

Megapixel

1280 x 960
software zoom

30 Frames/s

VGA (640 x 480)
10 fps Mega

-22°F to +140°F

Weatherproof

-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af

PoE

network power
even in winter

microphone & speaker

Audio

bi-directional via IP
variable framerates

Video SIP Client

IP Telephony

alarm notify,
cam remote control

Video motion

multiple windows
precision pixel-based

lip-synchronized audio

Recording

event-ringbuffer
30 cams each 30 fps

Live viewing

30 cams at 30 fps
all on one screen

Backlight

safe using CMOS
without mechanical iris

Wall bracket

with cable cover
for RJ45 wall outlet

Robust

no moving parts
fiber glass housing

M22M

Camera Manual

Part 1



Complete integration for web and security

Current PDF File:

www.mobotix.com > Support > Manuals

MOBOTIX AG • Security-Vision-Systems • Made in Germany

www.mobotix.com • sales@mobotix.com • 18.06.2007



MOBOTIX ... the new face of IP video

M22M Camera Manual Part 1

MOBOTIX Camera Data

Enter the data of your camera here!

Camera Model: _____

Camera Name: _____

Factory IP Address:

 . . .

Current IP Address:

 . . .

DHCP:

activated ☐

deactivated ☐

Admin User Name: _____

Admin Password: _____

Notes: _____

Technical information subject to change without notice!

**No part of this manual may be reproduced by any means
without our written approval!**

Copyright © MOBOTIX AG, Kaiserslautern, Germany.

Note:

MOBOTIX offers inexpensive seminars that include a workshop and practical exercises:

Basic Seminar 3 days, **Advanced Seminar** 2 days.

For more information, see www.mobotix.com

M22M CAMERA MANUAL PART 1

1	INTRODUCTION	6
1.1	MOBOTIX Cost Benefits	8
1.2	MOBOTIX Technical Advantages	9
1.3	MOBOTIX M22M Concept	10
1.4	Feature Overview of the MOBOTIX M22M	13
1.5	Lenses for the MOBOTIX M22M	16
1.6	Important Notes	18
1.6.1	Weatherproofness	18
1.6.2	Password for the Administration Menu	18
1.6.3	Irreversibly Deactivating the Microphone	18
1.6.4	Starting the Camera Using the Factory IP Address	19
1.6.5	Resetting the Camera to Factory Defaults	19
1.6.6	Activating Event Control for Web Applications	19
1.6.7	Deactivating Text and Logo Options	19
1.6.8	Deactivating the Automatic Daily Reboot of the Camera	20
1.6.9	Using Internet Browsers	20
1.6.10	Cleaning Instructions - Cleaning The Lens	20
1.6.11	Safety Notes for Operating MOBOTIX Cameras	20
1.6.12	Additional Information	21
2	MOUNTING THE CAMERA	22
2.1	Preparing the Installation	22
2.1.1	Network Connection and Power Supply, UPS	22
2.1.2	Providing the Camera Connections, Wall Outlets	22
2.2	Overview	24
2.3	Delivered Parts of the MOBOTIX M22M	24
2.4	Camera Housing and Connectors of the MOBOTIX M22M	25
2.4.1	Connectors	25
2.5	Mounting Options and Positioning	26
2.6	Dimensions of the MOBOTIX M22M	27
2.7	Mounting the MOBOTIX M22M to a Wall or Ceiling	28
2.7.1	Mounting to a Wall	28
2.7.2	Mounting to a Ceiling	28
2.7.3	Converting the Wall Mount to Ceiling Mount	29
2.7.4	Mounting the Camera over Wall Outlets	30
2.7.5	SecureFlex Pole Mount	31
2.7.6	Delivered Parts of the SecureFlex Pole Mount	31
2.7.7	Mounting the Pole Mount and the Camera	32

2.8	Mounting the Camera to Different Surfaces	34
2.8.1	Mounting to a Wooden Wall or Surface	35
2.8.2	Mounting to a Drywall	36
2.8.3	Mounting to a Concrete or Brick Wall	37
2.8.4	After Mounting the Camera	38
2.9	Lens Options	39
2.9.1	CS Mount Version	40
2.9.2	Lens Cover with Glass Pane	40
2.9.3	Changing Lenses	41
2.10	Wiring, Fire Prevention, Lightning and Surge Protection	41
2.10.1	Wiring	41
2.10.2	Fire Prevention	42
2.10.3	Lightning and Surge Protection	42
2.11	Camera Accessories	42
3	OPERATING THE CAMERA	44
3.1	General Procedure	44
3.1.1	Establishing the Power Supply to the Camera	44
3.1.2	Connecting the Camera	44
3.2	Overview of the Configuration Settings	46
3.3	Connecting the Camera to the Network and the Power Supply	48
3.3.1	Notes on Cable Lengths and Power Supply	48
3.3.2	Power Supply (MxPoE) Using a Switch	49
3.3.3	Power Supply (MxPoE) When Connected Directly to a Computer	49
3.3.4	Power Supply (MxPoE) Using a Network Power Rack or Network Power Box	50
3.3.5	Power Supply (PoE IEEE 802.3af) Using Power-over-Ethernet Products	50
3.3.6	Camera Startup Sequence	51
3.4	The First Image from the Camera	52
3.4.1	Preparing the Ethernet Connection	52
3.4.2	The First Image in the Browser	54
3.4.3	Additional Information	55
3.4.4	Camera Screens in the Browser	56
3.4.5	Access Using Zeroconf/Bonjour	58
3.4.6	Prerequisites for using Zeroconf/Bonjour	59
3.4.7	The First Image in MxControlCenter	62
3.5	Starting the Camera With an Automatic IP Address (DHCP)	68
3.6	Starting the Camera Using the Factory IP Address	69
3.7	Drilling Template M22M (Scale 1:1)	70

Note

Download the latest version of this document as a PDF file from www.mobotix.com under **Support > Manuals**.

APPENDIX: M22M HARDWARE FEATURES
M22M SOFTWARE FEATURES
IP65 CERTIFICATE
FCC DECLARATION OF CONFORMITY
DECLARATION OF CONFORMITY
DRILLING TEMPLATE (1:1)

Download the latest version of this document as a PDF file from www.mobotix.com,
Support > Manuals

Note

All chapters listed in the following (4 and higher) are part of the **Camera Software Manual** (*Software Manual* in short). The main headings are listed below to give you an overview of the *Software Manual* contents.

SOFTWARE CAMERA MANUAL PART 2

4 CAMERA USER INTERFACE

- 4.1 The First Image in the Browser**
- 4.2 The First Image in MxControlCenter**
- 4.3 The Live Screen in the Browser**
- 4.4 The Playback Screen in the Browser**
- 4.5 The MultiView Screen in the Browser**
- 4.6 The PDA Screen**
- 4.7 The Guest Screen**
- 4.8 Browser Settings**
- 4.9 Configuring the Softbuttons**
- 4.10 Fast Video Streaming**
- 4.11 Operating Multiple Cameras**

5 BASIC CAMERA CONFIGURATION

- 5.1 Overview**
- 5.2 Quick Installation**
- 5.3 Connection Test**
- 5.4 Basic Settings**
- 5.5 Image Controls**
- 5.6 Logos**
- 5.7 Exposure Settings**
- 5.8 Day & Night Modes**
- 5.9 Managing Settings**

6 SOFTWARE UPDATES

- 6.1 Overview**
- 6.2 Preparatory Tasks**
- 6.3 Updating the Camera Software**
- 6.4 Update Checklist**

7 EVENTS, ACTIONS AND MESSAGES

- 7.1 Overview**
- 7.2 Functional Overview**
- 7.3 Some Remarks on the Procedure**
- 7.4 Screen Display of Event Settings in Live Image**
- 7.5 Arming**
- 7.6 Events**
- 7.7 Actions and Messaging, Action and Messaging Profiles**
- 7.8 Working with Profiles**

8 RECORDING

- 8.1 Overview**
- 8.2 Recording Modes**
- 8.3 Recording Types**

9 TELEPHONY FEATURES

- 9.1 Overview**
- 9.2 Telephony via ISDN**
- 9.3 Telephony via LAN and the Internet (IP Telephony)**
- 9.4 Configuring Phone Call-In**
- 9.5 Configuring Phone Call-Out (Phone Profiles)**
- 9.6 Camera Phone (Listen, Speak and Intercom Modes)**
- 9.7 Sample Configurations for IP Telephony via LAN**
- 9.8 Sample Configurations for IP Telephony via Internet**
- 9.9 LED Signals of the Phone Functions**

10 MOBOTIX CAMERAS ON THE WEB

- 10.1 Overview**
- 10.2 Displaying Cameras on the Web**
- 10.3 Configuring Routers and Firewalls**
- 10.4 Configuring DynDNS**
- 10.5 Updating Web Pages**

11 SOFTWARE INTERFACES

- 11.1 Overview
- 11.2 Accessing Live Images
- 11.3 Accessing the Second Image Channel
- 11.4 Video Streaming
- 11.5 The HTTP API

12 TROUBLESHOOTING

- 12.1 Overview
- 12.2 Troubleshooting Checklist
- 12.3 Diagnostic Tools of the Camera
- 12.4 Monitoring Tools of the Camera
- 12.5 Potential Other Problems
- 12.6 Additional Information
- 12.7 Sending Back the Camera
- 12.8 Warranty

Note

Download the latest version of this document as a PDF file from www.mobotix.com under **Support > Manuals**.

Information subject to change without notice!

Copyright © 1999-2007 MOBOTIX AG, Kaiserslautern, Germany.

All rights reserved. MOBOTIX, MxPEG and MxControlCenter are world-wide trademarks of MOBOTIX AG. Microsoft, Windows and Windows Server are registered trademarks of Microsoft Corporation. Apple, the Apple logo, Macintosh, OS X and Bonjour are trademarks of Apple Inc. Linux is a trademark of Linus Torvalds. All other marks and names mentioned herein may be trademarks or registered trademarks of the respective owners.

1 INTRODUCTION

The **M22M** cameras are powerful yet compact MOBOTIX network cameras, that are capable of creating high-resolution live video streams with high image rates. When showing **VGA video (640x480)**, the camera can deliver up to **30 fps**. Even **Megapixel video (1280x960)** will still generate up to **10 fps**. The camera transmits lip-synchronous audio, both in the browser (ActiveX plug-in) and when using **McControlCenter**.



30 frames per second!

Everything integrated!

Similar to previous MOBOTIX cameras, M22M cameras are available as **SECURE**, **IT**, **WEB** and **BASIC** models, with WEB and BASIC models just missing the microphone. The M22M can be fitted with one of the five M14 high-performance lenses or with CS mount lenses (model **M22M-Sec-CSVario**).

Like all other MOBOTIX cameras, M22M models are more than "just a camera"; the integrated software features include a multitude of functions, such as **video motion detection**, **long-term recording**, **alarm messaging** and **video IP telephony**. Unlike in camera systems from other manufacturers, buying and installing additional soft-

ware on the computer is thus unnecessary. Instead of using a web browser, you can also download the free **MxControlCenter** for Windows from www.mobotix.com, which allows displaying multiple cameras on one monitor. Moreover, MxControlCenter can also process incoming alarms from the camera and allows for comfortably searching and evaluating the alarm video clips (including audio).

Because of the low power consumption of only 3 Watts, the MOBOTIX M22M cameras feature the highest operating temperature range available from **-30 to +60°C (-20 to +140°F)**. Since MOBOTIX cameras neither fog up nor require heating, power can be supplied via the network



cabling using standard PoE products. M22M models are absolutely dust-proof and resistant against water jets (**IP65**). All models come with a wall mount that covers wall outlets and conceals the cabling.

Using the **MX Connector** with USB socket, you can directly connect the **MOBOTIX Cam-IO** expansion box, which simplifies installing the camera and expands on these possibilities. All external devices, sensors and the Ethernet cabling are connected directly to the expansion box. Likewise, the **MOBOTIX Cam-IO** installation box connects directly to the mains and supplies power to the camera, without requiring any other type of power supply.



M22M Pole Mount

If you would like to mount the MOBOTIX M22M to a pole, you should consider using the MOBOTIX Pole Mount, which is used in combination with the standard SecureFlex mount. The supplied stainless steel straps allow fixing the mount to poles with diameters between **60 and 180 mm (2.4 to 7.1 in)**.



M22M with Pole Mount

Lenses, sensors

You can choose between five different lenses for the MOBOTIX M22M (M14 thread). IT and Secure models can be ordered either with a daylight image sensor (color) or a night image sensor (black and white).

The **M22M-Sec-CSVario** model is delivered with a CS mount and a compact L24-L54 1/2" lens.


M22M-Sec-CSVario with
vario zoom lens 24-54 mm

M22M lens options

	L22 Super Wide Angle 90°	L32 Wide Angle	L43 Wide Angle	L65 Tele	L135 Tele
MOBOTIX Lenses					
	approx. 90°H x 67°V at 10 m appr.: 20.0 x 13.3 m	approx. 60°H x 45°V at 10 m appr.: 11.5 x 8.2 m	approx. 45°H x 34°V at 10 m appr.: 8.2 x 6.1 m	approx. 31°H x 23°V at 10 m appr.: 5.5 x 4.0 m	approx. 15°H x 11°V at 10 m appr.: 2.6 x 1.9 m

1.1 MOBOTIX Cost Benefits

1

Increased resolution reduces amount of cameras

960-line, high-resolution sensors give a better overview and allow monitoring an entire room with just one camera from the corner

2

Reduced installation costs at any distance

Standard Ethernet connection enables the use of common network components such as fiber, copper and wireless (WiFi)

3

Intelligent recording technology reduces storage

Decentralized recording technology in the camera software puts less strain on PCs and reduces the amount of storage PCs (DVRs) by 10 times

4

Event-controlled image rate minimizes storage cost

Event-driven, automatically adjusted recording frame rate based on event or sensor action reduces amount of data and storage costs

5

No additional power and no heating required

Anti-fogging without heating allows usage of standard PoE technology to power the system via network and saves costs of power cabling

6

Backup power requirement reduced by 8 times

Low power consumption, 3 Watt, enables year-round (no heating required) PoE with one centralized UPS from installation room via network

7

Robust and practically maintenance free

Fiberglass-reinforced composite housing with built-in cable protection and no mechanical moving parts (no autoiris) guarantees longevity

8

No software and no licence costs

Control and recording software is integrated in the camera and is free of charge; new functions are available via free software downloads

9

Unlimited scalability and high return on investment

While in use, more cameras and storage can be added at any time; image format, frame rate & recording parameters can be camera specific

10

Additional functions and other extras included

Audio support, lens, wall mount and weatherproof housing (-30 to +60°C, -22 to +140°F) included; microphone & speaker available in certain models

1.2 MOBOTIX Technical Advantages

- 1 Progressive-scan instead of half-frame blur**
Megapixel sensor and image processing inside the camera with digital white balance generates sharp and true color images at every scale
- 2 Sun and backlight compensation**
CMOS sensor without auto iris, digital contrast enhancement and configurable exposure measurement zones guarantee optimum exposure control
- 3 Dual camera technology: 2-in-1**
Two possible camera views with picture-in-picture technology or 180° panoramic view; one Dual-Fixdome camera with 2.5 megapixel is enough
- 4 Long-term, high-performance Terabyte recording incl.**
Event detection and ring buffer recording by the camera itself allow recording of 40 smooth video streams on a single PC (1200 VGA images/s)
- 5 Simultaneous recording, event search and live viewing**
Live video for multiple users, recording and event search simultaneously possible in seconds from anywhere in the world via network
- 6 Very low network load**
Efficient MxPEG video codec, motion detection based recording and video buffering inside camera guarantee a very low network load
- 7 Bridging of recording during network failures**
Internal camera ring buffer bridges network failures and bandwidth fluctuations of wireless links (WLAN/UMTS) for several minutes
- 8 Day & night maintenance free**
Unique Day/Night camera technology without moving parts guarantees extreme light sensitivity and ensures long-term reliability
- 9 Audio and SIP telephony**
Lip-synchronized audio (live & recording); each camera is a video IP telephone based on SIP standard with automatic alarm call and remote control
- 10 MxControlCenter included**
Dual screen technology with building plans, free camera positioning, event search, image processing, lens distortion correction and PTZ support

1.3 MOBOTIX M22M Concept

High-resolution live video with up to 30 frames/s at 640x480

The second generation of cameras from MOBOTIX delivers smooth live video display in VGA format with synchronous live audio, yet it keeps the network load to a minimum (approx. 2 Mbps)*. Live video display now matches the performance of analog video systems. When recording, MOBOTIX systems easily outperform analog systems, since MOBOTIX cameras store the high live image resolution and frame rate without compromising image quality. **MOBOTIX technology thus allows simultaneous recording of video from 30 cameras in continuous recording mode on one standard PC at 30 fps each, including audio.**

Low bandwidth requirements

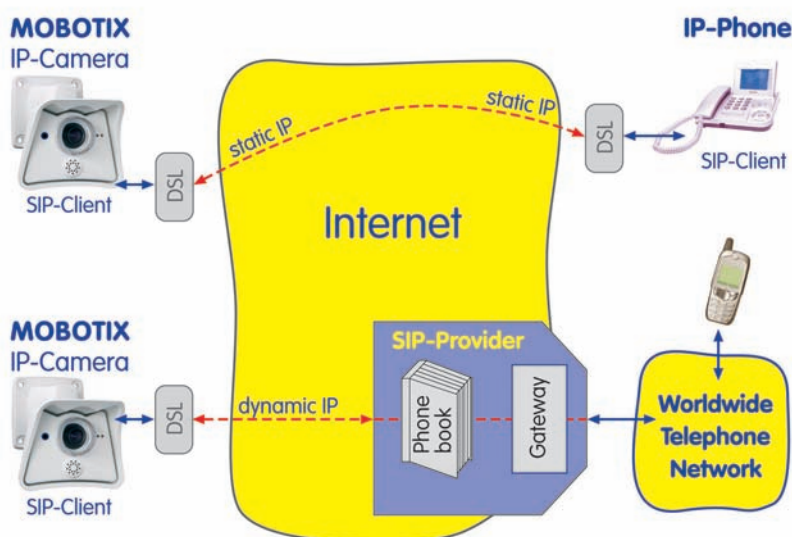
MOBOTIX' patent pending **MxPEG** streaming format allows fast live video with audio* at extremely low network loads (1 to 2 Mbps). Since the MOBOTIX camera itself detects movements in the image (and not the computer), video is only transmitted if movements occur, and when the video and audio data are being stored.

Voice over IP*

Moreover, **MxPEG** provides for lip-synchronized audio and two-way communication between the camera and your computer. Room surveillance with audio is possible using Internet Explorer or MxControlCenter. Alarm notification on your mobile or via Internet telephony is just as easy as event-controlled voice messages directly from the camera.

IP telephony and video SIP (with accessories)*

All telephone features can be used via Internet telephony thanks to the integrated SIP client. The SIP client allows remote-controlling the camera using the touchtone keys and also makes the alarm calls of the camera. **Video SIP** allows establishing audio/video connections to the camera using Windows Messenger or similar applications (e.g. CounterPath X-Lite, Eyebeam).



IP Telephony!

* Web and Basic models do not have a microphone

Long-term storage included

MOBOTIX cameras (IT and Secure models) feature an integrated long-term storage system for Windows, Linux and Mac OS X computers. Every camera manages its own ring buffer storage space on the shared folder. Thanks to this decentralized technology, 30 live cameras can store images on a regular Pentium 4-class computer with **30 fps each**, including audio (depending on the operating system).

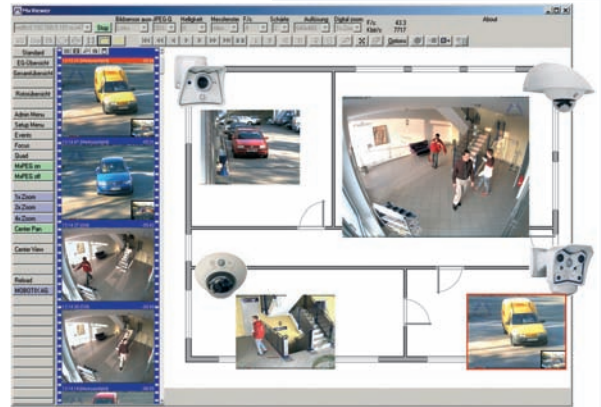
Event storage on the integrated CF card (optional)

For most applications, the MOBOTIX-installed CF card provides more than enough storage space, since this flash card (2 GB and higher) stores the audio/video data permanently, even after power failures. If long-term storage on a file server has been set up, the CF card adds yet another layer of security against loss of data, as the flash card can easily bridge longer network outages.

CF cards will be supported in a future software update

30 live cameras using MxControlCenter

Instead of using a web browser, you can also download the free **MxControlCenter** for Windows from www.mobotix.com, which allows displaying up to 30 MOBOTIX cameras on one monitor (Linux and Mac OS X versions are currently being developed). In addition, MxControlCenter can process incoming alarms from the cameras and allows comfortably searching and evaluating the alarm video clips (including audio*). The integrated Layout Editor of MxControlCenter provides for quickly creating floor plans by simply dragging/dropping the cameras onto a background image. Load a floor plan as background image, drag&drop the cameras; done.



Download MxControlCenter free of charge from www.mobotix.com

Event and time-controlled

Just like event-controlled recording upon detecting movements in the image, the camera can also record when the volume picked up by the microphone exceeds a set trigger value (audio-capable models only*). Using scheduled recording that takes into consideration vacation times and holidays, time tasks can start or stop video recording, uploading of images to a web site or sending of e-mails with video/audio* clips.

Remote alerting

In case of an alarm, MOBOTIX cameras automatically pop up windows or activate other functions at a remote security control center. The cameras can use network/wireless, GSM/GPRS/UMTS (3G) or Internet connections for this purpose (a GSM/GPRS/UMTS modem can be connected to the serial interface of MOBOTIX M12/D12 models).

Day & Night

The Night versions of the M22M-IT/Secure models deliver crisp and clear images of moving objects even at night since they use a special black and white image sensor. Depending on the lighting conditions, you can use infrared light to enhance the lighting, since the B/W sensor system is IR-sensitive (in contrast to the human eye).

* Web and Basic models do not have a microphone

No heating required -
PoE is no problem even in
the wintertime!

Integrated Power over Ethernet

Power is supplied as **Power-over Ethernet** via the network cabling **using the MOBOTIX power supply** (in combination with the Network Power Adapter), a MOBOTIX **Network Power Rack** (8 to 20 cameras) or a **Net-work Power Box** (4 cameras), or by using a PoE-compatible switch (according to **PoE standard IEEE 802.3af**).



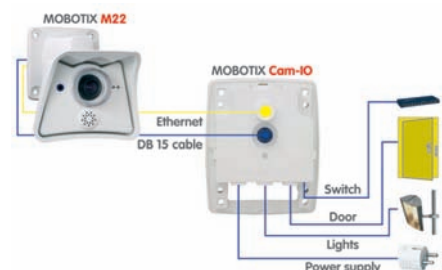
Since the camera's plastic housing insulates well and is anti-fogging, no additional heating or fans are necessary. This is why MOBOTIX, unlike other manufacturer's cameras, have low power requirements (3 Watts) and PoE can be used every day of the year indoors as well as outdoors for supplying power.

Weatherproof

MOBOTIX M22M cameras are certified according to IP65 (absolutely dustproof and resistant against water jets) and are designed for outdoor as well as indoor usage. As the cameras do not have any moving parts, they are extremely robust and resistant against heat or cold (**-30 to +60°C; -20 to +140°F**).

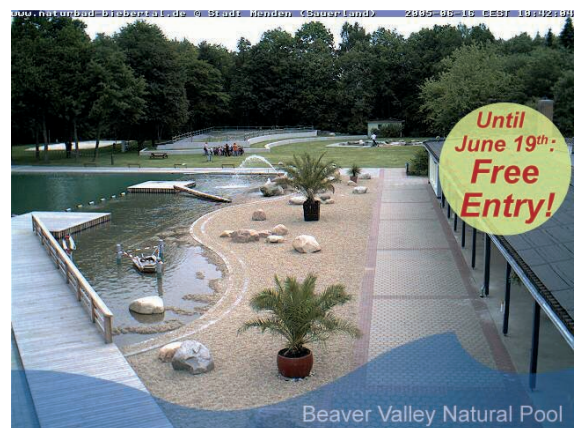
Easy Installation Using the Cam-IO Installation Box

The **Cam-IO Installation box** greatly facilitates setting up a security system as this module carries all pins of the **MX Interface Connector** and simplifies connecting external devices and sensors. Besides supplying power to the camera, the installation box can power lamps with up to 500 W/230 V (max. 4 A) and has heavy-duty connectors for the remaining pins of the **D Sub 15 HD** socket (e.g. Line In/Out or signal inputs of the camera).



Logos, Animated or Freestyle

The logo generator of MOBOTIX cameras allows scheduled display of different banners and graphics (or files loaded from any URL) into the current camera images. MOBOTIX cameras are the only network IP cameras supporting animated and transparent graphics.



1.4 Feature Overview of the MOBOTIX M22M

The MOBOTIX M22M includes the following main features (some features are model-dependent):

- **Live images** of up to 1280 x 960 pixels resolution via network and WiFi with up to 30 fps (at 640 x 480 VGA resolution), also adapted for **PDA**s.
- **Digital zoom** with three stages (1x, 2x, 4x) and integrated panning (from 2x: clicking in the browser image will move the zoomed image section in the corresponding direction).
- **True software scaling** using the proven and continuously improved MOBOTIX algorithms, which deliver brilliant images even with smaller image formats (e.g. 320 x 240/CIF).
- **Audio video recording** with three different recording modes: Event recording with audio, continuous recording with variable frame rate and audio as well as event-controlled Snapshot recording of JPEG images.
- **Telephony functions (SIP)** for Phone Call-In and remote-controlling from touch-tone phones as well as voice phone calls from the camera for alarm messaging purposes.
- **SIP Video** (Internet telephony) with support for e.g. Windows Messenger, X-Lite/Eyebeam and video phones.
- **File server tests** can monitor a file server and use one or more of the defined messaging options for error notification.
- **Camera tests** where several cameras monitor one another, with failure notification using the defined messaging options.
- **Playback** of recorded images/video sequences with audio in the integrated video management system.
- **MultiView** screen for displaying multiple cameras or events in one browser window.
- **Event notification** by e-mail, SMS (using a provider), voice notification (Phone Call-Out), sounds and by visual means (e.g. red frame in Live image) using two separate messaging paths.
- **Object tracing** for analyzing the paths of objects that are moving in the image.
- **Logo generator** for displaying logos in the camera images with dialogs for managing image files and defining image and logo profiles for controlling logo display.
- **Logos** can have **transparent areas** and can be displayed partially transparent at the same time (creating a watermark effect), banner rotation and animations are also possible.

1280 x 960 pixels

Logo generator

Speaker phone


Telephony features using
SIP connections (Internet
telephony)!

- **Time Tables** for handling customized days, e.g. for **holidays** and **vacations**. The time tables are used to control the camera's arming, image recording, action, messaging, logo, obscure image and other features.
- **Remote signaling** for **master/slave** cameras, with the master camera controlling the arming status of the slave cameras. This allows arming, for example, of all slave cameras by using a key switch that is connected to the master camera.
- **Transfer profiles** for improved handling of FTP, E-Mail, phone calls, network transmissions and messages.
- **Speaker phone** for announcements via the camera speaker, listening into a room and intercom mode using **Internet telephony (SIP)**.
- **Phone Call-In** to remotely control the camera using a touchtone phone via Internet telephony (retrieve camera information, establish Internet connection, announcement of retrieved IP address, intercom feature, etc.).
- **MxPEG video compression** using **MxControlCenter** for Windows (Linux and Mac OS X versions are currently being developed). In addition, the ActiveX plug-in for Windows Internet Explorer brings all advantages of MxPEG (including the audio stream to and from the camera) to the browser-based user interface.
- **Routing** allows using other network connections besides the standard route.
- **DynDNS client** for accessing the camera using a symbolic name (e.g. `mymobotixcam.dyndns.org`) although the provider is assigning a new dynamic IP address every time the camera connects to the Internet.
- Undeletable **Backup operating system** automatically takes over when rebooting the camera (e.g. when updating the system software has failed due to a power failure), allowing you to restart the update process.
- **Enhanced startup options** for the camera (obtain IP address via **DHCP**, announcement of IP address and other network data, reset to factory default settings, etc.).

Software Updates

MOBOTIX provides **free** software updates on **www.mobotix.com** at regular intervals that improve and expand the camera's functionality. Chapter 6, *Software Update*, in the *Software Manual*, provides detailed information on the process.

Free software updates on
www.mobotix.com

		Basic Models	Web Models	IT Models	Secure Models
Software Features (All Models)					
Digital zoom (2x, 4x) with panning			X		X
Motion JPEG/MxPEG video streaming	X/X	X/X	X/X	X/X	X/X
Custom exposure windows	X	X	X	X	X
Video Motion Detector	X	X	X	X	X
Time and event control (FTP, email, logos)	X	X	X	X	X
Time tables with holidays	X	X	X	X	X
Web functionality (FTP, email)	X	X	X	X	X
Quad/MultiView in browser	X	X	X	X	X
Recording/Playback in browser	X	X	X	X	X
Logo generator, animations		X	X	X	X
Single image recording (pre-/post-alarm images)	3	3	10	50	
Terabyte ring buffer (Win/Lin/Mac) via network			X	X	
Continuous video/audio recording, 0.2 to 30 fps			X	X	
Video/audio recording (event-triggered)			X	X	
Event-controlled frame rate with continuous sound			X	X	
Flexible event logic					X
Master/Slave arming by one camera					X
Scheduled privacy zones, several areas					X
Bidirectional audio (IP) from/to browser			X	X	
Customized voice messages			X	X	
VoIP telephony (Audio/Video, SIP)			X	X	
Alarm calls to softphones (SIP) e.g. Xten			X	X	
Remote alarm notification (via TCP/IP, IP Notify)			X	X	
RS232 Data Logger/Terminal			X**/***	X**/***	
Programming interface/HTTP API			X	X	
Model Limitations					
Image size	VGA	Mega	VGA	Mega	
Image sensor (color / B/W)	Color	Color	Color & BW	Color & BW	
Standard lens for software version	L22	L22*	L22*	L22*	
Audio support (Microphone/Speaker)	-/S†	-/S†	M/S†	M/S†	

* M12 models delivered with L43 or L22

** M22 models in connection with Cam-IO

*** Not available for M22M models

† D22M models require an external speaker/microphone

1.5 Lenses for the MOBOTIX M22M

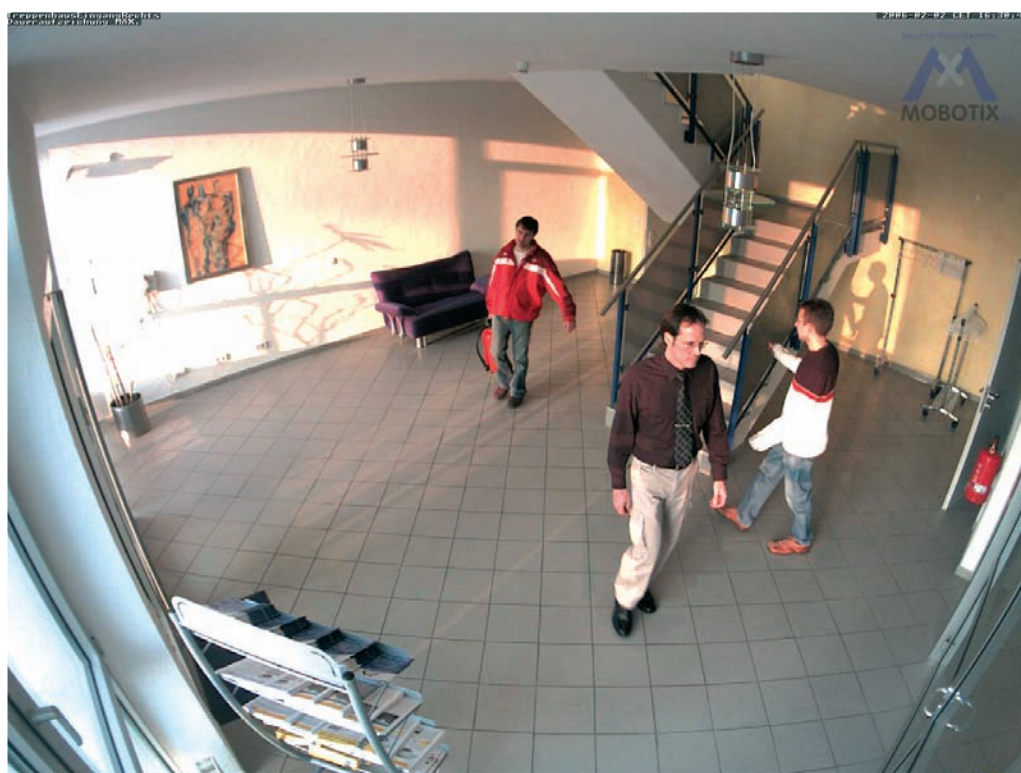
MOBOTIX currently offers five different lenses: from **Super Wide-Angle L22** with 22 mm focal length up to the **tele lens L135** with 135 mm focal length (equiv. to 35 mm camera). Since MOBOTIX cameras are backlight-proof, they do not require a mechanical auto iris. Without the iris as a mechanical component, all MOBOTIX glass lenses are extremely robust and maintenance-free. You can choose between the following lenses for the MOBOTIX M22M (M14 thread):

Available lenses!

- **L22 Super Wide-Angle** 90° image angle (horizontally)
- **L32 Wide angle** 60° image angle (horizontally)
- **L43 Wide angle** 45° image angle (horizontally)
- **L65 Tele** 31° image angle (horizontally)
- **L135 Tele** 15° image angle (horizontally)



The **L22 Super Wide-Angle 90°** lens has very little distortion and excellent image quality, even when using the 4x digital zoom of the M22M. If a camera with a Super Wide-Angle lens has been mounted in the corner of a room, the complete room is visible on the image.



L22 Super Wide-Angle 90°

Lens Table

Order name	L22	L32	L43	L65	L135
Original image					
35mm equivalent	22 mm	32 mm	43 mm	65 mm	135 mm
Aperture	4 mm	6 mm	8 mm	12 mm	25 mm
Aperture	2.0	2.0	2.0	2.0	2.5
Image angle horizontally	90°	60°	45°	31°	15°
Image angle vertically	67°	45°	34°	23°	11°
Distance 1 m	m	m	m	m	m
• Image width	2.0	1.1	0.8	0.5	0.3
• Image height	1.3	0.8	0.6	0.4	0.2
Distance 5 m	m	m	m	m	m
• Image width	10.0	5.7	4.1	2.7	1.3
• Image height	6.6	4.1	3.0	2.0	1.0
Distance 10 m	m	m	m	m	m
• Image width	20.0	11.5	8.2	5.5	2.6
• Image height	13.3	8.2	6.1	4.0	1.9
Distance 20 m	m	m	m	m	m
• Image width	40.0	23.0	16.4	11.0	5.2
• Image height	26.6	16.4	12.2	8.0	3.8
Distance 50 m	m	m	m	m	m
• Image width	100.0	57.5	41.0	27.5	13.0
• Image height	66.0	41.0	30.5	20.0	9.5

Focal lengths of MOBOTIX lenses are always given as compared to a 35 mm camera!

To determine the lens you need, simply use a camera with zoom lens to find a matching MOBOTIX lens

Note

The focal lengths of MOBOTIX lenses do not reflect the actual focal length of the lenses, but the focal length (L_{xx} mm) converted to 35 mm camera format. For example, the MOBOTIX Super Wide-Angle lens has an actual focal length of 4 mm. This would be the equivalent of 22 mm on a 35 mm camera. This lens is thus called **L22**.

Since the image sensors in digital cameras have different sizes, converting to 35 mm camera as a known format provides for better comparing the image formats and the fields of vision of the different lenses. Another benefit is that you can easily set a 35 mm camera (analog or digital) to the same focal length (**L~~xx~~**) to obtain the same field of vision. This approach greatly facilitates lens selection.

1.6 Important Notes

1.6.1 Weatherproofness

The MOBOTIX M22M with M14 standard lenses and mounted lens cover is **IP65**-certified (absolutely dustproof, resistant against water jets) and can be used from **-30 to +60°C (-22 to +140°F)**. Please make absolutely sure that you use the proper rubber plugs for the installed cables. NET for the USB cable, USB for the Ethernet cable. Please also make sure that the plugs are seated properly!



Administration menu:
User: **admin**
Password: **meinsm**

CAUTION: Only use the supplied connection cables and always mount the proper plugs for the cables. The camera *must never* be mounted without properly installed cables and weather protection plugs!

1.6.2 Password for the Administration Menu

The administration area of the camera (**Admin Menu** button) is protected by a user name and password:

- User name is **admin**
- Password is **meinsm**

Enter the user name and password exactly as shown above. Note that both entries are case-sensitive.

When accessing the administration menu for the first time, the **Quick Installation** wizard will help you set the most important parameters that are relevant for your requirements. **For security reasons, it is highly recommended to change the administrator password after the camera has been configured properly.**

CAUTION: Make sure that you store information on user names and passwords in a secure place. If you lose the administrator password and cannot access the Admin menu, the password can only be reset at the factory. This service is subject to a service charge!

The microphone can be
irreversibly deactivated!

1.6.3 Irreversibly Deactivating the Microphone

Deactivating a camera's microphone may become necessary in order to protect the privacy of people at a workplace or for other reasons. You can permanently and **irreversibly** deactivate the microphone in the **Admin Menu > Loudspeaker and Microphone** dialog.

CAUTION: This deactivation is permanent and cannot be reversed even by MOBOTIX engineers. Deactivating the microphone will also deactivate all features that use the camera's microphone.

1.6.4 Starting the Camera Using the Factory IP Address

If the camera's IP address is not known, you can start the camera with its factory IP address. Section 3.6, *Starting the Camera Using the Factory IP Address*, describes this procedure in more detail.

The configuration can also be reset partially

1.6.5 Resetting the Camera to Factory Defaults

All settings of the MOBOTIX camera can be reset to the factory default settings. This makes sense if you have, for example, obtained a camera without any information or you would like to reset all settings after testing the camera. In order to perform this procedure, you need to have access to the administration area of the camera (**admins** group). Open **Admin Menu > Reset ...** to reset the camera to factory defaults.

Note: All defined users will be deleted and the admin password will be reset to the factory default when you reset the camera using **Admin Menu > Reset ...**. Proceed according to section 3.6, *Starting the Camera Using the Factory IP Address*, if you would like to maintain existing users.

If the dotted rectangle in the live image is visible, the camera is armed

1.6.6 Activating Event Control for Security Applications

In its default configuration, the camera's event control and video motion detection features are **not enabled**. In order to activate event control as a whole, open **Setup Menu > General Event Settings** and activate the **Arming** switch or click on the **Arm & Record** softbutton of the browser interface. The video motion detection window is visible again (dotted frame in the center of the live image) and the camera stores images as soon as the video motion window detects movements.

Text and logos can be also deactivated or customized to your liking

1.6.7 Deactivating Text and Logo Options

As the camera arming has been deactivated in its default configuration (see preceding section), the MOBOTIX camera only displays the Text **WWW.MOBOTIX.COM**, the time stamp and the MOBOTIX logo at the top of the image. Once the camera arming has been activated (see section 1.6.6), the text at the bottom of the live image (event, action and messaging symbols) will also appear.

You can deactivate the status text at the bottom and the text at the top left corner of the live image by setting **Text Display** in the **Setup Menu > Text & Display Settings** dialog to *Off*. Setting **Text Display** to *Date & Time* will only display the time stamp in the live image.

In order to hide the logo in the live image, open **Admin Menu > Logo Profiles** and set **Logo Display** to *Disable*.

Deactivating the camera
reboot

1.6.8 Deactivating the Automatic Daily Reboot of the Camera

In its default configuration, the MOBOTIX camera automatically reboots every morning at 3:36 am. The reason for this is that external influences (e.g. radiation in high locations) can lead to camera malfunctions. The automatic reboot will refresh the camera's memory and will ensure proper operation without requiring any interaction on the part of the user.

Open **Admin Menu > Time Tasks** and deactivate or delete the *Reboot camera* task. This will prevent the camera from rebooting automatically.

1.6.9 Using Internet Browsers

Current Internet browsers (Internet Explorer, Netscape, Mozilla, Firefox, Safari, Konqueror, Opera, ...) with enabled **JavaScript** can show the camera's live images with their standard settings. Text-based browsers (e.g. **lynx**) cannot display the user interface and are *not* suitable for operating the camera.

Section 4.8, *Browser Settings*, in the *Software Manual* contains more information on browser compatibility. For additional information on troubleshooting the camera, see chapter 12, *Troubleshooting*, in the *Software Manual*.

1.6.10 Cleaning Instructions – Cleaning the Lens

If the lens is dirty from the installation process, clean the lens using a lint-free cotton cloth.

1.6.11 Safety Notes for Operating MOBOTIX Cameras

Electrical surges can be induced by other electrical appliances, improper wiring, but also from the outside (e.g. lightning strikes to phone or power lines).


MOBOTIX cameras are protected against small **electrical surges** by numerous measures. These measures, however, cannot prevent the camera from being damaged when stronger electrical surges occur.


Special care should be taken when installing the camera **outside of buildings** for **protection against lightning**, since this also protects the building and the whole network infrastructure.


MOBOTIX recommends having MOBOTIX cameras installed only by specialists accustomed to installing network devices and having proper respect for the pertinent regulations regarding lightning protection and **fire prevention** as well as the current technology for preventing damages from electrical surges.


Section 2.10, *Wiring, Fire Prevention, Lightning and Surge Protection*, contains more information on these topics.

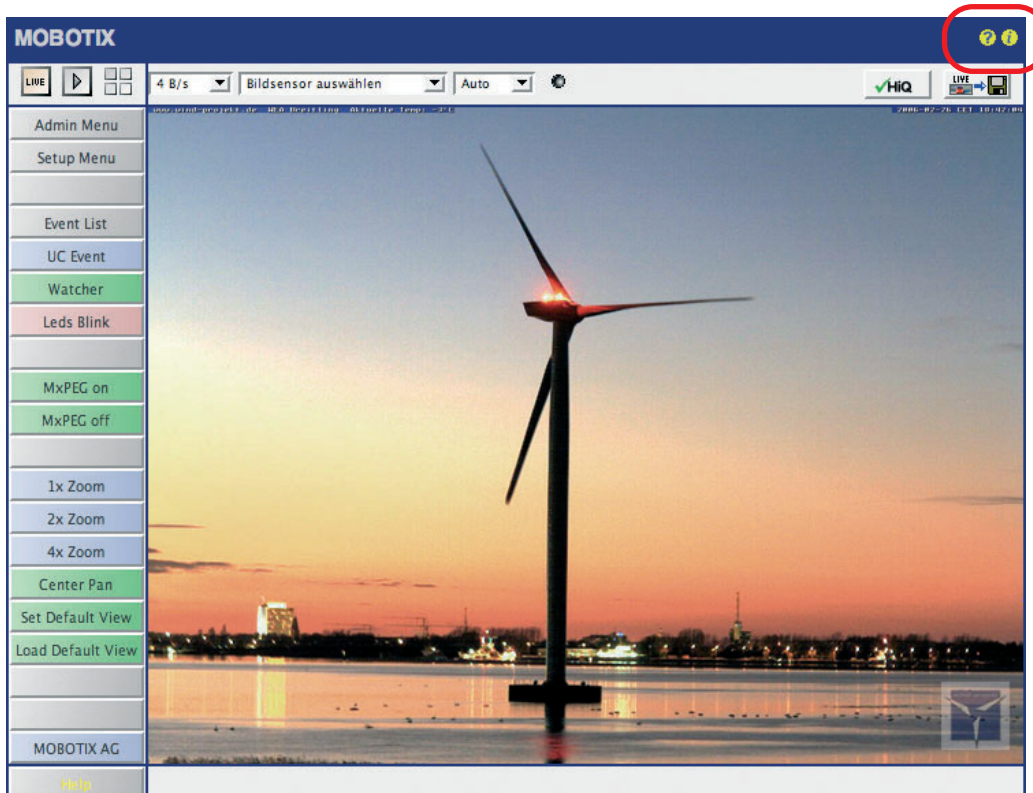
1.6.12 Additional Information

For more information on this topic, see the **News** and **Functional Overview** pages in the **online help** of the camera's browser interface. Click on the yellow  icon in the top right corner to open the camera's online help.

In order to obtain more information on the camera and its current configuration, open the **Camera Status** dialog by clicking on the yellow  icon in the top right corner of the camera's browser interface.

 Camera Help

 Camera information



Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from www.mobotix.com. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

2 MOUNTING THE CAMERA

2.1 Preparing the Installation

2.1.1 Network Connection and Power Supply, UPS

Power over Ethernet (MxPoE)

Power is supplied to all M22M models via the network cabling (**MxPoE**, **Power-over-Ethernet**). For smaller installations, the universal **power supply** (*MX-SNT-E/U/GB/J/AUS01-30-RJ*) with the MOBOTIX **Network Power Adapter** *MX-NPA-3-RJ* is sufficient. Larger installations would benefit from one or more MOBOTIX **Network Power Racks/Boxes** that are available for supplying power to 4, 8 or 20 cameras (*MX-NPR-4*, *-8* or *-20*).

See section 2.11, *Camera Accessories*, for more information on these and other items or open shop.mobotix.com (**Products > Accessories** section).

MX-NPA-3-RJ: Easy installation for smaller systems

MX-NPR-4: For mounting in wiring cupboards; includes DIN rail clip

MX-NPR-8/20: 19" rack mount (2 rack units)



Network Power Adapter
MX-NPA-3-RJ



Netpower Box
MX-NPR-4



Netpower Rack
MX-NPR-20

Advantages of MOBOTIX PoE Products

- Zero maintenance and reliable without fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails using supplied adapter (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

Note

If you are using **Power over Ethernet (IEEE 802.3af) network components** for supplying power to the MOBOTIX M22M, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, the reliability of the entire system is increased and the life cycle of the PoE components is expanded.

PoE components without fans increase overall reliability of the entire system

Power-over-Ethernet (PoE according to IEEE 802.3af)

Besides **MOBOTIX MxPoE**, the MOBOTIX M22M also supports the **Power-over-Ethernet standard IEEE 802.3af**. You can hence use switches or routers that support the PoE (Power-over-Ethernet) standard IEEE 802.3af.

Section 3.3, *Connecting the Camera to the Network and the Power Supply*, contains more information on the possible combinations of connecting the M22M and power supply options.

Using Uninterruptible Power Supplies (UPS)

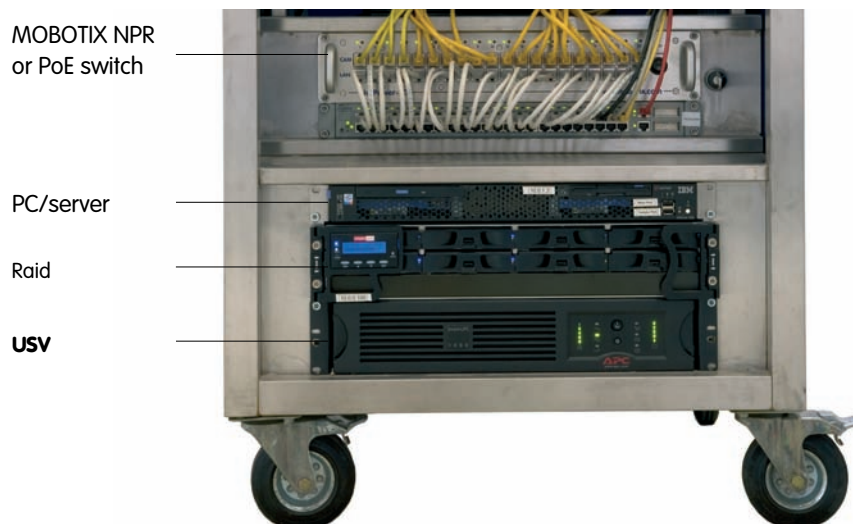
In order to maintain a continuous power supply even when utility power fails, you should install an **uninterruptible power supply (UPS)**. These devices also provide full protection against electrical surges and voltage fluctuations and thus enhance the reliability of the system as a whole.

When using a more powerful 19" rack-mounted USP, you can also protect all other network components (e.g. switches, routers, PoE switches, etc.).

Since MOBOTIX cameras do not require any heating even in the wintertime, the power consumption of 3 W is very low. This in turn means that you can centralize the USP-protected power supply by injecting power into the network cables (max. 100 m/300 ft). This kind of protected power supply can be used either with MOBOTIX MxPoE products (MX-NPA-3-RJ + external power supply or MX-NPR-4/8/20) or with PoE-compliant switches according to IEEE 802.3af.

The M22M supports the MOBOTIX PoE products for power injection into the network cabling (MxPoE) and the Power-over-Ethernet standard IEEE 802.3af (PoE)

UPS not only protect the camera against power failures, they also protect all other connected network devices against damage from voltage peaks and lows



Typical setup of a 19" system with UPS

2.1.2 Providing the Camera Connections, Wall Outlets

Once the camera position, the position of the cable outlets, and the method of power supply have been decided upon, the cabling should be installed. Before mounting the MOBOTIX M22M, you should make sure that the network connections have been properly tested, so that the proper functioning of the camera is guaranteed.

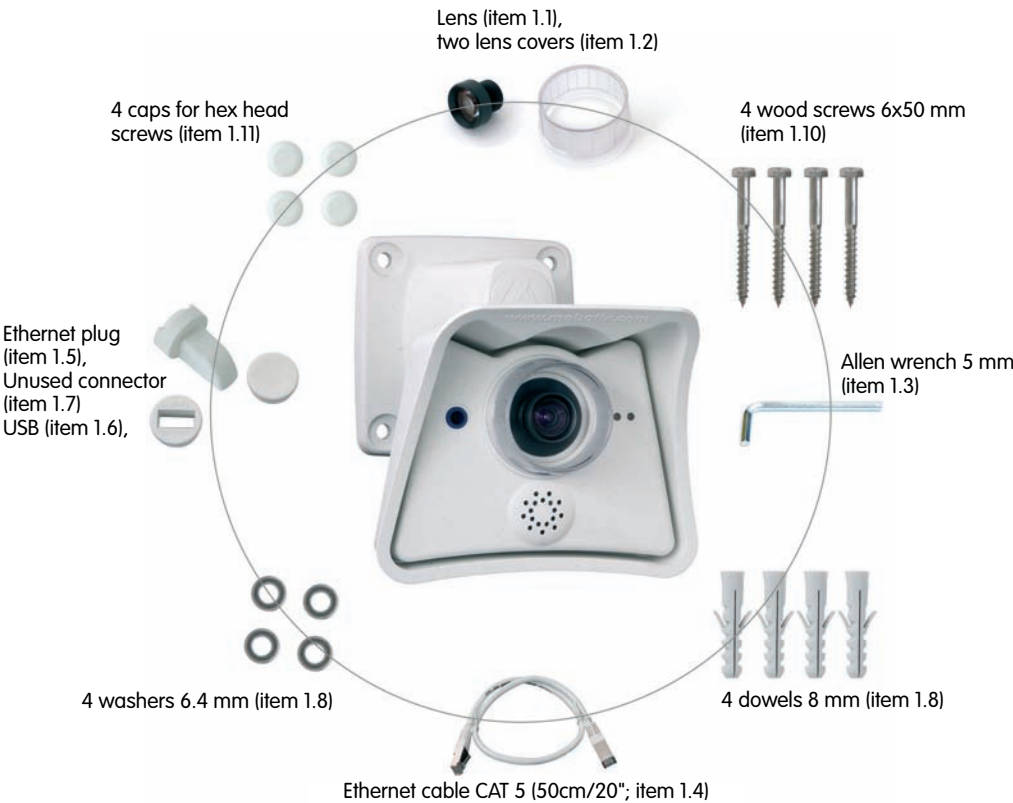
2.2 Overview

Mounting the MOBOTIX M22M generally follows **these steps**:

- **Checking the delivered parts** (section 2.3)
- **Deciding on the mounting options** (section 2.5)
- **Selecting the power supply** (section 3.3)
- **Mounting the MOBOTIX M22M to a wall or ceiling** (section 2.7)

2.3 Delivered Parts of the MOBOTIX M22M

Make sure to check the delivered parts



Mounting supplies are included!

Item	Count	Part Name
1.1	1	Lens (installed)
1.2	1	Lens cover (installed), replacement lens cover
1.3	1	Allen wrench 5 mm
1.4	1	Ethernet cable (installed)
1.5	1	Rubber plug for Ethernet connector (installed)
1.6	1	Rubber plug for USB connector
1.7	1	Rubber plug for unused connector (installed)
Mounting Supplies		
1.8	4	Dowels 8 mm
1.9	4	Stainless steel washers Ø 6.4 mm
1.10	4	Stainless steel wood screws with hex head 6x50 mm
1.11	5	Caps for covering screws

2.4 Camera Housing and Connectors of the MOBOTIX M22M



The MOBOTIX M22M consists of two main components, the camera itself and the SecureFlex wall mount. Like the M12/D12 models, the MOBOTIX M22M also features an integrated microphone and a speaker.

2.4.1 Connectors

- **10BaseT** (Ethernet network)
- **USB connector** (MOBOTIX expansion modules)



LED signals:

-  Power / Ethernet
-  Event / Recording

CF cards will be supported in a future software update

2.5 Mounting Options and Positioning

Mounting to a ceiling or wall



Mounting to a wall



Mounting to a ceiling

Tilting (ceiling mount)

To increase the tilt of the camera, the vertical tilt joint can be turned around 180 degrees (see red arrow!)



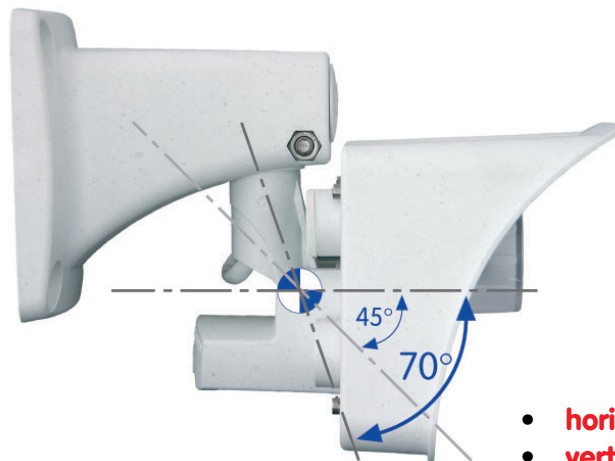
- **horizontally:** 360°
- **vertically:** 90°

Tilting (wall mount)

To increase the tilt to 70° when mounting the camera to a wall, the vertical tilt joint can be shortened (see dotted red line!)



Foot



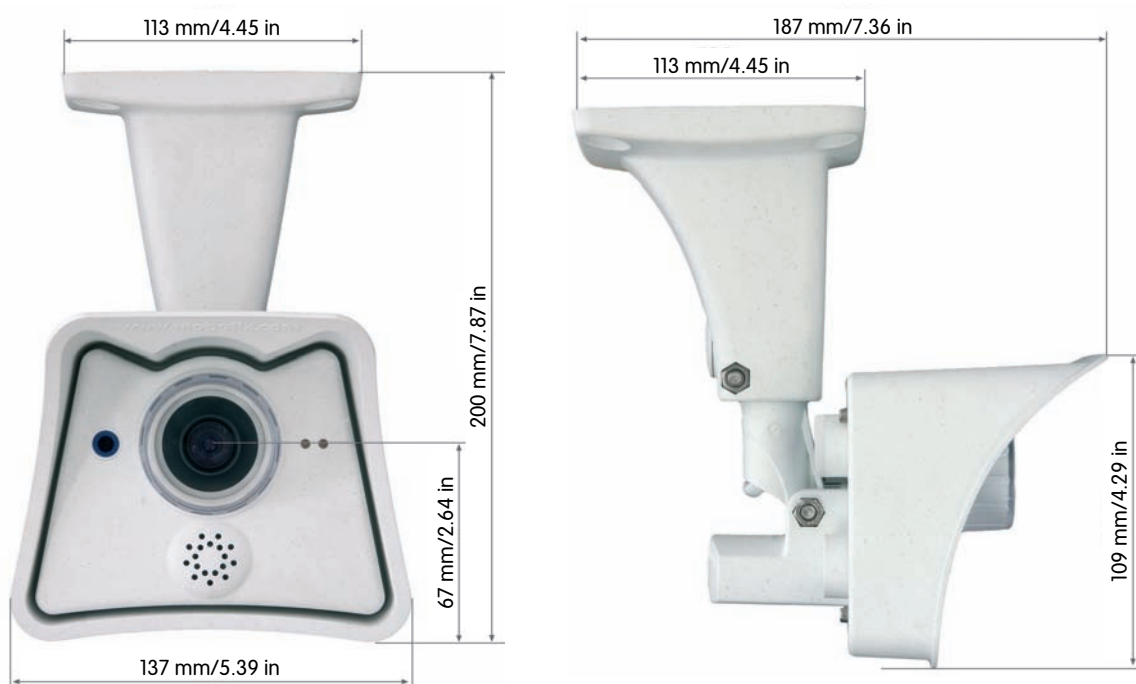
- **horizontally:** 180°
- **vertically:** 70°

2.6 Dimensions of the MOBOTIX M22M

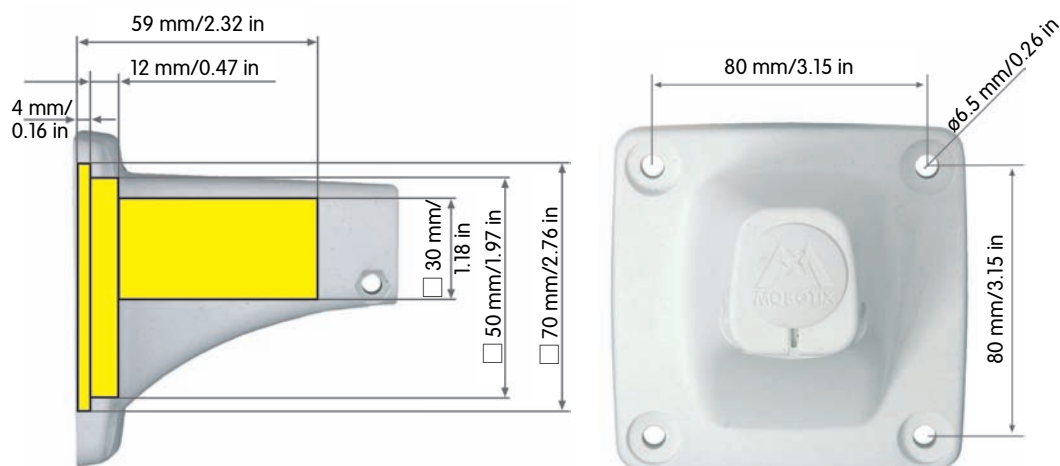
The **SecureFlex mount** enables easy mounting of the MOBOTIX M22M models to a wall or ceiling; the concealed cabling enhances the visual impression of the installation. The foot of the supplied wall mount is large enough to elegantly cover wall outlets (see section 2.7.4, *Mounting the Camera over Wall Outlets*).

Check the appendix for the drilling template, which will be helpful when drilling the holes for the supplied SecureFlex wall mount.

Elegantly covers wall outlets



Available Space Within Foot



Find the drilling template at the end of the manual



Maximum torque for hex head screws: 4 Nm (2.95 lbf ft)

The mount covers RJ45 wall outlets and conceals the cabling

Always use the NET plug for the Ethernet and the USB plug for the USB cable

Make sure that the plugs are firmly seated and that the cables are not bent within the plugs as water may enter into the camera

2.7 Mounting the MOBOTIX M22M to a Wall or Ceiling

Caution

Never use screws with countersunk heads to fasten the mount, as these screws will destroy the mount.

The wall mount is large enough to **mount the camera over a wall outlet** (see section 2.7.4, *Mounting the Camera over Wall Outlets*).

In order to increase the tilt of the camera, turn the vertical tilt joint by 180 degrees or shorten it.

2.7.1 Mounting to a Wall

Before attempting to mount the camera, make sure that you have found the best camera position. It is important that the camera's field of view is not obstructed in any way.

Once the camera has been mounted to the wall, you can fine-tune its position. Using the integrated SecureFlex wall mount, the camera can be turned horizontally and tilted vertically.

When mounted to a wall, the camera can be **turned/tilted** as follows:

- **horizontally**: approx. 180°
- **vertically**: approx. 70°



2.7.2 Mounting to the Ceiling

Before attempting to mount the camera to a ceiling, make sure that you have found the best camera position. It is important that the camera's field of view is not obstructed in any way.

Once the camera has been mounted to the ceiling, you can fine-tune its position. Using the integrated SecureFlex wall mount, the camera can be turned horizontally and tilted vertically.

When mounted to a ceiling, the camera can be **turned/tilted** as follows:

- **horizontally**: 360°
- **vertically**: approx 90°

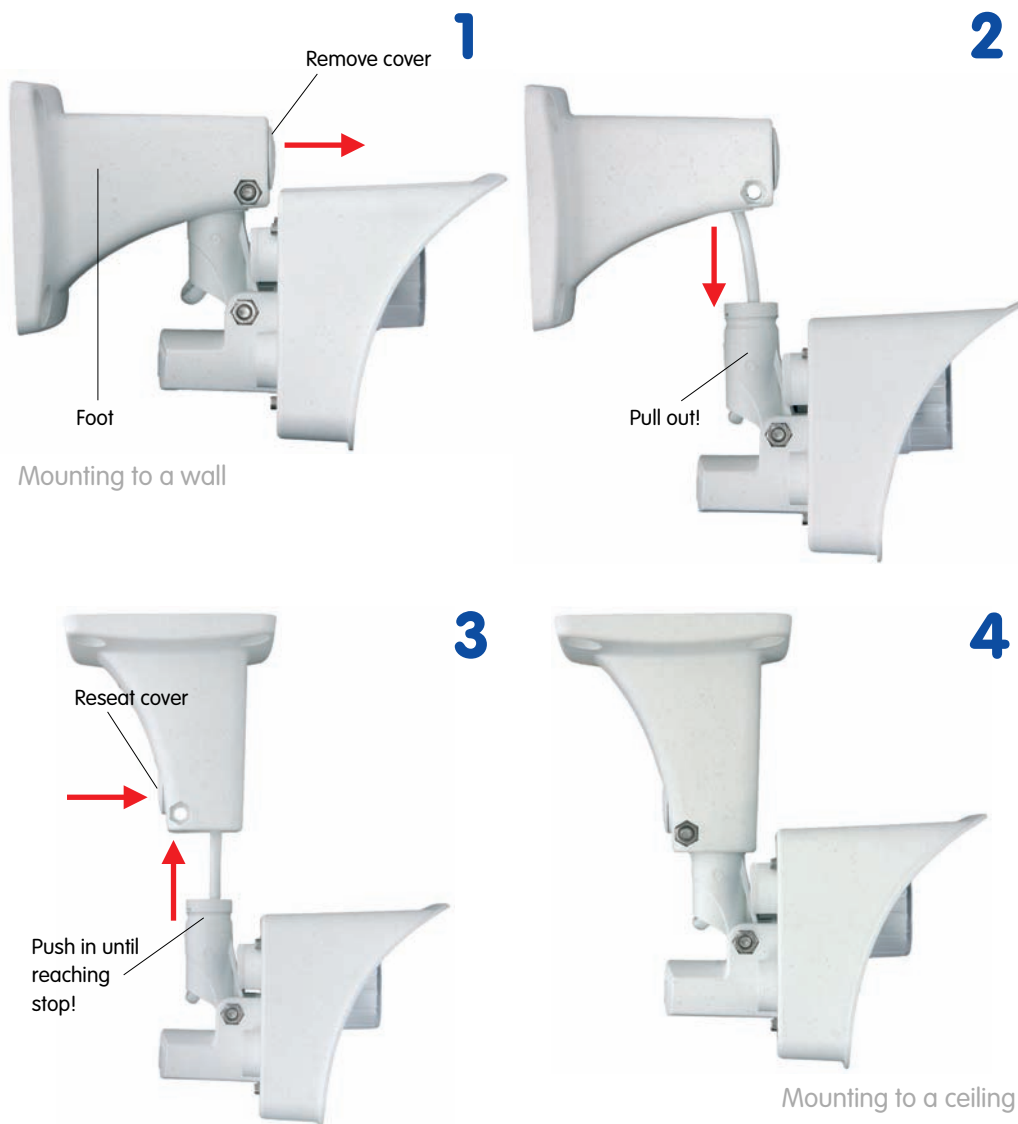


2.7.3 Converting the Wall Mount to Ceiling Mount

If the camera is to be mounted to a ceiling, it is necessary to convert the SecureFlex wall mount. Proceed as outlined in the following:

- Unscrew the **Allen screw** in the mount, which holds the turn/tilt unit in place (5 mm Allen wrench). Remove the Allen screw, the washer and the hex nut from the mount and unplug the **cover**.
- Gently pull the **turn/tilt unit** and the installed cable out of the vertical opening of the mount.
- First insert the **cable**, then the turn/tilt unit into the horizontal opening of the mount (all the way to the stop).
- Press the **cover** into the unused opening of the mount.
- Place the hex nut into the corresponding hole, insert the **Allen screw** with washer and lightly fasten the screw so that you can still easily move the camera.

Converting the ceiling mount back to wall mount follows the steps in reverse order.



Converting from wall mount to ceiling mount in four easy steps

Maximum torque for all Allen screws: 4 Nm (2.95 lbf ft)

The wall mount has to completely cover the wall outlet

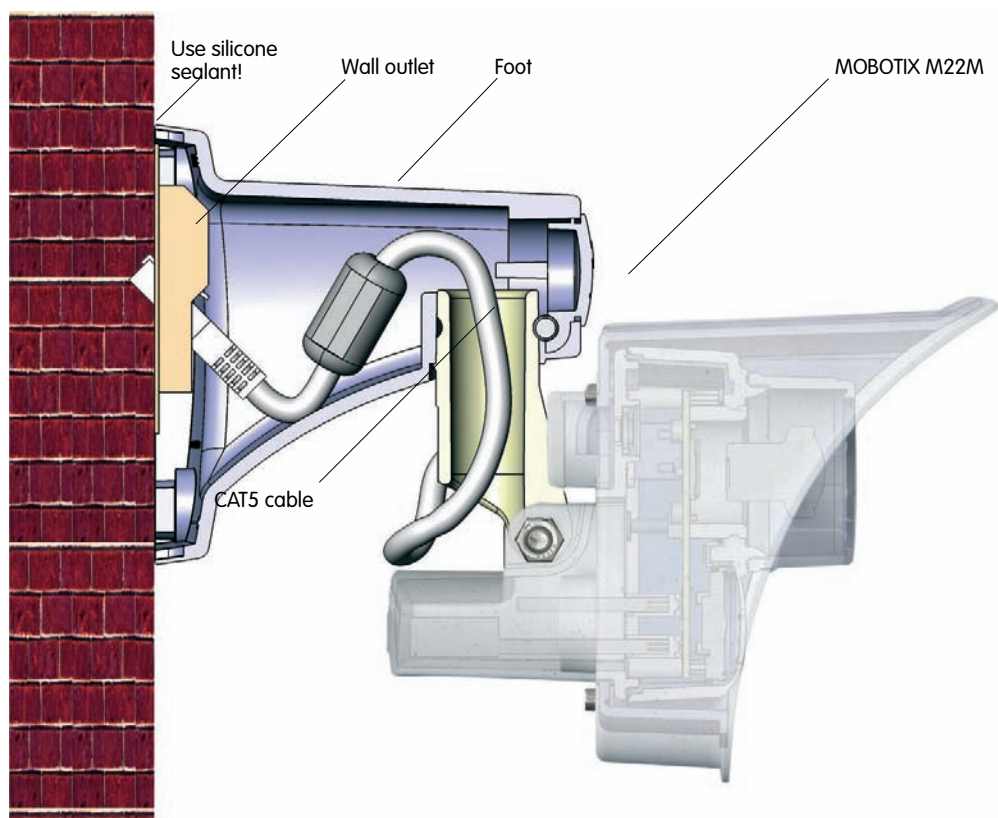
2.7.4 Mounting the Camera over Wall Outlets

Mounting the SecureFlex mount to a wall allows **covering RJ45 wall outlets (without frame)** and also allows using a defined network end point.

When positioning the wall outlet, make sure that the outlet lines up with the upper rim of the mount later on (see figure below and the drilling template at the end of the manual).

If no wall outlet is present, use a suitable extension or an adapter to connect the camera to the network.

When installing an above-the-wall assembly, breaking out one of the four openings in the base of the mount will provide for properly guiding the cable into the mount.



NET plug for Ethernet cable

Caution

Always use the NET plug for connecting the Ethernet cable!

Make sure that the plug is seated properly and the connector is not bent or water may enter the camera!



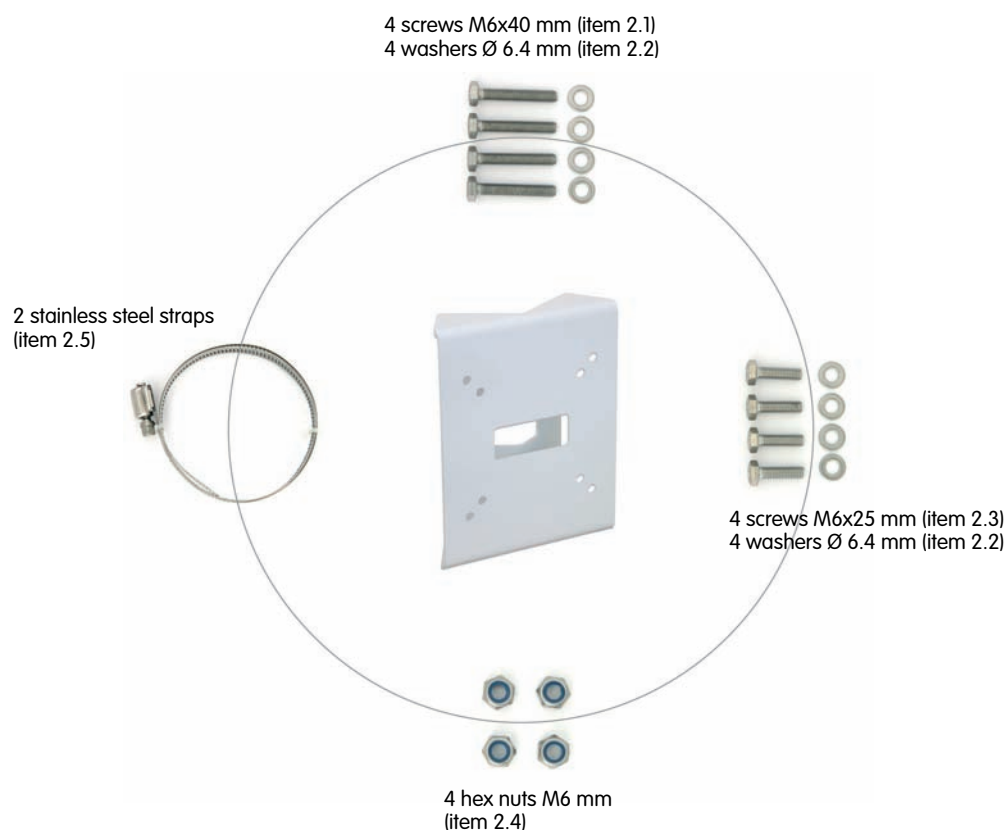
2.7.5 SecureFlex Pole Mount

If you are intending to mount the camera on a pole, you should consider using the **MOBOTIX SecureFlex Pole Mount**. This mount is made of **3 mm powder-coated stainless steel (white)** and has been designed specifically for outdoor use. The supplied stainless steel straps allow fixing the mount to poles with diameters between **60 and 180 mm (2.4" to 7.1")**.



Robust and maintenance-free: Pole mount made of 3 mm stainless steel

2.7.6 Delivered Parts of the SecureFlex Pole Mount



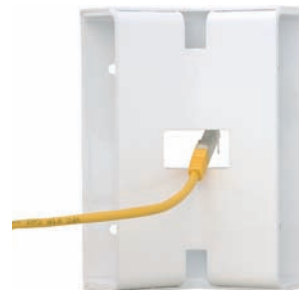
Item	Count	Part Name
2.1	4	Stainless steel screws M6x40 mm
2.2	8	Stainless steel washers Ø 6.4 mm
2.3	4	Stainless steel screws M6x25 mm
2.4	4	Stainless steel hex nuts M6
2.5	2	Stainless steel straps

2.7.7 Mounting the Pole Mount and the Camera

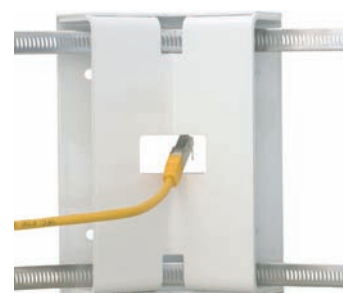
Use the supplied stainless steel straps (item 2.5) for affixing the pole mount to the pole.

- Guide the **connector cables of the camera** from behind through the opening at the center of the pole mount. In order to properly **protect the cabling**, you should let the cabling run from the inside of the pole through the pole mount directly into the camera.

Note: The cable to the camera should be running at least 50 cm (20") outside of the pole!



- Guide the stainless **steel straps** (item 2.5) through the pole mount (see figure). The stainless steel straps allow attaching the mount to **poles with diameters between 60 and 180 mm (2.4" to 7.1")**.



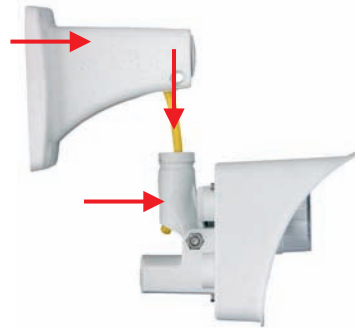
- **Firmly tighten the screws of the stainless steel straps.**



- Unscrew the **upper Allen screw** in the foot of the mount, which holds the turn/tilt unit in place (5 mm Allen wrench, item 1.3). Remove the Allen screw, washer and hex nut from the mount and pull the **turn/tilt unit** out of the mount's foot.



- Remove any installed **connection cables** and guide the connection cables through the foot of the mount and the turn/tilt unit of the SecureFlex mount. Hook up the cables to the camera connectors, as described in section 3.3, *Connecting the Camera to the Network and the Power Supply*.

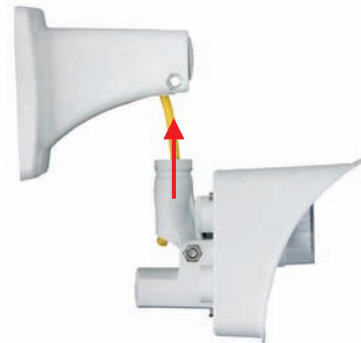


Make sure that you use the proper plugs (NET for Ethernet, USB for the USB cable)!



Also take care not to bend the cables too much as they enter the plugs or water may enter the camera!

- Re-install the **turn/tilt unit** of the SecureFlex mount and lightly tighten all screws of the turn/tilt unit so you can easily find the best camera position later on.



Maximum torque for all
Allen screws: 4 Nm
(2.95 lbf ft)

- Use the supplied **screws M6x25 mm** (item 2.3), **washers dia. 6.4 mm** (item 2.2) and **hex nuts M6** (item 2.4) to attach the foot of the mount (including the camera) to the pole mount.
- Properly position the camera and then tighten all screws of the turn/tilt unit (max. 4 Nm/2.95 lbf ft) to make sure that the camera keeps its position.
- Press the white **caps** (item 1.10) onto the hex heads of the screws.



Maximum torque for hex
head screws: 4 Nm
(2.95 lbf ft)

2.8 Mounting the Camera to Different Surfaces

Notes

Above-the-wall assembly:

When installing an **above-the-wall assembly** instead of using a wall outlet, you can break out one of the four cable openings in the foot of the mount to properly guide the cable into the mount.

Mounting the camera outdoors:

When using a **wall outlet for an outdoors installation**, you should use silicone sealant to prevent water from entering the wall outlet and the cabling by sealing off the mount's foot against the wall. You should break out the lower cable opening in the mount's base to prevent condensation from accumulating. Make sure not to seal off this opening.

When using an **above-the-wall assembly**, make sure that you install the cable from the bottom-most cable opening in order to prevent rainwater from entering the mount. When using an **above-the-wall assembly**, sealing off the SecureFlex mount and the wall is not absolutely necessary. Make sure that condensation can exit the mount despite the above-the-wall assembly. Make sure not to seal off this opening.

Wall thickness:

Make sure that the wall is at least five centimeters (2") thick if you intend to use the supplied dowels and screws.

2.8.1 Mounting to a Wooden Wall or Surface

Use the supplied materials and suitable tools for mounting the SecureFlex mount to a wooden wall or surface. Follow the *Mounting Instructions* below to complete the installation.

Use the supplied wood screws without dowels, if you are mounting the camera to a thick wooden wall or structure. If the wooden wall or surface is too thin or if concrete or brick is behind the wood, you should also use the supplied dowels for mounting. Make sure that you know how thick the wooden wall or surface is, before you start drilling the holes. Please also follow the instructions in the following sections.



Required Materials:

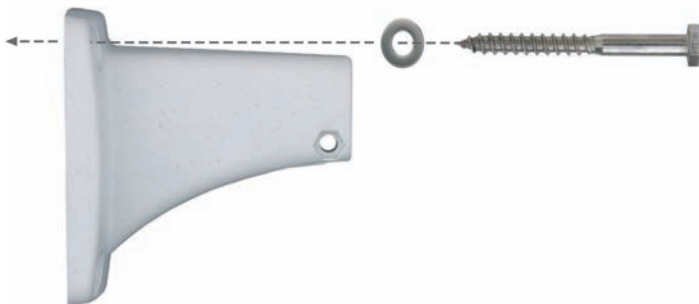
- 4 hex head screws (item 1.6)
- 4 washers (item 1.5)

Required Tools:

- Wrench or ratchet for M6 hex heads
- Allen wrench 5 mm (item 1.3)
- Possibly power drill and drill bit for pre-drilling

Mounting Instructions:

- Slide a washer (item 1.5) over every hex head screw (item 1.6).
- Press the SecureFlex mount against the wooden wall or surface.
- Insert the four screws (with washers) into the openings in the foot of the SecureFlex mount.
- Tighten the screws using the wrench or ratchet.
- Check the screws for proper tightness and push the caps onto the hex heads.



Maximum torque for hex head screws: 4 Nm
(2.95 lbf ft)

2.8.2 Mounting to a Drywall

Use the supplied materials and suitable tools for mounting the SecureFlex mount to a drywall. Follow the *Mounting Instructions* below to complete the installation.

Required Materials:

- 4 hex head screws (item 1.6)
- 4 washers (item 1.5)
- 4 dowels (item 1.4)



Required Tools:

- Power drill
- Suitable drill bit
- Hammer (optional)
- Wrench or ratchet for M6 hex heads
- Allen wrench 5 mm (item 1.3)

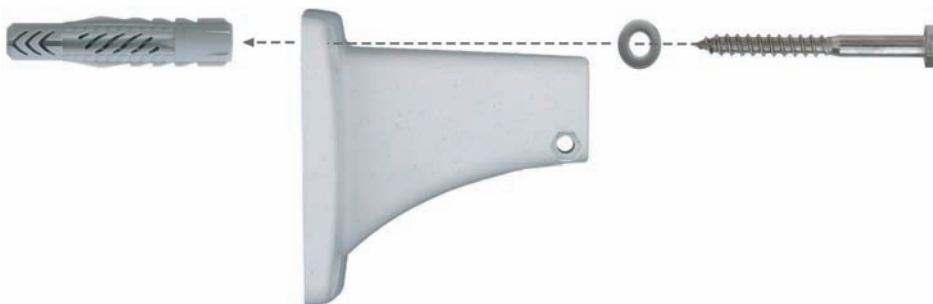
Mounting Instructions:

- Hold the drilling template at the position where you would like to mount the camera.
- Mark the holes for drilling with a pencil or a sharp object, then remove the drilling template.
- Drill the holes with the power drill where you just marked.
- Insert a dowel into each of the holes you just drilled. If required, use the hammer to press the dowels into the holes.
- Slide a washer (item 1.5) over every hex head screw (item 1.6).
- Hold the SecureFlex mount against the wall. Make sure that the openings in the mount's foot line up with the dowels.
- Insert the four screws (with washers) into the openings in the foot of the SecureFlex mount and into the dowels.
- Tighten the screws using the wrench or ratchet.
- Check the screws for proper tightness and push the caps onto the hex heads.

Find the drilling template at the end of the manual



Maximum torque for hex head screws: 4 Nm (2.95 lbf ft)



2.8.3 Mounting to a Concrete or Brick Wall

Use the supplied materials and suitable tools for mounting the SecureFlex mount to a concrete or brick wall. Follow the *Mounting Instructions* below to complete the installation.

Required Materials:

- 4 hex head screws (item 1.6)
- 4 washers (item 1.5)
- 4 dowels (item 1.4)

Required Tools:

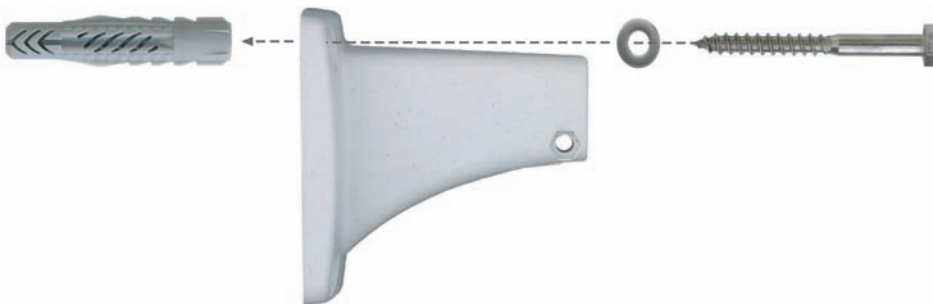
- Power drill
- Suitable drill bit
- Wrench or ratchet for M6 hex heads
- Hammer (optional)
- Allen wrench 5 mm (item 1.3)



Mounting Instructions:

- Hold the drilling template at the position where you would like to mount the camera.
- Mark the holes for drilling with a pencil or a sharp object, then remove the drilling template.
- Drill the holes with the power drill where you just marked.
- Insert a dowel into each of the holes you just drilled. If required, use the hammer to press the dowels into the holes.
- Slide a washer (item 1.5) over every hex head screw (item 1.6).
- Hold the SecureFlex mount against the wall. Make sure that the openings in the mount's foot line up with the dowels.
- Insert the four screws (with washers) into the openings in the foot of the SecureFlex mount and into the dowels.
- Tighten the screws using the wrench or ratchet.
- Check the screws for proper tightness and push the caps onto the hex heads.

Find the drilling template at the end of the manual



Maximum torque for hex head screws: 4 Nm (2.95 lbf ft)

2.8.4 After Mounting the Camera

Controlling the image position and the focus

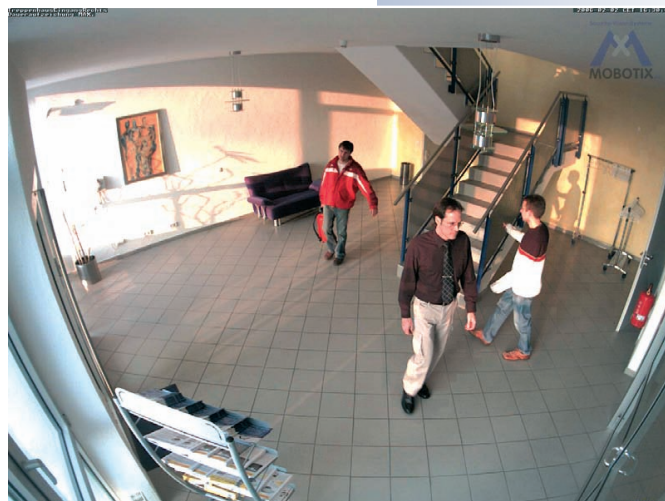
- Loosen both screws at the turn/tilt joints of the mount using the supplied Allen wrench (item 1.3) so that you can easily turn and tilt the camera.
- Display the camera images on a computer monitor, then turn and tilt the camera until you have found the best position.
- Tighten the screws at the turn/tilt joints of the SecureFlex mount using the Allen wrench (maximum 4 Nm/2.95 lbf ft) to make sure that the position of the camera remains as set.
- If required, clean the lens' surface using a clean, lint-free cotton cloth.
- Check the image focus (tele lens L135 only) and the camera position on the computer monitor. Please also see section 2.9.3, *Changing Lenses*.

Maximum torque for all
Allen screws: 4 Nm
(2.95 lbf ft)



2.9 Lens Options

MOBOTIX offers five different lenses from **Super Wide Angle** (L22) to **Tele** (L135). Since the M22M is backlight-proof, these lenses do not require an auto iris. Without the iris as a mechanical component, these glass lenses are extremely robust and maintenance-free. The standard lens for the M22M Secure and IT models is the Super Wide Angle lens with a **horizontal field of vision of approx. 90°**. Although the Super Wide Angle is a super wide-angle lens, it shows very little distortion and delivers good image quality, even when using the 4x zoom of the M22M. If a camera with a Super Wide Angle lens has been mounted in the corner of a room, the complete room is visible on the image.



L22 Super Wide Angle lens

	L22 Super Wide Angle	L32 Wide-angle	L43 Wide-angle	L65 Tele	L135 Tele
MOBOTIX Lenses					
	approx. 90°H x 67°V in 10 m appr.: 20.0 x 13.3 m	approx. 60°H x 45°V in 10 m appr.: 11.5 x 8.2 m	approx. 45°H x 34°V in 10 m appr.: 8.2 x 6.1 m	approx. 31°H x 23°V in 10 m appr.: 5.5 x 4.0 m	approx. 15°H x 11°V in 10 m appr.: 2.6 x 1.9 m

Note

MOBOTIX lens designations do not reflect the actual focal length of the lenses, but the focal length (Lxx mm) converted to 35 mm camera format. For example, the MOBOTIX Super Wide Angle lens has an actual focal length of 4 mm. This would be the equivalent of 22 mm on a 35 mm camera and thus results in the MOBOTIX designation "L22" for the Super Wide Angle lens.

Since the image sensors in the cameras have different sizes, converting to 35 mm camera as a known format provides for better comparison of the image format and the field of vision parameters of different lenses. Another benefit is that you can easily set a 35 mm SLR camera to the same focal length (Lxx) to obtain the same field of vision. This approach greatly facilitates lens selection.

M22M-Sec-CSVario with
L24-54 Vario CS mount
lens

Lens cover for Vario CS
mount lens

Lens cover for fixed
lenses with tempered
glass pane for usage in
rough environmental
conditions

Canceling out light
reflections

2.9.1 CS Mount Version

The **M22M-Sec-CSVario** is delivered with a CS mount and a compact L24-L54 1/2" vario lens. To protect the lens against the weather, this version comes with a longer lens cover (43 mm inside, 53 mm outside) with integrated glass pane and threads for an external filter (40.5 mm x 0.5 mm). This cover will work for lenses, which have a maximum diameter of 36 mm and which are not longer than 43 mm.



Because of the image sensor's size of 1/2", you can only use CS and C mount lenses (C mount lenses with adapter ring) for 1/2" sensors or larger. Using other lenses will produce shadows at the image borders and will reduce image sharpness. Vario lenses are not maintenance-free, they are definitely less robust and less reliable in the long run as compared to the MOBOTIX M14 fixed lenses. This is why the vario lenses are typically used in applications where locations are changing frequently, e.g. in industrial applications.

2.9.2 Lens Cover with Glass Pane

As an additional accessory, a heavy-duty lens cover with a front glass pane is available for the M22M models. This will improve the durability of the lens cover when used in rough conditions (at the sea, in sand storms, etc.). This lens cover also has a thread size that fits external filters (40.5 mm x 0.5 mm) available from photo shops. For example, you could install a polarization filter to cancel out the reflections from windowpanes or windshields.



Using this lens cover together with the L22 Super Wide Angle lens is not recommended, since this lens cover produces shadows at the image borders.

Caution

Make sure that the white ring remains in the lens cover, since the ring reduces light reflections and prevents the camera LEDs from adding reflections to the images.

2.9.3 Changing Lenses

As described in section 2.9, *Lens Options*, the M22M can be fitted with several MOBOTIX lenses. Proceed as follows to change a lens:

- Unmount the **lens cover** by turning it counter-clockwise.
- Loosen the **lens' lock ring** (if fitted) by turning it counter-clockwise.
- Remove the **lens** with the lock ring by turning it counter-clockwise.
- Unscrew the **lock ring** (if present) from the lens you just removed and screw it onto the new lens.
- Screw the **new lens with the lock ring** (if present) back into the camera.
- If necessary, restore the **power supply** of the camera.
- Adjust the **image sharpness** according to the camera's live image on the computer monitor. **Never turn the lens to far into the lens mount and never apply excessive force when doing so as this would damage the lens mount otherwise.**
- Tighten the **lock ring** by turning it in clockwise direction.



Caution: Protection class IP65 will only be reached with mounted lens cover

Check image sharpness!

This procedure is the same for the **M22M-Sec-CSVario** and **CS/C mount** lenses, albeit without the lock ring (not installed).

2.10 Wiring, Fire Prevention, Lightning and Surge Protection

When installing the wiring inside or outside of buildings, make sure you always adhere to the relevant regulations on wiring, fire prevention and protection against lightning.

MOBOTIX recommends having MOBOTIX cameras installed only by specialists accustomed to installing network devices and having proper respect for the pertinent regulations regarding lightning protection and **fire prevention** as well as the current technology for preventing damages from electrical surges.

Find more information at an institution such as the **International Electrotechnical Commission** (IEC, www.iec.ch) or at a manufacturer of protection devices against lightning and electrical surges, such as Dehn (www.dehn.de).

2.10.1 Wiring

When installing the wiring, make sure you follow these guidelines:

- **Data cable:** Make sure you only use double-shielded CAT 5/7 cable (**S/STP**) for Ethernet connections. Double-shielded means that the cable as a whole is shielded and that each twisted wire pair has its own shield.



Use double-shielded CAT 5/7 cables for wiring

Carefully follow these instructions!

- **Outdoors:** Installing the camera outdoors requires special precautions and measures regarding the cables as well as lightning and surge protection (see section 2.10.3, *Lightning and Surge Protection*).
- **Wire lengths:** The cable segments must not exceed the maximum allowed cable lengths in order to ensure proper data transfer (see section 3.3, *Connecting the Camera...*). Maximum cable lengths should not exceed 30 m (33 yd) for patch cables and 100 m (110 yd.) for installed cables.
- **Avoid induction:** When running data cables parallel to existing regular power lines or high-voltage wires, make sure you observe the minimum distances to the power cables.

2.10.2 Fire Prevention

When installing the power lines to the camera, make sure you always adhere to the relevant regulations on wiring and fire prevention at the site of the installation.

2.10.3 Lightning and Surge Protection

To prevent damage from lightning and surges, make sure you follow these guidelines:

- **Lightning conductors:** In areas exposed to lightning (e.g. on roofs), a distance holder (1 m/3 ft. higher, 1 m/3 ft. away from the camera) and proper lightning conductors need to be installed in order to prevent lightning strikes into the camera and to ensure that the energy of a lightning strike is properly led to the ground.
- **Surge protection:** Make sure you have installed proper protection against electrical surges in order to prevent damage to the camera, the building and the network infrastructure. This includes surge protectors for 19" racks, adding an uninterruptible power supply (UPS) to the MOBOTIX camera and installing surge arresters or similar for routers, switches, servers, etc.

Not required if network components are used that support the PoE (Power over Ethernet) standard IEEE 802.3af!

Power supply for smaller systems

2.11 Camera Accessories

Power supply (MX-SNT-E/U/GB/J/AUS01-30-RJ)

The MOBOTIX power supply is required if you do not use a **Network Power Rack** or **Network Power Box**, or a PoE-compatible switch or router.



Network Power Adapter (MX-NPA-3-RJ)

The Network Power Adapter allows injecting the power supply for the MOBOTIX camera into the network cable. It thus allows using the network cable for connecting to the camera and for remotely supplying power (up to 100 m (300 ft)). The Network Power Adapter is required, if you are using the uni-



versal power supply, and power is not supplied using a PoE switch/router or a MOBOTIX Netpower Box/Rack.

Netpower Box for up to 4 Cameras (MX-NPR-4)

The MX-NPR-4 allows supplying power to up to four MOBOTIX cameras via the network cable. The NPR-4 thus replaces four separate power supplies and four Network Power Adapters. The Netpower Box delivery includes a (detachable) clip at the back, which simply clicks onto DIN rails.



Intelligent and robust power supply thanks to DIN rail installation

Netpower Rack for 8/20 Cameras (MX-NPR-8/20)

The MX-NPR-8/MX-NPR-20 allow supplying power to up to 8/20 MOBOTIX cameras, respectively, via the network cable. These NPRs thus replace 8/20 separate power supplies and the same number of Network Power Adapters; they are easily mounted in 19" racks (2 rack units).



Zero maintenance and reliable as these devices do not require fans

M22M Pole Mount (MX-MH-SecureFlex-ESWS)

If you are intending to mount the camera to the corner of a building or a pole, you should consider using the Corner and Pole Mount together with the Outdoor Wall Mount. This Corner and Pole Mount is made of **3 mm powder-coated stainless steel (white)** and has been designed specifically for outdoor use. The supplied stainless steel straps allow attaching the mount to poles with diameters between **60 and 180 mm (2.4 to 7.1 in)**; see section 2.7.5 ff, *SecureFlex Pole Mount*.



Corner and Pole Mount: Outdoor quality made of 3 mm stainless steel

MOBOTIX Cam-IO (MX-CAM-IO)

This installation module for MOBOTIX cameras features numerous connectors for external devices. It thus expands the scope of camera applications when adding external sensors using its two signal inputs. On the other hand, it also allows controlling other devices (two signal outputs, Line In/Out for audio signals) and serves as power supply of the camera.



Expansion box with various possibilities for attaching external devices and sensors

3 OPERATING THE CAMERA

3.1 General Procedure

The MOBOTIX camera **does not require any software installation**; all you need is your preferred browser with JavaScript support to operate the camera. Thus, the MOBOTIX camera is supported by all common operating systems (such as **Windows**, **Macintosh** and **Linux**, ...).

3.1.1 Establishing the Power Supply to the Camera

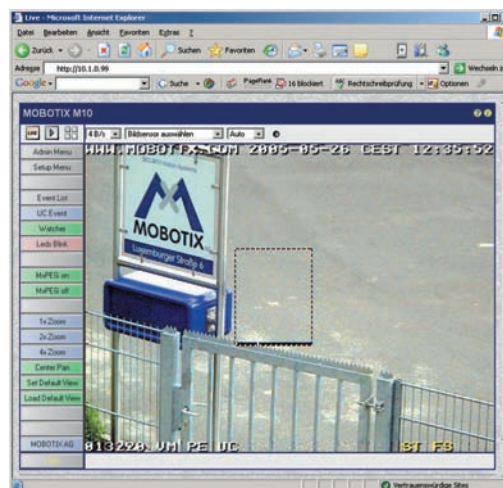
You can choose between the following options:

- **External power supply and Network Power Adapter (MX-NPA-3-RJ):** Power supply of one camera injected into the network cabling (max. length 100 m (110 yd)), from the NPA to the **10BaseT/NET** connector of the camera (see sections 3.3.2 and 3.3.3).
- **Network Power Box/Rack (MX-NPR-4, or 8/20):** Power supply of 4/8/20 cameras injected into the network cabling (max. length 100 m (110 yd)), from the NPR to the **10BaseT/NET** connector of the camera (see section 3.3.4).
- **Power over Ethernet:** Power supply using network components that are conforming to the PoE standard **IEEE 802.3af** (see section 3.3.5)

3.1.2 Connecting the Camera

- **Ethernet interface of the camera** (10/100 Mbps Ethernet): Connect directly from a computer (using a crossover cable) or by using a Network Power Adapter or a switch and a regular patch cable. Open a browser and enter the IP address printed on the camera label (e.g. **10.1.0.99**).

If your network does not support a Class A network (i.e. **10.x.x.x**), your PC or laptop will have to be set temporarily to such a network address. For operating systems that allow multi-homing (Windows 2000, Windows XP, Linux, Mac OS X), you can set a second IP address in the **10.x.x.x** network (see section 3.4.1, *Preparing the Ethernet Connection*).



Once a connection has been established, click on the **Admin Menu** button to start configuring the camera. The **Admin Menu** controls all network settings (IP address, netmask, DHCP, etc.) and other options.

MOBOTIX PoE products do not require any fans and are robust and reliable!

PoE components (IEEE 802.af) should not have fans as this would decrease the overall reliability of the entire system

Computer settings:

- IP address: 10.1.0.11
- Netmask: 255.0.0.0
- Gateway: none
- DNS: none

Note

After first booting the new MOBOTIX camera or after resetting to factory defaults, accessing the Administration menu in the browser (**Admin Menu** button) will automatically start the **Quick Installation** wizard. This is where you configure the most important camera parameters in a step-by-step manner. If you have completed the Quick Installation wizard at least once, the standard Administration menu will open.

Always use Quick Installation for initial configuration

The configuration follows these steps:

- 1) Establish the first connection (via the Ethernet network).
- 2) Set the parameters for the desired connection type (Quick Installation).
- 3) Set the event control (see chapter 7, *Events, Actions and Messages*, in the *Software Manual*).
- 4) Set the storage parameters (FTP, internal and external ring buffer storage).
- 5) Store the configuration in the camera's permanent storage (flash).



Live image: <http://preparkcam.mobotixserver.de>

Always use **Quick Installation** for initial configuration!

Admin Menu
User: **admin**
Password: **meinsm**

Setup Menu

Recommendation: Always use factory image settings!

3.2 Overview of the Configuration Settings

Once the connection has been established, you can configure the camera by clicking on the **Admin Menu** button or the **Setup Menu** button.

- **Using the Quick Installation wizard**

After first booting the camera or after resetting it to factory defaults, any access to the administration menu (**Admin Menu** button) will start the **Quick Installation**.

The wizard will guide you through the most important settings of the camera (configuration of the network interface, image control, etc.) and can also be used to reset the camera to its factory settings.

It is also recommended to use **Admin Menu > Quick Installation** later on as well, e.g. if you would like to change connection parameters or add a new connection type.

- **Administration and setup of the camera**

Basic configuration tasks of the camera (e.g. passwords, interfaces, software updates) are carried out from the administration menu (**Admin Menu** button), which requires the corresponding access rights (*admins* group, user name and password).

Open the **Setup Menu** (button) and find the dialogs for changing the image, event and recording settings in the **Image Control** and **Event Control** sections. These options are also available for users belonging to the *users* group. Some of these settings can be changed using the corresponding pull-down menus above the image on the Live screen.

- **The image settings are already optimized**

The factory image settings of MOBOTIX cameras deliver excellent images for most application scenarios and should not be changed. If you do wish to make changes, your changes should be minor and gradual.

If you would like to reset changes without resetting the complete configuration to factory defaults, you can use the **Factory** button at the bottom of the dialog to reset only this dialog's settings. If you would like to reset all image settings, you may do so using the **Manage Settings > Restore Image Settings** pull-down menu above the image on the Live screen.

- **All changes are temporary**

All changes to the configuration are only temporary and can thus be tested easily. Restoring the previous configuration settings can be achieved using the **Restore** button in most dialogs or by running **Admin Menu > Restore last stored configuration from flash** (see also section 5.9, *Managing Settings*, in the *Software Manual*).

Once you have finished configuring the camera, you should always **store the settings in the camera's permanent memory**. You can do so in each dialog (clicking on **Set** at the bottom of each dialog will temporarily set the changes; clicking on **Close** will ask you to store the complete configuration in the camera's permanent memory) or in the **Configuration** section of the administration menu (**Admin Menu > Store current configuration into flash memory**).

The **Configuration** section of the administration menu provides more functions for storing, copying and managing camera settings. For additional information on this topic, see chapter 5, *Basic Camera Configuration*, in the *Software Manual*.

- **A camera that keeps time**

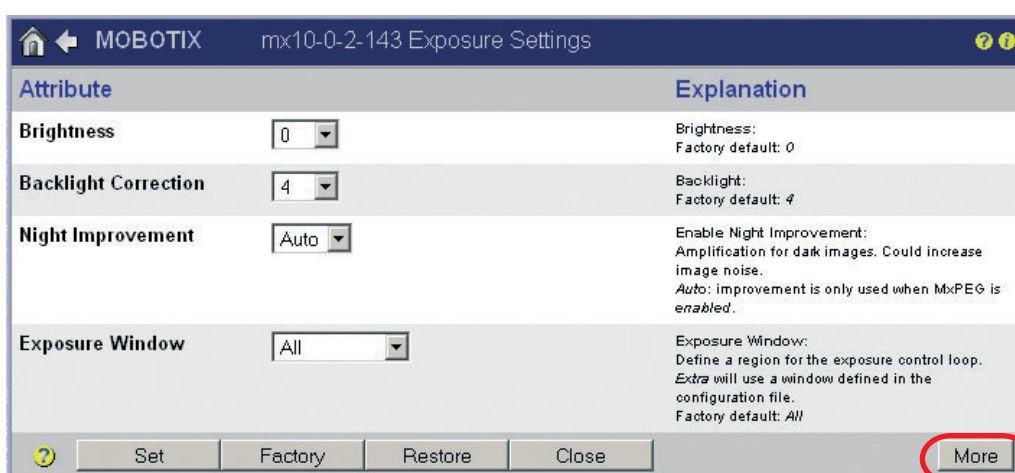
Apart from a multitude of possibilities for controlling the camera using time (time tables, holiday and vacation, scheduled tasks, etc.), the camera can also **synchronize its internal clock**. This allows you to keep the camera in synch manually with a computer or fully automatic using a time server or another MOBOTIX camera. The camera can use NTP time servers or time servers providing Time Protocol (RFC 868). For additional information on this topic, see section 5.4.2, *Date and Time / Time Zones and Time Servers*, in the *Software Manual*.

- **MOBOTIX cameras can do "More"**

In order to improve the readability of the camera dialogs, some of them hide less-often used options when showing the dialog. These dialogs have a **More** button in the bottom right corner; click on it to display the advanced options. If all options are displayed, the **Less** button appears. Clicking this button will hide the advanced options.

Make sure to permanently store changed parameters!

Automatic time synchronization using a time server



Click on the **More/Less** buttons to show/hide the advanced options

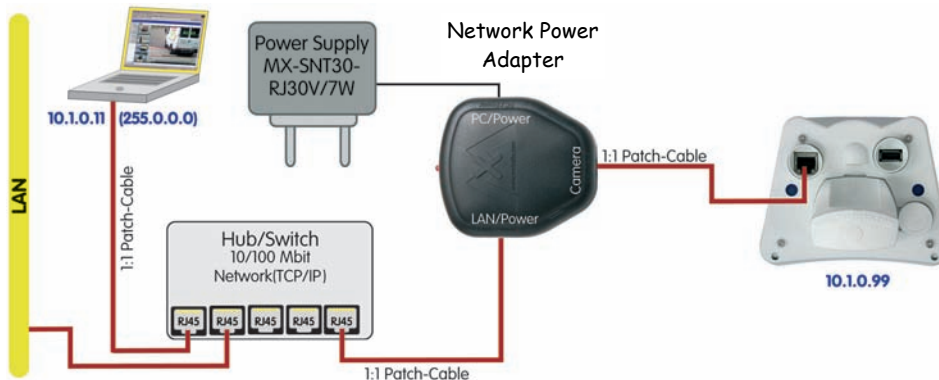
3.3 Connecting the Camera to the Network and to the Power Supply

3.3.1 Notes on Cable Lengths and Power Supply

- The **power supply of the camera** can only be established using the 10BaseT/NET connector of the camera with the (pre-installed) network cable. In order to supply power via the network cabling we recommend the MOBOTIX PoE products (MxPoE, see also section 2.11, *Camera Accessories*):
 - for one camera using the **Network Power Adapter** (MX-NPA-3-RJ)
 - for up to four cameras using the **Network Power Box** (MX-NPR-4)
 - for up to 8 or 20 cameras using the **Network Power Rack** (MX-NPR-8/20)
- The **maximum length of the network cable** for remotely supplying power is **100 m (300 ft)**.
- Make sure that you only use switches or routers that support the **10/100 Mbps Ethernet interface** of the camera. Check the LED activity of the corresponding port at the switch or router. When operating many cameras, please also see section 4.11, *Operating Many Cameras*, in the *Software Manual*, for additional hints.
- It is highly recommended to use **uninterruptible power supplies (UPS)**, which also protect the cameras and the network components against electrical surges.
- **Advantages of MOBOTIX PoE Products:**
 - Zero maintenance and reliable without fans.
 - Higher reliability of the system as a whole, since standard routers/switches without PoE can be used (lower risk of failure).
 - Easy installation in 19" racks (*MX-NPR-8/20*) or on DIN rails (*MX-NPR-4*).
- If you are using **IEEE 802.3af Power over Ethernet network components** for supplying power to MOBOTIX cameras, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, the reliability of the entire system is increased and the life cycle of these components is expanded.

3.3.2 Power Supply (MxPoE) Using a Switch

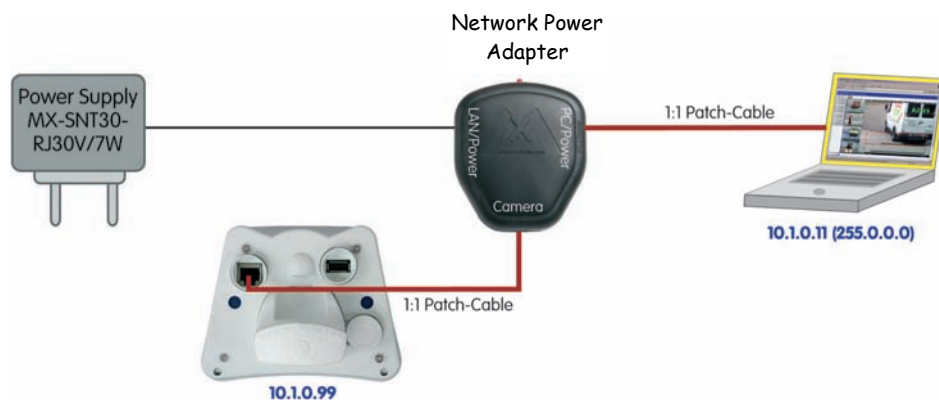
- Connect the factory pre-installed cable of the camera to the **Camera** connector of the Network Power Adapter.
- Connect the **LAN/Power** connector of the Network Power Adapter to an Ethernet connector of the switch/router or the Ethernet wall outlet.
- Plug the RJ45 connector of the external power unit into the **PC/Power** connector of the Network Power Adapter.



MOBOTIX power supply and Network Power Adapter required

3.3.3 Power Supply (MxPoE) When Connected Directly to a Computer

- Connect the factory pre-installed cable of the camera to the **Camera** connector of the Network Power Adapter.
- Connect the **PC/Power** connector of the Network Power Adapter to the Ethernet port of the computer.
- Plug the RJ45 connector of the external power unit into the **LAN/Power** connector of the Network Power Adapter.



MOBOTIX power supply and Network Power Adapter required

The Network Power Adapter replaces the crossover cable when directly connecting to a computer

MOBOTIX Network
Power Rack or Network
Power Box required

Use the 19" MOBOTIX
Netpower rack-mount
units to supply power to 8
or 20 cameras

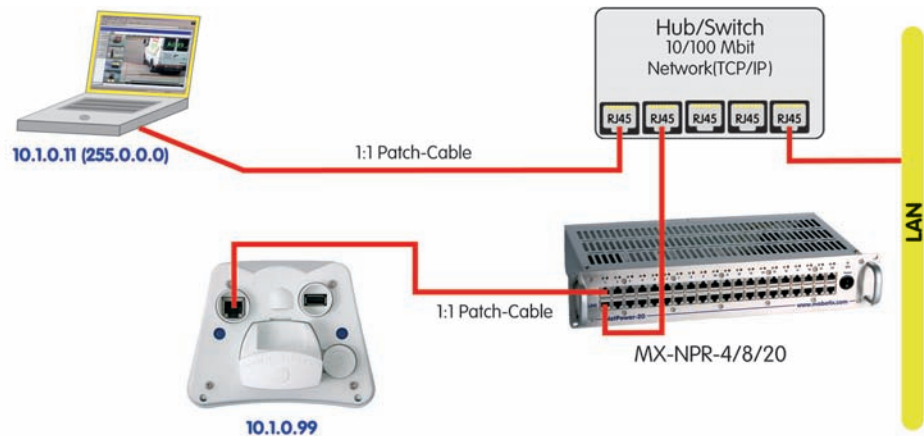
Use the MOBOTIX Net-
work Power Box for
smaller installations

Uninterruptible power
supply (UPS) should be in-
stalled

PoE switch/router accord-
ing to IEEE 802.3af re-
quired

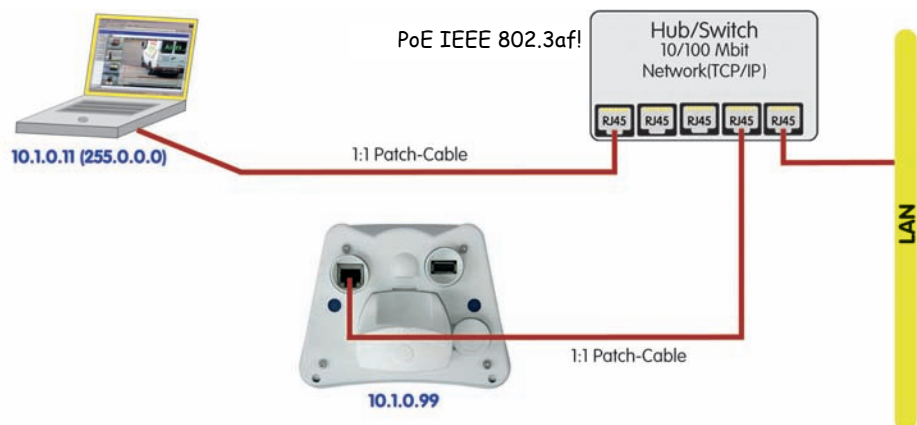
3.3.4 Power Supply (MxPoE) Using a Network Power Rack or Network Power Box

- Connect the factory pre-installed cable of the camera to the **CAM** connector of the **Network Power Rack (MX-NPR-8/20)** or the **Network Power Box (MX-NPR-4)**.
- Connect the **LAN** connector of the Network Power Rack or Network Power Box to an Ethernet connector of the switch/router.



3.3.5 Power Supply (PoE IEEE 802.3af) Using Power-over-Ethernet Products

- Connect the factory pre-installed cable of the camera to the Ethernet connector of the PoE switch/router. The switch/router needs to support the **PoE standard IEEE 802.3af**.



3.3.6 Camera Startup Sequence

As soon as the power supply is established, the camera's LEDs will provide information on the startup sequence of the camera.

- **Booting:** Immediately after connecting the power supply, the red LED lights up, blinks for two seconds, then stays on permanently. The camera's boot loader checks the hardware, unpacks and starts the operating system. All applications are verified using the checksums; **in case of an error**, the camera will start using the backup operating system.
- **Waiting for key pressed:** Both LEDs light up for four seconds. If you press the "R" or "L" key of the camera during this time, the camera will execute the corresponding function (see sections 3.5 and 3.6).
- **Ready:** Once the application software has been started, the green LED is on permanently and the red LED blinks. You can now reach the camera via the network using a browser. For additional information on this topic, see section 5.4.3, *LED Signals and LED Configuration*, in the *Software Manual*.



Note

If you are using **Power over Ethernet components (IEEE 802.3af)** for supplying power to the MOBOTIX M22M, these components have to provide **PoE class 0** (12.95 Watts max. power consumption of attached device). Although the M22M only uses 3 Watts and does not require heating even at very low temperatures, this will ensure that devices attached to the USB port of the camera will be properly supplied.

Note

During the startup sequence or a software reboot, the LEDs will always light up, even if they have been deactivated in **Admin Menu > LED Setup**.

Working with the web-based user interface only requires a web browser with activated JavaScript!

3.4 The First Image from the Camera

Once the Ethernet connection has been established, you have the following possibilities to see the first image of the camera:

- **Automatic camera search and configuration** using **MxControlCenter** (free Windows client for MOBOTIX cameras; section 3.4.7, *The First Image in MxControlCenter*)
- **Manual configuration** (section 3.4.1, *Preparing the Ethernet Connection*)

Besides using **MxControlCenter**, you can also use a **browser** to access the camera (section 3.4.2, *The First Image in the Browser*).

In order to finish the camera configuration, you can use either **MxControlCenter** or the browser-based user interface of the camera (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).

3.4.1 Preparing the Ethernet Connection

For this example, we will use a camera with the factory IP address **10.1.0.99**. **Replace this IP address with the IP address of your camera.** You will find this address on a **small sticker on the camera**. Accessing the camera is always the same and is independent of the connection type: simply enter the camera's IP address in the address field of the browser (see section 3.4.2, *The First Image in the Browser*).

Caution:
Netmask 255.0.0.0

Note

Pressing the **"R" key** on the back of the camera will let the camera **announce the current IP address of the camera using its voice output feature.**

Open a Command Prompt (Windows):
Start > Run, enter "cmd", then press [Return]

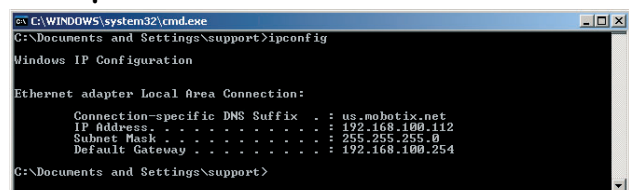
Your computer has to have a network or a wireless interface, and it should be in the same subnet as the camera. If your network also uses IP addresses of a class A network (e.g. **10.x.x.x**, network mask **255.0.0.0**), you should be able to access the camera directly (provided no other network device uses the same IP address).

Determine the IP address of your computer:

- Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:

Windows 2000/XP: **ipconfig**

Linux/UNIX/OS X: **ifconfig**



```

C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\support>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : us.mobotix.net
    IP Address . . . . . : 192.168.100.112
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.100.254

C:\Documents and Settings\support>
  
```

You will find the IP address of your Windows computer under **IP address**; for Linux/UNIX/OS X computers, search for the **inet address** parameter of the **eth0** device (the first network interface). If your computer does not use an IP address in the **10.x.x.x** range, you should change the network configuration of your computer or add a new IP address (see below).

Make sure that no other network device uses the camera's IP address:

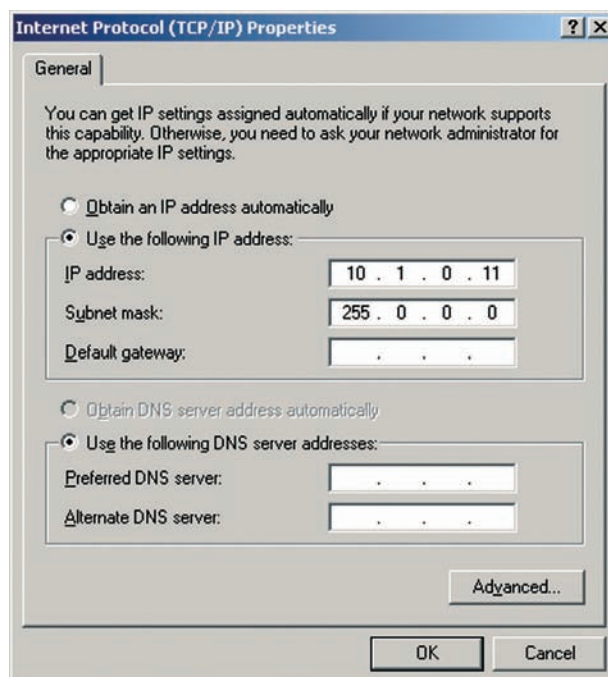
- Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:
ping <factory IP address>

If you receive an answer from another network device although the camera is not connected, you will have to remove that device until you have reset the MOBOTIX camera to a free IP address. We recommend using the Quick Installation wizard for assigning a new IP address to the camera.

If your computer does not use an IP address in the 10.0.0.0 network (e.g. a 192.168.x.x or 172.x.x.x network), you should temporarily set a new IP address in the 10.x.x.x range:

Windows 2000/XP

- (1) Open the **Network Connections** and open the **Properties of LAN Connection**.
- (2) Double-click **Internet Protocol (TCP/IP)**.
- (3) On the **General** tab, activate the **Use the following address** option.
- (4) Enter an IP address (e.g. **10.1.0.11**) in the class A network (**10.x.x.x**) that is unique in your network and that is not the same as the camera's IP address.
- (5) Close all dialogs by clicking on **OK**.

**Linux/UNIX/OS X**

- (1) Open a terminal as **root** user and enter the following command (**eth0** or **en0** is usually the first network interface):
Linux/UNIX: ifconfig eth0:1 10.1.0.11
OS X: ifconfig en0:1 10.1.0.11

The computer now has the additional IP address **10.1.0.11**, allowing it to access the camera with its factory IP address in the 10.x.x.x network (**10.1.0.99** in this example).

The factory IP address is printed on the sticker on the camera housing

Example: 10.1.0.99

Make sure that you use the IP address of your camera instead of 10.1.0.99!

Setting up a second IP address on Windows computers

Setting up a second IP address on Linux/UNIX computers

Camera access:

<http://10.1.0.99> (example IP)

The factory IP address is printed on the sticker on the camera housing

Administration menu:

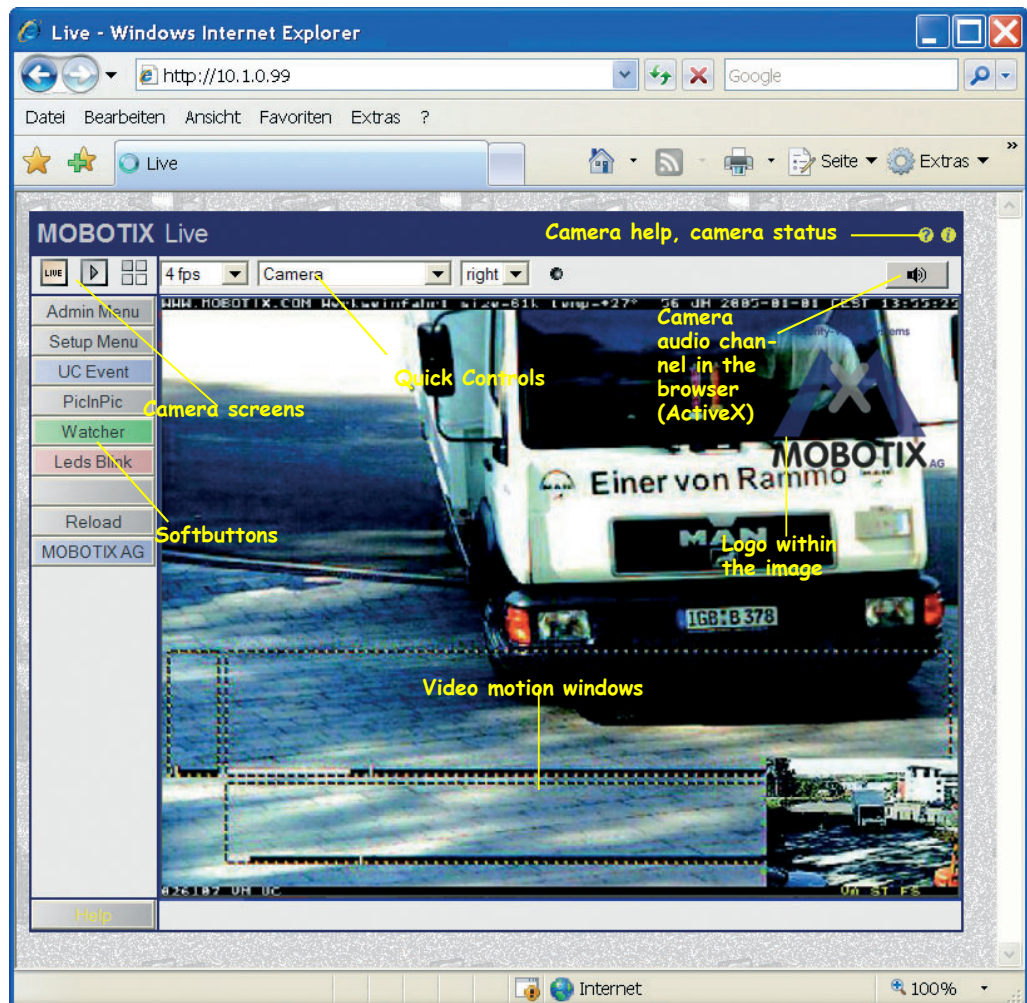
User Name: **admin**

Password: **meinsm**

User interface can be **customized**

3.4.2 The First Image in the Browser

Now that you have successfully started the camera for the first time, you can access the camera using your preferred browser to see the live video stream and the user interface. Internet Explorer, Mozilla, Firefox, Safari, Camino or any other graphical browser with activated JavaScript is suitable. The operating system is of no importance, even PDAs can be used without any problems, provided a web browser is available on the device.



After entering the camera's IP address in the browser address bar (e.g. **http://10.1.0.99**), you will see the Live screen of the MOBOTIX camera with its user interface controls, such as **softbuttons**, buttons for the different **camera screens**, **pull-down menus** (*Quick Controls*), icons for accessing the **online help** and the **camera status**, as well as status information elements above and below the live image.

If you have started the camera using DHCP or you have set the IP address manually, enter the new IP address in the browser address bar (e.g. **192.168.0.99**) instead of the factory IP address.


Notes


The MOBOTIX camera can announce its current IP address over the **speaker**. For additional information on this topic, see section 3.6, *Starting the Camera With an Automatic IP Address (DHCP)*.

MxControlCenter: In order to see the live image of the camera, you can also use other applications or the integrated programming interface of the MOBOTIX camera. **MxControlCenter** for Windows is such an application and is provided **free of charge** by MOBOTIX (see section 3.4.6, *The First Image in MxControlCenter*). Besides its ability to display fast live video of up to **30 cameras simultaneously at 30 fps each** on one PC, MxControlCenter also allows recording and playing back video clips with lip-synchronous audio via the network and can control pan/tilt heads using a joystick or the mouse. Download the latest version of MxControlCenter from the MOBOTIX website. The website contains more information on MOBOTIX systems as well as the MxControlCenter User Manual.

From camera software version 3.0.3.37, MOBOTIX cameras automatically offer their **web service within the network** (see section 3.4.5, *Access Using Zeroconf/Bonjour*). This means that the cameras will announce themselves automatically in a Bonjour list in the web browser and in MxControlCenter. Selecting one of the listed MOBOTIX cameras will automatically display the camera's user interface in the browser window or in MxControlCenter.


3.4.3 Additional Information


For more information on this topic, see the **News** and **Functional Overview** pages in the online help of the camera's browser interface. Click on the yellow  icon in the top right corner to open the camera's online help.

In order to obtain more information on the camera and its current configuration, open the **Camera Status** dialog by clicking on the yellow  icon in the top right corner of the camera's browser interface.

Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from www.mobotix.com. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

Changing the factory IP address: Always use Admin Menu > Quick Installation

 Camera Help

 Camera status



Use the Administration menu to set the camera screen that should appear initially when accessing the camera IP address

<http://10.1.0.99/pda> opens the PDA screen

Live/Playback/MultiView: Click on to open the online help pages for the camera screens

3.4.4 Camera Screens in the Browser

Per factory default, the MOBOTIX camera first shows the **Live** screen. You can set a different start page in order to prevent others from changing the settings. In addition to this, you can assign user names and passwords to prevent unauthorized access or you can restrict access to the current live image only by setting the **Guest** screen as the start page.

The following screens are available:

- **Guest** screen: Only shows the current live image with reduced frame rate (see section 4.7, *Guest Screen*, in the *Software Manual*).
- **Live** screen: Shows the current live image and allows changing the image and event settings of the camera (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).
- **Playback** screen: Shows all recorded images or video clips with extended functions for searching and downloading images, regardless of where the images are stored (in the internal or the external ring buffer on a file server or PC; see section 4.4, *The Playback Screen in the Browser*, in the *Software Manual*).
- **MultiView** screen: Shows multiple cameras or the last events in a freely definable layout (see section 4.5, *The MultiView Screen in the Browser*, in the *Software Manual*).
- **PDA** screen and **PDA Event List**: Both screens are optimized for PDAs with a focus on fast data transmission with low bandwidth requirements (GSM, GPRS) on devices with small displays (PDAs, mobile phones, sub notebooks). The **PDA Event List** in particular gives a quick overview over the last events since the live image is not transferred (see section 4.6, *The PDA Screen*, in the *Software Manual*).

Note

Open **Admin Menu > Language and Entry Page** to set a different start page when accessing the camera.

Open **Admin Menu > Users and Passwords** and **Admin Menu > Group Access Control Lists** to set user rights and to prevent unauthorized access to specific screens and functions of the camera (see section 5.4.1, *Passwords*, in the *Software Manual*).

For more information on camera screens, see the **online help** of the camera's browser interface. Click on the yellow icon in the top right corner of the **Live screen** to open the corresponding page of the online help.

Notes:

[illegible]

Automatic network configuration for MOBOTIX cameras using Zeroconf/Bonjour

MOBOTIX cameras support Bonjour by default from software version 3.0.3.37!

3.4.5 Access Using Zeroconf/Bonjour

Zeroconf (short for *Zero Configuration Networking*) describes the networking method of automatically establishing an IP-based network without the help of servers and without changing any settings. Zeroconf-capable devices automatically announce their name and the service they are providing (printer, email server, etc.) in the network. As a basic technology, Zeroconf is part of the current Windows, Linux and Mac OS X operating systems.

Bonjour is the implementation of this service in Apple Mac OS X from version 10.4; in Mac OS X 10.2 and 10.3, this service is called **Rendezvous**.

Bonjour is available free of charge for **Windows** computers from the Apple web site www.apple.com/bonjour.

For **Linux** and **Unix**, **Avahi** provides the corresponding functionality.

For further information on Bonjour and Zeroconf, please consult www.apple.com/macosx/features/bonjour and the Zeroconf web site www.zeroconf.org.

From software version **3.0.3.37**, MOBOTIX cameras automatically offer their web service via Zeroconf/Bonjour. This means that the cameras will announce themselves automatically in a Bonjour list in the web browser and in MxControlCenter. Selecting a MOBOTIX camera in the browser will display the camera's user interface in the browser window; likewise, MxControlCenter will be able to find the camera.



Note

A major **advantage of Zeroconf/Bonjour** is that **you do not need to know the IP address or the name of the MOBOTIX camera in order to access it.**

Another advantage of Bonjour is that **all cameras will be found regardless if they are in the same subnet or in other subnets as long as they are in the same physical network as the computer.** If the cameras are not in the same subnet, actually connecting to them is not as easy. The name of the camera is listed in the web browser, but connecting via HTTP will not work, however. **Using MxControlCenter allows reconfiguring the camera automatically for the subnet of the computer. You can now easily reach the camera in a web browser and MxControlCenter.**

Caution

When using the camera in a network with managed switches or internal firewalls, make sure that port **5353 UDP** is not blocked or else Zeroconf/Bonjour will not work.

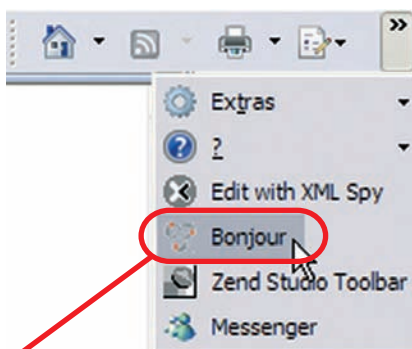
3.4.6 Prerequisites for using Zeroconf/Bonjour

MOBOTIX camera:

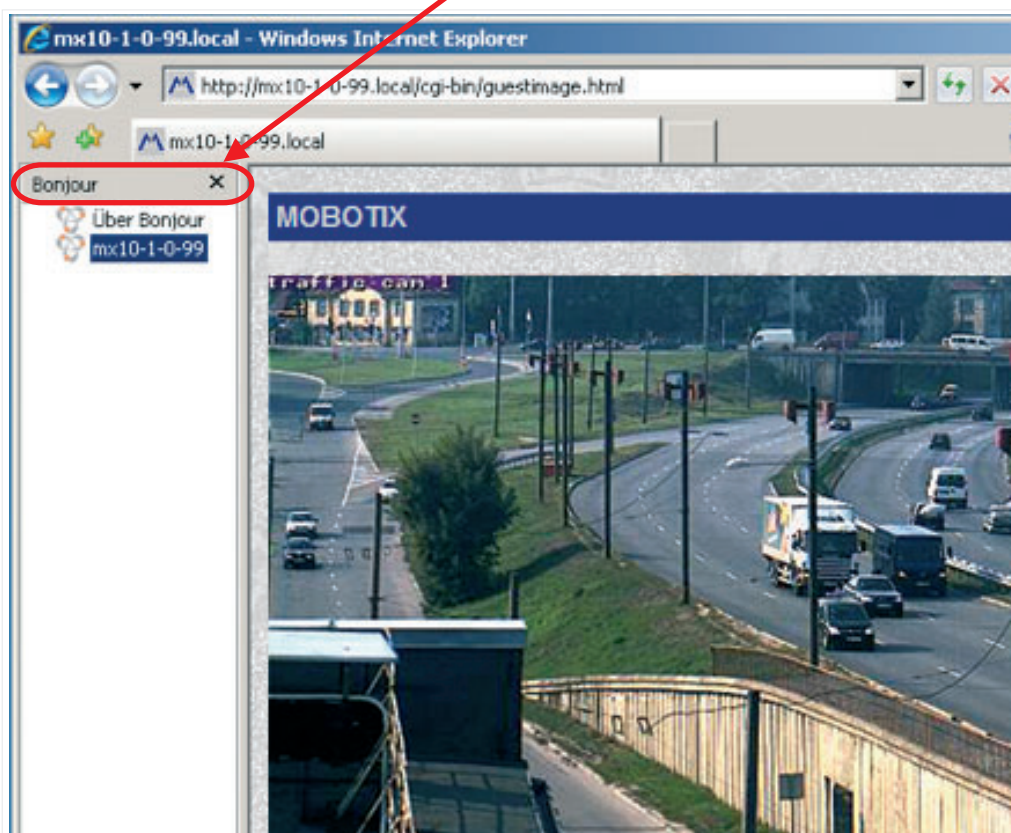
- **Zeroconf** has to be activated (**Admin Menu > Ethernet Interface**). This is the **factory default** for MOBOTIX cameras from software version 3.0.3.37.
- The camera needs to be in the same **physical** subnet as the computer (**Admin Menu > Ethernet Interface**).

Operating system:

- **Microsoft Windows (2000, XP, 2003, Vista)**: Bonjour for Windows has to be installed (www.apple.com/bonjour). The application also configures the Windows firewall, installs an add-on for Internet Explorer and the Java Bonjour libraries. The list of Bonjour-enabled network devices is shown in Internet Explorer once the **Bonjour** add-on has been activated in the main toolbar of Internet Explorer.



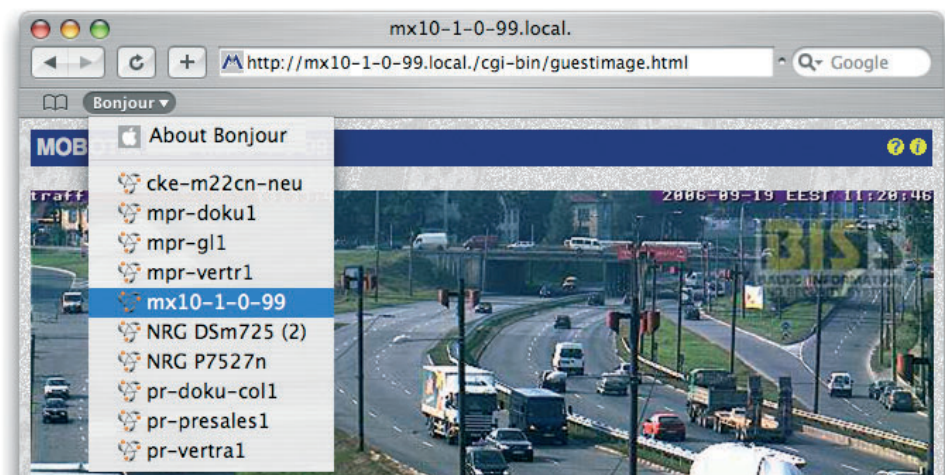
Internet Explorer (Windows): Activate Bonjour add-On



Internet Explorer with activated Bonjour sidebar

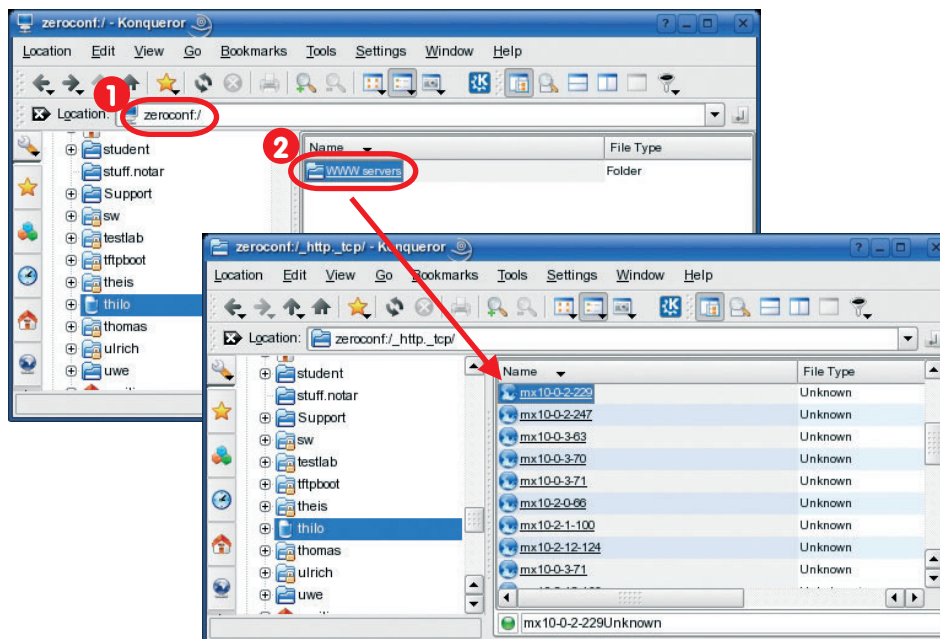
Bonjour is enabled by default in Safari (Mac OS X)

- **Macintosh OS X (10.2 or higher):** **Bonjour** is the implementation of this service in Apple Mac OS X from version 10.4; in Mac OS X 10.2 and 10.3, this service is called **Rendezvous**. The list of Bonjour-enabled network devices is displayed in Safari after clicking on the **Bonjour** button.



- **Linux:** Zeroconf is included in KDE from version 3.4 and in Gnome from version 2.8. The list of Bonjour-enabled network devices is displayed after entering **zeroconf:/** in the Konqueror address bar. The displayed list contains all Zeroconf-enabled network services (see figure below). Clicking on **/www servers** displays the list of all available MOBOTIX cameras (and all other Bonjour-enabled devices). Linux users can also use the **mdns-scan** application in a terminal to search for Bonjour-enabled devices on the network.

Konqueror on SuSE



Note

If a **proxy server** is used in your network, you may get an error message when trying to access a MOBOTIX camera in the web browser. Make sure that the list of proxy exceptions in your browser contains the following entry:

- * **.local** (Windows)
- * **.local.** (Mac OS X)
- .local.** (Linux)

To find the **proxy exceptions** in **Internet Explorer** for **Windows**, open **Tools > Connections > LAN Settings > Settings > Proxy server > Advanced** and add the entry in the **Exceptions** text field.

To find the **proxy exceptions** in **Mac OS X**, open **System Preferences > Network > Proxies** and add the entry in the **Bypass proxy settings for these Hosts and Domains** text field.

As an alternative, your network administrator can reconfigure the proxy server so that it does not block **.local** addresses.

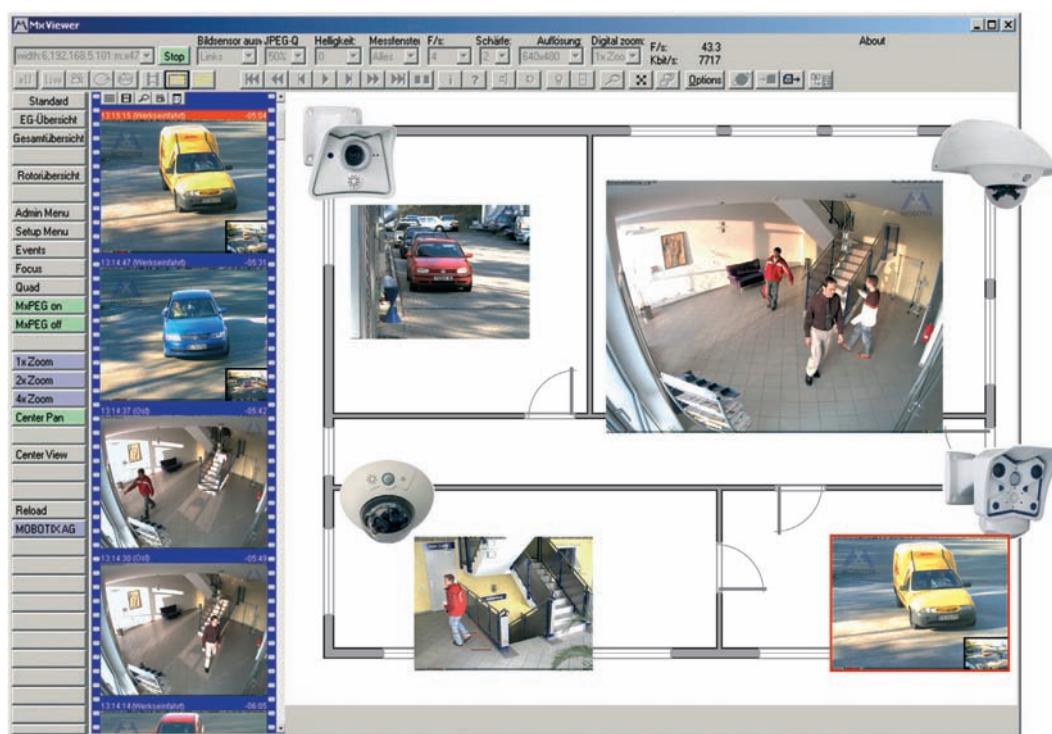
Caution: **Proxy servers** may cause errors when trying to establish a connection

Download MxControlCenter free of charge from www.mobotix.com

MxControlCenter Windows client with alarm list, background image and freely positioned cameras

3.4.7 The First Image in MxControlCenter

MOBOTIX MxControlCenter is a free Windows application that allows displaying **multiple MOBOTIX cameras** on one computer and provides alarm management functions. It can easily handle displaying **30 cameras with CIF resolution simultaneously at 30 fps each** in **MxPEG** format on one standard PC with Intel Pentium 4 and 3 GHz.



MxControlCenter can do quite a bit more than simply display the video and audio data from MOBOTIX cameras. The unique features of MxControlCenter in combination with the MOBOTIX cameras create a full-featured security system: intelligent alarm handling, various ways of arranging the camera views on different layouts (MultiView screens), ability to display cameras that are sending alarm notifications, the integrated camera management functions, and an array of other interesting features.

Further Information on MxControlCenter

For further information on **MxControlCenter**, download the *MxControlCenter User Manual* from www.mobotix.com:

- Saving and loading MxPEG video clips
- Creating and editing layouts using the Layout Editor

Further Information in the Software Manual

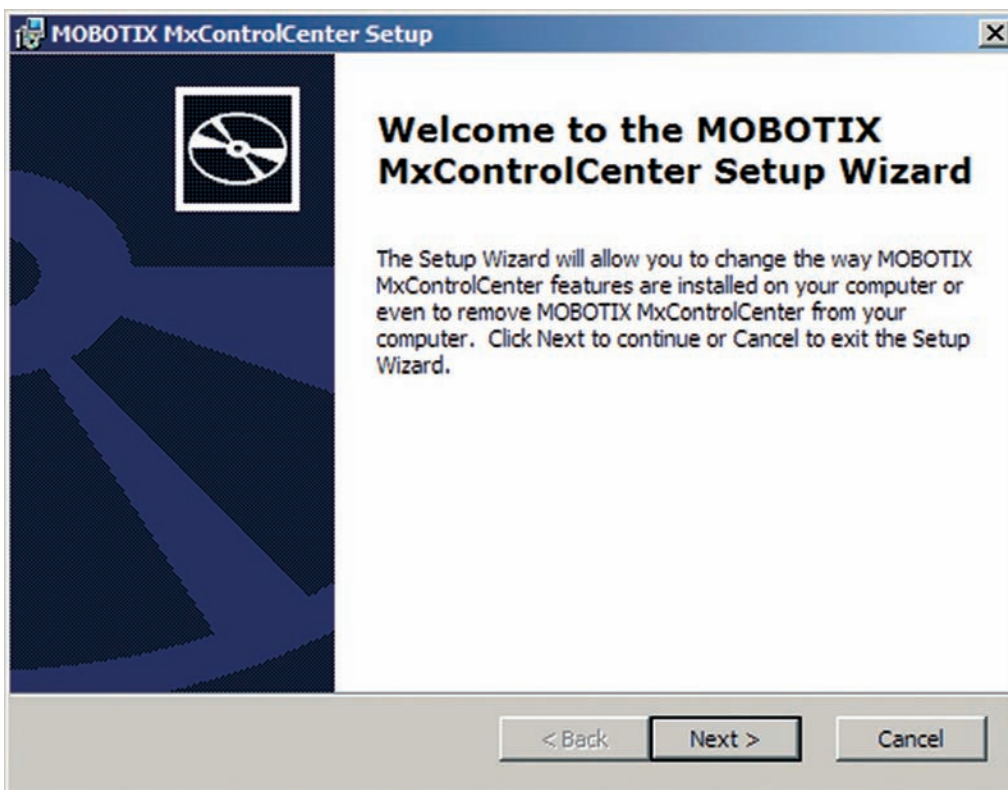
- Section 4.3.5: *JPEG, MxPEG and Audio*
- Section 4.3.6: *Background Information on JPEG, MxPEG and Audio*
- Section 4.10: *Fast Video Streaming*

Installing MxControlCenter

If you have an **MxControlCenter installation CD**, insert it into your computer drive.

If this is not the case or if you would like to update an older version, you can download the latest Windows installer (**MSI** file) from the MOBOTIX website and then manually install the current version. The latest version is available at **www.mobotix.com > Support > Software-Downloads** in the **MxControlCenter** section.

If you are using the installation CD, the installation process starts automatically and leads you through the necessary steps. If you have downloaded the Installer, simply double-click the **MSI** file to begin the installation process.



Automatic installation of MxControlCenter with Windows Installer (MSI)

The installer automatically creates the shortcuts selected in the installation process (desktop, start menu, etc.).

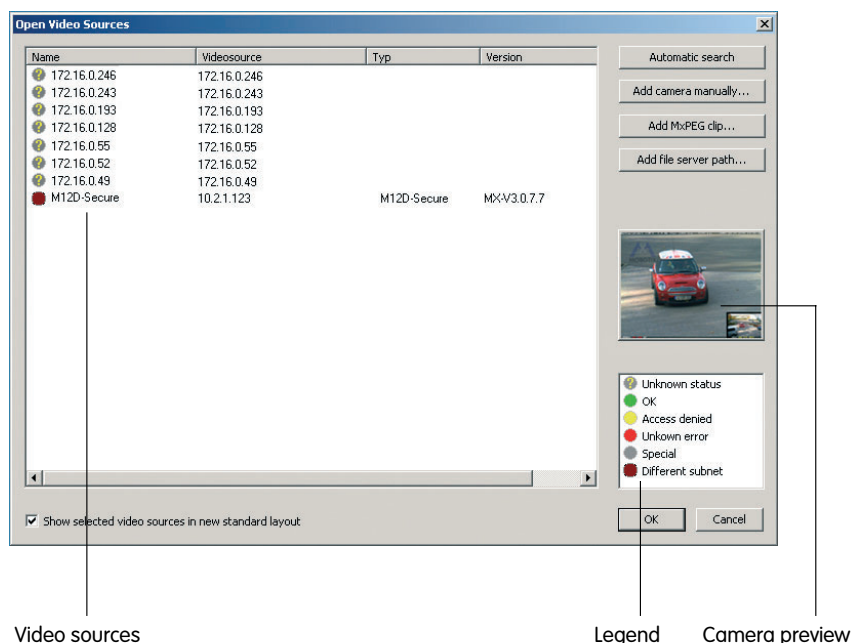
Using MxControlCenter for the First Time

Double-click the shortcut created by the installer (see *Installing MxControlCenter*) or the program file itself to start MxControlCenter.

Automated Search for MOBOTIX Cameras

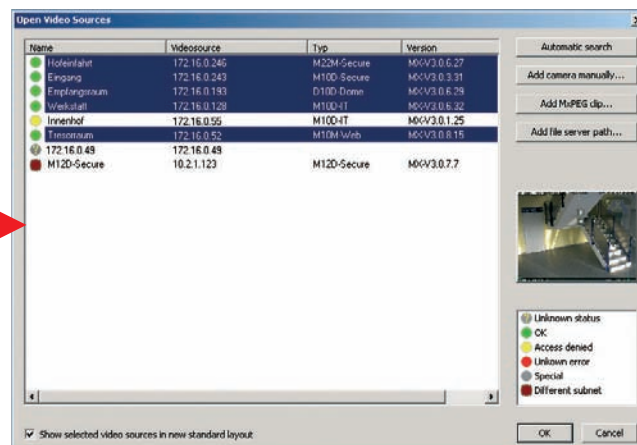
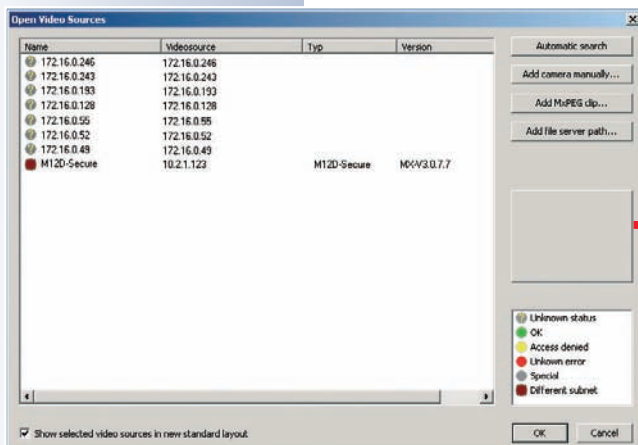
If you start MxControlCenter for the first time or if you have not yet stored a start layout with the desired video sources (i.e. MOBOTIX cameras), the **Open Video Sources** dialog will open and automatically starts scanning the network.

Automatic search for MOBOTIX cameras!

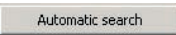


After all MOBOTIX cameras have been identified, MxControlCenter performs an operational test on the cameras to determine their status and then lists them according to the legend.

Next, MxControlCenter automatically selects all cameras.



Click on **OK** to add the selected cameras to the **Open Video Sources** dialog.

Anytime you connect a new camera to the local network, you can initiate the search in the **Open Video Sources** dialog again by pushing the  button.

If the desired MOBOTIX cameras are highlighted in the video source list, proceed to *Selecting Video Sources*.

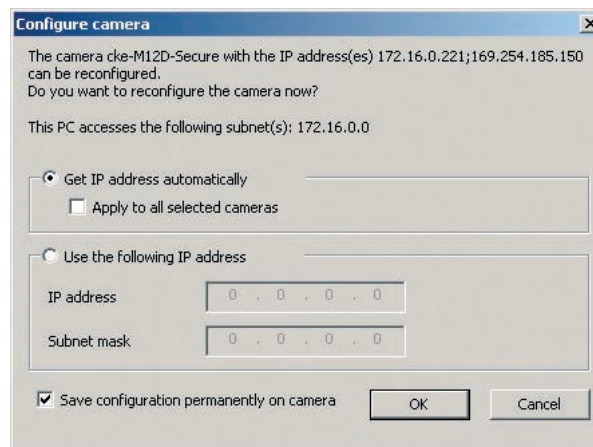
Configuring MOBOTIX Cameras for a Different Network

Using Bonjour, MxControlCenter finds not only cameras on the same subnet (network range) but also **MOBOTIX cameras located in other subnets** (status: *Different subnet*). Normally, you would not be able to establish any connection to cameras in a different network or subnet (without going into much further detail about the complicated details of TCP/IP network configurations). This is possible, for example, when a camera with a factory IP address is connected to a network in which a DHCP server automatically assigns the IP addresses.

Click on *Configure network* in the context menu and **MxControlCenter will automatically reconfigure this camera** so that it is "integrated" into your existing subnet. However, MxControlCenter first needs some information about the subnet into which the camera will be integrated. You can enter this information in the **Configure Cameras** dialog that opens automatically.

If your computer gets its IP address automatically from a DHCP server, then this is certainly the best choice for the new camera and most likely for all other cameras which have been found in a different subnet (**Apply to all inaccessible cameras** checkbox).

If you have assigned a fixed IP address to your computer, you will certainly prefer to assign fixed IP addresses (issued by your system administrator) to every camera. In most cases, you should enter a similar configuration as the one found for your computer's **Network Connections** in the **Properties of Internet protocol (TCP/IP)** dialog.



Automatic camera configuration by MxControlCenter

MxControlCenter changes the network configuration of the current camera and, after a short time, the camera also appears in the list with a new IP address and in the same subnet as your computer.

Make sure that the **Save camera configuration permanently** checkbox is activated so that the new network settings will be used from now on and not just until the camera's next reboot.

Note

If you have set a different user name and password for administration than the factory-preset ones (**admin**, **meinsm**), you will need to have these user credentials available and enter them in the appropriate dialog. To open the dialog, click on the *Enter password* context menu entry.

Defining Additional Video Sources

Besides automatically detecting MOBOTIX cameras, you can also **manually add other video sources** to the list of available video sources in MxControlCenter.

- **Automatic search:** Scans the (physical) network. This scan will find all MOBOTIX cameras, regardless of whether they are in the same subnet as the computer or in a different one.
- **Add camera manually:** Enter a known IP address or the DNS name of a MOBOTIX camera if this camera had not been detected during the automatic search in the first place.
- **Add MxPEG clip:** Adds an MxPEG video clip previously recorded by a MOBOTIX camera as a video source.
- **Add file server path:** Adds the alarm images previously stored by a MOBOTIX camera on an external file server as a video source.

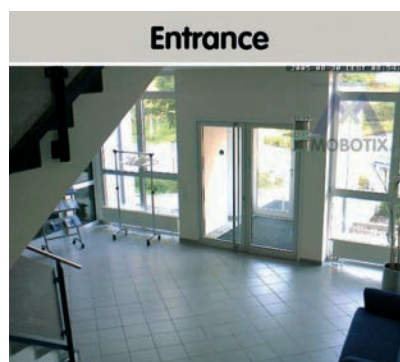


Selecting Video Sources

Highlight the desired video sources you would like to manage and display in MxControlCenter.

Camera preview

If you select a camera with a status of *OK*, MxControlCenter **automatically displays the live images from the camera in the preview window**. If you are using [Ctrl]-click to select several cameras, the image from the camera selected last is shown in the preview window. This feature facilitates identifying the cameras you would like to use.



Editing the video source list

This list provides a popup menu (right mouse key), allowing you to select/deselect all video sources at once. Similarly, you can highlight some or all of the listed video sources and remove them from the list if they are not to be displayed or managed in MxControlCenter.

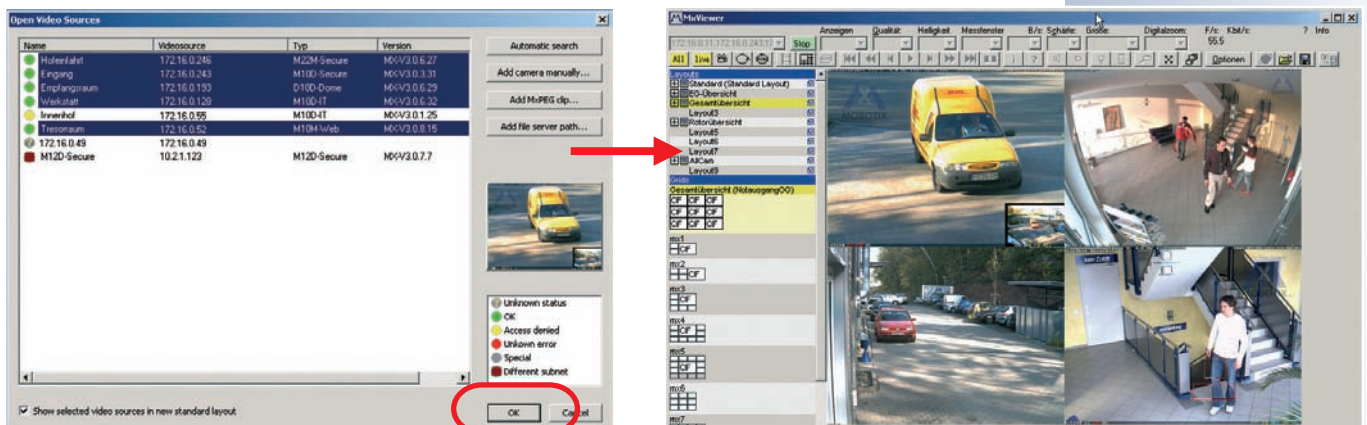
If you interrupt the discovery process (section *Configuring MOBOTIX Cameras for a Different Subnet*) or require a password that is different from the factory preset one, you can always re-launch the configuration process from the popup menu at a later time and enter the appropriate user name and password.

Select all
Deselect all
Remove
Remove all

Configure network...
Enter password...

Using the selected video sources

Clicking on **OK** instructs MxControlCenter to use the highlighted cameras. Activate the **Show selected video sources in new standard layout** checkbox and MxControlCenter automatically generates a layout with the live images of all highlighted cameras.



3.5 Starting the Camera With an Automatic IP Address (DHCP)

If your network has a DHCP server, you can start the camera with DHCP support. In this case, the DHCP server automatically assigns an IP address.

As soon as startup has been completed, the camera automatically announces its IP address, its network mask and its MAC address (note that this feature requires an external speaker). Note that this announcement function can be deactivated (**Admin Menu > Loudspeaker and Microphone**).

Proceed as follows to start the camera using DHCP:

- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect power to the camera and observe the LEDs.
- Wait until **both LEDs are lighting up simultaneously for the first time**.
- Press the **"R" key** on the camera **within four seconds**.



Press "R" key



- After about two more seconds, the camera plays a sound twice ("Boing, Boing"), if an external speaker has been connected.
- After about another 15 seconds, the camera will announce its network data, provided it has audio functionality.

You can now access the camera using the IP address it just announced and via the list of Bonjour-enabled devices.

Announce IP address:
Press "R" key

In case of an error, the
camera uses its last IP
address

Notes

Simply press the **"R" key** once if you would like to prompt a running camera to announce its network settings.

Caution

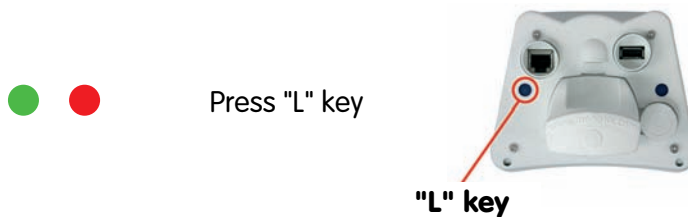
When starting the camera with DHCP support, make sure that the network has a properly functioning DHCP server. If this is not the case, the camera cannot obtain a valid IP address and will fall back to its last known IP address.

3.6 Starting the Camera Using the Factory IP Address

In certain situations, it may become necessary to start the camera with its factory IP address. This could be the case, for example, if the IP address has been lost or the camera does not react to the last known IP address.

Proceed as follows to start the camera using its factory IP address:

- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect power to the camera and observe the LEDs.
- Wait until **both LEDs are lighting up simultaneously for the first time**.
- Press the **"L" key** on the camera **within four seconds**.



- After about two more seconds, the camera plays a single sound ("Boing"), if an external speaker has been connected.

The camera is now accessible again using its factory IP address (see label on the camera housing).

Note

If you use the camera's **"L" key** to load the factory network configuration, this configuration is not automatically saved to flash memory. Upon restarting the camera the next time **without** using the camera's **"L" key**, the *last stored network configuration* will be used. To permanently store the new network configuration in the camera's flash memory, open **Admin Menu > Store ...**

Make sure you store the factory network configuration to the permanent flash memory

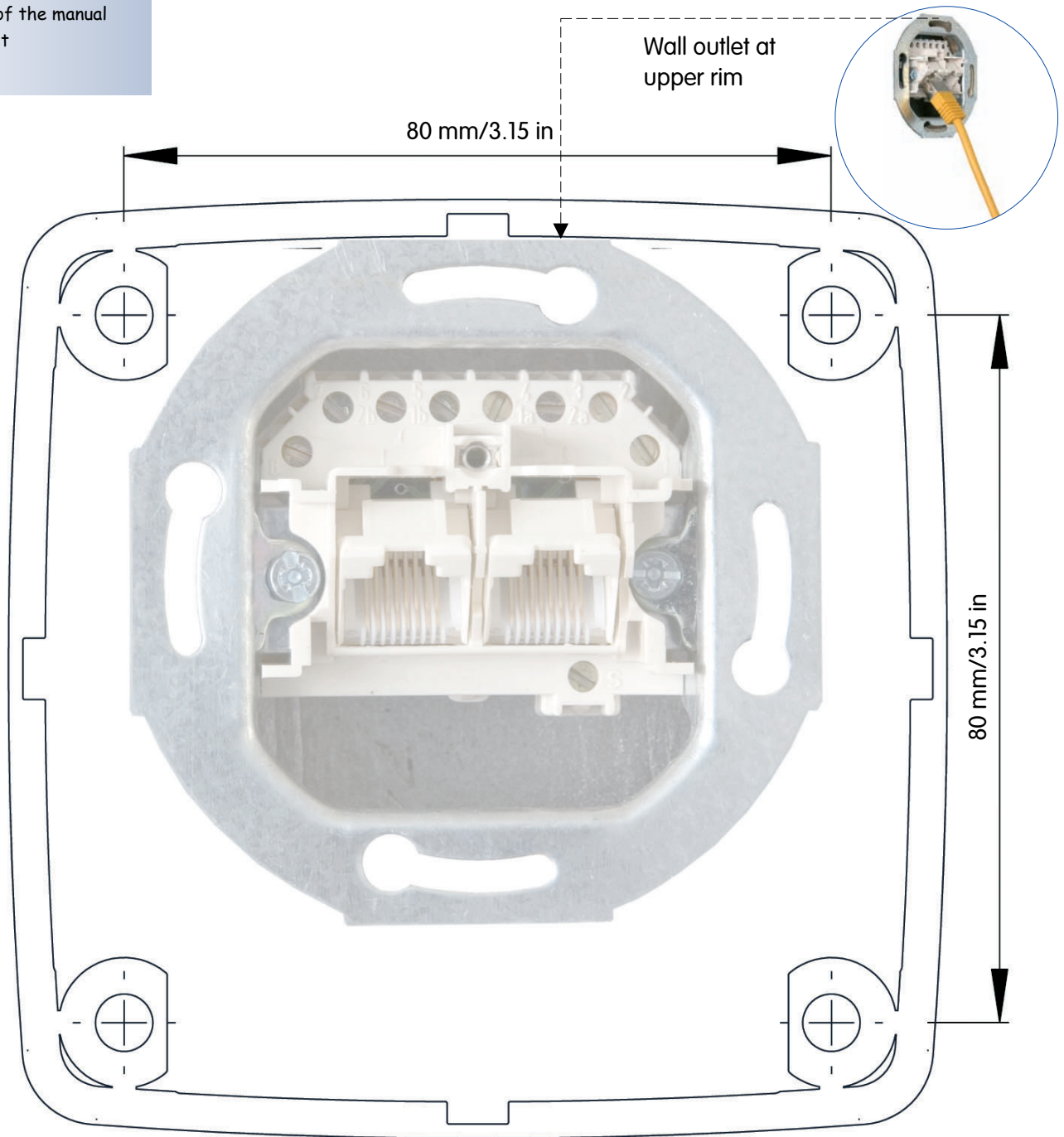
Caution

As opposed to resetting the camera using *Admin Menu > Reset configuration to factory defaults* (see section 1.4.5), the users and passwords defined in the camera will not be reset if the camera is being booted using the factory IP address.

Users and passwords will **not** be changed!

Find the drilling template at the end of the manual as a fold-out

3.7 M22M Drilling Templates (Scale 1:1)




Note





Make sure that the drilling template is not scaled (up or down) when printing the template.


When printing the PDF, make sure that you print two facing PDF pages on one single A4 page in order to obtain a scale 1:1 template.

[illegible]

	M22M-Basic Mx-M22M-Basic-D43	M22M-IT Mx-M22M-IT-D22	M22M-Sec Mx-M22M-Sec-D22	M22M-Sec-Night Mx-M22M-Sec-Night-N22	M22M-Sec-CSVario Mx-M22M-Sec-CSVario	M22M-Sec-Night-CSVario Mx-M22M-Sec-Night-CSVario
M22M Hardware Features						IP65
Outdoor weatherproof (IP65)	IP65	IP65	IP65	IP65	IP65	IP65
Mono (M) / Dual (D)	M	M	M	M	M	M
Image Sensor	Color	Color	Color	B/W	Color	B/W
Image size	VGA	VGA	Mega	Mega	Mega	Mega
Resolution horizontal x vertical	640x480	640x480	1280x960	1280x960	1280x960	1280x960
Max. frame rate CIF/VGA/Mega	16/16/-	30/30/-	30/30/10	30/30/10	30/30/10	30/30/10
Sensitivity at 1/60 second (Lux)	1	1	1	0.1	1	0.1
Sensitivity at 1 second (Lux)	0.05	0.05	0.05	0.005	0.05	0.005
Automatic night lens switch	-	-	-	-	-	-
Standard lens	L43	L22	L22	L22	L24-54	L24-54
Storage (MB)	64	64	128	128	128	128
Video ring buffer (MB)	2	32	64	64	64	64
CIF images approx.	100	2,000	4,000	4,000	4,000	4,000
VGA images approx.	50	1,250	2,500	2,500	2,500	2,500
Mega images approx.			800	800	800	800
Ethernet, ISDN, USB, RS232	E / - / U / -	E / - / U / -	E / - / U / -	E / - / U / -	E / - / U / -	E / - / U / -
CF slots (MOBOTIX extensions)	-	2	2	2	2	2
Microphone/Speaker	-/S	M/S	M/S	M/S	M/S	M/S
External audio (Line-In/Out*)	-	I/O*	I/O*	I/O*	I/O*	I/O*
Signal Input (only via Cam-IO*)	-	2 x	2 x	2 x	2 x	2 x
Signal Output (only via Cam-IO*)	-	2 x	2 x	2 x	2 x	2 x
Concealed cabling	X	X	X	X	X	X
In stock	Yes	Yes	Yes	Yes	Yes	Yes

* Only with Cam-IO extension box (optional accessory)

	L22 Super Wide Angle	L32 Wide-angle	L43 Wide-angle	L65 Tele	L135 Tele
MOBOTIX Lenses					
	approx. 90°H x 67°V in 10 m appr.: 20.0 x 13.3 m	approx. 60°H x 45°V in 10 m appr.: 11.5 x 8.2 m	approx. 45°H x 34°V in 10 m appr.: 8.2 x 6.1 m	approx. 31°H x 23°V in 10 m appr.: 5.5 x 4.0 m	approx. 15°H x 11°V in 10 m appr.: 2.6 x 1.9 m

		Basic Models	Web Models	IT Models	Secure Models
Software Features (All Models)					
Digital zoom (2x, 4x) with panning			X		X
Motion JPEG/MxPEG video streaming	X/X	X/X	X/X	X/X	X/X
Custom exposure windows	X	X	X	X	X
Video Motion Detector	X	X	X	X	X
Time and event control (FTP, email, logos)	X	X	X	X	X
Time tables with holidays	X	X	X	X	X
Web functionality (FTP, email)	X	X	X	X	X
Quad/MultiView in browser	X	X	X	X	X
Recording/Playback in browser	X	X	X	X	X
Logo generator, animations		X	X	X	X
Single image recording (pre-/post-alarm images)	3	3	10	50	
Terabyte ring buffer (Win/Lin/Mac) via network			X	X	
Continuous video/audio recording, 0.2 to 30 fps			X	X	
Video/audio recording (event-triggered)			X	X	
Event-controlled frame rate with continuous sound			X	X	
Flexible event logic					X
Master/Slave arming by one camera					X
Scheduled privacy zones, several areas					X
Bidirectional audio (IP) from/to browser			X	X	
Customized voice messages			X	X	
VoIP telephony (Audio/Video, SIP)			X	X	
Alarm calls to softphones (SIP) e.g. Xten			X	X	
Remote alarm notification (via TCP/IP, IP Notify)			X	X	
RS232 Data Logger/Terminal			X**/***	X**/***	
Programming interface/HTTP API			X	X	
Model Limitations					
Image size	VGA	Mega	VGA	Mega	
Image sensor (color / B/W)	Color	Color	Color & BW	Color & BW	
Standard lens for software version	L22	L22*	L22*	L22*	
Audio support (Microphone/Speaker)	-/S†	-/S†	M/S†	M/S†	

* M12 models delivered with L43 or L22

** M22 models in connection with Cam-IO

*** Not available for M22M models

† D22M models require an external microphone/speaker

IP65 Certificate

VDE Prüf- und Zertifizierungsinstitut

VDE VERBAND DER ELEKTROTECHNIK
ELEKTRONIK INFORMATIONSTECHNIK e.V.

KONFORMITÄTSBESTÄTIGUNG STATEMENT OF COMPLIANCE

Für das (die) überprüfte(n) Produkt(e)
for the approved product(s)

Erzeugnis
Product

Security Netzwerk-Kamera
Security network camera

Typenbezeichnung
Model/Type ref.

MX-M22-Sec-D22

Weitere Information(en)
Further information

IP65

Warenzeichen
Trade mark



Auftraggeber / Hersteller
Client / Manufacturer

MOBOTIX AG
Luxemburger Strasse 6
67657 Kaiserslautern

Angewandte Normen
Applied standards

DIN EN 60529/VDE 0470 Teil 1:2000-09
EN 60529:1991 + A1:2000
Abschnitte / *Clauses*: 12; 13; 14

Prüfbericht-Nr.
Test report reference no

2514700-9010-0001/76548 FG33/bhl
2006-10-16

Die Konformitätsbestätigung erfolgt auf Basis einer einmaligen Untersuchung von Produkten, die in einer zwischen Auftraggeber und VDE vereinbarten Menge aus der laufenden Produktion oder dem bereitgestellten Versandlos entnommen wurden. Sie bezieht sich ausschließlich auf die entnommenen Muster. Bei der im Prüfbericht dokumentierten Untersuchung wurden keine Abweichungen festgestellt. Detaillierte Ergebnisse sind dem Prüfbericht zu entnehmen.

Diese Überprüfung berechtigt nicht zum Führen eines VDE-Zeichens.

The statement of compliance is based on a single inspection carried out on the basis of the samples selected from running production or from a provided delivery lot of a quantity agreed between applicant and VDE. It only refers to the selected samples. No deviations were detected during the inspection documented in the test report. Detailed results can be taken from the test report.

This inspection is no authorization to use VDE marks.

Ausstellungsort / Datum
Place of issue / date

Offenbach, 2007-01-29

VDE Prüf- und Zertifizierungsinstitut
VDE Testing and Certification Institute

Leiter Fachbereich F3
Head of Department F3



VDE Prüf- und Zertifizierungsinstitut VDE Testing and Certification Institute Merianstraße 28 63069 Offenbach Germany www.vde.com

FCC Declaration of Conformity



DECLARATION
OF
CONFORMITY

Applicant: **MOBOTIX AG**
Luxemburgerstr. 6
67657 Kaiserslautern
Germany

Type of Equipment: **Camera**

Model Number: **M22**

Serial Number: **10.2.1.175**

Test Report Number: **266.307**

Test Report Is On File At: **EMV Testhaus GmbH**
Gustav-Hertz-Straße 35
94 315 Straubing
Germany



DAT-P-224/95-02 / BNetzA-CAB-02/21-02/1

This device complies with Part 15 of the FCC Rules for Class B Devices.

Regulation: **United States Code of Federal Regulations 47**
Part 15 Digital Devices, Subpart B unintentional radiators, Class B

Standard: **ANSI C63.4-2003 Methods of Measurement of Radio-Noise**
Emissions from Low Voltage Electrical Equipment in the Range of
9 kHz to 40 GHz.

Limit: **DIN EN 55022:1998-04 Information Technology Equipment**
Radio Disturbance Characteristics –
Limits and Methods of Measurement

Verified by: *Michael Hofmann*

Date: Straubing, June 28th, 2006

Declaration of Conformity

**Konformitätserklärung gemäß dem Gesetz über Funkanlagen und
Telekommunikationsendeinrichtungen (FTEG) und der Richtlinie
1999/5/EG (R&TTE)**

**Declaration of Conformity in accordance with the Radio and Telecommunications
Terminal Equipment Act (FTEG) and Directive 1999/5/EC (R&TTE Directive)**

**Déclaration de conformité selon la loi sur les équipements hertziens et les équipements
terminaux de télécommunication (FTEG) et la directive 1995/5/EC (R&TTE)**

Hersteller/verantwortliche Person: MOBOTIX AG
Manufacturer/responsible person:
Fabricant/personne responsable :

erklärt, dass das Produkt: Netzwerk-Kamera
declares that the product: Network camera
déclare que le produit : Caméra de réseau

Typ: M22M
Type:
Type :

Telekommunikations(Tk-)endeinrichtung: Netzwerk-Kamera
Telecommunications terminal equipment: Network camera
Équipement de terminal de télécommunication: Caméra de réseau

Verwendungszweck: Übertragung von Bildern und Toninformationen
Intended purpose: Transmission of images and audio information
Le but suivi : Transmission d'images et du son

bei bestimmungsgemäßer Verwendung den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht.
complies with the essential requirements of §3 and the other relevant provisions of the FTEG (article 3 of the R&TTE Directive), when used for its intended purpose.
est conforme aux exigences fondamentales du paragraphe 3 du FTEG (article 3 du R&TTE) et des autres clauses s'y rapportant.

Gesundheit und Sicherheit gemäß § 3 (1) 1. (Artikel 3 (1) a))
Health and safety requirements pursuant to § 3 (1) 1. (article 3 (1) a))
Santé et sécurité conformes au paragraphe 3 (1) 1. (article 3 (1) a))

angewendete harmonisierte Normen: EN 60950:2000 (NSR 73/23/EWG & 93/68/EWG)
harmonised standards applied: (LVD 73/23/EWG & 93/68/EC)
normes harmonisées : (Directive Basse Tension 73/23/EWG & 93/68/EC)

Schutzanforderungen in Bezug auf die elektromagn. Verträglichkeit § 3 (1) 2, Artikel 3 (1) b))
Protection requirements concerning electromagnetic compatibility § 3 (1) 2, (article 3 (1) b))
Exigences de protection concernant la compatibilité électromagnétique, paragraphe 3 (1) 2; (article 3 (1) b))

angewendete harmonisierte Normen: EN 61000-4-2 EN 55022, Class B (EMV-RL 1995/5/EG
harmonised standards applied: EN 61000-4-3 EN 55024 (R&TTE))
normes harmonisées : EN 61000-4-4 EN 61000-6-2 (EMCD 1995/5/EG
EN 61000-4-5 EN 61000-6-3 (R&TTE))
EN 61000-4-6 (Directive EMC 1995/5/EG
EN 61000-4-11 (R&TTE))

Anschrift: MOBOTIX AG
Address: Luxemburger Str. 6
Adresse : 67657 Kaiserslautern
Germany

+ TK-Nr. / Phone number / N° de communication:

Fon: +49 (631) 3033-100
Fax: +49 (631) 3033-190
E-Mail: info@mobotix.com

Kaiserslautern, 29.02.2006

Ort, Datum
Place & date of issue
Lieu et date



MOBOTIX AG
Luxemburger Str. 6
D-67657 Kaiserslautern
Tel: +49 (631) 3033-100
Fax: +49 (631) 3033-190

Dr. Ralf Hinkel
Vorstand/CEO, MOBOTIX AG

Name und Unterschrift
Name and signature
Nom et signature

MOBOTIX – The HiRes Video Company



**To demonstrate our confidence in the quality of our products,
MOBOTIX cameras were used to capture all the images that
appear in this manual.**

Manufacturer

MOBOTIX AG

Kaiserstrasse

D-67722 Langmeil

Germany

Tel : +49 6302 9816-103

Fax: +49 6302 9816-190

<http://www.mobotix.com>

sales@mobotix.com

Executive Board

Dr. Ralf Hinkel

Registration Office: Kaiserslautern Local Court

Registration Number: HRB 3724

Tax Code: 44/676/0700/4

Tax Office: Worms-Kirchheimbolanden, Germany

VAT ID:

DE202203501

You can find the latest version of this document
at www.mobotix.com under **Support**.

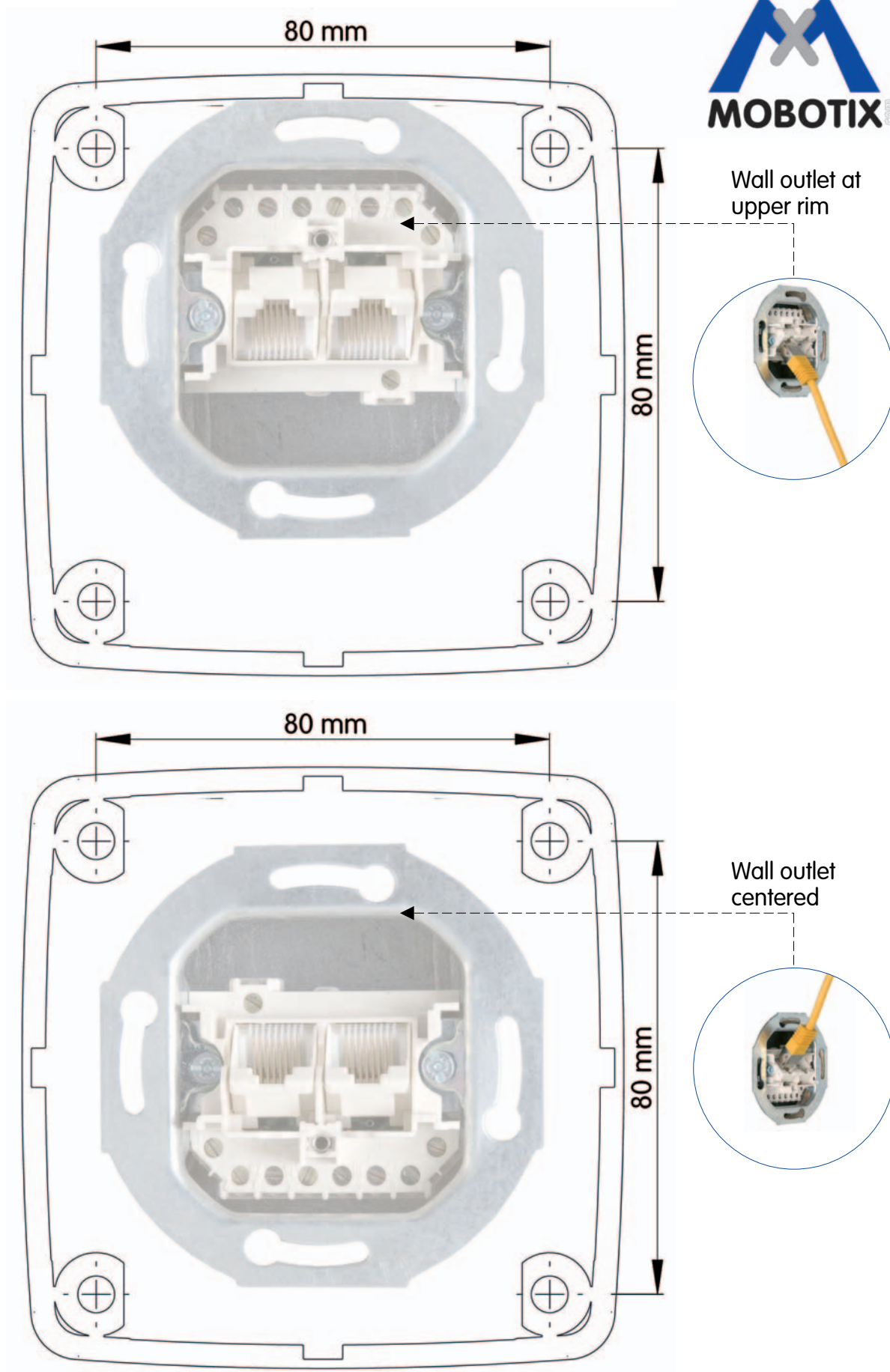


Technical specifications subject to change without notice!

M22M Drilling Template

Scale 1:1

Security-Vision-Systems





Area with horizontal dashed lines for notes.

Megapixel

1280 x 960
software zoom

30 Frames/s

VGA (640 x 480)
10 fps Mega

-22°F to +140°F

Weatherproof

-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af

PoE

network power
even in winter

microphone & speaker

Audio

bi-directional via IP
variable framerates

Video SIP Client

IP-Telephony

alarm notify,
cam remote control

Video motion

multiple windows
precision pixel-based

lip-synchronized audio

Recording

event-ringbuffer
30 cams each 30 fps

Live viewing

30 cams at 30 fps
all on one screen

Backlight

safe using CMOS
without mechanical iris

Wall bracket

with cable cover
for RJ45 wall outlet

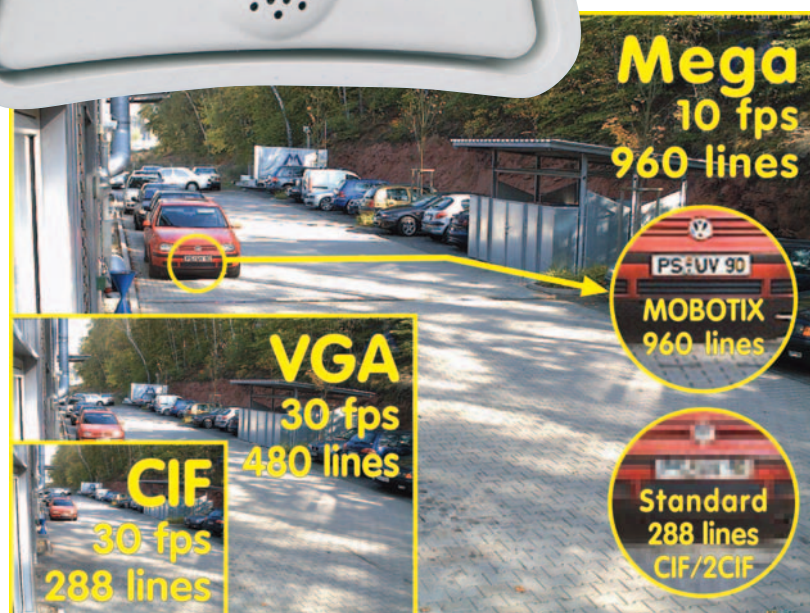
Robust

no moving parts
fiber glass housing

M22M

Camera Manual

Part 1



Complete integration for web and security

Current PDF File:

www.mobotix.com > Support > Manuals

MOBOTIX AG • Security-Vision-Systems • Made in Germany

www.mobotix.com • sales@mobotix.com • 18.06.2007



MOBOTIX ... the new face of IP video