User name.

Parameter

Password

Description

Login password for the user.

Parameter

Authentication Method

Description

Algorithm used to verify the user name and password.

Parameter

Key

Description

Key for encrypting the transferred data. If you do not enter a key in this field, the camera uses the access password.

Parameter

Encryption Method

Description

Algorithm used to encrypt the transferred data.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Routing

Open the **Routing** dialog to define the routes to be used by the camera for connecting to different networks. You can use any Ethernet connection.

Basically, the camera can send network data only via its **Ethernet interface**.

Introduction

A *network* is defined by the *network address* and the *network mask*. For example, by factory default the camera is configured to an IP address within the network 10.0.0.0/255.0.0.0 (network address/network mask).

Networks are connected through *gateways*. This can be a DSL router or a special computer within the network.

In order for each computer within the network to know if and how it can connect to computers in other networks, you need to configure *routes*. A route consists of the following information:

- The target network data (network address and network mask).
- The IP address of the gateway.
- The connection to be used.

If a network package is to be sent to a specific target IP address, the camera checks if a route exists for this address. If no specific route exists, or no routes have been defined, the so-called *Default Route* is used.

The Default Route

Select the connection to be used by default. In general, this is the connection to your Internet Service Provider or to the closest gateway.

If you select the **Ethernet Interface** connection, you need to enter the IP address of the **Gateway**. Valid gateway IP addresses need to be accessible within the camera's local network (as defined in the **Ethernet Interface** dialog).

If you have activated the BOOTP/DHCP option in the **Ethernet Interface** dialog, the **Default Route** is *always* set to the **Ethernet Interface** with the **Gateway IP Address** being determined automatically.

Network Routes

Enter the routes to other networks.

- Enter a name for the route. Only use letters, digits, dot, hyphen and underscore.
- Enter the target network information: **Destination Network** and **Network Mask**.
- Enter the IP address of the **Gateway**. This IP address must be part of the local network of the camera.
- Select a **Connection**.
- For each connection, you can select one of two options:
 - Inactive: Deactivates this route as soon as you click the **Set** button.
 - Remove: Deletes the route from the configuration as soon as you click the **Set** button.
- Click on the **Set** button to check the routes. Provided that the respective gateways are available, the configured routes are saved.

Using the Camera as a Router

Backup Internet Gateway

This functionality is only available if the camera has been configured as DHCP server in the **Ethernet Interface** dialog.

After activating the **Backup Internet Gateway** option, the camera can use an additional Internet connection. In case the camera's default Internet connection fails, the local network traffic is re-routed via the additional backup Internet gateway. Enter the IP address of the backup Internet gateway in the **Backup Internet Gateway IP** field.

To be able to detect the failure of the default Internet connection, you need to enter the **Test Server IP**. When running, the camera is sending ping signals at regular intervals to the specified IP address. If the camera cannot reach the test server, the camera changes the default route to use the backup Internet gateway. The IP address of the test server **needs** to be a publicly accessible IP address that is usually **not** contacted from the camera network.

It is highly recommended to configure an additional public DNS server in the **Ethernet Interface** dialog. This DNS server should be accessible via the backup Internet gateway.

IP Forwarding

If the **IP Forwarding** parameter is activated, the camera acts as a router for other network devices. The camera then routes IP packets between its own network interfaces based on the routing table. This feature only provides the basic forwarding of IP packets without applying any NAT functionalities (*Network Address Translation*).

NAT for Outbound Traffic

The **NAT for Outbound Traffic** parameter activates NAT for all outbound packets on the external side of the camera's network interface (*WAN* - Wide Area Network). These are the network connections of the camera that are established using GPRS/2G, UMTS/3G, WiFi, etc.

Other network devices connected to the camera on the local network can use the forwarding camera as a default gateway in order to establish their own connections to external IP addresses. The external data traffic of the other network devices is visible on the WAN as if it originated from the camera. (The sender's IP of the packets is rewritten to the IP address of the forwarding camera.) This functionality thus prevents anyone from accessing devices on the local network via the external network interface of the camera.

Since this function always requires **IP Forwarding**, the camera automatically activates this parameter as soon as you activate the **Nat for Outbound Traffic**.

NAT for Inbound Traffic

Activating the **NAT for Inbound Traffic** parameter prompts the camera to forward requests from outside of the local network (external network interface) to cameras within the local network. If you would like to access a camera within the local network, you need to activate this parameter. To access an internal camera,

you thus need the external IP address of the forwarding camera or its host name (see [dynamic DNS](#)) and a port.

The forwarding camera automatically searches the local network using **Zeroconf** (Bonjour). Access from the outside is granted automatically for all cameras on the local network that have activated Zeroconf. Access from the outside is handled by NAT and *port mapping* (using a map of external port numbers to internal IP addresses). If the forwarding camera detects traffic on a specific port on its external (WAN) network interface, it forwards the request to the corresponding camera on the local network.

NAT port mapping is only activated for MOBOTIX cameras. Other network devices are ignored even if they support Zeroconf.

The mapping of external ports to internal IP addresses follows this scheme:

- The address for accessing an internal camera is always the external IP address of the forwarding camera or its host name (see [Dynamic DNS](#)).
- For HTTP, the external port corresponds to the last byte of the camera on the local network plus 8000.
- For HTTPS, the external port corresponds to the last byte of the camera on the local network plus 9000.

Example 1. NAT for Inbound Traffic

- External IP address of forwarding camera: 123.234.56.78
- Internal IP address of a camera on the local network: 192.168.1.45

You can thus access the internal camera from anywhere in the world using `http://123.234.56.78:8045/` or `https://123.234.56.78:9045/` (if HTTPS has been activated in the [Web Server](#) dialog of the **internal camera**).

Caution

Make sure that you are only using HTTPS connections when accessing an internal camera. This prevents unwanted eavesdropping on the connection.

Since this function always requires **IP Forwarding**, the camera automatically activates this parameter as soon as you activate the **Nat for Outbound Traffic**.

Additional Information

- Activate the **Enable HTTPS** parameter in the [Web Server](#) dialog of the **internal**

camera to be able to use HTTPS encryption when accessing the camera.

- As soon as you are using one camera as router, you should also configure this camera as **DHCP server** and the remaining devices on the local network as **DHCP clients** (see the **Ethernet Interface** dialog and the **BOOTP/DHCP** parameter).

In order to get a list of the devices managed by the DHCP server (including their IP addresses, host names and MAC addresses), open the **DHCP Leases** dialog of the camera that serves as DHCP server.

- In order to use **Zeroconf** (Bonjour), open the **Ethernet Interface** dialog, activate the **Zeroconf** parameter and reboot the camera.
- You should also consider activating **DynDNS** on the forwarding camera, so that you can access this camera from the outside using a host name (e.g. `myremotecam.dyndns.org`) instead of an IP address that changes every time the camera establishes an Internet connection. For additional information on this topic, see the [Dynamic DNS](#) help page.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

 **In order to enable these settings, you need to [store the configuration](#) and reboot the camera!**

Dynamic DNS

In the **Configure Dynamic DNS** dialog, you are configuring the camera's *DynDNS Client* so that you can access the camera using a symbolic host name even though the camera's IP address keeps changing.

Introduction

Connections via the Internet are typically established by Internet service providers. Normally, providers assign changing IP addresses, which means that the camera's IP address is a different one each time a connection to the provider is established. Once the camera is connected to the Internet, you can only access it via the Internet if you know its current IP address.

The *Domain Name Service* (DNS) is an important Internet service. Using so-called *name servers*, this service provides decentralized databases that allow allocating symbolic host names (e.g. `www.mobotix.com`) to the respective IP addresses (e.g. `213.83.41.133`). However, the DNS service concept is based on statically

assigned IP addresses. Originally, this concept was not designed to work with frequently changing IP addresses as used when dialing up to a provider.

In order to enable the DNS to also manage changing IP addresses, the *Dynamic DNS Service* (DynDNS) has been introduced. A mechanism has been added to the DNS service, which the camera can use to transmit its current IP address, so that the entry in the name server database is updated automatically.

For the *dynamic DNS service* to work, the camera must be connected directly to the Internet using an officially routed IP address. This is generally not the case if the camera is connected via a DSL router only, since these usually employ NAT (*Network Address Translation*). A router using NAT replaces the camera's IP address in outbound packets by his own.

The camera has no knowledge of this IP address and therefore can not use the *dynamic DNS service*. In this case, you need to configure port forwarding to the camera on the router, and set the latter to use the *dynamic DNS service*.

Configuring the DynDNS Client

Prior to configuring the camera for DynDNS, you need to register a host name for your camera with a DynDNS service (e.g. `mycam.dyndns.org`). For a list of DynDNS service websites, see the **Service Type** list box.

Description of Parameters

Parameter

Client

Description

This option *enables* or *disables* your camera's DynDNS client.

Parameter

Service Type

Description

The DynDNS data transfer is not standardized. This has resulted in different data exchange formats for different DynDNS providers. Select the service type suitable for your DynDNS service.

Parameter

Server

Description

Enter the symbolic name (e.g. `members.dyndns.org`) or the IP address of your DynDNS provider's server. If you are not sure which server to enter, leave this field empty. In this case, the camera automatically uses the *standard server* enclosed in parentheses in the **Service Type** field.

Parameter

Host Name

Description

Enter the host name (e.g. `mycam.dyndns.org`) that you have registered with a DynDNS service for

your camera.

Parameter

User Name

Description

Enter the user name that you have registered or that you have been assigned during the registration process with your DynDNS service.

Parameter

Password

Description

Enter the password that is used for authentication at the DynDNS server.

Parameter

Connection

Description

This field shows which connection the DynDNS client uses and if it is working properly. This is the connection defined for the standard route. For configuring the standard route, open the **Routing** dialog.

Testing the Configuration

Ethernet Connection

In this case, the camera's DynDNS client transfers the IP address just once when the camera has been rebooted.

If your network uses e.g. DSL to connect to the Internet, you need to make sure that the camera is rebooted periodically *after* the respective router has been assigned a new IP address. By default, the camera is rebooting every Monday between 03:00 and 03:59 hours using a time task defined in the **Time Tasks** dialog.

For status information on this feature, open the **System Messages** dialog.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

 **In order to enable these settings, you need to [store the configuration](#) and reboot the camera!**

General Settings of the Network Client

Open the **General Network Client Settings** dialog to change the settings of the network client software (email client, FTP client, network messages) of the camera.

Description of Parameters

Parameter

Connect Timeout

Description

This option controls how long a network client will wait for a network connection before considering it a failed attempt.

Parameter

Transfer Timeout

Description

This option controls how long a file transfer (e.g. file transfer via FTP) may take. Once this time has expired, the camera will abort the transfer.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

OpenVPN Configuration

Open the **OpenVPN** dialog to configure camera's OpenVPN client settings.

For more information about OpenVPN, visit the [OpenVPN Community](#) website.

Requirements

Creating an OpenVPN connection requires a corresponding server, which provides secure access to the camera. To do so, you could run your own OpenVPN server or use the service from an OpenVPN provider.

General OpenVPN Setup

Parameter

OpenVPN

Description

Enables or disables the OpenVPN client.

Parameter

Server Address

Description

Enter the address to which the OpenVPN client will connect.

Parameter

Server Port

Description

Enter the port to which the OpenVPN server is listening for incoming connections.
(OpenVPN option `--rport port`)

Parameter

Encryption

Description

Select the encryption cipher that is being used.
The encryption ciphers are included in the OpenSSL library.
For additional information on this topic, see the following websites:

- [OpenVPN Howto](#)
- [OpenSSL Ciphers](#)

Parameter

Communication Protocol

Description

Depending on the OpenVPN server settings, you can choose UDP or TCP.

Parameter

LZO Compression

Description

Use this option to enable LZO data compression. For more information about LZO, see www.oberhumer.com.

Parameter

Maximum Fragment Size

Description

UDP only! Set the size of the data fragments to *n* bytes. This can help prevent the fragmentation of UDP packets.
(OpenVPN option `--fragment max`)

Parameter

mssfix Size

Description

UDP only! Improves the TCP connection over the UDP tunnel by reducing the TCP packet size.
(OpenVPN option `--mssfix max`)

Parameter

TUN Device MTU

Description

Set the MTU of the used TUN device. This depends on the connection type used.
(OpenVPN option `--tun-mtu n`)

Parameter

MTU Test

Description

UDP only! This test can help in finding good MTU parameters. Do not use this test in normal operation mode.

Parameter

Ping Interval

Description

Sends a ping to the remote server over the tunnel if no packets have been sent for at least n seconds. This option keeps the tunnel open if the connection between the camera and the server runs over a stateful inspection firewall.

(OpenVPN option `--ping n`)

Parameter

Ping Restart

Description

If the remote server is not sending a ping or other packet for more than n seconds, the OpenVPN client on the camera will restart the connection. (OpenVPN option `--ping-restart n`)

Parameter

Renegotiation

Description

Renegotiates the data channel key after n seconds (default is 3600s). Once the timeout is reached on either the server or the client side, the camera starts the renegotiation process. Setting this value to 0 disables client-side renegotiation.

(OpenVPN option `--reneg-sec n`)

Authentication

Parameter

VPN Certificates

Description

If the private key is protected by a Passphrase, enter the corresponding Passphrase in this field. The keyfiles can managed in the **Manage VPN Certificates** dialog.

Parameter

VPN User Name

Description

Enter the OpenVPN user name in this field.

(OpenVPN option `--auth-user-name`)

Parameter

VPN Password

Description

Enter the OpenVPN password in this field.

(OpenVPN option `--auth-user-pass`)

Logging Options

Parameter

VPN Logging Level

Description

- 0: No output except fatal errors
- 1: Small amount of status information
- 2: More status information, e.g., certification and encryption status
- 3: Even more status information
- 4: Full status information

Manage VPN Certificates

The **Manage VPN Certificates** dialog manages the certificates that are used to establish OpenVPN connections.

To authenticate the server against the camera, a certificate from an Certificate Authority (CA) is required. In addition, it is possible to use an RSA-based public/private key pair to authenticate the camera against the server.

Parameter

Certificate Authority (CA) Certificate

Description

Use this section to store a new certificate from a CA in the camera.

Upload: uploads a certificate in .PEM format to the camera.

Delete: Removes the certificate.

Parameter

Client Certificate

Description

Use this section to store a new public key in the camera for authenticating the camera against the server.

Upload: uploads a certificate in .PEM format to the camera.

Delete: Removes the certificate.

Parameter

Client Key

Description

The private key contains the secret part of the public/private key authentication scheme. Use this section to store a new private key in the camera.

Upload: uploads a private key in .PEM format to the camera.

Delete: Removes the private key.

To enter the Passphrase, go back to the **OpenVPN** dialog.

FAQs and Error Messages

Frequently Asked Questions

1.

Which types of VPN are supported?

This implementation currently supports the OpenVPN protocol in point-to-point mode (routing).

2.

Which type of encryption is used?

You can select different encryption ciphers depending on the requirements of the server.

3.

How can I recognize if a connection is valid or not?

The VPN log file should contain the message "Initialization Sequence Completed".

4.

Why aren't the certificates accepted by the server?

- Make sure that the client and the server are using the same time (e.g., by using a common **time server**, see **Time & Date**).
- Make sure that the Certificate Authority (CA) matches the values of the client certificate.
- Make sure that the modulus of the client certificate and the client key are identical.

Error Messages

1.

The camera cannot establish a connection to the OpenVPN server.

- Set the **VPN Logging Level** to 4 and check the output.
- Make sure that the client and the server are using the same time (e.g., by using a common **time server**, see **Time & Date**).
- Make sure that the client and the server are in the same subnet.

2.

TLS ERROR

- Did you upload all certificates?
- Are the certificates the proper ones for the server?
- Make sure that the Certificate Authority (CA) matches the values on the server.

3.

No client-side authentication method is specified.

- Did you upload the client key and the client certificate?
- Did you enter both the VPN user name and the corresponding password?
- After uploading the client certificate, make sure that you click again on the **Set** button in the **OpenVPN Configuration** dialog.

4.

Network is unreachable, Check your network connectivity.

- Make sure that you can reach the specified IP address of the server.
- Can you establish a connection to the server (ping)?
- Did you set the correct communication protocol (UDP/TCP)?

5.

HOST_NOT_FOUND, Cannot resolve host address, The specified host is unknown

- Make sure that the server name is resolved properly (using `nslookup`).
- Did you enter the server name properly?
- Has the server name been properly entered at the DNS service?

6.

Write to TUN/TAP: Invalid argument (code=22)

Make sure that you are using the same settings for **LZO Compression** on the server and the client.

Additional Information

- openvpn.net
- en.wikipedia.org/wiki/OpenVPN
- www.ipcop.org

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

MxMessageSystem

The dialogs in this section are used to configure the MxMessageSystem for exchanging and reacting to messages between MxBus modules and cameras.

This feature is not available on all MOBOTIX cameras!

Network Distribution of Messages

Open the **Network Distribution of Messages** dialog to configure the message transfer between cameras. Currently, you can use up to 32 cameras for one physical network for such a message system. This restriction does not apply when using the [Broadcast](#) distributor type.

General Interface Setup

Parameter

Network

Description

Activate/deactivate the transfer of messages between cameras over the network.

Parameter

Password

Description

A password (symmetrical key) of at least six characters, which is used to encrypt the transferred messages.

Parameter

Distribution Type

Description

Two message distribution types are available:

- *Broadcast* does not guarantee that the messages are actually received by the recipients ("Fire And Forget"). Transmission errors are not corrected by resending the messages. Messages are not sent to the recipients in a specific order. Note that there is not limitation regarding the number of message system users in a network.
- *Multicast* reliably guarantees that the messages are actually received by all recipients in the same order. Transmission errors are corrected by resending the messages. A message is distributed to either all recipients or – if transmission errors are persistent – to no one at all. Note that number of message system recipients in a network is limited to 32.

Settings Depending on the Distributor Type

Depending on the distributor type chosen (*Multicast*, *Broadcast*, see above), you can set different options.

Distributor type

Multicast

Description

- **Multicast Port:** The messages are transferred using UDP Unicast and Multicast on the specified port and the preceding port. If you want to run several independent message systems on your network, assign different ports to the systems. Make sure that you use ports that are different by at least two numbers.

Distribution Type

Broadcast

Description

- **Broadcast Port:** The messages are transferred using UDP Broadcast on the specified port. If you want to run several independent message systems on your network, assign different ports to the systems.
- **Recurrence:** This parameter specifies how often *in total* the message will be resent. Many resends increase the probability that the message is actually received, but they also create heavier network load.
- **Poll Frequency:** This parameter specifies how often per second the messages will be sent. A higher frequency reduces latency, but creates heavier network load.
- **Max. Time Difference:** Maximum difference between the message timestamp and the system time. Messages with a greater difference are discarded. It is highly recommended to synchronize the system time of all message system components using NTP (in the **Date and Time** dialog).

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Message Configuration for MxBus Modules

Open the **Message Configuration for MXBUS Modules** dialog to configure the messages sent by connected MXBUS modules. Upon detecting specific events, an MXBUS module can send messages using the MxMessageSystem; in turn, the module can also execute a specific action upon receiving a corresponding message. Open the **Manage MxBus Modules** dialog and make sure that the attached MxBus modules have been activated and that the firmware is up-to-date.

- For an introduction and examples on this subject, please see the **Technical Note: MxMessageSystem** from the MOBOTIX [Download Center](#) in the Marketing & Documentation > Brochures & Guides > Compact Guides section.
- All elements and the available settings on this page are explained using tool tips (bubble help). You will see them when you hold the mouse over an element (without clicking).

Managing Messages

First, load the configuration from the attached modules by clicking on the **Load configuration of connected devices** button.

Set the MxMessageSystem names in the **Edit Messages** section.

A valid MxMessageSystem name must follow these rules:

- Must start with a letter.
- Must not contain spaces, tabs or the "/", "%", "." characters.
- Must not be longer than 31 characters.

Note that all entries are case-sensitive. Use the **New message** and **Remove** buttons to create new messages and to delete existing ones, respectively. Note that you can only remove a message, if it is not used in any device configuration. When leaving an input field, all messages are stored temporarily on this page and are used to fill the dropdown fields in the configuration forms of all devices. Note that the messages are not yet written to any device configurations.

You can set a **message range** for every message. This range specifies where to distribute the message. The scope of the ranges is defined as follows:

- *Global*: across all cameras within the current LAN
- *Local*: within the camera (not transferred via the network)
- *Internal*: distribute to all devices on the MxBus

A message can contain parameters and can thus be used to transmit values. The "Parameter" operating mode will be selected automatically depending on the specified configuration. Every message will get a specific signature according to the parameter types that are transmitted. The message dropdown fields are automatically filled and updated using only messages of the same type (i.e., the same signature).

Configuring the MxMessageSystem of the Devices

After loading the configuration, the dialog lists all discovered MxBus modules in separate sections below the message section. Depending on the features of the module, the corresponding form section contains sub-sections for configuring the function components that are available in that module. These can be, for example:

- [Inputs](#)
- [Outputs](#)
- [RFID](#)
- [Audio feedback](#)
- [Visual feedback](#)
- [Keys](#)
- [KeypadRFID](#)
- [Sensors of the MX-GPS-Box \(temperature, illumination, date, time, position\)](#)
- [Sensors of the MxMultiSense \(temperature, illumination, PIR, sound volume\)](#)
- [Radar \(MX-Proximity-Box\)](#)

Inputs

The configuration sections for **inputs** are present if the module has inputs. **Add** creates a new line for configuring the current input. To delete a configuration line, click on the corresponding **Remove** button. Use the first dropdown **edge type** to set either the desired edge trigger (falling, raising, both), a level period or a parameter. The other selection fields are filled according to the first selection:

- When using an **edge trigger**, the second dropdown field contains the messages that will be triggered.

- When using **Level period**, you need to select the type of level to test for (*high*, *low*) and the duration that will trigger a message. In addition, you can set a dead time that can be used to set a pause before sending the next message.
- When using a **parameter**, the second dropdown field contains messages that correspond to the signature, and which can be used to transmit the input state.

Outputs

The configuration sections for **outputs** are present if the module has outputs. **Add** creates a new line for configuring the current output. To delete a configuration line, click on the corresponding **Remove** button. The first dropdown field shows the generated message names that will be executed when receiving the message. The second dropdown field shows the action to be executed; depending on the selection, more fields will be displayed.

- **Off**: When receiving the message, switches the output off (opens the output).
 - **Lock** prevents changes in the output state by any timers.
- **On**: When receiving the message, switches the output on (closes the output).
 - **Lock** prevents changes in the output state by any timers.
- **Toggle**: When receiving the message, toggles the output.
 - **Lock** prevents changes in the output state by any timers.
- **Timer**: Allows settings a switching time in seconds. The output will be switched to the specified state *On* or *Off* for this duration.
 - **Lock** prevents changes in the output state while the timer is running.
- **Parameter**: Changes the initial state of the output depending on the parameter contained in the received message.

RFID Modules

The KeypadRFID and BellRFID modules can trigger messages when specific RFID cards are presented. To use this feature, you need to add the unique identifier (UID) of the card on the text field. The UID is printed on the back of the card in the center and it can have up to 16 characters in hexadecimal notation (0–9, A–F):

Example 1. UID of an RFID Card

49131 047C18C2022C80 48315

Audio feedback

For modules with the ability for audio feedback, you can add/remove messages and the corresponding feedback types (**error**, **success**, **alarm**).

Visual feedback

For modules with the ability for visual feedback, you can add/remove messages and the corresponding feedback types (**error**, **success**, **alarm**).

Keys

For modules such as the BellRFID, you can configure messages for the available edge triggers in the sections of the corresponding bell button. When using the **Parameter** setting, the message will transmit the state of

the bell buttons as a parameter. Accordingly, you can only select messages that correspond to the signature (see also under [Managing Messages](#)).

KeypadRFID

The KeypadRFID module has its own configuration section. Its purpose is to map number codes to different messages. Every number code can have up to 16 digits. Note that you can also send function codes with the messages. A function code is a sequence of a digits and one of the following special key designators:

- **K**: Key
- **M**: Mail
- **B**: Bell
- **E**: ESC
- **O**: OK

Example 2. Message with Function Code

If a visitor pressed the keys **1+2+3+4+Key**, the message contains the string 1234K.

If a key is pressed longer, the string contains an additional 1.

Example 3. Message with Function Code and Long Key Pressure

If a visitor pressed the keys **1+2+3+Key** and held the Key button longer, the message contains the string 123K1.

Sensors of the MX-GPS-Box

The MX-GPS-Box has a temperature sensor, an illumination sensor and a GPS sensor (date and time, position). Since it receives precise time and date information from the GPS satellites, you can use the MX-GPS-Box as camera time server. Please note that the MX-GPS-Box needs to run in classic mode for this purpose. There are two operating modes for the temperature and illumination sensors: **Status** and **Threshold**.

In **Status** mode, the measured values of the sensors can be attached as parameters to the message that will be sent. The message can be sent either using a timer after the specified time in seconds has passed or when receiving the selected message. The default time span for the timer is five minutes (300 seconds); this will prevent the message from being sent too often.

In **Threshold** mode, you can specify how the threshold or a value range are to be interpreted. To set a threshold, you can use either the **Above** or the **Below** comparison type. Note that – in this case – the lower and the upper threshold need to be identical. To set a value range, you can use either the **Inner** or the **Outer** comparison type. Enter sensible values for the upper and the lower thresholds. If you enter 0 as **Recurrence time**, the message is sent only once. You can send the values of the GPS sensor together with a message. The message can be sent either using a timer after the specified time in seconds has passed or when receiving the selected message. The default time span for the timer is five minutes (300 seconds); this will prevent the message from being sent too often.

Sensors of the MxMultiSense

The MxMultiSense has sensors for measuring temperature, illumination and sound volume as well as an additional PIR (passive infrared) sensor. There are two operating modes for the temperature and illumination sensors: **Status** and **Threshold**.

In **Status** mode, the measured values of the sensors can be attached as parameters to the message that will be sent. The message can be sent either using a timer after the specified time in seconds has passed or when receiving the selected message. The default time span for the timer is five minutes (300 seconds); this will prevent the message from being sent too often.

In **Threshold** mode, you can specify how the threshold or a value range are to be interpreted. To set a threshold, you can use either the **Above** or the **Below** comparison type. Note that – in this case – the lower and the upper threshold need to be identical. To set a value range, you can use either the **Inner** or the **Outer** comparison type. Enter sensible values for the upper and the lower thresholds. If you enter 0 as **Recurrence time**, the message is sent only once. The PIR and sound volume sensors can trigger messages of the specified trigger values (in percent) are exceeded.

Radar Sensor of the MX-Proximity-Box

The MX-Proximity-Box can trigger messages when detecting movements. The **Recurrence time** specifies the time to pause before a new message can be sent. Note that you can set the sensor range to either **Near** or **Far**. In addition, you can use a **movement profile**, which combines preset sensor values for **amplitude**, **approach speed** and **escape speed**. These values can be customized when using the **Custom** profile mode.

Since the speed of approaching or leaving objects can only be measured properly with speeds of up to 15 kph/9.3 mph, the **Distance** slider will be deactivated for higher speeds.

Storing the Configuration

Once you have finished configuring the modules, you can save the current module's configuration by clicking on the **Write configuration** button at the bottom of the module section. In order to save the configuration of all modules at once, click on **Transfer entire configuration** at the bottom of the dialog.

Loading the Configuration

In order to load the entire configuration, click on the **Load configuration of connected devices** button at the bottom of the dialog. The form shows the corresponding modules and the configuration sections. Note that you can also load individual module configurations. This will only update the corresponding device section of the dialog.

Generating a Default Configuration

Click on the **Create default configurations for all devices** button at the bottom of the dialog to create a configuration with preset values. This will create configuration sections for all attached modules with appropriate default values and the corresponding messages. Note that you can do this manually for individual modules.

Factory Defaults

You can reset every module to its factory default settings. This will discard all configuration changes for the device made in this dialog. You can either discard the changes of all modules at the same time (click on **Fact-**

ory Defaults at the bottom of the page) or for a single module (**Factory Reset** at the bottom of a device section).

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Message Profiles for Action Groups

Open the **Message Profiles for Action Groups** dialog to configure the messages that are sent upon specific actions.

Open the **Action Group Overview** dialog and edit an action group to link its actions to specific events.

Enter the desired **MxMessageSystem Name** for each message profile. A valid MxMessageSystem-Name must start with a letter, it must not contain spaces, tabs or the characters "/", "%", or ".", the name is case-sensitive and the maximum length is 31 characters. Note that you can create several profiles with the same MxMessageSystem name.

Using the JSON-based API of the camera, you can see the current messages of the MxMessageSystem. Enter the following URL on your camera in a browser:

<http://<IP address>/api/json/messages/global>

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Storage

The dialogs in this section contain the basic settings of the camera for storing video data.

Storage on External File Server / Flash Device

An Overview of the Storage Methods

The camera will first use its internal ring buffer in a certain part of the volatile internal memory (RAM) to store the recordings. After a camera restart, these recordings are not available any more. By selecting a suitable **Primary Target** in the **Storage on External File Server / Flash Device** dialog; you are determining where the camera stores the recordings. After selecting the **Primary Target** you can configure the other

options, such as the storage format, the file server to use, additional storage archive, storage size, time-based restrictions, etc. This section provides an overview of the various storage methods, which will be discussed in more detail further below.

- Open the **Recording** dialog to configure *when* and *how* the camera will store its recording (**Arming**, **Time Table Program**, **Recording Mode**, etc.).
- Click on the **More** button at the bottom of the dialog to display all options.

Description

[RAM Storage With Ring Buffer](#)

Primary Target

- *Disabled*

Archive Target

(Not available)

Description

The data are stored in a certain part of the volatile memory (RAM) of the camera (< 200 MB). This means that the recordings are not available any more after rebooting the camera.

Using this storage method is not recommended!

Description

[Storage in a Folder/File Structure on File Server](#)

Primary Target

- *NFS File Server* (mostly Linux/UNIX-based servers or NAS systems)
- *SMB/CIFS File Server* (mostly Windows-based servers or NAS systems, OS X/macOS systems can also be used)

Archive Target

(Not available)

Description

The data are stored in a folder/file structure.

- Indirectly via the camera
 - By directly accessing the data on the file server
-
- The storage structure is simple. If required, you can access the files (JPEG files E0000n.jpg, MxPEG clips M0000n.jpg with audio and video data) of specific recordings directly, you can open or copy them or process the files using other means.
 - Direct data access by MxManagementCenter is simple and fast.

- If the connection to the file server fails, no recordings will be stored.
- The large number of created folders and files induces a rather high load on the server.

Description

Storage on Flash Device

Primary Target

- *USB Stick / Flash SSD* (connected to the USB port of the camera)
- *SD Flash Card* (in the microSD slot of the camera; *factory default*)

Archive Target

- *Disabled* (*factory default*)

Description

The data are stored on a Flash device that had to be formatted in MxFFS format beforehand by the camera.

- Only indirectly via the camera

If the Flash device is connected to a computer with installed MxControlCenter, you can play back and export the recordings using MxControlCenter (release 2 . 5 . 4 . 5 and higher).

- No additional file server required.
- The data are protected from unauthorized interference.
- Flash devices have a noticeably smaller capacity than file servers and are not as reliable.
- Directly accessing the recordings is complicated and can only be achieved using MxControlCenter (release 2 . 5 . 4 . 5 and higher).
- Indirectly accessing the recordings via the camera is slower than directly accessing the data on a file server and induces more load on the camera.

Description

Storage on Flash Device With Additional MxFFS Archiving on File Server/USB Device

Primary Target

- *USB Stick / Flash SSD* (connected to the USB port of the camera)
- *SD Flash Card* (in the microSD slot of the camera)

Archive Target

- *SMB/CIFS File Server*
- *NFS File Server*
- *USB*

Description

The data are first stored on the configured Flash device and are then copied into a larger MxFFS archive on a file server or USB device.

- Indirectly via the camera onto a file server
- Indirectly via the camera onto a USB device
- By directly accessing the data on the file server

- There will not be any loss of data even if the file server fails unless the failure persists until the Flash device is filled to capacity (after that, older recordings will be deleted).
- You can access the most recent recordings even though the file server is not working.
- Writing the archive data does induces considerably lower load on the file server than writing the folder/file structure.
- The data are protected from unauthorized interference.

- The Flash device is stressed by the additional write cycles and will fail after a certain time (depending on the Flash type and data rate used when writing.) In this case, data will not be stored in the archive any more.

Description

[Storage in MxFFS Archive With SD Card as a Fallback Buffer](#)

Primary Target

- *Buffered MxFFS Archive*

Archive Target

- *SMB/CIFS File Server*
- *NFS File Server*

Description

The data are stored directly in an MxFFS archive on a file server. Only in case of a file server failure will the data be written first onto the internal SD card of the camera, and will be transferred to the MxFFS archive later on.

- Indirectly via the camera
 - By directly accessing the data on the file server
-
- There will not be any loss of data even if the file server fails unless the failure persists until the Flash device is filled to capacity (after that, older recordings will be deleted).
 - Writing the archive data does induces considerably lower load on the file server than writing the folder/file structure.
 - The strain on the internal SD card of the camera is not really worth mentioning.
 - The data are protected from unauthorized interference.
-
- If the file server fails, some data may get lost since it will take a while before the camera reliably detects the failure.
 - During a file server failure, you can access the contents of the internal SD card of the camera. This will only be possible once the data have been transferred into the archive.
-
- Open the **Recording** dialog to configure *when* and *how* the camera will store its recording (**Arming**, **Time Table Program**, **Recording Mode**, etc.).
 - Click on the **More** button at the bottom of the dialog to display all options.

The Storage Methods in Detail – Configuring, Updating, Storage Structure, Maintenance, Best Practices

RAM Storage With Ring Buffer

The camera will first use its internal *ring buffer* in a certain part of the volatile internal memory (RAM, < 200 MB) to store the data. A ring buffer will overwrite its oldest images once the storage capacity has been reached.

If the **Primary Target** is set to *Disabled*, the data are not copied anywhere else, which means that these recordings will not be available any more after rebooting the camera. Due to the limited storage space in the RAM and the volatility of the data after rebooting or a power failure, it is not advisable to use this storage method. You can, however, use this method for testing, e.g., when configuring the camera system.

Storage in a Folder/File Structure on File Server

Description

- When using this storage method, the camera will copy the recordings from the ring buffer of the internal memory (RAM) to the specified file server.

- Similar to the internal memory (RAM), the data on the file server are also stored as a ring buffer, i.e., if the assigned storage space is depleted, the oldest recordings will be deleted to make room for new recordings.
- The recordings are stored in a specific folder/file structure. The "recording sequences" are stored in a two-layer folder structure, where the two folder names combined represent the sequence number of the recording. All stored recordings (JPEG files `E0000n.jpg`, MxPEG clips `M0000n.jpg` with audio and video data) can be accessed directly using a file browser of your computer system.
- In case of a file server failure, the camera can store the recordings in the internal memory for only a short period of time without losing data (until the ring buffer in the RAM is depleted).
- Storing recordings on a file server is accomplished without installing any additional software on the file server.
- The recordings can be accessed from MxManagementCenter (MxMC) either indirectly via the camera or directly from the file server.

Configuration

In the **Storage Target** section, select one of the following entries as **Primary Target**:

- *SMB/CIFS File Server* (mostly Windows-based servers or NAS systems, OS X/macOS systems can also be used)
- *NFS File Server* (mostly Linux/UNIX-based servers or NAS systems)

Caution

The camera will automatically create a folder structure in the specified folder on the storage target, which is based on its **factory IP address** (dots are replaced by underscore characters). This path contains the audio and video data as well as various other files, which are required for the proper management and playback of the stored video data on the storage target.

Make sure that the camera paths and their contents cannot be changed in any way by assigning corresponding rights on the storage folder.

Storage on SMB/CIFS File Servers – Configuring the Camera

When storing recordings on Windows computers, the camera uses a Windows share on a computer. You can use not only products of the Windows server family, but also Windows Professional products. Note that the number of parallel connections serviced by such a workstation is limited, however.

- Note that MOBOTIX **cannot** provide support for configuring the Windows computer.
- Products of the Windows "Home" family are not supported and should not be used at all. The same applies to Windows 2000 and Windows XP.

Parameter

Primary Target

Description

Activate the **SMB/CIFS File Server** option. Note that this will enable the fields that are relevant for **SMB/CIFS**.

The camera can log onto a Windows computer using its local accounts and can also use Windows domains and Active Directory Services.

Parameter

File Server IP

Description

Enter the IP address or the name of the file server. The file server must be accessible for the camera in the local network.

Parameter

Directory/Share

Description

Enter the **Share Name** that you have assigned during server configuration (e.g., `mxdta`), not the directory or the absolute path.

Parameter

User Name

Description

Enter the user name the camera should use to log onto the server (e.g., `mxcam`).

The camera can log onto a Windows computer using its local accounts and can also use Windows domains and Active Directory Services.

Parameter

Password

Description

Enter the password you have assigned to the user name.

Parameter

Domain

Description

Enter the name of the domain to which this user belongs.

Parameter

NTLM mode

Description

Select the desired method for Windows authentication of the camera (NTLM or NTLMv2).

Use the **File Server Test** to check the settings of the file server. Click on the **Start Test** button to test if the camera can properly access the file server.

Caution

- Make sure that you are setting one or more of the [Storage Limits](#) that are available for the selected storage targets. Do this to prevent the storage space for the

selected storage target from running out, which would prompt the camera to stop storing recordings on this target.

- You should configure the integrated monitoring features of the camera and the corresponding messaging options to be able to take suitable measures if the camera detects a file server failure. To configure the monitoring options, open **Admin Menu > Storage > Storage Failure Detection**.

Click **Set** to save the changes. Next, click on **Close** to close the dialog and on **OK** to save the changes permanently. Reboot the camera (**Admin Menu > Reboot the camera**).

Return to this dialog and check if the external ring buffer works, as described in [Checking the Storage on the External File Server](#)!

It is *not* required to close this help window while the camera is rebooting. If the camera is available again, this help window may be used in the usual manner.

Storage on NFS File Servers – Configuring the Camera

When storing recordings on Linux/UNIX file servers, the camera uses **NFS (Network File System)** and stores the video in a directory on the server (commonly entered in `/etc/exports`), which is mounted as a file system.

Parameter

Primary Target

Description

Activate the **NFS File Server** option. Note that this will enable the fields that are relevant for **NFS**.

Parameter

File Server IP

Description

Enter the IP address or the name of the file server. The file server must be accessible for the camera in the local network.

Parameter

Directory/Share

Description

Enter the absolute path of the directory on the server, which the camera should use for storing images (e.g., `/mxdata`).

Make sure that this directory exists and that access rights are assigned accordingly.

Parameter

User ID and Group ID

Description

This option is only visible if you clicked on the **More** button beforehand. Enter the user ID of a user with write access rights:

- UID = user ID
- GID = group ID

If you are using the factory default settings, you need to check whether or not a user with this user ID exists and whether or not this user has write access to the directory.

Use the **File Server Test** to check the settings of the file server. Click on the **Start Test** button to test if the camera can properly access the file server.

Caution

- Make sure that you are setting one or more of the [Storage Limits](#) that are available for the selected storage targets. Do this to prevent the storage space for the selected storage target from running out, which would prompt the camera to stop storing recordings on this target.
- You should configure the integrated monitoring features of the camera and the corresponding messaging options to be able to take suitable measures if the camera detects a file server failure. To configure the monitoring options, open **Admin Menu > Storage > Storage Failure Detection**.

Click **Set** to save the changes. Next, click on **Close** to close the dialog and on **OK** to save the changes permanently. Reboot the camera (**Admin Menu > Reboot the camera**).

Return to this dialog and check if the external ring buffer works, as described in [Checking the Storage on the External File Server](#)!

It is *not* required to close this help window while the camera is rebooting. If the camera is available again, this help window may be used in the usual manner.

Storage on Flash Device

Description

- When using this storage method, the camera stores the recordings on the internal SD card of the camera or on a USB storage device connected to the camera.
- Similar to the internal memory (RAM) of the camera, the data on the Flash device are also stored as a ring buffer, i.e., if the assigned storage space is depleted, the oldest recordings will be deleted to make room for new recordings. The Flash device is then "rolled over".
- The recordings are stored internally in MxFFS format.
- If the Flash device fails, the camera will not store recordings any more.
- You can access the recordings from MxManagementCenter only indirectly via the camera.

If the Flash device is connected to a computer with installed MxControlCenter, you can play back and export the recordings using MxControlCenter (release 2 . 5 . 4 . 5 and higher).

Configuration

The **Storage on External File Server / Flash Device** dialog (**Storage Targets > Primary Target** section) allows using Flash devices as storage media:

- *USB Stick / Flash SSD* (connected to the USB port of the camera)
- *External USB Harddisk* (connected to the USB port of the camera)
- *SD Flash Card* (in the microSD slot of the camera)

The camera has a built-in SD card with MxFFS formatting, allowing you to activate the storage of recordings out-of-the-box. Before replacing this card by a different SD card or a different Flash device connected to the USB port, you need to format the new Flash device (see the [Formatting Flash Devices for MxFFS Storage – Steps and Options](#) section).

The **MxFFS** file system (short for **MOBOTIX Flash File System**) has been designed for professional applications that are requiring safe storage and which are creating high throughput over longer periods of time. This recording format has been developed with the following two properties, which are a prerequisite for security applications:

1. **Controlled wear of Flash cells:** Since Flash media have a limited (but nevertheless high) number of writing cycles for each cell, special care has been taken to make sure that the Flash device is being written evenly, thus prolonging the life of the storage device.
2. **Error tolerance:** If the data integrity of the device is being compromised (e.g. due to power failures or user errors such as disconnecting a USB flash drive without prior deactivation in the **Manage Hardware Expansions**) the damage to the storage device remains rather small. Instead of losing the whole device as would be the case if other file systems would have been used, **MxFFS** will only lose 4 MB per incident.

Storage on Flash Device With Additional MxFFS Archiving on File Server/USB Device

Description

- When using this storage method, the camera stores the recordings on the internal SD card of the camera or on a USB storage device connected to the camera. The recordings are then copied to the MxFFS archive on a file server or a USB storage device.
- The archive itself consists of individual files of 2 GB, it can be considerably larger than the Flash device itself. Its main purpose is to permanently archive the recordings. The archive also works as a ring buffer, i.e., if the assigned storage space is depleted, the oldest recordings will be deleted to make room for new recordings.

- The recordings are stored in the camera and are independent of archive availability. If the archive fails, the camera continues to store the recordings on the SD card and archiving resumes once the archive is available again. A loss of data only occurs if the archive cannot be reached before the storage space on the internal SD card is depleted. In this case, the oldest recordings on the Flash device since the file server failure will be deleted before the camera can copy them to the archive (due to the ring buffer strategy).
- The recordings in an MxFFS archive on a file server can be accessed from MxManagementCenter (MxMC) either indirectly via the camera or directly from the file server.
- The recordings in an MxFFS archive on a USB device can be accessed from MxManagementCenter only via the camera.

Configuration

In the **Storage on External File Server / Flash Device** dialog, **Storage Target** section, select one of the following options as **Primary Target**:

- *USB Stick / Flash SSD* (connected to the USB port of the camera)
- *External USB Harddisk* (connected to the USB port of the camera)
- *SD Flash Card* (in the microSD slot of the camera)

The camera has a built-in SD card with MxFFS formatting, allowing you to activate the storage of recordings out-of-the-box. Before replacing this card by a different SD card or a different Flash device connected to the USB port, you need to format the new Flash device (see the [Formatting Flash Devices for MxFFS Storage – Steps and Options](#) section).

Next, in the **Storage Target** section, select one of the entries [SMB/CIFS File Server](#), [NFS File Server](#) or *USB* as **MxFFS Archive Target**.

To configure the options, please see the sections [Storage on SMB/CIFS File Servers – Configuring the Camera](#) or [Storage on NFS File Servers – Configuring the Camera](#), respectively.

Caution

The camera will automatically create a path name in the specified folder on the storage target, which is based on its **factory IP address** (dots are replaced by underscore characters). The path contains one subfolder named `fs_sd0_flash_card_0`, which contains the individual MxFFS archive files of 2 GB size with the audio/video data.

Make sure that the camera paths and their contents cannot be changed in any way by assigning corresponding rights on the storage folder.

Configure the corresponding parameters in the **MxFFS Archive Options** section.

Use the **File Server Test** to check the settings of the file server. Click on the **Start Test** button to test if the camera can properly access the file server.

Caution

- Make sure that you are setting one or more of the [Storage Limits](#) that are available for the selected storage targets. Do this to prevent the storage space for the selected storage target from running out, which would prompt the camera to stop storing recordings on this target.
- You should configure the integrated monitoring features of the camera and the corresponding messaging options to be able to take suitable measures if the camera detects a file server failure. To configure the monitoring options, open **Admin Menu > Storage > Storage Failure Detection**.
- If MxFFS archiving is activated, the live image of the camera shows the AS symbol (<buffer fill level> / <remaining time before data loss>). If the camera detects a file server failure, this symbol will turn red. The value on the left shows the current fill level of the SD card buffer with recordings since the file server failure. The value on the right shows the estimated remaining time until the oldest recordings since the file server failure will have been overwritten due to the ring buffer mechanism.

Click **Set** to save the changes. Next, click on **Close** to close the dialog and on **OK** to save the changes permanently. Reboot the camera (**Admin Menu > Reboot the camera**).

Return to this dialog and check if the external ring buffer works, as described in [Checking the Storage on the External File Server](#)!

Configuring the MxFFS Archive Options

Parameter

MxFFS Archive Size

Description

Set the storage space that the camera should use for the archive.

Caution

It is recommended that you set the archive size to at least twice the size of the storage capacity of the Flash device.

Parameter

Archive Timetable

Description

Select a [timetable](#) to control archiving based on a weekly schedule. Select the timetable in which you have specified the timeframes for archiving.

The timeframes only control when writing to the archive takes place. Reading from the archive is possible with both active or inactive archiving.

Parameter

Archive Retrieval

Description

When trying to retrieve recordings that are not present on the Flash medium any more, the camera can read the corresponding video data from the archive. Please note, however, that this creates additional

network traffic, which may use up the entire bandwidth, even though archiving alone would be possible. Use this setting to control whether or not the camera should be allowed to read from the archive.

You will find helpful statics for MxFFS archiving in the **Archive Statistics** dialog.

Storage in MxFFS Archive With SD Card as a Fallback Buffer

Description

The "buffered archive" is based on using a file server as **Primary Target** for the MxFFS data and the internal SD card of the camera as a fallback buffer.

- As opposed to storing the recordings on Flash devices with an MxFFS archive, the recordings are copied from the camera's ring buffer (RAM) directly to the file server ([NFS File Server](#) or [SMB/CIFS File Server](#), respectively).
- The SD card in the camera is only used to store a very limited amount of management information. Only if the server cannot be reached or the recordings cannot be written fast enough (i.e., if the server or the network connection fails), the data are buffered on the camera's SD card until the server is available again. The buffered recordings are then copied to the server. A loss of data only occurs if the archive cannot be reached before the storage space on the internal SD card is depleted. In this case, the oldest recordings on the Flash device since the file server failure will be deleted before the camera can copy them to the archive (due to the ring buffer strategy).
- Since this approach greatly reduces the write cycles on the SD card, its life span increases considerably.
- The archive itself consists of individual files of 2 GB, it can be considerably larger than the Flash device itself na dit main purpose is to permanently archive the recordings. The archive also works as a ring buffer, i.e., if the assigned storage space is depleted, the oldest recordings will be deleted to make room for new recordings.
- The recordings in an MxFFS archive on a file server can be accessed from MxManagementCenter (MxMC) either indirectly via the camera or directly from the file server.
- **During a file server failure, you can access the contents of the internal SD card of the camera. The recordings will be available for reading only after they have been copied to the archive.**

Warning

If you change the **Primary Target** from *SD Flash Card* (without MxFFS archiving) to *Buffered MxFFS Archive*, the existing recordings on the SD card will not be available any more! When changing a system that is already up and running, you should hence export the contents of the SD card **before** changing the storage method.

Configuration

In the **Storage Target** section, select *Buffered MxFFS Archive* as **Primary Target** and then one of the following entries as **MxFFS Archive Target**:

- *SMB/CIFS File Server*
- *NFS File Server*

To configure the options, please see the sections [Storage on SMB/CIFS File Servers – Configuring the Camera](#) or [Storage on NFS File Servers – Configuring the Camera](#), respectively.

Caution

The camera will automatically create a path name in the specified folder on the storage target, which is based on its **factory IP address** (dots are replaced by underscore characters). The path contains one subfolder named `fs_sd0_flash_card_0`, which contains the individual MxFFS archive files of 2 GB size with the audio/video data.

Make sure that the camera paths and their contents cannot be changed in any way by assigning corresponding rights on the storage folder.

Configure the corresponding parameters in the **MxFFS Archive Options** section.

Use the **File Server Test** to check the settings of the file server. Click on the **Start Test** button to test if the camera can properly access the file server.

Caution

- Make sure that you are setting one or more of the [Storage Limits](#) that are available for the selected storage targets. Do this to prevent the storage space for the selected storage target from running out, which would prompt the camera to stop storing recordings on this target.
- You should configure the integrated monitoring features of the camera and the corresponding messaging options to be able to take suitable measures if the camera detects a file server failure. To configure the monitoring options, open **Admin Menu > Storage > Storage Failure Detection**.
- If MxFFS archiving is activated, the live image of the camera shows the AS symbol (<buffer fill level> / <remaining time before data loss>). If the camera detects a file server failure, this symbol will turn red. The value on the left shows the current fill level of the SD card buffer with recordings since the file server failure. The value on the right shows the estimated remaining time until the oldest recordings since the file server failure will have been overwritten due to the ring buffer mechanism.

Click **Set** to save the changes. Next, click on **Close** to close the dialog and on **OK** to save the changes permanently. Reboot the camera (**Admin Menu > Reboot the camera**).

Return to this dialog and check if the external ring buffer works, as described in [Checking the Storage on the External File Server](#)!

Configuring the MxFFS Archive Options

Parameter

MxFFS Archive Size

Description

Set the storage space that the camera should use for the archive.

Caution

It is recommended that you set the archive size to at least twice the size of the storage capacity of the Flash device.

Parameter

Archive Timetable

Description

Select a [timetable](#) to control archiving based on a weekly schedule. Select the timetable in which you have specified the timeframes for archiving.

The timeframes only control when writing to the archive takes place. Reading from the archive is possible with both active or inactive archiving.

Parameter

Archive Retrieval

Description

When trying to retrieve recordings that are not present on the Flash medium any more, the camera can read the corresponding video data from the archive. Please note, however, that this creates additional network traffic, which may use up the entire bandwidth, even though archiving alone would be possible. Use this setting to control whether or not the camera should be allowed to read from the archive.

You will find helpful statics for MxFFS archiving in the **Archive Statistics** dialog.

Further Information Regarding Storage

Formatting Flash Devices for Storage Using MxFFS – Steps and Options

You can use formatting to prepare storage targets (**USB Stick/Flash SSD, External USB Harddisk, SD Flash Card**) that have not been used in a camera, for storing the camera's recordings. Likewise, you can use this function to securely erase storage media that are not used any more. This will make restoring the deleted data impossible (see **Secure deletion mode – slow** in the [Formatting the Storage Target](#) section below).

Warning

If you need to exchange a Flash device while MxFFS archiving is activated, make sure to follow the procedure described in [Exchanging Flash Devices With Activated MxFFS Archiving](#) to prevent the loss of data.

If you would also like to use the SD card for recording [MxAnalytics](#) data (not available on all camera models), you should proceed as described on the corresponding help page in the [MxAnalytics Data Storage](#) section.

You can leave this help page open during the entire process to properly follow the step-by-step instructions.

Formatting the Storage Target

- If recording has been activated on the device you would like to format, deactivate recording by selecting *Disabled* as **Primary Target**.
- Permanently store the settings (**Set**, then **Close** at the bottom of the dialog, confirm system prompt) and **reboot the camera**.
- Open the **Storage on External File Server / Flash Device** dialog again and click on **Format** in the line of the storage target you want to format.
- The **Formatter Wizard** dialog allows setting the size of the MxAnalytics partition (or you can use the proposed value).
- If you want to prevent misuse of the recorded data by reading the device on a computer, you should set a **Data Encryption Key**.

Caution

It is recommended to use **secure formatting** by activating the **Secure deletion mode (slow)** checkbox, even though this may take considerably more time (up to several hours), depending on the card type. This type of formatting will greatly increase the performance and reliability of the SD card upon first writing to the card. This is especially valid if the camera uses high data rates (2 MB/s or higher) to write to the SD card (based on the image size, image rate, JPEG quality, etc.).

- Click on **OK** and confirm the system prompt. The camera shows a progress bar (this may take a couple of minutes). Once the formatting has been completed, the camera shows a summary.
- Close the dialog and set the storage device you just formatted in the **Storage on External File Server / Flash Device** dialog as storage target.
- Permanently store the settings (**Set**, then **Close** at the bottom of the dialog, confirm system prompt) and **reboot the camera**.
- Open the **Storage on External File Server / Flash Device** dialog and check the status at the bottom of the **Storage on External File Server / Flash Device** section.

Setting the Storage Limits

The **Storage Limits** section contains the different types of limits that are available for the selected **primary target**. Defining sensible limits will prevent the storage space for the selected primary target from running out, which would prompt the camera to stop storing recordings on this target.

Caution

Make sure that all cameras combined do not use more than 90 % of the storage space on the file server. Hence, you should make sure that you are distributing the available storage space between the cameras that are storing on the target (i.e., by setting a sensible **Storage Size**).

- The options in the **Storage Target** section will change depending on the selected **Primary Target** and which **MxFFS Archive Target** has been chosen in the **Storage Target** section. You should definitely define limits, since they prevent errors (e.g., unintended recording stop) caused by full storage media.
- Changes to the external storage settings always require a **camera reboot** to take effect. Do not forget to permanently save the configuration: Click **Set** to save the changes, then click on **Close** to close the dialog.

Parameter

Time to Keep

Description

Deactivate the **Unlimited** option and enter the desired maximum values in one or more of the text fields.

If one of the defined values has been reached, the camera will automatically delete the oldest recordings (*ring buffer storage*).

Parameter

Storage Size

Description

Deactivate the **4TB Limit** option and enter the maximum storage size in the text field.

If the reserved storage space has been reached, the camera will automatically delete the oldest recordings (*ring buffer storage*).

Parameter

Reserve Storage

Description

If the **Storage Size** parameter has been set, the camera uses the reserve storage if the file server is running under high load and the camera cannot store the data as quickly as needed. In this case, the camera temporarily increases the storage size by the amount of the reserve storage to be able to transfer

the files as quickly as possible. Time-consuming operations are postponed (i.e. deleting old files). The camera will run these operations once the server load drops to normal levels again.

Parameter

Number of Sequences

Description

Deactivate the **Unlimited** option and enter the maximum number of video sequences to be stored in the text field.

If the defined number of sequences has been reached, the camera will automatically delete the oldest recordings (*ring buffer storage*).

External Logging (File Server Storage Only)

Activate the options in the **External Logging** section (only shown if you clicked the **More** button) to periodically copy the log files for external recording as well as the camera's [Web Server Logfile](#) and [System Messages](#) to the file server.

- **Event Storage:** Copies the *log file for event storage* to the directory of the file server used by the camera to store the images. You may also set a maximum size for this file (default is 128 kB).
- **Camera Logfiles:** Copies the *Web Server Logfile* and the *System Messages* to the same directory.

Testing the Storage on the External File Server

To test the camera storage on a file server, do the following:

- Make sure that you saved the camera configuration to the permanent storage after you had activated the external ring buffer and that you rebooted the camera afterwards.
- Open the **System Messages** of the camera and check the entries of the **STORAGE** service. If the camera was able to connect to the file server, you may see the following message:

```
connected to file server 192.168.x.x:/mxcam.
```

- Activate the storage on the camera and make sure that the camera stores recordings on the file server, e.g., by temporarily activating continuous recording.
- Check the contents of the storage folder on the file server:
 - When storing a folder/file structure, the camera should have created the following structure
<share>\<camera-factory-IP>\000\000, 001, ...
 - When storing an MxFFS archive, the camera should have created the file <share>\<camera-factory-IP>\fs_sd0_flash_card_0\MxBA_N_000_Block_0_to_512 on the file server, that is growing steadily (up to 2 GB max.).
- If the camera creates the proper files and folders, you can reset the settings for recording back to the previous values. If this is not the case, you should check the connection to the file server and then repeat the steps above.

In order to remedy errors that are occurring, you should activate the options in the [External Logging](#) section and check the **Event Storage Logfile** (*Logfile* link in the explanation of this parameter). (This link is only visible if storing to an external file server or Flash device has been set up successfully.)

You should also configure the [Storage Failure Detection](#) to use the messaging options of that dialog to alert you of problems with storing to file servers or Flash devices.

Event Logging

The **Event Logger** option controls whether or not the events are logged. The logger's data are stored on a ring buffer on a separate partition on the SD card. If the partition is not available, the data are stored in the camera's RAM and will be lost when rebooting the camera. Please monitor the [System Messages](#) for corresponding messages.

- If you want to use the event histogram of MxManagementCenter, make sure this option is activated.
- When formatting an SD card, the camera will automatically create the event logging partition. When updating the software of a camera that had not been able to use event logging, you will need to format the SD card in order to create this partition.

Storage on SMB/CIFS File Servers – Configuring the Server

The configuration steps may be different depending on the version of the Windows operating system.

1. Log onto the system as administrator user.
2. Create a new user and set a password (e.g., `mxcam`). The camera will use this user name later on to log onto the server.
3. Create a new directory with a name of your choice (e.g., `mxdata`).
4. Right-click the directory and select the **Share for > Extended Sharing** option from the context menu.
5. Click on **Extended Sharing**.
6. Activate the **Share this folder** option and assign a name for the share.
7. Click on **Access Rights** and add the account name you just created.
8. Change the access rights for this user by activating the **Full Control** option the **Allow** column in the lower field.
9. Close all open dialogs by clicking on **OK**.

This completes the configuration of the SMB/CIFS server.

Storage on NFS File Servers – Configuring the Server

The server configuration may vary for different distributions. Note that MOBOTIX **cannot** provide support for configuring the Linux/UNIX server.

1. Log onto the file server as **root** user.
2. Create a new directory (e.g., `mxdata`):
`mkdir /mxdata`
3. Change the owner and the user group for this directory:
`chown -R 65534:0 /mxdata`
4. Assign the required access rights for the directory:
`chmod 755 /mxdata`
5. Use the `ps aux | grep nfs` command to check if the NFS server is already running. If this is not the case, use the `/etc/init.d/nfsserver start` command to start the service, or install the service from scratch if it is not available.
6. Use the `rpcinfo -p` command to check if the `nfs`, `mountd` and `portmapper` services are already running. `nfs` and `mountd` are usually started by the NFS server, `portmapper` is started as a separate service. If `portmapper` is not running, you can start it using the `/etc/init.d/portmapper start` command.
7. Open the `/etc/exports` file in a text editor and add the following line:
`/mxdata <IP address>(rw,no_root_squash)`
8. To re-initialize the list of entries in `/etc/exports`, execute the `exportfs -a` command.
9. Next, restart the NFS server. Execute the `/etc/init.d/nfsserver restart` command.

This completes the configuration of the Linux/UNIX server.

Updates, Maintenance and Best Practices Regarding MxFFS Archives

Exchanging Flash Devices With Activated MxFFS Archiving

To prevent problems and the possible loss of data while MxFFS archiving is activated, you must follow the procedure below in the specified order when exchanging an SD card or another Flash device.

Warning

If the procedure below is not followed – especially when using **archiving on file servers**, you will risk losing all data that has been stored in the archive.

If you have activated the **Archive Timetable** parameter in the **Storage on External File Server / Flash Device** dialog, proceed as follows:

- Write down the selected **Archive Timetable** to activate the same option later on.
- Select the *Disabled* option and click on **Set** below.

Deactivate Recording and Synchronize MxFFS Archive

- Deactivate recording:
 - Open the **Recording** dialog.
 - In the **General Settings** section, write down the value of the **Arming** parameter.
 - For the **Arming** parameter, select the value *Off*.
 - Click on the **Set** button at the bottom of the dialog.
- The camera now finishes the synchronization process with the MxFFS archive.
Open the **Camera Status** dialog, search the **Archive Status** section and make sure that the **Blocks to sync** parameter has the value 0. Once this is the case, the archive has been synchronized successfully.

You may have to reload the dialog several times to refresh the value of the **Blocks to sync** parameter.

Formatting SD Card, Activating MxFFS Archiving and Recording

- Open the **Storage on External File Server / Flash Device** dialog and deactivate the recording on the device you want to format (if activated) by setting **Primary Target (Storage Target)** section) to *Disabled*.
- Permanently store the settings (**Set**, then **Close** at the bottom of the dialog, confirm system prompt).
- **Reboot** the camera.
- Remove the power supply of the camera and exchange the SD card or Flash device.
- Restore the power supply of the camera and open the **Storage on External File Server / Flash Device** dialog.
- Format the storage device as described in the [Formatting Flash Devices](#) section.
- In the **Storage on External File Server / Flash Device** dialog, set the storage device you just formatted as storage target.

If you had deactivated the **Archive Timetable** parameter before, set this parameter to its original value.

- Permanently store the settings (**Set**, then **Close** at the bottom of the dialog, confirm system prompt) and **reboot the camera**.
- Open the **Camera Status** dialog, search the **File Server / Flash Device** section and make sure that the **Sequences**, **Newest Sequence**, **Oldest Sequence**, **Current Usage** and **Maximum Size** parameters show the values of the archive. You may have to reload the dialog several times to refresh the values.
- Activate recording: Open the **Recording** dialog and in the **General Settings** section, set the value of the **Arming** parameter to the original value.
- Permanently store the settings (**Set**, then **Close** at the bottom of the dialog, confirm system prompt).

Measures to Take Upon a File Server Failure in Conjunction With MxFFS Archiving

Both storage methods using MxFFS archiving ([Storage on Flash Device With Additional MxFFS Archiving on File Server/USB Device](#) and [Storage in MxFFS Archive With SD Card as a Fallback Buffer](#)) are capable of

bridging a file server failure. In such a case, the recordings are stored on the SD card and are transferred to the archive later on, once the server is back online again.

To prevent loss of data and to ensure that archiving will resume without any errors later on, you should follow these steps if a file server failure occurs:

- Once you have been alerted that a file server failure has occurred (by the [File Server Checks](#)), you need to restore the availability of the file server before the SD card of the camera has been overwritten once or more often!
- Make sure that you check the camera connection to the file server once it is available again. To do so, open the **Camera Status** dialog, search the **Archive Status** section and check the values of the line **Blocks to sync. / Transferred / Lost**:
 - The first value (**Blocks to sync.**) should be 0.
 - The second value (**Transferred**) should increase steadily.
- If the values above do not show these values within 10 minutes, there is most likely a connection problem with the file server or an overload situation of the server or the network. It may even be that some cameras can store recordings on the file server, while others cannot.
 - In such a case, you should try to reboot the camera that has issues. At any rate, you should make sure that the power supply of the camera is not corrupted.
 - Next, you should again check the values mentioned above. If the values do not change as expected, deactivate the recording in **Setup Menu > Recording** to avoid further loss of data, then reboot the camera.
- If the values do change as desired, you can reactivate recording (if you had disabled it before).

Changing the Size of an MxFFS Archive

Warning

To prevent loss of data, make sure that the power supply of the camera is not disrupted while changing the size (e.g., for physically installing the camera)!

If you want to change the size of an MxFFS archive that is already in use, you should follow these steps to avoid archiving issues later on:

- Deactivate recording in **Setup Menu > Recording**.
- In the **Storage on External File Server / Flash Device** dialog, set the **MxFFS Archive Size** to the desired value.
- Store the current configuration and restart the camera (**Admin Menu > General Tasks > Reboot the Camera**).

Caution

Do not cut the power supply of the camera to force a camera reboot!

- Make sure that the archive is available and wait until all remaining transfers have been completed (live image text display **AS** must have a value of 0%).

- Make sure that the size of the archive has actually changed. To do so, search **Admin Menu > System Information > System Messages** for such an entry:

```
MxFFSEventStorage Archive was successfully resized.
From xxxx to xxx blocks. Querying for a modified head-cursor.
Old Archive head at xxx, new archive head relocated to xxx.
```

Check the **Maximum Size** value in **Admin Menu > System Information > Camera Status**.

- Only reactivate recording if the resizing has been completed successfully.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

 **In order to enable these settings, you need to [store the configuration](#) and reboot the camera!**

Archive Statistics

The charts of the **Archive Statistics** dialog provide a quick overview of the current MxFFS archive status (see also [Storage on External File Server / Flash Device](#)).

Displayed Charts

Parameter

Transfer Statistics

Parameter

Bandwidth Histogram: Connection Speed

Description

Connection speed as measured during individual data transfers. Due to buffering, this chart can show values that are higher than the actual available network bandwidth.

Parameter

Bandwidth Distribution

Description

Distribution of the bandwidth that is available for transfers during the day (i.e., the last 24 hours).

Parameter

Archiving History

Parameter

Maximum Queue Fill Level

Description

Distribution of the MxFFS data blocks waiting for transfer during the day (i.e., the last 24 hours).

- Permanently high values in this chart indicate that the network is running at capacity. You should take measures to reduce the network load (more powerful hardware, segmenting the network into smaller parts, etc.).
- Peaks in this chart indicate that the camera was unable to reach the server.

Parameter

Enqueued 4MB blocks

Description

Number of MxFFS data blocks waiting for transfer during the day (i.e., the last 24 hours).

- Permanently high values in this chart indicate that the network is running at capacity. You should take measures to reduce the network load (more powerful hardware, segmenting the network into smaller parts, etc.).
- Peaks in this chart indicate that the camera was unable to reach the server.

Parameter

Transferred 4MB blocks

Description

Number of MxFFS data blocks transferred during the day (i.e., the last 24 hours).

The number of blocks in this chart is an indicator for the volume of transferred data (number x 4MB) as well as the attained data rate.

Parameter

Lost 4MB blocks

Description

Number of lost MxFFS data blocks during the day (i.e., the last 24 hours).

Parameter

Archiving Reliability

Parameter

Archive Connection Outages

Description

Pattern of the detected archive connection failures in the course of the day since resetting the archive statistics.

Frequent or evenly distributed connection failures indicate that the network is running at capacity. You should take measures to reduce the network load (more powerful hardware, segmenting the network into smaller parts, etc.).

Parameter

Archive Verification Errors

Description

Pattern of the errors detected when verifying the transferred archive data in the course of the day since resetting the archive statistics.

Parameter

Block Retransmissions

Description

Pattern of retransmissions of MxFFS data blocks in the course of the day since resetting the archive statistics.

Parameter

Buffered Transfers

Parameter

Direct Transfers into Archive

Description

Percentage of MxFFS blocks written directly into the archive, i.e., there was no need to *buffer* these blocks on the SD card.

- This value should be somewhere short of 100 % (it is impossible to reach 100 %; see note in section [Target Switches](#)).
- Values that are considerably lower than 100 % in this chart indicate that the network is running at capacity. You should take measures to reduce the network load (more powerful hardware, segmenting the network into smaller parts, etc.).

Parameter

Target Switches

Description

Number of instances in which the camera had to switch between direct archive storage and buffering on the SD card.

Note that the camera switches back and forth between direct archive storage and buffering on the SD card a couple of times per hour for administrative purposes.

Parameter

Internal Storage Statistics

Parameter

Internal Transfer Bandwidth Histogram

Description

Allows assessing the speed with which the recorder stores blocks in the internal buffers.

Parameter

Internally Transferred 4MB Blocks

Description

Number of blocks stored in the course of the day (or since rebooting the camera).

If a chart shows time-of-day values, the current interval is highlighted in yellow.

Storage Failure Detection

Use the **Storage Failure Detection** dialog to configure tests that constantly monitor the external [storage target](#) (file server or Flash device) that the camera is using as an external ring buffer. The camera will actively monitor its storage target and reports problems with video recording using the notification methods specified in this dialog.

Before you configure the storage failure detection, make sure that you have properly configured the options in the **Storage on External File Server / Flash Device** dialog.

Configuring the Tests

You can choose to run different test methods. The camera can check if the file server can be reached on the network. It can also test if all event images have been transferred properly to the storage target or if events have been lost. Depending on the selected sensitivity, the tests can be executed with different strictness.

Description of Parameters

Parameter

Check

Description

This option **enables** or **disables** the camera's storage failure detection.

If storage failure detection has been activated for the first time after the last reboot, make sure you restart the camera!

Parameter

Tests

Description

Select the tests you would like to perform.

- **Ping test** checks if a file server responds to network packets (do not use this option if you are recording to Flash media).
- **Check transfer** checks if it is possible to write data to the storage target.
- **Lost events** checks if the most recent events have been written properly to the storage target.

If the storage failure detection is running, the dialog shows a link to the log file. The log file contains messages (error and success messages) and measurement values (transfer buffer usage, number of the last event stored internally and transferred to the storage target).

Rebooting the camera will delete the log file contents.

Parameter

Sensitivity

Description

Select the sensitivity of the tests. Selecting *High* will use stricter test criteria and will notify you early if problems occur. Selecting *Low* will use less strict test settings and notification will be delayed. If **Sensitivity** has been set to *High*, the camera triggers an alert if the remaining storage capacity has dropped to 45 minutes. Selecting *Low* will only trigger an alert if the remaining storage capacity has reached 15 minutes.

Add the `fsck_archbuftimelimit=n` configuration parameter in the `camerachecks` section of the [configuration file](#) in order to set a different remaining storage capacity (in *n* minutes).

Parameter

Startup Delay

Description

Activate this option and select a value to delay the start of storage failure detection after a camera reboot. This allows adjusting a nightly camera reboot to a reboot of a NAS system used for recording, for example.

Notification

In order to notify you of any problems that the file server may be having, you can let the camera transfer an image to an FTP server or have it send the error message using an email or an IP Notify message. If VoIP telephony has been set up for this camera, it can also call you on the phone to let you know that an error condition has been detected. The camera itself can use its speaker to play an audio message or it can activate its LEDs to alert you of an error condition.

In addition, some notification methods allow selecting how often the notification should be sent.

Description of Parameters

Parameter

Camera LEDs

Description

The camera can signal an error condition by flashing the [LEDs on the camera front](#). Select how the LEDs should blink: *Blink one LED* or *Flash all LEDs*.

Parameter

Audio Message

Description

Select the **Audio Message** that should be played back on the camera speaker.

Parameter

FTP

Description

Select the **FTP Profile** that should be used to transfer images in case of an error condition.

The FTP server and the external file server of the camera should not be on the same computer, if possible.

Parameter

E-Mail

Description

Select the **Email Profile** that should be used for sending the error messages.

In order to obtain more information on the error condition, set up the email profile to append an image or the system messages.

Parameter

Phone Call

Description

If [VoIP](#) has been configured, you can select one of the profiles defined in the **Phone Profiles** dialog and the camera will call you in case of an error condition.

Parameter

Network Message

Description

Select the **IP Notify Profile** that should be used to send error messages in case an error condition has been detected.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Logos and Image Profiles

The dialogs in this section provide the methods to integrate logos into the camera images and to define different image profiles. Using image profiles, you can send different-size images via e-mail and FTP, for example.

Managing Image Files

Open the **Manage Image Files** dialog to define the image files for displaying logos in the camera. You can upload image files to the camera and store them in its permanent storage. Alternatively, the camera can automatically download an image file from a website (using the *URL* address).

- *Portable Network Graphics* (file extension `.png`)
- *Windows bitmaps* (file extension `.bmp`)

If you plan to display portions of the graphic transparently, it is recommended to use an indexed bitmap file with 256 colors or a PNG graphic with alpha channel and transparency.

Once you have loaded the desired image files in your camera or made available via URL, these images can be displayed as logo or watermark in the camera image. Open the **Logo Profiles** dialog.

Upload Image File

- Select a logo file for uploading to the camera.

.png

The *Portable Network Graphics* format has been designed for use in the World Wide Web. It combines the advantages of GIF (compression without losses) and JPEG (high color depth). On top of this, it uses a patent-free and license-free compression algorithm.

PNG images can contain a transparent color as paletted image, if they are stored as greyscale or RGB images, they can contain an alpha channel, which defines for each pixel how much image background is visible.

.bmp

The *Bitmap* format is the standard format for graphic files under Microsoft Windows and is used for storing bitmap graphics without any loss. This format has a very simple structure, but it requires a lot of storage capacity.

The bitmap format is restricted in that it does not contain any information regarding transparency. Should you still want to save an image with transparent areas as bitmap, this image needs to be available as *indexed 256 color bitmap*. Then, you can select a color in this dialog that you want to be displayed transparently.

.tar

This format is no image file but an archive file saved by a camera (**Tape Archive**), which can contain several image files. You can use this format for backing up the files and for exchanging image files between cameras.

- In case of **Existing Image Files**, select whether you would like to keep or overwrite existing files. If you select *Keep*, a new file will be created by adding a number to the file name.
- Click on **Browse** to select the file on to your computer you would like to upload to the camera. To start the transfer, click on **Upload**.

- The **Manage Image Files** dialog displays the size and the remaining space for all user graphics in the **Stored User Images** section. Hence, a user graphic that is to be loaded into the camera cannot be larger than the free storage space shown in kByte in the totals line behind **Free** and in the explanation text for **Image File**. If user graphics have been saved, the free space is reduced accordingly.
- User graphics should have a color depth of no more than 8 bits.
- In order to create an indexed bitmap graphic with *transparent areas* it may help to fill the transparent images areas with a color that is *not* used in the rest of the image.
- For a *free-of-charge tool for creating and editing graphic files* in the formats mentioned above under Windows, Unix, Linux and Mac OS X environments, go to www.gimp.org. Apart from several conversion possibilities, Gimp also allows you to find the index for the color that you want to display transparently.
- To display the *content of a .tar file*, you can use e.g. WinZip, Stuffit or Power-Archiver.

View system images

The camera software already contains some image files. In order to view these system images, select a name. Click on **Display** to display the image in a separate preview window.

Stored User Images

This list contains the image files you have stored in the camera's permanent storage.

- Click on a graphic file name to display this image in a separate preview window.
- Click on **Delete** to delete this image file from the list of user images.

Displayed Information

The name, size and format for every image file are displayed in this list.

PNG images with alpha channel are marked in the **Transparency** by an *alpha* entry, for 256 color bitmaps, an additional selection field is displayed where you can set the color you would like to display transparently.

- Select the index of the color you would like to set to transparent.
- Click on the **Set** button.

The last line of this section displays information on the amount of storage space that the image files are using. Also, the remaining storage capacity for user data is displayed.

Download Image Files

This section is only available if you already have stored at least one image file in the camera's permanent storage.

You can store one or several image files as an archive file (`.tar`) on your local computer. In order to select several files, keep the *Ctrl* key pressed and select the desired files with your mouse.

You can either keep such an archive for backup purposes or upload it to other cameras.

Images Loaded From URL

The camera can be configured to download images from a website (*URL*) once after it has been rebooted or in predefined intervals. These files are saved in temporary storage and will thus only be available until the camera is rebooted.

- Enter a name for the image. Only use letters, digits, dot, hyphen and underscore.
- Enter the image's **URL**, e.g. `http://www.mycompany.com/logo-small.png`

The camera needs to be installed and configured in a way that the URL can be accessed via an **Ethernet** connection.

- Under **Reload page**, select either *Off* in order to load the files only once after the camera has been rebooted, or define the duration after which you want the image to be reloaded.
- If access to the URL is protected by a **user name** and **password**, you need to enter these data in the respective fields.

- For each image loaded from a URL, the following options are available:

Inactive

Deactivates loading of the image. The settings remain stored in the configuration.

Deleting

Deletes this entry from the configuration.

- Click on the **Set** button to start loading the first image file and to create another line.

After you have clicked on the **Set** button, the camera tries to load the configured images. You can display the current status of each image that has not been set to **Inactive** by clicking on this icon:  For this purpose, the transfer log file is displayed in a separate window. If successful, a link is displayed in the status window, which you can use to open a preview window with the image as is stored on the camera.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Logo Profiles

The **Logo Profile** dialog is used to extend the image files that have been uploaded in the [Manage Image Files](#) dialog to a *logo profile* with the corresponding display options.

A logo profile is the combination of an image file and its positioning information in the camera image.

Logo Display

Select the desired option to either *activate* or *deactivate* the logo display in the camera image.

Profiles & Options

- Click on the **More** button at the bottom of the dialog to display all options for all profiles.
- The maximum number of logo profiles is 20.
- You can show up to five logos in the camera image at the same time.

Set the following parameters in the Image Profiles dialog for each profile:

Parameter

Logo *n*

Description

Enter a unique logo name. The camera will use this name for error messages.
Valid characters are letters, digits, dot, comma and underscore.

Parameter

Enable Logo

Description

Using this switch, you can temporarily hide individual logos. Hidden logos remain stored and can be shown again later on.

Parameter

Time Table

Description

To show a logo based on a weekly schedule, you can select a [Time Table](#).

Parameter

Live Image Logo

Description

Using this option, you define whether or not the logo is displayed in the live image.

Parameter

Image Link Logo

Description

Specify, whether or not the logo can be used for [custom image formats](#). If you choose the *force* setting, the logo is displayed in every image and cannot be removed.

Parameter

Logo Opacity

Description

Use this option to define how visible the logo is displayed within the camera image. Specifying the opacity value lower than 100% results in the actual camera image to shine through. If you would like to obtain a watermark effect, try setting the opacity to 20 to 30%.

Parameter

Image List

Description

The image list contains all available [Image Files](#). You may use one or multiple image files for a logo. When selecting several image files, they are displayed one at a time (rotated) at short intervals.

Parameter

Rotation Interval

Description

Specify the interval for displaying the image files from the image list one at a time.

Parameter

Logo Position

Description

The logo image files can be positioned in the camera image in two different ways. For each possibility, the alignment and offset information is interpreted differently.

- *Relative*: The logo is positioned in the camera image relative to its alignment, the image size is not relevant.
- *Frame*: The logo is drawn as frame around the entire camera image as described under [Creating Frames](#) later in this topic.

Positioning: Relative

Positioning: Frame

X/Y Alignment

The logo is aligned relative to the camera image.

Ignored

X/Y Offset

Border offset from the aligned image border in dots.

Size of the corner portions of the frame in dots. For additional information on this topic, see the [Creating Frames](#) help page.

Parameter

Restrict Width/Height

Description

Highlight the allowed camera resolutions that may use this logo. The logo is only displayed in the image if it has been approved for this resolution.

These restrictions are compared to the actual size of the generated image. When using image rotation, the *Panorama* display mode or any other dual image mode, this is not the size set beforehand!

Adding a Profile

Click on the **Add new profile** button at the bottom of the dialog to create a new profile. Overtyping the proposed name with a name that describes the profile as good as possible; this name is used to identify the profile in other dialogs (e.g. the [detail view of the action groups](#)).

Deleting Profiles

In order to delete a profile, activate the **Delete** checkbox at the top of the profile. The profile will be deleted as soon as you click on **Set** at the bottom of the dialog.

Creating Frames

Using an image file, you can draw a frame in the camera image. Make sure Positioning is set to *Frame*.

- The image files should be square as they will be divided into 9 frame pieces: 4 corner pieces, 4 edge

pieces and one unused center piece.

- The corner pieces should be identical in size. The size is set by the *X/Y Offset* menu parameters.
- The edge pieces are repeated until the entire image width and height is filled:

Corner top/left

Edge piece top

Corner top/right

Edge piece left

Unused

Edge piece right

Corner bottom/left

Edge bottom

Corner bottom/right

It is recommended to create an image file with dimensions that can easily be divided by three, e.g. 90 x 90 pixels.

Example 1. Using a Frame File

The sample file shown here fulfills all prerequisites to be used as a frame file:

- Format: PNG
- Size: 90 x 90 pixels
- Shape: Square



To configure this image file as frame:

- Download this file to your computer (right-click on the file, then click on **Save Image as...**).
- Open the **Manage Image Files** dialog and transfer this file to your camera.
- In this dialog, click on the **Set** button.
- Open the **Logo Profiles** dialog and click on the **Add new profile** button at the end of this dialog.
- In the new profile, set the **Display Logo** parameter to *show*.

- In the **Image List** field, select the *example_frame* entry.
- Set the **Positioning** parameter to *Frame*.
- Enter a value of 35 for both the **X Offset** and the **Y Offset** parameters.
- Click on the **Set** button and check how the frame is displayed in the camera's **Live Image**.

Adapt the frame's **Opacity** as desired.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Image Profiles

Open the **Image Profiles** dialog to create profiles that define customized image formats. These image profiles can be used in the [FTP Profiles](#) and the [Email Profiles](#) for transferring images different from the current live image settings.

Global Options

Set the global options that control how camera images can be requested using the HTTP API:

Parameter

CGI Access

Description

Disabling this parameter will prevent access to the customized image format using the HTTP API as described in [CGI Parameters of image.jpg](#).

Parameter

Custom Formats

Description

If this parameter is enabled, customized image formats can be requested using the HTTP API, if it is disabled, only the image profiles defined in this dialog can be used.

Parameter

Default Parameter

Description

These parameters will be used as default values when initializing.

Parameter

Best Quality

Description

If this parameter is enabled, images are generated in best possible quality. Note that this can influence the frame rate of the live stream for a couple of seconds. Activate this parameter when using high-resolution images.

Profiles & Options

Click on the **More** button at the bottom of the dialog to display all options for all profiles.

For each profile, set the following parameters in the Image Profiles dialog:

Parameter

Image Profile *n*

Description

Enter a unique image profile name. This name will be displayed in the **FTP Profiles** and **Email Profiles** dialogs in the **Image Profile** field.

Valid characters are letters, digits, dot, comma and underscore.

Parameter

Camera Selection

Description

Select the image sensor you would like to use. Set the image sensor to *Right*, *Left*, *Both* and *Live Image*.

Live Image always uses the current live image, as it is displayed on the Live screen of the camera. The *Auto* option is not available on Day&Night models; select *Live Image* if you need this feature.

Parameter

Image Size

Description

Sets the image format.

Parameter

Display Mode

Description

Use this parameter to control what the camera shows:

Full Image

Shows the original (full) image of the sensor (distortion is not corrected for Fisheye lenses).

Picture in Picture

Shows a small preview image of the second image sensor.

Picture in Zoom

Displays a small overview image in the zoomed image.

Lens Correction

Shows the corrected image from a non-hemispheric lens in 4:3 format.

Normal

Shows the corrected image from a hemispheric lens in 4:3 format.

Surround

Displays four images with independent views. This mode is not available if both image sensors are used side-by-side!

Panorama

Shows a panorama image in 8-to-3 format.

Double Panorama

Shows two panorama images in 8-to-3 format (one on top of the other).

Panorama/Focus

Shows one panorama image in 8-to-3 format and two normal 4-to-3 images below.

Note that - depending on the camera model - some of these features may not be available!

Parameter

Screen

Description

Select the stored view you would like to use. A view is the combination of a direction and a zoom factor. When using display modes with several views, all dependent views are loaded automatically (e.g., the *Surround* display modes loads the selected and the three subsequent views).

Parameter

JPEG Quality

Description

Select the desired image quality. The higher the image quality, the larger the transferred image file will be. The recommended setting is 60%.

Parameter

Mirroring

Description

Specify whether the image will be mirrored in horizontal, vertical or in both directions.

Parameter

Rotation

Description

Select the rotation of the image. The rotation can be set in steps of 90 degrees.

Parameter

Sharpness

Description

Changes the image sharpness.

Parameter

Text Display

Description

Set the display of text in the image to *Off*, *On* or *Date & time*. Set the parameters for **Text background color** and **Opacity of background color** to the desired values.

Parameter

Text Color

Description

Sets the color for text that is displayed in the image.

Parameter

Background Color

Description

Sets the text background color.

Parameter

Background Opacity

Description

Sets the opacity of the text background color.

Parameter

Date and Time

Description

Sets the desired time format.

Parameter

Comment

Description

Any text you would to show in the image can also contain [placeholders](#) and [variables](#).

Parameter

Text Font Size

Description

Sets the size of the text that is displayed in the image.

Parameter

Logo Profile

Description

Select one or more [logos](#) to display in every transferred image from this list box. Note that some of these logos may be deactivated or not available for the selected resolution of this custom format. Logos that are forced for this resolution in the **Logo Profiles** dialog cannot be disabled here. They will *always* be displayed in the image.

Adding a Profile

Click on the **Add new profile** button at the bottom of the dialog to create a new profile. Overtyping the proposed name with a name that describes the profile as good as possible; this name is used to identify the profile in other dialogs (e.g. the [detail view of the action groups](#)).

Deleting Profiles

In order to delete a profile, activate the **Delete** checkbox at the top of the profile. The profile will be deleted as soon as you click on **Set** at the bottom of the dialog.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Transfer Profiles

The profiles defined in these dialogs can be used in the [Action Control](#) to transfer different files on different FTP servers or to send specific network messages to other network devices, for example.

FTP Profiles

Using the **FTP Profiles** dialog, you can create and manage profiles for automatically uploading images to FTP servers.

You need to create at least one profile that you can select in the **Time Tasks** or in the detail view of the **Action Group Overview** dialog for transferring images via FTP.

What is FTP?

FTP (**F**ile **T**ransfer **P**rotocol) is an Internet protocol used for exchanging files between computers. This protocol is used frequently for uploading modified HTML pages or images to the server of an Internet provider.

Using the MOBOTIX Camera for FTP Transfers

The MOBOTIX camera can transfer images via FTP to a server, so that your website always shows an up-to-date image, for example. In this setting, the camera functions as sender (FTP client) while the remote computer acts as the receiver (FTP server).

You may define one or multiple FTP profiles. Every FTP profile contains the entire set of FTP transfer information. The transfer can be triggered either by a task defined in the **Time Tasks** dialog or by an event defined in the detail view of the **Action Group Overview** dialog.

The MOBOTIX camera supports FTPS (FTP over TLS). FTPS is used in the so-called explicit mode, i.e., as soon as the FTP server also supports the FTPS in explicit mode, the connection is automatically encrypted using TLS (Transport Layer Security).

Global Options and Profile Options

This dialog contains *global options* that can be used in all profiles and *profile options* only valid for the respective profile.

It is recommended to use the global options for entering frequently used parameters (e.g. **FTP Server**, **User Name**, **Password** and **Connection**). In the profiles using the global FTP server, you can leave the respective fields empty.

Streaming FTP

Select one of the profiles defined in the **Profiles & Options** section to be used in **Streaming FTP** mode. While regular FTP transfers use the complete FTP transfer procedure with the FTP server (login, change to the directory, transfer the file, logoff), this transfer mode will connect only once to the FTP server. The camera then tries to keep open the connection until all file transfers have been completed and logs off only after that. If the update interval has been set to *Fastest*, the file transfers are started as quickly as possible, i.e. the next file transfer is started immediately after the previous transfer has been completed.

- If you have created a new FTP profile (**Add new profile** button at the bottom of the dialog), make sure that you click on the **Set** button before trying to select the new profile in the **FTP Profile** list.
- FTPS cannot be used for FTP streaming, i.e., data transmission is always unencrypted.

Profiles & Options

- Click on the **More** button at the bottom of the dialog to display all options for all profiles.
- The first line below the profile name shows the **Current Destination** file. Once you have made the desired changes, click on the **Set** button in the lower part of the dialog to update the profile entry.

For each profile, set the following parameters in the FTP Profiles dialog:

Parameter

FTP Profile *n*

Description

Enter a unique profile name.

You can select the stored profiles in the **Time Tasks** and in the detail view of the **Action Group Overview** dialogs, in order to perform time or event-controlled file transfers.

Parameter

Current Destination

Description

Here, the camera displays the destination file that is created using the current values in the fields **Directory Name**, **File Name** and **Event Directory**.

If you have modified any of these fields, you need to click on the **Set** button at the bottom of the dialog to update the current destination file.

Parameter

Directory Name

Description

Enter the FTP server directory name where you want the images to be stored.

You may use any name that is valid for your FTP server and that is accessible for you. If the specified directory does not yet exist, it will be created during the FTP transfer. If you are using [Variables](#) (this is the factory default), the directories are created using the corresponding names.

If you leave this field empty, the images are stored directly at the root level ("/") of the FTP server.

Make sure that the user you entered has the necessary access rights for storing files and for creating directories.

Do *not* enter a slash ("/") before the directory name!

Parameter

File Name

Description

Enter the file name (e.g. `my_image.jpg`) for the stored image.

You may use any name that is valid for your FTP server. If you are using [Variables](#) (this is the factory default), the files are created using the corresponding names.

Parameter

File Type

Description

Select the desired type of data you would like to transfer:

- [Image from image profile](#): Transfers an image according to a profile defined in the **Image Profiles** dialog.
- [Video Clip](#): Transfers image data as MxPEG clip with audio or JPEG files.

- System Messages: Transfer all system messages collected by the camera during the specified period of time.
- Web Server Log: Sends the log file of the web server.
- Text Message: Sends the specified text message.

Parameter

File Format: *Image from image profile*

Description

For every FTP profile, you can use a specific image format that is independent of the image format currently displayed by the camera. These formats are saved in the camera as [image profiles](#).

Select one of the image profiles defined in the **Image Profiles** dialog.

If **MxPEG has been activated in the camera**, the frame rate will be reduced for ten seconds if an image is pulled from the camera using one of the [image profiles](#).

Parameter

File Format: *MxPEG or JPEG clip*

Description

Select the file format of the image files that will be sent:

- *MxPEG Clip file*: Transfers the image data as MxPEG clips with audio.
- *Single JPEG file(s)*: Transmits the image data as single JPEG files.

Set the desired **Clip Frame Rate** and the time to include before and after the event(**Time Before** and **Time After**).

The frame rate set in these boxes depends on a number of factors (e.g. the processor load at the time of the event) and may not reach the set frame rate.

In particular, using the **Playback has Priority** setting in the **Setup Menu > General Image Settings** dialog can reduce the pre-alarm frame rate to 2 fps.

Parameter

Temporary Name

Description

If this option is active, the image is stored in a temporary file during FTP transfer. Once it has been transferred completely, the image will be renamed.

Activate this option to prevent visitors from seeing incomplete images, empty frames or error messages if the image transfer has not been completed.

In order to create a unique file name, this name is composed of the serial number of the camera (red) and the profile number (blue).

Example:

`mx0108e702`

Some FTP servers such as Microsoft *Internet Information Services* (IIS) do not allow renaming a file to an existing one. Make sure that you use the *Enable, delete before rename* option in this case.

Parameter

Event Directory

Description

Activate this option if you would like to create an individual subdirectory for every event and its pre- and post-alarm images.

Parameter

FTP Server

Description

Enter the IP address or the name of the FTP server (recipient). Examples:

IP Address:

`123,123,123,123`

Computer Name:

`ftp.myftpserver.com`

If you would like to use a symbolic name, make sure that at least one DNS server has been specified in the **Ethernet Interface** dialog so that the camera can obtain an IP address for this server.

Parameter

User Name

Description

Enter the user name for logging on to the FTP server.

You will be assigned a user name either by your Internet provider or by your system administrator.

Parameter

Password

Description

Enter the password for logging on to the FTP server.

You will be assigned a password either by your Internet provider or by your system administrator.

Parameter

Connection

Description

Should you not want to use the global default settings in a profile, you can select *Active FTP* (if a fire-wall or a router is located between the camera and the FTP server) or *Passive FTP* here.

If you are not sure which setting is supported by your FTP server, do not change this setting.

Testing Profiles

If you have created or modified one or more profiles, you should test the profiles (after you have closed the dialog using the **Set** and **Close** buttons and you have stored the configuration permanently). Open the **Test Current Network Configuration** dialog for testing. Click on the **Transfer** button behind the corresponding profile and monitor the output on the **Network Test Log** window. For additional information on this topic, please see the [Test Network Current Configuration](#) help page.

Adding a Profile

Click on the **Add new profile** button at the bottom of the dialog to create a new profile. Overtyping the proposed name with a name that describes the profile as good as possible; this name is used to identify the profile in other dialogs (e.g. the [detail view of the action groups](#)).

Deleting Profiles

In order to delete a profile, activate the **Delete** checkbox at the top of the profile. The profile will be deleted as soon as you click on **Set** at the bottom of the dialog.

Saving Created Profiles

Click on the **Set** button to check the created profiles. If a profile is faulty or entries are missing, you will be prompted to correct or complete your entries for this profile. If no errors have been detected, the profile is stored *temporarily*.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

- Any newly created or modified profile is saved *permanently* only when the entire camera configuration is stored.
- In order to activate the newly created or modified FTP profiles, you do *not* have to reboot the camera.

Variables and Placeholders for Directory and File Names

In order to create unique directory or file names, you can use [variables](#) or [placeholders](#). Using variables and placeholders is helpful for creating e.g. a daily history.

The variables listed in the following are only shown as an example. Read the [Variables](#) and [Placeholders](#) help pages for more information on dynamic texts.

Variable

`$ (TEXT.FTPDIR)`

Description

MOBOTIX pre-defined directory

The placeholder is replaced by a unique directory structure following the pattern below:

`cameraname/YYYY/MM/DD/hh/`

Camera Name

The **computer name** of the camera as defined in the **Ethernet Interface** dialog or assigned via DHCP.

YYYY

Year, four digits

MM

Month, two digits with leading zero

TT

Day, two digits with leading zero

hh

Hour, two digits with leading zero

Variable

`$(TEXT.FTPFILE)`

Description

MOBOTIX pre-defined file name

The placeholder is replaced by a unique file name following the pattern below:

`mYYMMDDhhmmsmmmm`

m

The letter "m"

YY

Year, two digits with leading zero

MM

Month, two digits with leading zero

TT

Day, two digits with leading zero

hh

Hour, two digits with leading zero

mm

Minute, two digits with leading zero

ss

Second, two digits with leading zero

mmm

Milliseconds, three digits with leading zeros

Remember to add the `.jpg` file name extension so that the camera generates a valid file name.

`$(TEXT.FTPFILE).jpg`.

- Make sure [placeholders](#) and [variables](#) are typed correctly.
- Note that [placeholders](#) are case-sensitive, but [variables](#) are *not*.
- Click on the **Set** button and compare the results after **Current Destination** of the FTP profile with the version you envisioned.

Additional Possibilities for Creating Dynamic Directory and File Names

Apart from the placeholders listed above, you can also use these [variables](#).

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

E-Mail Profiles

Open the **Email Profiles** dialog to create and manage profiles for automatically sending images in emails.

You need to create at least one profile that you can select in the **Time Tasks** dialog or in the detail view of the **Action Group Overview** for sending images via email.

Using the MOBOTIX Camera for Sending Emails

The MOBOTIX camera can send images via email to recipients to report e.g. unauthorized access to a specific area.

You may define one or multiple email profiles. Every email profile contains all the information required to send emails to one address. The transfer can be triggered either by a task defined in the **Time Tasks** dialog or by an event defined in the detail view of the **Action Group Overview** dialog.

You can enter any text and use predefined [variables](#), as described in [Examples for Dynamic Text in Subject Lines](#).

Global Options and Profile Options

This dialog contains *global options* that can be used in all profiles and *profile options* only valid for the respective profile.

It is recommended to use the global options for entering frequently-used parameters (e.g. **SMTP Server**, **Secure Connection**, **Authentication Method**, **User Name** and **Password**). Leave the corresponding fields empty in the profiles in which you would like to use the global values.

Profiles & Options

Click on the **More** button at the bottom of the dialog to display all options for all profiles.

Set the following parameters for each profile in the **Email Profiles** dialog:

Option

Mail Profile n

Description

Enter a unique profile name.

You can select the stored profiles in the **Time Tasks** and in the detail view of the **Action Group Overview** dialogs, in order to send emails time- or event-controlled, respectively.

Option

Receiver Address

Description

Enter the recipient's address to which the email will be sent.

Example:myname@myaddress.com

Option

Sender Address

Description

Enter the sender's (valid!) address. Otherwise, the email cannot be sent.

Example:myname@mycompany.com

Option

Reply Address

Description

If an error occurs, the email will be sent to this address. Normally, you would enter the address of either your administrator or a camera user.

Option

Subject

Description

This text will be displayed in the subject line of the email. For some examples of how this option can be used, see the [Examples for Dynamic Text in Subject Lines](#) help page.

Option

Body Text

Description

This text will be displayed in the text area for the email. You can also use dynamic text containing [Variables](#) and [Placeholders](#).

Option

Attachment

Description

Select the desired type of data you would like to transfer:

- *No attachment*: No data are attached to the email.
- **Image from image profile**: Transfers an image according to a profile defined in the **Image Profiles** dialog.
- **MxPEG or JPEG clip**: Transfers image data as MxPEG clip with audio or JPEG files.
- *Image information (JPEG comment)*: Transmits the image information of the current live image as it is written into the header of the JPEG image.
- **System Messages**: Transmits the system messages of the sending camera.
- *Web Server Log*: Transfers the **Web Server Logfile** of the camera.
- **Counting Corridor Report**: Transfers a counting corridor report according to a profile defined in the **Counting Corridor Report Profiles** dialog.
- **Heatmap Report**: Transfers a heatmap report according to a profile defined in the **Heatmap Report Profiles** dialog.

Option

Attachment: Image

Description

For every FTP profile, you can use a specific image format that is independent of the image format currently displayed by the camera. These formats are saved in the camera as **image profiles**.

Select one of the image profiles defined in the **Image Profiles** dialog.

If **MxPEG has been activated in the camera**, the frame rate will be reduced for ten seconds if an image is pulled from the camera using one of the **image profiles**.

Option

Attachment: Video clip

Description

Select the file format of the image files that will be sent:

- *MxPEG Clip file*: Transfers the image data as MxPEG clips with audio.
- *Single JPEG file(s)*: Transmits the image data as single JPEG files.

Set the desired **Clip Frame Rate** and the time to include before and after the event(**Time Before** and **Time After**).

The frame rate set in these boxes depends on a number of factors (e.g. the processor load at the time of the event) and may not reach the set frame rate.

In particular, using the **Playback has Priority** setting in the **Setup Menu > General Image Settings** dialog can reduce the pre-alarm frame rate to 2 fps.

Option

Attachment:*System Messages*

Description

Select the **System Message Scope** to include the desired range of system messages.

Option

Attachment:*Counting Corridor Report, Heatmap Report*

Description

Select the counting corridor or heatmap report profile in the **Statistics Export Profile** dropdown that you would like to use for exporting the attachment.

Option

Secure Connection

Description

The following types of encrypted connections are supported:

- *Never*
- *STARTTLS*: The camera uses an unencrypted connection to contact the SMTP server. If the server supports STARTTLS, the connection is automatically re-established as an encrypted connection. The default port is 25.
- *SSL/TLS*: The camera uses an encrypted connection to contact the SMTP server. The default port is 465.

Option

Authentication Method

Description

The following possibilities for authentication are supported:

- *No authentication*
- *SMTP login*: The camera uses this user name and password to log onto the SMTP server.
- *POP before SMTP*: Before contacting the SMTP server, the camera uses this user name and password to log onto the POP3 server.

Option

SMTP Server

Description

IP address or name of the email server. Your Internet provider or administrator will provide this information.

Make sure that the following prerequisites are fulfilled:

- The **Ethernet Interface** and the **Gateway** in particular need to be configured correctly.
- When using a symbolic name (e.g. `smtp.mycompany.com`), you *have to* specify a **DNS server** in the **Ethernet Interface** dialog.
- Your LAN's firewall has to be configured in a way that the camera is allowed to send emails.

Option

POP3 Server

Description

Enter the IP address or the name of the POP3 server. Your Internet provider or administrator will provide this information.

- This parameter will only be shown if the authentication method *POP before SMTP* has been selected.
- Communication with a PO3 server is never encrypted.

Option

User Name

Description

Enter the user name for logging on to the SMTP server. You will be assigned a user name either by your Internet provider or by your system administrator.

This parameter will only be shown if one of the authentication methods *SMTP login* or *POP before SMTP* has been selected.

Option

Password

Description

Enter the password for logging on to the SMTP server. You will be assigned a password either by your Internet provider or by your system administrator.

This parameter will only be shown if one of the authentication methods *SMTP login* or *POP before SMTP* has been selected.

Option

Signature

Description

If this parameter is activated, the camera uses the generated or uploaded SSL certificate to sign the emails that are sent using this profile. For additional information see the [Web Server](#) help page.

Testing Profiles

If you have created or modified one or more profiles, you should test the profiles (after you have closed the dialog using the **Set** and **Close** buttons and you have stored the configuration permanently). Open the **Test Current Network Configuration** dialog for testing. Click on the **Transfer** button behind the corresponding profile and monitor the output on the **Network Test Log** window. For additional information on this topic, please see the [Test Network Current Configuration](#) help page.

Adding a Profile

Click on the **Add new profile** button at the bottom of the dialog to create a new profile. Overtyping the proposed name with a name that describes the profile as good as possible; this name is used to identify the profile in other dialogs (e.g. the [detail view of the action groups](#)).

Deleting Profiles

In order to delete a profile, activate the **Delete** checkbox at the top of the profile. The profile will be deleted as soon as you click on **Set** at the bottom of the dialog.

Saving Changed Profiles

Click on the **Set** button to check the changed profiles. If a profile is faulty or entries are missing, you will be prompted to correct or complete your entries for this profile. If no errors have been detected, the profiles are stored *temporarily*.

- Any newly created or modified profile is saved *permanently* only when the entire camera configuration is stored.
- In order to activate the newly created or modified Email profiles, you do *not* have to reboot the camera.

Examples for Dynamic Text in Subject Lines

Using [variables](#) and [placeholders](#), the camera can dynamically integrate information into the emails it is sending.

Example 1. Including the Camera's Dynamic IP Address Assigned by the Provider or a DHCP Server in the Subject

Definition of subject line

```
$(id.nam): Ereignis=$(fpr.eno) IP=$(ID.ET0)
```

Explanation

`$(id.nam)`

Name of the camera

`$(fpr.eno)`

Event number

`$(ID.ET0)`

IP address that the camera obtained from a DHCP server

Example 2. Including the State of a Signal Input With an Attached External Sensor in the Subject

Definition of subject line

```
$(id.nam): Internal PIR=$(SEN.PIR)% Signal Input=$(SEN.SIN)
```

Explanation

`$(id.nam)`

Name of the camera

`$(SEN.PIR)`

Internal PIR level in percent

`$(SEN.SIN)`

State of the signal input

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

IP Notify Profiles

In the **IP Notify Profiles** dialog, you can configure the network messages that the camera uses in case of an alarm to send text messages to the TCP port of a computer or camera and, thus, trigger e.g. other events (observation chain).

Open the **Action Group Overview** dialog and edit an action group to link its actions to specific events.

- Instead of the IP addresses used here, you can also use the DNS names of cameras or computers (e.g. `cam1.myintranet.net` or `myserver.myintranet.net`) if these names have been defined in the DNS servers (**Ethernet Interface** dialog).
- Click on the **More** button at the bottom of the dialog to display all options for all profiles.

Profiles & Options

For each profile, set the following parameters in the **IP Notify Profiles** dialog:

Option

IP Notify Profile *n*

Parameter

Enter a unique profile name. Valid characters for profile names are letters, digits, hyphen, dot and underscore.

Option

IP Notify Type

Parameter

Predefined Configuration can have the following values:

- *MxCC-Alarm: Simple*
This type sends a predefined IP notify (network) message to the alarm list of the computer running [MxControlCenter](#).
- *MxCC-Alarm: Acknowledge Required*
This type also sends a predefined IP notify (network) message to the alarm list of the computer running [MxControlCenter](#), but the user needs to acknowledge every new alarm by clicking onto the corresponding alarm in the alarm list of MxControlCenter. If the alarm is not acknowledged within 60 seconds, the camera signals a transmission error.
- *Custom Configuration*
Displays the additional **Data Protocol** and **Data Type** sections so the camera can send special network messages. (Please also see the explanation of the [Sample Profiles](#).)

Option

Destination Address

Parameter

Enter the IP address(es) and the port(s) (separated by a colon) to which the camera is supposed to send the network message in the **Destination Address** field.

Example 1: Destination Addresses

- 192.155.13.22:8000
- alertcenter1.mycompany.net:8701

- If you would like to send the message to several computers, enter each IP address in a separate line.
- If the IP message could not be transmitted successfully, the camera will issue an error message as described in the [Errors When Sending IP Messages](#) section.
- It is also possible to use symbolic names. In order to do so, you need to enter a DNS server in the **Ethernet Interface** dialog.

Set the **Send Order** for sending the IP message:

- *Parallel send to all* (default): The camera tries to send the message to all **Destination Addresses** simultaneously.
- *Sequential send to all*: The camera tries to send the message to all **Destination Addresses** one after another.
- *Send to next on error*: The camera stops after the first successful transmission or will try the next IP address if the current transmission has failed.

Option

Data Protocol

Parameter

Set the transfer protocol to use in the **Data Protocol** selection box:

- **Raw TCP/IP**: Sends the raw data in TCP packets. Use this protocol if you would like to transmit data only (e.g. for triggering other cameras).
- **HTTP/1.0 Request**: Sends the data as an HTTP request to the receiving computer (a MOBOTIX camera or another web server).
- **HTTP/1.0 Request + Acknowledge**: Sends the data as an HTTP request to the receiving computer (a MOBOTIX camera or another web server). The camera will only consider the IP Notify message as successfully sent, if the receiving computer returns a confirmation message.

Option

Transfer Protocol: Raw TCP/IP

Parameter

If **Transfer Protocol** has been set to *Raw TCP/IP*, the following options appear:

- **Separator for Raw TCP/IP**: This string is inserted between the individual parts of a message (e.g. images) in order to allow separating them at the receiving end. Enter a unique string (default: `--next-image--`) that is not used otherwise in the transmitted data.

Option

Transfer Protocol: HTTP/1.0 Request, HTTP/1.0 Request + Acknowledge

Parameter

If **Transfer Protocol** has been set to *HTTP/1.0 Request*, the following options appear:

- **CGI Path**: Enter the absolute path (has to start with "/") of the script on the target computer that will process the request, (e.g. `/cgi-bin/newmessage.cgi`).
- **HTTP Authentication**: Enter the user name and password information (`user:password`) in this field that are required to log onto the destination computer.

Option

Data Type

Parameter

Select the **Notification Data** you would like to send to the destination computer:

- **Plain text**: Transmits raw text data only.
- **MxPEG or JPEG clip**: Transfers image data as MxPEG clip with audio or JPEG files.
- **Image from image profile**: Transfers an image according to a profile defined in the **Image Profiles** dialog.

- *Image information (JPEG comment)*: Transmits the image information of the current live image as it is written into the header of the JPEG image.
- **System Messages**: Transmits the system messages of the sending camera.
- *Web Server Log*: Transfers the [Web Server Logfile](#) of the camera.

Option

Notification Data: Plain text

Parameter

Enter the text to send in the **Message** field. This text can be a simple text message for triggering the **IP Receive (RC)** event in the receiving camera (see the [SimpleNotify](#) example profile) or a command passed to a CGI script (see the [HttpRequest](#) example profile).

You can enter any text and use predefined *variables*. For a complete list of variables, see the [Variables](#) help page.

Option

Notification Data: MxPEG or JPEG clip

Parameter

Select the file format of the image files that will be sent:

- *MxPEG Clip file*: Transfers the image data as MxPEG clips with audio.
- *Single JPEG file(s)*: Transmits the image data as single JPEG files.

Set the desired **Clip Frame Rate** and the time to include before and after the event(**Time Before** and **Time After**).

The frame rate set in these boxes depends on a number of factors (e.g. the processor load at the time of the event) and may not reach the set frame rate.

In particular, using the **Playback has Priority** setting in the **Setup Menu > General Image Settings** dialog can reduce the pre-alarm frame rate to 2 fps.

Option

Message data:*Image from image profile*

Parameter

For every network message profile, you can use a specific image format that is independent of the image format currently displayed by the camera. These formats are saved in the camera as [image profiles](#).

Select one of the image profiles defined in the **Image Profiles** dialog.

If **MxPEG has been activated in the camera**, the frame rate will be reduced for ten seconds if an image is pulled from the camera using one of the [image profiles](#).

Option

Message data:System Messages

Parameter

Select the **System Message Scope** to include the desired range of system messages.

Option

Send Port

Parameter

When using a firewall, you can set a different send port for your camera. In order to do this, click on the **More** button and enter the port of your choice in the **Send Port** field.

The factory default setting for the send port is 0 (automatic).

Errors When Sending IP Messages

In order to ensure the successful transmission of a network message, the receiving computer has to acknowledge the message. If a network message cannot be transmitted successfully (broken connection, computer down, ...), this will result in an error that is logged in the camera's **System Messages** dialog with an **IPMSG Service** tag and the profile name in the **ID** column.

Testing Profiles

If you have created or modified one or more profiles, you should test the profiles (after you have closed the dialog using the **Set** and **Close** buttons and you have stored the configuration permanently). Open the **Test Current Network Configuration** dialog for testing. Click on the **Send** button behind the corresponding profile and monitor the output on the **Network Test Log** window. For additional information on this topic, please see the [Test Network Current Configuration](#) help page.

Adding a Profile

Click on the **Add new profile** button at the bottom of the dialog to create a new profile. Overtyping the proposed name with a name that describes the profile as good as possible; this name is used to identify the profile in other dialogs (e.g. the [detail view of the action groups](#)).

Deleting Profiles

In order to delete a profile, activate the **Delete** checkbox at the top of the profile. The profile will be deleted as soon as you click on **Set** at the bottom of the dialog.

Example Profiles

Profile

MxCC-Alarm

Explanation

This profile sends a predefined IP notify (network) message to the alarm list of the computer with the IP address 10.0.0.42 (port 8000), which is running [MxControlCenter](#).

If **Predefined Configuration** has been set to *MxCC Alarm: Acknowledge Required* instead of *MxCC Alarm: Simple*, the user needs to acknowledge every new alarm by clicking onto the corresponding alarm in the MxControlCenter alarm list.

Profile

MxGuard Popup

Explanation

This profile sends a simple text message to port 81 of the computer with the IP address 10.0.0.42. If **MxGuard** is running on this computer (see www.mobotix.com, **Support > Software Downloads > Tools**), the application will display the corresponding alarm image.

The message contains the camera name `$(ID.NAM)` and the event number as variables `$(FPR.ENO)`.

Profile

SimpleNotify

Explanation

This profile sends a simple text message to port 8000 of the IP address 10.0.0.42.

The message contains the camera name `$(ID.NAM)` and the event number as variables `$(FPR.ENO)`.

Profile

MultipleNotify

Explanation

This profile also sends a simple text message, but this time simultaneously to port 8000 of the IP addresses 10.0.0.42 and 10.1.0.94.

The message is the same as in [SimpleNotify](#) as it contains the camera name `$(ID.NAM)` and the event number as variables `$(FPR.ENO)`.

Profile

HttpRequest

Explanation

This profile sends a command to the default HTTP port 80 of the camera's web server (localhost).

The camera will pass the command `action=ledson&leds=BBBBBB&time=5` to the script `/control/rcontrol`, which will prompt the camera LEDs to blink for five seconds.

For additional information on camera commands, see the following help pages:

- [/control/control](#): Change settings of the **Setup Menu**.
- [/control/rcontrol](#): Execute various camera functions.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Audio and Phone

Open the dialogs in this section to set the audio options of the camera.

Microphone and Speaker

The **Speaker and Microphone** dialog contains the basic microphone and speaker settings of the MOBOTIX camera.

Click on the **More** button at the bottom of the dialog to display all options.

Audio Input

- Signal Source
 - *Disabled*: Disables the audio input.
 - *Microphone*: The camera uses the microphone as audio input.
- Select one of the following options:
 - *Low sensitivity*: Setting for short distances.
 - *Medium sensitivity*: Setting for medium distances.
 - *High sensitivity*: Setting for longer distances. If you select this setting, background noise may occur.
- Click on the **Test** button to check your setting. In order to perform this check, the speaker must be activated.

Audio Output

- Activate the speaker.
- Activate or deactivate the speaker and set the amplification.
Value range: $-30 \dots 0 \dots 30$
- In order to check your settings, select one of the audio files and click on the **Test** button.

Announce Network Data

Activating this parameter will prompt the camera to announce its network configuration (IP address, network mask, MAC address; see **Ethernet Interface**) over the camera speaker. If the announcement is enabled, the announcement can be started by e.g. pressing the **R** button of the camera (to start DHCP or during runtime) or by clicking on a softbutton of the user interface.

Echo Cancellation

This parameter allows suppressing the unwanted echo that may appear during a VoIP call. The echo is created by the microphone, which also records some of the audio from the camera speaker and sends it back to the recipient of the call, thus creating an echo (back coupling). Echo cancellation suppresses this unwanted effect.

In order to optimize the quality of the echo cancellation, you can also adjust the ambient noise level. You should use the *High* setting if you expect a high level of noise at the camera's installation position, e.g. at a road with a high traffic volume. You should select *Low*, if you do not expect loud noise at the installation position of the camera.

Deactivating the Microphone

Deactivating a camera's microphone may become necessary in order to protect the privacy or for other reasons. You can permanently and *irreversibly* deactivate the microphone in the **Speaker and Microphone** dialog:

1. Click on the **More** button.
2. Click on the **disable** link that appears in the first paragraph of the explanation.
3. Follow the instructions in the **Permanently Disable the Camera Microphone** section.

Warning

This deactivation is permanent and removes *all* functions that involve the microphone and cannot be reversed even by MOBOTIX engineers.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Manage Audio Messages

Use the **Manage Audio Messages** dialog to edit the camera's voice messages.

The camera can record, play and manage voice messages. To record voice messages, you can either use your telephone or the camera's integrated microphone.

In order to record a voice message using the camera's internal microphone, you must have activated the microphone in the **Speaker and Microphone** dialog. The factory default setting for the microphone is *deactivated*.

Alternatively, you can transfer one or more messages recorded by another camera as an audio file via your computer to this camera.

Recording an Audio File Using the Camera

- Select the **Connection Type** that should be used for all numbers in this profile (*SIP*). If you would like to use VoIP for this purpose, activate SIP telephony in the **VoIP Settings** dialog and enter the appropriate settings (open the [VoIP Settings](#) help page to get more information about this topic).
- Enter the **phone number or SIP address** for the camera to dial.

- Select the maximum message duration in seconds.
Value range: 2..20s.
- Click on the **Call & Record** button.

The camera calls the telephone number or SIP address you entered so that you can record the voice message. Hang up the phone to stop the recording.

- Select the maximum message duration in seconds.
Value range: 2..20s.
- Click on the **Record** button.

To record a voice message, start recording the message using the camera microphone as soon as all LEDs are lighting up. The camera automatically stops the recording after the specified time.

Note that LED signaling will only work if the LED main switch in the **LED Setup** dialog has been set to **Default Configuration** or **Custom Configuration**.

- Testing the voice message:
 - Click on the **Play** button in order to play back the voice message using the camera's speaker. For doing so, the speaker needs to be activated in the **Speaker and Microphone** dialog.
 - If you click on the **Call & Play** button, the camera calls the number and plays back the voice message over the telephone.
- Once you are satisfied with the voice message, enter a name and save the recording by clicking on the **Store** button.
- If you do not want to store the voice message, click on the **Cancel** button.

Recording an Audio File Using a Computer

- Launch an application for recording audio files on your computer (e.g. Windows: Audiorecorder, Audacity, Wavesurfer; Linux: Audacity, KRecord).
- Record an audio file or open an existing audio file.
- The length of the recording should not exceed 20 seconds.
- Save the file as *CCITTA-law* with 8 kHz; 8 Bit sampling rate; Mono.
- Make sure that the finished file is not larger than the free space on the camera (see **Stored Voice Messages > Free**).

Stored Voice Messages

This section is only available if you already have created and stored at least one voice message.

The name and size of the individual voice messages are displayed in the list. You can execute these actions on each voice message:

Play

The voice message is played back using the camera's speaker.

Call & Play

The camera calls the telephone number entered in **Phone Number to Call** and plays back the voice message.

Delete

Removes the corresponding voice message.

The last line of this section displays information on the amount of storage space that the voice messages are using.

Download Voice Messages

This section is only available if you already have created and stored at least one voice message.

You can download one or several voice messages to archive them on your local computer. In order to select several files, keep the *Ctrl* key pressed and select the desired files with your mouse.

You can either keep such an archive for backup purposes or upload it to other cameras.

Upload Voice Messages

- First, select the format of the file you would like to upload:

TAR (* .tar)

A compressed audio archive (*Tape Archive*) that can contain several packed .a1 files and that has been generated by a camera. You can use this format for backing up the files and for exchanging voice messages between cameras.

Wave (* .wav)

Use this format if you have recorded an audio file on a Windows computer by means of the Sound Recorder. When saving the file, make sure to set **Format** to CCITT A-law and **Attribute** to 8 kHz; 8 Bit; Mono.

A-Law (* .a1)

A-law encoding is frequently used for digitally transferring analog signals. This encoding system needs very few digitizing levels for improving the quality of voice transfer.

The camera expects an A-law file with the following specifications: 8 kHz, mono, 8 bit sampling rate.

Opus (*.opus)

Opus encoding is a file format for lossy compression of audio data with the lowest possible latency. This format is ideally suited for real-time applications on the Internet and covers the entire hearing range of the human being.

The camera expects an opus audio file with one channel (mono) and a frequency range of 16 kHz.

- Click on the **Browse** button to select the file on your computer.
 - To start the transfer, click on **Upload**.
-
- Use the **Sound Recorder** on Windows systems if you would like to convert audio files in WAV format to other formats. The WAV files on Windows systems usually are PCM format with 44,100 Hz, 16 Bit, Mono. You will have to convert these files to one of the formats listed above (**WAV**, **A-Law** or **Opus**) before you can use them in the camera.
 - On Linux systems, for example, you can use the `sox` program for converting audio files into one of the compatible formats (**WAV**, **A-Law** or **Opus**) listed above.

Sound Profiles

Using the **Sound Profiles** dialog, you can create and manage profiles for playing back sound on the camera. You need to create at least one profile that you can select in the [detail view of the action groups](#) dialog for playing back the desired audio files if one of the selected events occurs.

Open the **Manage Audio Messages** dialog in order to create or delete custom voice messages or to select one of the pre-recorded audio files.

For additional information on this feature, see the [Manage Audio Messages](#) help page.

Profiles & Options

Parameter

Play List

Description

Select the sound file(s) for the camera to play back (use [Ctrl] click to select more than one item). If an event occurs, the camera plays back one file per event.

Parameter

Playback Sequence

Description

The camera can play back the audio files in *ascending*, *descending* or in *random* order.

Parameter

Loop Count

Description

Define how many sounds from the selected play list will be played back consecutively.

Adding a Profile

Click on the **Add new profile** button at the bottom of the dialog to create a new profile. Overtyping the proposed name with a name that describes the profile as good as possible; this name is used to identify the profile in other dialogs (e.g. the [detail view of the action groups](#)).

Deleting Profiles

In order to delete a profile, activate the **Delete** checkbox at the top of the profile. The profile will be deleted as soon as you click on **Set** at the bottom of the dialog.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

VoIP Settings

Open the **VoIP Settings** dialog to edit the settings required for making VoIP (*Voice over IP*) phone calls to other devices (e.g. SIP phones or soft phones), i.e., for placing phone calls using network connections instead of the telephone network. You can also use these voice connections for remote-controlling the camera. Likewise, the camera can place (voice) phone calls to other SIP phones, soft phones (computer applications emulating a SIP phone), but also to regular telephones and mobile (cell) phones when using SIP providers.

Introduction to SIP Telephony

The term *SIP telephony* describes a mechanism for establishing voice connections using data networks instead of standard (analog) telephone networks. This method (also known as *Voice over IP* or short *VoIP*) allows establishing cheap phone connections (or free connections when connecting two SIP devices) using existing data networks. When using phone servers, VoIP also provides for easy integration of telephone and network services on the same network.

The MOBOTIX cameras support the *SIP protocol* (*Session Initiation Protocol*) that two SIP devices use to "negotiate" the parameters of the voice connection. The voice data itself is exchanged using the *Real Time Protocol* (RTP); it is encoded using the audio codec both devices have agreed on.

The simplest case involves two devices that are using their IP addresses or DNS names to establish a SIP phone connection. This means that the calling device has to know the SIP address of the device it would like to call. A valid SIP address is composed of a user name, the "@" character and the IP address of the called device (e.g. `fred@123.231.222.213`). If this IP address also has a DNS name (this could be a router with an external IP address in larger networks), this address could look like this: `fred@mysample-company.net`.

If *SIP providers* are used and the SIP accounts have been assigned telephone numbers, the devices can reach each other using the assigned phone numbers, just like calling regular telephones. SIP providers generally also provide connections to "regular" (land-line) telephone numbers and mobile (cell) phones.

- To test the SIP phone functionality, using a soft phone on your computer has proven invaluable. Soft phone applications are nowadays furnished free of charge by good SIP providers. If this is not the case, you can easily find one by searching "free soft phone" on Google.
- Note that you will need *two* SIP accounts from your SIP provider (one for the camera, one for your SIP phone or soft phone). Creating SIP accounts and placing phone calls between SIP devices should be free of charge.
- Make sure that the SIP provider you intend to use also transfers the phone touch tones according to the DTMF standard. If this is not the case, you will not be able to [remote-control](#) the camera using the touchtone phone keys. Likewise, you will not be able to receive voice messages from the camera, if the camera requests [entering a PIN](#) upon connecting.
- Some providers require entering a "geographical" telephone number when trying to call a regular phone from a SIP device. For example, the phone number of the called party has to start with the country code 0049 for a phone number in Germany. The "0" of the prefix is dropped in most countries: 0049631xxxxxxx. Note that this depends on the country you are living in and make yourself knowledgeable at your SIP provider, for example.

Setup Mode

You have two different options for configuring VoIP: The Quick Setup mode activates VoIP automatically, allowing you to place the first VoIP phone calls with a minimum of manual intervention. The Expert mode allows setting all parameters manually; you can thus use the extended VoIP features and adapt the camera to special network environments.

General Phone Settings

This section contains the general settings for VoIP telephony.

Parameter

VoIP

Description

Use this option to either *Enable* or *Disable* the VoIP functionality.

If you deactivate VoIP, the settings in this dialog are still stored in the configuration file of the camera and will remain available if you need them again.

Parameter

Hangup on Outgoing Calls

Description

If this option is activated, the MOBOTIX camera will close an ongoing call if another call has been

triggered and will play a sound file on its speaker if **Call Status on Camera Speaker** has been activated. If this is not the case, the camera will signal the ongoing call by blinking with all LEDs.

Parameter

Parallel Dialing

Description

If this option is enabled, the camera can dial several numbers simultaneously. The camera will establish the connection with the receiver that first accepts the call.

When using SIP servers that are checking the source ports of the call requests against the source ports of the registration, this feature cannot be used as the ports will differ from the registered ones.

SIP Accounts

This section contains the parameters that the camera uses for making SIP connections. Using these parameters, the camera can establish SIP connection using SIP providers or direct connections to a SIP device with an IP address (or DNS name). See the [Introduction to SIP Telephony](#) section in this topic for more information.

- The SIP accounts used in this example are *fictitious*. Register with a SIP provider and use your own account information for testing and using SIP telephony.
- When entering a SIP address in the MOBOTIX camera dialogs, it is not necessary to add the ("sip:") protocol prefix at the beginning of the address.
- To use a SIP provider with differing registrar and proxy servers, enter it twice. Put the address of the registrar server in the first entry and activate "Use as Registrar". Put the address of the proxy server in the second entry and activate "Available as Proxy". Set the other fields to identical values in both entries. The proxy server can then be selected for outbound calls in the **Phone Profiles** dialog.

Parameter

User Name (SIP Address)

With SIP Provider

Enter a name for the user that should be called on the camera. The name is the left part of the SIP address (the part to the left of the "@" sign). If the camera's SIP address is `mycam1@sipphone.com`, the user name is `mycam1`.

This entry usually corresponds to the **User Name (Authentication)** setting.

Without SIP Provider

Similar to the scenario with SIP provider, but the SIP domain would be the IP address of the camera (`mycam1@10.1.0.99`) or its DNS name (`mycam1@mysamplecompany.net`).

Parameter

Domain (SIP Address)

With SIP Provider

The SIP domain (to the right of the "@" sign) contains the IP address of the device where the user can be found. If the camera's SIP address is `mycam1@sipphone.com`, the SIP domain is `sipphone.com` (i.e., the domain of the provider).

Without SIP Provider

Similar to the scenario with SIP provider, but the SIP domain would be the IP address of the camera (`mycam1@10.1.0.99`) or its DNS name (`mycam1@mysamplecompany.net`).

Parameter

User Name (Authentication).

With SIP Provider

Enter the user name that you have registered or that you have been assigned during the registration process with your SIP provider. This entry usually corresponds to the **User Name (SIP Address)** setting.

Without SIP Provider

Leave this field empty as it is not used.

Parameter

Password (Authentication).

With SIP Provider

Enter the password for the user name that you have set during the registration process with your SIP provider.

Without SIP Provider

Leave this field empty as it is not used.

Parameter

Hostname / Address (Server)

With SIP Provider

Enter the server address for the camera to log on as SIP user.

Without SIP Provider

Leave this field empty as it is not used. Registration with the SIP server is disabled.

Parameter

Port (Server)

With SIP Provider

Enter the server port for the camera to log on as SIP user. This will usually be port 5060.

Without SIP Provider

Leave this field empty as it is not used.

Parameter

Available as Proxy

With SIP Provider

If this option is enabled, the **Registrar Server** is used as the default SIP proxy for all outgoing SIP

connections. The account specified in this entry is available for selection in the field "SIP Proxy" in the **Phone Profiles** dialog. It can be connected to a profile for outbound calls.

Without SIP Provider

Disable this option.

Parameter

Use as Registrar

With SIP Provider

Check this option to have the camera log into the **Registrar Server** using the given authentication data.

Without SIP Provider

Disable this option.

Parameter

Registration Expires After

With SIP Provider

The registration with the registration server expires after this time. In this case, the server will return a "user not reachable" message if you are calling the camera from your soft phone, for example. The camera will automatically renew the registration after this time.

Without SIP Provider

Since registration has been deactivated anyway if no registration server has been specified, this parameter may be set to any value.

Network Settings

These settings should only be changed if your network environment involves special mechanism for security (firewall, NAT routers, ...).

Parameter

NAT Traversal

Description

Enable this option if you are trying to establish connections via a router or firewall that performs *NAT* (*Network Address Translation*). Make sure that you set the **NAT Address or STUN Server** according to the selected option (see below).

Parameter

External router address or STUN server address

Description

Enter the external IP address or the DNS name of the router or firewall or the STUN server address in this field. When contacting other SIP devices, the camera will name this address or the address received using STUN as its reply address instead of the camera's own (private) IP address. The router-/firewall has to redirect the voice and video data to the corresponding port of the camera.

Parameter

SIP Port

Description

Enter the SIP port that is to be used e.g. behind a firewall. Only change the standard port 5060 if this is necessary. Make sure that the SIP ports of all devices are the same when trying to establish direct SIP connections (this is usually not required when using SIP providers).

Parameter

Audio RTP port

Description

This is the port that is used for receiving the audio data. You may need to change this setting for some SIP providers or firewall scenarios. If a router or firewall are used that perform *NAT (Network Address Translation)*, the router/firewall will have to redirect this port to the camera.

Parameter

Video RTP Port

Description

This is the port that is used for receiving the video data. You may need to change this setting for some SIP providers or firewall scenarios. If a router or firewall are used that perform *NAT (Network Address Translation)*, the router/firewall will have to redirect this port to the camera.

Parameter

Audio Data Timeout

Description

The camera hangs up the call if there is no incoming audio data during the time specified in this parameter.

Audio Message Settings

The parameters of this section control the output of voice messages via the phone connection and the camera speaker.

Parameter

Welcome Message for Inbound Calls

Description

Switches the output of a welcome message when calling the camera on or off.

Parameter

Welcome Message for Outbound Calls

Description

Switches the output of a welcome message when the camera calls on or off.

Parameter

Delay Before Welcome Message

Description

The camera waits for the specified time after the recipient has accepted the call before playing back its welcome message.

Parameter

DTMF Key Confirmation for Inbound Calls

Description

Switches the voice output of the phone key pressed by the caller on or off.

Parameter

DTMF Key Confirmation for Outbound Calls

Description

Switches the voice output of the pressed phone key when the camera is calling on or off.

Parameter

Call Status on Camera Speaker

Description

Controls the output of sounds to signal the call status on the camera speaker (ring on inbound call, announcement on hangup or disruptions).

Parameter

Phone Tones on Camera Speaker

Description

Upon outgoing calls of the camera, switches the output of the dial tone on the camera speaker on or off. If the output via early media has been enabled, this process gets priority if the camera receives early media data.

Parameter

Early Media on Camera Speaker

Description

Upon outgoing calls of the camera, switches the output of early media (sounds sent from the call recipient before actually accepting the call) on the camera speaker on or off.

OSD Settings

You can set the properties of the On-Screen display in this section.

Parameter

Auto Hide OSD

Description

Activates/deactivates automatic hiding of the On-Screen display.

Parameter

Setup OSD

Description

Activates/deactivates the configuration menu of the On-Screen display.

Parameter

Start View

Description

Controls the availability of the Home View in the live image of the On-Screen display. If this parameter is activated, you can use the "0" key to switch between the regular view and view 11.

Audio Codec Settings

The camera can use one of the following audio codecs for transferring voice data. When the camera is making a SIP call, it will try to use the codecs in the order from top to bottom as listed in the dialog. If you would like to use only one codec, deactivate the other ones.

Parameter

Use G.722 Codec

Description

The **G.722** audio codec creates compressed audio data with a frequency range of nearly 7 kHz (50 to 7,000 Hz) a sampling rate of 16 kHz and 14 bits quantization. The actual bandwidth required by this codec is 64 kbps (8 kByte/s).

Parameter

Use PCMA Codec

Description

The **PCMA** audio codec creates uncompressed audio data with 8 kHz and *a-Law* encoding. The actual bandwidth required by this codec is 86 kbps (10.4 kByte/s).

Parameter

Use PCMU Codec

Description

This audio codec corresponds to PCMA/G.711a except for encoding, which uses *μ-Law* instead of *a-Law*.

Parameter

Use GSM Codec

Description

This audio codec uses a lossy compression to reduce the size of the audio data; audio quality corresponds to GSM connections. The actual bandwidth required by this codec is 35 kbps (4.2 kByte/s).

Video Settings

When using video telephony, the camera can adjust the size of the image and the data throughput rate of the video stream.

Parameter

Video

Description

This option activates the transmission of video. If deactivated, the camera can only place or receive audio phone calls.

Parameter

Video Bit Rate

Description

Use this parameter to adjust the maximum data throughput rate of the transferred video data. By dynamically adjusting the image quality, the camera tries to stay below the selected value. If the video bit rate drops below 250 kbit/s, the camera automatically reduces the video resolution. In this case, the On-Screen display is not available.

Parameter

Preferred Video Codec

Description

If possible, the camera will try to use the selected video codec for video telephony. This selection does not appear if the camera supports only one codec.

VoIP Messages and Call Log

Click on the **VoIP Messages and Call Log** link to get detailed information on the status and the connections of the VoIP system of the MOBOTIX camera. For additional information on this dialog, see the [VoIP Messages and Call Log](#) help page.

LED Signals When in VoIP Mode

When using the VoIP interface of the camera, the MOBOTIX camera's LEDs signal the following information, if the [LED Setup](#) dialog has been set to the default settings.

- **SIP configured:** VoIP LED flashes negatively at 2 Hz.
- **Camera successfully registered with SIP server:** VoIP LED flashes at 2 Hz.
- **Error:** VoIP LED flashes (about 250 msec on/off).

- **Listen or Speak:** VoIP LED is on permanently.
- **Intercom:** The lower three LEDs are lit if the camera's *speaker* is active ("speaking" as seen by the camera operator). If the camera *microphone* is active, the upper three LEDs are lit ("listening").
- **Intercom without switching between microphone and speaker:** The top and bottom LEDs are blinking, all others are on continuously.

Video Telephony On-Screen Menu

When making video phone calls, the camera can display a legend for the available functions that are assigned to the phone keys (DTMF). Note that you can also use the features if the legend is not visible.

- **Phone key "#":** Shows/hides the menu, switches between different display modes, stores selections.
- **Phone key "*":** Changes to the next page of the legend, cancels selections and closes submenus.
- **Phone key "0":** If not used otherwise, opens submenus.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

VoIP Messages and Call Log

The **VoIP Messages and Call Log** provides information on **Messages**, **Calls** and the **Status** of the MOBOTIX camera's VoIP system.

Click on the links at the bottom of the dialog to display or download the log file as a text file.

Note, that rebooting the camera will delete the VoIP log file contents.

Phone Profiles

Using the **Phone Profiles** dialog, you can create and manage the profiles for calling phone numbers or [SIP addresses](#).

The profiles thus created are used in the **Action Group Overview** and **File Server Checks** dialogs to send notifications using the **Phone Call-Out (CL)** action.

Testing the Phone Profiles

Before testing the phone profiles, make sure that you have stored the modifications by clicking on the **Set** button. Next, select a profile from the **Name** list in the **Test Profile** section and click on the **Test** button.

Description of Parameters

Parameter

Profile Name

Description

Enter a unique profile name.

Parameter

Delete

Description

To delete a stored profile, click on **Remove** and confirm your selection by clicking on the **Set** button.

Parameter

Phone Number or SIP Address

Description

Enter the phone number for the camera to call.

You can enter multiple phone numbers. The camera then calls the numbers one by one until one of them accepts the call.

Parameter

Dial Attempts

Description

Defines the maximum number of dial retries.

Value range: 1..10.

Parameter

Dial Timeout

Description

Defines the dial timeout between two retries while dialing in seconds.

Parameter

SIP Proxy

Description

Please select the SIP account to be used for outbound calls using this number. To make a SIP account accessible here, activate the corresponding **Available as Proxy** option in the **VoIP Settings** dialog.

Parameter

Add

Description

Click this button to enter more phone numbers. The camera then calls the numbers one by one until one call is completed successfully.

Parameter

Connection Type

Description

Select the **Connection Type** that should be used for all numbers in this profile (*SIP* (audio or video)). If you would like to use VoIP for this purpose, activate SIP telephony in the **VoIP Settings** dialog and enter the appropriate settings (open the [VoIP Settings](#) help page to get more information about this topic).

Parameter

Audio Message

Description

Select one of the audio messages recorded in the **Manage Audio Messages** dialog.

Parameter

Confirm call with PIN code

Description

Set a PIN to be entered in order to acknowledge this phone call from the camera. If no PIN is entered (e.g. a voice mailbox answers), the camera will call the next phone number on the list.

Parameter

After the message has been sent

Description

Hangup

After the voice message has been played back, the connection is terminated.

Listen

After the voice message has been played, the connection remains active and you can listen to what goes on in the room.

Speak

After the voice message has been played, the connection remains active and you can make an announcement.

Intercom

After the voice message has been played, the connection remains active and you can start a conversation.

If not all of these options are shown in the list, open the **Speaker and Microphone** dialog and activate both the microphone and the speaker.

Parameter

Camera Remote Control

Description

Activate this option if the camera is supposed to react to [touch tone phone commands](#).

This option is only available, if **After the message has been sent** is not set to *Hangup*.

Parameter

Hangup call after

Description

Set the maximum connection time for a voice message.

Value range: 1 .. 10 minutes

This option is only available, if **After the message has been sent** is not set to *Hangup*.

Click on **Add new profile** at the bottom of the dialog to create a new phone profile.

LED Signals When in VoIP Mode

When using the VoIP interface of the camera, the MOBOTIX camera's LEDs signal the following information, if the [LED Setup](#) dialog has been set to the default settings.

- **SIP configured:** VoIP LED flashes at 1 Hz.
- **Camera successfully registered with SIP server:** VoIP LED flashes at 2 Hz.
- **Error:** VoIP LED flashes (about 250 msec on/off).

If a voice connection has been established using the VoIP (SIP) interface, the LEDs signal the following:

- **Listen or Speak:** VoIP LED is on permanently.
- **Intercom:** The lower three LEDs are lit if the camera's *speaker* is active ("speaking" as seen by the camera operator). If the camera *microphone* is active, the upper three LEDs are lit ("listening").

Adding a Profile

Click on the **Add new profile** button at the bottom of the dialog to create a new profile. Overtyping the proposed name with a name that describes the profile as good as possible; this name is used to identify the profile in other dialogs (e.g. the [detail view of the action groups](#)).

Deleting Profiles

In order to delete a profile, activate the **Delete** checkbox at the top of the profile. The profile will be deleted as soon as you click on **Set** at the bottom of the dialog.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Incoming Calls and Camera Remote Control Using VoIP

If your camera is connected to a network, you can call the camera from any SIP phone (for *Voice over IP*, short *VoIP* telephony) or from a regular telephone.

You can then remote-control the camera using the phone's touchtone keys. The telephone must support tone (*Dial Tone Multi-Frequency*) dialing, sometimes also called *touchtone dialing*. If you are using VoIP telephony and a SIP provider, this provider also has to support DTMF dial tones (for further information, see the [VoIP Settings](#) help page).

Incoming Calls Settings

In order for the camera to answer VoIP audio calls, you need to configure this access in the **Incoming Calls Settings** dialog first.

Enter the telephone number (MSN) in this dialog to which the camera will answer. In addition, you can select a message that the camera plays when answering a call.

Description of Parameters

Parameter

Phone Call-In

Description

Select if and how you would like to allow voice phone calls (from a normal phone and from VoIP phones) to the camera.

If the VoIP options are not shown, you need to activate VoIP in the **VoIP Settings** dialog and enter the desired settings.

Parameter

Accepted Phone Numbers or SIP Addresses

Description

The camera can be configured to either react to all incoming calls (not recommended) or only to the phone numbers and SIP addresses entered here.

In order to create a list of accepted telephone numbers, enter the accepted phone numbers and SIP addresses in the text box, one per line.

The camera software can assist you in finding and entering the phone numbers and SIP addresses. Call your camera and reload this dialog or re-open it by clicking on this link: **Incoming Calls Settings**. The last calling phone number or SIP address is displayed and you can copy it to the text box by clicking on the corresponding button.

If you leave this text box empty, the camera will answer every call. This is not recommended for security reasons.

Parameter

Welcome Message

Description

Select one of the audio messages that had been stored using the **Manage Audio Messages** dialog. The camera will play this message upon every call.

Parameter

PIN Code

Description

Enter a **P**ersonal **I**dentification **N**umber to avoid unauthorized access to your camera. If you have set a PIN, every caller needs to enter this number using the telephone keys. This will only work if you call from a phone that supports tone dialing (DTMF). If you are using [VoIP telephony](#) and a SIP provider, make sure that this provider also supports DTMF dial tones, since you will not be able to access the camera otherwise.

Parameter

Audio Mode

Description

Select the audio mode to be activated after calling the camera:

No audio

Audio mode is deactivated.

Listen

After the voice message has been played, the connection remains active and you can listen to what is going on in the room.

Speak

After the voice message has been played, the connection remains active and you can make an announcement using the camera speaker.

Intercom

After the voice message has been played, the connection remains active and you can communicate with a person via the camera.

Parameter

Intercom Settings

Description

The **Intercom** audio mode simulates an intercom device. To minimize distortions, the camera's microphone is deactivated while you speak.

Threshold

The threshold controls the volume at which the audio channel from the telephone is put on the camera's speaker while the microphone is deactivated.

Duration

Sets the minimum duration during which the microphone is switched off.

Parameter

Hangup call after

Description

The maximum connection time before it is terminated.

Parameter

Email Profile

Description

After successfully connecting to the camera, you can send the last event image via email by pressing "5" on your telephone's keyboard.

Select the email profile you would like to use for sending. You can select any of the profiles created in the **Email Profiles** dialog.

Security Recommendations

If you have activated calls into the camera via telephone, anybody can call the camera. To avoid unauthorized access to the camera, it is recommended to restrict the access:

- Enter the phone numbers and SIP addresses, which are allowed to call the camera.
- Set a PIN to be entered over the telephone before any caller can remote-control the camera.

LED Signals When in VoIP Mode

When using the VoIP interface of the camera, the MOBOTIX camera's LEDs signal the following information, if the [LED Setup](#) dialog has been set to the default settings.

- **SIP configured:** VoIP LED flashes at 1 Hz.
- **Camera successfully registered with SIP server:** VoIP LED flashes at 2 Hz.
- **Error:** VoIP LED flashes (about 250 msec on/off).

If a voice connection has been established using the VoIP (SIP) interface, the LEDs signal the following:

- **Listen or Speak:** VoIP LED is on permanently.
- **Intercom:** The lower three LEDs are lit if the camera's *speaker* is active ("speaking" as seen by the camera operator). If the camera *microphone* is active, the upper three LEDs are lit ("listening").

- **Intercom without switching between microphone and speaker:** The top and bottom LEDs are blinking, all others are on continuously.

Camera Remote Control

Once you have successfully called the camera, it switches to the audio mode set in this dialog. If you have selected "Listen", for example, you can now listen to what the camera microphone is recording.

Using the keys of a telephone that supports tone dialing, you can send the commands of the main menu to the camera:

1. Select a feature by pressing any telephone key from **0** to **9**. The camera repeats the number and tells you which command you have chosen.
2. Confirm the command and execute it by pressing the **#** key.

- Prior to pressing the **#** key, you may press additional keys in order to select other commands.
- If the command is not acknowledged by the camera, this command is not available.

Keypad Commands of the Main Menu

Key

1

Function

Trigger signal out action profile A (see the **Door Opener** setting in the **Assign Wires** dialog).

Key

2

Function

Not Applicable.

Key

3

Function

Trigger signal out action profile C (see the **Light** setting in the **Assign Wires** dialog).

Key

4

Function

Announce the camera's date and time.

Key

5

Function

Send an email with the latest event image as attachment.

The email is sent to the profile you defined for this purpose.

Key

6

Function

Trigger the *User Click (UC)* event.

Key

7

Function

Switch to Listen audio mode.

You can hear what the camera microphone is recording. While doing so, the camera's speaker is deactivated.

Key

8

Function

Switch to Speak audio mode.

You can make an announcement using the camera's built-in speaker. While doing so, the camera's microphone is deactivated.

Key

9

Function

Switch to Intercom audio mode.

The camera simulates an intercom device. To minimize distortions the camera's microphone is muted when you speak.

Key

0

Function

Announce camera information:

- Time of the last event
- Status of the Internet connection

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Camera Phone

Using the **Camera Phone** dialog, you can enter a phone number for the camera to call. Afterwards, you can listen what the camera microphone is recording, make an announcement over the camera's built-in speaker, or use the camera as an intercom system.

If you see *only one or no buttons at all*, activate the **Microphone** and **Speaker** options in the **Speaker and Microphone** dialog and reopen this dialog. You will then have access to all functions.

- Select the **Connection Type** that should be used for all numbers in this profile (*SIP*). If you would like to use VoIP for this purpose, activate SIP telephony in the **VoIP Settings** dialog and enter the appropriate settings (open the [VoIP Settings](#) help page to get more information about this topic).
- Enter the **phone number or SIP address** for the camera to dial.
- Select a function:
 - Click on the **Listen** button to hear what the camera microphone is recording.
 - Click on the **Speak** button to make an announcement using the camera's speaker.
 - Click on the **Intercom** button to use the camera as an intercom system.

The camera now calls the telephone number you have entered and switches to the selected mode.

- While you are connected to the camera, the browser window may remain empty.
- Make sure that the speaker level setting in the **Speaker and Microphone** dialog has been set to a value of 3 and not higher.

LED Signals When in VoIP Mode

When using the VoIP interface of the camera, the MOBOTIX camera's LEDs signal the following information, if the [LED Setup](#) dialog has been set to the default settings.

- **SIP configured:** VoIP LED flashes at 1 Hz.
- **Camera successfully registered with SIP server:** VoIP LED flashes at 2 Hz.
- **Error:** VoIP LED flashes (about 250 msec on/off).

If a voice connection has been established using the VoIP (SIP) interface, the LEDs signal the following:

- **Listen or Speak:** VoIP LED is on permanently.
- **Intercom:** The lower three LEDs are lit if the camera's *speaker* is active ("speaking" as seen by the camera operator). If the camera *microphone* is active, the upper three LEDs are lit ("listening").

SIP Server Settings

Open the **SIP Server Settings** dialog to configure the camera's integrated SIP server. The camera's SIP server can play the role of a SIP provider in a local network if you would like to establish video connections between cameras, SIP phones and softphones (i.e. computer applications with SIP functionality). Note that every device will need its own SIP account.

For additional information on the *SIP telephony* topic, see the [VoIP Settings](#) help page.

SIP Server

This section contains the basic settings of the SIP server. Note that you cannot change the server's IP address and port. You will need this information when configuring the attached SIP phones, for example.

Parameter

SIP Server

Description

Use this option to either *Enable* or *Disable* the SIP server.

Parameter

Realm

Description

Sets the realm of the SIP server. One realm combines a group of SIP accounts and only members of the same realm can talk to one another.

Parameter

Missed Calls

Description

Select if you would like to be notified about missed calls. If multiple calls are dialed out simultaneously, this option should be unchecked. Otherwise you will be notified of missed calls even if the call was pick up at another receiver.

SIP Accounts

This section manages the SIP accounts. Click on **Add new profile** at the bottom of the dialog to create a new SIP account. Every account consists of a *SIP address*, a *user name* and a *password*.

Parameter

SIP Address

Description

The **SIP address** works like a phone number. If you are using SIP phones, make sure that you can enter the *SIP address* using the phone keys.

Parameter

Username

Description

Enter the user name you would like to set for this **SIP address**.

Parameter

Password

Description

Enter the password you would like to set for this **SIP address**.

Parameter

Delete

Description

To delete one or more accounts, activate the corresponding checkboxes and click on the **Set** button.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

RTP Pager

The **RTP Pager** can receive G.711-encoded audio data from up to four multicast groups (i.e., combinations of IP addresses and ports).

The received data will be played on the camera speaker. As a precondition, the camera must have a speaker connected that has to be activated. (see **Speaker and Microphone** dialog).

Note that the received audio data will not be mixed. If data are received from different multicast groups, the first group to send its data will be played on the speaker. If this group stops the transmission, the next group will be played automatically.

Note that in one multicast group, only one sender may send data at any given time! If several services send audio data at the same time to the same multicast group, the audio data cannot be played properly.

General

Enable

Activates the RTP Multicast Pager ("RTP Pager"). Changes require rebooting the camera.

Receiver Settings

Every one of the four streams has its own configuration section with the corresponding parameters **Multicast IP** and **Port**.

Multicast IP

IP address of the multicast group sending the audio data. The IP address must be a valid multicast IP in the range from 224.0.0.0 to 239.255.255.255.

Port

Network port used to receive the multicast data. The port has to be in the range from 1025 to 65535. A value of 0 will deactivate the receiver.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

General Administration

The dialogs in this section are used to configure specific administrative functions of the camera.

Date and Time

Open the **Time and Date** dialog to set the camera's date, time, time zone and time server settings.

In order to maintain a reliable system time, the camera can synchronize its real-time clock using an external time server. You can choose between these two protocols:

- **NTP (Network Time Protocol, RFC 1305):** This protocol maintains permanent synchronization with one or more time servers in the Intranet or the Internet that provide the NTP service. Open [pool servers of ntp.org](#) to find a list of suitable time servers.
- **Time Protocol (RFC 868):** This protocol is out-dated. If you use this protocol, the camera synchronizes its real-time clock with the time server once upon booting and then again every six hours.
- In order to synchronize its time using **NTP**, the camera maintains a permanent connection to the time server; this is only recommended for cameras with a permanent network connection. Other advantages:
 - NTP guarantees the highest precision of the internal clock.
 - NTP reduces time differences to the time server to a minimum.

- When configuring a network with several cameras to use **NTP**, you should activate the **Use camera as time server** checkbox on one camera. This camera can now work as an (additional) time server for the other cameras. This always ensures that these cameras have the same system time, independent of the proper functioning of the external time server.

Example: Three local cameras A, B, C are running in a local subnet. Camera A is attached to an MX-GPS-Box as a reliable source of time information; in addition, an Internet connection is available. It is highly unlikely (yet possible) that neither the Internet connection nor the GPS satellites are working properly. Hence, the following settings make sense:

- Camera A: Server `0.pool.ntp.org`, `1.pool.ntp.org`, `2.pool.ntp.org` configured as time servers
- Camera B: Using camera A as time server
- Camera C: Using camera A as time server
- In general, using one time server for the cameras is sufficient. If you would like to provide better redundancy, you can set three—or even better—four time servers. If you are using only two time servers and one of them is sending wrong time information, the camera may choose to ignore both time servers, since it cannot properly determine the correct source of time information.

Description of the Dialog

Time Settings

Parameter

Time Zone

Description

Select the correct time zone for the camera location.

If you have changed the time zone, you should store the settings of this dialog permanently by clicking on the **Set** button and then the **Close** button. Make sure that you **reboot the camera** before you proceed!

Parameter

Hourly Sound

Description

Select one of the sound files that have been stored using the **Manage Audio Messages** dialog in order to play back the file at every full hour for the specified number of times.

Parameter

Time Server Protocol

Description

This list box selects the protocol to be used. The choices are the recent NTP (Network Time Protocol) as laid out in RFC 1305 or the simpler and older Time Protocol according to RFC 868.

Parameter

Time Server

Description

If *Time Protocol (RFC 868)* is selected, enter the address of the time server in this field. The server must support the protocol specified in RFC 868.

If the *NTP* protocol has been selected, you can enter up to five time servers. These servers must support the protocol specified in RFC 1305. An LED to the right of the corresponding server shows the status of the NTP service. Hold your mouse over the LED to get more detailed information in the bubble help.

Parameter

Use Camera as Time Server

Description

This setting uses the camera as a time server for the rest of the network. Note that you need to enter this camera's IP address as a time server on all other cameras. This setting instructs the camera to set its own system time as Stratum 7, making it an acceptable time server, even if no external time servers are available. (This option is only available when using the *NTP* protocol.)

Time Status

Parameter

Current Camera Time

Description

This field shows the current time of the camera. This output may be imprecise; when in doubt, check the time stamp in the live image. If the time differs by more than 5s from the time of your PC, the camera shows a button, which allows applying the system time of your computer to the camera. You should only do this if the time of the computer is actually more precise than the time of the camera. If the camera is in sync with a time server, it will show a warning before applying the computer time.

Parameter

MX-GPS-Box

Description

If an *MX-GPS-Box* is attached to the camera, it can receive highly precise time information from the GPS satellites. In this case, the dialog contains a status line that shows information about the GPS data received by the MX-GPS-Box box.

Parameter

Local NTP Service

Description

This field contains information about the time services currently used by the camera. The information is displayed in different colors: If the time server can be reached, the output of the NTP client is amber, if the camera clock is synchronized, the output is green. Note: only one time server will be used. Be patient—synchronizing the clock using NTP may take some time.

Time Server Check

When running in NTP mode, the camera will check the configured time servers every 30 minutes. If all servers fail, the system messages will show a corresponding error.

The `SECTION` time of the [camera configuration](#) allows changing the interval between checks and the error severity.

You can change the `TSCHECKINTERVAL=30` parameter to 1, 10, or 15 minutes. If the `TSFAILISCRITICAL=0` switch is set to 1, the failure will be logged as critical error. Note that you need to manually edit the **camera configuration**; all changes will only be used after rebooting the camera.

Warning

You should only change the configuration if you are an experienced MOBOTIX user. Saving an invalid configuration may render the MOBOTIX camera unreachable!

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

LED and Signal Output Setup

Depending on the model, MOBOTIX cameras have a different set of LEDs on the front to inform you about different actions/states of the system. Open the **LED Setup** dialog to modify the LED behavior or to deactivate LED signals as a whole.

Open the **General Event Settings** dialog to modify the behavior of the LEDs that have been set to *Event* in this dialog.

LED Settings

Parameter

LED Main Switch

Description

The main switch controls the operating mode of the camera LEDs:

Disabled

If deactivated, the LEDs blink only when the camera is starting. Beyond that, the LEDs will not signal anything.

Custom Configuration

In this operating mode, you can select one of the functions for all LEDs or you can link individual functions to specific LEDs.

Default Configuration

The camera uses a permanently lit LED **0** to signal that it is running. In case of an error, this LED will blink. LED **1** signals the different recording modes. All other LEDs are off. This is the factory default setting.

Transparency Mode

In this mode, LED **0** flashes twice every three seconds. In addition to the recording status, LED **1** or LEDs **1** and **5**, respectively, are signaling live image access.

Security Mode

In security mode, LED **0** shows the status of the recording. LED **1** or LEDs **1** and **5**, respectively, are signaling live image access. If LED **1** or **1** and **5**, respectively, are on permanently, the camera has detected an error. This error is listed in the **System Messages**, including a link for resetting this error.

Parameter

Set all LEDs

Description

You can assign the same function to all LEDs:

All other options correspond to the functions that you can select for the individual LEDs. For more detailed information, see the [LED Signals](#) help page.

Differently

Select this option to assign different functions to the the LEDs.

Preset

Select this option to set all LEDs as described for the individual models in the [Designation of the Camera LEDs](#) section.

Other Options

Sets all LEDs at once to the desired [LED signal](#).

The selected settings may be overruled temporarily by certain applications, e.g. while installing a software update.

Parameter

IP Video Door Station only: Illumination LEDs

Description

This parameter allows setting different brightness levels for the illumination LEDs:

Off

The illumination LEDs are always off.

1..14

The illumination LEDs are using the selected brightness level.

Max

The illumination LEDs are always using the maximum brightness level.

Auto Detect

The illumination LEDs are always on. As the illumination of the environment decreases, so does the illumination provided by the LEDs.

Parameter

IP Video Door Station only: Button Illumination

Description

This parameter allows setting different brightness levels for illuminating the camera buttons:

Off

The button illumination is always off.

On

The button illumination is always on.

Auto Detect

The button illumination is off if the illumination LEDs are off. Button illumination will be switched on, if the illumination LEDs are using at least brightness level 1.

Parameter

IP Video Door Station only: External Illumination

Description

You can link an external source of light to the button illumination using a signal output:

Off

The external illumination is always off. The signal outputs can also be controlled via other camera systems.

Signal Out 1 (Do)

Signal output 1 (Do) is switched on together with the button illumination. This signal output is switched off together with the button illumination.

Signal Out 2 (eLi)

Signal output 2 (eLi) is switched on together with the button illumination. This signal output is switched off together with the button illumination.

Signal Out 3 (iLi)

Signal output 3 (iLi) is switched on together with the button illumination. This signal output is switched off together with the button illumination.

Designation of the Camera LEDs

LED Signals

You can assign a different signaling function to every LED:

Signal

Off

Meaning

The LED's signal feature is deactivated during regular operation.

This setting will be ignored during camera startup.

Signal

On

Meaning

The LED is on without interruption.

Signal

Web Access

Meaning

The LED lights up when the camera's web server is being accessed.

Signal

Accessing Live Images

Meaning

The LED lights up when the camera's live image is being accessed.

Signal

Blink

Meaning

The LED blinks slowly.

Signal

Flash

Meaning

The LED blinks rapidly.

Signal

Arming

Meaning

The LED signals the arming state as set by the **Arming LEDs** parameter in the **General Event Settings** dialog (you may have to click on **More** to display this parameter).

Signal

Event

Meaning

The LED signals events as set by the **Event LEDs** parameter in the **General Event Settings** dialog (you may have to click on **More** to display this parameter).

Signal

Recording

Meaning

The LED is flashing while recording and is off when not recording.

Signal

Ethernet

Meaning

The LED signals activity on the Ethernet interface.

Signal

Camera

Meaning

The LED shows the activity of the image sensors. Slow blinking indicates long exposure times.

Signal

VoIP

Meaning

The LED signals activity on an established [VoIP](#) connection.

LED Signals When in VoIP Mode:

- **SIP configured:** VoIP LED flashes at 1 Hz.
- **Camera successfully registered with SIP server:** VoIP LED flashes at 2 Hz.
- **Error:** VoIP LED flashes (about 250 msec on/off).

If a voice connection has been established using the VoIP (SIP) interface, the LEDs signal the following:

- **Listen or Speak:** VoIP LED is on permanently.
- **Intercom:** All LEDs are off if the camera's *speaker* is active ("speaking" as seen by the camera operator). If the camera *microphone* is active, all LEDs are lit ("listening").

Signal

PIR

Meaning

The LED indicates if an event has been triggered by the passive infrared detector.

Signal

Signal Input

Meaning

The LED lights up when the signal input is active.

Signal

Signal Output

Meaning

The LED lights up when the signal output is active.

Signal

Serial Interface

Meaning

The LED signals activity on the serial (RS232) interface.

- The option at the top is always the default option that is used if **Set all LEDs** has been set to *Default*.
- Depending on the camera model, some of the listed features may not be available.

Other Settings

Parameter

PIR Threshold

Description

Define the trigger level for the *passive infrared detector*.

Activate the level meter in the **Text and Display Settings** dialog and select *PIR Detector* as source. The level meter helps you find the best possible trigger level for your application.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Time Tables

Use the **Time Tables** dialog to define schedules for switching certain camera functions on or off:

- Arming of the entire [event processing](#) (**General Event Settings** dialog).
- Arming of the individual action groups in the **Action Group Overview** dialog and the corresponding [detail views](#).
- Scheduled display of [logos](#) (**Logo Profiles** dialog).

The **Custom Days** section at the beginning of this dialog allows defining exceptions to the time tables defined further below.

Custom Days

Create custom days lists for holidays or vacations that disrupt the regular weekly schedule.

Custom Days List

Name

Description

Enter a unique name for this custom days list.

Valid characters are letters, digits, dot, comma and underscore.

Custom Days List

Custom Days List

Description

Enter all days that disrupt the regular weekly schedule in this list. Empty lines or lines beginning with a # character will be regarded as comment lines and are thus ignored.

The date input format follows ISO 8601. Create a new line for every new day you would like to add.

The following entries are recognized:

- YYYY-MM-DD for single days.
- YYYY-MM-DD..YYYY-MM-DD for a range of days.

Click on the **Set** button to add the new custom days list to the selection boxes of the individual lines of a time table. The custom days lists are listed at the end of the list boxes and are marked by pointed brackets.

Example 1: Custom Days List

```
<NewYearHoliday>
```

Time Tables

You can define multiple profiles, each storing one time table. Always enter a unique name for a time table. Valid characters are letters, digits, dot, comma and underscore.

Click on **Add new time table** at the bottom of the dialog to add a new time table with *one* example time period (one line) to the bottom of the list.

The individual *time periods* within a time table are setting the times in which certain camera functions are switched on or off. In a store, for example, two time tables with several time periods each may be used to arm the camera depending on the opening and closing times (cf. predefined time tables `Opening_Times` and `Closing_Times`).

The number of time periods within a time table is limited to *twelve time periods*, independent of the camera model.

The Columns of a Time Table

Column(s)

1

Contents



Description

The alarm symbols and the blue background color of a line indicate that this time period is currently active.

Column(s)

2

Contents

Switching

Description

Sets the switching behavior of this time period. The first time period of a time table also defines the times excluded from the start and end times as having the opposite switching behavior as in the current time period. If no time period has been entered, the profile is regarded as being *activated*.

- *On*: switches the camera function within the start and end times to On.
- *Off*: switches the camera function within the start and end times to Off.

Column(s)

3

Contents

Time Tables and Custom Days Lists

Description

Select the days for which this time period is supposed to be used. Using customized combinations of weekdays is only possible by editing the configuration file manually.
If [custom days](#) have been defined, they are listed at the end of the list boxes and are marked by pointed brackets.

Example 2: Custom Days List

```
<ChristmasHolidays>
```

Column(s)

4 + 5

Contents

Start Time

Description

The start time for this time period in hour and minute. The start time always has to be before the end

time. If this is not the case, the end time will be set to 23 : 59 automatically.

Column(s)

6 + 7

Contents

End time

Description

The end time for this time period in hour and minute. This time period will be active until the minute set for end time has expired. The end time always has to be after the start time. If this is not the case, the end time will be set to 23 : 59 automatically.

Column(s)

8

Contents

Actions

Description

- **Remove:** removes the selected time period from the time table.
- **Add:** adds a new time period at the end of the time table.

Deleting Profiles

In order to delete a profile, check the **Delete** option below the profile name. The profile will be deleted as soon as you click on **Set** at the bottom of the dialog.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Time Control

Open the **Time Tasks** dialog to define tasks that the camera performs at specific points in time (most often recurring periodically). A typical example would be to update an image on a website every 10 minutes between 7 am and 9 pm every day.

In order to properly test the time task, make sure that the first occurrence **is at least one minute in the future**. If this is not the case, the time task will not be executed!

Configuring Time Tasks

Actions and messages that can be executed as time tasks

Action/Message

Restore last configuration

Description

The last permanently stored configuration is retrieved. Temporary settings are lost.

Use this action to reset all cameras periodically which can be accessed by several persons at user level (e.g. for testing purposes).

Action/Message

Reboot camera

Description

In order to ensure that the camera functions operate as desired, it is recommended to reboot the camera periodically.

Action/Message

Reboot randomly within one hour

Description

As opposed to a regular reboot, the camera can execute the reboot randomly within one hour. This method prevents the camera from rebooting at the same time and thus prevents exploiting the camera's downtime during the reboot.

By factory default, the camera automatically reboots every Monday between 03:00 and 03:59 hours.

Action/Message

Time Task (TT) event

Description

Triggers an event following a certain time scheme.

In case this action is not displayed, activate the **Time Tasks (TT)** option in the **Event Settings** dialog and reload this dialog.

Action/Message

FTP "<profile name>": Current image

FTP "<profile name>": Event Archive

Description

Select one of the FTP profiles that you have created in the **FTP Profiles** dialog and set the action of your choice:

- **Current Image:** Stores the current image on the FTP server. Use this action to store periodic images on a website, for example.
- **Event Archive:** Downloads all events as compressed archive file on the FTP server.

- After the images have been transferred, they are deleted in the RAM.
- The compressed archive file can be several MB in size.
- If these actions are not displayed, create a profile in the **FTP Profiles** dialog and reload this dialog.

Action/Message

Email "<profile name>"

Description

Select one of the email profiles that you have created in the **Email Profiles** dialog in order to send emails periodically.

If this action is not displayed, create a new profile in the **Email Profiles** dialog and reload this dialog.

Action/Message

Phone call "<profile name>"

Description

Select one of the profiles you have created in the **Phone Profiles** dialog and the camera will call periodically.

If this action is not displayed, create a new profile in the **Phone Profiles** dialog and reload this dialog.

Action/Message

IP Notify "<profile name>"

Description

Select one of the IP Notify profiles that you have created in the **IP Notify Profiles** dialog to send the IP message periodically.

If the desired IP message is not displayed, create a new profile in the **IP Notify Profiles** dialog and reload this dialog.

Action/Message

Play audio message "<file name>"

Description

Select one of the audio files that you have created in the **Manage Audio Messages** dialog in order to

play back the audio file over the camera's speaker periodically.

If this action is not displayed, record a new audio file in the **Manage Audio Messages** dialog and reload this dialog.

Numeric Values of the Time Fields

Time Field

Minutes

Possible Values

Minutes from 0 to 59

Time Field

Hours

Possible Values

Hours from 0 to 23

Caution

This field is evaluated without considering the minutes. This may lead to the camera transferring images from 7 am until 7:59 pm if you have entered 7-19 in this and "*" in the **Minutes** field.

See also [Examples](#)

Time Field

Days of Month

Possible Values

Days of the month from 1 to 31

Time Field

Months

Possible Values

Months from 1 to 12

Time Field

Weekdays

Possible Values

Days of the week 0 to 7, with 0 = Sunday, 1 = Monday ... 6=Saturday, 7=Sunday

Caution

If you are using numbers (as opposed to *) for **both** calendar days and the days of the week, the camera will execute the task if at least one of these criteria has been fulfilled.

See also [Examples.](#)

When filling out the time fields, you can only use numbers.

Combined Time Field Entries

You can enter a **numeric value** for a point in time, an asterisk *, a list, a range or an interval:

Character

Function

Numeric Value

Description

A numeric value means *at this point in time*: 12 in the **Minutes** time field means *at the 12th minute*.

Character

*

Function

Every

Description

The asterisk "*" means *every*: "*" in the **Hours** time field means *at every hour*.

Character

,

Function

List

Description

You can combine several numeric values to form a list: 3, 6, 8 in the **Days of Month** time field means *on the 3rd, 6th and 8th of every month*.

Character

-

Function

Range

Description

You can enter a range in time field. 7-9 in the **Months** time field means *from the 7th month (July) to*

Reference

The Admin Menu

the 9th month (September).

Note that the smaller numeric value *always* comes first. Thus, entering 22-5 in the Hours field returns an error. In this case, you need to enter two ranges (22-23, 0-5), or you could define two tasks.

Character

/

Function

(every *nth*)

Description

You can shorten a list by entering an increment: 7-18/2 in the **Hours** time field means *from 7 am to 6 pm, but only every other hour*.

The entry corresponds to the following list: 7, 9, 11, 13, 15, 17.

You can also combine an increment with an asterisk (*): */10 in the **Minutes** field means *every 10 minutes, starting with minute 00*.

Values that are larger than 1/2 of the maximum value (e.g. >30 for minutes) only make sense for certain exceptions, as the task will be executed once at minute 00 and then again after the interval.

Example 1.

Entering */50 will execute the task once at minute 00, then again at minute 50.

Enter at least one number in one of the time fields. A task is rejected if you have entered asterisks in every time field.

Examples

Minutes

*/10

Hours

7-21

Days of Month

*

Months

*

Week Days

*

Explanation

The task is executed every 10 minutes between 7 am and 9:50 pm every day. If you would like to store images from 7 am to 9 pm sharp, create two time tasks (see next example).

Minutes

* / 10
0

Hours

7 - 20
21

Days of Month

*
*

Months

*
*

Week Days

*
*

Explanation

If you would like the task to be performed on the hour for the last time, you need to define a second task with this exact hour and the value 0 for minutes.

These two tasks now work as follows:

- The first task is executed every 10 minutes between 7 am and **8:50** pm every day.
- The second task is performed just once every day, at 9:00 pm.

Minutes

* / 10

Hours

7 - 15

Days of Month

*

Months

6 - 9

Week Days

2 . 4

Explanation

The task is executed every 10 minutes between 7 am and 3:50 pm on Tuesdays and Thursdays from June to September.

Minutes

* / 15

Reference

The Admin Menu

Hours

8-16

Days of Month

*

Months

*

Week Days

1-5

Explanation

The task is executed every 15 minutes between 8 am and 4:45 pm from Monday to Friday.

Minutes

30

Hours

15

Days of Month

1,15

Months

*

Week Days

5

Explanation

The task is executed at 3:30 p.m., on the 1st and 15th of each month and **additionally** on each Friday.

Options

At the right border of the dialog, two option switches per defined task are displayed:

Inactive

The task is deactivated although the definition remains in the configuration.

Delete

The task is deactivated and will be deleted from the configuration.

The **Remove** option is only available for stored tasks.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.
Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Integration Protocols

Open the **Integration Protocols** dialog to configure the interfaces for integrating the camera into the third-party systems as well as the RTP server of the camera.

The interfaces allow finding and configuring the camera on the network using compatible systems of third-party manufacturers.

The RTP server provides access to the camera's live image. The server can provide different types of video streams using the RTP protocol. The number of available streams and the configuration options depend on the camera hardware and the configuration of the camera itself.

Integration Protocols

Protocol

Sets the active integration protocols of the camera.

- **Genetec:** Activates the Genetec integration protocol. The camera will be discovered automatically by Genetec Security Center, which also allows configuring the camera. The RTP server is active in this mode.
 - The browser interface of the camera only contains the parameters that cannot be configured directly in Genetec Security Center.
 - It's important that these parameters are only changed before adding the camera to Security Center. Changing these parameters afterwards usually requires a reconnect; sometimes you may even have to remove and add the camera again in Security Center.
 - When using **Extended** as image source, this mode automatically adjusts image generation (the resolution in particular) to the requirements of the Genetec integration. The configuration options in **General Image Settings** are limited accordingly.

- **ONVIF:** Activates the ONVIF integration protocol. The camera will be discovered automatically by ONVIF-compatible systems, which also allow configuring the camera. The ONVIF configuration requires special users. The factory default includes a preconfigured *admin* user with default password. If you are not selecting ONVIF at this point, all ONVIF users will be denied access. The RTP server is active in this mode.
 - Change the password of the preconfigured ONVIF user if you are using ONVIF.
 - Standard users will be denied access to the camera via the ONVIF interface!
 - You only need to select the image source and adjust the aspect ratio if required. All other configuration options can be changed directly in the ONVIF client using the profile management.
 - If has been activated, the ONVIF service is also available via the **ports configured for MxWeb**.
 - When using **Extended** as image source, this mode automatically adjusts image generation (the resolution in particular) to the requirements of the ONVIF integration. The configuration options in **General Image Settings** are limited accordingly.
- **Genetec + ONVIF:** Activates both, Genetec and ONVIF as integration protocol. The camera will be discovered automatically by Genetec Security Center and ONVIF-compatible systems, which also allow configuring the camera. In this mode, you should use the camera via ONVIF in read-only mode when accessing the camera via Genetec Security Center at the same time. The RTP server is active in this mode.
- **RTP:** Activates only the RTP server of the camera. This server provides MxPEG, H.264 and M-JPEG-encoded video via RTSP/RTP.
 - When using **Extended** as image source, the camera will only provide the same or lower resolutions than those configured in **General Image Settings**. Automatic adjustment of image generation is disabled.
- **Off:** In this mode, neither the RTP server nor other protocols are active.

Optimize Settings

This option is only available if the protocol supports optimized settings.

The basic idea is that the recommended camera settings for the selected protocol are applied automatically. Clicking on the button shows an overview of the settings that will be optimized. If available, the dialog also

shows additional settings that can be configured by the user. The changes that will be applied and the available options depend on the selected protocol. Clicking on **Apply & Store** will apply the optimized settings and store them in permanent storage, clicking on **Cancel** will abort the process without any changes.

- Applying the optimized settings possibly overwrites other changes you may have applied beforehand. It's a good idea to apply the optimized settings first and then customize the settings as required.
- Applying the optimized settings will discard changes to the integration protocol settings that have not yet been applied.

Global Settings

Multicast Interface

Network interface for the RTP server to use. Depending on the configuration, you can use different (virtual) network interfaces/IP addresses to access the camera. This option allows limiting access to the RTP server to only one of these interfaces. By factory default, all interfaces are available. This means that you can establish Unicast connections to all interfaces of the camera. For Multicast connections, the connection is selected automatically in the following order:

1. Network interface with fixed (static) IP address
2. Network interface with an IP address assigned by DHCP
3. Network interface with the factory IP address (10 . x . x . x)
4. Network interface with the Zeroconf IP address (169 . 254 . x . x . x)

If you select a specific interface for this option, Multicast and Unicast connections are only available via this interface. The RTP server will be deactivated on all other interfaces.

RTSP Port

Port of the RTSP Server. By default, this is port 554.

RTSP-over-HTTP Tunnel

Allows accessing the RTSP/RTP data via an HTTP tunnel. This is available below the web server ports.

RTSP User Configuration

Allows setting the Multicast parameters using the `RTSP SETUP` command.

Image Source

Allows selecting an image source for the RTP server.

- *Extended*: The **Extended** image source integrates all camera functions that are available for image generation. In essence, this refers to day/night switching, vPTZ, text and logo display and the obscuring of image areas (OA). This image source is only available with reduced image rates (20 frames/s in UltraHD) and only for the currently active image sensor (see **General Image Settings**).

- Fast: The **Fast** image source reduces image processing to a minimum in favor of higher frame rates. This means that the camera can generate up to 30 frames/s in UltraHD. This mode allows accessing all available image sensors.
- Make sure to apply the settings for the image source to the configuration so the camera can load the correct selection parameters for the aspect ratio and the [Stream Settings](#).

Aspect Ratio

Sets the aspect ratio of all video streams supplied by the RTP server. The following values are possible:

- 4:3
- 3:2 (only when using a 6MP sensor)
- 16:9
- When using the RTP integration mode, the aspect ratios of all available resolutions correspond to the aspect ratio of the resolution selected in **General Image Settings**. Hence, configuring the aspect ratio is not required in this mode.
- The full resolution of the 6MP sensor is only reached when using the 3:2 aspect ratio.
- The full resolution of the 4K sensor is only reached when using the 16:9 aspect ratio.
- When using the settings 4:3, 3:2, and 16:9, all resolutions up to the maximum resolution of the sensor are available. The RTP server automatically adjusts the resolutions and the image quality in the **General Image Settings** dialog to the requirements of the currently active RTP streams. **Caution:** When using *live image* recording, these settings also apply to the recorded video. To circumvent this behavior, you can activate full image recording in the **Recording** dialog.
- Note that the camera selection and the display mode in the **General Image Settings** dialog also influence the aspect ratio and thus the resolutions supported by the RTP server.

Stream Settings

The configuration options available in this section are dynamically adapted to the options chosen above.

- **Genetec:** Simply select the desired video codec for each stream. You can configure all other parameters directly in Security Center. **Caution:** Changing the video codec means that you need to remove the camera and add it again in Security Center. In this case, executing a reconnect will not work!
 - **ONVIF:** All configuration parameters can be managed using ONVIF. The [Stream Settings](#) section is not displayed in ONVIF mode.
- RTP:** Depending on the image source and the **General Image Settings**, you can use these parameters to configure the RTP streams.

You can configure the following parameters for each available stream:

Codec

Select the video codec of this stream. The selection of codecs depends on the selected image source:

- **MxPEG**
- **MJPEG**
- **H.264**

- **H.264**

- Make sure to apply changes to the selected codec to the configuration so the camera can load the correct selection parameters for the image size.

Frame Rate (fps)

Image rate in frames per second.

Image Size

Select the resolution of the video stream. You can only use one of the image formats (width x height) in the list box. The list depends in the integration mode and the selected video codec.

Enable Audio

Use this parameter to control the audio channel for this RTP stream. Note that this option is only available if a corresponding audio input has been configured and activated in the **Microphone and Speaker** dialog. This option is activated by factory default.

Activate Multicast

This settings allows using both Unicast and Multicast (simultaneous transmission to an unlimited number of recipients) at the same time.

Multicast Autostart

Controls whether or not the RTP stream in Multicast mode is always supplied or only if it is actually requested. If autostart has been disabled, the RTP Multicast stream will be started only once an RTSP connection has been established. The stream will stay active as long as there are active RTSP connections to the stream. If autostart has been enabled, the RTP Multicast stream will always be supplied.

Multicast IP

IP address of the Multicast group, to which the video data are being sent. This address must be within the SSM (*Source-Specific Multicast*) range (232.0.1.0 to 232.255.255.255), but all other valid Multicast IP

addresses will be accepted. If you leave this field empty, the server automatically chooses a valid IP address based on the factory IP address of the camera (10.x.y.z will be 232.x.y.z).

The server automatically sends the Multicast IP address and the port to the recipients.

Multicast Port

In Multicast mode, the server uses up to four consecutive ports to send the audio and video data to the recipients. Enter the first port of the range and make sure that the following three ports are not used on your network. Enter a port from the range 1025 to 65532.

Make sure that the specified port range is not blocked by the recipient's firewall.

Multicast TTL

The TTL ("Time To Live") specifies how many hops (routers) the Multicast packets can pass before being discarded. The valid value range is 1 through 255. The default value (1) means that the Multicast packets are only distributed within the current subnet of the camera.

Quality

Sets the image quality in percent.

Keyframe Interval

Number of frames between two full images. This option is not available for **MJPEG**.

Profiles

Sets the codec profile for the H.264 stream.

Bit Rate Control

Sets the strategy for controlling the bit rate limits.

- **CBR** Constant Bit Rate: Quality varies, constant bit rate.
- **VBR** Variable Bit Rate: Bit rate varies, constant quality.
- **MBR** Maximum Bit Rate: Variable bit rate with constant quality up to reaching the maximum; quality is reduced afterwards to maintain the bit rate limit.

Genetec Settings

This section is only available if the selected protocol activates Genetec.

PTZ

Allows controlling the camera vPTZ from Genetec Security Center. If this option is not selected, Genetec Security Center will apply its own vPTZ mechanisms to the received video stream.

This option is only available, if **Image Source** has been set to *Extended*.

ONVIF Settings

This section is only available if ONVIF has been selected as protocol.

The following functions are provided for ONVIF integration:

- **WS Discovery** for automatic detection of cameras by ONVIF-compatible devices. The current implementation only supports the ad-hoc mode, discovery proxies are not yet available.
- **Device Service** allows querying system data, configuration parameters, and allows managing the ONVIF user accounts.
- **Media Service** provides access to the H.264 and M-JPEG video streams. This interface allows creating and managing ONVIF profiles. In addition, you can configure the basic parameters of the video streams (such as image size, frame rate and quality).
- **Imaging Service** allows querying and configuring image parameters (such as brightness, exposure time, etc.).
- **Event Service** allows querying events via the ONVIF interface or the RTP server.
- **IO Service** allows querying input pins and setting signal outputs.
- **PTZ Service** is used to control the camera vPTZ.

Discoverable

Activates the service for automatic detection of the camera by other ONVIF devices. If this service is deactivated, you can manually integrate the camera into a video management system using the network address and the ports. For additional information, see the documentation of your video management system.

Scopes

Lists the scopes for this camera, one per line. You can configure the scopes list either using the ONVIF interface or the browser-based user interface of the camera.

Profiles

Lists all profiles that had been configured via the ONVIF interface. Use the **Reset Profiles** function if you want to delete these profiles. The *Default MJPEG Profile* and the *Default H.264 Profile* are predefined profiles. If you delete them, they will be recreated automatically using the factory default parameters.

User

Lists all ONVIF user accounts. ONVIF users have access to the ONVIF interface and the RTP live video streams. Accessing other interfaces, such as the web or the eventstream interfaces is not possible for ONVIF users. According to the ONVIF specification, access to the ONVIF interface is granted using a three-level user level model. The assignment of the user levels to specific access rights follows the *Default Access Policy Definition* of the ONVIF specification:

- Users of the **Admin** level have full access to the configuration and all RTP live video streams. In particular, administrators can manage the ONVIF user accounts.

- Users of the **Operator** level have limited access to the system. They can read parts of the configuration and can control actuators (such as PTZ, I/O ports). These users also have access to all RTP live video streams.
- Users of the **Users** level can read the basic configuration and have access to all RTP live video streams.

Changing the User Level

To change the user level, click on the current user level and select the new level from the drop-down field.

Changing the Password

Click on **Change Password** to change the password of a user. New passwords must have at least eight characters.

Deleting Users

Click on the **Delete** icon next to the password field to delete a user. Note that you cannot delete the last user since there must be at least one ONVIF user on the system.

Adding Users

Click on **Add User** to add a new user. Enter the user name, select the user level, and enter the password. User names must have at least three characters.

General Notes

- **Unicast:** Suitable for distributing one stream to single computers, since the camera generates individual streams for every recipient. The transmission data rate is a multiple of the number of recipients.
- **Multicast:** Suitable for distribution to an unlimited number of computers. Regardless of the number of recipients, the camera only needs to create and transmit the data of one stream.
- **No authentication:** Authentication when accessing the RTP video stream is deactivated, if **Public Access** is allowed for the **Live** access right in the **Group Access Control Lists**.
- **Standard users** are managed in the **Users and Passwords** dialog; they must belong to a group that has the **Live** access right.
- **ONVIF users** are managed either in the **Integration Protocols** (see section [Users](#)) or via the ONVIF interface. As a general rule, you have access to all RTP video streams. ONVIF user accounts are only used if the ONVIF integration of the camera has been activated.

When accessing the RTP server, authentication uses the different user types as specified by the *RTSP URLs*. All URLs assigned to an ONVIF account need to be authenticated using an *ONVIF* user account; all other URLs require a *Standard* user account for authentication.

- Streams in **RTP Integration Mode**

Access by means of a standard user account:

```
rtsp://<IP address>:<RTSP port>/stream/profile{0 - X}
```

- Streams in **Genetec Integration Mode**

The access URLs will be transmitted automatically to Security Center using the Genetec protocol. It is thus not necessary to enter these URLs.

Access by means of a standard user account:

```
rtsp://<IP address>:<RTSP port>/stream/genetec_video{0 - X}
```

- Streams in **ONVIF Integration Mode**

The access URLs will be transmitted automatically to the ONVIF clients. It is thus not necessary to enter these URLs.

Access by means of an ONVIF user account:

```
rtsp://<IP address>:<RTSP port>/stream/onvif-<ONVIF PROFILE TOKEN>
```

Smart Data Logging

Smart Data logging provides a mechanism for the camera to store data on the storage medium. By using MxMessageSystem for controlling the data transfer, you can record the data of several Smart Data sources on one camera and also record the data of one Smart Data source on several cameras.

Open the **Smart Data Configuration** dialog and scroll to the **Configuration** section to select the Smart Data sources for logging the data.

You can use the **Status** section to see if the settings are working properly.

Configuration

If this has not happened already, you can activate the data logging feature and enter the names of the Smart Data sources for which you want to log the data.

Enabled

Activates the event and Smart Data logging of the camera. This corresponds to activating the **Event Logging** option in the **Storage on External File Server / Flash Device** dialog.

This parameter is only available if the event logging service has not been activated yet.

Adding Smart Data Sources

Adds an entry to the list of Smart Data sources that are being logged. Enter the name of the Smart Data source as it has been set when configuring the Smart Data source.

A valid Smart Data source name must follow these rules:

- Must start with a letter.
- Must not contain spaces, tabs or the "/", "%", or "." characters.
- Must not be longer than 31 characters.

Remove

This removes the Smart Data source name from the list and deactivates the logging of data for the Smart Data source. The data logged until now will remain untouched and is still available. If you add the same Smart Data source name again later on, the camera resumes logging the data for this Smart Data source.

Status

This section shows the current status of Smart Data source logging in two tables.

The first table shows information on the received data for each of the configured Smart Data sources configured in the **Configuration** section.

- **Registered** shows whether or not the camera logs the data from this Smart Data source.
- **Received since last reboot** shows whether or not data has been received from this Smart Data source since the last reboot of the camera.

The second table shows information on the time range covered by the logs, the contents of the last log entry and the fill level of the storage area reserved on the storage medium.

- **Oldest transaction:** Timestamp of the oldest entry in the log.
- **Newest transaction:** Timestamp of the latest entry in the log.
- **Last transaction:** Contents of the newest logged entry.
- **Fill level:** When starting to store transaction data for the first time after formatting the storage area, this item shows the current fill level. If the entire storage space has been used up, the camera will start overwriting the oldest transaction data. After that, the fill level will not change any more and will remain at 100 percent. In order to see how long the logged data are stored, it is advisable to monitor the fill level frequently at the beginning.

Refresh

To update the information in the **Status** section, click on the **Refresh** button.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Serial Interface

This dialog configures the settings of the camera's serial interface (e.g., for displaying weather station data in the images).

Note: Using this feature requires an external module (such as the MX-232-IO-Box).

The Serial Interface

Open the **Serial Interface and Modem Setup** dialog to select the interface type, its mode and to set the parameters of the serial interface.

You can use the serial interface either as signal in-/output for controlling external devices (e.g. alarm bell and light using a relay), for transferring data via a modem or mobile phone, as a web terminal for controlling/monitoring machines or to retrieve data from one of the supported weather stations.

Selecting the Operating Mode

Select how you would like to use the serial interface in the **Operating mode** drop-down box:

Operating Mode

Data

Description

The serial interface operates as as terminal or as enhanced signal in-/output

Operating Mode

Modem

Description

The serial interface is connected to an analog or GSM/GPRS modem.

Operating Mode

Weather

Description

The serial interface is connected to a weather station.

Operating Mode

Off

Description

The serial interface is deactivated.

- Depending on the selected operation mode, additional parameters are displayed.
- **If the serial interface had been deactivated before, it will be only available after rebooting the camera.**

The Data Operating Mode

In the **Data** operating mode, you can use the camera as web-based data terminal for controlling, monitoring and remotely maintaining machines or to control other devices via the enhanced signal in-/output.

Parameter

Speed

Description

Select the data transfer speed supported by your modem.

Parameter

Bits

Description

Number of data bits per character.

Parameter

Parity

Description

Type of check for a transferred bit sequence:

N

No checks are performed.

E

The sequence is checked for an even number of single bits.

O

The sequence is checked for an odd number of single bits.

Parameter

Stop Bits

Description

Required number of stop bits.

Parameter

Flow Control

Description

Off

Flow control is deactivated.

If you are not sure which type of flow control your modem supports, do not change this setting. The factory default setting is *Off*.

CRTSCTS

Hardware flow control

Xon/Xoff (software flow control) is currently not supported.

Parameter

Echo

Description

Certain devices do not repeat the string that has been sent. For this reason, this string cannot be displayed in the web terminal. Set the Echo parameter to *On* in order to display the strings sent.

Parameter

End of Line

Description

The end-of-line character varies between devices. Select the correct line end character(s) for your device:

None

No line end character(s) are being added.

LF

Line feed.

CR

Carriage return.

LFCR

Line feed/carriage return.

CRLF

Carriage return/line feed.

Parameter

Buffer Size

Description

All incoming characters are stored in a buffer prior to being displayed in the web terminal. Set the buffer size (max. 100 kByte).

Parameter

Timestamp

Description

If you set this parameter to *On* every line is preceded by a timestamp.

The *Modem* Operating Mode

In the **Modem** operating mode, the camera can communicate with analog modems, GSM/2G and UTM/3G devices in order to establish data connections.

As modems, GSM/2G and UTM/3G devices strongly vary in their use of AT commands, it is recommended that you have the manufacturer's documentation ready when setting the following parameters.

Parameter

Speed

Description

Select the data transfer speed supported by your modem.

Parameter

Flow Control

Description

Off

Flow control is deactivated.

If you are not sure which type of flow control your modem supports, do not change this setting. The factory default setting is *Off*.

CRTSCTS

Hardware flow control.

Xon/Xoff (software flow control) is currently not supported.

Parameter

Modem Type

Description

Analog

Analog telephone modem.

GSM

GSM/2G modem (mobile phone with data transfer, e.g. Siemens MC35, Nokia 30).

GPRS

GPRS/2G capable cellular modem.

Null

A null modem is a special RS232 cable that has certain pins connected in a manner that a modem connection is simulated. In this cable, certain (at least the send and receive pins) or all pins are cross-connected.

Parameter

Modem Mode

Description

In

You can dial into the camera using the modem.

Out

The camera can dial out, e.g. for transferring images to the Internet.

In/Out

You can dial into the camera *or* the camera can dial out.

Only *one* channel is available so that dialing in and out does not work *simultaneously*.

Parameter

Termination Reboot

Description

If you set this parameter to *On*, the camera will reboot every time after it has dialed out. This means that the internal image storage is deleted and local network connections are interrupted.

It is recommended to use this setting only if the camera does not send images frequently.

Parameter

Dial Timeout

Description

The maximum time the camera should wait for a connection to be established.

Parameter

Modem Init Selection

Description

Enter the AT commands that your modem needs for initializing an outgoing call. Precede each quote character by a backslash (\").

Parameter

Modem Init Call-In

Description

Enter the AT commands that your modem needs for initializing an incoming call. Precede each quote character by a backslash (\").

Parameter

Modem disconnect

Description

Enter the AT commands that your modem needs for terminating a call. Precede each quote character by a backslash (\").

Parameter

Phone Number

Description

Enter the telephone number that you want the modem to use for dialing out.

Parameter

Dial Mode

Description

Tone

The selected numbers are transferred as tones. This is the factory default setting.

Pulse

The selected numbers are transferred as pulses. This is an old-fashioned method.

None

The dialing method preset by the manufacturer is used.

Parameter

IP Address Camera

Description

The IP address used by the camera. If you do not enter an IP address, the factory default IP address is used.

Parameter

IP Address Peer

Description

The IP address that is assigned to the device dialing in. If you do not enter an IP address, the factory-preset IP address (172.16.23.202) is used.

Parameter

IP Address Outgoing Gateway

Description

When having dialed out successfully, the called device transmits the IP address of the gateway. The IP address entered here must not be identical to either the camera's IP address or a local address. If you do not enter an IP address, the factory-preset IP address (172.16.23.203) is used.

Parameter

Authentication

Description

Select the authentication protocol of your choice to be used when establishing a connection. Other than PAP, CHAP encodes the user name and password prior to transfer. The factory default setting is PAP.

Both parties need to use the same protocol.

Parameter

Camera Login

Description

User name and password used to dial into the camera. Enter the password twice.

Parameter

Remote Login

Description

User name and password used by the camera for dialing out. Enter the password twice.

Parameter

Idle Time

Description

If no data traffic is recognized for the period of time set here, the camera terminates the connection.

Parameter

Echo Interval

Description

Period of time after which the camera checks whether the connection has been interrupted.
Recommended value: 10 seconds.

Parameter

Echo Fails

Description

Number of retries checking for interruptions. The connection is terminated when the selected value has been reached.

Parameter

PIN Code

Description

PIN code for using the GSM card. If no PIN is necessary, leave this box empty.

Caution

Entering an invalid PIN may result in a locked GSM card!

Parameter

PIN delay

Description

Period of time that the camera waits after the PIN has been entered.
Recommended value: 15 seconds.

The *Weather* Operating Mode

When operating in *Weather* mode, the MOBOTIX camera can poll the data from a weather station and it can display and archive the data.

The current software version supports the weather stations from [Reinhardt System- und Messelektronik GmbH](#) and the "Vantage Pro" family of weather stations from [Davis Instruments](#).

Parameter

Weather Station

Description

Select the weather station type.

Parameter

Speed

Description

Select the data transfer speed supported by your weather station.

Parameter

Flow Control

Description

Off

Flow control is deactivated.

If you are not sure which type of flow control your weather station supports, do not change this setting. The factory default setting is *Off*.

CRTSCTS

The camera uses the hardware flow control of the attached device.

Xon/Xoff (software flow control) is currently not supported.

Parameter

Text

Description

Enter the text to be displayed in the camera image. Enter the corresponding [weather variables](#) to display the data from the weather station. In order to display the text in the image, make sure that either the `^S#` or the `^s#` [comment variable](#) has been set in the **Text & Display Settings** dialog.

Information on positioning the weather variables is contained in the [Weather Variables](#) section on this help page.

Parameter

Rain Conversion Factor

Description

The unit of the rainfall amount measured by Vantage Pro stations. Make sure that you are using the proper volume per unit for the rain collector so that the displayed rainfall amounts are correct.

Parameter

Update Interval

Description

The camera actively polls new data from the weather station at the interval set in this parameter. Set this parameter to *Off* if the weather station sends its data automatically.

Parameter

Raw Data Log

Description

The camera can record the data from the weather station and can archive the data on an FTP server. Select how many records the camera should archive. Selecting *1* will archive every record, *Off* deactivates this feature.

Parameter

Raw Data Log Size

Description

Set the number of records to collect before uploading the file to the server defined in the FTP profile.

Parameter

Timestamp

Description

The camera can add a time stamp to every data record of the weather station. This allows having precisely timed data even if the weather station itself is not capable of adding timestamps to the data records.

Off

The camera does not add timestamps.

On

The camera adds a timestamp to every record it records.

Parameter

FTP Profile

Description

Select the FTP profile that should be used for transferring the weather data to an FTP server.

Parameter

FTP Directory

Description

The camera will upload the raw data log file into this directory on the server specified in the FTP profile.

Weather Variables

In order to display the weather variables used in the **Text** field in the camera image, make sure that either the `^S#` or the `^s#` [comment variable](#) has been set in the **Text & Display Settings** dialog.

The **Text** field of the **Text & Display Settings** dialog should also be used to *set the vertical position of the data in the image* (e.g. by using the `^g $\times$ , y;` placeholder):

`^g0, 3; ^S2` shows the weather station's data left-aligned, starting in the third row from the top on two lines with white text color and the default background color (the data from the serial interface is always left-aligned).

Unlike the other *variables*, the weather variables cannot be used in other dialog boxes (Email Profiles, FTP Profiles, etc.).

Weather Variable

```
$ (meteo.barometer.mmhg)
$ (meteo.barometer.inhg)
$ (meteo.barometer.mb)
$ (meteo.barometer.hpa)
```

Description

Barometric air pressure in millimeters of mercury (mmhg), inches of mercury (inhg), millibar (mb) or hectopascal (hpa).

Reinhardt (Parameters)

X
(DR)

Vantage Pro

X

Weather Variable

```
$ (meteo.bartrend)
```

Description

Barometric trend: "/" rising, "/" rising fast, "-" stable, "\" falling, "\" falling fast.

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

```
$ (meteo.tempin.c)
$ (meteo.tempin.f)
$ (meteo.tempin.k)
```

Description

Inside temperature in degrees Centigrade (c), Fahrenheit (f) or Kelvin (k).

Reinhardt (Parameters)

X
(TK)

Vantage Pro

X

Weather Variable

`$(meteo.tempout.c)`

`$(meteo.tempout.f)`

`$(meteo.tempout.k)`

Description

Outside temperature in degrees Centigrade (c), Fahrenheit (f) or Kelvin (k).

Reinhardt (Parameters)

X

(TE)

Vantage Pro

X

Weather Variable

`$(meteo.tempeextra1.c) - $(meteo.tempeextra7.c)`

`$(meteo.tempeextra1.f) - $(meteo.tempeextra7.f)`

`$(meteo.tempeextra1.k) - $(meteo.tempeextra7.k)`

Description

Seven additional temperatures in degrees Centigrade (c), Fahrenheit (f) or Kelvin (k).

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

`$(meteo.tempsoil1.c) - $(meteo.tempsoil4.c)`

`$(meteo.tempsoil1.f) - $(meteo.tempsoil4.f)`

`$(meteo.tempsoil1.k) - $(meteo.tempsoil4.k)`

Description

Four ground temperatures in degrees Centigrade (c), Fahrenheit (f) or Kelvin (k).

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

`$(meteo.templeaf1.c) - $(meteo.templeaf4.c)`

Reference

The Admin Menu

```
$(meteo.templeaf1.f) - $(meteo.templeaf4.f)
$(meteo.templeaf1.k) - $(meteo.templeaf4.k)
```

Description

Four leaf temperatures in degrees Centigrade (c), Fahrenheit (f) or Kelvin (k).

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

```
$(meteo.humin)
```

Description

Relative inside humidity in percent.

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

```
$(meteo.humout)
```

Description

Relative outside humidity in percent.

Reinhardt (Parameters)

X

(FE)

Vantage Pro

X

Weather Variable

```
$(meteo.humextra1) - $(meteo.humextra7)
```

Description

Seven additional relative humidity values in percent.

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable


```
$(meteo.moistsoil1.hpa) - $(meteo.moistsoil4.hpa) $(meteo.moistsoil1.cb) - $(meteo.moistsoil4.cb)
```

Description

Four ground humidity values in hectopascal (hpa) or centibar (cb).

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

```
$(meteo.wetnleaf1) - $(meteo.wetnleaf4)
```

Description

Four leaf humidity values from 0 to 15.

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

```
$(meteo.windspeed.ms)
```

```
$(meteo.windspeed.kmh)
```

```
$(meteo.windspeed.knots)
```

```
$(meteo.windspeed.mph)
```

Description

Wind speed in meters per second (ms), kilometers per second (km), sea miles per hour (knots) or (land) miles per hour (mph).

Reinhardt (Parameters)

X

(WG)

Vantage Pro

X

Weather Variable

```
$(meteo.avgwindspeed.ms)
```

```
$(meteo.avgwindspeed.kmh)
```

```
$(meteo.avgwindspeed.knots)
```

```
$(meteo.avgwindspeed.mph)
```

Description

Reference

The Admin Menu

Average wind speed of the current measurement interval in meters per second (`ms`), kilometers per second (`km`), sea miles per hour (`knots`) or (land) miles per hour (`mph`).

Reinhardt (Parameters)

X
(WD)

Vantage Pro

X

Weather Variable

`$(meteo.windpeak.ms)`
`$(meteo.windpeak.kmh)`
`$(meteo.windpeak.knots)`
`$(meteo.windpeak.mph)`

Description

Highest wind speed of the current measurement interval in meters per second (`ms`), kilometers per second (`km`), sea miles per hour (`knots`) or (land) miles per hour (`mph`).

Reinhardt (Parameters)

X
(WS)

Vantage Pro

-

Weather Variable

`$(meteo.winddir.grad)`
`$(meteo.winddir.de)`
`$(meteo.winddir.en)`

Description

Wind direction in degrees (`grad`). Usually with North = 0 degrees, increasing in clockwise direction or in eight steps when using German (`de`: `N`, `NO`, `O`, `SO`, `S`, `SW`, `W`, `NW`) or English (`en`: `N`, `NE`, `E`, `SE`, `S`, `SW`, `W`, `NW`) abbreviations.

Reinhardt (Parameters)

X
(WR)

Vantage Pro

X

Weather Variable

`$(meteo.avgwinddir.grad)`
`$(meteo.avgwinddir.de)`

`$(meteo.avgwinddir.en)`

Description

Average wind direction in the current measurement interval in degrees (`grad`). Usually with North = 0 degrees, increasing in clockwise direction or in eight steps when using German (`de`: N, NO, O, SO, S, SW, W, NW) or English (`en`: N, NE, E, SE, S, SW, W, NW) abbreviations.

Reinhardt (Parameters)

X

(WD)

Vantage Pro

X

Weather Variable

`$(meteo.rainrate.mmh)`

`$(meteo.rainrate.inh)`

Description

Current precipitation in millimeters per hour (`mmh`) or inches per hour (`inh`).

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

`$(meteo.rainday.mm)`

`$(meteo.rainday.in)`

Description

Precipitation of the current day in millimeters (`mm`) or inches (`in`).

Reinhardt (Parameters)

X

(RE)

Vantage Pro

X

Weather Variable

`$(meteo.rainmonth.mm)`

`$(meteo.rainmonth.in)`

Description

Precipitation of the current month in millimeters (`mm`) or inches (`in`).

Reinhardt (Parameters)

Reference

The Admin Menu

-
Vantage Pro
X
Weather Variable

```
$(meteo.rainyear.mm)  
$(meteo.rainyear.in)
```

Description
Precipitation of the current year in millimeters (mm) or inches (in).
Reinhardt (Parameters)

-
Vantage Pro
X
Weather Variable

```
$(meteo.rainfree.mm)  
$(meteo.rainfree.in)
```

Description
Precipitation variable for rain values of a different interval.
Reinhardt (Parameters)

X
(RD)
Vantage Pro

-
Weather Variable

```
$(meteo.solar)
```

Description
Sun shine in watts per square meter.
Reinhardt (Parameters)

X
(SO)
Vantage Pro

X
Weather Variable

```
$(meteo.uvidx)
```

Description
Index value of ultra-violet radiation.

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

`$ (meteo.sunrise.24h)`

`$ (meteo.sunrise.12h)`

`$ (meteo.sunrise.ampm)`

Description

Time of sunrise in 24-hour format (24h), 12-hour format (12h) or 12-hour format with added *am* and *pm* indicators (ampm).

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

`$ (meteo.sunset.24h)`

`$ (meteo.sunset.12h)`

`$ (meteo.sunset.ampm)`

Description

Time of sunset in 24-hour format (24h), 12-hour format (12h) or 12-hour format with added *am* and *pm* indicators (ampm).

Reinhardt (Parameters)

-

Vantage Pro

X

Weather Variable

`$ (meteo.bat1)`

Description

Current voltage of power supply in Volts.

Reinhardt (Parameters)

X

(VI)

Vantage Pro

X

Weather Variable

$$\$(meteo.miscvalue1) - \$(meteo.miscvalue3)$$

Description

Additional sensors 1 to 3.

Reinhardt (Parameters)

X

(ZA,ZB,ZC)

Vantage Pro

-

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

 **In order to enable these settings, you need to [store the configuration](#) and reboot the camera!**

Configuration

Use the dialogs in this section to manage camera settings and to transfer settings to cameras.

Note: Storing the configuration is a two-step process that is only finished once the configuration has been **stored in the camera's permanent memory**. Please also read the [General Remarks on Storing Camera Settings](#), p. 34 section for more information.

Configuring the Camera

To configure the camera, you normally select parameters in the dialogs and enter text in the text boxes. These parameters and values are stored in the *configuration file*.

You can view (but not modify) this file using the **Show Current Configuration** dialog.

The configuration file resides in the camera's permanent storage (flash). The configuration is read once at boot time and then copied to the camera's RAM. Any changes to the configuration are done in the copy of the original and are only valid until the next system start.

Some configuration settings (network, storage on external file server / Flash device, switching the mode of the serial interface) do not become effective at runtime. In order for modifications of these settings to become active, you need to perform a **camera reboot**. All other configuration settings can be modified at runtime and become effective immediately.

MOBOTIX cameras do not accept configuration files saved by a camera with a lower major release number (i.e., current camera 7.x, configuration file 5.x).

The Basic Configuration of the MOBOTIX Camera

Using the **Quick Installation** wizard is the easiest and most secure way for initially configuring the camera. To modify other settings, you will use the submenus of the **Setup Menu** and the **Admin Menu**.

Saving the Configuration

In the dialogs, click on the **Set** button to activate your settings and to save them until the camera is rebooted.

Click on the **Close** button to close the dialogs. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Working with the Configuration File

In order to configure certain parameters of your MOBOTIX camera, you may need to modify settings in the configuration file. All related parameters are grouped together in configuration sections.

Action

Store current configuration permanently (to flash)

Description

Stores the current configuration in the camera's permanent storage so that the changed version is used when the system is rebooted.

Action

Reset configuration to factory defaults

Description

It is possible to reset the camera's current configuration to the factory default settings. After doing so, you need to save the configuration to permanent storage and reboot the camera.

Caution

This will overwrite any modifications of the network settings. Make sure that the camera can still be accessed.

The current configuration can be replaced as a whole or in parts (see [Keep Parts of the Configuration](#)).

Action

Restore last stored configuration from flash

Description

If you have modified the configuration temporarily and do not intend to keep the changes, you can retrieve the last configuration that has been stored permanently.

The current configuration can be replaced as a whole or in parts (see [Keep Parts of the Configuration](#)).

Action

Load configuration from local computer

Description

Using this function, you can load a locally stored backup copy of the configuration into your camera. After doing so, you need to save the configuration to permanent storage and reboot the camera. In order to be accepted, the file originally must have been created by this camera.

The current configuration can be replaced as a whole or in parts (see [Keep Parts of the Configuration](#)).

Action

Save current configuration to local computer

Description

With this function, you can create a backup copy of the current configuration on your local computer. Note that FTP passwords etc. are readable in the file.

Action

Show current configuration

Description

The current configuration file is displayed as formatted text. Alternatively, you can choose to display the configuration file as **text only** file.

Action

Edit configuration file (for experts)

Description

It is possible to modify parameters directly in the configuration file. **It is recommended that only experts make use of this feature.** An invalid modification of parameters may render the camera inaccessible. Save the modified configuration in the permanent storage and reboot the camera.

Action

Backup and Restore system configuration to/from SD card

Description

Use this dialog to create encrypted backups of the system configuration on the SD card of the MOBOTIX camera. If required, you can use these backups to restore the entire configuration.. For

additional information on this dialog, see the [System Backup and Restore](#) help page.

Action

Manage other cameras

Description

Open this dialog to automatically search for MOBOTIX cameras on the network or to add them manually. You can save the list of the discovered cameras in the camera configuration, so the camera can use this list in the [MultiView screen](#), for example. For additional information on this topic, see the [Configuring MultiView Screens](#) help page.

Keeping Parts of the Configuration

Usually, when loading a backup copy from your local computer or when resetting the configuration to the factory default settings, the entire configuration is replaced.

In order to keep parts of the configuration (e.g. user and password settings), you need to check the *everything except the parts checked below* option in the **Replace** list. Check the configuration sections that are **not** to be replaced.

Next, click on **Load** in the **Load Configuration From File** dialog, or click on **Restore** in the **Restore Configuration From Flash** dialog, to replace the complete configuration or parts of it in the *current* camera configuration.

Remember, that the changes to the configuration still apply only to the current camera settings. If you reboot now, the old configuration will be used if you do not **store** the current configuration to the permanent (flash) storage of the camera.

System Backup and Restore

The **Backup and Restore** dialog enables you to store the current configuration of the camera and attached MXBUS modules as an encrypted backup on the camera's SD card and to restore the configuration from such a backup.

The encryption is based on the Super PIN. If a Super PIN has not been configured, you can do so in the **Users and Passwords** dialog.

Backing Up the System Configuration

Click on the **Start Backup** button in order to create a system backup. The camera can store max. five backups. If five backups have been stored, the camera will remove the oldest one if you create another backup.

Every backup has its own timestamp, allowing you to differentiate between the different backups.

Restoring the System Configuration

Select the backup you want to restore and enter the corresponding Super PIN. Next, click on the **Restore configuration and reboot** button. After having restored the configuration, the system will automatically reboot to finalize the process.

Notes on the Dependency between the Backup Feature and the Super PIN

All backups are encrypted using the current Super PIN. When changing the Super PIN, the camera automatically adjusts the encryption of the existing backups.

A special situation may occur if you are bringing a camera with existing backups that had been used before back into service and if you are setting a new Super PIN. In such a case, accessing the existing backups is not possible any more for security reasons. Similarly, creating new backups in this case.

If you want to access the backups again, you can change the Super PIN to the digits that had been used previously. If this is not possible (e.g., since the old Super PIN is not known), you can still delete all existing backups. The camera will re-initialize the encryption mechanism and you can create new backups.

Delete All System Configuration Backups

Click on the **Delete all Backups** button if you want to remove all backups that are stored on the SD card. This may make sense, for example, if the camera is used for a different purpose.

System Update

Use this dialog to upload a file for updating the software of the MOBOTIX camera.

Updating the Camera Software

Open the **Update System Software** dialog to select special files with a `.mp1` file extension for updating the camera software.

Loading the Update File

Warning

- Make sure that you are **connected directly to the camera**, i.e. without any **proxy server** or similar in-between. Ask your administrator if you are unsure of this.
- Make sure that **JavaScript** has been enabled in your browser and that the browser **does not block the popup windows of the camera**.
- Make sure that you **reboot the camera** before attempting to upload new software.
- Make sure that the power supply and the data connection **are not disrupted** while the upload is in progress.
- Never close browser windows or switch to other browser windows until the results of the upload are displayed.
- If the update fails **do not reboot the camera**, but try to **upload the camera software again**.

1. Download the update file from the MOBOTIX support page to your computer: www.mobotix.com in the **Support > Software Downloads** section.
2. Store the current configuration file on your computer by clicking on **Save current configuration to local computer** in the Admin menu.
3. Open the **Reboot the Camera** dialog, restart the camera and re-open this help page.
4. Open the **Update System Software** dialog.
5. Read the notes in the dialog! Make sure that you read and understand the notes on connection speeds and the duration of system updates at the end of the dialog!
6. Click on **Browse** to select the file on your computer you would like to upload to the camera.
7. Click on the **Start Software Update** button.

After the software has been updated successfully and after you have rebooted the camera, message windows may alert you of configuration parameters not matching. If this happens, you should **reset the configuration to factory defaults**, either in parts or as a whole.

If you would like to keep certain settings, you should choose *Everything except the parts checked below* and then activate all options that should *not* be replaced, such as **Security, Networking, Audio, ...**).

For additional information on this topic, see the [Configuring the Camera](#) help page.

The Setup Menu

This menu contains the settings you need to configure image processing, text overlays, actions and recordings, among other things.

Image Control

These dialogs are controlling the image and exposure settings and the text overlays of the camera, for example.

General Image Settings

Open the **General Image Settings** dialog to define the basic settings for image control in the camera.

- Some of these settings can be changed using the Quick Control (pull-down menus) above the image on the **Live** screen.
- Click on the **Factory** button to reset all parameters to the factory default settings.
- Click on the **Restore** button to restore the last stored configuration.
- Click on the **More** button at the bottom of the dialog to display all options.

Description of Parameters

Configuration of the Panorama view (D16-180° and D16-Pano only)	Activates an OnScreen Control , which allows panning and tilting Panorama windows. This element also controls the trapezoid correction used for adjusting the perspective of the image.								
Camera Selection	Select the lens that you want see on the Live and Guest screens or set the picture-in-picture mode to combine the images of both lenses (only for dual-lens cameras). <table border="1"> <tr> <td>Right</td><td>Right lens (factory default setting, usually the wide-angle lens).</td></tr> <tr> <td>Left</td><td>Left lens (usually the tele lens).</td></tr> <tr> <td>Both</td><td>Combines the images of both lenses and displays them side-by-side (left: left lens, right: right lens, as seen by the camera).</td></tr> <tr> <td>Auto</td><td>Automatically selects the color sensor for daylight and the b/w sensor for night recording (only for Day/Night cameras).</td></tr> </table>	Right	Right lens (factory default setting, usually the wide-angle lens).	Left	Left lens (usually the tele lens).	Both	Combines the images of both lenses and displays them side-by-side (left: left lens, right: right lens, as seen by the camera).	Auto	Automatically selects the color sensor for daylight and the b/w sensor for night recording (only for Day/Night cameras).
Right	Right lens (factory default setting, usually the wide-angle lens).								
Left	Left lens (usually the tele lens).								
Both	Combines the images of both lenses and displays them side-by-side (left: left lens, right: right lens, as seen by the camera).								
Auto	Automatically selects the color sensor for daylight and the b/w sensor for night recording (only for Day/Night cameras).								
Camera Night Switch (DY/NI) (only Day/Night models)	Day/Night camera models automatically switch between day and night lenses when the illumination falls below or exceeds the value set in Night Camera Level. The higher the value, the earlier the camera switches to the night lens. Notes ■ This parameter is only available for Day/Night models. ■ Set the Night Switch Delay to the desired value. This delay prevents switching to the other lens when illumination increases or decreases for a short period of time (e.g. a car with headlights passing by at night). Switching Source Select the sensor or signal that should be used for switching: <table border="1"> <tr> <td>Illumination from camera</td><td>Uses the illumination measured by the camera as criterion switching between the day and night lenses (default setting).</td></tr> <tr> <td>CS1 to CS5</td><td>The custom signals CS1 to CS5 are defined in the General Event Settings dialog (using one of them, you can use a key switch attached to the camera's signal input or a master camera for switching, for example).</td></tr> <tr> <td>CSL</td><td>The "logically combined" signal CSL is also defined in the General Event Settings dialog. It allows combining the two custom signals CS1 and CS2 using a logical operation (AND or OR) or to copy the CSL signal from the master camera.</td></tr> <tr> <td>Illumination from <device name></td><td>If an additional MOBOTIX device has been attached that can also measure illumination (e.g., an MX-GPS-Box), the camera can use that device as a criterion for switching between the day and night lenses.</td></tr> </table> Hint	Illumination from camera	Uses the illumination measured by the camera as criterion switching between the day and night lenses (default setting).	CS1 to CS5	The custom signals CS1 to CS5 are defined in the General Event Settings dialog (using one of them, you can use a key switch attached to the camera's signal input or a master camera for switching, for example).	CSL	The "logically combined" signal CSL is also defined in the General Event Settings dialog. It allows combining the two custom signals CS1 and CS2 using a logical operation (AND or OR) or to copy the CSL signal from the master camera.	Illumination from <device name>	If an additional MOBOTIX device has been attached that can also measure illumination (e.g., an MX-GPS-Box), the camera can use that device as a criterion for switching between the day and night lenses.
Illumination from camera	Uses the illumination measured by the camera as criterion switching between the day and night lenses (default setting).								
CS1 to CS5	The custom signals CS1 to CS5 are defined in the General Event Settings dialog (using one of them, you can use a key switch attached to the camera's signal input or a master camera for switching, for example).								
CSL	The "logically combined" signal CSL is also defined in the General Event Settings dialog. It allows combining the two custom signals CS1 and CS2 using a logical operation (AND or OR) or to copy the CSL signal from the master camera.								
Illumination from <device name>	If an additional MOBOTIX device has been attached that can also measure illumination (e.g., an MX-GPS-Box), the camera can use that device as a criterion for switching between the day and night lenses.								

	To determine the best possible value for defining the night camera level, proceed as follows: ■ Click on the More button at the bottom of the Text & Display Settings dialog to display all options. ■ In the same dialog, set the Text Display parameter to <i>On</i>. ■ In the Comment text box, enter the $\wedge IR$ placeholder. The camera now displays the current illumination rate in Lux on the live image. See also Placeholders for Dynamic Image Texts ■ Set the Level Meter parameter to <i>Bar</i>, and select <i>Illumination</i> as source for the level meter. The camera now displays the current exposure rate as a red bar on the live image. The value for switching to the night lens is displayed as white vertical line.
Image Size	Select the display size of the image. Dual images (right and left image sensor) automatically require twice the width. When selecting <i>Custom Size</i>, the camera will use the image size specified in the Custom Size field (see below).
Camera Time Switch (all other models with dual lenses)	Switches to the other lens according to a Time Table, if the Camera Selection option has been set to <i>Auto</i>. If a time table profile is <i>active</i> or <i>on</i> (the  symbol is visible), the camera uses the <i>left</i> image sensor. If the time table profile is <i>not active</i> or <i>off</i>, the camera will use the <i>right</i> image sensor.
Custom Size (only displayed if Image Size has been set to <i>Custom Size</i>)	Enter the size of the customized image in pixels that is displayed if Resolution has been set to <i>Custom Size</i>. If the image size defined here has a different ratio than 4:3, you can click with the mouse near the borders of the image to move the image area within the standard image in the desired direction (panning). It is recommended to set the coordinates of the custom size by creating a yellow frame on the live image of the camera and copying them into the required field. For additional information on this topic, see the Graphically Entering Image Areas help page. If you have selected Custom Size, you can also <i>crop</i> the image. This feature will define a specific portion of the image, which will then be used for all other operations. This feature also allows an interactive definition of the yellow rectangle in the image. Next, clicking on the Adjust Custom Size button will adjust the image size to match the ratio of the selected image area, thus displaying the whole image at once. <i>Cropping</i> of the image section is only possible if the display mode is not distortion-corrected.
Image Quality	Select the desired ratio of image quality to frame rate: ■ High: Read full image sensor to deliver the best image quality. ■ Default: Good image quality with high frame rates (this is the default setting). ■ Fast: Highest frame rate with some loss in quality.
Frames per second	Number of images per second that are recorded by the camera. If long exposure times are necessary to comply with poor lighting conditions, the frame rate decreases.
Playback has Priority	This option controls the camera behavior when playing back recordings via the camera. This is the case, if you are using MxManagementCenter for browsing the recordings, for example.

	Since the playback creates extra processor load in the camera, this option can be used to give higher priority to the playback than to creating live streams. This results in smoother display of the video during playback. Note that both parameters of this function only work if no recording is running (continuous or event recording, see below): ■ Live and Pre-Alarm Images at 2 fps: If the camera plays back images, the frame rate of live streams and the pre-alarm frame rate of recordings will be reduced to 2 frames/s. ■ Live and Pre-Alarm Images at Recording Frame Rate: If the camera plays back images, both, the pre-alarm frame rate of recordings and the frame rate of live streams will be created with the selected recording frame rate, if it is higher than 2 frames/s. This settings only makes sense if you need a higher frame rate than 2 frames/s for pre-alarm images and the recording frame rate is considerably lower than the live frame rate. Important Recordings always have the highest priority! If an event recording or a continuous recording is running, the frame rate of the live stream is the same as the defined recording frame rate, if it is higher than 2 frames/s. This applies to both live image and full image recording.
Data Rate	This value sets the maximum data rate for the MxPEG/JPEG streams in kbps. Enter 0 to for an unlimited data rate.
Display Mode	Sets the display mode of the selected image sensor: ■ Full Image: Shows the full image of the selected image sensor. When using 180° ("Hemispheric") lenses, the camera shows the uncorrected original image (circular shape). ■ Normal: Shows a corrected image from 180° lenses in 4:3 format. ■ Lens Correction: On all cameras with distortion correction (excluding 180° lenses) – shows a corrected image in 4:3 format. ■ Picture in Picture: Displays a small preview image inside of the other lens in the main image. If the resolution is lower than VGA (640x480 pixels), the camera suppresses the preview image. ■ Picture in Zoom: Displays a small overview image in the zoomed image. If the resolution is lower than VGA (640x480 pixels), the camera suppresses the preview image. ■ Event in Picture: Displays the last event image in the live image. If the resolution is lower than VGA (640x480 pixels), the camera suppresses the preview image. ■ Surround: Displays four images with independent views. ■ Panorama: Shows a corrected image in 8:3 format. This view mode shows a special 180° image. ■ Double Panorama: Shows two corrected images, which will be displayed differently depending on where the camera has been mounted: ■ Ceiling mounted: Shows two 180° views in a special projection, thus providing for full 360° surveillance. The upper image section shows "North" exactly at the center of the image (as set using the Installation Quick Control; the lower image section shows the opposite direction. Furthermore, the viewing directions of both images are linked with the second image trailing the first by 180 degrees. Note that you cannot change the tilt angle of this image as this disturb the image geometry of the projection. ■ Mounted to wall: Displays two Panorama 180° views pointing in the same direction. ■ Panorama/Focus: Consists of one panorama image in 8-to-3 format and two corrected 4-to-3 images below.

	Notes ■ The display modes described above depend on your camera model and the installed lenses. Hence, not all modes are available on all cameras. ■ The width and height of the inset images are always a quarter of the width and height of the main image. The Enlarge inset image option in the General Image Settings dialog doubles the width and height of the inset image. The Position of the inset image options in the same dialog specify where the inset image will be displayed within the overall image. ■ The Panorama display modes provide the OnScreen Control, which allows panning, tilting and zooming the corresponding Panorama window. This element also controls the trapezoid correction used for adjusting the perspective of the image. ■ Day/Night cameras are using the display mode of the day sensor if the image sensor has been set to <i>Auto</i>.
Mirror & Rotate Image	Using these parameters, you can mirror the image (but not the displayed text) in horizontal and vertical direction or rotate it. Note These parameters depend on your camera model and may thus not be available in all cameras. Caution When Mounting the Camera Upside-Down in Outdoor Scenarios! ■ When mounting a MOBOTIX , or upside-down <i>in outdoor scenarios</i>, the camera is not IP65-certified any more! ■ When mounting a MOBOTIX M16, M26 or S16/S26 camera upside-down <i>in outdoor scenarios (even though the camera is protected from rain)</i>, humidity from natural condensation cannot exit the camera properly. This will inevitably cause water to collect in the camera, leading to irreparable damages! ■ Mounting a MOBOTIX M16, M26 or S16/S26 upside-down <i>in outdoor environments</i> will automatically void your warranty!
Sharpness	In order to improve image quality, you can adjust the sharpness control value. A lower value results in a smoother (less crisp) image. The factory default setting is 4.
Automatic Sharpness Control	This parameter allows reducing the perceived image noise by automatically adjusting the sharpening of images in dark scenes to the image brightness. The factory default setting is <i>activated</i>. Note This feature is not available on cameras with 1MP and 3MP image sensors.
Image Noise Suppression	Growing darkness may result in the image quality getting poorer because of image noise. Even with higher illumination, varying pixel sensitivity of the sensor can create image noise. In this case, filtering is applied within one picture (<i>intra-frame</i>). Filtering reduces the data volume, but sometimes

	also suppresses fine details. You should also take the quality settings of the video codec into account. The Noise Suppress parameter minimizes this effect: ■ Off: Deactivates noise suppression. ■ Low: As darkness grows, the camera will filter within an image and will reduce sharpness and color saturation (default setting). ■ High: As darkness grows, the camera will use more spatial filtering, i.e., within an image (intra-frame).												
Temporal Noise Filter	Temporal (time-related) or dynamic image noise results in changes of pixel brightness over time. This restricts detail visibility, creates visual distractions and hampers video compression. If this filter is active, filtering considers several images (<i>inter-frame</i>). The number of filtered images varies. Filtering enhances video quality and reduces the data volume. Temporal noise filtering allows selecting the method that will be used to reduce dynamic image noise from one image to the next. Together with the 2D filters (intra-frame), this constitutes a 3D noise filter (3DNR, <i>3D Noise Reduction</i>). ■ Off: No temporal filtering. ■ Luma: Only the high-resolution brightness information is filtered between images. This is usually sufficient for most situations. ■ Chroma: Provides for filtering the color information at one-half of the resolution from image to image. Useful for high zoom settings, H.264 encoding in darkness, etc.												
Obscure Image Area (OA)	In some applications, certain image parts need to be obscured. Activate this parameter and select a Time Table, the Obscure Image Color and the area that is to be covered. Note This parameter is only available for Secure models. Obscure Image Time Table Select a Time Table profile to activate/deactivate the obscured image areas in a scheduled manner. Obscuring Image Areas Defines the image areas that are to be obscured; every line in the definition box (e.g. 0, 270, 190, 100, 100, 2) represents one window. The image coordinates' origin is the lower left corner of the image. Format of one line: lens, pos. x, pos. y, width, height, type Parameters of one configuration line: <table><tr><td>Image sensor</td><td>0 = right 1 = left</td></tr><tr><td>Pos. x</td><td>Number of pixels from the left edge of the image to the left edge of the window</td></tr><tr><td>Pos. y</td><td>Number of pixels from the lower edge of the image to the lower edge of the window</td></tr><tr><td>Width</td><td>Width of the window in pixels.</td></tr><tr><td>Height</td><td>Height of the window in pixels.</td></tr><tr><td>Type</td><td>0 = filled rectangle</td></tr></table>	Image sensor	0 = right 1 = left	Pos. x	Number of pixels from the left edge of the image to the left edge of the window	Pos. y	Number of pixels from the lower edge of the image to the lower edge of the window	Width	Width of the window in pixels.	Height	Height of the window in pixels.	Type	0 = filled rectangle
Image sensor	0 = right 1 = left												
Pos. x	Number of pixels from the left edge of the image to the left edge of the window												
Pos. y	Number of pixels from the lower edge of the image to the lower edge of the window												
Width	Width of the window in pixels.												
Height	Height of the window in pixels.												
Type	0 = filled rectangle												

	1 = shaded rectangle
	2 = mosaic (default)

Hint

For defining a new or additional window, follow the instructions in the [Graphically Entering Image Areas](#) help page.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Exposure Settings

Open the **Exposure Settings** dialog to adjust the exposure of the camera and to optimize it for the lighting conditions at the camera location. The MOBOTIX camera is equipped with several automatic features so that the best possible images can be created under all weather and lighting conditions. Normally, only extreme conditions call for manual modifications of the exposure settings.

- In order to facilitate the configuration of the camera, it provides [image programs](#), which quickly and easily adjust the camera to different application scenarios.
- Some of these settings can also be changed using the pull-down menus above the image on the **Live** screen.
- Click on the **More** button at the bottom of the dialog to display all options.

Description of Parameters

Linked Image Control

This mode uses the same exposure values and internal image correction settings for both sensors. This ensures that the images from both sensors look as similar as possible.

This parameter is only available for models with identical image sensors.

Automatic Contrast

The automatic contrast should always be activated in order to create high-contrast images under all lighting conditions.

Off

Deactivates contrast enhancement.

Default

The camera enhances image contrast evenly using the whole image area.

Extended

The camera enhances image contrast by displaying dark areas brighter without losing details in the areas that are already illuminated well (the camera tries to amplify these areas also).

Since the contrast enhancement is not applied evenly, the images may get a somewhat unnatural touch.

Aggressive

Works similar to **Extended**, but enhancement is not restricted. This mode may produce images that look unnatural.

Brightness

Changing the **Brightness** parameter will adjust the *entire* image area.

- Configure the [Exposure Windows](#) first (see below). This is usually sufficient to achieve good image exposure control.
- If setting the exposure windows alone does not produce satisfying results, you may want to use the **Brightness** parameter for fine tuning.
- Selecting high values for this parameter that are too high may lead to over-exposure of bright image areas.

Backlight Correction

This parameter also is used for adjusting the brightness of an image. However, it only affects the *darker portions* of an image.

- Start by configuring the [Exposure Mode](#) and the [Exposure Windows](#) (see below). This is usually sufficient to achieve good image exposure control.
- If setting the exposure windows alone does not produce satisfying results, you may want to use the **Backlight Correction** parameter for fine tuning.

Exposure Mode

Full Image Area: The full image of the sensor (i.e. the 1x Zoom, no lens correction on cameras which have this feature) is used to determine the proper exposure. The following parameters for [exposure](#)

[windows](#), [exposure weighting](#) and [white balance weighting](#) are used to set the appearance of the image.

This is the preferred mode when using **Full Image Recording** in the background. This mode guarantees that the recording channel always keeps its exposure.

Visible Image Area: This mode optimizes exposure control for the visible image section. Other parameters are not used, i.e. the settings of the [exposure windows](#), [exposure weighting](#) and [white balance weighting](#) parameters are ignored.

If the camera uses **Full Image Recording**, this setting could render the recorded images unusable (e.g. when zooming into very dark or very bright areas of the image, the rest of the image will be overexposed or underexposed, respectively).

Exposure Window

Exposure windows are defined image areas that are used for exposure and color adjustment. To facilitate exposure window positioning, you can select from a number of pre-defined exposure windows.

- This setting is only relevant in the *Full Image Area* [exposure mode](#).
- All exposure window dimensions refer to the entire image sensor.
- If the camera image has been **mirrored or rotated**, the positioning of the pre-defined exposure windows and the coordinate system of the custom windows changes accordingly.
- If your camera is a dual lens model, you can define different exposure windows for each lens.
- You may also use the exposure windows to perform the automatic [White Balance](#) adjustment.

Predefined exposure windows

Full Image

Uses the complete image area for exposure control.

Quarter

A measurement window at the image center that covers a quarter of the viewable image area.

Center

One measurement window at the image center.

Spot

One small measurement window at the image center.

Top

One horizontal measurement window at the top of the image.

Center

One horizontal measurement window at the image center.

Bottom

One horizontal measurement window at the bottom of the image.

Right

One vertical measurement window at the right border of the image.

Vertical

One vertical measurement window at the image center.

Left

One vertical measurement window at the left border of the image.

Right & Left

Two vertical measurement windows at the left and right borders of the image.

Custom exposure windows

For more information on how to define these windows, please see the [Using Custom Windows](#) section.

Exposure Weighting

Using this parameter, you can define how much the exposure windows are to be considered for exposure control—relative to the rest of the image.

Values: *Total*, 0%.. 100%

The *Total* setting will use the entire image for exposure control. The factory default setting is *100%*, which means that only the exposure windows are used for exposure control.

White Balance Weighting

Using this parameter, you can define how much the exposure windows are to be considered for white balancing—relative to the rest of the image.

Values: *Total*, 0%.. 100%

The factory default setting is *Total*, which means that the entire image is used for white balance. The setting of *100%* means that only the exposure windows are used for exposure control.

The values of 0%..90% are not available on some image sensors.

Show Windows

On: Shows the defined exposure window(s) as **green** box(es) within the image. Exclusion windows are shown with a **red** frame.

The *Histogram* option shows additional parameters of specific image processing features in the image.

Average Brightness

This parameter of exposure control (default is 40%) specifies the average brightness of the image pixels considered for exposure control (→ [exposure windows](#)) that the camera tries to reach; it is thus the

target value for the finished image's brightness. In order to reach this value, the camera first tries to change the exposure time within the limits set by the **minimum** and **maximum exposure time** and adjusts the hardware amplification within the internally defined limits.

Minimum Average Brightness

If the brightness continues to decrease, the camera extends the exposure time and increases the hardware amplification to maintain the specified [average brightness](#), until the maximum exposure time has been reached.

If it still gets darker, the image brightness drops below the value of the **average brightness** and approaches the value of the **minimum average brightness**. If the image brightness drops below this value, the camera will activate the software amplification to maintain the **minimum average brightness** for as long as possible.

When using this parameter, the following rules apply:

- *A lower value produces images with higher quality, which may become darker and thus constitute a more natural reflection of reality. The default value of 20% results in a largely lifelike behavior.*
- *A higher value increases the brightness of the images, but it can produce images with lower quality due to increased image noise.*

Night Improvement

This feature improves the contrast of dark images.

Activating this parameter may result in an increase of image noise.

Sensor Gain Range

This parameter sets the range in which the hardware gain is operating. When using this parameter, the following rules apply:

- *A lower gain produces images with higher quality, which may become darker and thus constitute a more natural reflection of reality.*
- *A higher gain increases the brightness of the images, but can produce images with lower quality due to increased image noise.*

- In order to maximize noise reduction, you should deactivate the Night Improvement feature.
- This feature is not available on cameras with 1MP and 3MP image sensors.

Exposure Program

Use this parameter to influence the balance between an exposure time that is as short as possible and hardware amplification that is as low as possible. The objective is to reach a fair compromise between clear images of moving objects (short exposure time, high amplification) and as little image noise as possible (long exposure time, low amplification).

When using the camera in a **web application**, a *positive value* would create images with little amplification (i.e. little image noise); moving objects would be displayed in a blurred manner. On the other hand, a **security application** would require a *negative value* to show moving objects as clearly as possible, even if this would mean higher image noise.

Max. Exposure Time

Set the maximum exposure time in seconds.

Min. Exposure Time

Set the minimum exposure time in seconds.

Frequency of Power Supply

This parameter sets the camera to the power supply frequency of the respective country to prevent interference by artificial light.

The factory default setting for Europe is *50 Hz*. For Canada, the U.S.A. and Japan, set the power supply frequency to *60 Hz*. If the camera is used in daylight conditions (rather than artificial illumination), you can also use the *No artificial light* setting.

Using Custom Windows

This value allows using custom exposure windows. You can define such a window by creating a selection rectangle in the live image ([Shift]-click, click into the image, then click on **Add Rectangle**), by using the **Exposure Control** Quick Control or manually by editing the exposure window definitions in the **Custom Windows** text field.

Every line in the definition box that does not begin with a hash sign (#, comment - can be used to deactivate exposure windows) defines one exposure window.

Exposure windows can be defined either as rectangles or as polygons.

Rectangle syntax:

```
[#]image sensor, horizontal position, vertical position, width, height[, in/out]
```

(optional parameters have square brackets)

Example 1. "Quarter" Exposure Window in Rectangle Syntax

```
0,224,168,832,624,in
```

Polygon syntax:

```
[#]image sensor, poly=<hor. coordinate>x<vert. coordinate>{/<hor. coordinate>x<vert. coordinate>}[, in/out]
```

(optional parameters have square brackets, parameters that can be used as often as needed have curly brackets)

Example 2. "Quarter" Exposure Window in Polygon Syntax

```
0,poly=224x168/224x791/1055x791/1055x168,in
```

Parameter

#

Introduces a comment line. Can be used to temporarily deactivate an exposure window definition without having to delete it.

Image sensor

0 = right camera lens

1 = left camera lens

Horizontal position

Position of the left exposure window border measured from the left edge of the visible image in pixels (based on a MEGA image 1280x960).

Vertical position

Number of pixels measured from the bottom edge of the visible image to the bottom border of the exposure window (based on a MEGA image 1280x960).

Width

Width of the exposure window in pixels (based on a MEGA image 1280x960).

Height

Height of the exposure window in pixels (based on a MEGA image 1280x960).

Horizontal coordinate

Number of pixels measured horizontally from the left edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

Vertical coordinate

Number of pixels measured vertically from the bottom edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

in

The current exposure window defines an area that is used for exposure control (default).

If **Show Windows** is set to *On*, the exposure windows will be displayed with a **green** frame.

out

The current exposure window defines an area that is excluded from exposure control.

If **Show Windows** is set to *On*, the exposure windows will be displayed with a **red** frame.

Exclusion windows are used to remove specific areas within "regular" exposure windows from exposure control.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Color Settings

Open the **Color Settings** dialog to adjust the color settings of the image sensors in order to optimize the camera for the lighting that is available.

- Some of these settings can be changed using the pull-down menus above the image on the **Live** screen.
- Click on the **More** button at the bottom of the dialog to display all options.

Description of Parameters

Linked Image Control

If **Linked Image Control** is activated, the camera uses the same exposure values and internal image correction settings for both sensors. This ensures that the images from both sensors look as similar as possible.

This parameter is only available for models with identical image sensors.

White Balance

Under certain lighting conditions, the color truthfulness of white areas may vary. White balance is used to correct this kind of color variation.

Select one of the following profiles for white balance:

Automatic WB (Extended)

Improvement of the classical automatic white balance. Delivers the best results in most cases and especially in critical lighting conditions.

Automatic WB (Classic)

This profile delivers good results in most situations.

Automatic WB (Warm Artificial Light)

Optimized profile of the classic automatic white balance for indoor situations with artificial lighting by fluorescent, halogen or incandescent (Tungsten) lamps (below 4000K).

Clear Blue Skylight

This profile corresponds to a source of light with a color temperature of 16000K. This kind of illumination is prevalent when the sky is clear and bright blue. If the automatic white balance does not deliver satisfactory results, try using this white balance profile.

Twilight

This profile corresponds to a source of light with a color temperature of 10000K. This kind of illumination is prevalent shortly after sunset and shortly before sunrise when the sky is clear and bright blue. If the automatic white balance does not deliver satisfactory results, try using this white balance profile.

Cloudy/Hazy

This profile corresponds to a source of light with a color temperature of 8000K. This kind of illumination is prevalent when the sky is very cloudy. If the automatic white balance does not deliver satisfactory results, try using this white balance profile.

Outdoor

This profile corresponds to a source of light with a color temperature of 7000K. This kind of illumination is prevalent during the day outside of buildings. If the automatic white balance does not deliver satisfactory results, try using this white balance profile.

Sunny

This profile corresponds to a source of light with a color temperature of 5500K. This kind of illumination is prevalent when the sun is shining brightly. If the automatic white balance does not deliver satisfactory results, try using this white balance profile.

Morning Sun

This profile corresponds to a source of light with a color temperature of 5000K. This kind of illumination is prevalent when the sun is shining in the morning and in the evening. If the automatic white balance does not deliver satisfactory results, try using this white balance profile.

Fluorescent Lamp

This profile corresponds to a source of light with a color temperature of 4000K. This kind of illumination is prevalent when many fluorescent lamps are used. If the automatic white balance does not deliver satisfactory results, try using this white balance profile.

Halogen Lamp

This profile corresponds to a source of light with a color temperature of 3000K. This kind of illumination is prevalent when many halogen lamps are used. If the automatic white balance does not deliver satisfactory results, try using this white balance profile.

Incandescent Lamp

This profile corresponds to a source of light with a color temperature of 2500K. This kind of illumination is prevalent when many incandescent lamps are used. If the automatic white balance does not deliver satisfactory results, try using this white balance profile.

Gray World

You can select this profile if the illumination of scene observed by the camera changes often. The camera tries to automatically adjust image color without actually knowing the color temperature of the light sources.

The two profiles **Automatic WB (Extended)** and **Automatic WB (Warm Artificial Light)** are not available on all camera models.

Color Saturation

Color saturation controls the color intensity. The higher the saturation, the more intense are the colors. The value -10 produces a gray-scale image.

Automatic Saturation Control

This parameter allows reducing the perceived image noise by automatically adjusting the color saturation of images in dark scenes to the image brightness. The factory default setting is *activated*.

This feature is not available on cameras with 1MP and 3MP image sensors.

Blue Balance

Controls the blue channel of the image.

Red Balance

Controls the red channel of the image.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

JPEG Settings

Open the **JPEG Settings** dialog to activate MxPEG, define the JPEG quality and set other options for the camera's JPEG images.

- Some of these settings can be changed using the pull-down menus above the image on the **Live** screen.

- Click on the **More** button at the bottom of the dialog to display all options.

Description of Parameters

Parameter

Video Codec

Description

If you enable **MxPEG**, the camera creates a stream using the MOBOTIX video compression scheme. MxPEG allows for large-format live videos at extremely low network load (1% at 100 Mbps).

For viewing and storing the stream, you need *MxManagementCenter* or *MxControlCenter*. You can download the software directly from the [MOBOTIX website](#) in the **Support > Software Downloads** section.

See also ■ [The MxControlCenter](#)

- [The MxPEG ActiveX Plug-in for Internet Explorer](#)

Parameter

High Change Rate

Description

Optimize the video codec for scenes with many changes. Activate this option if large areas of the scene are changing between frames.

The factory default setting is *Deactivated*.

Parameter

JPEG Quality

Description

Select the image quality of the JPEG image.

Values: 10..90 %

The factory default setting is 60% (*High*).

Parameter

JPEG User Comment

Description

Enter your own text which is stored as comment in the header of every JPEG file.

- The comment will not be visible in the image itself. For entering visible text, open the **Text and Display Settings** dialog.
- The comment is limited to 64 characters.

Parameter

JPEG Comment Text (CT)

Description

Text messages received via the [serial interface](#) or the [IP Receive \(RC\)](#) event can be integrated in the header of a JPEG image. You can reserve up to 64 characters for the comment.

Parameter

EXIF Data

Description

If this option has been activated, the camera adds an Exif comment to all generated JPEG images. Among other data, this comment contains exposure information and the timestamps when the images had been recorded. If the camera has access to GPS data, these will also be included in the Exif data as a so-called "geo tag".

By default, the timestamps in the Exif comment are stored as UTC (world time). If you want to use the local camera time instead, add the line `jpegcomment_exif_time=cameratime` to the `SECTION imageimprover` of the camera configuration. To switch back to UTC, change this line in the camera configuration to `jpegcomment_exif_time=utc`.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Text and Display Settings

Open the **Text & Display Settings** dialog to define different types of information that are to be displayed in the image, such as comments, date and time, error messages, symbols, highlighting and level meters. The displays can be used for information or advertising purposes. They may be used for configuring the camera, help find errors or inform you about events and actions.

Click on the **More** button at the bottom of the dialog to display all options.

Description of Parameters

Parameter

Text Display

Description

Activates or deactivates all image information displays.

The *Date and Time* option displays the standard time format you selected at the upper right edge of the image.

Parameter

Text Color

Description

This option controls the default text color.

Parameter

Background Color

Description

Select the desired color of the text background.

Parameter

Background Opacity

Description

Select the desired opacity of the text background color.

Parameter

Date and Time

Description

Select the standard time format to be displayed in the image.

Parameter

Comment

Description

Enter your comment to be displayed at the upper left edge of the image.

In order to display dynamically created camera information, you can use a number of special characters. These characters are listed and described in the topics [Placeholders for Dynamic Image Text](#) and [Variables](#).

In order to format the text display in different colors, the following color codes are available:

Example 1. Colored Text Display

^#0Awww.^#09MOBOTIX.^#0CCOM

results in this colored text display:

www.mobotix.com

Color

Hexadecimal notation

^#00

Color

Hexadecimal notation

^#01

Color

Hexadecimal notation

^#02

Color

Hexadecimal notation

^#03

Color

Hexadecimal notation

^#04

Color

Hexadecimal notation

^#05

Color

Hexadecimal notation

^#06

Color

Hexadecimal notation

^#07

Color

Hexadecimal notation

^#08

Color

Hexadecimal notation

^#09

Color

Hexadecimal notation

^#0A

Color

Hexadecimal notation

^#0B

Color

Hexadecimal notation

^#0C

Color

Hexadecimal notation

^#0D

Color

Hexadecimal notation

^#0E

Color

Hexadecimal notation

^#0F

Parameter

Display Font Size

Description

Sets the size of the text that is displayed in the image.

Parameter

Error Font Size

Description

Sets the size of the error messages that are displayed in the image.

Parameter

Error Messages

Description

Activates or deactivates the display of error messages at the bottom edge of the image.

Make sure that the **Text Display** parameter is activated.

Parameter

Cover Borders

Description

Covers the borders of inset or dual images with thin bars using the background color.

Parameter

Show Event/Action Symbols

Description

These symbols indicate events, actions or errors.

If you have activated a large number of event sensors and actions, select *Symbols II* to get a symbol display consisting of two lines at the bottom of the image.

Event Symbols:

Symbol

CI

Meaning

Receive text via the serial interface

Symbol

EC

Meaning

Event Counter

Symbol

IL

Meaning

Illumination

Symbol

MI

Meaning

Microphone

Symbol

PE

Meaning

Periodic Event

Symbol

PI

Meaning

Passive Infrared Sensor

Symbol

RC

Meaning

IP Receive

Symbol

RD

Meaning

Random Event

Symbol

SI

Meaning

Signal Input

Symbol

TP

Meaning

Temperature

Symbol

TT

Meaning

Time Task

Symbol

VM

Meaning

Video Motion Window

Symbol

UC

Meaning

User Click

Action Symbols:

Symbol

CL

Meaning

Phone Call

Symbol

CT

Meaning

Text Message via the Serial Interface

Symbol

EM

Meaning

Send E-mail

Symbol

FR

Meaning

Image storage on a Flash device

Symbol

FS

Meaning

Storing Images on File Server

Symbol

FT

Meaning
FTP Transfer

Symbol

IP

Meaning
Send TCP Message

Symbol

REC

Meaning
LAN Image Storage

Symbol

SD

Meaning
Speaker

Symbol

SB

Meaning
Softbutton

Symbol

SO

Meaning
Signal Output

Symbol

SP

Meaning
Stop Action

Symbol

TR

Meaning
Image Transfer via TCP/IP

Symbol

VA

Meaning
Visual Alarm

Color-coding of Action Symbols:

Color

Yellow

Meaning

normal

Color

Gray

Meaning

inactive

Color

Red

Meaning

Errors

Color

Aqua

Meaning

is executed

Other Symbols:

Symbol

DY

Meaning

Day lens active

Symbol

NI

Meaning

Night lens active

Symbol

OA

Meaning

Obscure image areas

Symbol

OT

Meaning

Object tracing active

Parameter

Level Meter

Description

Display level meter as bar graph or scroll chart. The level meter is displayed in the lower left corner.

You can choose from different data sources for the level meter.

Among other things, the level meter can be used for determining the best trigger level for the microphone, the passive infrared sensor or other definable event or image parameters.

Parameter

Level Meter Data

Description

Select source for meter. If the selected event is based on an analog sensor (e.g. microphone), the sensor level and the trigger level will be displayed. Otherwise, only a digital curve (0 to 1) representing the event's trigger state is shown. Events in parentheses need to be activated first.

The VM and VM2 events are only signaling the trigger status of the first line of the corresponding **Video Motion Definitions** (i.e. VM window 1)!

Parameter

Enable Object Tracing

Description

Moving objects are highlighted in the current live image and the moving object is traced graphically. This feature can help, for example, to discover escape routes.

The object tracing mode is not available on all camera models.

Parameter

Tracing Camera

Description

Object tracing can be restricted to one image sensor or it automatically follows the displayed image sensor. If both sensors are displayed, object tracing will only work on the right image sensor (as seen by the camera).

This parameter is only available on MOBOTIX Dual cameras.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

vPTZ Settings

Just like in digital photography, MOBOTIX cameras can zoom into images to enlarge the image, giving the user a more detailed view. This "virtual" PTZ function (Pan/Tilt/Zoom) does not rely on a mechanical pan/tilt unit with zoom lens as in classical video surveillance; instead, the camera features purely software-driven features in connection with a fixed focal length lens and a high-resolution image sensor.

Open the **vPTZ Settings** dialog to configure the camera's PTZ features.

- Click on the **More** button at the bottom of the dialog to display all options.
- Depending on your camera model, some of these features may not be available.

Description of Parameters

Parameter

vPTZ Actions

Description

Select *Lock* to prevent changes to the currently displayed images. All vPTZ actions executed with a mouse, a joystick or softbuttons, the Auto Move mode, loading and storing views as well as the *Set North* function will be deactivated.

Parameter

Mouse Wheel Zoom

Description

Activates operating the zoom feature with the mouse wheel.

Parameter

Zoom Quality

Description

Allows setting a zoom level at which the camera automatically changes image quality from *Normal* to *High* in order to provide a more detailed image.

Parameter

On-Screen PTZ Control

Description

Unlocked Panorama windows display an [on-screen PTZ control](#), if this option has been activated.

Parameter

Automatic Trapezoid Correction

Description

If this option is selected, tilting a Panorama window will leave vertical lines vertical. The behavior is

identical to a photographic shift lens.

Parameter

Enable Pan Limits

Description

If this option is selected, PTZ limits for Panorama windows are less conservative. This will prevent you from moving parts of the image outside of the borders of the camera's image sensor. The parts of the image outside of the image sensor are shown in gray.

Parameter

Pan Shot on Click

Description

After clicking in the image, the visible image section will pan to the selected position within the specified time instead of immediately jumping to this position.

When using *Full Image*, moving to the new position is not possible.

Parameter

Pan Shot on Loading of Views

Description

After loading a stored view, the visible image section will pan to the selected position within the specified time instead of immediately jumping to this position.

When using *Full Image*, moving to the new position is not possible.

Parameter

Auto Move Pause Time

Description

If a stored position has been loaded in Auto Move mode, the camera will pause for this duration before panning to the next position.

Parameter

Auto Move Tour

Description

A tour can be set using a comma-separated list of positions that will be shown in Auto mode one after the other. You can use the Quick Controls of the Live page to start and stop the Auto mode.

Parameter

Tilt Angle

Description

Correction of the tilt angle for lenses with short focal length (super wide-angle, 180° lenses) in wall-mounted cameras.

After installing a hemispherical c26 with the **Corner Mounting Set**, make sure to select the value 35° (*Corner Mounting Set*).

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

The OnScreen Control

The **OnScreen Control** (OSC) provides for convenient configuration of the **Panorama**, **Double Panorama** and **Panorama/Focus** display modes (if available). This control allows panning, tilting and zooming the camera's image to find the optimum image section for your purposes. Moreover, the trapezoid correction allows adjusting the skewed (vertical) lines on the image that are common for this type of lens.

- When the OSC is not visible, the PTZ actions in the browser are *locked*, i.e. you cannot pan, tilt or zoom the image.
- Note that you can hide the OSC, if desired. The feature itself, however, is still available when using *MxControlCenter* or *MxEasy*. In order to hide the OSC, deactivate the **On-Screen PTZ Control** option in **Setup Menu > vPTZ Settings > More**.
- To permanently store the configuration in the camera's flash memory, make sure that you permanently store the current configuration in the camera's Flash memory. The simplest way to do this is to open the **Manage Settings > Store Complete Configuration** Quick Control or to open **Admin Menu > Configuration > Store current configuration into flash memory**. Note that you need administrator privileges to execute these commands.

Overview

If you are selecting a display mode, which contains a Panorama window, you can activate the OnScreen Control:

- Deactivate the lock  to enable the PTZ actions.
- Activate the OnScreen Control by clicking on .

If the OnScreen Control is visible, you can use it to adjust the visible image section to your needs.

Control Surfaces – Overview

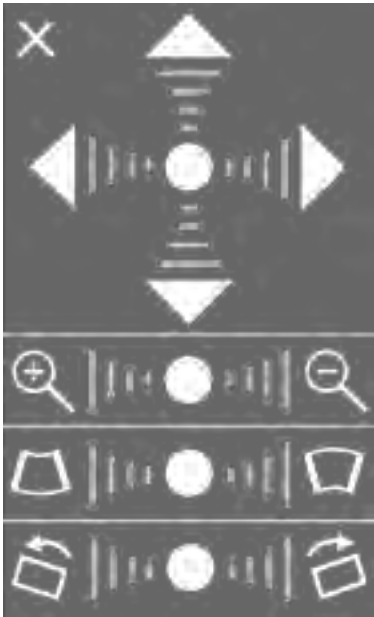
Control Surface



Explanation

Shows the OnScreen Control and activates the PTZ actions.

Control Surface



Explanation

This is the complete OnScreen Control for wall mounting.
The speed of the PTZ actions increases the farther away you click from the center of the control.
When attaching the camera to a ceiling or to the floor, the lower part for horizontal correction is not displayed.

Control Surface



Explanation

Hides the OnScreen Control and locks the PTZ actions for this window.

Control Surface



Explanation

Resets the current view to its default values (viewing direction is image center).

Control Surface



Explanation

Changes the zoom setting.

Control Surface



Explanation

Trapezoid correction: Allows adjusting the perspective of the image.

Control Surface



Explanation

Horizontal correction: Allows correcting a tilted image if the camera is lopsided after mounting it to a wall.

Control Surface



Explanation

Switches to the other lens (only dual cameras)

Control Surface



Explanation

Changes the projection.

Control Surface



Explanation

Selects the window you would like to configure.

Thermal Sensor Settings

Open the **Thermal Image Settings** dialog to configure a thermal sensor module.

Description of the Parameters in the Thermal Image Overlay Section

This section only appears in the dialog, if the camera has an optical **and** a thermal sensor module attached. To show the thermal image as an *overlay* picture on to of the live image and in the recordings, set the **Camera Selection** Quick Control to **Thermal Overlay**.

Opacity

Sets the opacity of the thermal overlay image. The lower the value, the more of the background (i.e., the image of the optical image sensor) will show.

Scaling

Sets the scaling of the thermal overlay image. You can change this value to adjust the thermal overlay image to the focal length of the optical image sensor.

You can also use the **vPTZ Settings** to control the appearance of the thermal image overlay using the vPTZ controls in the live image.

Horizontal Offset

Use this parameter to move the thermal overlay image in horizontal direction (based on 1280x960 pixels). Positive values move the overlay image to the right, negative values to the left. **0** centers the image, the maximum value is **±640**.

Vertical Offset

Use this parameter to move the thermal overlay image in vertical direction (based on 1280x960 pixels). Positive values move the overlay image up, negative values down. **0** centers the image, the maximum value is **±480**.

Overlay Mode

This feature is only available, if a suitable thermal image sensor (**-TR**) has been attached and is running properly.

Color Palette

In this mode, the camera shows the thermal image on top of the optical image if the temperature is above the selected relative temperature value (see **Minimum Value** below). This mode is the default.

The **Minimum Value** parameter sets the relative temperature value above which the colors of the thermal overlay image are displayed. The specified value is displayed as a vertical line in the color palette at the bottom of the window. Temperature values below the defined threshold are transparent.

Threshold

In this mode, the camera only shows the image areas in which the measured temperature exceeds the selected **Temperature Value** for the specified **Temperature Unit**. The **Color** parameter sets the color to be used.

Description of General Parameters

Raw Data

If this option is activated, the camera stores the raw data of the thermal sensor(s) as comment in every JPEG file. In addition, the camera can also store the raw data in the recorded images. To save bandwidth and storage capacity, you can choose to compress the data using the `zlib` library.

Color Palette

Sets the color palette that is used to show the different temperatures in the thermographic image.

Show Color Palette

Displays the current color palette at the bottom of the image. The leftmost color of the palette corresponds to the lowest, the rightmost color to the highest temperature in the image.

Linear Mode

The linear mode allows using extended radiometry features (**Thermal Radiometry** event). Note that activating this option influences the colors of the live image.

This feature is only available, if a suitable thermal image sensor has been attached and is running properly.

Manual Temperature Adjustment

This feature is only available, if a suitable thermal image sensor (**-TR**) has been attached and is running properly.

Getting precise temperature readings from the thermal sensor is only possible, if all variables and disturbances are known. Since they influence the measurement, you can then add a corresponding offset. By factory default, the camera has been calibrated so that it properly measures the temperatures for objects with a maximum emission ratio in the close-up range. If these basic conditions are not met, you can improve measurement accuracy by manually adjusting the following parameters (if the manual temperature adjustment is deactivated, the factory default settings are used).

Object Emissivity

This parameter describes the thermal radiation emitted by the observed object. The emissivity of an object is the percentage value of the thermal radiation emitted by the object compared to an ideal thermal radiator.

The lower the emissivity, the lower the effect of the thermal radiation emitted by the object.

Atmospheric Transmission and Ambient Temperature

These two parameters describe the influence of the space between the observed object and the camera on the emitted thermal radiation. The atmospheric transmission is the percentage value of the atmospheric purity between the object and the camera (100% means that there aren't any particles in this space that could obstruct the transmission). By reducing this value, you can adjust the measurement for damping effects by the atmosphere (e.g., by dust, vapor, smoke). This will increase the influence of the ambient temperature.

The higher the atmospheric transmission, the lower the influence of the current ambient temperature.

Value Range

Sets the value range of the displayed temperatures, i.e., the range between the lowest and the highest temperature that is to be displayed. A small value range results in noticeably higher sensitivity (i.e.,

the smallest difference in temperature that can be shown) compared to a large value range.

Automatic Adjustment

Automatically determines the minimum and maximum temperature values for color mapping. Deactivate automatic adjustment if you want to set custom limits.

Allow Immediate Updates

Activates immediate updates of the minimum and maximum temperature values in the color palette if the temperatures of the scene changes drastically. Deactivate immediate updates to get a continuously adapted color palette even when temperatures changes are large.

Update Speed

Sets the speed with which the minimum and maximum temperature values in the color palette are adjusted to the changes in temperature of the scene.

Level of Detail

Controls the contrast amplification of a thermal image. This is especially useful when there are only little differences in temperature in the image; selecting *Medium* or *High* will enhance contrasts, thus showing noticeably more image details.

High

Uses high contrast amplification of a thermal image. May increase image noise in scenes with a only little differences in temperature.

Medium

Uses medium contrast amplification of a thermal image.

Low

Uses low contrast amplification of a thermal image.

Temperature Control Mode

Full Image Area: All pixels of the full image or the defined temperature control windows are used to determine the current thermal range.

Visible Image Area: Only the pixels of the visible image section are used to determine the current thermal range.

Temperature Windows

Temperature control windows are defined image areas that are used for automatic adjustments. To facilitate the positioning of temperature control windows, you can select from a number of pre-defined windows.

- All temperature control windows refer to the full image (i.e., the entire image sensor).

- If the camera image has been **mirrored or rotated**, the positioning of the pre-defined windows and the coordinate system of the custom windows changes accordingly.
- If your camera is a dual lens model, you can define different temperature control windows for each lens.

Show Windows

On: Displays the defined measurement window(s) with **green** frames in the image. Exclusion windows are shown with a **red** frame.

The *Histogram* option shows additional parameters of specific image processing features in the image.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Thermal Radiometry

The *thermal radiometry* can trigger events based on the temperature measured within the specified image areas. Note that you can define different measurement areas for every event profile.

To do so, you can create different [temperature events](#), which react to different temperature ranges and trigger values.

- This feature is only available, if a suitable thermal image sensor has been attached and is running properly.
- Events of the *Thermal Radiometry* type can only be used if the sensor is running in linear mode. Open the **Setup Menu > Image Settings > Thermal Sensor Settings** dialog and activate the **Linear Mode**.

- The temperature of objects in the image as determined by the thermal sensors is influenced mostly by the following factors:
 - Surface properties and object color
 - Distance from the sensor to the objects
 - Properties of the atmosphere between the sensor and the objects

This means that the sensor can deliver different temperature values depending on the distance to the object and the current scene. In order to define events that are based on temperature trigger values, you first need to determine the current temperature values measured in the scene. To do so, you can use the [variables](#) `$(SEN.TTR.CELSIUS)` and `$(SEN.TTR.FAHRENHEIT)`. The determined values can then be used to set the trigger value defined below.

Edit Measurement Area

The measurement area can be defined as a rectangle or as a polygon.

Rectangle syntax:

`image sensor, horizontal position, vertical position, width, height`

Example 1. Rectangle Syntax

```
0,270,190,100,100
```

Polygon syntax:

```
image sensor, poly=<hor. coordinate>x<vert. coordinate>{/<hor. coordinate>x<vert. coordinate>}
```

Example 2. Polygon Syntax

```
0,poly=270x190/270x289/369x289/369x190
```

- The measurement area refers to the entire image sensor.
- If the camera image has been **mirrored or rotated**, the coordinate system of the windows changes accordingly.

Parameter

Image sensor

Description

Selects the image sensor (camera image) to use for this area definition:

- 0: Right camera image on dual cameras, default setting on mono cameras.
- 1: Left camera image on dual cameras.

Parameter

Horizontal position

Description

Number of pixels measured from the left edge of the visible image to the left border of the area (based on a MEGA image 1280x960).

Parameter

Vertical position

Description

Number of pixels measured from the bottom edge of the visible image to the bottom border of the area (based on a MEGA image 1280x960).

Parameter

Width

Description

Width of the area in pixels (based on a MEGA image 1280x960).

Parameter

Height

Description

Height of the area in pixels (based on a MEGA image 1280x960).

Parameter

Horizontal Coordinate

Description

Number of pixels measured horizontally from the left edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

Parameter

Vertical Coordinate

Description

Number of pixels measured vertically from the bottom edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

If you would like to define a new measurement area, open the **Environment Events** dialog and follow the instructions of the [Graphically Entering Image Areas](#) help page.

Measurement Mode

Allows setting the basic mode for the trigger value. The following modes are available:

- *Absolute Temperature*: The [Trigger Value](#) is interpreted as an absolute (i.e., not relative) temperature.

- *Reference Temperature*: The trigger value is interpreted as the average temperature of the defined [Reference Area](#).

Trigger Mode

Use this parameter to specify when to trigger the event. The following modes are available:

- *One Pixel*: Triggers an event if at least one pixel in the measurement area is higher or lower than the trigger value.
- *Percent*: Triggers an event if at least the specified percentage of all pixels in the measurement area is higher or lower than the trigger value.

Alarm Type

Allows using a temperature level (single trigger value) or a temperature range (two trigger values).

- *Thermal Level*: Triggers an event if the temperature is higher or lower than the trigger value.
- *Thermal Range*: Triggers an event if the temperature is within our outside of the defined temperature range.

Editing the Reference Area

The measurement area can be defined as a rectangle or as a polygon.

Rectangle syntax:

`image sensor, horizontal position, vertical position, width, height`

Example 3. Rectangle Syntax

```
0,270,190,100,100
```

Polygon syntax:

`image sensor, poly=<hor. coordinate>x<vert. coordinate>{/<hor. coordinate>x<vert. coordinate>}`

Example 4. Polygon Syntax

```
0,poly=270x190/270x289/369x289/369x190
```

- The reference area refers to the entire image sensor.
- If the camera image has been **mirrored or rotated**, the coordinate system of the windows changes accordingly.

Parameter

Image sensor

Description

Selects the image sensor (camera image) to use for this area definition:

- 0: Right camera image on dual cameras, default setting on mono cameras.
- 1: Left camera image on dual cameras.

Parameter

Horizontal position

Description

Number of pixels measured from the left edge of the visible image to the left border of the area (based on a MEGA image 1280x960).

Parameter

Vertical position

Description

Number of pixels measured from the bottom edge of the visible image to the bottom border of the area (based on a MEGA image 1280x960).

Parameter

Width

Description

Width of the area in pixels (based on a MEGA image 1280x960).

Parameter

Height

Description

Height of the area in pixels (based on a MEGA image 1280x960).

Parameter

Horizontal Coordinate

Description

Number of pixels measured horizontally from the left edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

Parameter

Vertical Coordinate

Description

Number of pixels measured vertically from the bottom edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

If you would like to define a new reference area, open the **Environment Events** dialog and follow the instructions of the [Graphically Entering Image Areas](#) help page.

Tolerance

Sets a tolerance value that is applied to the thermal level before it actually triggers an event. (Only available when using a reference window, see [Measurement Mode](#).)

Temperature Unit

Show the temperatures either in degrees Centigrade (°C) or Fahrenheit (°F).

Trigger Values

Enter the temperature value that is used to trigger an event when it exceeds or when it drops below the value (depending on the setting of the [Comparison](#) parameter).

Comparison

Select between triggering the event when it exceeds or drops below the specified temperature value on the one hand or when it reaches or leaves the specified temperature range on the other.

- *Higher than*: (only when using *Thermal Level* alarm type) triggers an event if the temperature in the measurement area is higher than the trigger value.
- *Lower than*: (only when using *Thermal Level* alarm type) triggers an event if the temperature in the measurement area is lower than the trigger value.
- *Outside of range*: (only when using *Thermal Range* alarm type) triggers an event if the temperature in the measurement area is outside of the temperature range.
- *Within range*: (only when using *Thermal Range* alarm type) triggers an event if the temperature in the measurement area is within the temperature range.

Action Type

Define how often the event is to be triggered:

- *First*: The event is triggered only *once*, i.e., when the condition is first detected.
- *Every*: The event is triggered *every time* as long as the condition is true.

Show Measurement Area

To display the measurement area of a *Thermal Radiometry* event profile in the live image, select a color from the selection list. In addition, you can set the following options for the measurement area:.

- *Show Thermal Radiometry Level Meter*: Shows the *current temperature* (see [Note](#) below) of the event profile within the defined measurement area as a level meter.
- *Show Thermal Radiometry Level Temperature*: Shows the *current temperature* (see [Note](#) below) of the event profile within the defined measurement area.
- *Show Thermal Radiometry Level Coordinates*: Shows the coordinates of the *current temperature* (see [Note](#) below) of the event profile within the defined measurement area as global coordinates.
- *Show Thermal Radiometry Level Crosshairs*: Shows crosshairs on the coordinates of the *current temperature* (see [Note](#) below) of the event profile as global coordinates.
- *Show Thermal Radiometry Profile Name*: Shows the name of the event profile within the defined measurement area.

The **current temperature** in this context is the temperature value determined according to the selected comparison conditions and compared to the specified trigger threshold.

The following options are available for measurement area, temperature value, coordinates, crosshairs and profile name:

- *Off*: Does not show the element.
- *Auto*: Shows the element with a color that depends on the color palette of the thermal sensor.
- *Color*: Shows the element using the selected color.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Event Control

These dialogs are controlling if and when the camera triggers **events**, which **actions** are resulting from the events and what the camera should **record**.

General Event Settings

Open the **General Event Settings** dialog to arm the camera's main event control and to configure associated functions such as *custom signals*, the *master/slave* feature or the event LEDs.

Click on the **More** button at the bottom of the dialog to display all options.

Description of Parameters

Main Event Arming

Option	Parameter	
Arming	When you deactivate arming permanently or temporarily, events will continue to be recognized (and highlighted in the image symbols) but they will not be processed any further. Consequently, the images are not stored, the event counter is not incremented and neither actions nor messages are executed.	
	<table><tr><td>Enabled</td><td>The camera is always armed.</td></tr></table>	Enabled
Enabled	The camera is always armed.	

Option	Parameter	
	Off	The camera is not armed. No image storage, actions or messages.
	CS1, ..., CS5, CSL	The camera is only armed if the corresponding custom signal is <i>true</i> . Note Using the custom signals, the camera can use e.g., the illumination at the camera itself or at an attached MX-GPS-Box as its main arming switch.
	From Master	The camera is armed only when the master camera is armed.
	Note Main Arming of the camera can also be controlled using a touch-tone phone. For additional information on this topic, see the Camera Remote Control Using VoIP help page in the Camera Remote Control section.	
Time Table Profile	In order to arm the camera in a time-controlled manner, you need to select a Time Table Profile . You need to <i>enable</i> arming. The time table profile can also be combined with arming via signal-input (e.g., from an MX-232-IO-Box).	

Custom Signals

Option	Parameter	
Source	The <i>custom signals</i> CS1, CS2 and CSL are states maintained on the local camera that can be configured to update themselves from various sources and that can then be fed as additional inputs into the camera's arming controls (Main Event Arming, Recording, Actions). The possible input sources for CS1 to CS5 are:	
	Off	The custom signal is set to <i>false</i> .
	On	The custom signal is set to <i>true</i> .
	Signal Input	The custom signal updates itself from a local signal input. Use the signal input and signal input state parameters to further configure the signal.
	Time Table Profile	The custom signal derives its state from a local time table profile. Use the time table parameter to choose the corresponding time table.
	From Master	The custom signal will be <i>true</i> only when the respective custom signal on the master camera is also <i>true</i> .
	By Action	You can use an action to switch the custom signal. First, select this setting for e.g. the custom signal CS1. This activates additional entries in the action lists of the action groups:

Option	Parameter									
	<table><tr><td rowspan="4"></td><td>Arming: ~CS1_disable</td><td>This action switches CS1 to <i>false</i>.</td></tr><tr><td>Arming: ~CS1_enable</td><td>This action switches CS1 to <i>true</i>.</td></tr><tr><td>Arming: ~CS1_toggle</td><td>This action toggles CS1.</td></tr><tr><td>Arming: ~CS1_enable_delayed</td><td>This action switches CS1 to <i>true</i> after the specified delay.</td></tr></table>		Arming: ~CS1_disable	This action switches CS1 to <i>false</i> .	Arming: ~CS1_enable	This action switches CS1 to <i>true</i> .	Arming: ~CS1_toggle	This action toggles CS1.	Arming: ~CS1_enable_delayed	This action switches CS1 to <i>true</i> after the specified delay .
			Arming: ~CS1_disable	This action switches CS1 to <i>false</i> .						
			Arming: ~CS1_enable	This action switches CS1 to <i>true</i> .						
			Arming: ~CS1_toggle	This action toggles CS1.						
		Arming: ~CS1_enable_delayed	This action switches CS1 to <i>true</i> after the specified delay .							
	By Illumination ■ Trigger Level: Sets the trigger level in Lux. ■ Illumination Source: Selects the sensor to be used (e.g., an attached <i>MX-GPS-Box</i>). ■ Comparison: Triggers switching if the illumination drops below or exceeds the trigger level. ■ Delay: Prevents reactions triggered by the custom signal if illumination increases or decreases for a short period of time (e.g. a car with headlights passing by at night).									
	The possible input sources for CSL, the so-called <i>logically combined custom signal</i>, are as follows:									
	Off	The custom signal CSL is locally set to <i>false</i> .								
	CS1 and CS2	CSL will be <i>true</i> only when both local custom conditions CS1 and CS2 are <i>true</i> at the same time.								
	CS1 or CS2	CSL will be <i>true</i> only when at least one of the local custom conditions CS1 and CS2 is <i>true</i> .								
From Master	CSL will be <i>true</i> only when CSL is <i>true</i> on the master camera.									
Another important property of the custom signals is the fact that they can also be distributed among a set of networked cameras using the Master/Slave feature.										
Signal Input	Allows you to specify which of the available signal inputs to use as input for the respective custom signal. Depending on your camera model and the expansion hardware connected, you may have the following options:									
Signal Input State	Allows you to specify which particular state of the signal input channel sets the respective custom signal to <i>true</i> :									
	<table><tr><td>Closed (low)</td><td>The custom signal will be <i>true</i> only when the selected signal input circuit is <i>closed</i>.</td></tr><tr><td>Open (high)</td><td>The custom signal will be <i>true</i> only when the selected signal input circuit is <i>open</i>.</td></tr></table>	Closed (low)	The custom signal will be <i>true</i> only when the selected signal input circuit is <i>closed</i> .	Open (high)	The custom signal will be <i>true</i> only when the selected signal input circuit is <i>open</i> .					
	Closed (low)	The custom signal will be <i>true</i> only when the selected signal input circuit is <i>closed</i> .								
Open (high)	The custom signal will be <i>true</i> only when the selected signal input circuit is <i>open</i> .									
Time Table Profile	This list allows you to select one of the locally defined time table profiles as input for the corresponding custom signal. The custom signal will be <i>true</i> only when the time table profile is currently <i>active</i> .									

Master/Slave

Option	Parameter
Enable Master/Slave	This feature allows arming state and custom signals of a <i>master camera</i> to be distributed throughout a set of <i>slave cameras</i> that can then use this information to control their own arming. Activate this option if you would like your camera to operate either as master or as slave. Deactivate this option otherwise to save system resources. Note The camera can very well be configured to operate as master and as slave at the same time in order to implement cascading master/slave hierarchies. In this case, be careful to avoid circular configurations.
Master Camera	If you would like to use this camera in Slave mode, enter the master camera from which the arming status and custom signals will be imported. The master camera can be specified either as an IP address or as DNS name. Leave this field blank if this camera will be used only as Master. Note In Master/Slave mode, the cameras need to communicate with each other using their primary IP address in the same subnet. If the communication uses the second (factory) IP address, the system messages show the following error message: <i>Some slave cameras did not copy state update, maybe losing slaves.</i> If this happens, the Master/Slave functionality is <i>not</i> available.
Replication Protocol Port	The Master/Slave feature uses a network protocol to replicate the status of the master camera to a set of slave cameras. Enter the IP port to be opened on each participating camera in this field. Note that you need to use the same replication protocol port for all cameras involved in one master/slave system. The default port is 60000.

Event LEDs

Option	Parameter
Flashing LEDs	This parameter controls the flashing of the camera LEDs that have been set to <i>Event</i> in the LED Setup dialog: ■ <i>Flash on recorded events</i> (default): The <i>Event</i> LEDs are flashing while the camera records an event. ■ <i>Flash on any event</i>: The <i>Event</i> LEDs are flashing if the camera detects an activated event. ■ <i>Do not flash LEDs</i>: The <i>Event</i> LEDs will not flash.
Blinking LEDs	This parameter provides numerous options for controlling the blinking (slower than flashing) of the camera LEDs that have been set to <i>Event</i> in the LED Setup dialog. The default setting is <i>Blink on recording</i>.

Arming Delay

Option	Parameter
Arming Delay	This parameter allows setting a delay that will pass without alarms after arming has been activated from an action or a signal input (e.g., an MX-232-IO-Box).

Option	Parameter
Disarming Delay	This parameter allows setting a delay that will pass after arming has been deactivated from a signal input.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Event Overview

The **Event Overview** dialog provides a summary of the events triggered by the camera. This dialog allows activating, deactivating, renaming, and deleting existing **events**. It provides a portal to the detailed configuration of events.

An **event** is triggered by the camera whenever a certain condition is met. These conditions can be of very different nature, e.g. an environment measurement surpassing a certain threshold, a key being pressed, a certain point in time, the end of an action, etc. These events can then be used to execute **actions** or control image recording.

There are different groups of these events, named in the first column. For a complete list of possible events by group, refer to the section [List of Events](#).

For each group a list of currently defined events by name is displayed. If no events are defined, an explanation appears.

For each event, the third column shows the configured sensor type. If this type is not currently available (usually because of missing expansion hardware), a note appears instead.

A check box displays the activation status of the event. An *inactive* event never triggers. You can still select it wherever events can be selected, but it is displayed in grey, not processed, and not displayed in the status row in the live image.

Each available group has an **Edit** button in the rightmost column, which leads to the respective detailed configuration dialog. That dialog allows editing or deleting all events of this group as well as creating them.

Modifying Existing Events

In order to modify one or more events, you can change them as described in the following. Next, click on the **Set** button at the bottom of the dialog to store the new settings. These settings can also be changed in the respective detailed configuration dialogs.

- **Activating an event:** Remove the check mark next to **Inactive**.
- **Deactivating an event:** Set the check mark next to **Inactive**.

- **Renaming an event:** Overwrite the name of the event to be renamed. Only use letters, digits, hyphens, dots and underscores for the name (A-Z a-z 0-9 - . _). Names have to be unique among all events of one group.

Please note that renamed events are deselected in the action group and recording dialogs and possibly needs to be selected anew.

- **Editing an event:** Click on the **Edit** button in the last column to configure the events of one group (also refer to the Online Help under [Environment](#), [Image Analysis](#), [Internal](#), [Meta](#), [Message](#), [Signal](#), and [Time Events](#)).

Please note that changes to the configuration are only stored *temporarily* in the camera's active configuration. In order to store the changes *permanently*, you should always store the settings in the camera's permanent memory (see [Storing the Configuration](#)).

For each group a list of currently defined events by name is displayed. If no events are defined, an explanation appears. You can rename or delete existing events and change their activation status. An *inactive* event can not be used. You can still select it wherever events can be selected, but it is displayed in grey and not processed. Deleted events vanish completely and can not be restored.

Deleting Events

Activate the **Delete** box of the events you want to delete and click on **Set** at the bottom of the dialog.

Caution

When clicking on the **Set** button, the camera will **immediately** delete all events with a checked **Delete** box from the camera's **active configuration**. In order to store the configuration permanently, click on the **Close** button at the bottom of the dialog (see [Storing the Configuration](#)).

Click on the **Restore** button at the bottom of the dialog load the action groups that are stored in the camera's permanent memory.

List of Events

Depending on the camera model and expansion hardware, some of the listed event sensor types may not be available. Not available sensor types are not displayed in the dialogs. If there are no sensor types available in a given group, this group will be hidden completely.

Click on the group names to access the respective help pages providing more in-depth explanations of the events.

Environment Events

Shock Detector

Can trigger events if the camera is subjected to shocks (e.g. by vandalism).

Brightness

Can trigger events based on the illumination measured in the camera images.

Microphone

Can trigger events based on the volume of the microphone recordings.

PIR

Passive infrared detector, can trigger events if it detects movements.

Temperature

Can trigger events based on the measured temperature.

GPS Position

Can trigger events if the camera leaves the specified position.

GPS Velocity

Can trigger events if the camera moves at speeds higher or lower than the specified speed.

Thermal Spotmeter

Can trigger events if the camera measures temperatures that are higher or lower than the specified value.

This feature is only available, if a suitable thermal image sensor has been attached and is running properly.

Thermal Reference Window

Can trigger events if the camera measures temperatures in a reference window that are higher or lower than the specified value.

This feature is only available, if a suitable thermal image sensor has been attached and is running properly.

Thermal Radiometry

Can trigger events if the camera measures temperatures that are higher or lower than the specified value.

This feature is only available, if a suitable thermal image sensor has been attached and is running properly.

Image Analysis Events

Video Motion Detection

Can trigger events based on simple image-based motion detection.

MxActivitySensor

Can trigger events based on image-based detection of continuous movements.

Behavioral Detection

Can trigger events based on image-based object detection according to behavior profiles.

Internal Events

Action Group Termination

Can trigger events whenever a certain action group terminates either successfully or with an error.

Signal States

Can trigger events based on status changes of the custom signals.

Bus

Can trigger events based on internal communication of camera components.

Recording

Can trigger events based on state changes of the recording module (begin, end, etc.).

GPS Status

Can trigger events if the camera detects changes in the reception quality of an attached MX-GPS-Box.

Meta Events

Event Counter

Can trigger events based on quantitative analysis of other events.

Logical AND Event

Can trigger events if several other events happen at the same time.

Event Logic

Can trigger events based on the order of occurrence of other events.

Message Events

IP Messages

Can trigger events based on simple TCP (network) messages received by the camera.

Serial

Can trigger events based on messages received by the camera via the serial interface (RS-232/USB).

Signal Events

User Click

Can trigger events when the **User Click** softbutton is pressed.

Signal Input

Can trigger events based on signal input states or state changes. This group also contains the **Key** and **IP Remote Control** events.

Signal Output

Can trigger events based on signal output states or state changes.

Timer Events

Periodic Event

Can trigger events regularly at the specified interval.

Time Task

Can trigger events at fixed points in time.

Random Event

Can trigger events randomly based on a fixed expected frequency.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Event Control Example

Very frequently, you would like only selected events to trigger actions and messages or to store an event sequence. Open the [Event Selection](#) dialog to control [actions](#) and [recordings](#).

Scenario

- The camera shall record for ten minutes after the user has triggered a User Click (UC) event.
- In addition, the camera shall react to movements within the motion detection window and start recording.
- If the camera detects a video motion event, it shall also send an email message and include the current live image as attachment.

Settings

Store the values of the dialogs you opened by clicking on **Set** at the bottom of the dialog, then on **Close** and store the entire configuration in the camera's Flash memory).

- In the **General Event Settings** dialog, enable the **Arming** option.
- In the **Event Overview** dialog, activate a **Video Motion Detection** event in the **Image Analysis** group, and a **User Click** in the **Signal** group. These events are predefined and active in the MOBOTIX factory configuration.
- Make sure that all events will start a recording in the **Recording** dialog (this is the default).
- In the **Email Profiles** dialog, create a profile with an email address to which the message will be sent. Enter a unique name for the profile (e.g. "Test Mail").
- In the **Attachment** selection box, select *Image* and in the **Image Profile** selection box, select *Live or Event Image*.
- Make sure that you have entered valid access data in the **Server Settings** section of the profile (SMTP Server, user name, password), so that the camera can actually send the email.
- In the **Action Group Overview** dialog, create a new action group (**Add new group** button at the bottom of the dialog) and change the proposed name (e.g. "Test").
- Click on the **Edit** button of the action group you just added.
- In the **Event Selection** box, select the *VM - Video Motion Detection* value.
- Click on the **Add new action** button at the bottom of the dialog.
- In the **Action Type and Profile** selection box, select the email profile you just created (*E-mail: Test Mail*).
- In the Live screen of the camera in the browser, click on the **UC Event** button.

The camera now tries to send an email with an attached image to the email address specified in the email profile.

Additional Information

- [Test Current Network Configuration](#) (for testing the email profile)

Environment Events

The **Environment Events** dialog contains all event sensors that can trigger a camera action, based on measurements of environment conditions.

Using Meta Events to Avoid False Alarms

In order to filter events, the camera provides an [Event Logic](#): This dialog allows linking events to create *logic* events only if the linked events occur in a certain sequence and within the specified time frame. Another possibility to filter events is the [Event Counter](#): It creates an event only if a certain number of events occurs within the specified time frame.

General Settings

Option

Event Dead Time

Description

The event dead time defines a period of time (0..3600 s) after an event, during which no new events from the same profile are recognized.

By defining an event dead time you can avoid, for example, that a complex action (person walks through the active image area) triggers *multiple* events.

Description of Event Sensor Types

Event Sensor Type

Shock Detector

Description

The shock sensor reacts if the camera is subjected to shocks. You can use this event to react to acts of vandalism, for example. The default value reacts to very light shocks, but does not trigger due to environmental influences, such as wind or rain.

If you are experiencing a high rate of false alarms under rough conditions, you can reduce the **Detection Sensitivity**. The default value is 1; using a value of 31 means that the sensor only reacts to extreme shocks. Note that this setting is used globally.

This feature is not available on MOBOTIX cameras with **board revisions lower than and including 4.1**. To find the board revision, open **Admin Menu > Information About the Camera** and check **Hardware > Board Revision**.

Event Sensor Type

PIR sensor

Description

The passive infrared detector registers warm moving objects within the sensor area. The sensor reaches about 10 meters (34 ft.) and has a field of view of $\pm 15^\circ$.

Use the trigger level to define when an event is triggered.

Activate the level meter in the **Text and Display Settings** dialog and select *PIR Detector* as source. The level meter helps you find the best possible trigger level for your application.

Event Sensor Type

Microphone

Description

The camera's integrated microphone reacts to noises in the camera's perimeter.

If the trigger level is exceeded, an event is triggered if the noise lasts longer than the minimum period of time defined.

Activate the level meter in the **Text and Display Settings** dialog and select *Microphone* as source. The level meter helps you find the best possible trigger level for your application.

Event Sensor Type

Temperature

Description

The integrated temperature sensor can trigger events when the actual temperature is higher or lower than the value entered here:

- Select the temperature sensor that the camera is supposed to use.

Camera Temperature:

The camera uses the internal temperature sensor.

Ambient Temperature:

The camera uses the built-in external temperature sensor (not available in every camera model).

MX-GPS-Box Temperature:

The camera uses the temperature sensor of an attached MX-GPS-Box.

ExtIO Temperature:

The camera uses the temperature sensor of an attached ExtIO expansion module.

- Specify whether the event is to be triggered when the the actual value is higher or lower than the entered value.
- Enter the temperature that is to trigger the event.
- Select the unit.
- Define how often the event is to be triggered:

First:

The event is triggered only *once*, i.e., when the condition is first detected.

Every:

The event is triggered *every* time as long as the condition is true.

Event Sensor Type

Illumination

Description

The image sensors can trigger events if the illumination is higher or lower than the value entered here:

- Select the image sensor to be used for this event (only available on dual lens models).
- Specify whether the event is to be triggered when the the actual value is higher or lower than the entered value.
- Enter the illumination value that is to trigger the event.
- Define how often the event is to be triggered:

First:

The event is triggered only *once*, i.e., when the condition is first detected.

Every:

The event is triggered *every* time as long as the condition is true.

Event Sensor Type

GPS Position

Description

The MX-GPS-Box can trigger events if the camera is moved from the specified position.

- Set the **Anchor Position** that is to be maintained.
- Set the maximum allowed distance from the anchor position.

This feature is only available, if an [MX-GPS-Box](#) has been attached and is running properly.

Event Sensor Type

GPS Velocity

Description

The MX-GPS-Box can trigger events if the camera is moved at a higher or a lower speed than specified here.

- Set the trigger speed.
- Select the type of trigger (minimum or maximum threshold).

This feature is only available, if an [MX-GPS-Box](#) has been attached and is running properly.

Event Sensor Type

Thermal Spotmeter

Description

The thermal spotmeter can trigger events if the temperature measured at the center of the image (four pixels) is higher or lower than the specified trigger value. For additional information on this event type, see the [Thermal Spotmeter](#) help page.

This feature is only available, if a suitable thermal image sensor has been attached and is running properly.

Event Sensor Type

Thermal Reference Window

Description

The thermal reference window can trigger events if the temperature measured in a reference window is higher or lower than the trigger value determined in user-defined image areas. For additional information on this event type, see the [Thermal Reference Window](#) help page.

This feature is only available, if a suitable thermal image sensor has been attached and is running properly.

Event Sensor Type

Thermal Radiometry

Description

Thermal radiometry can trigger events if the temperature measured in user-defined image areas is higher or lower than the specified trigger value. For additional information on this event type, see the [Thermal Radiometry](#) help page.

This feature is only available, if a suitable thermal image sensor has been attached and is running properly.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Thermal Reference Window

The *thermal reference window* can trigger events based on the temperature measured within the specified image areas and compared to the temperature measured in a reference window. Note that you can define different measurement areas for every event profile.

To do so, you can create different [temperature events](#), which react to different areas and reference temperatures.

- This feature is only available, if a suitable thermal image sensor has been attached and is running properly.

- The temperature of objects in the image as determined by the thermal sensors is influenced mostly by the following factors:
 - Surface properties and object color
 - Distance from the sensor to the objects
 - Properties of the atmosphere between the sensor and the objects

This means that the sensor can deliver different temperature values depending on the distance to the object and the current scene. In order to define events that are based on temperature trigger values, you first need to determine the current temperature values measured in the scene. To do so, you can use the [variables](#) `$(SEN.TSR.CELSIUS)` and `$(SEN.TSR.FAHRENHEIT)` for the right sensor or `$(SEN.TSL.CELSIUS)` and `$(SEN.TSL.FAHRENHEIT)` for the left sensor. The determined values can then be used to set the trigger value defined below.

Edit Measurement Area

The measurement area can be defined as a rectangle or as a polygon.

Rectangle syntax:

image sensor, horizontal position, vertical position, width, height

Example 1. Rectangle Syntax

```
0,270,190,100,100
```

Polygon syntax:

```
image sensor, poly=<hor. coordinate>x<vert. coordinate>{/<hor. coordinate>x<vert. coordinate>}
```

Example 2. Polygon Syntax

```
0,poly=270x190/270x289/369x289/369x190
```

- The measurement area refers to the entire image sensor.
- If the camera image has been **mirrored or rotated**, the coordinate system of the windows changes accordingly.

Parameter

Image sensor

Description

Selects the image sensor (camera image) to use for this area definition:

- 0: Right camera image on dual cameras, default setting on mono cameras.
- 1: Left camera image on dual cameras.

Parameter

Horizontal position

Description

Number of pixels measured from the left edge of the visible image to the left border of the area (based on a MEGA image 1280x960).

Parameter

Vertical position

Description

Number of pixels measured from the bottom edge of the visible image to the bottom border of the area (based on a MEGA image 1280x960).

Parameter

Width

Description

Width of the area in pixels (based on a MEGA image 1280x960).

Parameter

Height

Description

Height of the area in pixels (based on a MEGA image 1280x960).

Parameter

Horizontal Coordinate

Description

Number of pixels measured horizontally from the left edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

Parameter

Vertical Coordinate

Description

Number of pixels measured vertically from the bottom edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

If you would like to define a new measurement area, open the **Environment Events** dialog and follow the instructions of the [Graphically Entering Image Areas](#) help page.

Trigger Mode

Use this parameter to specify when to trigger the event. The following modes are available:

- *One Pixel*: Triggers an event if at least one pixel in the measurement area is higher or lower than the trigger value.

- **Percent:** Triggers an event if at least the specified percentage of all pixels in the measurement area is higher or lower than the trigger value.

Editing the Reference Area

The measurement area can be defined as a rectangle or as a polygon.

Rectangle syntax:

image sensor, horizontal position, vertical position, width, height

Example 3. Rectangle Syntax

```
0,270,190,100,100
```

Polygon syntax:

image sensor, poly=<hor. coordinate>x<vert. coordinate>{/<hor. coordinate>x<vert. coordinate>}

Example 4. Polygon Syntax

```
0,poly=270x190/270x289/369x289/369x190
```

- The reference area refers to the entire image sensor.
- If the camera image has been **mirrored or rotated**, the coordinate system of the windows changes accordingly.

Parameter

Image sensor

Description

Selects the image sensor (camera image) to use for this area definition:

- 0: Right camera image on dual cameras, default setting on mono cameras.
- 1: Left camera image on dual cameras.

Parameter

Horizontal position

Description

Number of pixels measured from the left edge of the visible image to the left border of the area (based on a MEGA image 1280x960).

Parameter

Vertical position

Reference

The Setup Menu

Description

Number of pixels measured from the bottom edge of the visible image to the bottom border of the area (based on a MEGA image 1280x960).

Parameter

Width

Description

Width of the area in pixels (based on a MEGA image 1280x960).

Parameter

Height

Description

Height of the area in pixels (based on a MEGA image 1280x960).

Parameter

Horizontal Coordinate

Description

Number of pixels measured horizontally from the left edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

Parameter

Vertical Coordinate

Description

Number of pixels measured vertically from the bottom edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

If you would like to define a new reference area, open the **Environment Events** dialog and follow the instructions of the [Graphically Entering Image Areas](#) help page.

Comparison

Select between triggering the event when it exceeds or when it drops below the specified trigger value measured in the reference window.

- *Higher than:* Triggers an event if the temperature in the measurement area is higher than the measured trigger value.
- *Lower than:* Triggers an event if the temperature in the measurement area is lower than the measured trigger value.

Action Type

Define how often the event is to be triggered:

- *First:* The event is triggered only *once*, i.e., when the condition is first detected.
- *Every:* The event is triggered *every* time as long as the condition is true.

Show Measurement Area

To display the measurement area of a *Thermal Reference Window* event profile in the live image, select a color from the selection list. In addition, you can set the following options for the measurement area:

- *Show Thermal Reference Window Level Meter*. Shows the relation between the temperatures in the measurement area and the reference window (see [Note](#) below) of the event profile within the defined measurement area as a level meter.
- *Show Thermal Reference Window Profile Name*: Shows the name of the event profile within the defined measurement area.

The **current temperature** in this context is the temperature value determined according to the selected comparison conditions and compared to the specified trigger threshold.

The following options are available for the measurement area and the profile name:

- *Off*: Does not show the element.
- *Auto*: Shows the element with a color that depends on the color palette of the thermal sensor.
- *Color*: Shows the element using the selected color.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Thermal Spotmeter

The *thermal spotmeter* can trigger events based on the measured temperature. The measurement area covers the four pixels at the center of the image.

- This feature is only available, if a suitable thermal image sensor has been attached and is running properly.

- The temperature of objects in the image as determined by the thermal sensors is influenced mostly by the following factors:
 - Surface properties and object color
 - Distance from the sensor to the objects
 - Properties of the atmosphere between the sensor and the objects

This means that the sensor can deliver different temperature values depending on the distance to the object and the current scene. In order to define events that are based on temperature trigger values, you first need to determine the current temperature values measured in the scene. To do so, you can use the [variables](#) `$ (SEN.TSR.CELSIUS)` and `$ (SEN.TSR.FAHRENHEIT)` for the right sensor or `$ (SEN.TSL.CELSIUS)` and `$ (SEN.TSL.FAHRENHEIT)` for the left sensor. The determined values can then be used to set the trigger value defined below.

General Settings of the Thermal Spotmeter

Show Crosshairs

In order to exactly point the sensor to the object you want to measure, the camera can display crosshairs in the live image. The circle at the center of the crosshairs shows the four pixels that are used for measuring.

Alarm Type

Allows using a temperature level (single trigger value) or a temperature range (two trigger values).

- *Thermal Level*: Triggers an event if the temperature is higher or lower than the trigger value.
- *Thermal Range*: Triggers an event if the temperature is within or outside of the defined temperature range.

Temperature Unit

Show the temperatures either in degrees Centigrade (°C) or Fahrenheit (°F).

Trigger Values

Enter the temperature value that is used to trigger an event when it exceeds or when it drops below the value (depending on the setting of the [Comparison](#) parameter).

Comparison

Select between triggering the event when it exceeds or drops below the specified trigger value on the one hand or when it reaches or leaves the specified temperature range.

- *Higher than*: (only when using *Thermal Level* alarm type) triggers an event if the temperature in the measurement area is higher than the trigger value.
- *Lower than*: (only when using *Thermal Level* alarm type) triggers an event if the temperature in the measurement area is lower than the trigger value.
- *Outside of range*: (only when using *Thermal Range* alarm type) triggers an event if the temperature in the measurement area is outside of the temperature range.
- *Within range*: (only when using *Thermal Range* alarm type) triggers an event if the temperature in the measurement area is within the temperature range.

Action Type

Define how often the event is to be triggered:

- **First:** The event is triggered only *once*, i.e., when the condition is first detected.
- **Every:** The event is triggered *every* time as long as the condition is true.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

MxActivitySensor

The **MxActivitySensor** reacts to continuous movements within specific image areas. You can define one or more independent image areas for each image sensor (camera image). Since the *MxActivitySensor* only reacts to relevant movements, events are triggered with a certain delay after the first appearance of an object. For **recording**, you can compensate this behavior by adjusting the [Recording Time Before Event](#) accordingly. Likewise, the measured activity *fades away* with a certain delay, which may prompt additional alarms. You can control this behavior by adjusting the *Event Dead Time* accordingly.

In order to obtain best results, the scene should be well-illuminated, so that the objects that are to be detected show sufficient contrast against the background of the image. In addition, you should choose the camera image in such a way, that the camera can follow objects within the detection area for several seconds.

Note that you can create different [image analysis events](#), which react to different detection areas. In addition, it is also possible to detect only specific directions of movement.

General MxActivitySensor Settings

Parameter

Detect Fast Motion

Description

By activating this checkbox, you can improve the detection of fast objects by *MxActivitySensor*. However, using this option can reduce the recognition results of small objects.

Parameter

Activate Noise Improvement

Description

Improves the detection precision in low-light situations with a high degree of image noise by filtering the noisy pixels from the image information.

Parameter

Show Direction Indicator

Description

Activates the direction indicator that is displayed in the live image. This display combines all active profiles of the *MxActivitySensor* type. The direction indicator is not available for every display mode.

Parameter

Show Live Position Indicator

Description

This option allows showing the position of the movement that triggered. The position indicator is not available for every display mode.

Parameter

Threshold for Thermal Sensors

Description

Allows setting the threshold of the *MxActivitySensor* for thermal sensors. The lower the value, the more sensitive the *MxActivitySensor* will react. This parameter is only available if at least one thermal sensor has been attached.

Parameter

Show Detection Area

Description

To display the detection areas of an *MxActivitySensor* profile, select the corresponding profile in the **Image Analysis Events** dialog.

MxActivitySensor 2.x Settings

This extension to the *MxActivitySensor* provides a method for object detection based on object size. It can thus eliminate false alarms triggered by objects that are too small. For example, you can use this feature to avoid false alarms triggered by animals (cats, dogs, birds, etc.).

- The parameters and options in this section are only available if the **Use MxActivitySensor 2.x** option is activated.
- If several image sensors are attached, you can set different parameters for each sensor.
- Using the MxActivitySensor 2.x may slightly reduce the maximum frame rate.

The Perspective Compensation

The perspective compensation provides a method for determining the size of an object independent of its distance to the camera. To be able to do so, the camera needs to know the minimum size of "real" objects near the camera and some distance away. The camera software uses the relative position of the windows in the image to determine the distance to the object.

Without perspective compensation, you can set a minimum object size from which the corresponding event is triggered.

- You will get the best results if the camera is installed in a slightly elevated position so that it is tilted downward by about 10 to 15 degrees.
- When defining the object size, make sure that the [size windows](#) are tight around the objects. If you want to trigger on humans, for example, draw the windows snugly along the body (from the throat down to the feet, ignore the arms and the head, as wide as the torso).
- The perspective compensation is **not** available for hemispheric sensor modules.

Parameter

Deactivated Perspective Compensation

Description

If the perspective compensation is deactivated, only the object size (as indicated by the changing pixels in the image) will be used to trigger an event.

The following parameters are available:

Minimum Object Size

Sets the minimum object size for objects to be considered relevant. All smaller objects are ignored. The size is defined using a [size window](#). Only the width and the height of the window are used; its position in the image is irrelevant.

Parameter

Activated Perspective Compensation

Description

If the perspective compensation is activated, the object size to trigger an event will be set twice – once for the object near the camera, once in some distance.

The following parameters are available:

Near Object Size

Sets the minimum size of objects near the camera. The size is defined using a [size window](#); its lower left corner is used as a reference point for the perspective.

Far Object Size

Sets the minimum size of objects farther away from the camera. The size is defined using a [size window](#); its lower left corner is used as a reference point for the perspective.

Defining the Size Windows for MxActivitySensor 2.x

Rectangle syntax:

Horizontal position, vertical position, width, height

Parameter

Horizontal position

Description

Number of pixels measured from the left edge of the visible image to the left border of the area (based on a MEGA image 1280x960).

Parameter

Vertical position

Description

Number of pixels measured from the bottom edge of the visible image to the bottom border of the area (based on a MEGA image 1280x960).

Parameter

Width

Description

Width of the area in pixels (based on a MEGA image 1280x960).

Parameter

Height

Description

Height of the area in pixels (based on a MEGA image 1280x960).

If you would like to define a new measurement area, open the **Image Analysis Events** dialog and follow the instructions of the [Graphically Entering Image Areas](#) help page.

Window Definitions

Every line in the definition box that does not begin with a hash sign (#, [comments](#)) defines one window. The windows can be defined either as rectangles or as polygons.

Rectangle syntax:

```
[!]image sensor, horizontal position, vertical position, width, height
```

(optional parameters have square brackets).

Example 1. Rectangle Syntax

```
0,270,190,100,100
```

Polygon syntax:

```
[!]image sensor, poly=<hor. coordinate>x<vert. coordinate>{/<hor. coordinate>x<vert. coordinate>}
```

(optional parameters have square brackets, parameters that can be used as often as needed have curly brackets).

Example 2. Polygon Syntax

```
0,poly=270x190/270x289/369x289/369x190
```

- All window dimensions refer to the entire image sensor.
- If the camera image has been **mirrored or rotated**, the coordinate system of the windows changes accordingly.

Parameter

!

Description

Defines an area that is excluded from analysis (this area should always be *inside* of the area that is to be analyzed).

Parameter

Image sensor

Description

Selects the image sensor (camera image) to use for this window definition:

- 0: Right camera image on dual cameras, default setting on mono cameras.
- 1: Left camera image on dual cameras.

Parameter

Horizontal position

Description

Number of pixels measured from the left edge of the visible image to the left border of the window (based on a MEGA image 1280x960).

Parameter

Vertical position

Description

Number of pixels measured from the bottom edge of the visible image to the bottom border of the window (based on a MEGA image 1280x960).

Parameter

Width

Description

Width of the window in pixels (based on a MEGA image 1280x960).

Parameter

Height

Description

Height of the window in pixels (based on a MEGA image 1280x960).

Parameter

Horizontal Coordinate

Description

Number of pixels measured horizontally from the left edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

Parameter

Vertical Coordinate

Description

Number of pixels measured vertically from the bottom edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

If you would like to define a new or additional window, open the **Image Analysis Events** dialog and follow the instructions of the [Graphically Entering Image Areas](#) help page.

Using Comments to Deactivate Window Definitions

In order to temporarily deactivate windows, place a hash sign (#) in front of the definition. This window definition will still be saved, but will not be used as detection area. In addition, comments generally help keep an overview if the window definitions are complex.

Detection Threshold

This trigger value sets the activity that needs to be measured in the area of analysis before the MxActivitySensor triggers. The higher the value, the slower MxActivitySensor will trigger; using a lower value require less activity before MxActivitySensor triggers. Value range: 0..99.

In order to determine a good value for the Detection Threshold, you can open the **Text & Display Settings** dialog and activate the corresponding **Level Meter** (*Bar* or *Scroll Chart*; you may have to click on **More** at the bottom of the dialog to see these options). Select the corresponding *Image Analysis: <event name>* entry from the **Level Meter Data** list and click on the **Set** button. You can now test the settings by having test persons walk through the image, for example.

Select Direction Triggers

Activate the directions of movement that will trigger reactions of the camera (e.g., recording).

Copy Window Definitions

If this option is activated, all window definitions will be used on both image sensors. This option is only available on Day/Night models.

Dual Lens Video Motion

Activating this option will detect video motion on both image sensors (regardless of which sensor is actually shown on the Live screen). Note that using this option may reduce the maximum frame rate. A window explicitly defined for the *left* image sensor will remain active, even if you only see the image of the camera's *right*

image sensor. This means that the camera will react on events detected on the *left* (invisible) image sensor. This option is only available on Dual models.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Image Analysis Events

The **Image Analysis Events** dialog contains all event sensors that can trigger a camera action based on the results of an image analysis function.

Using Meta Events to Avoid False Alarms

In order to filter events, the camera provides an [Event Logic](#): This dialog allows linking events to create *logic* events only if the linked events occur in a certain sequence and within the specified time frame. Another possibility to filter events is the [Event Counter](#): It creates an event only if a certain number of events occurs within the specified time frame.

General Settings

Option

Copy Window Definitions

Description

If this option is activated, all window definitions (for Video Motion Detection and MxActivitySensor) will be used on both image sensors. This option is only available on Day/Night models.

Option

Dual Lens Analysis

Description

Activating this option will detect video motion on both image sensors (regardless of which sensor is actually shown on the Live screen). Note that using this option may reduce the maximum frame rate. An image analysis window that has been defined for the left image sensor will still be active, even if you only see the image from the right lens of the camera. This means that the camera will react on events detected on the left (invisible) image sensor. This option is only available on Dual models.

Option

Event Dead Time

Description

The event dead time defines a period of time (0..3600 s) after an event, during which no new events from the same profile are recognized.

By defining an event dead time you can avoid, for example, that a complex action (person walks through the active image area) triggers *multiple* events.

Description of Event Sensor Types

Event Sensor Type

Video Motion Detection

Description

The Video Motion Detection reacts to movements in certain image areas, called "video motion windows". You can define one or more independent video motion windows for each image sensor (camera lens).

Open the [Video Motion Detection](#) help page for a detailed description of the parameters and application examples of this sensor.

Event Sensor Type

MxActivitySensor

Description

The MxActivitySensor reacts to continuous movements in specific, freely definable image areas. You can define one or more independent of these analysis windows for every image sensor (i.e. camera lens).

Open the [MxActivitySensor](#) help page for a detailed description of the parameters and application examples of this sensor.

Event Sensor Type

Behavioral Detection

Description

Behavioral detection is an extension to [MxAnalytics](#). The sensor reacts according to different behavior profiles of the objects tracked in the image.

Open the [Behavioral Detection](#) help page for a detailed description of the parameters and application examples of this sensor.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Behavioral Detection

This feature is not available on all camera models.

The **Behavioral Detection** is an extension to [MxAnalytics](#). This feature can create alarms based on movements of the tracked objects. In order to configure alarms, it is not required to explicitly activate [MxAnalytics](#). All required parameters can be accessed on the configuration page of the **Image Analysis Events**.

Note that you can create different [image analysis events](#), which react to different behavior profiles.

General Settings of Behavioral Detection

This section shows the general settings that are used in the entire behavioral detection. Parameters used only for specific alarms are configured directly at the event sensor type.

Main Direction

Sets the main direction of movement as a position of the clock face (12 o'clock corresponds to the North direction in the image). This parameter defines the direction, into which the detected objects are supposed to be moving.

Activate Visualization of Alarms

Activate this parameter to show icons in the image for triggered alarms.

Show Object Speed

In addition, you can show the speed for the detected objects. Note that the precision of the speed measurement is depending greatly on how precisely you specified the **Mounting Height and the Tilt Angle**.

MxAnalytics – Shared Settings

The *Behavioral Detection* is based on the [MxAnalytics](#) algorithms. This is why both features are sharing the configuration parameters listed in this section. For more detailed information on the shared parameters, please open the [MxAnalytics](#) help page.

Selectable Behavior Profiles

Use the parameters in this section to define the alarms. You can choose between different behavior profiles for this purpose.

Profile

Corridor

Parameter

Corridor List:

- Comma-separated list of corridor IDs.
- Definition of single corridors or areas (e.g., "1,2,4-7").
- The ranges can be open ("3-" or "-4").
- Leave the field empty to use all corridors.

Description

Triggers an alarm if an object moves through the entire length of one of the defined corridors.

Profile

Duration of Stay

Parameter

Maximum duration of stay:

- Sets the maximum period of time that an object can stay in the image.
- **Value range:** 1 s to 300 s

Description

Triggers an alarm if an object stays longer in the image than the specified maximum duration of stay.

Profile

Opposite Direction

Parameter

Main Direction:

- Represents the main direction of movement as shown on a clock face.
- Note that there is only one main direction that is valid globally.
- **Value range:** 1 to 12

Description

Triggers an alarm if an object moves opposite to the configured main direction.

Profile

U-Turn

Parameter

(None)

Description

Triggers an alarm if an object changes its direction of movement by an angle from 135° to 180°.

Profile

Turn

Parameter

(None)

Description

Triggers an alarm if an object changes its direction of movement by an angle from 45° to 134°.

Profile

Speed

Parameter

Speed threshold:

- **Value range:** 1 m/s to 6 m/s

Description

Triggers an alarm if an object moves faster than the specified speed.

Profile

Restricted Area

Parameter

Area Definition:

The restricted area can be defined as a rectangle or as a polygon.

Rectangle Syntax

image sensor, horizontal position, vertical position, width, height

Example 1. Rectangle Syntax

```
0,270,190,100,100
```

Polygon Syntax

```
Image sensor, poly=<hor. coordinate="">x<vert. coordinate=""> {/<hor. coordinate="">x<vert. coordinate="">}
```

Example 2. Polygon Syntax

```
0,poly=270x190/270x289/369x289/369x190
```

- The restricted area refers to the entire image sensor.
- If the camera image has been **mirrored or rotated**, the coordinate system of the windows changes accordingly.

Parameter

!

Description

Defines an area that is excluded from analysis (this area should always be *inside* of the area that is to be analyzed).

Parameter

Image sensor

Description

Selects the image sensor (camera image) to use for this window definition:

- 0: Right camera image on dual cameras, default setting on mono cameras.
- 1: Left camera image on dual cameras.

Parameter

Horizontal position

Description

Number of pixels measured from the left edge of the visible image to the left border of the window (based on a MEGA image 1280x960).

Parameter

Vertical position

Description

Number of pixels measured from the bottom edge of the visible image to the bottom border of the window (based on a MEGA image 1280x960).

Parameter

Width

Description

Width of the window in pixels (based on a MEGA image 1280x960).

Parameter

Height

Description

Height of the window in pixels (based on a MEGA image 1280x960).

Parameter

Horizontal Coordinate

Description

Number of pixels measured horizontally from the left edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

Parameter

Vertical Coordinate

Description

Number of pixels measured vertically from the bottom edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

If you would like to define a new or additional window, open the **Image Analysis Events** dialog and follow the instructions of the [Graphically Entering Image Areas](#) help page.

Description

Triggers an alarm if an object enters the restricted area.

To trigger the alarm, the camera uses the estimated position where the object touches the ground. In case of a person, this would be the estimated position of the person's feet. The [Object trace](#) is thus no suitable means to control this type of access since it follows the object's center of gravity.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Video Motion Detection

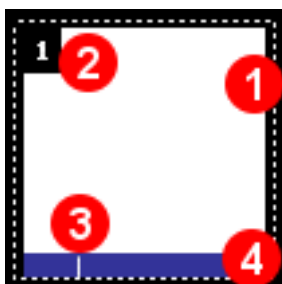
The Video Motion Detection sensor reacts to movements in certain image areas called *video motion windows* (VM windows in short). You can define one or more independent video motion windows for each image sensor (camera image).

Next, you can create different [image analysis events](#), which only react to subsets of these windows. This provides a means for filtering according to direction of motion, for example (see the [Event Logic](#) help page).

Visualization of Video Motion Detection Windows

If **Video Motion Detection Style** has been set to *On and highlight on event*, for example, the camera will display every VM window as a dotted frame.

VM Window Elements



1

Frame:

- **White:** Standard VM windows.
- **Yellow:** Reference windows.
- **Red:** VM window has triggered.

2

Video Motion Window ID

Number of the VM window in the definition box.

3

Minimum area trigger:

Triggers an event (alarm) if the changes in the image exceed the percentage set in the `minimum area` parameter (see [Video Motion Window Definitions](#) below).

4

Status bar:

- **Hidden:** VM window is not active (too dark or initializing).

Frame: If the camera detects movements in an active VM window that exceed the percentage set in the `minimum area` parameter (and that is below `maximum area`, see [Video Motion Window Definitions](#) below), the complete frame of the window turns red.

Video Motion Window ID: If **Show Video Motion Window ID** has been enabled (this is the default), every window shows an identification number in its top left corner. This number can be set in the [Video Motion Window definitions](#) (see below). IDs for windows with no explicit or erroneous definitions are automatically assigned in the order of their definitions.

Status bar: Shows the current activity (detected movement in the image) of every window and has one or two small markers showing the current trigger limits (see [Video Motion Window Definitions](#) below). If the VM window is not active (too dark or initializing), camera will hide the status bar for this time.

Video Motion Window Definitions

Every line in the definition box that does not begin with a dollar (`$generate=`, [auto-generated VM windows](#) or [variables](#)) or hash sign (`#`, [comments](#)) defines one VM window.

Video motion windows can be defined either as rectangles or as polygons.

Rectangle syntax:

```
[!]image sensor, horizontal position, vertical position, width, height
[, a=<min. area>] [, am=<max. area>] [, s=<sensitivity>]
[, col=<color>] [, id=<ID number>]
```

(optional parameters have square brackets).

Example 1. Rectangle Syntax

```
0,270,190,100,100,a=25,am=90,s=15,col=blue,id=5
```

Polygon syntax:

```
[!]Image sensor, poly=<hor. coordinate>x<vert. coordinate> {/<hor. coordinate>x<vert. coordinate>}[, a=<min. area>]
```

```
[, am=<max. area >] [, s=<sensitivity>] [, col=<color>]
[, id=<identification number>]
```

(optional parameters have square brackets, parameters that can be used as often as needed have curly brackets).

Example 2. Polygon Syntax

```
0,poly=270x190/270x289/369x289/369x190,a=25,am=90,s=15,col=blue,id=5
```

- All video motion window dimensions refer to the entire image sensor.
- If the camera image has been **mirrored or rotated**, the coordinate system of the video motion windows changes accordingly.

Parameter

!

Description

Defines a [reference window](#) (see below).

Parameter

Image sensor

Description

Selects the image sensor (camera image) to use for this Video Motion Window definition:

- 0: Right camera image on dual cameras, default setting on mono cameras.
- 1: Left camera image on dual cameras.

Parameter

Horizontal position

Description

Number of pixels measured from the left edge of the visible image to the left border of the VM window (based on a MEGA image 1280x960).

Parameter

Vertical position

Description

Number of pixels measured from the bottom edge of the visible image to the bottom border of the VM window (based on a MEGA image 1280x960).

Parameter

Width

Description

Width of the window in pixels (based on a MEGA image 1280x960).

Parameter

Height

Description

Height of the window in pixels (based on a MEGA image 1280x960).

Parameter

Horizontal Coordinate

Description

Number of pixels measured horizontally from the left edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

Parameter

Vertical Coordinate

Description

Number of pixels measured vertically from the bottom edge of the visible image to the polygon corner (based on a MEGA image 1280x960).

Parameter

Minimum area

Description

Values: 0-99 (lower: more sensitive)

This parameter controls the percentage of the VM window area that needs to change from one frame to the next in order to trigger an event. Decreasing this value will make the VM window more sensitive. This value can be left out; in this case, the camera will use the default value of 25.

Parameter

Maximum area

Description

Values: 0-99

The maximum percentage of the window area that *is allowed* to change from one frame to the next in order to trigger an event. You can use this value to suppress false alarms resulting from global changes (e.g. when the lights are turned on). This is an optional parameter, which will not be used, if it has not been specified explicitly.

Parameter

Sensitivity

Description

Values: 0-99 (higher: less sensitive)

This parameter controls the percentage of detected change in the pixels in a VM window, which must be reached to trigger an event. Besides the detection area, this is the second parameter to tune the detection performance. The sensitivity value can normally be left out (thus using the default setting), but may be helpful in difficult situations. By default, this value is 20 for regular VM windows and 10 for [reference windows](#).

Parameter

Color

Description

Values: *black, red, green, blue, cyan, magenta, dred, dgreen, dblue*

This parameter sets the background color of window frame and status line. A missing or erroneous specification will result in black being chosen.

Parameter

ID-number

Description

Values: 1-999

This parameter sets the ID-number of the window. If an invalid number is specified, or it has been previously assigned, the window reverts to automatic enumeration.

If you would like to define a new or additional window, open the **Event Settings** dialog and follow the instructions in the [Graphically Entering Image Areas](#) help page.

Using Reference Windows to Avoid False Alarms

Reference windows are used to avoid false alarms for events that would be triggered by VM windows, e.g. if lighting conditions change rapidly (sun and cloudy sky, headlights from cars, etc.).

To define a reference window, simply create an *additional* VM window in a portion of the image **where no movements are expected**. Then add an exclamation mark (!) in front of the VM window definition.

Example 3. Defining a Reference Window

```
!0,912,750,364,188,a=25
```

Note that specifying a maximum area for reference windows is possible, but not very useful.

If a reference window triggers, all events using it will be disabled for the time specified for the *Video Motion Suppression Time* parameter. If this value is 0, the camera only suppresses triggers at the same moment as the reference window.

Using Comments to Deactivate Window Definitions

In order to temporarily deactivate VM windows, place a hash sign (#) in front of the definition. This VM window definition will still be saved, but will not be used as a video motion window. In addition, comments generally help keep an overview if the VM window definitions are complex.

Auto-Generated VM Windows

This special mode allows generating several video motion windows with only one line, allowing you to create a "minefield" of VM windows with only one definition line. It can also be used to quickly find an optimum set of parameters for a given lighting situation. This is an example for a auto-generated VM window definition line with all optional parameters:

Syntax:

```
$generate=image sensor, width, height, horizontal gap, vertical gap,  
min. area left, min. area right, max. area bottom, max. area top
```

None of the parameters are mandatory (the most simple definition is `$generate=`); if no values are specified, the camera will use the defaults.

Example 4. Syntax of a VM Mine Field

```
$generate=0,100,100,20,20,25,25,70,70
```

Parameter

Image sensor

Description

Selects the image sensor (camera image) to use for this Video Motion Window definition:

- 0: Right camera image on dual cameras, default setting on mono cameras.
- 1: Left camera image on dual cameras.

Parameter

Width

Description

Width of the VM window in pixels.

Default: *100*

Parameter

Height

Description

Height of the VM window in pixels.

Default: *100*

Parameter

Horizontal gap

Description

Horizontal distance between one window and the next in pixels.

Default: *20*

Parameter

Vertical gap

Description

Vertical distance between one window and the next in pixels.

Default: *20*

Parameter

Minimum area

Description

If two different values are specified, the **minimum area** parameter for the generated windows varies between the first value for the leftmost column of windows and the second value for the rightmost column. The values for the windows in-between are interpolated linearly. If the same value is specified for both parameters, all windows use this value.

Default: 25

Parameter

Maximum area

Description

Varies the **maximum area** parameter in the same fashion as for **minimum area**, but in **vertical** direction from bottom to top. If no values are specified, the **maximum area** is disabled.

Default: *Off*

Generated windows have their own ID numbering system, indicated by a leading "g".

Make sure that you only use the **maximum area** parameter if absolutely necessary. It can help when trying to determine a good value for this kind of "minefield" set of VM window definitions.

Variables

Certain situations may require further fine-tuning of the behavior of the video motion windows using the following variables. Note that you do not need to change the default settings unless you need to handle very special situations.

Syntax:

Parameter=value

Example 5. Using the \$noiseadjust Variable

```
$noiseadjust=1
```

Variable

`$noiseadjust`

Meaning

Controls the sensitivity to image noise.

Value Range

0..1

Explanation

- 1 (default): Activates image noise filtering. Differences in the brightness of those image pixels that are below the calculated noise value, will not trigger a video motion window.
- 0: Deactivates image noise filtering. Motion detection is more sensitive in dark scenes, but the number of false alarms due to image noise may increase.

Variable

`$postfilter`

Meaning

Controls how changes in illumination are treated.

Value Range

0..1

Explanation

- 1 (default): Activates "post-filtering" of the VM window(s). Uniform changes in illumination are filtered and will not result in a triggering action.
- 0: Deactivates post-filtering and thus increases VM sensitivity. Note that switching post-filtering off is only recommended when illumination does not change. In this case, you can use this setting to increase the sensitivity of the VM windows.

Variable

`$limit`

Meaning

Defines a percentage for pixel brightness from which video motion detection will be more sensitive.

Value Range

0..100

Explanation

- 100 (default): No effect.
- 0..99: Use this parameter to increase the sensitivity of VM windows especially for bright image areas; a setting of `$limit=60`, for example, would limit VM detection to all pixels that have at least 60% brightness.

Copy Window Definitions

If this option is activated, all video motion definitions will be used on both image sensors. This option is only available on Day/Night models.

Dual Lens Video Motion

Activating this option will detect video motion on both image sensors (regardless of which sensor is actually shown on the Live screen). Note that using this option may reduce the maximum frame rate. A video motion window explicitly defined for the *left* image sensor will remain active, even if you only see the image of the camera's *right* image sensor. This means that the camera will react on events detected on the *left* (invisible) image sensor. This option is only available on Dual models.

Low-Light Suppression

Disables motion detection if illumination drops below the selected value. This value can be set independently for each camera lens.

Video Motion Window Suppression Time

If a positive value is entered, a triggering reference window suppresses motion detection for this duration.

Hide Unused Windows

With this option, windows that are not used in an active event are not processed and not visualized in the image. Using this function, a subset of windows can be selected from an automatically generated field. The unused windows do not use any processing time or clutter the image.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Internal Events

The **Internal Events** dialog contains all event sensors that can trigger a camera action based on internal state changes.

Using Meta Events to Avoid False Alarms

In order to filter events, the camera provides an [Event Logic](#): This dialog allows linking events to create *logic* events only if the linked events occur in a certain sequence and within the specified time frame. Another possibility to filter events is the [Event Counter](#): It creates an event only if a certain number of events occurs within the specified time frame.

General Settings

Option

Event Dead Time

Description

The event dead time defines a period of time (0..3600 s) after an event, during which no new events from the same profile are recognized.

By defining an event dead time you can avoid, for example, that a complex action (person walks through the active image area) triggers *multiple* events.

Description of Event Sensor Types

Event Sensor Type

Action Group Termination

Description

Triggers an event if an Action Group finishes execution.

You can define your own action groups.

The camera can trigger an event depending on the result of the selected action group.

Select one of the following options:

- Failed
- Successful

- Aborted

Event Sensor Type

Door Station

Description

Triggers an event if a door station incident occurs.

Select one of the following events:

- *Bell*: Failed
- *Bell*: Ringing
- *Door*: Wrong PIN
- *Door*: Wrong RFID
- *Door*: Correct PIN
- *Door*: Correct RFID
- *Mailbox*: Message Begin
- *Mailbox*: Message End

Event Sensor Type

Custom Signal State

Description

The camera can trigger an internal event if the state of a custom signal changes or has a specific state.

Select one of the following custom signals:

- CS1
- CS2
- CS3
- CS4
- CS5
- CSL

Select one of the following statuses:

- On
- Off
- Off → On
- On → Off

Event Sensor Type

Recording

Description

Triggers an event if the current state of recording changes.

Select one of the following options:

- Recording is started

- Recording is stopped
- History image is recorded
- Recording is terminated

Event Sensor Type

GPS Status

Description

Triggers an event if the reception quality of an MX-GPS-Box changes if such a box is attached to the camera.

The camera can evaluate the following GPS flags:

- *Time*: Valid if time has been synchronized successfully.
- *Position*: Valid if a basic position fix is available.
- *Height*: Valid if a full position fix is available.

You can use the following trigger conditions:

- Valid
- Invalid
- Becomes Valid
- Becomes Invalid

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Meta Events

The **Meta Events** dialog contains all event sensors that permit grouping and filtering of other events

General Settings

Option

Event Dead Time

Description

The event dead time defines a period of time (0..3600 s) after an event, during which no new events from the same profile are recognized.

By defining an event dead time you can avoid, for example, that a complex action (person walks through the active image area) triggers *multiple* events.

Event Counter

The **Event Counter (EC)** prevents events from being triggered immediately. It only triggers an event if a certain number of events within a defined period of time has been exceeded/reached or not reached, respectively.

Each image will increase the event counter by one, even if multiple event sensors are active at the time.

The event counter can be used, for example, for monitoring a conveyor belt in a production scenario. If fewer events occur than expected during the defined period of time, a malfunction is recognized and the camera triggers an alarm.

Also, the event counter is useful to avoid false alarms of the Video Motion Detection. Due to the event counter, an event is only triggered when events occur e.g. for as long as two to five seconds. This way, you can make sure that the object is really moving.

Parameter

Event Counter Enable

Description

If the event counter is enabled, this event will trigger alarms. The event counter counts *all* events selected in the **Event Selection** box.

Individual Events controls if only the event counter is allowed to trigger actions or if individual events may also trigger actions.

Parameter

Events to Count

Description

Select the events you want to be counted in the [Event Selection](#) list. Hold the [Ctrl] key pressed to select more than one event.

Parameter

Individual Events

Description

Specify, whether you want the counted individual events to be saved or deleted. Saved events can continue to initiate actions or messages:

- *ignore events*: Actions are only triggered by the event counter.
- *use events*: Actions are triggered by the event counter *and* by individual events that have been selected in the **Event Selection** box.

Parameter

Counting Period

Description

Define the period of time in which the events are to be counted.

Values: 1 . . 3600 seconds

Parameter

Event Count

Description

Enter the number of expected events.

Values: 1 . . 3600

Parameter

Condition

Description

Define the condition to trigger an event:

More/equal

An event is triggered if the expected number of events has been reached or exceeded.

Less

An event is triggered if the expected number of events has not been reached.

Parameter

Start Action

Description

Define how often the event is to be triggered:

First

The event is triggered only *once*, i.e., when the condition is first detected.

Every

The event is triggered *every* time as long as the condition is true.

Logical AND Event

This event allows reacting to the occurrence of several events at the same time. Similarly, the camera can react if a certain minimum number of a set of events does not occur.

Parameter

Condition

Description

Set when to trigger the event: *All* triggers if all selected events are triggering, *Not all* triggers if some of the selected events do not occur.

Parameter

Event List

Description

Highlight the desired [events](#) in the **Event List**. Hold the [Ctrl] key pressed to select more than one event.

Parameter

Maximum Delay

Description

Set the maximum length of the time window in which one of the events selected in the **Event list** has to occur.

Values: 1 to 3600 seconds

Parameter

Action Type

Description

Define how often the event is to be triggered:

First

The event is triggered only *once*, i.e., when the condition is first detected.

Every

The event is triggered *every* time as long as the condition is true.

Event Logic

The Event Logic feature permits testing source events for their **order of occurrence**. The event is triggered if one of the events selected in **Event Set A** and one of the events selected in **Event Set B** occur within the specified **Maximum Time Window**. The order of occurrence is optional; it does not necessarily be part of the evaluation (see below).

Events in the event lists that are displayed gray and in parentheses are deactivated; if you intend to use them, configure the desired events in the **Event Overview** dialog.

The meta event will only be triggered if the interval set in **Minimum Delay** passes between the occurrence of events specified in the two **Event Lists**.

When used in conjunction with the Video Motion Detection or other suitable sensors, the camera can start actions, send messages and record images depending on the direction of motion, for example.

Parameter

Event Set A

Description

Highlight the desired [events](#) in the **Event List**. Hold the [Ctrl] key pressed to select more than one event.

All selected events are AND-linked, i.e. only one of the selected events has to occur for an event list to become true.

Parameter

Event Set B

Description

Highlight the desired [events](#) in the **Event List**. Hold the [Ctrl] key pressed to select more than one event.

All selected events are AND-linked, i.e. only one of the selected events has to occur for an event list to become true.

Parameter

Order of Occurrence

Description

Set the desired order in which one of the events selected in **Event Set A** and one of the events

selected in **Event Set B** should occur to trigger the logic event:

$A \rightarrow B$

Triggers the logical event only if one of the events selected in **Event Set A** occurs *first* and (after the **Minimum Delay** has passed) one of the events selected in **Event Set B** occurs.

$A \leftrightarrow B$

Triggers the logical event (regardless of the order in which the events occur) if one of the events selected in an event list occurs and (after the **Minimum Delay** has passed) one of the events selected in the *other* event list occurs.

$A \rightarrow !B$

Triggers the logical event only if one of the events selected in **Event Set A** occurs *first* and (after the **Minimum Delay** has passed and before the **Maximum Delay** has expired) none of the events selected in **Event Set B** occurs.

Parameter

Maximum Time Window

Description

Set the maximum length of the time window in which one of the events selected in the **Event Set B** has to occur.

Values: 1 second to 15 minutes

Parameter

Minimum Delay

Description

Set the minimum delay, which has to pass before one of the events selected in **Event List** is accepted.

Values: 0 to 20 seconds

Event Logic Examples

The following two examples show two solutions that are using the event logic features of the camera.

Example 1. Counting Rejected Parts on a Conveyor Belt

Problem: A reject gate at a specific location on the conveyor belt is used to separate good parts from rejected parts. You would like to count the number of rejected parts.

Solution: Define a VM window on the conveyor belt in front of the reject gate. Define a second VM window on the rejects conveyor belt behind the reject gate. Both windows are assigned to different events. It is not sufficient to count the events of the second window alone as Employees can also place rejects on the rejects conveyor belt, which are not to be counted. It takes between 10 and 15 seconds for the rejects from the first to the second window (depending on the speed of the conveyor belt). All parameters for properly setting up the event logic are now known:

Maximum Time Window

Event Set A

15 seconds

VM_Belt

Maximum Time Window

Order of Occurrence

15 seconds

A → B

Maximum Time Window

Minimum Delay

15 seconds

10 seconds

Maximum Time Window

Event Set B

15 seconds

VM_Rejects

Example 2. Granting Access to Persons After Entering a Room

Problem: In order to access the secure area of a museum, persons have to authenticate themselves using a key card within 15 seconds after entering a room; failing to do so will trigger an alarm.

Solution: For detecting the person entering the room, you can use a signal input (event *SI_Entry*), for example. The maximum time window needs to be set to 15 seconds. Authentication with a key card (another signal input, event *SI_Auth*) corresponds to Event Set B. If *SI_Auth* is not detected within 15 seconds (A → !B), the camera triggers an alarm. The settings are as follows:

Maximum Time Window

Event Set A

15 seconds

SI_Entry

Maximum Time Window

Order of Occurrence

15 seconds

A → !B

Maximum Time Window

Minimum Delay

15 seconds

0 seconds
Maximum Time Window
Event Set B
15 seconds
SI_Auth

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

GPS Center Coordinates

The **GPS Center Coordinates** dialog shows a graphic rendering of the most recent position coordinates received from an attached MX-GPS-Box. If you are using a stationary MX-GPS-Box, you will get a drift diagram. This diagram allows discovering inaccuracies of the position data calculated from the satellite positions, which are resulting from the installation position of the GPS receiver.

This dialog only shows if an MX-GPS-Box has been attached to the MxBus and has been activated.

These coordinates are used to calculate a "center-of-gravity" coordinate, which is – statistically speaking – the most likely position of a stationary MX-GPS-Box. To facilitate checking the position, these *center coordinates* have been linked to Google Maps; the current center coordinates can thus be used as anchor position for the **GPS Position Environment Event**.

The *Distance Center to Farthest Fix* represents the potential inaccuracy when determining the position at the current location; this value can be used as minimum for the *Distance* parameter (with respect to the current reception conditions) when configuring the **GPS Position Environment Event**.

The diagram uses a maximum of 57,600 coordinates, which represents the last 16 hours of satellite reception without interruption.

It may make sense to use only a specific portion of the position records for calculating the center position (e.g. if the sensor has been moved recently and the older records still reflect the previous position). In such a case, you can use the two sliders beneath the diagram to set the start and end dates of the time range you would like to consider for calculating the center coordinates. Note that doing so will reduce the *number of fixes*.

Message Events

The **Message Events** dialog contains all event sensors that can trigger a camera action based on incoming messages.

Using Meta Events to Avoid False Alarms

In order to filter events, the camera provides an [Event Logic](#): This dialog allows linking events to create *logic* events only if the linked events occur in a certain sequence and within the specified time frame. Another possibility to filter events is the [Event Counter](#): It creates an event only if a certain number of events occurs within the specified time frame.

General Settings

Option	Description
Event Dead Time	The event dead time defines a period of time (0..3600 s) after an event, during which no new events from the same profile are recognized. By defining an event dead time you can avoid, for example, that a complex action (person walks through the active image area) triggers <i>multiple</i> events.

Description of Event Sensor Types

Event Sensor Type	Description						
Network Message	The camera can trigger an event when it receives an IP notification via TCP/IP: ■ Set the port at which you expect the notification. ■ Select the type of check: <table border="1"> <tr> <td><i>String Compare</i></td><td>The event is triggered if the received text is identical to the text entered here.</td></tr> <tr> <td><i>Regular Expression</i></td><td>The event is triggered if the received text matches the regular expression entered here.</td></tr> </table> ■ Enter the text or the regular expression. ■ Set the list of IP addresses of valid senders (separated by spaces). Use the following regular expression syntax to check the port number of the sender: <code>/^10.1.0.123:42000/</code>	<i>String Compare</i>	The event is triggered if the received text is identical to the text entered here.	<i>Regular Expression</i>	The event is triggered if the received text matches the regular expression entered here.		
<i>String Compare</i>	The event is triggered if the received text is identical to the text entered here.						
<i>Regular Expression</i>	The event is triggered if the received text matches the regular expression entered here.						
MxMessageSystem	The camera can trigger events when it receives a message via the MxMessageSystem from the MxBus or the network. Set the MxMessageSystem Name that is used to trigger the event. Note that you can define several message events for the same MxMessageSystem name. A valid MxMessageSystem-Name must start with a letter, it must not contain spaces, tabs or the characters "/", "%", or ".", the name is case-sensitive and the maximum length is 31 characters.						
Serial COM In	The camera can trigger an event when it receives a message via the serial interface (RS232). ■ Select the type of check: <table border="1"> <tr> <td><i>String Compare</i></td><td>The event is triggered if the received text is identical to the text entered here.</td></tr> <tr> <td><i>Regular Expression</i></td><td>The event is triggered if the received text matches the regular expression entered here.</td></tr> <tr> <td><i>Binary Compare</i></td><td>The event is triggered if the received text is identical to the binary value entered here.</td></tr> </table>	<i>String Compare</i>	The event is triggered if the received text is identical to the text entered here.	<i>Regular Expression</i>	The event is triggered if the received text matches the regular expression entered here.	<i>Binary Compare</i>	The event is triggered if the received text is identical to the binary value entered here.
<i>String Compare</i>	The event is triggered if the received text is identical to the text entered here.						
<i>Regular Expression</i>	The event is triggered if the received text matches the regular expression entered here.						
<i>Binary Compare</i>	The event is triggered if the received text is identical to the binary value entered here.						

Event Sensor Type	Description						
	■ Enter the text or the regular expression. Note If you perform a binary comparison, you need to enter special characters as hex notations of the ASCII code. If you have selected a timestamp when setting up the serial interface, this timestamp is part of the message and will also be analyzed. If you want to filter according to the actual contents of the message, you can use the following regular expressions: <table><tr><td>Fil- tering accord- ing to any part of the mes- sage</td><td><code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}.*<expression></code></td></tr><tr><td>Fil- tering accord- ing to the start of the mes- sage</td><td><code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}<expression></code></td></tr><tr><td>Fil- tering accord- ing to the end of the mes- sage</td><td><code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}.*<expression>\$</code></td></tr></table> Remember to replace <expression> by the expression you want to use for filtering. Example 1. Filtering According to Any Part of The Message	Fil- tering accord- ing to any part of the mes- sage	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}.*<expression></code>	Fil- tering accord- ing to the start of the mes- sage	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}<expression></code>	Fil- tering accord- ing to the end of the mes- sage	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}.*<expression>\$</code>
Fil- tering accord- ing to any part of the mes- sage	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}.*<expression></code>						
Fil- tering accord- ing to the start of the mes- sage	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}<expression></code>						
Fil- tering accord- ing to the end of the mes- sage	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}.*<expression>\$</code>						

Event Sensor Type	Description						
	<table><tr><td>Mes- sage con- tains "rror"</td><td><code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}.*rror</code></td></tr><tr><td>Mes- sage starts with one or more let- ters, fol- lowed by a digit</td><td><code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}[A-Za-z]+[0-9]</code></td></tr><tr><td>Mes- sage ends on "Erro- r!"</td><td><code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}Error!\$</code></td></tr></table>	Mes- sage con- tains "rror"	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}.*rror</code>	Mes- sage starts with one or more let- ters, fol- lowed by a digit	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}[A-Za-z]+[0-9]</code>	Mes- sage ends on "Erro- r!"	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}Error!\$</code>
Mes- sage con- tains "rror"	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}.*rror</code>						
Mes- sage starts with one or more let- ters, fol- lowed by a digit	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}[A-Za-z]+[0-9]</code>						
Mes- sage ends on "Erro- r!"	<code>^[0-9]{4}-[0-9]{2}-[0-9]{2} [0-9]{2}:[0-9]{2}:[0-9]{2}Error!\$</code>						

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Signal Events

The **Signal Events** dialog contains all event sensors that can trigger a camera action based on incoming signals.

Using Meta Events to Avoid False Alarms

In order to filter events, the camera provides an [Event Logic](#): This dialog allows linking events to create *logic* events only if the linked events occur in a certain sequence and

within the specified time frame. Another possibility to filter events is the [Event Counter](#): It creates an event only if a certain number of events occurs within the specified time frame.

General Settings

Option

Event Dead Time

Description

The event dead time defines a period of time (0..3600 s) after an event, during which no new events from the same profile are recognized.

By defining an event dead time you can avoid, for example, that a complex action (person walks through the active image area) triggers *multiple* events.

Description of Event Sensor Types

Event Sensor Type

Signal Input

Description

The camera's signal inputs can trigger events. For example, you can connect the door bell with the signal input so that an event is triggered when the bell is rung.

Options:

Open (high)

Triggers an event if the contact is open.

Closed (low)

Triggers an event if the contact is closed.

Rising (low to high)

Triggers an event if the contact is being opened (rising signal flank).

Falling (high to low)

Triggers an event if the contact is being closed (falling signal flank).

Change (Rising or Falling)

Triggers an event if the state of the contact changes (rising or falling signal flank).

De-Bounce Time

This interval prevents the signal input from switching to fast (e.g. if the bell button is being pressed in quick succession).

This event sensor type contains the keys on the camera body, as well as those on connected expansion hardware. The exact inputs available depend on the camera and expansion hardware you are using.

Event Sensor Type

Signal Output

Description

The camera's signal outputs can trigger events. A door station can activate the light using several different methods, for example. This event allows reacting to the fact that the lights are switched on, without having to actually know which command switched on the lights.

Options:

Open (high)

Triggers an event if the contact is open.

Closed (low)

Triggers an event if the contact is closed.

Rising (low to high)

Triggers an event if the contact is being opened (rising signal flank).

Falling (high to low)

Triggers an event if the contact is being closed (falling signal flank).

Change (Rising or Falling)

Triggers an event if the state of the contact changes (rising or falling signal flank).

De-Bounce Time

This interval prevents the signal input/output from switching to fast (e.g. if the light button is being pressed several times in quick succession).

The exact outputs that are available depend on the camera and its attached modules.

Event Sensor Type

User Click (UC)

Description

This will allow triggering events manually by clicking on the **UC Event** softbutton.

Activate this option if the camera should react to these events.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Timer Events

The **Time Events** dialog contains all event sensors that can trigger a camera action based on time.

Using Meta Events to Avoid False Alarms

In order to filter events, the camera provides an [Event Logic](#): This dialog allows linking events to create *logic* events only if the linked events occur in a certain sequence and within the specified time frame. Another possibility to filter events is the [Event Counter](#): It creates an event only if a certain number of events occurs within the specified time frame.

Description of Event Sensor Types

Event Sensor Type

Periodic Event

Description

The periodic event is a simple version of a time-controlled event. Use this event if you would like to create events in intervals < 1 minute.

- Select an interval unit.
- Set the duration of the interval.

The periodic event works with absolute time comparison, i.e., a periodic event with a 60 second interval will always trigger at the full minute.

Event Sensor Type

Time Task

Description

Time-controlled events are triggered at fixed points in time. For a detailed description of the syntax, please refer to the [Time Control](#) online help topic.

Event Sensor Type

Random Event

Description

The camera can trigger an event at a random point in time.

Enter the number of random events per hour. This value represents the *average* number of events to be triggered per hour for a longer period.

Valid values: 0.0001 to 500.0000. Default value is 1.000 (these values are displayed with a decimal point; a comma works in the same manner).

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Action Group Overview

The **Action Group Overview** dialog provides a summary of the actions executed by the camera if certain the **events** have been detected. This dialog also allows activating, deactivating, renaming, deleting as well as creating new **action groups**.

One **action group** allows combining different events with one or more actions. If the camera detects one of the selected events, it can execute the actions simultaneously or consecutively (including subsequent evaluation of the success). Note that you can arm (i.e. activate) the individual action groups either manually in the **Action Group Overview** dialog, using the camera's signal inputs or [time table programs](#) (weekly schedules).

For additional information about the detail view of one action group, see the online help under [Action Group \(Detail View\)](#).

The **Name** column contains the name of the action group (it is purely informational) and also allows [deleting this group](#).

The **Arming** column allows activating/deactivating the action groups manually or by using different **custom signals**; or you can select a **Time Table** program, which automatically activates/deactivates the camera according to its defined schedule.

Using the [custom signals](#), the camera can use e.g., a signal input, the illumination at the camera itself or at an attached MX-GPS-Box as an arming switch for recording.

The first row of the **Events & Actions** column lists the [abbreviations](#) (symbols) of the configured events and below that the abbreviations of the actions that are to be executed. The actions in the list are either separated by a vertical line ("|") or by a closing pointed bracket (">"), depending on whether they will be executed simultaneously or consecutively. This notation is also used in the live image. Move the mouse over the listed abbreviations to see more detailed information as a tool tip.

Click on the **Edit** button in the corresponding column to configure the events and actions of this action group. The camera then opens this action group in the [Action Group \(Detail View\)](#) dialog.

Modifying Existing Action Groups

In order to modify one or more action groups, you can change them as described in the following. Next, click on the **Set** button at the bottom of the dialog to store the new settings.

- **Activating an action group:** Set the upper selection box in the **Arming** column to *Enable* in order to arm (i.e. activate) this action group. When selecting one of the CS_n values, the camera will use the corresponding **custom signal**; make sure that you properly configure this signal in the **General Event Settings** dialog. This way, you can use one Master camera to arm a whole group of cameras, for example. (Note that you can also change this setting in the group's detail view.)
- **Deactivating an action group:** Set the upper selection box in the **Arming** column to *Off* in order to deactivate this action group. (Note that you can also change this setting in the group's detail view.)
- **Using a time table program for activating/deactivating an action group:** Set the lower selection box in the **Arming** column to the desired time table program in order to activate/deactivate the action group based on the schedule. Open the **Time Tables** dialog to configure the weekly schedules. (Note that you can also change this setting in the group's detail view.)
- **Renaming an action group:** Change the name of the action group you would like to modify and click on **Set** at the bottom of the dialog.
- **Editing an action group:** Click on the **Edit** button in the corresponding column to configure the events and actions of this action group (also see the Online Help under [Action Group \(Detail View\)](#) in the online help).

Please note that changes to the configuration are only stored *temporarily* in the camera's active configuration. In order to store the changes *permanently*, you should always store the settings in the camera's permanent memory (see [Storing the Configuration](#)).

Creating Action Groups

Click on the **Add new group** button at the bottom of the dialog and change the proposed name. Note that this name is purely informational, but you should use a name that best describes the settings of the group. Only use letters, digits, hyphens, dots and underscores for the name ((A-Z a-z 0-9- . _)).

Deleting Action Groups

Activate the **Delete** box of the action groups you want to delete and click on **Set** at the bottom of the dialog.

Caution

When clicking on the **Set** button, the camera will **immediately** delete all action groups with an activated **Delete** checkbox from the camera's **active configuration**. In order to store the configuration permanently, click on the **Close** button at the bottom of the dialog (see [Storing the Configuration](#)).

Click on the **Restore** button at the bottom of the dialog load the action groups that are stored in the camera's permanent memory.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera. Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Action Group (Detail View)

The **Action Group Overview** dialog and the corresponding detail views (after pressing **Edit...**) provide the means to control the actions of the camera if it detects one or more events.

Even if the **Action Profile** parameter has been activated, the camera will only execute the selected actions if the **Arming** parameter in the **General Event Settings** dialog has been activated.

General Settings

Once the event control has been enabled, the camera can use the events activated in this dialog. If **Event Selection** has been set to *All* (default), the camera will process all activated events in this list. To select only specific events from the list, use [Ctrl]-Click to highlight the desired events.

If you would like to use deactivated events (gray and in parentheses), you can select them, but you need to activate and configure them in the **Event Settings** dialog.

Option

Arming

Description

This parameter controls the activation status of the action group.

- **Enabled:** The action group is always armed.
- **Off:** The action group has been disabled, the settings are hidden from view, but remain stored.
- **CS1, ..., CS5, CSL:** The action group is only armed if the corresponding [custom signal](#) is *true*.

Option

Time Table

Description

In order to activate the action group defined in this dialog in a time-controlled manner, you need to select a [Time Table Profile](#). Please note that the **Arming** switch of the action group must not be set to *Off*.

Option

Event Selection

Description

You can restrict the number of events upon which the camera should start a new action by highlighting only the desired events in the list. If this is the case, the actions described hereafter are performed for the highlighted events only.

This selection does *not* affect image recording in the camera's internal image storage or on a file server.

Option

Action Dead Time

Description

Once the action group has been started, it will not be started again during the time set in this parameter.

Option

Action Chaining

Description

This parameter allows specifying how several actions should be executed (simultaneously or consecutively). In addition, the camera can react in different ways to the success or failure of an individual action.

- **Simultaneously:** All actions are started simultaneously and are executed until a success or failure is detected or until a timeout error occurs.
- **Simultaneously until first success:** All actions are started simultaneously and are executed until a success or failure is detected. As soon as one action has finished successfully, the remaining actions will be skipped.

In the case of a phone call, a success means that the recipient has accepted the call and, if required, has entered proper identification.

- **Consecutively:** The actions will be started one after another in the specified order (top to bottom). If one action ends with a success or a failure, the camera will execute the next one in the chain.
- **Consecutively until first success:** The actions will be started one after another in the specified order (top to bottom). If one action ends with a failure, the camera will execute the next one in the chain. Upon a success, the chain ends.

In the case of a phone call, a success means that the recipient has accepted the call and, if required, has entered proper identification.

- **Consecutively until first failure:** The actions will be started one after another in the specified order (top to bottom). If one action ends with a success, the camera will execute the next one in the chain. As soon as one action has failed, the remaining actions will be skipped.

Some actions can not run simultaneously (e.g. playback of sounds). In these cases, the exact order of execution is undefined. If you have added many simultaneous action of such a type, the remaining actions will be skipped after the timeout limit has been reached.

Actions

If one or more events that have been selected in the **Event Selection** and this action group has been armed and is not currently waiting out its dead time, the camera will execute the specified actions.

Action

Phone Call

Description

Calls a VoIP address or phone.

Open the **Phone Profiles** dialog to define the VoIP addresses or phone numbers.

Action

FTP

Description

Transfers an image to an FTP server.

Open the **FTP Profiles** dialog to configure the FTP file transfers.

Action

E-mail

Description

Sends a notification by email.

Open the **Email Profiles** dialog to configure the email notifications.

Action

Network Message

Description

Send a network message to a TCP port of a computer or another camera. Open the **IP Notify Profiles** dialog to configure the network messages.

Action

Play Sound

Description

Plays back a sound file.

Open the **Sound Profiles** dialog to configure the playback profiles.

Action

Signal Output

Description

Closes or opens the signal output for a specified duration.

Open the **Signal Out Profiles** dialog to define the profiles for signal output actions.

Creating Actions

Click on the **Add new action** button at the bottom of the dialog to add actions to this action group.

Deleting Actions

Activate the **Delete** option of the action(s) you would like to delete and click on **Set** at the bottom of the dialog.

Caution

When clicking on the **Set** button, the camera will **immediately** delete all actions with an activated **Delete** checkbox from the camera's **active configuration**. In order to store the configuration permanently, click on the **Close** button at the bottom of the dialog (see [Storing the Configuration](#)).

Click on the **Restore** button at the bottom of the dialog load the options of this action group that are stored in the camera's permanent memory.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Recording

Open the **Recording** dialog to set how the camera should store alarms (events).

MOBOTIX cameras offer three different recording modes:

- [Snap Shot Recording](#) with pre- and post-alarm images (JPEG images) without sound,
- [Event Recording](#) with variable frame rate and sound (MxPEG clips),
- [Continuous Recording](#) with automatically increasing frame rate on events and sound (MxPEG clips).

The recording modes are independent of the selected [encoding type \(JPEG, MxPEG\)](#). In order to obtain the highest frame rate and the most efficient storage method, however, you should use the MOBOTIX MxPEG codec.

Besides the event-controlled recording, the camera can also store [history images](#) at regular intervals and independent of the other recording modes. If required, the image format can be different from the format of the

live images. This would offer the possibility to store an additional megapixel image (1280x960 pixels) every ten minutes, while the camera is recording events in video/audio clips and in VGA format (640x480 pixels).

- Even if the **Arming** parameter in the **Recording** dialog has been activated, the camera will only record video and audio if the **Arming** parameter in the **Setup Menu > General Event Settings** dialog has been activated.
- The effectiveness of the **Playback has Priority** setting in the **Setup Menu > General Image Settings** dialog will be reduced if you set a high recording frame rate. For more information, please see [Playback has Priority](#).
- Depending on the camera model, some of the listed features and parameters may not be available.
- Click on the **More** button at the bottom of the dialog to display all options.

The Recording Process

The camera stores the image sequences and video clips according to event numbers. Every event will receive a new event number, provided the recording does not last longer than one minute. The current event number is displayed at the bottom left corner of the live image. The event number has six digits and ranges from 000000 to 999999.

As mentioned above, the MOBOTIX camera can use three different recording modes: [Snap Shot Recording](#), [Event Recording](#), and [Continuous Recording](#). The different recording modes are explained in more detail further below.

The MOBOTIX camera can be set to automatically **start**, **stop**, and **retrigger** the recording of images or video clips.

Process Description: Regular Recording

- The camera detects one of the events selected in **Start Recording**.
- The camera triggers the **Recording Begin (RB)** event.
- The event number is incremented by one. *Exception:* When using Continuous Recording, the event number is incremented every minute.
- The camera stores the **Recording Time Before Event** (or **Pre-Alarm Images** in Snap Shot mode). This feature is not available in Continuous Recording mode.
- In Event Recording mode, the E00000.jpg event image is saved as an additional JPEG image. This is a bit different in Snap Shot Recording mode, as the E00000.jpg is the actual alarm image.
- For the time defined in **Recording Time**, the camera stores the video stream as MxPEG clips (all **Post-Alarm Images** in Snap Shot mode). During this time, the [action symbol](#) is displayed in turquoise: **REC**.

Process Description: Retrigger Recording

This feature will only be used if events have been selected in **Retrigger Recording**.

- The camera detects one of the events selected in **Retrigger Recording**.
- For the time defined in **Recording Time**, the camera continues storing the video stream (when using event recording) or the **Post-Alarm Images** (in Snap Shot mode).

- The E00001.jpg event image is saved as an additional JPEG image besides the MxPEG clip file(s). Additional events are stored as E00002.jpg ...

Process Description: Stop Recording

- The camera detects one of the events selected in **Stop Recording**.
- The remaining Recording Time (Event Recording) and the remaining Post-Alarm Images (Snap Shot Recording) are ignored.
- For the time defined in **Recording Time After Stop Event**, the camera continues storing the video stream as MxPEG clips (Event Recording) or the **Post-Alarm Images** in Snap Shot mode, respectively.
- The Ennnnn.jpg event image is saved as an additional JPEG image besides the MxPEG clip file(s).
- If an **Recording Dead Time** has been set, a new recording will not be started during this time. The remaining dead time is displayed at the bottom right corner of the live image.
- When using **Continuous Recording**, storage resumes with the frame rate of continuous recording. To stop continuous recording, you can use the **Terminate Recording (TR)** event.

Once the last image of the event has been stored, the camera triggers the **Recording End (RE)** event.

- If an event has been selected in **Stop Recording**, recording will directly enter the **Recording Time After Stop Event**. The settings for retriggering the recording are ignored completely.
- If an event has been selected in **Start Recording**, but not in **Retrigger Event** or **Stop Event**, this event will always start a new recording. The current recording is stopped and the camera records a new event. This will allow recognizing multiple events in combination with long recording times.

General Settings

Description of Parameters

Option

Arm Recording

Parameter

This option allows deactivating the recording functions of the camera (default: *Enable*) or to use the signal input (SI) to control recording.

Enabled

Recording is always armed. The **REC** action symbol is displayed in yellow (see [Recording Mode](#) further below): **REC**.

Option

Off

Parameter

Recording is disabled and no images or clips are recorded in the internal image storage or on the file

server. The **REC** action symbol is displayed in gray (see [Recording Mode](#) further below): **REC**.

Option

CS1, ..., CS5, CSL

Parameter

The camera records only if the corresponding [custom signal](#) is *true*.

Using the [custom signals](#), the camera can use e.g., a signal input, the illumination at the camera itself or at an attached MX-GPS-Box as an arming switch for recording.

Option

From Master

Parameter

The camera records only if the master camera's recording is armed.

The **REC** [action symbol](#) in the lower right corner is displayed in yellow (see [Recording Mode](#) further below): **REC**. During event-controlled recording of snap shot images and events, this symbol will be displayed in turquoise (**REC**) and will turn yellow again once recording has been finished (**REC**). During continuous recording, the action symbol is always green: **REC**.

If Arm Recording has been switched off or deactivated temporarily, the camera will not record any events (alarms) during this time. No images will be recorded, the event number is not incremented, and the action symbol **REC** is gray: **REC**.

If the event control is completely disabled in the [General Event Settings](#) dialog (*Off*), the bottom part of the live image does not contain any event or action symbols.

[Actions and Messages](#) are not connected to recording and the camera will execute these functions *even if recording has been deactivated*.

Time Table Profile: In order to arm the camera in a time-controlled manner, you need to select a [Time Table Profile](#).

Arm Recording: Make sure that you set this option to *Enable* in this dialog or set it up to work with the camera's signal input (e.g. with a key switch) using the *SI Closed (low)* or *SI Open (high)* options.

Digital Signing: The camera signs the recorded data using the X.509 certificate of the camera's web server.

Activate Recording Status Symbol The camera shows a recording icon in the top right corner of the image; its color reflects the current state of the recording:

- **Red:** The camera is recording continuously.
- **Red blinking:** The camera is recording an event.
- **Yellow:** The camera is armed, but does not record an event at the moment.
- **Green:** Recording is disabled and no images or clips are recorded in the internal image storage or on the file server.

Activate Terminate Recording The function will automatically stop the recording of images or video clips if one of the selected events occur once the **Time Before Terminate** has been used up. Use this option if you would like freeze the stored images or image sequences and to prevent them from being overwritten.

- Set **Activate Terminate Recording** to *On*.
- Select the event in **Termination Condition** upon which you would like to stop recording.

The selected event(s) must have been activated in the **Event Settings** dialog; deactivated events are shown accordingly.

- Set the delay between the occurrence of the event and stopping all actions in **Time Before Stop**.
- By clicking on the **Restart Actions** softbutton or the link in this dialog, you can reactivate recording. (For additional information on softbuttons, see the [Defining softbuttons](#) help page.)

If the recording has been terminated, the **TR action symbol** will be displayed in yellow: **TR**.

While the Time Before Terminate is still running, the camera displays the remaining seconds before recording is terminated in the live image and the **TR** action symbol is turquoise.

After that time, the camera displays a corresponding message in the live image, stops recording and the **TR** action symbol turns gray.

Storage Settings

Description of Parameters

Option

Recording Mode: *Snap Shot Recording*

Parameter

Snap Shot Recording saves single JPEG images without audio data while the **Snap Shot Interval** can be set between 0 milliseconds and one image every ten minutes. The advantages of this recording mode are the low storage space requirements for the single image and the long interval that can be set between images.

The factory default setting of the camera is to save event stories, which may consist of the following **pre-** and **post-alarm images** for every event:

Pre-Alarm Images

50

Post-Alarm Images

50

Images After Stop Event

50

In order to obtain higher file server performance, activate the **Pack Event Story** checkbox. The event image and all pre- and post-alarm images are combined in one clip file, resulting in a drastically reduced number of file operations on the file server.

In order to cover a longer period of time (up to ten minutes) with the event story, you need to define a **Snap Shot Interval** that is long enough.

- The event image of a detected event (alarm image) is *always* stored.
- Because of the storage space required by the pre- and post-alarm images (e.g. resolution set to 1280x960), the number of images set here may *not* be reached. If this happens, take one or more measures described in the following:
 - Reduce the **JPEG Quality** in the **JPEG Settings** dialog.
 - Reduce the **Resolution** in the **General Image Settings** dialog in order to reduce the amount of data that is stored for the pre-alarm images.
 - Increase the **Recording Dead Time** when too many alarm follow in a short period of time, since a new alarm will overwrite the pre-alarm images of the previous alarm.
 - Set **Retrigger Recording** to *All* in order to combine all events in one event folder with the same event number.
 - Reduce the number of pre- and post-alarm images and increase the value for the **Snap Shot Interval**.

Option

Recording Mode: *Event Recording*

Parameter

Event Recording is only available for **Secure** cameras.

Event recording stores MxPEG Clips (M00001.jpg, M00002.jpg, ...; max. ten seconds recording time each) that can also contain audio data (provided that **Record Audio Data** has been activated). One of the advantages of this recording method is the efficient recording method that results in a high increase in server performance (e.g. up to 100 cameras can record on a single standard PC (P4, 3 GHz)). On the other hand, this method also allows storing lip-synchronous audio (sound) data of the camera.

Frame Rate: The MxPEG clips can be recorded with the maximum **Event Frame Rate** available from the Live image, but not with a frame rate lower than one image every five seconds. Audio data from the camera is always recorded with the same quality, regardless of the frame rate.

The **Recording Time Before Event** is limited to five seconds. Additional events during the recording are saved as JPEG images (E00001.jpg, E00002.jpg, ...).

Multiple Events: If the recording of one event exceeds five minutes or if the storage space for one event exceeds 40% of the internal image storage, the camera will split the event. The recording will then be resumed with a new event number.

- In Event Recording mode, the camera will trigger the **Recording Begin (RB)** event when starting a new recording.
- The **Recording End (RE)** event is triggered once the recording has been finished (including retriggered – i.e. prolonged – recording).

Option

Recording Mode: Continuous Recording

Parameter

Continuous Recording is only available for **Secure** cameras.

Continuous recording stores MxPEG Clips all the time (M00001.jpg, M00002.jpg, ...) that can also contain audio data (provided that **Record Audio Data** has been activated). The advantage of this recording mode is a continuous recording with reduced frame rate and permanent audio recording where the camera automatically increases the frame rate if it detects an event.

The event number is incremented every minute and thus stores 60 seconds of video and audio data in one event folder. The first event image is E00000.jpg is usually an image that is stored every minute. If the camera detects an event in Continuous Recording mode, it will not increment the event number. The camera will only store an additional event image and will optionally increase the frame rate (up to the max. frame rate).

Frame Rate: The MOBOTIX camera can use two different frame rates for recording. In order to avoid huge amounts of video data when nothing is happening, the camera can record with a lower frame rate (**Continuous Recording Frame Rate**). In case of an event (alarm), the camera will use the **Event Frame Rate** to store the event with a highest quality. Similar to Event Recording, audio data from the camera be recorded with the same quality, regardless of the frame rate.

- In Continuous Recording mode, the camera will trigger the **Recording Begin (RB)** event only if one of the events selected in **Start Recording** is detected.
- Similar to [Event Recording](#), the **Recording End (RE)** event is triggered once the recording has been finished (including retriggered – i.e. prolonged – recording).

Option

History Recording (HR)

Parameter

This feature allows recording history images at individual frame rates besides the event-controlled recording mechanism. The history images are saved as JPEG images (E00000.jpg) with their own event number.

During active recording, **no** additional history image is stored.

If a Time Task event (TT) is to be used to trigger a history recording, the TT event must be unselected in the lists of events starting, retriggering, or stopping event recording.

Image Profile for History Images: History images can use a different image format. Open the **Image Profiles** to define new image formats or to edit existing ones.

Full image recording

Description of Parameters

Option

Activate Full Image Recording

Parameter

If this option is activated, the camera records the entire sensor image. If not, it records only the visible section of the live image. This means that you can record the entire sensor image, while the live image shows a zoomed and panned image section. This also allows examining the parts of an image or video that had not been visible in the live image section on display at the time of the recording.

Depending on your camera model, this feature may not be available!

Option

Image Size

Parameter

Controls the resolution (size) of the recorded video stream (or of the JPEG images in Snap Shot recording).

The *HD (1280x720)* and *Full HD (1920x1080)* resolutions available in the live image and in the **image profiles** are *not* available for Full Image Recording. Since these resolutions do not have an aspect ratio of 4:3 (letterbox), full image recording would clip parts of the image at the top and the bottom of the image.

Option

JPEG Quality

Parameter

This parameter allows using a different JPEG quality for full image recording than for the live image, for example.

Option

Text Display, Date and Time, Comment

Parameter

These parameters allow showing different text messages in the images for full image recording than for the live image, for example.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Data Sheets for Certified Apps

The dialog in this section combines all settings of the MOBOTIX 7 Apps analysis tools for image-based analysis (e.g., heatmap analysis or customer behavior analysis).

This feature is not available on all MOBOTIX cameras!

Certified App Settings

Open the **Certified App Settings** dialog to configure the certified apps installed to the camera. The MOBOTIX App SDK allows development and integration of e.g. image analysis algorithms. This function is only available for the MOBOTIX 7 platform. If you are interested in developing own apps using the MOBOTIX App SDK please visit [MOBOTIX Certified Apps](#) or contact [MOBOTIX 7 Apps](#).

General Settings

This section activates the MOBOTIX App Service on the camera. After activation, the pre-installed apps are listed below.

Parameter	Description
Arming	Use this option to activate the MOBOTIX App Service.

App Settings

This section manages the installed apps and the licensing of the apps in case the app requests a license. If the license is installed or not required, the app can be activated. The configuration of each app can be opened by clicking on the name of the app. If the app does not offer any configuration, the name is not displayed as hyperlink.

Column	Description
App	Name of the app. If the app offers configuration options, click on the name (hyperlink) to open the settings. Depending on the app, you might be forwarded to an individual web site of this app. In such a case, you may have to authenticate yourself again.
Activation	Activate the app here. If a test license is available, the trial period can be started by pressing the appropriate button.
License	Licensing information such as an expiration date.
Explanation	Short description of the app.
Remove	Delete data of the app stored on the internal SD card.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Visage Technologies Face Recognition

Open the **Certified App Settings** dialog to enable the Visage Technologies Face Recognition. This app comes with a 30 days trial license. After the test period is finished you have to **buy** a license in order to keep on using this app.

Settings

Basic settings for this app. The list of known persons is stored within the regular camera configuration. The list can be copied to other cameras as long as non-hemispherical lenses are used for any of the cameras.

Parameter	Description
Sensor Selection	Select the sensor used for face recognition. Available options: <i>Automatic</i> , <i>Right Sensor</i> , <i>Left Sensor</i> and <i>Both Sensors</i> . <i>Automatic</i> means that the algorithm automatically uses the currently selected sensor.
Operating Mode	The face recognition app supports multiple Operating Modes . Available options: <i>Detection</i> , <i>Enrollment</i> and <i>Recognition</i> . While <i>Detection</i> only detects visible faces in the image, the Operation Mode Recognition tries to match the faces to known persons. In order to configure the list of known persons, select the Operation Mode Enrollment . In this mode, the app extracts a single face from the camera image. If the detection quality is higher than the quality of the previously stored face, the app updates the face data. Faces are only extracted if the minimal detection quality is achieved.
Confidence Threshold	The Confidence Threshold represents a similarity threshold used for the face recognition. Available options: <i>Low</i> , <i>Medium</i> and <i>High</i> . Please keep in mind, that the higher the threshold is set, the more difficult it is to be recognized. On the other hand, a lower threshold reduces the reliability of the recognition.
Show Name	Enable Show Name to display the names of recognized persons in the image.
Known Persons	List of Known Persons of the face recognition app. Click on the trash can to delete the person. Persons can be added by pushing Add Person .
Add person	Enter the name of the person and press Add Person to add the extracted face to the list of Known Persons . If the person is successfully added the extracted face is removed. You can press Add Person without any given name to delete the extracted face. Please make sure that the Operation Mode Enrollment is selected.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

Click on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Remote-Controlling the MOBOTIX Camera

This section of the help covers the methods for remote-controlling the MOBOTIX camera from other cameras, computers or other network devices.

The HTTP API

The HTTP API (Application Programming Interface) is a software interface to the camera and allows to conveniently integrate the camera into a centralized management system. The interface consists of several CGI scripts that can be called with parameters and values using HTTP commands. By means of these scripts, you can modify the settings of the dialogs in **Setup Menu** and execute certain camera functions.

Modifying the Settings of the Setup Menu

Using the HTTP command `http://<IP address>/control/control`, you can modify the settings of the **Setup menu**.

Using the vPTZ Features

As a consequence of integrating the Q camera models, the cameras now offer the vPTZ features (virtual Pan/Tilt/Zoom) also in the HTTP API. The corresponding features have been documented on specific help dialogs, which can be opened using the corresponding links:

- `click.cgi`: This interface provides limited access to simple vPTZ features.
- `rotor.cgi`: This interface provides full access to all vPTZ features.
- `control?list&section=vptzcontrol`: `control` also provides access to some vPTZ features, as outlined in the `vptzcontrol` section.

Executing Camera Functions

Using the HTTP command `http://<IP address>/control/rcontrol`, you can execute certain camera functions.

Caution

Certain functions for *Saving and Restoring* the configuration can only be performed by a user of the `admin` access level. In this case, you need another HTTP command for calling the `rcontrol` script, namely:

```
http://<IP address>/admin/rcontrol
```

Command Conventions

Command With One Instruction

If you would like to use the `list` instruction with the `control` command, you need to separate the instruction from the command using a `?`:

```
http://<IP address>/control/control?list
```

Command With One Instruction and a Parameter/Value Pair

In order to execute an instruction with a parameter, the instruction needs to be separated from the parameter by an ampersand `&`. The parameter value is separated by a `=` sign.

```
http://<IP address>/control/control?list&section=actions
```

Command With One Instruction and Several Parameter/Value Pairs

If you would like to use multiple parameters, separate them using an ampersand `&`:

```
http://<IP address>/control/rcontrol?action=ledson&time=5
```

Several Values for One Parameter

For some parameters you need to enter two values in order to address both lenses. These parameters are shown as having *two* default values (e.g. `0 0`). In the http command, you will need to separate these values using a `+` sign :

```
http://<IP address>/control/control?set&section=general&sharpen=0+0
```

Newline Characters in Commands

If you would to use one or more newline characters in a command (e.g. to set several video motion window definitions), you need to replace the newline characters using the CGI replacement string `%0A`.

```
http://<IP address>/control/control?set&section=general&coverimage_area-  
a=0,540,380,200,200,2%0A1,320,100,100,150,2
```

Special Characters in Commands

In order to display the CGI formatting strings themselves (newline, blank, umlauts, ...), enter the *URL-encoded* characters. To do this, enter a `%` sign followed by the hex value of the character you would like to display. The following table contains a list of the most common characters:

Character	URL-Encoding	Character	URL-Encoding	Character	URL-Encoding
(Newline)	%0A	(Blank)	%20 or +	%	%25
&	%26	+	%2B	=	%3D
?	%3F	©	%A9	®	%AE
ß	%DF	ä	%e4	Ä	%c4

ö	%F6	Ö	%D6	ü	%FC
Ü	%DC	Ç	%c7	à	%e0
á	%e1	â	%E2	æ	%E6
ç	%E7	è	%E8	é	%E9
ê	%EA	ë	%EB	î	%ee
ï	%EF	ô	%F4	ù	%F9
ú	%FA	û	%FB	û	%fc

For additional information on this topic, open en.wikipedia.org/wiki/URL_encoding.

Table of Color Values

You may specify color values for certain parameters. These values correspond to the hex values of the red, green and blue (RGB) values of a specific color. Two characters each represent on color, 00 represents the lowest value (*no color*), FF represents the highest value (*full color*). Since the colors are mixed additively, 0x000000 represents black and 0xFFFFFF represents white.

Color name	Hexadecimal notation	Color	Color name	Hexadecimal notation	Color
Black	0x000000		Maroon	0x800000	
Dark green	0x008000		Olive	0x808000	
Marine	0x000080		Purple	0x800080	
Teal	0x008080		Dark gray	0x808080	
Light gray	0xC0C0C0		Red	0xFF0000	
Green	0x00FF00		Yellow	0xFFFF00	
Blue	0x0000FF		Magenta	0xFF00FF	
Cyan	0x00FFFF		White	0xFFFFFF	

The control Command

First of all, you need to tell the camera which instructions are to be performed.

Instructions for the control Command

Instruction	Description
set	Write access to the settings. Use this instruction to modify the settings. http://<IP address>/control/control?set<parameter>=<value>[&<parameter>=<value>]
read	Read access to the settings. Use this instruction to query information about the settings.

Instruction	Description
	<code>http://<IP address>/control/control?read&<parameter>[&<parameter>]</code>
list	The <code>list</code> instruction returns a list of the configuration file sections that can be modified. To retrieve the parameters of one particular section, add <code>section=<sectionname></code> at the end of the call. Example: <code>http://<IP address>/control/control?list&section=actions</code> lists all options of the <code>actions</code> section. This command allows reading the current values and it provides a method for obtaining the possible options and the texts of the user interface by other applications.
factory	The <code>factory</code> instruction allows you to reset the parameters of a section to the factory default settings. This call requires the section name <code>section=<sectionname></code> as additional parameter. <code>http://<IP address>/control/control?factory&section=<section name></code>
restore	The <code>restore</code> instruction allows you to reset the parameters of a section to the values stored in the flash memory. This call requires the section name <code>section=<sectionname></code> as additional parameter. <code>http://<IP address>/control/control?restore&section=<section name></code>

Accessing Profile Parameters

A profile stores several settings in one value:

`<profile designator>=<name>[:<parameter>=<value>]`.

Note that several profiles with identical `<profile designators>` can co-exist. Since profiles cannot be properly edited using the `read` and `set` commands, you need to use the following commands:

Instruction	Description
read_profile	Read a profile. <code>http://<IP address>/control/control?read_profile=<profile identifier>:<name></code>
delete_profile	Delete a profile. <code>http://<IP address>/control/control?delete_profile=<profile identifier>:<name></code>
set_profile	Write a profile. <code>http://<IP address>/control/control?set_profile=<profile identifier>:<name>&<parameter>=<value>[&<parameter>=<value>]</code>
add_profile	Add a profile. <code>http://<IP address>/control/control?add_profile=<profile identifier>:<name>&<parameter>=<value>[&<parameter>=<value>]</code>

In addition, some profiles have more parameters, which are identified by a leading underscore character:

Parameter	Description
_pro-filename	This profile has a real name. Instead of the <name> value, the user interface of the camera always shows the value of the real name. This name can contain UTF-8 characters (some of them need to URL-encoded in order to maintain the syntax) and does not necessary need to be unique.
_pro-filestate	At the moment, the value of the profile state can be empty (<code>_profilestate=</code>) or it can be letter <code>i</code> (<code>_profilestate=i</code>). An empty value activates the profile, the letter <code>i</code> deactivates it (see event profiles, for example).

List of Sections of the `control` Command

The sections shown in the following tables correspond to all dialogs that you can control remotely using the `control` command. Click on one of the links listed below to go to the corresponding section.

Please note that the contents of this frame will only be displayed if the **API** right in the **Group Access Control Lists** is publicly accessible or the group of your **user name** has this right.

[Sections of the control Command, p. 414](#)

The `click.cgi` Interface

This interface provides limited access to simple vPTZ features. Use the `list` command to get the list of commands provided by this interface:

`http://<IP address>/control/click.cgi?list`

The `help` command returns detailed information and examples for using the individual commands:

`http://<IP address>/control/click.cgi?help`

The `query` command returns information on the current vPTZ settings:

`http://<IP address>/control/click.cgi?query`

The `rotorcgi` Interface

This interface provides full access to vPTZ features. The `help` command returns detailed information for using the individual commands:

`http://<IP address>/control/rotorcgi?help`

The `rcontrol` Command

The first value expected by the script is always the name of the action that is to be performed. Depending on the action, you may have to provide additional parameters. For the additional parameters mandatory and optional parameters are used.

- Please note that the contents of this frame will only be displayed if the **API** right in the **Group Access Control Lists** is publicly accessible or the group of your **user**

name has this right.

- This page of the camera is only available in English.

[Parameter Overview of the rcontrol Command, p. 483](#)

In order to see all options for the `rcontrol` command, enter the `list` instruction in your browser's address bar:

`http://<IP address>/control/rcontrol?list`

Sections of the control Command

Contents

Section [actionhandler](#)
Section [actions](#)
Section [audio](#)
Section [color](#)
Section [event_env](#)
Section [event_ima](#)
Section [event_int](#)
Section [event_met](#)
Section [event_msg](#)
Section [event_sig](#)
Section [event_tim](#)
Section [eventcontrol](#)
Section [exposure](#)
Section [exposurecontrol](#)
Section [general](#)
Section [imagecontrol](#)
Section [imageprogram](#)
Section [jpeg](#)
Section [mxpegparam](#)
Section [quickcontrol](#)
Section [quickcontrolreset](#)
Section [recording](#)
Section [settings](#)
Section [text](#)
Section [thermal](#)
Section [videomotionanalysis](#)
Section [vptzcontrol](#)

Parameters for Section 'actionhandler' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=actionhandler>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Action Group			
ah1_name	<i>Name</i>	(String constant)	
ah1_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah1_timetable	<i>Time Table</i>	 	
Event Selection			
ah1_events	<i>Event Selection</i>	 	
Action Details			
ah1_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah1_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah1_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah2_name	<i>Name</i>	(String constant)	
ah2_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah2_timetable	<i>Time Table</i>	 	
Event Selection			
ah2_events	<i>Event Selection</i>	 	
Action Details			
ah2_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah2_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par

ah2_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah3_name	<i>Name</i>	(String constant)	
ah3_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah3_timetable	<i>Time Table</i>	 	
Event Selection			
ah3_events	<i>Event Selection</i>	 	
Action Details			
ah3_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah3_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah3_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah4_name	<i>Name</i>	(String constant)	
ah4_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah4_timetable	<i>Time Table</i>	 	
Event Selection			
ah4_events	<i>Event Selection</i>	 	
Action Details			
ah4_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah4_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par

ah4_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah5_name	<i>Name</i>	(String constant)	
ah5_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah5_timetable	<i>Time Table</i>	 	
Event Selection			
ah5_events	<i>Event Selection</i>	 	
Action Details			
ah5_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah5_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah5_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah6_name	<i>Name</i>	(String constant)	
ah6_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah6_timetable	<i>Time Table</i>	 	
Event Selection			
ah6_events	<i>Event Selection</i>	 	
Action Details			
ah6_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah6_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par

ah6_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah7_name	<i>Name</i>	(String constant)	
ah7_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah7_timetable	<i>Time Table</i>	 	
Event Selection			
ah7_events	<i>Event Selection</i>	 	
Action Details			
ah7_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah7_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah7_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah8_name	<i>Name</i>	(String constant)	
ah8_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah8_timetable	<i>Time Table</i>	 	
Event Selection			
ah8_events	<i>Event Selection</i>	 	
Action Details			
ah8_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah8_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par

ah8_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah9_name	<i>Name</i>	(String constant)	
ah9_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah9_timetable	<i>Time Table</i>	 	
Event Selection			
ah9_events	<i>Event Selection</i>	 	
Action Details			
ah9_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah9_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah9_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah10_name	<i>Name</i>	(String constant)	
ah10_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah10_timetable	<i>Time Table</i>	 	
Event Selection			
ah10_events	<i>Event Selection</i>	 	
Action Details			
ah10_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah10_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par

ah10_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah11_name	<i>Name</i>	(String constant)	
ah11_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah11_timetable	<i>Time Table</i>	 	
Event Selection			
ah11_events	<i>Event Selection</i>	 	
Action Details			
ah11_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah11_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah11_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah12_name	<i>Name</i>	(String constant)	
ah12_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah12_timetable	<i>Time Table</i>	 	
Event Selection			
ah12_events	<i>Event Selection</i>	 	
Action Details			
ah12_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah12_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par

ah12_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah13_name	<i>Name</i>	(String constant)	
ah13_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah13_timetable	<i>Time Table</i>	 	
Event Selection			
ah13_events	<i>Event Selection</i>	 	
Action Details			
ah13_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah13_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah13_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah14_name	<i>Name</i>	(String constant)	
ah14_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah14_timetable	<i>Time Table</i>	 	
Event Selection			
ah14_events	<i>Event Selection</i>	 	
Action Details			
ah14_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah14_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par

ah14_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah15_name	<i>Name</i>	(String constant)	
ah15_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah15_timetable	<i>Time Table</i>	 	
Event Selection			
ah15_events	<i>Event Selection</i>	 	
Action Details			
ah15_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah15_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah15_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah16_name	<i>Name</i>	(String constant)	
ah16_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah16_timetable	<i>Time Table</i>	 	
Event Selection			
ah16_events	<i>Event Selection</i>	 	
Action Details			
ah16_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah16_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par

ah16_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah17_name	<i>Name</i>	(String constant)	
ah17_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah17_timetable	<i>Time Table</i>	 	
Event Selection			
ah17_events	<i>Event Selection</i>	 	
Action Details			
ah17_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah17_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah17_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah18_name	<i>Name</i>	(String constant)	
ah18_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah18_timetable	<i>Time Table</i>	 	
Event Selection			
ah18_events	<i>Event Selection</i>	 	
Action Details			
ah18_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah18_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par

ah18_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah19_name	<i>Name</i>	(String constant)	
ah19_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah19_timetable	<i>Time Table</i>	 	
Event Selection			
ah19_events	<i>Event Selection</i>	 	
Action Details			
ah19_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah19_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah19_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah20_name	<i>Name</i>	(String constant)	
ah20_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah20_timetable	<i>Time Table</i>	 	
Event Selection			
ah20_events	<i>Event Selection</i>	 	
Action Details			
ah20_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah20_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par

ah20_subactions	<i>Action %i</i>	(profile string constant)	

Parameters for Section 'actions' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=actions>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Action Group			
ah1_name	<i>Name</i>	(String constant)	
ah1_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah1_timetable	<i>Time Table</i>	 	
Event Selection			
ah1_events	<i>Event Selection</i>	 	
Action Details			
ah1_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah1_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah1_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah2_name	<i>Name</i>	(String constant)	
ah2_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah2_timetable	<i>Time Table</i>	 	
Event Selection			

ah2_events	<i>Event Selection</i>	 	
Action Details			
ah2_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah2_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah2_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah3_name	<i>Name</i>	(String constant)	
ah3_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah3_timetable	<i>Time Table</i>	 	
Event Selection			
ah3_events	<i>Event Selection</i>	 	
Action Details			
ah3_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah3_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah3_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah4_name	<i>Name</i>	(String constant)	
ah4_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah4_timetable	<i>Time Table</i>	 	
Event Selection			

ah4_events	<i>Event Selection</i>	 	
Action Details			
ah4_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah4_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah4_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah5_name	<i>Name</i>	(String constant)	
ah5_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah5_timetable	<i>Time Table</i>	 	
Event Selection			
ah5_events	<i>Event Selection</i>	 	
Action Details			
ah5_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah5_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah5_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah6_name	<i>Name</i>	(String constant)	
ah6_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah6_timetable	<i>Time Table</i>	 	
Event Selection			

ah6_events	<i>Event Selection</i>	 	
Action Details			
ah6_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah6_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah6_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah7_name	<i>Name</i>	(String constant)	
ah7_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah7_timetable	<i>Time Table</i>	 	
Event Selection			
ah7_events	<i>Event Selection</i>	 	
Action Details			
ah7_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah7_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah7_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah8_name	<i>Name</i>	(String constant)	
ah8_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah8_timetable	<i>Time Table</i>	 	
Event Selection			

ah8_events	<i>Event Selection</i>	 	
Action Details			
ah8_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah8_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah8_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah9_name	<i>Name</i>	(String constant)	
ah9_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah9_timetable	<i>Time Table</i>	 	
Event Selection			
ah9_events	<i>Event Selection</i>	 	
Action Details			
ah9_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah9_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah9_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah10_name	<i>Name</i>	(String constant)	
ah10_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah10_timetable	<i>Time Table</i>	 	
Event Selection			

ah10_events	<i>Event Selection</i>	 	
Action Details			
ah10_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah10_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah10_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah11_name	<i>Name</i>	(String constant)	
ah11_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah11_timetable	<i>Time Table</i>	 	
Event Selection			
ah11_events	<i>Event Selection</i>	 	
Action Details			
ah11_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah11_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah11_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah12_name	<i>Name</i>	(String constant)	
ah12_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah12_timetable	<i>Time Table</i>	 	
Event Selection			

ah12_events	<i>Event Selection</i>	 	
Action Details			
ah12_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah12_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah12_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah13_name	<i>Name</i>	(String constant)	
ah13_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah13_timetable	<i>Time Table</i>	 	
Event Selection			
ah13_events	<i>Event Selection</i>	 	
Action Details			
ah13_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah13_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah13_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah14_name	<i>Name</i>	(String constant)	
ah14_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah14_timetable	<i>Time Table</i>	 	
Event Selection			

ah14_events	<i>Event Selection</i>	 	
Action Details			
ah14_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah14_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah14_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah15_name	<i>Name</i>	(String constant)	
ah15_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah15_timetable	<i>Time Table</i>	 	
Event Selection			
ah15_events	<i>Event Selection</i>	 	
Action Details			
ah15_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah15_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah15_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah16_name	<i>Name</i>	(String constant)	
ah16_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah16_timetable	<i>Time Table</i>	 	
Event Selection			

ah16_events	<i>Event Selection</i>	 	
Action Details			
ah16_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah16_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah16_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah17_name	<i>Name</i>	(String constant)	
ah17_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah17_timetable	<i>Time Table</i>	 	
Event Selection			
ah17_events	<i>Event Selection</i>	 	
Action Details			
ah17_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah17_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah17_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah18_name	<i>Name</i>	(String constant)	
ah18_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah18_timetable	<i>Time Table</i>	 	
Event Selection			

ah18_events	<i>Event Selection</i>	 	
Action Details			
ah18_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah18_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah18_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah19_name	<i>Name</i>	(String constant)	
ah19_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah19_timetable	<i>Time Table</i>	 	
Event Selection			
ah19_events	<i>Event Selection</i>	 	
Action Details			
ah19_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah19_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah19_subactions	<i>Action %i</i>	(profile string constant)	
Action Group			
ah20_name	<i>Name</i>	(String constant)	
ah20_arming	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
ah20_timetable	<i>Time Table</i>	 	
Event Selection			

ah20_events	<i>Event Selection</i>	 	
Action Details			
ah20_deadtime	<i>Action Deadtime</i>	0 .. 3600	5
ah20_chaining	<i>Action Chaining</i>	par, par_succ, ser, ser_succ, ser_fail	par
ah20_subactions	<i>Action %i</i>	(profile string constant)	

Parameters for Section 'audio' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=audio>

Parameter	Name in Dialog	Possible Values	Default Value(s)

Parameters for Section 'color' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=color>

Parameter	Name in Dialog	Possible Values	Default Value(s)
White Balance			
wb_profile	<i>Color Profile</i>	-4, -2, -3, 16000, 10000, 8000, 7000, 5500, 5000, 4000, 3000, 2500, -1	-4 -4
Color Saturation			
color	<i>Color Saturation</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
color_dark_percent	<i>Automatic Saturation Control</i>	0, 100	0 0

Parameters for Section 'event_env' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

http://172.16.20.86/control/control?list&section=event_env

Parameter	Name in Dialog	Possible Values	Default Value(s)
Shock Detection			
tap_debounce	<i>Detection Sensitivity</i>	1, 3, 5, 7, 9, 11, 13, 15	1
env		(profile string constant)	

Parameters for Section 'event_ima' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

http://172.16.20.86/control/control?list&section=event_ima

Parameter	Name in Dialog	Possible Values	Default Value(s)
General Settings			
motionduallens	<i>Dual Lens Analysis</i>	1, 0	
motioncopydyni	<i>Copy Window Definitions</i>	1, 0	1
motioncopyoffsetx	<i>Copy Horizontal Offset</i>	-99 .. 99	
motioncopyoffsety	<i>Copy Vertical Offset</i>	-99 .. 99	
Video Motion Settings			
motionhideunused	<i>Hide Unused Windows</i>	1, 0	
motionwintype	<i>Video Motion Style</i>	off, on, highlight, passiv	highlight
motionwinid	<i>Show Video Motion Window ID</i>	1, 0	1
motionreftime	<i>Video Motion Suppression Time</i>	0 .. 30000	

motionnightoff	<i>Low-Light Suppression</i>	0, 1, 3, 6, 10, 18, 32, 56	0 0
motion_area	<i>Video Motion Definitions</i>	(Multiline string constant)	0, 540, 380, 200, 200, s=20, a=25, id=1%250A0, 140, 330, 200, 300, s=20, a=25, id=2, col=blue%250A0, 940, 330, 200, 300, s=20, a=25, id=3, col=blue
General MxActivitySensor Settings			
ima_as_fast_motion_stabilizer	<i>Detect Fast Motion</i>	1, 0	
ima_as_show_directions	<i>Show Direction Indicator</i>	1, 0	
ima_as_show_position	<i>Show Live Position Indicator</i>	1, 0	
ima_as_show_profile	<i>Show Detection Area</i>	 	
MxActivitySensor 2.1 Settings			
ima_as_use_v2	<i>MxActivitySensor 2.1</i>	1, 0	
ima_as_use_perspective	<i>Perspective Compensation</i>	1, 0	0 0
ima_as_near_obj_size	<i>Near Object Size</i>	(String constant)	@ @
ima_as_far_obj_size	<i>Far Object Size</i>	(String constant)	@ @
ima_as_min_obj_size	<i>Minimum Object Size</i>	(String constant)	@ @
ima		(profile string constant)	

Parameters for Section 'event_int' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

http://172.16.20.86/control/control?list&section=event_int

Parameter	Name in Dialog	Possible Values	Default Value(s)
int		(profile string constant)	

Parameters for Section 'event_met' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

http://172.16.20.86/control/control?list&section=event_met

Parameter	Name in Dialog	Possible Values	Default Value(s)
met		(profile string constant)	

Parameters for Section 'event_msg' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

http://172.16.20.86/control/control?list&section=event_msg

Parameter	Name in Dialog	Possible Values	Default Value(s)
IP Receive			
ipreceiveport	Port	1 .. 65536	8000
msg		(profile string constant)	

Parameters for Section 'event_sig' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

http://172.16.20.86/control/control?list&section=event_sig

Parameter	Name in Dialog	Possible Values	Default Value(s)
sig		(profile string constant)	

Parameters for Section 'event_tim' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

http://172.16.20.86/control/control?list&section=event_tim

Parameter	Name in Dialog	Possible Values	Default Value(s)
tim		(profile string constant)	

Parameters for Section 'eventcontrol' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=eventcontrol>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Shock Detection			
tap_debounce	<i>Detection Sensitivity</i>	1, 3, 5, 7, 9, 11, 13, 15	1
General Settings			
motionduallens	<i>Dual Lens Analysis</i>	1, 0	
motioncopydyni	<i>Copy Window Definitions</i>	1, 0	1
motioncopyoffsetx	<i>Copy Horizontal Offset</i>	-99 .. 99	
motioncopyoffsety	<i>Copy Vertical Offset</i>	-99 .. 99	
Video Motion Settings			
motionhideunused	<i>Hide Unused Windows</i>	1, 0	
motionwintype	<i>Video Motion Style</i>	off, on, highlight, passiv	highlight

motionwinid	<i>Show Video Motion Window ID</i>	1, 0	1
motionreftime	<i>Video Motion Suppression Time</i>	0 .. 30000	
motionnightoff	<i>Low-Light Suppression</i>	0, 1, 3, 6, 10, 18, 32, 56	0 0
motion_area	<i>Video Motion Definitions</i>	(Multiline string constant)	0, 540, 380, 200, 200, s=20, a=25, id=1%250A0, 140, 330, 200, 300, s=20, a=25, id=2, col=blue%250A0, 940, 330, 200, 300, s=20, a=25, id=3, col=blue
General MxActivitySensor Settings			
ima_as_fast_motion_stabilizer	<i>Detect Fast Motion</i>	1, 0	
ima_as_show_directions	<i>Show Direction Indicator</i>	1, 0	
ima_as_show_position	<i>Show Live Position Indicator</i>	1, 0	
ima_as_show_profile	<i>Show Detection Area</i>	 	
MxActivitySensor 2.1 Settings			
ima_as_use_v2	<i>MxActivitySensor 2.1</i>	1, 0	
ima_as_use_perspective	<i>Perspective Compensation</i>	1, 0	0 0
ima_as_near_obj_size	<i>Near Object Size</i>	(String constant)	@ @
ima_as_far_obj_size	<i>Far Object Size</i>	(String constant)	@ @
ima_as_min_obj_size	<i>Minimum Object Size</i>	(String constant)	@ @
IP Receive			
ipreceiveport	<i>Port</i>	1 .. 65536	8000

Right Softbutton			
softbutton1	<i>Activate Softbutton</i>	1, 0	1
softbuttonname1	<i>Softbutton Name</i>	(String constant)	Speak IP
Left Softbutton			
softbutton2	<i>Activate Softbutton</i>	1, 0	
softbuttonname2	<i>Softbutton Name</i>	(String constant)	Actions disable
Arming			
edactiv	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl, remote	disable
edacttimetable	<i>Time Table Profile</i>	 	
Custom Signal 1 (CS1)			
armcond_ac1_source	<i>Source</i>	disable, enable, signal_input, time_table, remote, action, illu	disable
armcond_ac1_signalin_which	<i>Signal Input</i>	ob%2C1, DI%2C~BPC, DI%2C~DPC	ob, 1
armcond_ac1_signalin_state	<i>Signal Input State</i>	si_open, si_close	si_open
armcond_ac1_timetable	<i>Time Table</i>	 	
armcond_ac1_illu_level	<i>Trigger Level</i>	(String constant)	100.0
armcond_ac1_illu_src	<i>Illumination Source</i>	right, left, both, auto	auto
armcond_ac1_illu_cmp	<i>Comparison</i>	higher, lower	higher
armcond_ac1_illu_delay	<i>Delay</i>	0 .. 300	10
Custom Signal 2 (CS2)			
armcond_ac2_source	<i>Source</i>	disable, enable, signal_	disable

		input, time_table, remote, action, illu	
armcond_ac2_signalin_which	<i>Signal Input</i>	ob%2C1, DI%2C~BPC, DI%2C~DPC	ob, 1
armcond_ac2_signalin_state	<i>Signal Input State</i>	si_open, si_close	si_open
armcond_ac2_timetable	<i>Time Table</i>	 	
armcond_ac2_illu_level	<i>Trigger Level</i>	(String constant)	100.0
armcond_ac2_illu_src	<i>Illumination Source</i>	right, left, both, auto	auto
armcond_ac2_illu_cmp	<i>Comparison</i>	higher, lower	higher
armcond_ac2_illu_delay	<i>Delay</i>	0 .. 300	10
Custom Signal 3 (CS3)			
armcond_ac3_source	<i>Source</i>	disable, enable, signal_ input, time_table, remote, action, illu	disable
armcond_ac3_signalin_which	<i>Signal Input</i>	ob%2C1, DI%2C~BPC, DI%2C~DPC	ob, 1
armcond_ac3_signalin_state	<i>Signal Input State</i>	si_open, si_close	si_open
armcond_ac3_timetable	<i>Time Table</i>	 	
armcond_ac3_illu_level	<i>Trigger Level</i>	(String constant)	100.0
armcond_ac3_illu_src	<i>Illumination Source</i>	right, left, both, auto	auto
armcond_ac3_illu_cmp	<i>Comparison</i>	higher, lower	higher
armcond_ac3_illu_delay	<i>Delay</i>	0 .. 300	10
Custom Signal 4 (CS4)			
armcond_ac4_source	<i>Source</i>	disable, enable, signal_	disable

		input, time_table, remote, action, illu	
armcond_ac4_signalin_which	<i>Signal Input</i>	ob%2C1, DI%2C~BPC, DI%2C~DPC	ob, 1
armcond_ac4_signalin_state	<i>Signal Input State</i>	si_open, si_close	si_open
armcond_ac4_timetable	<i>Time Table</i>	 	
armcond_ac4_illu_level	<i>Trigger Level</i>	(String constant)	100.0
armcond_ac4_illu_src	<i>Illumination Source</i>	right, left, both, auto	auto
armcond_ac4_illu_cmp	<i>Comparison</i>	higher, lower	higher
armcond_ac4_illu_delay	<i>Delay</i>	0 .. 300	10
Custom Signal 5 (CS5)			
armcond_ac5_source	<i>Source</i>	disable, enable, signal_ input, time_table, remote, action, illu	disable
armcond_ac5_signalin_which	<i>Signal Input</i>	ob%2C1, DI%2C~BPC, DI%2C~DPC	ob, 1
armcond_ac5_signalin_state	<i>Signal Input State</i>	si_open, si_close	si_open
armcond_ac5_timetable	<i>Time Table</i>	 	
armcond_ac5_illu_level	<i>Trigger Level</i>	(String constant)	100.0
armcond_ac5_illu_src	<i>Illumination Source</i>	right, left, both, auto	auto
armcond_ac5_illu_cmp	<i>Comparison</i>	higher, lower	higher
armcond_ac5_illu_delay	<i>Delay</i>	0 .. 300	10
Logically Combined Signal (CSL)			
armcond_acl_source	<i>Source</i>	disable, ac1_and_ac2, ac1_	disable

		or_ac2, remote	
Master/Slave			
enable_distributed_camera_state	<i>Enable Master/Slave</i>	1, 0	
master_cam	<i>Master Camera</i>	(String constant)	
replication_protocol_port	<i>Replication Protocol Port</i>	0 .. 65535	60000
LED Setup			
led_events	<i>Event LED</i>	 	*
led_arming	<i>Arming LED</i>	edactiv, ac1, ac2, ac3, ac4, ac5, acl	edactiv
Arming Delay			
inputarm_delay	<i>Arming Delay</i>	0, 5, 10, 15, 20, 25, 30, 45, 60, 75, 90	60
inputdisarm_delay	<i>Disarming Delay</i>	0, 5, 10, 15, 20, 25, 30, 45, 60, 75, 90	
Arming			
recording_activ	<i>Arm Recording</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl, remote	enable
recording_timetable	<i>Time Table Profile</i>	 	
Digital Signing			
rec_sign	<i>Digital Signing</i>	0, 1	
Recording Status Symbol			
recsymbol	<i>Activate Recording Status Symbol</i>	disable, enable	disable
Terminate Recording (TR)			

freezeactiv	<i>Activate Terminate Recording</i>	off, on	off
freezeevents	<i>Termination Condition</i>	 	~
freezedelay	<i>Time Before Terminate</i>	0 .. 86400	15
Full Image Recording			
recording_fullimage	<i>Activate Full Image Recording</i>	0, 1	
Recording (REC)			
recording	<i>Recording Mode</i>	snapshot, streaming_event, streaming	streaming_event
storypacking	<i>Pack Event Story</i>	1, 0	
streamframerate100	<i>Continuous Recording Frame Rate</i>	0, 2500, 1200, 600, 400, 300, 200, 100, 50, 33, 25, 20	100
Start Recording			
recstartevents	<i>Start Recording</i>	 	*
storyinterval	<i>Snap Shot Interval</i>	0 .. 600000	1000
storyantecount	<i>Pre-Alarm Images</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50	1
storypostcount	<i>Post-Alarm Images</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50	2
streameventframerate100	<i>Event Frame Rate</i>	0, 2500, 1200, 600, 400, 300, 200, 100, 50, 33, 25, 20	
streamantetime	<i>Recording Time Before Event</i>	0 .. 15	
streamtime	<i>Recording Time</i>	2, 4, 6, 8, 10, 20, 30, 40, 50, 60, 70, 80, 90, 120, 180, 300, 420, 600, 900	10
Retrigger Recording			
recstretchevents	<i>Retrigger Recording</i>	 	~

Stop Recording			
recstopevents	<i>Stop Recording</i>	 	~
storystopcount	<i>Images After Stop Event</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50	1
streamstoptime	<i>Recording Time After Stop Event</i>	0, 2, 4, 6, 8, 10, 20, 30, 40, 50, 60, 70, 80, 90, 120, 180, 300, 420, 600, 900	10
recstopdeadtime	<i>Recording Dead Time</i>	0 .. 3600	5
History Recording (HR)			
rechistory_sec	<i>History Recording</i>	0, -1, 1	
rechistory_cron	<i>Recording Time</i>	(String constant)	* * * * *
rechistory_interval	<i>History Recording Interval</i>	10 .. 86400	10
rechistory_imgprof	<i>Image Profile for History</i>	 	
recsuspectevents	<i>UVV Suspect Trigger</i>	 	~
recsuspecttimepre	<i>Recording Time Before UVV Suspect</i>	0 .. 120	10
recsuspecttimepost	<i>Recording Time After UVV Suspect</i>	0 .. 120	10
Display Options			
imageinfo	<i>Show Event/Action Symbols</i>	0, 1, 2	1
chartdrawmode	<i>Level Meter</i>	off, bar, scrollchart	off
chartevent	<i>Level Meter Data</i>	 	
Object Tracing (OT)			
objecttracing	<i>Enable Object Tracing</i>	disable, enable	disable

objectcamera	<i>Tracing Camera</i>	auto, right, left	auto
Genetec audio alarm			
audioalarmenabled	<i>Genetec audio alarm</i>	1, 0	
audioalarmthresh	<i>Genetec audio alarm threshold</i>	0 .. 100	50
Genetec tampering event			
tamperingeventenabled	<i>Genetec tampering event</i>	1, 0	

Parameters for Section 'exposure' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=exposure>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Automatic Contrast			
automatic	<i>Automatic Contrast</i>	off, auto, extended, aggressive	auto auto
Brightness			
brightness	<i>Brightness</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
Backlight Correction			
backlight	<i>Backlight Correction</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4
Exposure Control			
ca_exp_mode	<i>Exposure Mode</i>	recording, vptz	recording recording
ca_exp_window_type	<i>Exposure Windows</i>	extra, all, quarter, center, spot, top, middle, bottom, right, vertical, left, right_left	quarter quarter

ca_extra_area	<i>Custom Windows</i>	(Multiline string constant)	0, 224, 168, 832, 624 1, 224, 168, 832, 624
ca_exp_window_weight	<i>Exposure Weighting</i>	-1, 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100	100 100
ca_wbal_window_weight	<i>White Balance Weighting</i>	-1, 100	-1 -1
ca_exp_window_draw	<i>Show Windows</i>	auto, on, histo	auto
Target Brightness			
ca_avg_intensity	<i>Average Brightness</i>	10, 25, 50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800	400 400
ca_exp_minavg	<i>Minimum Average Brightness</i>	0, 10, 25, 50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800	200 200
Night Improvement			
ca_night_improve	<i>Enable Night Improvement</i>	off, on	on on
Sensor Gain Range			
ca_gain_max	<i>Sensor Gain Range</i>	6144, 32768, 0	0 0
Exposure Time			
ca_exp_corr	<i>Exposure Program</i>	-2, -1, 0, 1, 2, 4, 6	0 0
ca_exp_max	<i>Max. Exposure Time</i>	80, 160, 320, 640, 1280, 2560, 4960, 10080, 20000, 40000, 80000, 160000, 320000, 640000, 1280000	160000 160000
ca_exp_min	<i>Min. Exposure Time</i>	80, 160, 320, 640, 1280, 2560, 4960, 10080, 20000, 40000,	80 80

		80000, 160000, 320000, 640000, 1280000	
Frequency of Power Supply			
ca_linefreq	<i>Line Frequency</i>	0, 50, 60	
Wide Dynamic Range			
ca_qwdr_level	<i>Wide Dynamic Range</i>	0, 1, 2, 3, 4	0 0

Parameters for Section 'exposurecontrol' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=exposurecontrol>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Exposure Control			
ca_exp_mode	<i>Exposure Mode</i>	recording, vptz	recording recording
ca_exp_window_type	<i>Exposure Windows</i>	extra, all, quarter, center, spot, top, middle, bottom, right, vertical, left, right_left	quarter quarter
ca_extra_area	<i>Custom Windows</i>	(Multiline string constant)	0, 224, 168, 832, 624 1, 224, 168, 832, 624
ca_exp_window_weight	<i>Exposure Weighting</i>	-1, 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100	100 100
ca_wbal_window_weight	<i>White Balance Weighting</i>	-1, 100	-1 -1
ca_exp_window_draw	<i>Show Windows</i>	auto, on, histo	auto
Target Brightness			

Reference

Remote-Controlling the MOBOTIX Camera

ca_avg_intensity	<i>Average Brightness</i>	10, 25, 50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800	400 400
ca_exp_minavg	<i>Minimum Average Brightness</i>	0, 10, 25, 50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800	200 200
Night Improvement			
ca_night_improve	<i>Enable Night Improvement</i>	off, on	on on
ca_high_gain	<i>Permit high gain</i>	auto, off, on	auto auto
Sensor Gain Range			
ca_gain_max	<i>Sensor Gain Range</i>	6144, 32768, 0	0 0
Exposure Time			
ca_exp_corr	<i>Exposure Program</i>	-2, -1, 0, 1, 2, 4, 6	0 0
ca_exp_max	<i>Max. Exposure Time</i>	80, 160, 320, 640, 1280, 2560, 4960, 10080, 20000, 40000, 80000, 160000, 320000, 640000, 1280000	160000 160000
ca_exp_min	<i>Min. Exposure Time</i>	80, 160, 320, 640, 1280, 2560, 4960, 10080, 20000, 40000, 80000, 160000, 320000, 640000, 1280000	80 80
Frequency of Power Supply			
ca_linefreq	<i>Line Frequency</i>	0, 50, 60	
Wide Dynamic Range			
ca_qwdr_level	<i>Wide Dynamic Range</i>	0, 1, 2, 3, 4	0 0

Parameters for Section 'general' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=general>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Camera Selection			
camera	<i>Camera Selection</i>	right, left, auto	auto
Camera Night Switch (DY/NI)			
nisw_source	<i>Switching Source</i>	camera, ac1, ac2, ac3, ac4, ac5, acl	camera
nightswitch	<i>Night Camera Level</i>	1, 3, 6, 10, 185, 32, 56, 100, 170, 320, 560, 1000, 1800, 3200	100
nightswitch_irlight	<i>IR Light Support</i>	disable, enable	enable
nightswitchdelay	<i>Night Switch Delay</i>	0, 5, 10, 15, 20, 25, 30, 60, 90, 120, 180, 300, 600	5
Image Quality			
reduced_mode	<i>Image Quality</i>	-1, 0, 1	-1
Frame and Data Rate			
framerate100	<i>Frames per Second</i>	0, 2500, 2000, 1600, 1400, 1200, 1000, 800, 600, 400	
framerate_throttle	<i>Playback has Priority</i>	disable, prealarm, 2fps	2fps
Mirror & Rotate Image			
mirror	<i>Mirroring</i>	no, vertical, horizontal, both	no no
rotate	<i>Rotation</i>	0, 90, 180, 270	0 0
adopt_window_format	<i>Window Orientation</i>	1, 0	1

Sharpness			
sharpen	<i>Sharpness</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4
sharpen_dark_percent	<i>Automatic Sharpness Control</i>	0, 100	0 0
Noise Filtering			
noisesuppress	<i>Noise Filtering</i>	off, low, high	low low
temporal_noise-suppress	<i>Temporal Noise Filtering</i>	off, luma, chroma	off off
Obscure Image Area (OA)			
obscure_image	<i>Obscure Image Area</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
obscure_image_timetable	<i>Obscure Image Time Table</i>	 	
obscure_image_area_color	<i>Obscure Image Color</i>	0x000000, 0x800000, 0x008000, 0x808000, 0x000080, 0x800080, 0x008080, 0x808080, 0xC0C0C0, 0xFF0000, 0x00FF00, 0xFFFF00, 0x0000FF, 0xFF00FF, 0x00FFFF, 0xFFFFFF	0x000000
obscure_image_area	<i>Obscure Image Area</i>	(Multiline string constant)	0, 540, 380, 200, 200, 2

Parameters for Section 'imagecontrol' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=imagecontrol>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Camera Selection			

camera	<i>Camera Selection</i>	right, left, auto	auto
Camera Night Switch (DY/NI)			
nisw_source	<i>Switching Source</i>	camera, ac1, ac2, ac3, ac4, ac5, acl	camera
nightswitch	<i>Night Camera Level</i>	1, 3, 6, 10, 185, 32, 56, 100, 170, 320, 560, 1000, 1800, 3200	100
nightswitch_irlight	<i>IR Light Support</i>	disable, enable	enable
nightswitchdelay	<i>Night Switch Delay</i>	0, 5, 10, 15, 20, 25, 30, 60, 90, 120, 180, 300, 600	5
Image Quality			
reduced_mode	<i>Image Quality</i>	-1, 0, 1	-1
IR-Cut Filter			
ircutmode	<i>Operating Mode</i>	auto, irpass, ircut	ircut
ircut_level_pass	<i>IR-Cut Threshold Pass</i>	0 .. 9999	10 10
ircut_level_cut	<i>IR-Cut Threshold Cut</i>	0 .. 9999	12 12
Frame and Data Rate			
framerate100	<i>Frames per Second</i>	0, 2500, 2000, 1600, 1400, 1200, 1000, 800, 600, 400	
framerate_throttle	<i>Playback has Priority</i>	disable, prealarm, 2fps	2fps
Mirror & Rotate Image			
mirror	<i>Mirroring</i>	no, vertical, horizontal, both	no no
rotate	<i>Rotation</i>	0, 90, 180, 270	0 0
adopt_window_format	<i>Window Orientation</i>	1, 0	1

Sharpness			
sharpen	<i>Sharpness</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4
sharpen_dark_percent	<i>Automatic Sharpness Control</i>	0, 100	0 0
Focusing Aid			
sharpnessadjust	<i>Focusing Aid</i>	disable, enable, audio	disable
Noise Filtering			
noisesuppress	<i>Noise Filtering</i>	off, low, high	low low
temporal_noise-suppress	<i>Temporal Noise Filtering</i>	off, luma, chroma	off off
Automatic Contrast			
automatic	<i>Automatic Contrast</i>	off, auto, extended, aggressive	auto auto
Brightness			
brightness	<i>Brightness</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
Backlight Correction			
backlight	<i>Backlight Correction</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4
White Balance			
wb_profile	<i>Color Profile</i>	-4, -2, -3, 16000, 10000, 8000, 7000, 5500, 5000, 4000, 3000, 2500, -1	-4 -4
Color Saturation			
color	<i>Color Saturation</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0

color_dark_percent	<i>Automatic Saturation Control</i>	0, 100	0 0
Blue Balance			
blue	<i>Blue Balance</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
Red Balance			
red	<i>Red Balance</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
Video Codec			
motionjpeg	<i>Video Codec</i>	disable, enable	enable
mxpeg_transfer1	<i>Transfer Rate I</i>	0 .. 100	15
mxpeg_transfer2	<i>Transfer Rate II</i>	0 .. 100	15
mxpeg_minclass	<i>Minimum MCU Change</i>	0 .. 255	128
mxpeg_fulljpeg	<i>Switch to Full Image</i>	0 .. 255	255
mxpeg_neighbours	<i>Transfer Neighbors</i>	disable, enable	enable
mxpeg_bewareof-heavy-motion	<i>High Change Rate</i>	disable, enable	disable
mxpeg_high-sensitivity	<i>MxPEG High Sensitivity Mode</i>	disable, enable	disable
JPEG Quality			
quality	<i>JPEG Quality</i>	10, 20, 30, 40, 50, 60, 70, 80, 90	60
JPEG User Comment			
jpegcommentuser	<i>JPEG User Comment</i>	(String constant)	
JPEG Comment Text (CT)			
jpegcomment_ctx	<i>Comment Text Rows</i>	0 .. 64	1

jpegcomment_ctclear	<i>Clear Comment on Match</i>	(String constant)	
EXIF Data			
jpegcomment_exif	<i>EXIF Data</i>	1, 0	
Text Display			
textdisplay	<i>Text Display</i>	disable, enable, datetime	enable
textcolor	<i>Text Color</i>	0x000000, 0x800000, 0x008000, 0x808000, 0x000080, 0x800080, 0x008080, 0x808080, 0xC0C0C0, 0xFF0000, 0x00FF00, 0xFFFF00, 0x0000FF, 0xFF00FF, 0x00FFFF, 0xFFFFFF	0xFFFFFFFF
textbgcolor	<i>Background Color</i>	0x000000, 0x800000, 0x008000, 0x808000, 0x000080, 0x800080, 0x008080, 0x808080, 0xC0C0C0, 0xFF0000, 0x00FF00, 0xFFFF00, 0x0000FF, 0xFF00FF, 0x00FFFF, 0xFFFFFF	0x000000
textbgopacity	<i>Background Opacity</i>	0, 25, 50, 75, 100	
date	<i>Date and Time</i>	0, 1, 2, 3, 4, 5, 6	1
print	<i>Comment</i>	(Multiline string constant)	WWW.MOBOTIX.COM
displayfontsize	<i>Display Font Size</i>	8, 16, 24	8
fontsize	<i>Error Font Size</i>	8, 10, 12, 16, 24, 48	12
errortext	<i>Error Messages</i>	0, 1	1
stitchmode	<i>Cover Borders</i>	off, on	on
Obscure Image Area (OA)			

obscure_image	<i>Obscure Image Area</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
obscure_image_timetable	<i>Obscure Image Time Table</i>	 	
obscure_image_area_color	<i>Obscure Image Color</i>	0x000000, 0x800000, 0x008000, 0x808000, 0x000080, 0x800080, 0x008080, 0x808080, 0xC0C0C0, 0xFF0000, 0x00FF00, 0xFFFF00, 0x0000FF, 0xFF00FF, 0x00FFFF, 0xFFFFFF	0x000000
obscure_image_area	<i>Obscure Image Area</i>	(Multiline string constant)	0, 540, 380, 200, 200, 2
Color Palette			
uhu_spec	<i>Color Palette</i>	0, 1, 2, 3, 4	2 2
uhu_spec_show	<i>Show Color Palette</i>	1, 0	1 1
Thermal Range			
uhu_spec_auto	<i>Automatic Adjustment</i>	enable, disable	enable enable
uhu_min	<i>Minimum Thermal Value</i>	0 .. 1023	45 45
uhu_max	<i>Maximum Thermal Value</i>	0 .. 1023	500 500
uhu_update_direct_enable	<i>Allow Immediate Updates</i>	1, 0	0 0
uhu_update_speed	<i>Update Speed</i>	0, 1, 2	1 1
uhu_temp_spread	<i>Level of Detail</i>	0, 1, 2	0 0
Value Range			
uhu_gain_mode	<i>Value Range</i>	0, 1, 2	0 0
Linear Mode			

uhu_tlinear_enable	<i>Enable Linear Mode</i>	1, 0	1 1
Thermal Raw Data			
uhu_raw_data	<i>Export Thermal Raw Data</i>	disable, enable, recording	disable
Temperature Compensation			
uhu_tcomp_configure	<i>Manual Configuration</i>	1, 0	0 0
uhu_tcomp_scn_emis	<i>Object Emissivity</i>	50 .. 100	100 100
uhu_tcomp_atm_trns	<i>Atmospheric Transmission</i>	50 .. 100	100 100
uhu_tcomp_atm_temp	<i>Ambient Temperature</i>	-30 .. 60	22 22

Parameters for Section 'imageprogram' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=imageprogram>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Automatic Contrast			
automatic	<i>Automatic Contrast</i>	off, auto, extended, aggressive	auto auto
Brightness			
brightness	<i>Brightness</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
Backlight Correction			
backlight	<i>Backlight Correction</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4
Sharpness			
sharpen	<i>Sharpness</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4

sharpen_dark_per-cent	<i>Automatic Sharpness Control</i>	0, 100	0 0
Night Improvement			
ca_night_improve	<i>Enable Night Improvement</i>	off, on	on on
ca_exp_window_type	<i>Exposure Windows</i>	extra, all, quarter, center, spot, top, middle, bottom, right, vertical, left, right_left	quarter quarter
ca_exp_window_weight	<i>Exposure Weighting</i>	-1, 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100	100 100
ca_wbal_window_weight	<i>White Balance Weighting</i>	-1, 100	-1 -1
Target Brightness			
ca_avg_intensity	<i>Average Brightness</i>	10, 25, 50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800	400 400
ca_exp_minavg	<i>Minimum Average Brightness</i>	0, 10, 25, 50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800	200 200
ca_exp_window_draw	<i>Show Windows</i>	auto, on, histo	auto
Exposure Time			
ca_exp_corr	<i>Exposure Program</i>	-2, -1, 0, 1, 2, 4, 6	0 0
ca_exp_max	<i>Max. Exposure Time</i>	80, 160, 320, 640, 1280, 2560, 4960, 10080, 20000, 40000, 80000, 160000, 320000, 640000, 1280000	160000 160000
ca_exp_min	<i>Min. Exposure Time</i>	80, 160, 320, 640, 1280, 2560, 4960, 10080, 20000, 40000, 80000, 160000, 320000, 640000,	80 80

		1280000	
Sensor Gain Range			
ca_gain_max	<i>Sensor Gain Range</i>	6144, 32768, 0	0 0
bestquality	<i>Best Quality</i>	disable, enable	disable

Parameters for Section 'jpeg' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=jpeg>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Video Codec			
motionjpeg	<i>Video Codec</i>	disable, enable	enable
mxpeg_high-sensitivity	<i>MxPEG High Sensitivity Mode</i>	disable, enable	disable
JPEG Quality			
quality	<i>JPEG Quality</i>	10, 20, 30, 40, 50, 60, 70, 80, 90	60
JPEG User Comment			
jpegcommentuser	<i>JPEG User Comment</i>	(String constant)	
JPEG Comment Text (CT)			
jpegcomment_ctx	<i>Comment Text Rows</i>	0 .. 64	1
jpegcomment_ctclear	<i>Clear Comment on Match</i>	(String constant)	
EXIF Data			
jpegcomment_exif	<i>EXIF Data</i>	1, 0	

Parameters for Section 'mxpegparam' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=mxpegparam>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Camera Selection			
camera	<i>Camera Selection</i>	right, left, auto	auto
Frame and Data Rate			
framerate100	<i>Frames per Second</i>	0, 2500, 2000, 1600, 1400, 1200, 1000, 800, 600, 400	
Brightness			
brightness	<i>Brightness</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
Sharpness			
sharpen	<i>Sharpness</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4
JPEG Quality			
quality	<i>JPEG Quality</i>	10, 20, 30, 40, 50, 60, 70, 80, 90	60
Video Codec			
motionjpeg	<i>Video Codec</i>	disable, enable	enable
mxpeg_transfer1	<i>Transfer Rate I</i>	0 .. 100	15
mxpeg_transfer2	<i>Transfer Rate II</i>	0 .. 100	15
mxpeg_minclass	<i>Minimum MCU Change</i>	0 .. 255	128
mxpeg_fulljpeg	<i>Switch to Full Image</i>	0 .. 255	255
mxpeg_neighbours	<i>Transfer Neighbors</i>	disable, enable	enable

Reference

Remote-Controlling the MOBOTIX Camera

ca_exp_window_type	<i>Exposure Windows</i>	extra, all, quarter, center, spot, top, middle, bottom, right, vertical, left, right_left	quarter quarter
ca_exp_window_draw	<i>Show Windows</i>	auto, on, histo	auto
Arming			
edactiv	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl, remote	disable
edacttimetable	<i>Time Table Profile</i>	 	
Arming			
recording_activ	<i>Arm Recording</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl, remote	enable
recording_timetable	<i>Time Table Profile</i>	 	
Recording (REC)			
recording	<i>Recording Mode</i>	snapshot, streaming_event, streaming	streaming_event

Parameters for Section 'quickcontrol' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=quickcontrol>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Camera Selection			
camera	<i>Camera Selection</i>	right, left, auto	auto
Image Quality			
reduced_mode	<i>Image Quality</i>	-1, 0, 1	-1

Brightness			
brightness	<i>Brightness</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
Backlight Correction			
backlight	<i>Backlight Correction</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4
Color Saturation			
color	<i>Color Saturation</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
Sharpness			
sharpen	<i>Sharpness</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4
JPEG Quality			
quality	<i>JPEG Quality</i>	10, 20, 30, 40, 50, 60, 70, 80, 90	60
Focusing Aid			
sharpnessadjust	<i>Focusing Aid</i>	disable, enable, auto	disable
Exposure Control			
ca_exp_mode	<i>Exposure Mode</i>	recording, vptz	recording recording
ca_exp_window_type	<i>Exposure Windows</i>	extra, all, quarter, center, spot, top, middle, bottom, right, vertical, left, right_left	quarter quarter
ca_exp_window_draw	<i>Show Windows</i>	auto, on, histo	auto
Arming			
edactiv	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl, remote	disable
Arming			

recording_activ	<i>Arm Recording</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl, remote	enable
Display Options			
imageinfo	<i>Show Event/Action Symbols</i>	0, 1, 2	1
Recording Status Symbol			
recsymbol	<i>Activate Recording Status Symbol</i>	disable, enable	disable
vPTZ Actions			
view_lock_glob	<i>Lock all common display modes</i>	none, all	none
Mouse Wheel Zoom			
zoom_lock_wheel	<i>Mouse Wheel Zoom</i>	1, 0	1

Parameters for Section 'quickcontrolreset' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=quickcontrolreset>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Camera Selection			
camera	<i>Camera Selection</i>	right, left, auto	auto
Camera Night Switch (DY/NI)			
nisw_source	<i>Switching Source</i>	camera, ac1, ac2, ac3, ac4, ac5, acl	camera
nightswitch	<i>Night Camera Level</i>	1, 3, 6, 10, 185, 32, 56, 100, 170, 320, 560, 1000, 1800, 3200	100
nightswitch_irlight	<i>IR Light Support</i>	disable, enable	enable

nightswitchdelay	<i>Night Switch Delay</i>	0, 5, 10, 15, 20, 25, 30, 60, 90, 120, 180, 300, 600	5
Image Quality			
reduced_mode	<i>Image Quality</i>	-1, 0, 1	-1
IR-Cut Filter			
ircutmode	<i>Operating Mode</i>	auto, irpass, ircut	ircut
ircut_level_pass	<i>IR-Cut Threshold Pass</i>	0 .. 9999	10 10
ircut_level_cut	<i>IR-Cut Threshold Cut</i>	0 .. 9999	12 12
Frame and Data Rate			
framerate100	<i>Frames per Second</i>	0, 2500, 2000, 1600, 1400, 1200, 1000, 800, 600, 400	
framerate_throttle	<i>Playback has Priority</i>	disable, prealarm, 2fps	2fps
Mirror & Rotate Image			
mirror	<i>Mirroring</i>	no, vertical, horizontal, both	no no
rotate	<i>Rotation</i>	0, 90, 180, 270	0 0
adopt_window_format	<i>Window Orientation</i>	1, 0	1
Sharpness			
sharpen	<i>Sharpness</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4
sharpen_dark_percent	<i>Automatic Sharpness Control</i>	0, 100	0 0
Focusing Aid			
sharpnessadjust	<i>Focusing Aid</i>	disable, enable, audio	disable
Noise Filtering			

noisesuppress	<i>Noise Filtering</i>	off, low, high	low low
temporal_noise-suppress	<i>Temporal Noise Filtering</i>	off, luma, chroma	off off
Automatic Contrast			
automatic	<i>Automatic Contrast</i>	off, auto, extended, aggressive	auto auto
Brightness			
brightness	<i>Brightness</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
Backlight Correction			
backlight	<i>Backlight Correction</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	4 4
White Balance			
wb_profile	<i>Color Profile</i>	-4, -2, -3, 16000, 10000, 8000, 7000, 5500, 5000, 4000, 3000, 2500, -1	-4 -4
Color Saturation			
color	<i>Color Saturation</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
color_dark_percent	<i>Automatic Saturation Control</i>	0, 100	0 0
Blue Balance			
blue	<i>Blue Balance</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0
Red Balance			
red	<i>Red Balance</i>	-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	0 0

Video Codec			
motionjpeg	<i>Video Codec</i>	disable, enable	enable
mxpeg_transfer1	<i>Transfer Rate I</i>	0 .. 100	15
mxpeg_transfer2	<i>Transfer Rate II</i>	0 .. 100	15
mxpeg_minclass	<i>Minimum MCU Change</i>	0 .. 255	128
mxpeg_fulljpeg	<i>Switch to Full Image</i>	0 .. 255	255
mxpeg_neighbours	<i>Transfer Neighbors</i>	disable, enable	enable
mxpeg_bewareof-heavy-motion	<i>High Change Rate</i>	disable, enable	disable
mxpeg_high-sensitivity	<i>MxPEG High Sensitivity Mode</i>	disable, enable	disable
JPEG Quality			
quality	<i>JPEG Quality</i>	10, 20, 30, 40, 50, 60, 70, 80, 90	60
JPEG User Comment			
jpegcommentuser	<i>JPEG User Comment</i>	(String constant)	
JPEG Comment Text (CT)			
jpegcomment_ctx	<i>Comment Text Rows</i>	0 .. 64	1
jpegcomment_ctclear	<i>Clear Comment on Match</i>	(String constant)	
EXIF Data			
jpegcomment_exif	<i>EXIF Data</i>	1, 0	
Text Display			
textdisplay	<i>Text Display</i>	disable, enable, datetime	enable
textcolor	<i>Text Color</i>	0x000000, 0x800000,	0xFFFFFFFF

		0x008000, 0x808000, 0x000080, 0x800080, 0x008080, 0x808080, 0xC0C0C0, 0xFF0000, 0x00FF00, 0xFFFF00, 0x0000FF, 0xFF00FF, 0x00FFFF, 0xFFFFFF	
textbgcolor	<i>Background Color</i>	0x000000, 0x800000, 0x008000, 0x808000, 0x000080, 0x800080, 0x008080, 0x808080, 0xC0C0C0, 0xFF0000, 0x00FF00, 0xFFFF00, 0x0000FF, 0xFF00FF, 0x00FFFF, 0xFFFFFF	0x000000
textbgopacity	<i>Background Opacity</i>	0, 25, 50, 75, 100	
date	<i>Date and Time</i>	0, 1, 2, 3, 4, 5, 6	1
print	<i>Comment</i>	(Multiline string constant)	WWW.MOBOTIX.COM
displayfontsize	<i>Display Font Size</i>	8, 16, 24	8
fontsize	<i>Error Font Size</i>	8, 10, 12, 16, 24, 48	12
errortext	<i>Error Messages</i>	0, 1	1
stitchmode	<i>Cover Borders</i>	off, on	on
Obscure Image Area (OA)			
obscure_image	<i>Obscure Image Area</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl	enable
obscure_image_ timetable	<i>Obscure Image Time Table</i>	 	
obscure_image_area_ color	<i>Obscure Image Color</i>	0x000000, 0x800000, 0x008000, 0x808000, 0x000080, 0x800080, 0x008080, 0x808080,	0x000000

		0xC0C0C0, 0xFF0000, 0x00FF00, 0xFFFF00, 0x0000FF, 0xFF00FF, 0x00FFFF, 0xFFFF00	
obscure_image_area	<i>Obscure Image Area</i>	(Multiline string constant)	0, 540, 380, 200, 200, 2
Color Palette			
uhu_spec	<i>Color Palette</i>	0, 1, 2, 3, 4	2 2
uhu_spec_show	<i>Show Color Palette</i>	1, 0	1 1
Thermal Range			
uhu_spec_auto	<i>Automatic Adjustment</i>	enable, disable	enable enable
uhu_min	<i>Minimum Thermal Value</i>	0 .. 1023	45 45
uhu_max	<i>Maximum Thermal Value</i>	0 .. 1023	500 500
uhu_update_direct_enable	<i>Allow Immediate Updates</i>	1, 0	0 0
uhu_update_speed	<i>Update Speed</i>	0, 1, 2	1 1
uhu_temp_spread	<i>Level of Detail</i>	0, 1, 2	0 0
Value Range			
uhu_gain_mode	<i>Value Range</i>	0, 1, 2	0 0
Linear Mode			
uhu_tlinear_enable	<i>Enable Linear Mode</i>	1, 0	1 1
Thermal Raw Data			
uhu_raw_data	<i>Export Thermal Raw Data</i>	disable, enable, recording	disable
Temperature Compensation			
uhu_tcomp_configure	<i>Manual Configuration</i>	1, 0	0 0

uhu_tcomp_scn_emis	<i>Object Emissivity</i>	50 .. 100	100 100
uhu_tcomp_atm_trns	<i>Atmospheric Transmission</i>	50 .. 100	100 100
uhu_tcomp_atm_temp	<i>Ambient Temperature</i>	-30 .. 60	22 22
Exposure Control			
ca_exp_mode	<i>Exposure Mode</i>	recording, vptz	recording recording
ca_exp_window_type	<i>Exposure Windows</i>	extra, all, quarter, center, spot, top, middle, bottom, right, vertical, left, right_left	quarter quarter
ca_extra_area	<i>Custom Windows</i>	(Multiline string constant)	0, 224, 168, 832, 624 1, 224, 168, 832, 624
ca_exp_window_weight	<i>Exposure Weighting</i>	-1, 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100	100 100
ca_wbal_window_weight	<i>White Balance Weighting</i>	-1, 100	-1 -1
ca_exp_window_draw	<i>Show Windows</i>	auto, on, histo	auto
Target Brightness			
ca_avg_intensity	<i>Average Brightness</i>	10, 25, 50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800	400 400
ca_exp_minavg	<i>Minimum Average Brightness</i>	0, 10, 25, 50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800	200 200
Night Improvement			
ca_night_improve	<i>Enable Night Improvement</i>	off, on	on on

ca_high_gain	<i>Permit high gain</i>	auto, off, on	auto auto
Sensor Gain Range			
ca_gain_max	<i>Sensor Gain Range</i>	6144, 32768, 0	0 0
Exposure Time			
ca_exp_corr	<i>Exposure Program</i>	-2, -1, 0, 1, 2, 4, 6	0 0
ca_exp_max	<i>Max. Exposure Time</i>	80, 160, 320, 640, 1280, 2560, 4960, 10080, 20000, 40000, 80000, 160000, 320000, 640000, 1280000	160000 160000
ca_exp_min	<i>Min. Exposure Time</i>	80, 160, 320, 640, 1280, 2560, 4960, 10080, 20000, 40000, 80000, 160000, 320000, 640000, 1280000	80 80
Frequency of Power Supply			
ca_linefreq	<i>Line Frequency</i>	0, 50, 60	
Wide Dynamic Range			
ca_qwdr_level	<i>Wide Dynamic Range</i>	0, 1, 2, 3, 4	0 0
Display Options			
imageinfo	<i>Show Event/Action Symbols</i>	0, 1, 2	1
chartdrawmode	<i>Level Meter</i>	off, bar, scrollchart	off
chartevent	<i>Level Meter Data</i>	 	
Object Tracing (OT)			
objecttracing	<i>Enable Object Tracing</i>	disable, enable	disable
objectcamera	<i>Tracing Camera</i>	auto, right, left	auto
vPTZ Actions			

Reference

Remote-Controlling the MOBOTIX Camera

view_lock_glob	<i>Lock all common display modes</i>	none, all	none
Mouse Wheel Zoom			
zoom_lock_wheel	<i>Mouse Wheel Zoom</i>	1, 0	1
Zoom Quality			
zoom_thresh	<i>Zoom Quality</i>	0, 1600, 2000, 3200, 4000	2000
Auto Move			
automove_pause	<i>Pause Time</i>	0 .. 120	10
automove_tour_1	<i>Auto Move Tour 1</i>	(String constant)	1, 2, 3
automove_tour_2	<i>Auto Move Tour 2</i>	(String constant)	1, 2, 3
automove_tour_3	<i>Auto Move Tour 3</i>	(String constant)	1, 2, 3
PTZ Control			
activate_pano_osc	<i>On-Screen PTZ Control</i>	0, 1	

Parameters for Section 'recording' [↑](#)

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=recording>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Arming			
recording_activ	<i>Arm Recording</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl, remote	enable
recording_timetable	<i>Time Table Profile</i>	 	
Digital Signing			
rec_sign	<i>Digital Signing</i>	0, 1	

Recording Status Symbol			
recsymbol	<i>Activate Recording Status Symbol</i>	disable, enable	disable
Terminate Recording (TR)			
freezeactiv	<i>Activate Terminate Recording</i>	off, on	off
freezeevents	<i>Termination Condition</i>	 	~
freezedelay	<i>Time Before Terminate</i>	0 .. 86400	15
Recording (REC)			
recording	<i>Recording Mode</i>	snapshot, streaming_event, streaming	streaming_event
storypacking	<i>Pack Event Story</i>	1, 0	
streamframerate100	<i>Continuous Recording Frame Rate</i>	0, 2500, 1200, 600, 400, 300, 200, 100, 50, 33, 25, 20	100
Start Recording			
recstartevents	<i>Start Recording</i>	 	*
storyinterval	<i>Snap Shot Interval</i>	0 .. 600000	1000
storyantecount	<i>Pre-Alarm Images</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50	1
storypostcount	<i>Post-Alarm Images</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50	2
streameventframerate100	<i>Event Frame Rate</i>	0, 2500, 1200, 600, 400, 300, 200, 100, 50, 33, 25, 20	
streamantetime	<i>Recording Time Before Event</i>	0 .. 15	
streamtime	<i>Recording Time</i>	2, 4, 6, 8, 10, 20, 30, 40, 50, 60, 70, 80, 90, 120, 180, 300, 420, 600, 900	10

Retrigger Recording			
recstretchevents	<i>Retrigger Recording</i>	 	~
Stop Recording			
recstopevents	<i>Stop Recording</i>	 	~
storystopcount	<i>Images After Stop Event</i>	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50	1
streamstoptime	<i>Recording Time After Stop Event</i>	0, 2, 4, 6, 8, 10, 20, 30, 40, 50, 60, 70, 80, 90, 120, 180, 300, 420, 600, 900	10
recstopdeadtime	<i>Recording Dead Time</i>	0 .. 3600	5
History Recording (HR)			
rechistory_sec	<i>History Recording</i>	0, -1, 1	
rechistory_cron	<i>Recording Time</i>	(String constant)	* * * * *
rechistory_interval	<i>History Recording Interval</i>	10 .. 86400	10
rechistory_imgprof	<i>Image Profile for History</i>	 	
Full Image Recording			
recording_fullimage	<i>Activate Full Image Recording</i>	0, 1	
Camera Selection			
camera	<i>Camera Selection</i>	right, left, auto, live	live
JPEG Quality			
quality	<i>JPEG Quality</i>	10, 20, 30, 40, 50, 60, 70, 80, 90	60
Text Display			
textdisplay	<i>Text Display</i>	disable, enable, datetime	datetime

date	<i>Date and Time</i>	0, 1, 2, 3, 4, 5, 6	1
print	<i>Comment</i>	(Multiline string constant)	
displayfontsize	<i>Display Font Size</i>	8, 16, 24	16

Parameters for Section 'settings' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=settings>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Arming			
edactiv	<i>Arming</i>	enable, disable, ac1, ac2, ac3, ac4, ac5, acl, remote	disable
edacttimetable	<i>Time Table Profile</i>	 	
Custom Signal 1 (CS1)			
armcond_ac1_source	<i>Source</i>	disable, enable, signal_input, time_table, remote, action, illu	disable
armcond_ac1_signalin_which	<i>Signal Input</i>	ob%2C1, DI%2C~BPC, DI%2C~DPC	ob, 1
armcond_ac1_signalin_state	<i>Signal Input State</i>	si_open, si_close	si_open
armcond_ac1_timetable	<i>Time Table</i>	 	
armcond_ac1_illu_level	<i>Trigger Level</i>	(String constant)	100.0
armcond_ac1_illu_src	<i>Illumination Source</i>	right, left, both, auto	auto
armcond_ac1_illu_	<i>Comparison</i>	higher, lower	higher

cmp			
armcond_ac1_illu_delay	<i>Delay</i>	0 .. 300	10
Custom Signal 2 (CS2)			
armcond_ac2_source	<i>Source</i>	disable, enable, signal_input, time_table, remote, action, illu	disable
armcond_ac2_signalin_which	<i>Signal Input</i>	ob%2C1, DI%2C~BPC, DI%2C~DPC	ob, 1
armcond_ac2_signalin_state	<i>Signal Input State</i>	si_open, si_close	si_open
armcond_ac2_timetable	<i>Time Table</i>	 	
armcond_ac2_illu_level	<i>Trigger Level</i>	(String constant)	100.0
armcond_ac2_illu_src	<i>Illumination Source</i>	right, left, both, auto	auto
armcond_ac2_illu_cmp	<i>Comparison</i>	higher, lower	higher
armcond_ac2_illu_delay	<i>Delay</i>	0 .. 300	10
Custom Signal 3 (CS3)			
armcond_ac3_source	<i>Source</i>	disable, enable, signal_input, time_table, remote, action, illu	disable
armcond_ac3_signalin_which	<i>Signal Input</i>	ob%2C1, DI%2C~BPC, DI%2C~DPC	ob, 1
armcond_ac3_signalin_state	<i>Signal Input State</i>	si_open, si_close	si_open
armcond_ac3_timetable	<i>Time Table</i>	 	

armcond_ac3_illu_level	<i>Trigger Level</i>	(String constant)	100.0
armcond_ac3_illu_src	<i>Illumination Source</i>	right, left, both, auto	auto
armcond_ac3_illu_cmp	<i>Comparison</i>	higher, lower	higher
armcond_ac3_illu_delay	<i>Delay</i>	0 .. 300	10
Custom Signal 4 (CS4)			
armcond_ac4_source	<i>Source</i>	disable, enable, signal_input, time_table, remote, action, illu	disable
armcond_ac4_signalin_which	<i>Signal Input</i>	ob%2C1, DI%2C~BPC, DI%2C~DPC	ob, 1
armcond_ac4_signalin_state	<i>Signal Input State</i>	si_open, si_close	si_open
armcond_ac4_timetable	<i>Time Table</i>	 	
armcond_ac4_illu_level	<i>Trigger Level</i>	(String constant)	100.0
armcond_ac4_illu_src	<i>Illumination Source</i>	right, left, both, auto	auto
armcond_ac4_illu_cmp	<i>Comparison</i>	higher, lower	higher
armcond_ac4_illu_delay	<i>Delay</i>	0 .. 300	10
Custom Signal 5 (CS5)			
armcond_ac5_source	<i>Source</i>	disable, enable, signal_input, time_table, remote, action, illu	disable
armcond_ac5_sig-	<i>Signal Input</i>	ob%2C1, DI%2C~BPC,	ob, 1

nalin_which		DI%2C~DPC	
armcond_ac5_sig-nalin_state	<i>Signal Input State</i>	si_open, si_close	si_open
armcond_ac5_timetable	<i>Time Table</i>	 	
armcond_ac5_illu_level	<i>Trigger Level</i>	(String constant)	100.0
armcond_ac5_illu_src	<i>Illumination Source</i>	right, left, both, auto	auto
armcond_ac5_illu_cmp	<i>Comparison</i>	higher, lower	higher
armcond_ac5_illu_delay	<i>Delay</i>	0 .. 300	10
Logically Combined Signal (CSL)			
armcond_acl_source	<i>Source</i>	disable, ac1_and_ac2, ac1_or_ac2, remote	disable
Master/Slave			
enable_distributed_camera_state	<i>Enable Master/Slave</i>	1, 0	
master_cam	<i>Master Camera</i>	(String constant)	
replication_protocol_port	<i>Replication Protocol Port</i>	0 .. 65535	60000
LED Setup			
led_events	<i>Event LED</i>	 	*
led_armling	<i>Arming LED</i>	edactiv, ac1, ac2, ac3, ac4, ac5, acl	edactiv

Arming Delay			
inputarm_delay	<i>Arming Delay</i>	0, 5, 10, 15, 20, 25, 30, 45, 60, 75, 90	60
inputdisarm_delay	<i>Disarming Delay</i>	0, 5, 10, 15, 20, 25, 30, 45, 60, 75, 90	

Parameters for Section 'text' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=text>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Text Display			
textdisplay	<i>Text Display</i>	disable, enable, datetime	enable
textcolor	<i>Text Color</i>	0x000000, 0x800000, 0x008000, 0x808000, 0x000080, 0x800080, 0x008080, 0x808080, 0xC0C0C0, 0xFF0000, 0x00FF00, 0xFFFF00, 0x0000FF, 0xFF00FF, 0x00FFFF, 0xFFFFFF	0xFFFFFF
textbgcolor	<i>Background Color</i>	0x000000, 0x800000, 0x008000, 0x808000, 0x000080, 0x800080, 0x008080, 0x808080, 0xC0C0C0, 0xFF0000, 0x00FF00, 0xFFFF00, 0x0000FF, 0xFF00FF, 0x00FFFF, 0xFFFFFF	0x000000
textbgopacity	<i>Background Opacity</i>	0, 25, 50, 75, 100	
date	<i>Date and Time</i>	0, 1, 2, 3, 4, 5, 6	1
print	<i>Comment</i>	(Multiline string constant)	WWW.MOBOTIX.COM
displayfontsize	<i>Display Font Size</i>	8, 16, 24	8

errortext	<i>Error Messages</i>	0, 1	1
fontsize	<i>Error Font Size</i>	8, 10, 12, 16, 24, 48	12
stitchmode	<i>Cover Borders</i>	off, on	on
Display Options			
imageinfo	<i>Show Event/Action Symbols</i>	0, 1, 2	1
chartdrawmode	<i>Level Meter</i>	off, bar, scrollchart	off
chartevent	<i>Level Meter Data</i>	 	
Object Tracing (OT)			
objecttracing	<i>Enable Object Tracing</i>	disable, enable	disable
objectcamera	<i>Tracing Camera</i>	auto, right, left	auto

Parameters for Section 'thermal' [↑](#)

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=thermal>

Parameter	Name in Dialog	Possible Values	Default Value(s)
Thermal Raw Data			
uhu_raw_data	<i>Export Thermal Raw Data</i>	disable, enable, recording	disable
Color Palette			
uhu_spec	<i>Color Palette</i>	0, 1, 2, 3, 4	2 2
uhu_spec_show	<i>Show Color Palette</i>	1, 0	1 1
Linear Mode			
uhu_tlinear_enable	<i>Enable Linear Mode</i>	1, 0	1 1

Temperature Compensation			
uhu_tcomp_configure	<i>Manual Configuration</i>	1, 0	0 0
uhu_tcomp_scn_emis	<i>Object Emissivity</i>	50 .. 100	100 100
uhu_tcomp_atm_trns	<i>Atmospheric Transmission</i>	50 .. 100	100 100
uhu_tcomp_atm_temp	<i>Ambient Temperature</i>	-30 .. 60	22 22
Value Range			
uhu_gain_mode	<i>Value Range</i>	0, 1, 2	0 0
Thermal Range			
uhu_spec_auto	<i>Automatic Adjustment</i>	enable, disable	enable enable
uhu_min	<i>Minimum Thermal Value</i>	0 .. 1023	45 45
uhu_max	<i>Maximum Thermal Value</i>	0 .. 1023	500 500
uhu_update_direct_enable	<i>Allow Immediate Updates</i>	1, 0	0 0
uhu_update_speed	<i>Update Speed</i>	0, 1, 2	1 1
uhu_temp_spread	<i>Level of Detail</i>	0, 1, 2	0 0
Temperature Control Area			
ca_exp_mode	<i>Temperature Control Mode</i>	recording, vptz	recording recording
ca_exp_window_type	<i>Temperature Control Windows</i>	extra, all, quarter, center, spot, top, middle, bottom, right, vertical, left, right_left	quarter quarter
ca_extra_area	<i>Custom Windows</i>	(Multiline string constant)	0, 224, 168, 832, 624 1, 224, 168,

Reference

Remote-Controlling the MOBOTIX Camera

			832, 624
ca_exp_window_draw	<i>Show Windows</i>	auto, on, histo	auto

Parameters for Section 'videomotionanalysis' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=videomotionanalysis>

Parameter	Name in Dialog	Possible Values	Default Value(s)

Parameters for Section 'vptzcontrol' ↑

Click on the following command to see the unformatted parameters for this section in a new browser window:

<http://172.16.20.86/control/control?list&section=vptzcontrol>

Parameter	Name in Dialog	Possible Values	Default Value(s)
vPTZ Actions			
view_lock_glob	<i>Lock all common display modes</i>	none, all	none
Mouse Wheel Zoom			
zoom_lock_wheel	<i>Mouse Wheel Zoom</i>	1, 0	1
Zoom Quality			
zoom_thresh	<i>Zoom Quality</i>	0, 1600, 2000, 3200, 4000	2000
PTZ Control			
activate_pano_osc	<i>On-Screen PTZ Control</i>	0, 1	
Auto Move			
automove_pause	<i>Pause Time</i>	0 .. 120	10

automove_tour_1	<i>Auto Move Tour 1</i>	(String constant)	1, 2, 3
automove_tour_2	<i>Auto Move Tour 2</i>	(String constant)	1, 2, 3
automove_tour_3	<i>Auto Move Tour 3</i>	(String constant)	1, 2, 3

Parameter Overview of the `rcontrol` Command

Example: `rcontrol?action=sound&soundfile=Alarm`

Example: `rcontrol?action=message&name=camera_alarm`

action=	Explanation	Parameters
defreeze	Unfreezes the camera after Terminate Recording (TR) occurred and resumes recording.	
delete_ref- erence_image	Delete current reference image. Only available as administrator under <i>/admin/rcontrol</i> .	
delete_sys- tem_mes- sages	Delete and reset all system messages. Only available as administrator under <i>/admin/rcontrol</i> .	
emailcurrent	Sends the current image by e-mail using the e-mail profile specified by id or name.	profile profile id name custom profile name
emaillastevent	Sends the last event image by e-mail using the e-mail profile specified by id or name.	profile profile id name custom profile name
errorack	Acknowledges an error notification. Only available as administrator under <i>/admin/rcontrol</i> .	
eventack	Acknowledges an event.	

Reference

Remote-Controlling the MOBOTIX Camera

exportstatistic	Triggers an export of the statistic data generated by MxAnalytics.	
format_device	Format flash device with MxFFS volumes for Recording and/or MxAnalytics. Only available as administrator under <i>/admin/rcontrol</i> .	media_type target encryption security_pass- word secure_format num_volumes mxanalytics_ volume_size_gb store reboot event_recorder_ size_gb
ftpcurrent	Sends the current image to the FTP server using the FTP profile specified by id or name.	profile profile id name custom profile name
ftplastevent	Sends the last event image to the FTP server using the FTP profile specified by id or name.	profile profile id name custom profile name
generate_ref- erence_image	Save current image as reference image. Only available as administrator under <i>/admin/rcontrol</i> .	
getrs232	Prints text received from the RS232 interface.	nrofbytes get the last nrof- bytes Bytes rs232de lafterread 0 or 1: delete Buffer after read

getrs232hex	Prints text received from the RS232 interface in hex notation.	nrofbytes get the last nrof- bytes Bytes rs232delayafterread 0 or 1: delete Buffer after read
gettemp	Gets the camera's internal temperature.	
gettext	Replace <code>variables</code> in message and print it as plain text.	message text with variables
irledsoff	Switches all infrared LEDs off.	
irledon	Switches all infrared LEDs on. The optional time parameter switches the LEDs off after the specified number of seconds.	time duration [s]
irledsstring	Switches the infrared LEDs specified in the <code>leds</code> parameter. If no string is specified, the IR LEDs will be switched to default. The optional time parameter switches the IR LEDs off after the specified number of seconds.	time duration [s] leds string, six chars long, 0=off, 1=on, b=blink, d=default, -= no change 1st char is top LED, rest clock- wise
ledsdefault	Switches LEDs to default.	
ledsoff	Switches all LEDs off. The optional time parameter switches the LEDs back to default after the specified number of seconds.	time duration

Reference

Remote-Controlling the MOBOTIX Camera

		[s]
ledson	Switches all LEDs on. The optional time parameter switches the LEDs back to default after the specified number of seconds.	time duration [s]
ledsstring	Switches LEDs specified in the leds parameter. If no string is specified, the LEDs will be switched to default. The optional time parameter switches the LEDs back to default after the specified number of seconds.	time duration [s] leds string, six chars long, 0=off, 1=on, b=blink, d=default, -= no change 1st char is top LED, rest clock- wise
list_plex_recording_targets	Lists the event recording targets provided by supported expansion devices. Set the output parameter to media_types to retrieve the list of supported media types instead. Only available as administrator under <i>/admin/rcontrol</i> .	output
mailboxdb_delete	Will delete an entry from the mailbox db, only. It will not erase the actual recording on the event storage. Specify the message using its sequence and event number. Only available as administrator under <i>/admin/rcontrol</i> .	sequence a sequence number event an event number
mailboxdb_reset	Delete all entries in the mailbox database! Only available as administrator under <i>/admin/rcontrol</i> .	
mailboxdb_set_seen_flag	Allows to change the "seen flag", whether a message has been reviewed, for the message given by its sequence and event number. This has to be followed by the flag value. Zero (0) is for unseen messages. Other values for seen messages.	sequence a sequence number event

		an event number seen_flag mailboxdb seen flag (0 unseen)
message	Sends the message specified in the name parameter using the MxMessageSystem. The message is distributed within the current LAN (=range global).	name custom profile name
mxffs_ archive_delete	Delete MxFFS archive files on the file server, and reset current transfers and statistics! Attention: You will immediately loose all archived recordings! Only available as administrator under <i>/admin/rcontrol</i> .	
mxffs_ archive_ delete_ without_reset	Delete MxFFS archive files on the file server only. No reset of the statistics queue! Attention: You will immediately loose all archived recordings! Only available as administrator under <i>/admin/rcontrol</i> .	
mxffs_ archive_reset_ tq	Reset all queued MxFFS archive transfers. Only available as administrator under <i>/admin/rcontrol</i> .	
mxffs_ archive_reset_ stats	Reset MxFFS archive statistics. Only available as administrator under <i>/admin/rcontrol</i> .	
mxffs_ archive_resync	Synchronizes the camera's internal MxFFS block recordings with the archive content by transferring missing blocks (asynchronous transfer). Only available as administrator under <i>/admin/rcontrol</i> .	
notifycurrent	Sends a network message (IP Notify) with the status of the current image.	profile profile id name custom profile name
notifylastevent	Sends a network message (IP Notify) with the status of the last event image.	profile profile id name custom

Reference

Remote-Controlling the MOBOTIX Camera

		profile name
pancenter	Sets the pan position to the center of the current view.	
prepare_ format	Prepare format of storage targets. DISABLES RECORDING on selected target or all USB, SD and CF devices and reboots the camera, if required for formatting. Only available as administrator under <i>/admin/rcontrol</i> .	target
puts232	Sends text specified in the rs232outtext parameter to the RS232 interface.	rs232outtext text to write to rs232
reboot	Reboots the camera. Only available as administrator under <i>/admin/rcontrol</i> .	
recording_ targets_info	Shows information about available recording targets. When used with check option, tests for newly connected hardware. Only available as administrator under <i>/admin/rcontrol</i> .	check
resetconfig	Resets the configuration to factory defaults. Only available as administrator under <i>/admin/rcontrol</i> .	
resetstatistic	Resets statistic data generated by MxAnalytics.	
restoreconfig	Restores the current configuration from flash. Only available as administrator under <i>/admin/rcontrol</i> .	
rs232signin	Prints status of the signalin pin of the serial interface.	
scanzeroconf	Scans for cameras with Zero Configuration Networking enabled. Scan time is set through parameter time. Default scan time is five seconds. Only available as administrator under <i>/admin/rcontrol</i> .	time duration [s]
sendmessage	Sends a network message (IP Notify) specified in the message parameter to the IP address specified in the addr parameter.	message text with variables addr host:port
push	Send a push notification specified in the message parameter using a push profile.	profile profile id

		message text with variables
set_plex_recording_target	Reconfigures event recording to use a specified target on an expansion device. Either specify the target directly via the target parameter, or indirectly by requesting a specific media_type such as cf, sd or usb. Then store to flash and reboot in order to activate changes. Only available as administrator under <i>/admin/rcontrol</i> .	target media_type security_pass- word
set_plex_recording_target_and_reboot	Same as set_plex_recording_target. Also stores the new configuration into flash and reboots the camera. Only available as administrator under <i>/admin/rcontrol</i> .	target media_type security_pass- word
settime	Sets the current system time. Specify the time in seconds since the epoch. If in NTP client mode, triggers a resync to the time server; the time parameter is optional in this case. Only available as administrator under <i>/admin/rcontrol</i> .	time duration [s]
sigout	Triggers the signal out profile as specified using the profile parameter.	profile profile id name custom profile name
sound	Play back a given sound profile or sound file. If both are given, the former takes precedence over the latter.	profile profile id name custom profile name soundfile name of sound file
speakeup	Outputs the camera's current IP address on the speaker.	
storeconfig	Stores the current configuration to flash. Only available as administrator under <i>/admin/rcontrol</i> .	
test_fileserver	Runs a file server test.	time duration

Reference

Remote-Controlling the MOBOTIX Camera

		[s]
userclick	Triggers a User Click (UC) event.	
voipcall	Triggers VoIP call-out using the sip address specified in the sipaddr parameter.	sipaddr sipaddress
voiphangup	Hangs up VoIP call-out.	
voipphone	Triggers VoIP call-out using the profile specified by id or name.	profile profile id name custom profile name
voiprestart	Restarts the VoIP software of the camera.	

Please note that the following actions have become obsolete and are deprecated. They are still supported for legacy purposes.
"setrs232sig", "sigouthigh", "sigoutlow", "MxMessageSystem"

The Remote Configuration API

The remote configuration API (**A**pplication **P**rogramming **I**nterface) `http://<IP address>/admin/remotefconfig` provides the methods used for remotely changing configuration parameters directly on the camera.

Using the Remote Configuration API

The camera's HTTP interface processes commands and configuration parameters in an HTTP POST request as in the following example:

```
POST /admin/remotefconfig HTTP/1.0
Content-type: application/x-www-form-urlencoded
Authorization: Basic YWRtaW46bWVpbnNt
Content-length: 87

helo
view section audio
write params
audio/MICRO=1
view section audio
update
```

```
store  
quit
```

Explanation of the HTTP POST Request in the Example

Part

```
POST /admin/remotefconfig HTTP/1.0  
Content-type: application/x-www-form-urlencoded  
Authorization: Basic YWRtaW46bWVpbnNt  
Content-length: 87
```

Description

Header of the HTTP POST Request.

Part

Description

Empty line; separates the request's header from its content.

Part

```
helo
```

Description

Beginning of the command sequence.

Part

```
view section audio  
write params  
audio/MICRO=1  
view section audio  
update  
store
```

Description

Command sequence with specific commands, as described in the [Commands of the Remote Configuration API](#) section.

Part

```
quit
```

Description

End of the command sequence.

- Make sure to close the command sequence with a blank and a line break at the end.
- The content type (`Content-type: application/x-www-form-urlencoded`) does not need to be specified, but it is expected by the camera's web server.
- The web server handles authentication (in this case, `Basic` authentication is used). User name and password are concatenated by a colon (":") and Base64-encoded. See the line above for the "admin:meinsm" user name and password.
- The length of the content (`Content-length`) is the length of the entire data that follows the blank line after the header.
- The content of the request itself is processed line by line.
- Note that you need to *URL-encode* special characters in the parameters, as described in the [Command Conventions](#) section of the [The HTTP API](#) help page.

This example is discussed in detail in [Output of the Remote Configuration API](#) using the `cURL` command line application.

Commands of the Remote Configuration API

You can use the commands as shown in the following syntax samples:

- Simple command:
`<command>`
- Command with keyword, separated by spaces:
`<command> <keyword>`
- Command with parameters, separated by spaces:
`<command> <parameter1> <parameter2>`
- Command keyword and one or more parameters, separated by spaces:
`<command> <keyword> <parameter1> <parameter2>`

Available Commands

Command

`reset`

Description

Resets the entire camera configuration or individual sections thereof to the factory default values.

Keyword

Result

`configfile`

Resets the entire configuration.

`section`

Only resets the sections of the configuration that are specified as parameters.

`exceptsection`

Resets all sections of the configuration *except* the ones specified as parameters.

Command

`restore`

Description

Restores the configuration from the copy in Flash storage.

Keyword

Result

`configfile`

Restores the entire configuration.

`section`

Only restores the sections of the configuration that are specified as parameters.

Command

`delete`

Description

Deletes the entire configuration, specific sections or individual parameters.

Keyword

Result

`configfile`

Deletes the entire configuration.

`section`

Only deletes the sections of the configuration that are specified as parameters.

`params`

Only deletes the parameters of the configuration that are specified in the following lines. The parameters for deletion are specified by the section name followed by "/" as separator:

`<section name>/<parameter>`

When dealing with profiles, the profile name is expanding the section name, again separated by a "/".

`<section name>/<profile name>/<parameter>`

In order to access a profile such as

```
SECTION ipnotify  
  
profile=ip0:<value>  
  
ENDSECTION ipnotify  
  
use the following string  
  
ipnotify/ip0/profile
```

Command

write

Description

Writes entire sections or – when used with the `params` keyword in front – individual parameters of the configuration.

Keyword

Result

(not specified)

Writes the sections of the configuration that are specified in the following lines. Note that the sections need to be specified with start and end lines:

```
SECTION <section name1>  
  
<parameter>=<value>  
  
<parameter>=<value>  
  
ENDSECTION <section name1>  
  
SECTION <section name2>  
  
<parameter>=<value>  
  
ENDSECTION <section name2>
```

params

Writes the parameters of the configuration that are specified in the following lines. The parameters are specified by the section name followed by "/" as separator:

```
<section name>/<parameter>=<value>
```

When dealing with profiles, the profile name is expanding the section name, again separated by a "/".

```
<section name>/<profile name>/<parameter>=<value>
```

In order to access a profile such as

```
SECTION ipnotify  
  
profile=ip0:<value>  
  
ENDSECTION ipnotify  
  
use the following string  
  
ipnotify/ip0/profile
```

Profiles can only be written as a whole. Accessing individual parameters of a profile is not possible.

Command

append

Description

Appends data to configuration sections. The parameters to append to a section are specified line by line between SECTION and ENDSECTION as in the following:

```
SECTION <section name>  
  
Parameter=<value>  
  
Parameter=<value>  
  
ENDSECTION <section name>
```

Command

view

Description

Returns (shows) the entire configuration or specific sections.

Keyword**Result**

configfile

Returns the entire configuration.

section

Only returns the sections of the configuration that are specified as parameters.

Command

store

Description

Permanently stores the configuration in the camera's Flash memory.

Command

Reference

Remote-Controlling the MOBOTIX Camera

`reboot`

Description

Reboots the camera.

Command

`update`

Description

Applies all changes to the configuration that can be activated without rebooting the camera.

Keyword

Result

all (or without keyword)

Activates all changes.

`section`

Only applies the changes to the sections that are specified as parameters.

Command

`profile`

Description

Returns one line with the name of the current configuration profile. This line is empty, if no profile is active.

Command

`activate_profile`

Description

Activates the configuration profile specified as parameter: `activate_profile <profile name>`

Command

`reboot_needed`

Description

Returns all changed configuration sections, which require a reboot before they can be applied. This line is empty, if no change requires a reboot.

After changing the entire configuration (using `write`, `reset`, `delete` or after uploading/editing the configuration from the web interface), the camera does not know if certain configuration sections have been changed. In this case, the command returns the answer "unknown".

Command

`exit quit`

Description

Identical meaning. Both commands end the preceding command and close the API command

sequence. Note that you can only use **one** of these two commands in a command sequence.

Command

```
help
```

Description

Returns a list of available commands (see [Returning a List of Commands Using help](#)).

Output of the Remote Configuration API

- The results consist of the data returned by the executed command.
- Informational output starts with "#" and documents the progress while processing the commands.
- Error messages start with "ERROR:", followed by a description of the error that occurred.
- Commands without results data (`reset`, `store`, etc.) do not have any output.
- If no errors have occurred, the camera acknowledges this by returning "OK" before closing.

Example: Activating the Microphone

This example demonstrates how to activate the microphone using an HTTP request. For easily testing the remote configuration API, the `cURL` command line tool (<http://curl.haxx.se/download.html>) can be downloaded for Windows. It is automatically installed on Mac OS X and most Linux computers.

Using `cURL` allows quickly and easily testing the commands, since this tool handles the communication with the camera. For example, `cURL` automatically sends the correct header and calculates the length of the command sequence.

Commands

```
helo
view section audio
write params
audio/MICRO=1
view section audio
update
store
quit
```

Description

```
# Beginning of the command sequence.
# Output the audio section.
# Write the parameter specified in the following line.
# Set the MICRO parameter in the audio section to the value "1".
# Output audio section once more.
```

```
# Apply the changes without rebooting.  
# Store the configuration in the camera's flash memory.  
# End of the command sequence.
```

- Open a **command shell** (Windows) or a **terminal** (Mac OS X, Linux).
- Enter the following command line and replace <user name>, <password> and <IP address> by the actual data of your camera:

```
curl -q -v -u "<user name>:<password>" --data-binary @- "http://<IP  
address>/admin/remoteconfig"
```

- Press the [Return] key; cURL is now waiting for commands.
- Copy the text block from the left column of the last table from `hello` to `quit`.
- Copy the contents of the clipboard to the command shell or terminal.
- Press the [Ctrl+D] key combination twice (Windows, Linux) or once (Mac OS X) to send the command sequence to the camera.

Output of the command sequence with the following data:

- <user name>: admin
- <password>: meinsm
- <IP address>: 10.8.0.118

```
* About to connect() to 10.8.0.118 port 80 (#0)  
* Trying 10.8.0.118... connected  
* Connected to 10.8.0.118 port 80 (#0)  
* Server auth using Basic with user 'admin'  
> POST /admin/remoteconfig HTTP/1.1  
> Authorization: Basic YWRtaW46bWVpbnNt  
> User-Agent: curl/7.18.2 (i486-pc-linux-gnu) libcurl/7.18.2  
OpenSSL/0.9.8g zlib/1.2.3.3 libidn/1.8 libssh2/0.18  
> Host: 10.8.0.118  
> Accept: */*  
> Content-Length: 87  
> Content-Type: application/x-www-form-urlencoded  
>* HTTP 1.0, assume close after body  
< HTTP/1.0 200 OK  
< Content-Type: text/plain; charset=utf-8  
< Cache-Control: no-cache
```

```
<#read:helo:
#read:view section audio:
#exec cmd=view section audio
SECTION audio
SPEAKER=1
MICRO=0
PREAMPLIFIER=2
SPEAKERLEVEL=0
ENDSECTION audio
#read:write params:
#exec cmd=write params
#read:view section audio:
#exec cmd=view section audio
SECTION audio
SPEAKER=1
MICRO=1
PREAMPLIFIER=2
SPEAKERLEVEL=0
ENDSECTION audio
#read:update:
#exec cmd=update
#updating daemons!
#read:store:
#exec cmd=store
#Storing to flash...
#read:quit:
OK
#bye
* Closing connection #0
```

Output beginning with a "*", "<" or ">" character is generated by `cURL`. In the output, ">" precedes the commands sent to the camera, while "<" precedes the messages returned by the camera's web server. The remaining lines are returned by the remote configuration API, as described in the [Output of the Remote Configuration API](#) section.

Example: Returning a List of Commands Using `help`

Commands

```
helo
help
quit
```

Description

```
# Beginning of the command sequence.
# Call the help of the Remote Configuration API
# End of the command sequence.
```

- Open a **command shell** (Windows) or a **terminal** (Mac OS X, Linux).
- Enter the following command line and replace <user name>, <password> and <IP address> by the actual data of your camera:

```
curl -q -v -u "<user name>:<password>" --data-binary @- "http://<IP address>/admin/remotefconfig"
```

- Press the [Return] key; cURL is now waiting for commands.
- Copy the text block from the left column of the last table from helo to quit.
- Copy the contents of the clipboard to the command shell or terminal.
- Press the [Ctrl+D] key combination twice to send the command sequence to the camera.

Output of the command sequence with the following data:

- <user name>: admin
- <password>: meinsm
- <IP address>: 10.8.0.118

```
* About to connect() to 10.8.0.118 port 80 (#0)
* Trying 10.8.0.118... connected
* Connected to 10.8.0.118 port 80 (#0)
* Server auth using Basic with user 'admin'
> POST /admin/remotefconfig HTTP/1.1
> Authorization: Basic YWRtaW46bWVpbnNt
> User-Agent: curl/7.18.2 (i486-pc-linux-gnu) libcurl/7.18.2
OpenSSL/0.9.8g zlib/1.2.3.3 libidn/1.8 libssh2/0.18
> Host: 10.8.0.118
> Accept: */*
```

```
> Content-Length: 87
> Content-Type: application/x-www-form-urlencoded
>* HTTP 1.0, assume close after body
< HTTP/1.0 200 OK
< Content-Type: text/plain; charset=utf-8
< Cache-Control: no-cache
<#read:helo:
#read:help:
The following commands are currently implemented:
append
reboot_needed
view
reboot
write
profile
restore
activate_profile
reset
update
delete
store
exit
quit
help
#read:quit:
OK
#bye
* Closing connection #0
```

Output beginning with a "*", "<" or ">" character is generated by cURL. In the output, ">" precedes the commands sent to the camera, while "<" precedes the messages returned by the camera's web server. The remaining lines are returned by the remote configuration API, as described in the [Output of the Remote Configuration API](#) section.

Example: Changing a Profile Line Using `write`

The `ipnotifyaddress` target address of the network message profile `ip0` in the `ipnotify` configuration section is to be changed from `10.0.0.42:8000` to `10.11.12.13:6750`.

Make sure that you always need to write the entire profile line. It is not possible to change individual values within a profile.

Commands

```
helo
view section ipnotify
write params
ipnotify/ip0/profile=ip0:_profilename=MxCC-Alarm
:preset=mxpeg_alarm:ackn_time=60
:ipnotifyaddress=10.11.12.13%3A6750
:send=on_error:protocol=raw
:boundary=--next-image--:httppath=:httpauth=
:data=msg:ipnotifymessage=Hello World!
:filetype=mxg:rate100=100:antetime=1
:posttime=1:systime=1440:ipnotifyport=0
view section ipnotify
update
store
quit
```

Description

```
# Beginning of the command sequence.
# Output the ipnotify section.
# Write the profile specified in the following line.
# Set profile ip0 in section ipnotify with the address
# "10.11.12.13" and the port 6750 ...
# ...
# ...
# ...
# ...
# ...
# ...
# ...
# Again output the ipnotify section.
# Apply the changes without rebooting.
# Store the configuration in the camera's flash memory.
# End of the command sequence.
```

- Open a **command shell** (Windows) or a **terminal** (Mac OS X, Linux).
- Enter the following command line and replace <user name>, <password> and <IP address> by the actual data of your camera:

```
curl -q -v -u "<user name>:<password>" --data-binary @- "http://<IP address>/admin/remotefconfig"
```

- Press the [Return] key; cURL is now waiting for commands.
- Copy the text block from the left column of the last table from `helo` to `quit`.
- Copy the contents of the clipboard to the command shell or terminal.
- Press the [Ctrl+D] key combination twice to send the command sequence to the camera.

- <user name>: admin
- <password>: meinsm
- <IP address>: 10.8.0.118

```
* About to connect() to 10.8.0.118 port 80 (#0)
* Trying 10.8.0.118... connected
* Connected to 10.8.0.118 port 80 (#0)
* Server auth using Basic with user 'admin'
> POST /admin/remotefconfig HTTP/1.1
> Authorization: Basic YWRtaW46bWVpbmNt
> User-Agent: curl/7.18.2 (i486-pc-linux-gnu) libcurl/7.18.2
OpenSSL/0.9.8g zlib/1.2.3.3 libidn/1.8 libssh2/0.18
> Host: 10.8.0.118
> Accept: */*
> Content-Length: 87
> Content-Type: application/x-www-form-urlencoded
>* HTTP 1.0, assume close after body
< HTTP/1.0 200 OK
< Content-Type: text/plain; charset=utf-8
< Cache-Control: no-cache
<#read:helo:
#read:view section ipnotify:
#exec cmd=view section ipnotify
SECTION ipnotify
```

```
ipnotify/ip0/profile=ip0:_profilename=MxCC-Alarm
:preset=mxpeg_alarm:ackn_time=60
:ipnotifyaddress=10.0.0.42%3A8000

:send=on_error:protocol=raw
:boundary=--next-image--:httppath=:httpauth=
:data=msg:ipnotifymessage=Hello World!
:filetype=mxg:rate100=100:antetime=1
:posttime=1:systime=1440:ipnotifyport=0

...

ENDSECTION ipnotify
#read:write params:
#exec cmd=write params
#read:view section ipnotify:
#exec cmd=view section ipnotify
SECTION ipnotify
ipnotify/ip0/profile=ip0:_profilename=MxCC-Alarm
:preset=mxpeg_alarm:ackn_time=60
:ipnotifyaddress= 10.11.12.13%3A6750

:send=on_error:protocol=raw
:boundary=--next-image--:httppath=:httpauth=
:data=msg:ipnotifymessage=Hello World!
:filetype=mxg:rate100=100:antetime=1
:posttime=1:systime=1440:ipnotifyport=0

...

ENDSECTION ipnotify
#read:update:
#exec cmd=update
#updating daemons!
#read:store:
#exec cmd=store
#Storing to flash...
#read:quit:
```



```
OK
#bye
* Closing connection 0
```

Output beginning with a "*", "<" or ">" character is generated by `cURL`. In the output, ">" precedes the commands sent to the camera, while "<" precedes the messages returned by the camera's web server. The remaining lines are returned by the remote configuration API, as described in the [Output of the Remote Configuration API](#) section.

CGI Parameters of the MOBOTIX Camera

To retrieve images of the camera directly from the integrated web server, you can use one of the following HTTP commands:

- <http://<IP address>/record/current.jpg>
Retrieves a camera image according to the current image settings. You cannot specify any additional parameters. This HTTP API supports so-called *HTTP Keep Alive* connections to optimize the retrieval of several images per second. Note that the best image rates are obtained using the `faststream.jpg` API (see [Parameters for faststream.jpg](#)).
- <http://<IP address>/cgi-bin/image.jpg>
Retrieves a camera image using additional image parameters. For example, the following command will display an image from the right camera lens, size 320x240 mm with an image quality of 60%:
`http://<IP address>/cgi-bin/image.jpg?camera=right&size=320x240&quality=60`
The saved configuration is *not* changed.
Appending `?help` to the end of the command will display the corresponding help page:
`http://<IP address>/cgi-bin/image.jpg?help`
See [Parameters for image.jpg](#) for additional information.
- <http://<IP address>/cgi-bin/faststream.jpg> (guest access)
<http://<IP address>/control/faststream.jpg> (user access)
Retrieves the live stream from the camera using additional image parameters. For example, the following command will show the live stream as M-JPEG from the camera in a generated HTML page:
`http://<IP address>/cgi-bin/faststream.jpg?stream=full&html`
Appending `?help` to the end of the command will display the corresponding help page:
`http://<IP address>/cgi-bin/faststream.jpg?help`
For additional information on the parameters for guest and user access, see [Parameters for faststream.jpg](#).

■ [http://<IP address>/control/event.jpg](#)

Provides access the camera's events and allows adding additional parameters. The following request, for example, delivers the last event image of the camera:

```
http://<IP address>/control/event.jpg?sequence=head
```

Appending `?help` to the end of the command will display the corresponding help page:

```
http://<IP address>/control/event.jpg?help
```

See [Parameters for event.jpg](#) for additional information.

If **MxPEG has been activated in the camera**, the frame rate will be reduced for ten seconds if an image is pulled from the camera using one of the [image profiles](#).

Parameters for `image.jpg`

Please note that the contents of this frame will only be displayed if the **API** right in the **Group Access Control Lists** is publicly accessible or the group of your **user name** has this right.

[Parameter Overview of the image.jpg Command, p. 507](#)

Except for the `help` and `current` parameters, you can combine any number of parameters in any order.

Parameters for `faststream.jpg`

Guest Access:	The URL <code>http://<IP address>/cgi-bin/faststream.jpg</code> provides <i>guest access</i> to the live stream. For additional information on how to set the maximum and preset image refresh rate, see the Start Page help page.
User Access:	The URL <code>http://<IP address>/control/faststream.jpg</code> provides <i>user access</i> to the live stream. For additional information on how to set the maximum and preset image refresh rate, see the Start Page help page. This access has been optimized for high image rates and thus delivers a video stream in MxPEG format, which has to be decoded accordingly. Please download the MOBOTIX SDK from www.mobotix.com in the Support > Developer Tools section for detailed instructions.

Please note that the contents of this frame will only be displayed if the **API** right in the **Group Access Control Lists** is publicly accessible or the group of your **user name** has this right.

[Parameter Overview of the faststream.jpg Command, p. 510](#)

Parameters for `event.jpg`

Please note that the contents of this frame will only be displayed if the **API** right in the **Group Access Control Lists** is publicly accessible or the group of your **user name** has this right.

[Parameter Overview of the `event.jpg` Command, p. 512](#)

Parameter Overview of the `image.jpg` Command

Example: `image.jpg?size=1024x768&sharpen=5&quality=90`

Parameter=Default	Values	Explanation
help		Help This overview.
current		Current Live Image Generate image from <code>/record/current.jpg</code> . All other parameters are ignored.
config		Current Configuration Generate image with parameters from current configuration file. Other parameters can overwrite them.
fip=10.x.x.x	<i>Escaped string</i>	Factory IP Will only deliver an image if the camera has this factory IP address.
error=picture	picture empty content current	Error Handling Sets the error handling options in case no image is available: <i>picture</i> : returns the "No frame available!" image <i>empty</i> : returns nothing <i>content</i> : returns only the content type <i>current</i> : returns the <code>current.jpg</code> image
imgprof=	<i>Escaped string</i>	Image Profile Load parameters from this image profile. At first, the current configuration is read and will be overwritten by the settings of the image profile.
preview		Preview Mode Output image in the format given by the parameter <code>size</code> . It may be smaller to keep the aspect ratio.

view=0	-1..256	View Loads the specified view if given. Omitted or set to 0 falls back to the current (or factory default) live view.
Image Parameter		
camera=live	right left both live thermal	Camera Selection Image sensor used for JPEG conversion. <i>Note:</i> A Day&Night camera always shows the appropriate image sensor depending on the current illumination.
display_mode=lenscorr_l11	simple lenscorr_l11 lenscorr_l22 surround panorama pano_dbl pano_focus pip piz	Display Mode
pipposition=bot_right	bot_right bot_left top_right top_left	Position of the inset image Select the image corner in which the inset image is displayed.
double_pip=off	off on	Enlarge inset image Display the inset image with twice the width and height.
size=1024x768	<i>Escaped string</i>	Image Size Enter the desired image size. If you select an aspect ratio other than 4:3, the image will show a centered section of the full sensor.
customsize=800x400	<i>Escaped string</i>	Custom Image Size Enter the desired image size. If you select an aspect ratio other than 4:3, the image will show a centered section of the full sensor. This parameter overwrites the <i>size</i> parameter.
sharpen=4	0..10	Sharpness

quality=60	10..90	JPEG Quality
textdisplay=enable	disable enable datetime	Text Display Enable or disable text display: <i>datetime</i> displays date & time only.
textcolor=0xFFFFFF	<i>Escaped string</i>	Text Color Enter hexadecimal color value: 0xRRGGBB
textbgopacity=0	0..100	Text Background Opacity Opacity of the background color in percent.
textbgcolor=0x000000	<i>Escaped string</i>	Text Background Color Enter hexadecimal color value: 0xRRGGBB
stitchmode=on	off on	Cover Borders Covers the borders of inset or dual images with bars.
displayfontsize=8	8..24	Display Font Size Font size for text display. Supported values are 8, 16 and 24.
date=0	0..7	Insert Date & Time 0 = off 1 = Date, time zone, time 2 = Time 3 = Time, milliseconds 4 = Date 5 = Long date 6 = Date, time & milliseconds 7 = Time zone
print=	<i>Escaped string</i>	Text Display The text follows CGI syntax rules: '%0A' for return, '+' for space and so on.
mirror=no	no vertical horizontal both	Mirror
rotate=0	0..360	Rotation Currently only 0° and 180° available.
noisesuppress=low	off	Noise Suppression

Reference

Remote-Controlling the MOBOTIX Camera

	low high	Select level of noise suppression.
temporal_noise-suppress=off	off luma chroma	Temporal Noise Suppression Method of temporal noise reduction.
showlogo=		Logo Profile Logo profile to display in the image. Repeat this parameter to display several logos.

Parameter Overview of the `faststream.jpg` Command

Example: `faststream.jpg?stream=full&fps=1.0`

Parameter=Default	Values	Explanation
help		Help This overview.
stream=MxPEG	full MxPEG mxg	Stream Type Image data in stream: <i>full</i> : full JPEG images <i>MxPEG</i> : MOBOTIX optimized JPEG <i>mxg</i> : MxPEG Clipfile; not server push
noaudio		No Audio Switch Disable audio data in image stream. Audio is only available for MxPEG streams.
needlength		Need Content-Length Send HTTP <i>content-length</i> for every frame in server push stream. Note: This option is not useful for browsers.
fps=16	<i>Escaped string</i>	Frames per Second Frame rate of streamed images: e.g. '3.0' streaming with 3 frames per second. Set to 0 for maximum frame rate.
iframerefresh=0	0..60	Seconds between new I-frames I-frame interval in seconds. 0: turn off Note: Using this option disables <i>jpheaderrefresh</i> and <i>jpheaderupdate</i> .

jpheaderupdate=0	0..1000	Frames between tables refreshes Table refresh count. 0: off, 1: every frame, 2: every second frame, ...
jpheaderrefresh=10	0..60	Seconds between table refreshes Table refresh time. 0: off, 1: every second, 2: every second second, ...
framecount=0	0..	Frame Counter Amount of images delivered before stream stops (0=infinite).
fip=10.x.x.x	<i>Escaped string</i>	Factory IP Will only deliver an image if the camera has this factory IP address.
error=picture	picture empty content current	Error Handling Sets the error handling options in case no image is available: <i>picture</i> : returns the "No frame available!" image <i>empty</i> : returns nothing <i>content</i> : returns only the content type <i>current</i> : returns the current.jpg image
html		HTML Page With Stream Output HTML demo page including stream.
preview		Preview Mode Output image in the format given by the parameter <code>size</code> . It may be smaller to keep the aspect ratio.
size=	<i>Escaped string</i>	Image Size Enter the desired image size in format <i>[width]x[height]</i> . Only used if the parameter <code>preview</code> is specified.
quality=60	10..90	JPEG Quality Enter the desired JPEG quality. Only used if the parameter <code>preview</code> is specified.
camera=both	right left both	Preview Camera Select the part of a double image that is displayed. Only used if the parameters <code>preview</code> or <code>roi</code> are specified and if the live stream of the camera shows both sensors.
roi		Region of Interest Output a part of the image given by the parameters <code>roisize</code> or <code>camera</code> .
roisize=	<i>Escaped string</i>	Roi Rectangle Enter an Roi rectangle in MCU format (blocks of 16x16 pixels), e.g. 2x3x12x10

		(offsetX, offsetY, width, height). Only used if the parameter <code>roi</code> is specified.

Parameter Overview of the `event.jpg` Command

Example: `event.jpg?sequence=head&offset=-1`

Parameter=Default	Values	Explanation
<code>help</code>		Help This overview.
<code>sequence=head</code>	<i>Escaped string</i>	Sequence Number Accepted values are <i>0..999999</i> : Number of Sequence <i>head</i> : last sequence <i>tail</i> : oldest sequence
<code>offset=0</code>	- <i>999999..999999</i>	Sequence Offset Offset to the sequence number.
<code>eno=-1</code>	-1..99999	Alarm Image Offset Offset to the alarm image number. Accepted values are <i>-1</i> : last alarm image found in sequence <i>0</i> = E00000.jpg <i>1</i> = E00001.jpg <i>2</i> = E00002.jpg ...
<code>alarmimage=</code>	<i>Escaped string</i>	Alarm Image Address Address for an alarm image. This parameter combines <code>sequence</code> and <code>eno</code> separated by a dot.
<code>length=5</code>	1..10000	Alarm List Length Number of alarms in the output <code>alarmlist</code> .
<code>timespan=3600</code>	1..	Alarm List Time Span Time span in seconds from Time Search Starting Time <code>searchbytime_start</code> to the last alarm displayed in the output <code>alarmlist</code> . Can be combined with parameter <code>length</code> .
<code>filter=*</code>	<i>Escaped string</i>	Alarm Filter List

		Optional event filter for output <code>alarmlist</code> and <code>alarmupdate</code> . Example: VM,UC,PE,TT
story=0	-99999..99999	Story Offset View an image or clip file out of the story: -3 = A00001.jpg -2 = A00002.jpg -1 = A00003.jpg 0 = E00000.jpg 1 = P00001.jpg, M00001.jpg or C00001.jpg 2 = P00002.jpg or M00002.jpg 3 = P00003.jpg or M00003.jpg ...
direct=0	-99999..99999	Direct Story Offset Directly load the story image or clip file without retrieving a story size: -1 = A00001.jpg -2 = A00002.jpg -3 = A00003.jpg 0 = E00000.jpg <i>Same procedure as Story Offset on post alarm files.</i>
source=auto	auto intern extern	Image Storage Source Select the image storage: <i>auto</i> : prefer external, but use intern on fail <i>intern</i> : use the internal event buffer <i>extern</i> : use the external storage
volume=	<i>Escaped string</i>	Volume ID Use this option to access alarms and information from volumes in bank-ing mode. Examples: 0: accessing live buffer / last alarm buffer 10.x.x.x (no extension) 1: accessing alarm buffer 10.x.x.x S: accessing suspect buffer 10.x.x.x.S Note: do not combine with option <code>source</code> .
fip=10.x.x.x	<i>Escaped string</i>	Factory IP Will only deliver an image if the camera has this factory IP address.
error=picture	picture empty content current	Error Handling Sets the error handling options in case no image is available: <i>picture</i> : returns the "No frame available!" image

		<i>empty</i> : returns nothing <i>content</i> : returns only the content type <i>current</i> : returns the current.jpg image
output=jpeg	jpeg jpeg_download m1img evtinfo evtinfo_d mxg m1imgtab alarmlist alarmupdate certificate sequencecheck alarmlist_extended	Output Format Output format of event JPEG: <i>jpeg</i> : Save as JPEG. <i>jpeg_download</i> : Opens browser download dialog for saving the JPEG. <i>m1img</i> : Print only the JPEG comment. <i>m1imgtab</i> : Print JPEG comment with variable parser, using format string <i>tableformat</i> (example). <i>evtinfo</i> : Print event information, e.g. recording mode, story count and event number. <i>evtinfo_d</i> : Print normal and detailed event information, e.g. story size, frame number and time stamp. <i>mxg</i> : Entire event story in one clip file. <i>alarmlist</i> : Print a list of alarm images using JSON format (using this JSON Schema). <i>alarmlist_extended</i> : Print an <i>alarmlist</i> with more detailed information. <i>alarmupdate</i> : Print a row of alarm information for each new alarm. <i>certificate</i> : Output the certificate used for signing the event images. <i>sequencecheck</i> : Detect manipulations of the camera time and lost or corrupted sequences.
include_mailbox_changes		Mailbox Information Mailbox start alarms in output format <i>alarmupdate</i> list additional information.
verify		Verify Signature Verify recorded sequences. Only available for output formats event information (output=evtinfo[_d]) and sequencecheck.
preview		Preview Mode Output image in the format given by the parameter <i>size</i> . It may be smaller to keep the aspect ratio.
size=	<i>Escaped string</i>	Image Size Enter the desired image size in format <i>[width]x[height]</i> . Only used if the parameter <i>preview</i> is specified.
quality=60	10..90	JPEG Quality Enter the desired JPEG quality. Only used if the parameter <i>preview</i> is specified.

camera=both	right left both	Preview Camera Select the part of a double image that is displayed. Only used if the parameter <code>preview</code> is specified.
searchbytime_ start=	<i>Escaped string</i>	Time Search Starting Time Request an image via its timestamp [<i>seconds.microseconds</i>] since the Epoch (00:00:00 UTC, January 1, 1970).

Additional Information

This section provides additional information for working with the MOBOTIX camera.

The MxWeb Interface

MxWeb is the new user interface for the web browser. This page allows seeing the live images and also provides access to the recordings. To reduce bandwidth requirements, MxWeb uses *MxPEG* as video format. In addition, MxWeb uses standard technologies that are supported by most of the current web browsers. Browsers need to support these technologies: *HTML5*, *WebGL* and *Web Audio*. It is also advisable to use a browser that supports the `asm.js` JavaScript extension.

The current releases of the following browsers are supported: *Google Chrome*, *Apple Safari*, *Mozilla Firefox* and *Microsoft Edge*.

MxWeb is still in the beta stage. This means that you will not have access to all camera features on this page. The standard website is totally independent and can be used parallel to the new interface.

- To start MxWeb directly, open **http://<IP address>:8080** for unencrypted and **https://<IP address>:8081** for encrypted connections.
- If you want to use the automatic redirect to MxWeb, simply click on this **link**.

To configure MxWeb, open the **Webserver** dialog. Note that you can also use MxWeb as the start page of the camera in the **Language and Start Page** dialog.

MxManagementCenter, MxControlCenter, and MxEasy

If you enable the **MxPEG** parameter in the **JPEG Settings** dialog, the camera creates a combined audio/video stream using MOBOTIX video encoding. MxPEG allows for large-format live video and audio streaming (audio only if supported by the camera model) at extremely low network load (1% at 100 Mbps).

For viewing and storing the stream, you need **MxManagementCenter**, **MxControlCenter**, **MxEasy** or the [MxPEG ActiveX plugin for Internet Explorer](#). While **MxManagementCenter** and **MxControlCenter** can be used for creating complex video surveillance systems, **MxEasy** is better suited for small to medium-size systems (max. 16 cameras). **MxEasy** also puts special emphasis on intuitive and comfortable handling of the sur-

veillance system. Starting with version 1.3, **MxEasy** is also capable of managing and automatically configuring the *MOBOTIX IP Video Door Station*.

MxManagementCenter, **MxControlCenter** and **MxEasy** are available at the [MOBOTIX website](#) free of charge in the **Support > Software Downloads** section. This section also contains the latest version of the [MxPEG ActiveX Plug-in for Internet Explorer](#).

The programs/program components also provide bidirectional voice connections via the network (*Voice over IP* or *VoIP*), provided that adequate bandwidth is available.

For more information on **MxManagementCenter**, **MxControlCenter** and **MxEasy**, please open the **Support > Manuals** section on www.mobotix.com.

The Privacy Mode

Use the **Privacy Mode**, if you would like to deactivate the whole system, i.e. recording and any kind of camera access is rendered impossible until you deactivate this mode. While this lock can be deactivated directly from this computer, you will need the user name and password set in this dialog to deactivate the lock from a different computer. Note that the cameras are also signaling this operating mode by a specific LED blinking pattern.

Activating the "Privacy Mode"

To activate this mode, enter a user name and password, then click on the **Set** button.

Caution

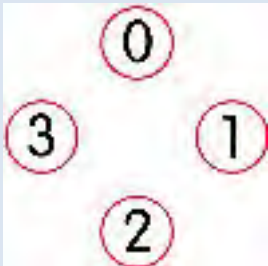
This mode becomes effective immediately after you click on the **Set** button. If you would like to access the camera again, you need to use the access data you defined when activating the Privacy Mode.

Effects Of The "Privacy Mode"

- The camera only accepts the access data (user name and password) you defined in the Privacy Mode dialog. Without these access data, you cannot deactivate the Privacy Mode any more.
- The camera's entire image generation process is deactivated.
- Recording is deactivated completely.
- The camera's audio channel is switched off.
- The camera shows a distinctive blinking pattern so you can see that the cameras are in this mode (see below).

Signaling by the Camera LEDs

The different MOBOTIX cameras are displaying the following blinking patterns once they have been switched to Privacy Mode:

Camera Type	LEDs	Blinking Pattern
Cameras with four LEDs		LED 0 flashes red every 3 seconds LED 3 flashes red every 3 seconds, in sync with LED 0
Cameras with two LEDs		LED 0 flashes green every 3 seconds LED 1 flashes green every 3 seconds, in sync with LED 0

Deactivating the Privacy Mode

Proceed as follows to deactivate the Privacy Mode:

- Start a browser, enter the IP address of the camera and enter the access data you defined before.
- Open the **Privacy Mode** dialog (<http://<camera IP address>/admin/privacymode>).
- Click on the **Set** button to deactivate the **Privacy Mode**.

Description of Parameters

Parameter	Description
User Name	The user name for accessing the camera if the Privacy Mode is active.
Password	The password for accessing the camera if the Privacy Mode is active.

Graphically Entering Image Areas

Some of the camera features, such as **Video Motion Detection (VM)**, **Obscure Image Area (OA)**, **Exposure Windows**, **Custom Size** and **Free Zoom / Crop** options use windows within the image sensors that you can define and modify for the corresponding image sensor or the visible image section using graphical means.

Defining New Windows

1. Open the camera's **Live image**.
2. Hold down the *[Shift]* key and left-click inside the displayed image with your mouse. This spot is highlighted in yellow.
3. Release the *[Shift]* key and click on a second spot of the image area. The selected image area is now displayed as a yellow frame in the live image.
Hold down the *[Ctrl]* key during this step to define a rectangle that has the same proportions as the current image format (default is 4:3).
4. Then click on the button in the dialog to add the rectangle coordinates to the corresponding definition text field.

- The yellow frame in the live image disappears after the coordinates have been entered in a definition box by clicking on one of the buttons or the zoom feature, or after 60 seconds at the latest. After first the [Shift]-click, the camera will wait 10 seconds for you to follow up with a second click.
- If images or video sequences are stored while the yellow marker or the yellow frame are displayed (i.e. due to events or by a time task), the yellow elements will also be stored.
- If you select a rectangle for **Custom Size** while displaying two images side-by-side (**Camera Selection** Quick Control: *Both*), the same area will be used on both image sensors, i.e. the visible image will be twice as wide as the selection.
- The camera always clips the rectangle at the border between the images when the camera shows *both* image sensors. Selecting one area from both sensors is not possible.

See also [The Live Screen of the MOBOTIX Camera](#)

Definition of Counting Corridors in MxAnalytics

Note that the [MxAnalytics](#) functions include the definition of **counting corridors**. Proceed as follows to draw a counting corridor in the live image instead of a rectangle.

1. Open the camera's **Live image**.
2. Hold down the *[Ctrl+Shift]* keys and left-click inside the displayed image with your mouse. This spot is highlighted in yellow.
3. In order to define the direction and length of the counting corridor, hold down the *[Shift]* key and click again into the live image.
4. Click again to set the width of the counting corridor.
5. Then click on the button in the dialog to add the counting corridor coordinates to the corresponding definition field.

Using Variables

Variables can be used in various dialogs and are replaced at runtime by the actual values:

- File or directory name in the **FTP Profiles** dialog.
 - Subject or body text in the **Email Profiles** dialog
 - Network messages in the **Messaging** dialog
 - Comments in the **Text & Display Settings** dialog
-
- Apart from the variables listed above, you can also use [Placeholders for Dynamic Image Text](#).

- When retrieving data from one of the [supported weather stations](#) connected to the serial interface, [weather variables](#) will allow displaying the weather data in the image.
- Note that variables are *not* case-sensitive.
- Information on formatting variables is contained in the [Formatting Options](#) section in this help page.
- Optional parts of variables are written in **angular** brackets and do not have to be used.
- Note that a maximum of 25 variables can be used at the same time.

Variable Description

The variable's syntax is as follows:

```
$ (GROUP.VARIABLE[, formatting options [, ...]])
```

Variable	Description	Note
LEV / LASTEVENT: Last Event		
\$ (LEV.DATE)	Date and time of the last event	YYYY-MM-DD hh:mm:ss
\$ (LEV.TIME)	Time of the last event	hh:mm:ss
\$ (LEV.SECONDS)	Seconds since the last event	<i>Seconds</i>
\$ (LEV.RELATIV)	Time since the last event	<i>hh:mm:ss</i>
EVT / EVENT: Event		
\$ (EVT.AST) , \$ (EVENT.AST)	Displays all activated Action Groups .	See also Abbreviations Used in the MOBOTIX Camera
\$ (EVT.EST.SELECTED) , \$ (EVENT.EST.SELECTED)	Displays all active events .	See also Abbreviations Used in the MOBOTIX Camera

Variable	Description	Note
\$ (EVT.EST.ACTIVATED) , \$ (EVENT.EST.ACTIVATED)	Displays the event that triggered an alarm.	See also Abbreviations Used in the MOBOTIX Camera
\$ (EVT.SYA) , \$ (EVENT.ANTE)	Displays the number of the pre-alarm images currently set.	<i>Pre-Alarm Images</i>
\$ (EVT.SYP) , \$ (EVENT.POST)	Displays the number of the post-alarm images currently set.	<i>Post-Alarm Images</i>
\$ (EVT.SIA) , \$ (EVENT.ANTEINTERVAL)	Displays the interval between the pre-alarm images .	<i>Milliseconds</i>
\$ (EVT.SIP) , \$ (EVENT.POSTINTERVAL)	Displays the interval between the post-alarm images .	<i>Milliseconds</i>
\$ (EVT.VATIMESTAMP)	Shows the time stamp of the last time a visual alert (VA) was acknowledged.	YYYY-MM-DD hh:mm:ss
\$ (EVT.VAD)	Shows the date of the last time a visual alert (VA) was acknowledged.	YYYY-MM-DD
\$ (EVT.VAT)	Shows the time of the last time a visual alert (VA) was acknowledged.	hh:mm:ss
\$ (EVT.VAS)	Shows the status of the visual alert (VA) in this image.	HIDE (hidden) or DRAW (shown)
FPR / FINGERPRINT: Fingerprint Information		
\$ (FPR.VER) , \$ (FINGERPRINT.VERSION)	Version number of the JPEG comment	
\$ (FPR.PRD) , \$ (FINGERPRINT.PRODUCER)	Manufacturer name (MOBOTIX)	

Variable	Description	Note
<code>\$(FPR.FRM)</code> , <code>\$(FINGERPRINT.FRAME)</code>	Unique image number of every digitized image since the camera has been rebooted.	
<code>\$(FPR.ENO)</code> , <code>\$(FINGERPRINT.EVENT)</code>	Currently valid event number; for an event images, the number of the event.	This variable is only available with active recording and outside of image profiles.
<code>\$(FPR.IMT)</code> , <code>\$(FPR.IMAGETYPE)</code>	Image type	
<code>\$(FPR.TIMESTAMP)</code>	Date and time as <code>\$(TMS)</code>	YYYY-MM-DD hh:mm:ss.msec
<code>\$(FPR.DAT)</code>	Date as <code>\$(TMS.DAT)</code>	YYYY-MM-DD
<code>\$(FPR.TIM)</code>	Time as <code>\$(TMS.TIME)</code>	hh:mm:ss.msec
<code>\$(FPR.TIT)</code>	Seconds and milliseconds as <code>\$(TMS.TIMET)</code>	ss.msec
<code>\$(FPR.TZN)</code>	Abbreviation of the current time zone as in <code>\$(TMS.ZONE)</code>	ZZZ
IMG / IMAGE: Image Variables		
<code>\$(IMG.CTY)</code>	Shows information on the camera model. If this variable shows MONO , all parameters will only display the value for the right lens.	DUAL, MONO
<code>\$(IMG.ICC)</code>	Video codec used for converting this image to JPEG	MxPEG, JPEG
<code>\$(IMG.FRJ)</code>	Frame rate of JPEG/MxPEG conversion	Hz
<code>\$(IMG.FRB)</code>	Digitizer rate of the camera sensor (Bayer frame rate)	Hz
<code>\$(IMG.XTO)</code> , <code>\$(IMG.XRES)</code>	Image size of the X dimension in pixels	<i>X pixels</i>
<code>\$(IMG.YTO)</code> , <code>\$(IMG.YRES)</code>	Image size of the Y	<i>Y pixels</i>

Variable	Description	Note
	dimension in pixels	
\$ (IMG.QLT) , \$ (IMG.QUALITY)	Quality level of JPEG/MxPEG conversion in percent	<i>Percent</i>
\$ (IMG.CAM)	Image type or selected image sensors when this image was recorded	RIGHT, LEFT, BOTH, PIP
\$ (IMG.ZOM)	Selected Zoom level (x1000) of this image. 1000=1x Zoom	1000 . . 8000
\$ (IMG.PAX)	Center of the zoomed image section in X direction. -1000= left , 0= center , 1000= right	-1000 . . 0 . . 1000
\$ (IMG.PAY)	Center of the zoomed image section in Y direction. -1000= bottom , 0= center , 1000= top	-1000 . . 0 . . 1000
\$ (IMG.MIR)	Mirroring of the image	NONE, VERTICAL, HORIZONTAL, BOTH
\$ (IMG.ROT)	Rotation of the image in degrees	0 . . 359
\$ (IMG.SRP [.RIGHT LEFT])	Sharpness setting of the right or left image	-2 . . 0 . . 10
\$ (IMG.ACT [.RIGHT LEFT])	Setting of the auto contrast	OFF, AUTO
\$ (IMG.BRT [.RIGHT LEFT])	Brightness setting for both lenses	-10 . . 0 . . 10
\$ (IMG.BLT [.RIGHT LEFT])	Backlight correction for both lenses	-10 . . 0 . . 10
\$ (IMG.CSA [.RIGHT LEFT])	Color saturation. -10 = B/W	-10 . . 0 . . 10
\$ (IMG.BBL [.RIGHT LEFT])	Blue Balance	-10 . . 0 . . 10
\$ (IMG.RBL [.RIGHT LEFT])	Red Balance	-10 . . 0 . . 10
\$ (IMG.NSM [.RIGHT LEFT])	Setting of the noise	OFF, LOW, HIGH

Variable	Description	Note
	filter	
\$ (IMG.EXB [.RIGHT LEFT])	Black pixel correction	ON, OFF
\$ (IMG.EXW [.RIGHT LEFT])	Weighting of the measurement windows for exposure . TOTAL: Ignore exposure windows, use full image to determine exposure.	0..100, TOTAL
\$ (IMG.WBW [.RIGHT LEFT])	White balance weighting. TOTAL: Ignore exposure windows, use full image to determine white balance.	0..100, TOTAL
\$ (IMG.AVB [.RIGHT BOTH LEFT])	Mean brightness of the image in percent. BOTH is the mean value of both the right and the left lens.	0..100
\$ (IMG.AMB [.RIGHT BOTH LEFT])	Minimum mean image brightness. This value is important for night improvement.	0..100
\$ (IMG.GNG [.RIGHT LEFT])	Green amplification of the camera sensor. The value range depends on the sensor.	128..1024..16384
\$ (IMG.GNR [.RIGHT LEFT])	Red amplification of the camera sensor. The value range depends on the sensor.	128..1024..16384
\$ (IMG.GNB [.RIGHT LEFT])	Blue amplification of the camera sensor. The value range depends on the sensor.	128..1024..16384
\$ (IMG.CNG [.RIGHT LEFT])	Green color correction value. 1024=1. 0=No cor-	128..1024..16384

Variable	Description	Note
	rection required.	
\$ (IMG.CNR [.RIGHT LEFT])	Red color correction value.	128 .. 1024 .. 16384
\$ (IMG.CNB [.RIGHT LEFT])	Blue color correction value.	128 .. 1024 .. 16384
\$ (IMG.LFQ)	Power supply frequency in Hz	50, 60
\$ (IMG.EXI [.RIGHT LEFT])	Minimum exposure time in micro-seconds	<i>Microseconds</i>
\$ (IMG.EXI [.RIGHT LEFT] .SECOND)	Minimum exposure time in seconds Example: 1 / 90	<i>seconds 1/x</i>
\$ (IMG.EXA [.RIGHT LEFT])	Maximum exposure time in micro-seconds	<i>Microseconds</i>
\$ (IMG.EXA [.RIGHT LEFT] .SECOND)	Maximum exposure time in seconds Example: 1 / 90	<i>seconds 1/x</i>
\$ (IMG.EXP [.RIGHT LEFT])	Current exposure time in microseconds	<i>Microseconds</i>
\$ (IMG.TRM. (MIN MAX) [.RIGHT LEFT])	Only with thermal image sensor! Minimum and maximum of the measured thermal range	0..1023
\$ (IMG.TRP. (MIN MAX) [.RIGHT LEFT])	Only with thermal image sensor! Minimum and maximum of the thermal range as determined by the color table	0..1023
\$ (IMG.EXP [.RIGHT LEFT] .SECOND)	Current exposure time in seconds. Example: 1/90	<i>seconds 1/x</i>
TMS / TIMESTAMP: Timestamp Information		
\$ (TMS)	Timestamp & milliseconds	YYYY-MM-DD hh:mm:ss.msec
\$ (TMS .DATE)	Date according to ISO 8601	YYYY-MM-DD

Variable	Description	Note
\$ (TMS . TIME)	24h date & mil- liseconds	hh:mm:ss.msec
\$ (TMS . TIMET)	Number of seconds since 1970-01-01 00:00:00 UTC & mil- liseconds	Seconds.msec
\$ (TMS . YEAR)	Year, four digits	YYYY
\$ (TMS . SYEAR)	Year, two digits	YY
\$ (TMS . MON)	Month from 01 to 12	MM
\$ (TMS . MON . NAME)	Abbreviation of the month Jan, Feb, etc.	MMM
\$ (TMS . MON . FULL)	Full name of the month. January, February, etc.	Month
\$ (TMS . DAY)	Day from 01 to 31	TT
\$ (TMS . YDAY)	Day of the year (001 ... 366)	DDD
\$ (TMS . WEEK)	Number of the week according to <i>ISO 8601:1988</i> from 01 to 53. The first week has at least four days in the current year. The week starts on Monday.	WW
\$ (TMS . WDAY)	Day of the week from 1 to 7. 1=Monday, 2=Tue- esday, etc.	W
\$ (TMS . WDAY . NAME)	Abbreviation of the weekday. Mon, Tue, etc.	WWW
\$ (TMS . WDAY . FULL)	Full name of the weekday. Monday, Tuesday, etc.	Day
\$ (TMS . HOUR)	Two-digit number of the current hour (24h representation) from 00 to 23	hh
\$ (TMS . HOUR12)	Two-digit number of	hh

Variable	Description	Note
	the current hour (12h representation) from 01 to 12	
\$ (TMS . AMPM)	AM and PM abbreviations 12 o'clock noon is 'PM' and 12 o'clock midnight is 'AM'	AM or PM
\$ (TMS . MIN)	Two-digit minutes	mm
\$ (TMS . SEC)	Two-digit seconds	ss
\$ (TMS . MSEC)	Three-digit milliseconds	msec
\$ (TMS . ZONE)	Abbreviation of the current time zone	ZZZ
\$ (TMS . RFC822)	Date and time as deviation from GMT (UTC) according to RFC822	Day, DD MMM YYYY hh:mm:ss +zzzz
ID: Identification Information		
\$ (ID . MAC)	MAC address of the network interface	00:03:C5:xx:yy:zz, where 00:03:C5:MOBOTIX identifier, xx:yy:zz: Factory IP address in hexadecimal notation
\$ (ID . FIP)	Factory default IP address of the camera	10.x.x.x
\$ (ID . NAM) , \$ (ID . HOSTNAME)	Host name of the camera	<host name>
\$ (ID . ET0) , \$ (ID . ETHERNET)	Current IP address of the camera	For example <IP address>
\$ (ID . SWV)	Software version of the camera	E.g. 7.0.0.x
\$ (ID . UPT) , \$ (ID . UPTIME)	Operating time of the camera since the last reboot in seconds	ss
\$ (ID . TSI)	IP addresses of the time servers separated by space characters.	e.g. 10.1.1.1 10.1.1.2

Variable	Description	Note
\$ (ID.TSP)	Time Server Protocol NONE: Automatic Adjustment is not activated.	NTP, RFC868, NONE
\$ (ID.TST)	Time stamp of the last time server check (this is not the time of the last contact to the server): A check is run every 30 minutes with NTP, every 6 hours with RFC868.	YYYY-MM-DD hh:mm:ss
\$ (ID.TSO)	Time server offset in milliseconds (NTP only)	e.g. 0.073
\$ (ID.PTS)	If the camera time is set to a point in the future, this counter is increased by the time difference in seconds. It serves the detection of camera time changes to prevent manipulation of recordings.	0..4294967295
\$ (ID.NTS)	Like \$ (ID.PTS) , but counting changes to the past.	0..4294967295
\$ (ID.CTX[.ALL . <n>])	Returns text lines from IP Receive and the serial interface. .ALL returns all available lines, . <n> up to <i>n</i> lines (maximum of 64 lines possible). Corresponds to \$ (ID.CTX.1) if called without parameters.	Several strings
\$ (ID.CTX.LIP[.DAT .TIM .SRC .MSG])	Returns the last text line from IP Receive, if available. .DAT limits the output to a certain date, .TIM to a certain time,	YYYY-MM-DD hh:mm:ss IP:port string

Variable	Description	Note
	.SRC to an IP address and port of the sender and .MSG to the message itself. Corresponds to \$ (ID.CTX) and returns all lines if called without parameters.	
\$ (ID.CTX.LRS [.DAT .TIM .SRC .MSG])	Returns the last text line from the serial interface, if available. .DAT limits the output to a certain date, .TIM to a certain time and .MSG to the message itself. Corresponds to \$ (ID.CTX) and returns all lines if called without parameters.	YYYY-MM-DD hh:mm:ss "RS232" <i>string</i>
SEN / SENSOR: Sensor Information		
\$ (SEN.INA) to \$ (SEN.INP)	Status of the signal inputs: If an ExtIO is attached, these variables show their statuses. Otherwise, the variables show the status of the inputs of the MX-232-IO-Box (INA to IND: 7.1 to 7.4, INE to INH: PIR to Bpc, INI to INP: ERT mode of the inputs, also in the order of 7.1 to Bpc). Only if no MX-232-IO-Box is not present, the variables will show the statuses of the on-board inputs.	0, 1
\$ (SEN.BTR)	State of the right camera key	0, 1
\$ (SEN.BTL)	State of the left camera key	0, 1

Variable	Description	Note
\$ (SEN . PIR)	PIR level in percent	0..100
\$ (SEN . MIC)	Microphone level in percent This value will only be displayed if the Microphone event or the level meter has been activated.	0..100
\$ (SEN . ILR)	Illumination level of the right lens, where 0: dark, 1000: direct sun at the equator at noon	0..1000
\$ (SEN . ILL)	Illumination level of the left lens, where 0: dark, 1000: direct sun at the equator at noon	0..1000
\$ (SEN . LXR)	Lux value of the right lens	0..100000
\$ (SEN . LXL)	Lux value of the left lens	0..100000
\$ (SEN . LXE)	Lux value of the sensor in the MX-GPS-Box	0..100000
\$ (SEN . LAR)	Lux value of the ambient light sensor of the right lens	0..100000
\$ (SEN . LAL)	Lux value of the ambient light sensor of the left lens	0..100000
\$ (SEN . VM1)	List of all triggered motion windows	(Comma-separated list with window numbers)
\$ (SEN . TIN . CELSIUS) , \$ (SEN . TIN . FAHRENHEIT)	Internal camera temperature in degrees Celsius or degrees Fahrenheit	°C °F
\$ (SEN . TOU . CELSIUS) , \$ (SEN . TOU . FAHRENHEIT)	Only cameras with ambient temperature sensor! Ambient camera temperature in degrees Celsius or degrees Fahrenheit	°C °F

Variable	Description	Note
	Fahrenheit.	
\$ (SEN.TEX.CELSIUS) , \$ (SEN.TEX.FAHRENHEIT)	Only with ExtIO! Temperature of the ExtIO in degrees Celsius or degrees Fahrenheit	°C °F
\$ (SEN.TGP.CELSIUS) , \$ (SEN.TGP.FAHRENHEIT)	Only with MX-GPS-Box! Temperature of the MX-GPS-Box in degrees Celsius or degrees Fahrenheit	°C °F
\$ (SEN.TSR.CELSIUS) , \$ (SEN.TSR.FAHRENHEIT)	Only with thermal image sensor! Temperature of the sensor center in degrees Celsius or degrees Fahrenheit (right sensor)	°C °F
\$ (SEN.TSL.CELSIUS) , \$ (SEN.TSL.FAHRENHEIT)	Only with thermal image sensor! Temperature of the sensor center in degrees Celsius or degrees Fahrenheit (left sensor)	°C °F
\$ (SEN.TTR.CELSIUS) , \$ (SEN.TTR.FAHRENHEIT)	Only with image sensor for thermal radiometry! A list of measured temperatures of all configured radiometry events. The displayed values are determined for every event according to the following method: ■ Comparison operator Greater than and Trigger Mode One Pixel: Shows the highest temperature of the measurement area in degrees Celsius or degrees Fahrenheit.	°C °F

Variable	Description	Note
	■ Comparison operator Less than and Trigger Mode One Pixel: Shows the lowest temperature of the measurement area in degrees Celsius or degrees Fahrenheit. ■ Comparison operator Greater than and Trigger Mode Percent: Shows the highest temperature of the coldest pixels within the minimum range measured in the TR measurement window in degrees Celsius or Fahrenheit. ■ Comparison operator Less than and Trigger Mode Percent: Shows the lowest temperature of the hottest pixels within the minimum range measured in the TR measurement window in degrees Celsius or Fahrenheit. In this context, the minimum range specifies the number of pixels in which the temperature values exceeds or drops below the trigger value in order to trigger an event.	
\$ (SEN . TCO)	Creates a list of coordinates that contains the temperatures of all configured radiometry events.	Note ■ Only available for cameras of the Mx6 range! ■ Only with image sensor for thermal radiometry!
\$ (SEN . GST)	Only with MX-GPS-Box! Shows the number of satellites used to obtain the fix and	

Variable	Description	Note
	the total number of reachable satellites.	
\$ (SEN.GPS [. (DEG MIN SEC)])	Only with MX-GPS-Box! Shows the position in degrees longitude and degrees latitude. In addition, the box also shows the precision of this value in meters. Note that the availability of this value depends on the reception status of the MX-GPS-Box. By default, longitude and latitude are shown as a decimal fraction (this corresponds to using \$ (SEN.GPS.DEG)). When using \$ (SEN.GPS.MIN) , the result includes degrees and arc minutes, using \$ (SEN.GPS.SEC) will also show the arc seconds.	° & m
\$ (SEN.GLO [. (DEG MIN SEC)])	Only with MX-GPS-Box! Shows the current longitude. Note that the availability of this value depends on the reception status of the MX-GPS-Box. By default, the longitude is shown as a decimal fraction (this corresponds to using \$ (SEN.GLO.DEG)). When using \$ (SEN.GLO.MIN) , the result includes degrees and arc minutes, using \$ (SEN.GLO.SEC) will also show the	°

Variable	Description	Note
	arc seconds.	
<code>\$(SEN.GLA[.(DEG MIN SEC)])</code>	Only with MX-GPS-Box! Shows the current latitude. Note that the availability of this value depends on the reception status of the MX-GPS-Box. By default, the latitude is shown as a decimal fraction (this corresponds to using <code>\$(SEN.GLA.DEG)</code>). When using <code>\$(SEN.GLA.MIN)</code>, the result includes degrees and arc minutes, using <code>\$(SEN.GLA.SEC)</code> will also show the arc seconds.	°
<code>\$(SEN.GAL)</code>	Only with MX-GPS-Box! Shows the elevation above Mean Sea Level and the precision of this value. Note that the availability of this value depends on the reception status of the MX-GPS-Box. Note that <code>\$(SEN.GPS)</code> may already deliver a position, but the elevation cannot be determined yet.	m
<code>\$(SEN.GVE[.(MPS KMH MPH KNOT)])</code>	Only with MX-GPS-Box! Shows the current speed and the precision of this value. Note that the availability of this value depends on the reception status of the MX-GPS-Box. Note that <code>\$(SEN.GPS)</code> may	mps, kph, mph & kn

Variable	Description	Note
	already deliver a position, but the speed cannot be determined yet. By default, the speed is shown in meters per second (this corresponds to using <code>\$(SEN.GVE.MPS)</code>). Use <code>\$(SEN.GVE.KMH)</code> to get kilometers per hour, <code>\$(SEN.GVE.MPH)</code> to get miles per hour and <code>\$(SEN.GVE.KNOT)</code> to get the speed in knots.	
<code>\$(SEN.GDI)</code>	Only with MX-GPS-Box! Shows the direction of movement and the precision of this value. Note that the availability of this value depends on the reception status of the MX-GPS-Box. Note that <code>\$(SEN.GPS)</code> may already deliver a position, but the direction of movement cannot be determined, although the box is measuring significant movement.	°
TEXT: Text Variables		
<code>\$(TEXT.FTPDIR)</code>	Default path for FTP image storage	<hostname>/YYYY/MM/DD/hh/
<code>\$(TEXT.FTPFILE)</code>	Default filename for FTP image storage (without file name extension)	mYYMMDDhhmmssmsc
<code>\$(TEXT.EVENTFILE)</code>	File name (without file name extension) that contains a	fYYMMDDhhssmsc[_Eeeeeee]

Variable	Description	Note
	timestamp and where event images are identified by a E+<event number> suffix.	
STO / STORAGE: Storage		
<code>\$(STORAGE.BUFFERFILL.CURRENT)</code> , <code>\$(STORAGE.BUFFERFILL.AVERAGE)</code> , <code>\$(STORAGE.BUFFERFILL.MAXIMUM)</code>	Buffer load indicator in percent	0..100
<code>\$(STORAGE.TRANSFERDELAY.CURRENT)</code> , <code>\$(STORAGE.TRANSFERDELAY.AVERAGE)</code> , <code>\$(STORAGE.TRANSFERDELAY.MAXIMUM)</code>	Transfer delay when storing in seconds	Seconds
Special Variables		
<code>\$("any text" [, Formatting option])</code>	Use double quotes to write any text. This text can then be formatted using the Formatting Options . In order to output the "\$" character itself, make sure that you enter "\$\$".	If <i>any text</i> is entered as the second parameter, this text is seen as the result of the variable.

Formatting Options

The formatting options allow formatting the **Text Display** of the MOBOTIX camera's live image.

- `$(fpr.eno, fill=0, len=6, align=right)`: Sequence number 6 digits and leading zeros.
- `$("sampletext", len=80, fill=-, align=center)`: One full row of minus signs ("-") with the center-aligned word "sampletext".

In order to output the "\$" character itself, make sure that you enter "\$\$".

Syntax errors are displayed behind the formatting instructions and are enclosed in leading/trailing "#" signs:

```
#"sampletext",Test,len=80,fill=-,align=center:format parameter unknown#
```

Formatting Commands

The formatting commands take a value and are separated by commas (",") one after another.

FORMATTINGOPTION1=VALUE, FORMATTINGOPTION2=VALUE

Option	Description	Note
LEN, LENGTH	This parameter sets the width of the text output. The	0..512

Option	Description	Note										
	remaining space is filled using the fill character. "0" is variable width. If the text is larger than defined in <code>LENGTH</code>, the output width is enlarged automatically, if the Formatting Switch <code>TRUNCATE</code> has not been set. Default value: 0 Reasonable maximum values and image sizes: <table><tr><th>Image Size</th><th>Maximum Value</th></tr><tr><td>PDA: 160x120</td><td>20</td></tr><tr><td>CIF: 320x240</td><td>40</td></tr><tr><td>VGA: 640x480</td><td>80</td></tr><tr><td>MEGA: 1280x960</td><td>160</td></tr></table> If higher than the maximum values in this table are used, the characters are wrapped to the next line.	Image Size	Maximum Value	PDA: 160x120	20	CIF: 320x240	40	VGA: 640x480	80	MEGA: 1280x960	160	
Image Size	Maximum Value											
PDA: 160x120	20											
CIF: 320x240	40											
VGA: 640x480	80											
MEGA: 1280x960	160											
FIL, FILL	Sets the fill character to be used to format the output. This command takes one character. Superfluous characters will be ignored. Default value: [<code>Space</code>]	<i>Any character</i>										
ALI, ALIGN	This parameter sets the alignment of the text output within the specified length. Default value: <code>LEFT</code>	RIGHT, CENTER, LEFT										

Formatting Switches

The formatting switches do not take a value and are separated by commas (",") one after another.

Switch	Description	Note
DEF, DEFAULT	Uses the default settings for this variable	
GLO, GLOBAL	Sets the values of this variable as global default for all following variables. Note Combining <code>DEFAULT</code> and <code>GLOBAL</code> will reset the values to the camera's default settings.	
TRU, TRUNCATE	Cuts off any text longer than specified by <code>LENGTH</code> .	
B64, BASE64	Switches text output to Base64 encoding (this is required by some email servers, for example)	Use this switch to supply user information, for example: \$("admin:meinsm", BASE64).

Placeholders for Dynamic Image Texts

The **Text & Display Settings** dialog allows using placeholders in the **Comment** textbox to dynamically display certain camera information in the image.

- Apart from the placeholders listed above, you can also use [variables](#). When retrieving data from one of the [supported weather stations](#) that is connected to the serial interface, [weather variables](#) will allow displaying the weather data in the image.
- Make sure placeholders and variables are typed correctly.
- Note that placeholders are case-sensitive, but [variables](#) are *not*.

Description of Placeholders

Placeholders

Image information

Placeholders

^F#

Description

Image number (# = number of digits to display: 1..9)

Note

every image

Placeholders

^f#

Description

Image counter (as for **^F#**, but with leading zeros (# = number of digits: 1..9)

Note

every image

Placeholders

^Er

Description

Exposure time for the right lens in seconds.

Note

every image

Placeholders

^El

Description

Exposure time for the left lens in seconds.

Note

Reference

Additional Information

every image

Placeholders

^ER

Description

Exposure time for the right lens in milliseconds.

Note

every image

Placeholders

^EL

Description

Exposure time for the left lens in milliseconds.

Note

every image

Placeholders

^Ir

Description

Illumination value (-20..100 dB) of the right lens at F-stop 2.0

Note

every image

Placeholders

^Il

Description

Illumination value (-20..100 dB) of the left lens at F-stop 2.0

Note

every image

Placeholders

^Ib

Description

Average illumination value (-20 .. 100 dB) of both lenses at F-stop 2.0

Note

every image

Placeholders

^IR

Description

Illumination value (0..100000 lux) of the right lens at F-stop 2.0

Note

every image

Placeholders

^IL

Description

Illumination value (*0..100000 lux*) of the left lens at F-stop 2.0

Note

every image

Placeholders

^IB

Description

Average illumination value (*0.. 100000 lux*) of both lenses at F-stop 2.0

Note

every image

Placeholders

^J#

Description

JPEG image size in kB (# = number of digits to display: *1.. 9* of the *previous* image)

This placeholder will only return values if the following conditions are true:

- The camera's **arming** has been *activated* in the **General Event Settings** dialog.
- The number of **Pre-Alarm Images** has been set to *1* or higher in the **Recording** dialog.

Note

every image

Placeholders

^j#

Description

JPEG image size in bytes (# = number of digits to display: *1.. 9* of the *previous* image)

This placeholder will only return values if the following conditions are true:

- The camera's **arming** has been *activated* in the **General Event Settings** dialog.
- The number of **Pre-Alarm Images** has been set to *1* or higher in the **Recording** dialog.

Note

every image

Reference

Additional Information

Placeholders

^R#

Description

Average data rate in kbps (# = number of digits to display: 1..9)

Note

every image

Placeholders

^r#

Description

Average data rate in kB (# = number of digits to display: 1..9)

Note

every image

Placeholders

^h#

Description

Various image information; # can have the following values:

- **j**: JPEG frame rate
- **m**: Converted MxPEG tiles in percent
- **q**: JPEG quality in percent

Note

every image

Placeholders

Event Information

Placeholders

^Lt

Description

Time of the last event

Note

(hh:mm:ss)

Placeholders

^Ld

Description

Date and time of the last event

Note

(YYYY-MM-DD hh:mm:ss)

Placeholders

^Ls

Description

Time since last event in seconds

Note

(+s)

Placeholders

^Lr

Description

Time since last event in hours, minutes and seconds

Note

(+hh:mm:ss)

Placeholders

Date information

Placeholders

^D#

Description

Date & time (top right in the image); # can have the following values:

- **0:** Date Time zone (short) Time
- **1:** Time
- **2:** Time, milliseconds
- **3:** Date
- **4:** Preferred date format
- **5:** Date Time milliseconds
- **6:** Time Zone

This placeholder will only display values if **Date and Time** in the **Setup Menu > Text & Display Settings** dialog has been set to *Off*. The camera will **always** display the desired values in the top right corner of the image (instead of the date and time information displayed by default). The position of the ^D placeholder does not have any influence on the position of the displayed text.

If you would like to display the date and time information at a different position, you should use the ^d placeholder (see below).

Note

Placeholders

^d#

Description

Date information just like ^D#, but displayed inline at the current position in the text.

Note

Placeholders

Text information

Placeholders

^#xx

Description

Use this placeholder to format the **text in the image** in different colors.
In order to format the text display in different colors, the following color codes are available:

Color
Hexadecimal notation
^#00

Color
Hexadecimal notation
^#01

Color
Hexadecimal notation
^#02

Color
Hexadecimal notation
^#03

Color
Hexadecimal notation
^#04

Color
Hexadecimal notation
^#05

Color
Hexadecimal notation
^#06

Color
Hexadecimal notation
^#07

Color
Hexadecimal notation
^#08

Color

Hexadecimal notation

^#09

Color

Hexadecimal notation

^#0A

Color

Hexadecimal notation

^#0B

Color

Hexadecimal notation

^#0C

Color

Hexadecimal notation

^#0D

Color

Hexadecimal notation

^#0E

Color

Hexadecimal notation

^#0F

Example 1. Colored Text Display

^#0Awww.^#09MOBOTIX.^#0CCOM

results in this colored text display:

www.mobotix.com

Note

Placeholders

^s#;

Description

Use this placeholder to display data of the serial interface (RS232) or a network message in the image. The text color is *black*, the background color is *white*.

The maximum number of characters per line is limited to 80 characters.

The # character represents the number of lines that are to be displayed. Replace # by the desired number of lines.

Values: 1..64

This command takes a semicolon (";") at the end.

Example 2. Show data from the serial interface or a network message (black letters on white background)

<code>^s3;</code>	Displays three lines in the image using black text color and white background.
<code>^s16;</code>	Displays sixteen lines in the image using black text color and white background.

Note

Placeholders

`^S#;`

Description

This placeholder also allows displaying data of the serial interface (RS232) or a network message in the image. In this case, the text color is *white* while the background color is *standard*.

The maximum number of characters per line is limited to 80 characters.

The # character represents the number of lines that are to be displayed. Replace # by the desired number of lines.

Values: 1..64

This command takes a semicolon (";") at the end.

Example 3. Show data from the serial interface or a network message (white letters on standard background)

<code>^S3;</code>	Displays three lines in the image using white text color and standard background.
<code>^S16;</code>	Displays sixteen lines in the image using white text color and standard background.

Note

Placeholders

Identification Information

Placeholders

`~E`

Description

The current IP address of the camera's Ethernet interface

Note

Placeholders

~H

Description

The computer name of the camera as defined in the **Ethernet Interface** dialog or assigned via DHCP.

Note

Placeholders

~N

Description

The camera's factory default IP address

Note

Placeholders

~S

Description

Serial number of the camera

Note

Placeholders

Sensor Information

Placeholders

^Ti

Description

Internal temperature in °C (degrees Celsius)

Note

every twelfth image

Placeholders

^Tn

Description

Internal temperature in °F (degrees Fahrenheit)

Note

every twelfth image

Placeholders

Other information

Placeholders

~fp

Description

Reference

Additional Information

Service Update

Note

Placeholders

~**ft**

Description

Creation Date

Note

Placeholders

~**fv**

Description

The version of the file system

Note

Placeholders

Special characters

Placeholders

~~

Description

The tilde (~) character

Note

Placeholders

^^

Description

The caret (^) character

Note

Placeholders

^**cc**

Description

The copyright character ©

Note

Placeholders

^**CE**

Description

The Euro character €

Note

Placeholders

^CR

Description

The registered trademark character ®

Note

Placeholders

Formatting instructions

Placeholders

^gx;^gx,y;

Description

Position of the text (lines and columns) in the following; displays the text at position x , y . The origin of the coordinates (0, 0) is in the top left corner.

For x,y , the following applies:

- x is the number of columns, by which the beginning of the text is offset to the *right*.
- y is the number of rows, by which the beginning of the text is offset *down*.

This command takes a semicolon (";") at the end.

- You can also use negative values for x and y :
 - $-x$ is the number of columns, by which the beginning of the text is offset to the *left* from the right image border.
 - $-y$ is the number of rows, by which the beginning of the text is offset *upward* from the bottom image border.
- The positioning within the image is directly dependent on the following settings:
 - **Image Size** in the **Setup Menu > General Image Settings** dialog.
 - **Font Size** in the **Setup Menu > Text & Display Settings** dialog.

Example 4. Calculating the Maximum Values for Columns and Rows

For an image size of 1280x960 (MEGA) and a font size of 8 pt, the image consists of 160 columns and 12 rows:

- Columns: $1280 / 8 = 160$

■ Rows: 960 / 8 = 120

Example 5. Positioning Text Using the ^gx,y; Variable

<code>^g-7,20;MOBOTIX</code>	Shows the text "MOBOTIX" using font size 8 pt at the right-hand border of the image in row 20.
<code>^g77,60;MOBOTIX</code>	Shows the text "MOBOTIX" using font size 8 pt and <i>MEGA</i> image size in the center of the image.

Storing the configuration

Click on the **Set** button to activate your settings and to save them until the next reboot of the camera.

Click on the **Factory** button to load the factory defaults for this dialog (this button may not be present in all dialogs).

Click on the **Restore** button to undo your most recent changes that have not been stored in the camera permanently.

lick on the **Close** button to close the dialog. While closing the dialog, the system checks the entire configuration for changes. If changes are detected, you will be asked if you would like to store the entire configuration permanently.

Abbreviations Used in the MOBOTIX Camera

The abbreviations (also called 'symbols') listed in the table below are displayed at the bottom of the camera images. They inform you about camera events and actions as well as errors and display status information. These symbols are visible in the **Live** images, the stored images and the event stories. For example, using the abbreviations displayed in the **Player** images, you can identify the event that has triggered the storage of an image or event story.

Event Names

Event names are displayed in the lower left corner of the image and indicate the activated events. Symbols are only shown for activated events.

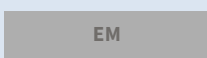
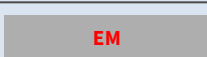
Color Coding of Event Names Using the UserClick Example

State	Color	Example	Remark
Enabled	White	User-Click	
Triggered	Red	User-Click	
Event Dead Time	Gray	User-Click	Only if an Event Dead Time has been set for the corresponding event profile .

Action Symbols

These symbols are displayed in the lower right corner of the image and indicate that the corresponding action or message is active. Parentheses enclosing a group of symbols indicate their shared membership of an **Action Group**. A "|" (pipe character) between these symbols means that they are executed simultaneously, ">" means consecutively in the order shown.

Color Coding of Action Symbols Using the EM (Email) Example

State	Color	Example	Remark
Enabled	Yellow		
Executed	Aqua		This action is currently executed.
Inactive	Gray		E.g. by time table.
Error	Red		

As Recording has additional options, the REC symbol has an expanded color scheme (see table below).

List of Action Symbols

Symbol	Description												
CL	Making a phone call												
CT	Receive a JPEG comment via the RS232 interface												
EM	Send E-Mail												
FS	Storing images on a File Server												
FT	Perform File Transfer action												
HR	Record history image												
IP	Send TCP Message												
MA	The arming status is imported entirely or in parts by the master camera.												
nSL	The arming status is transferred to <i>n</i> slave cameras.												
REC	The camera is storing images in its internal storage (RAM). Colors of the REC symbol: <table><tr><th>State</th><th>Color</th><th>Example</th><th>Remark</th></tr><tr><td>Enabled</td><td>Yellow</td><td> REC </td><td></td></tr><tr><td>Inactive</td><td>Gray</td><td> REC </td><td>By time table or when recording is deactivated (Arm Recording is <i>Off</i> or has been deactivated using a key switch in conjunction with the signal</td></tr></table>	State	Color	Example	Remark	Enabled	Yellow	REC		Inactive	Gray	REC	By time table or when recording is deactivated (Arm Recording is <i>Off</i> or has been deactivated using a key switch in conjunction with the signal
State	Color	Example	Remark										
Enabled	Yellow	REC											
Inactive	Gray	REC	By time table or when recording is deactivated (Arm Recording is <i>Off</i> or has been deactivated using a key switch in conjunction with the signal										

Symbol	Description			
	State	Color	Example	Remark
				input).
	Event Recording	Aqua		Only while an event recording is taking place.
	Continuous Recording	Green		
	Error	Red		
SD	Sound on event			
SMS	Send SMS			
SO	Switching Signal Output is active			
TR	The <i>Terminate Recording</i> action has been triggered and the camera has stopped recording. The symbol is displayed in gray (TR) and a message in the live image above the symbols will indicate the status.			
VA	Visual Alarm is active			

Status Symbols

These symbols are displayed in the lower right corner of the image to indicate a certain status of the camera. The default color is yellow: **DY**.

Symbol	Description
DY	The camera is using the day lens (only Day/Night models).
NI	The camera is using the night lens (only Day/Night models).

Additional Symbols

These additional symbols are not linked to a specific event or action and are only displayed above the event symbols if an error has occurred. The default color is yellow: **LG**.

Symbol	Description
LG	Error processing a logo.
OA	Error obscuring image areas.
SB	Error triggering a softbutton function.

Informational Symbols

These symbols are not linked to events nor actions either. They are displayed only to indicate the state of various camera functions. They always appear in grey color and in brackets: **[exp]**.

Symbol	Description
[dual]	The camera digitizes the second image sensor in the background, which may reduce the frame rate.
[exp]	The maximum possible frame rate is currently not available due to exposure settings (<i>exp</i> = abbreviation of <i>exposure</i>).

- Depending on your camera model, some symbols may not be available.
- In general, the camera can use all symbols to indicate an error if the corresponding function fails.
- Open the **Text & Display Settings** ([help page](#)) dialog to deactivate the display of **Error Messages**.
- Error messages are *always* logged in the **System Messages**, even if error message display in the live image has been disabled.

Configuration Service and Manual Configuration

MOBOTIX cameras provide a *configuration service*, which allows other MOBOTIX programs to automatically apply and store changes to the camera configuration. The MOBOTIX programs use this service to apply and store the settings according to the Alarm Planner schedule. This service prevents overwriting certain changes applied by the MOBOTIX programs, which you may be trying to change manually (e.g. via the web interface of the camera).

Caution

If this service has been activated, because the cameras have been integrated into an MOBOTIX program (e.g. MxManagementCenter), changes applied via the camera's web interface can be lost if they collide with the automatic changes.

Deactivating the Configuration Service

In order to resolve this problem, you need to deactivate the configuration service of the camera. You can choose between the following options:

- **Resetting the configuration:**
 - Reset the configuration to its **factory defaults**.
 - Permanently **store** the configuration in the camera's Flash memory and **reboot the camera**.
- **Deactivating the configuration service:**
 - **Edit** the configuration file of the camera:
 - Look for the `configservice` section and enter the text `disable` for the `service` parameter:

```
SECTION configservice service=disable
```
 - Click on the **Accept** button to store the change and to close the dialog.
 - Permanently **store** the configuration in the camera's Flash memory and **reboot the camera**.

After deactivating the configuration service, you can use the web interface to change the camera configuration.

Activating the Configuration Service

Please follow these instructions if you would like to activate the configuration service again:

1. **Edit** the configuration file of the camera:
2. Look for the `configservice` section and enter the text `enable` for the `service` parameter:
`SECTION configservice service=enable`
3. Click on the **Accept** button to store the change and to close the dialog.
4. Permanently **store** the configuration in the camera's Flash memory and **reboot the camera**.

After activating the configuration service, you can use the MOBOTIX programs (e.g. MxManagementCenter) to change the camera configuration.

Download Camera Report for Support

The **Download Camera Report** dialog provides a method for collecting specific information regarding the camera status for the MOBOTIX support team. The camera creates an email file (file name extension `.eml`) that contains the information of the selected sections; this file can be sent using an email application.

Description of the Report Sections

Section	Description
Camera Info	Includes the current camera status in the report.
Live Image	Includes the actual live image in the report.
Event Image	Includes the last event image in the report.
Image Profile	Includes an image according to the image profile in the report.
Camera Configuration	Includes the camera configuration in the report.
Full Camera Report	Includes a file with extended internal information on the camera status in the report. This report includes the following sections (you do not need to add them manually): System Messages, Web Server logfile, Storage Failure logfile and VoIP logfiles.
System Messages	Includes the system messages in the report.
Web Server Logfile	Includes the web server logfile in the report.
Storage Failure Log	Includes the log of the storage failure detection in the report.
VoIP Logfiles	Includes the VoIP logfile and status in the report.
Graphics and Sound Files	Includes the graphics and sound files from the media archive in the report.

Section	Description
SSL Certificates and Keys	Includes the SSL certificates and private keys of the camera in the report. Note From a cryptographic point of view, these certificates/keys are then considered compromised and must not be used any more.
JSON-based API	Includes the status and information of the JSON-based API, including the JSON configuration in the report.
Remove Passwords	Deletes all stored passwords from the camera report. Note Only include the passwords, if this is absolutely necessary for resolving a support case.

Activate the desired sections, click on **Download** and save the report file on your computer. Open the file in an email application and send the email to the MOBOTIX support team (for further information, please go to the MOBOTIX website www.mobotix.com and open the **Support** section).

Regular Expressions

This page should only give you a short introduction into the concept of regular expressions and is far from complete. For more information on the subject, reading *Regular Expressions* by Jeffrey E.F. Friedl, O'REILLY, is highly recommended.

Regular expressions are search patterns which you can use to test strings. For example, you can use a regular expression to test the message text of an IP message or data sent via the serial interface. A regular expression consists of one or several characters you are searching for and of special characters that are performing certain functions.

Example 1. A machine sends data via the serial interface

```
[...]
2003-09-22 12:24:50 roboctrl ready
2003-09-22 12:24:51 roboctrl starting process
2003-09-22 12:25:25 roboctrl finished in 34sec
2003-09-22 12:25:30 roboctrl ready
2003-09-22 12:25:31 roboctrl starting process
2003-09-22 12:25:33 error: no material found
2003-09-22 12:25:33 roboctrl stop on error
```

The regular expression `stop.*error` will trigger an event if the machine returns an error as in the last line of the example.

Special Characters

If you want to search for a character from the left column of the table below or for the backslash "\" or minus "-" characters, precede them with a backslash "\" (this is also called *masking*).

Character	Function
^	The ^ character marks the start of a string. The expression ^Test is only true for strings that start with Test.
\$	The \$ character marks the end of a string. The expression Test\$ only is true for strings that end with Test.
.	The <i>full stop</i> character is a placeholder for <i>one</i> character. The ab.d expression is true for abcd or abad, but not for abccd. When searching for the . character itself, you need to mask it by preceding it with a backslash "\". In this case, the expression ab\d is only true for ab.d.
*	The <i>asterisk</i> character is a repeat operator meaning that the preceding character may either occur never or an unlimited number of times. The expression ab*c is true for abc, abbbbbc, but also for ac.
+	The <i>plus</i> character is a similar repeat operator meaning that the preceding character may either occur once or an unlimited number of times. The expression ab+c is true for abc, abbbbbc, but not for ac.
?	The <i>question mark</i> character means that the preceding character may occur once or never. The expression ab?c is true for abc and ac, but not for abbc.
[]	Expressions surrounded by <i>[square brackets]</i> represent a character class. A character class can be defined either as a list or as a range. The expression [abc] represents a list of characters, while the expression [a-m] represents a range. For example, [0-9] is true for all numbers, while [a-z] is true for all lower-case letters. It is possible to use several ranges within one character class, such as [0-9a-zA-Z], or you can mix lists and ranges as in [a-fm0-6]. A character class can also be negated by using a preceding caret "^" character. The expression [^ab] is true for all characters that are neither a nor b.

MOBOTIX AG

We Deliver Solutions “Beyond Human Vision”

Since 1999, MOBOTIX develops and produces intelligent IP video systems that are based on 360 degree security, reliability without compromises and highest quality Made in Germany. With developments such as the first hemispheric IP video camera and the first IP video door station, we have redefined the standards. But there is one innovation that is of paramount importance in our more and more interconnected world—the decentralized intelligence of your camera system.

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