Quick Installation

MOBOTIX M16B EN54 Thermal Camera

BeyondHumanVision

MOBOTIX

V2.06_11/21/2023, Order Code: Mx-M16TB-Rxxx-EN54

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Before You Start

This section contains the following information:

Support

MOBOTIX Support

If you need technical support, please contact your MOBOTIX dealer. If your dealer cannot help you, he will contact the support channel to get an answer for you as quickly as possible.

If you have internet access, you can open the MOBOTIX help desk to find additional information and software updates.

Please visit **www.mobotix.com > Support > Help Desk**.

MOBOTIX eCampus

The MOBOTIX eCampus is a complete e-learning platform. It lets you decide when and where you want to view and process your training seminar content. Simply open the site in your browser and select the desired training seminar.

Please visit **www.mobotix.com/ecampus-mobotix**.

MOBOTIX Community

The MOBOTIX community is another valuable source of information. MOBOTIX staff and other users are sharing their information, and so can you.

Please visit **community.mobotix.com**.

Safety Notes

- This camera must be installed by qualified personnel and the installation should conform to all local codes.

- This product must not be used in locations exposed to the dangers of explosion.
- Do not use this product in a dusty environment.
- Protect this product from moisture or water entering the housing.
- Install this product as outlined in this document. A faulty installation can damage the product!
- Do not replace batteries of the camera. If a battery is replaced by an incorrect type, the battery can explode.
- This equipment is not suitable for use in locations where children are likely to be present.
- External power supplies must comply with the Limited Power Source (LPS) requirements and share the same power specifications with the camera.
- When using a Class I adapter, the power cord shall be connected to a socket-outlet with proper ground connection.
- To comply with the requirements of EN 50130-4 regarding the power supply of alarm systems for 24/7 operation, it is highly recommended to use an uninterruptible power supply (UPS) for backing up the power supply of this product.

Legal Notes

Special Export Regulations!

Cameras with thermal image sensors ("thermal cameras") are subject to the special export regulations of the U.S.A. and including the ITAR (International Traffic in Arms Regulation):

- According to the currently applicable export regulations of the U.S.A. and the ITAR, cameras with thermal image sensors or parts thereof must not be exported to countries embargoed by the U.S.A., except if a special permit can be presented. At present, this applies to the following countries: Crimea region of Ukraine, Cuba, Iran, North Korea, Sudan, and Syria. The same export ban applies to all persons and institutions listed in "The Denied Persons List" (see www.bis.doc.gov, "Policy Guidance > Lists of Parties of Concern"; https://www.treasury.gov/resource-center/sanctions/sdn-list/pages/default.aspx).
- Under no circumstances must the camera itself or its thermal image sensors be used in the design, the development or in the production of nuclear, biological or chemical weapons or in the weapons themselves.

Legal Aspects of Video and Sound Recording

You must comply with all data protection regulations for video and sound monitoring when using MOBOTIX AG products. Depending on national laws and the installation location of the cameras, the recording of video

and sound data may be subject to special documentation or it may be prohibited. All users of MOBOTIX products are therefore required to familiarize themselves with all applicable regulations and to comply with these laws. MOBOTIX AG is not liable for any illegal use of its products.

Declaration of Conformity

The products of MOBOTIX AG are certified according to the applicable regulations of the EC and other countries. You can find the declarations of conformity for the products of MOBOTIX AG on www.mobotix.com under **Support > Download Center > Marketing & Documentation > Certificates & Declarations of Conformity**.

RoHS Declaration

The products of MOBOTIX AG are in full compliance with European Unions Restrictions of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS Directive 2011/65/EC) as far as they are subject to these regulations (for the RoHS Declaration of MOBOTIX, please see www.mobotix.com, **Support > Download Center > Marketing & Documentation > Brochures & Guides > Certificates**).

Disposal

Electrical and electronic products contain many valuable materials. For this reason, we recommend that you dispose of MOBOTIX products at the end of their service life in accordance with all legal requirements and regulations (or deposit these products at a municipal collection center). MOBOTIX products must not be disposed of in household waste! If the product contains a battery, please dispose of the battery separately (the corresponding product manuals contain specific directions if the product contains a battery).

Disclaimer

MOBOTIX AG does not assume any responsibility for damages, which are the result of improper use or failure to comply to the manuals or the applicable rules and regulations. Our General Terms and Conditions apply. You can download the current version of the **General Terms and Conditions** from our website at www.-mobotix.com by clicking on the corresponding link at the bottom of every page.

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Intended Use

The system with all components included in the scope of delivery (see) meets the requirements of the EN 54-10 and EN54-18 standards. The EN 54-10 testing procedure tests the ability of the thermal camera to detect hot spots at max 25m

3 Classes are defined by the EN 54-10 Standard:

- Class 1 when all test items respond to both fire types up to and including a distance of 25m.
- Class 2 if all test specimens respond to both types of fire up to and including a distance of 17m.
- Class 3 if all specimens respond to both types of fire at a distance of 12 m.

The alarm shall trigger a red led on the camera. The alarm acknowledgment shall be done manually

The MOBOTIX M16B EN54 Thermal Camera Mx-M16TB-Rxxx-EN54 is intended for use in environments with increased fire risk. It can be used, for example, in waste management to discover possible sources of fire at an early stage by detecting critical temperature thresholds and reporting them to the fire alarm system in use.

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Delivered Parts and Dimensions

This section contains the following information:

MOBOTIX M16B EN54 Thermal Camera: Scope of Delivery

Scope of delivery MOBOTIX M16B EN54 Thermal Camera

Item	Count	Description
1.1	1	Pre-mounted bundle of M16B Camera and one Thermal TR sensor Order Code: Mx-M16TB-R079-EN54-V2 Mx-M16TB-R119-EN54-V2 Mx-M16TB-R237-EN54-V2
1.2	1	MX-232-IO-Box (Weatherproof connection of external sensors and switching of external devices via MOBOTIX cameras)
1.3	1	MX-NPA-Box (Weatherproof PoE Injector (IEEE 802.3af) and network connector)
1.4	1	MX-Overvoltage-Protection-Box-LSA (Protects one MOBOTIX camera against surges of up to 4 kV on the PoE network cabling)

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Installation

This section contains the following information:

Wiring Overview

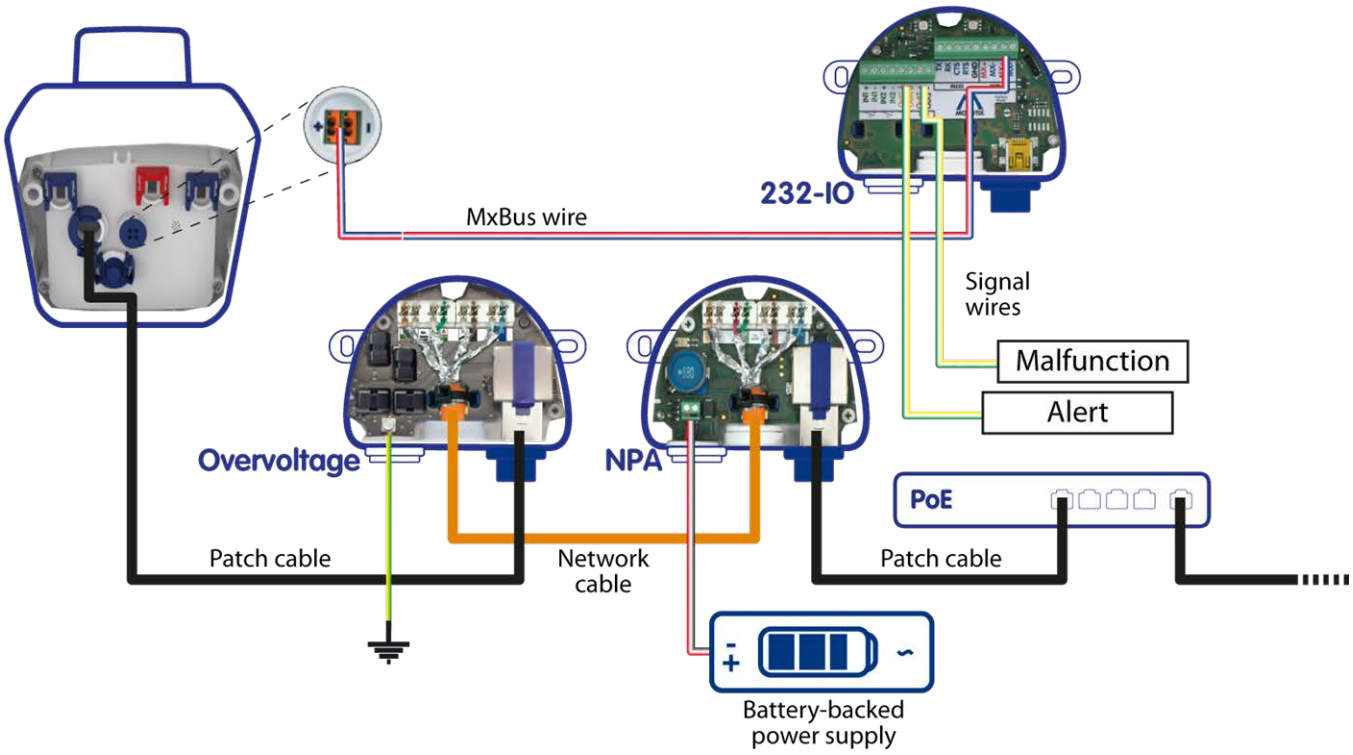

Fig. 1: Wiring of the MOBOTIX M16B EN54 Thermal Camera system

NOTE!

- The cable between the MOBOTIX M16B EN54 Thermal Camera and the MX-Overvoltage-Protection-Box must not exceed 0.5 m. It is recommended to install the MX-Overvoltage-Protection-Box in the wall arm of the camera.
- For MxBus wiring, use a cable of type J-Y(ST)Y with 2x2x0.8 mm^2. The maximum length for the MxBus cable is 100 m/110 yd.
- For alarm and fault output, use cables of type J-Y(ST)Y with 2x2x0.8 mm^2. The maximum length for these cables is 3 m/10 ft.
- The battery-backed power supply (not included) must comply with EN54-4.

Information on Installing the Components

CAUTION! To ensure EN 54 conformity, only the original MOBOTIX components supplied may be used!

NOTE! One additional optical sensor can be optionally added without losing the EN 54 certification.

For more information on installing the individual components of the MOBOTIX M16B EN54 Thermal Camera system, please refer to the documents listed below.

M16B Thermal TR

Quick Installation	Manual	Technical Specifications
		

MX-232-IO-Box

Quick Installation/Technical Specifications


MX-NPA-Box

Quick Installation/Technical Specifications


MX-Overvoltage-Protection-Box-LSA

Quick Installation/Technical Specifications

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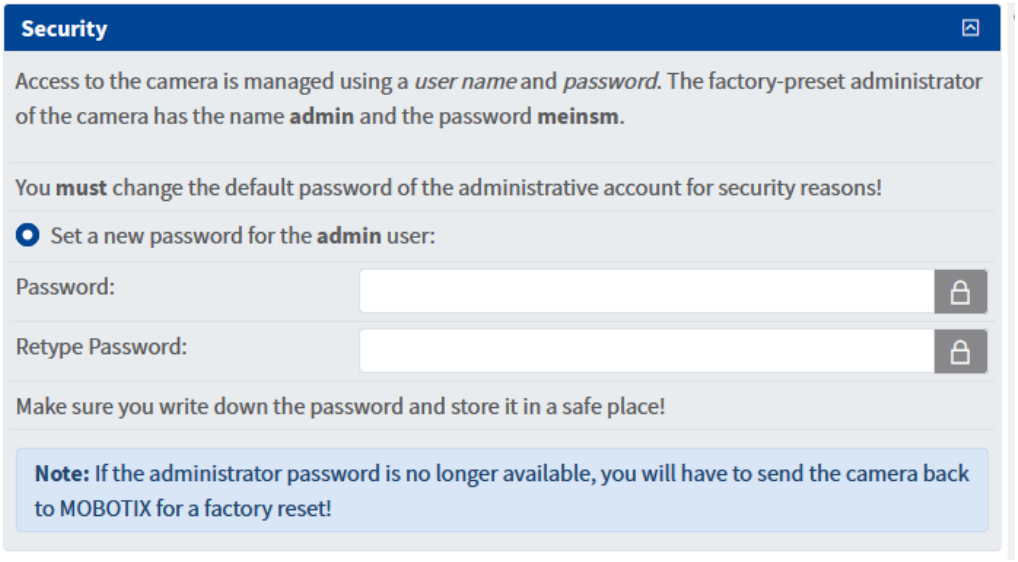
EN 54 Compliant Camera Configuration

This section contains the following information:

Initial Camera Setup



1. Start your web browser.
2. Enter the IP address of your camera. This can be found on the label of the camera as well as on the shipping box.
3. You will be prompted to set a password for the admin user of the camera. Make sure you keep the password in a safe place.

Configure the MxBus Interface

- Open the **Admin Menu** of the camera.
- In the **Manage MxBus Modules** dialog, activate the connected MX-232-IO-Box.

- Check **Use in Classic Mode** ① , switch **Line Termination** to **On** and click on **Activate**. The LEDs of the MX-232-IO-Box light up green and blue.

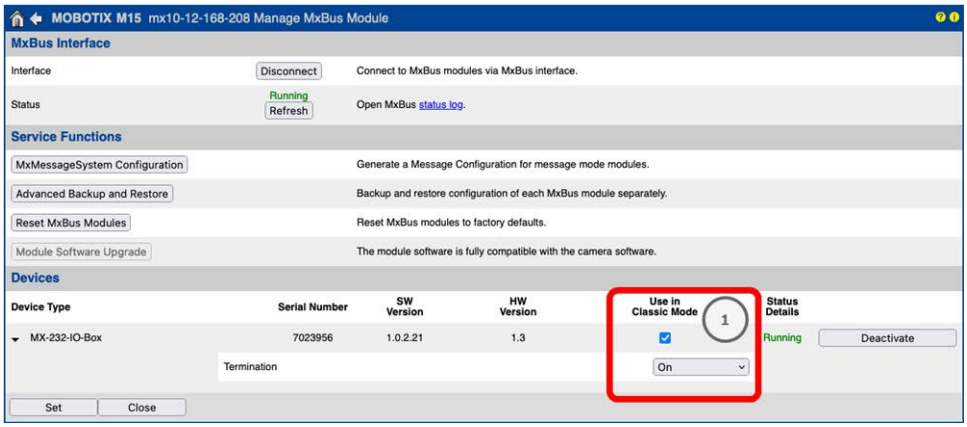
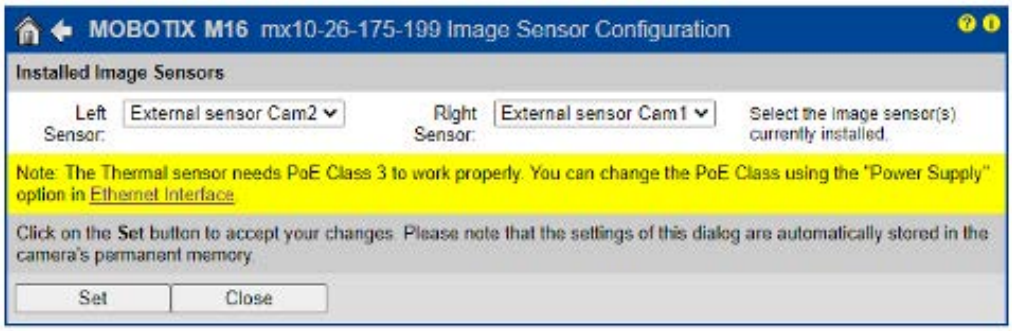


Fig. 2: Activating the MxBus interface

- Click on **Set**, then on **Close** and permanently save the settings.

Image Sensor Configuration



1. Go to **Admin Menu > Image Sensor Configuration**
2. Select the combination corresponding to your settings and reboot the camera.

Event Control / Pre-configured Events

The MOBOTIX EN54 Thermal Camera contains pre-configured events and action groups that are required for proper system operation.

CAUTION! To ensure EN54-compliant functionality, the pre-configured event and action group settings must not be changed.

The pre-configured events are:

- **Shock Detector:** For reporting possible manipulation of the camera.
- **Thermal Event:** To detect and report the exceeding of a critical temperature threshold.
- **Fault Message Input:** To report a fault in the EN54 Thermal System.
- **User Click:** For acknowledging events.

The pre-configured Action Groups are:

- **Trouble**,
- **Thermal Event**,
- **ACK trigger**.

Various messages are pre-configured via the assigned outputs and/or by means of internal camera action types.

Adjusting the Configuration

The individual events of the MOBOTIX M16B EN54 Thermal Camera can be adapted to the conditions of your installation using the following steps.

- Open the camera's web interface in your browser using the IP address you have set.
- Open the **Setup Menu** of the camera.

- Edit ① the individual events in **Event Control > Event Overview**.

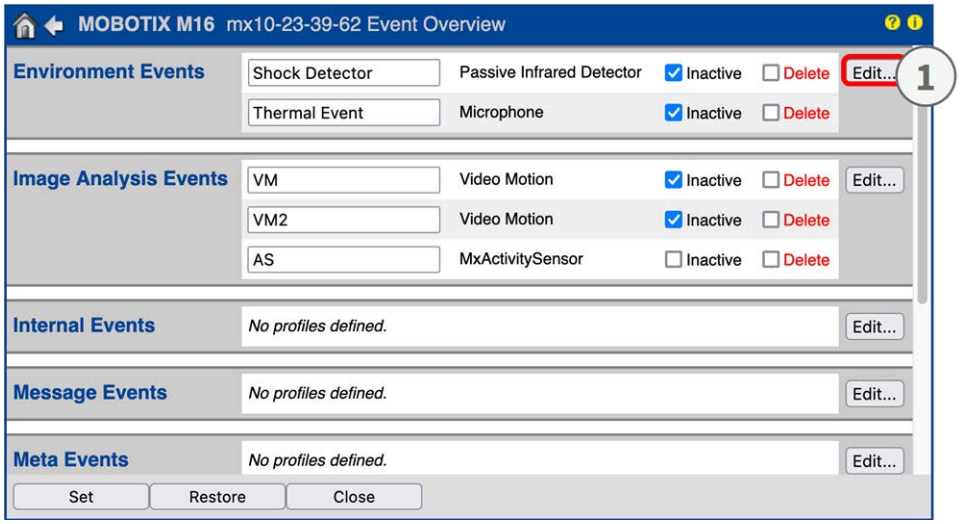


Fig. 3: Event overview in the Setup Menu

Adjusting the Detection Sensitivity of the Shock Detector Event

The **Detection Sensitivity** ① can be adjusted using the dropdown list. Lower values trigger earlier. Test the trigger sensitivity on-site based on the conditions and requirements of the installation.

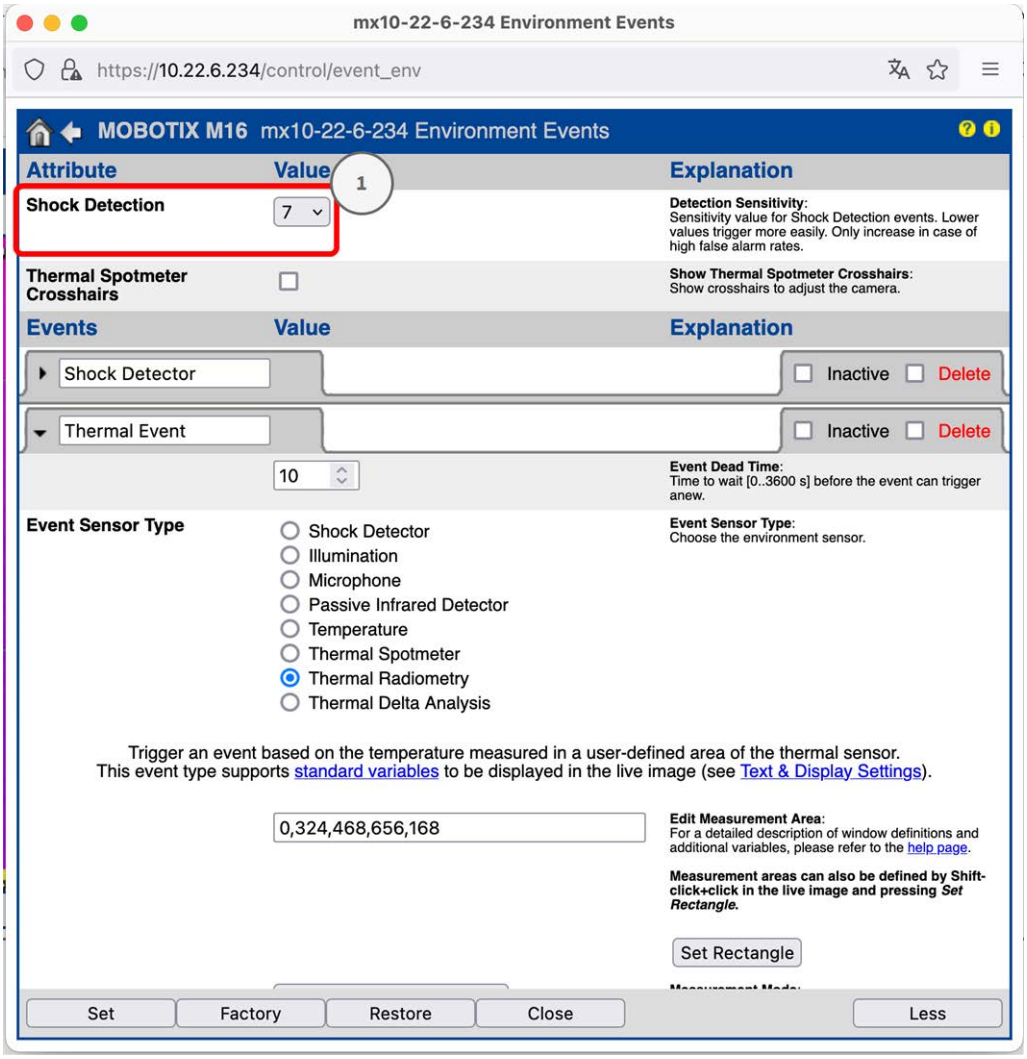


Fig. 4: Configuring the Shock Detector event

Adjusting the Thermal Event

You can adjust the **Thermal Event** of the camera to the on-site conditions as follows:

- Unfold the corresponding event.
- To edit the measurement area, use **Shift-click** in the live image of the camera to define a rectangle around the area you want to measure.

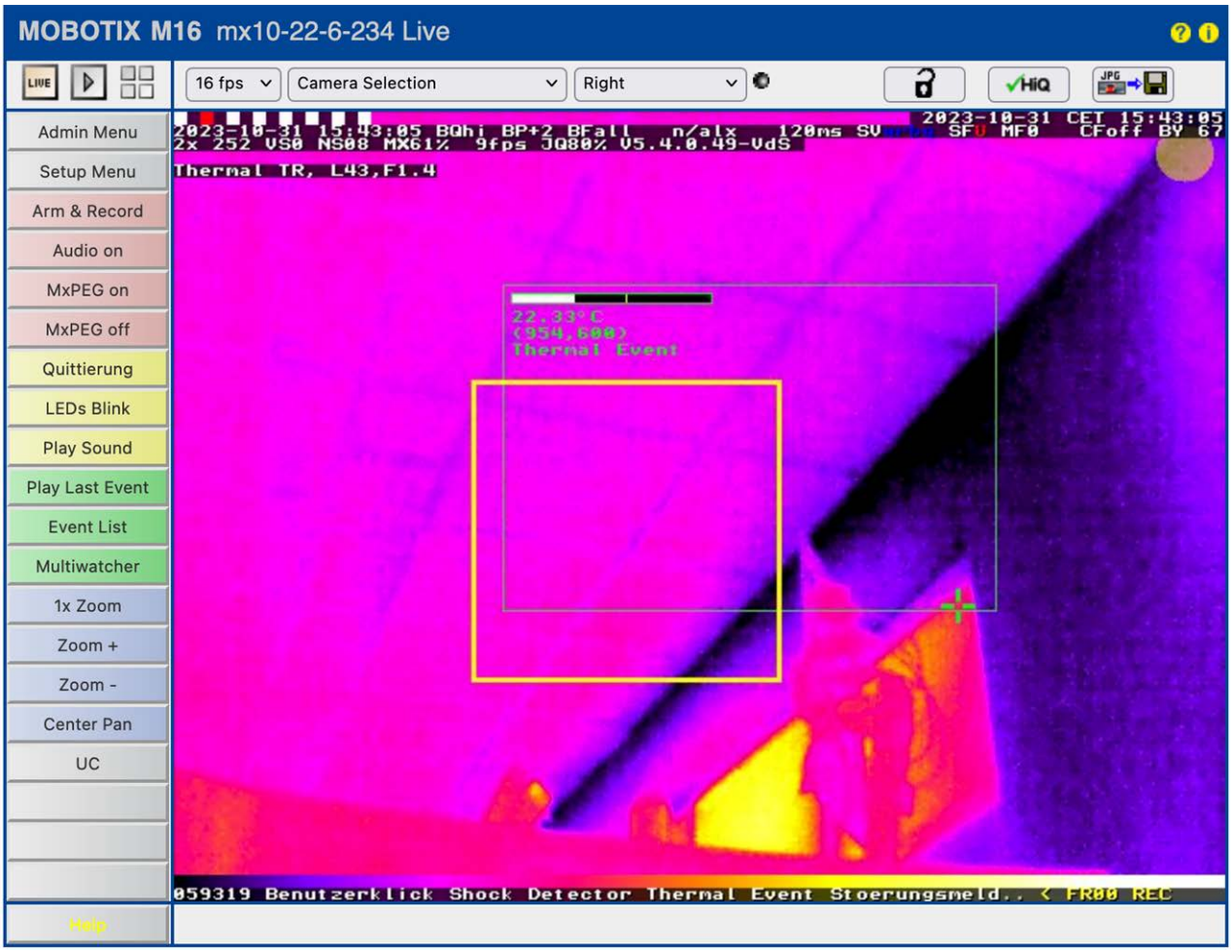


Fig. 5: Editing the measurement area

- In the **Thermal Event** dialog, click **Set Rectangle** to define the area.
- Click on **Set** to save the settings.

- To change the trigger level of the event, enter the desired temperature value in the dialog and click on **Set**.

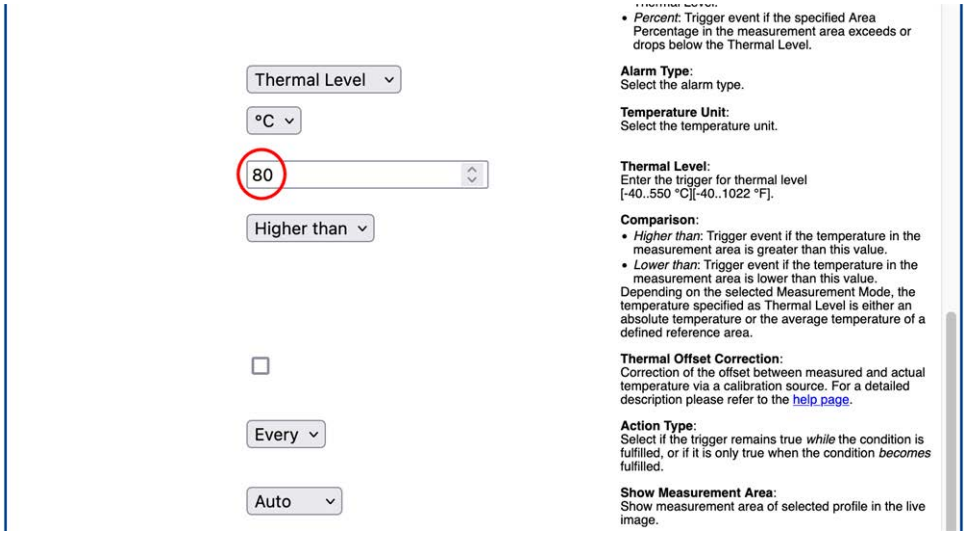
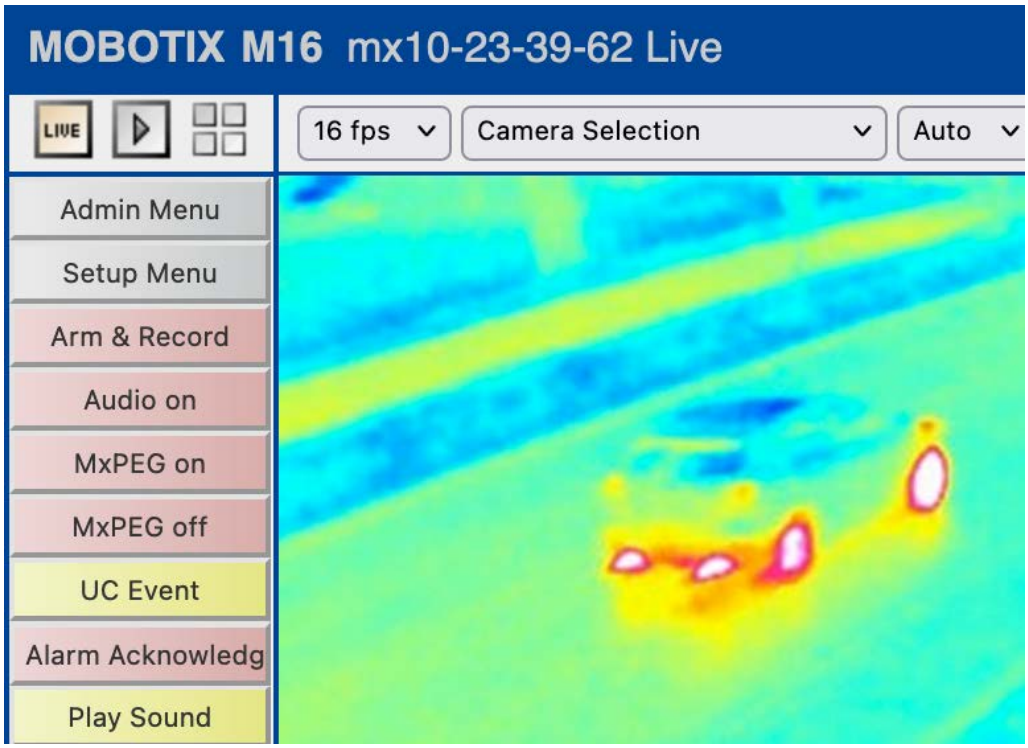


Fig. 6: Adjusting the trigger level of the Thermal Event

- Click on **Set**, then on **Close** and permanently save the settings.

For more general settings of the camera, please refer to the general **M16 Camera Manual**.

Acknowledge Alarm via Softbutton



1. In case of an Overheating Alarm Event, you can acknowledge the Alarm by clicking the corresponding Softbutton (see Set an Alarm Acknowledge Softbutton).

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Technical Specifications

Product Information

Specialties	Thermographic IP camera with Thermal Radiometry technology (TR) and Germanium lens; can be optionally equipped with a second optical 6MP sensor module (day/-color or night/black and white to be ordered separately for easy self-assembly)
Area of Application	TR temperature measurement of each pixel in the whole image area, up to 20 independent temperature events

Thermal Lenses/Sensors, 50 mK, 336 x 252 (Factory-Assembled)

Calibrated Thermal sensor TR/Thermal Radiometry, horiz./vert. image angle 45°/35°	Mx-M16TB-R079
Calibrated Thermal sensor TR/Thermal Radiometry, horiz./vert. image angle 25°/19°	Mx-M16TB-R119
Calibrated Thermal sensor TR/Thermal Radiometry, horiz./vert. image angle 17°/13°	Mx-M16TB-R237
Thermal image sensor	Uncooled microbolometer, 336 x 252 pixels, Pixel Pitch 17 µm, IR range 7,5 to 13,5 µm
Sensitivity NETD (thermal resolution)	Typ. 50 mK, < 79 mK (50 mK is equal to temperature changes of 0,05°C)
Thermal image representation	False colors or black and white
Temperature measuring range (adjustable)	High Sensitivity: -40 to 170°C/-40 t0 320°F – Low Sensitivity: -40 to 550°C/-40 to 1022°F
Temperature measuring method (via camera)	Complete image areas (customizable temperature measurement windows)

Optical Lenses/Sensors, 6MP, 3072 x 2048 (Available With Optional Sensor Module)

Sensor module with Fisheye Lens B016 (180° x 180°), night version optionally with long-pass filter (LPF)	Day/Color: Mx-O-SMA-S-6D016 Night/Black&White: Mx-O-SMA-S-6N016 LPF/Black&White: Mx-O-SMA-S-6L016
Sensor module with Ultra Wide Lens B036 (103° x 77°), night version optionally with LPF	Day/Color: Mx-O-SMA-S-6D036 Night/Black&White: Mx-O-SMA-S-6N036 LPF/Black&White: Mx-O-SMA-S-6L036

Sensor module with Super Wide Lens B041 (90° x 67°), night version optionally with LPF	Day/Color: Mx-O-SMA-S-6D041 Night/Black&White: Mx-O-SMA-S-6N041 LPF/Black&White: Mx-O-SMA-S-6L041
Sensor module with Wide Lens B061 (60° x 45°), night version optionally with LPF	Day/Color: Mx-O-SMA-S-6D061 Night/Black&White: Mx-O-SMA-S-6N061 LPF/Black&White: Mx-O-SMA-S-6L061
Sensor module with Standard Lens B079 (45° x 34°), night version optionally with LPF	Day/Color: Mx-O-SMA-S-6D079 Night/Black&White: Mx-O-SMA-S-6N079 LPF/Black&White: Mx-O-SMA-S-6L079
Sensor module with Tele Lens B119 (31° x 23°), night version optionally with LPF	Day/Color: Mx-O-SMA-S-6D119 Night/Black&White: Mx-O-SMA-S-6N119 LPF/Black&White: Mx-O-SMA-S-6L119
Sensor module with Distant Tele Lens B237 (15° x 11°), night version optionally with LPF	Day/Color: Mx-O-SMA-S-6D237 Night/Black&White: Mx-O-SMA-S-6N237 LPF/Black&White: Mx-O-SMA-S-6L237
Sensor module with Super Tele Lens B500 (8° x 6°), night version optionally with LPF	Day/Color: Mx-O-SMA-S-6D500 Night/Black&White: Mx-O-SMA-S-6N500 LPF/Black&White: Mx-O-SMA-S-6L500
Sensor module with CS-Mount (no lens included)	Day/Color: Mx-O-SMA-S-6DCS Night/Black&White: Mx-O-SMA-S-6NCS
Sensor module with CSVario Lens B045-100-CS	Day/Color: Mx-O-SMA-S-6DCSV Night/Black&White: Mx-O-SMA-S-6NCSV
Image sensor with individual exposure zones	1/1.8“ CMOS, 6MP (3072 x 2048), Progressive Scan Color or Black And White
Light sensitivity in lux at 1/60 s and 1/1 s	Color Sensor: 0,1/0,005 Black And White Sensor: 0,02/0,001

Hardware

Microprocessor	iMX 6 Dual Core incl. GPU (1 GB RAM, 512 MB Flash)
H.264 Hardware-Codec	Yes, bandwidth limitation available; output image format up to QXGA

Protection class	IP66 and IK06; with second 6MP sensor module: IK04 with B036 to B237, IK06 with B016
Intended use	Not for use in hazardous areas (Ex area); no mounting behind glass windows
Ambient temperature (range, incl. storage)	-40 to 60°C/-40 to 140°F (cold boot from -30°C/-22°F)
Internal DVR, ex works	4 GB (microSD)
Microphone/speaker	Microphone Sensitivity: -35 +/-4 dB (0 dB = 1 V/pa, 1 kHz) Speaker: 0.9 W at 8 Ohm
16bit/16kHz HD wideband audio (Opus codec)	Yes (live and audio messages)
Passive infrared sensor (PIR)	Yes
Temperature sensor	Yes
Shock detector (tamper detection)	Yes
Power consumption (typically at 20°C/68°F)	9 W (10 W possible over the short term)
PoE class (IEEE 802.3af)	Class 2 or 3 (variable), factory setting: class 3 (required for thermal operation)
Interfaces Ethernet 100BaseT/MxBus/USB	Yes (MxRJ45)/Yes/Yes
Interface RS232	With accessory (MX-232-IO-Box)
Mounting options	Wall, pole or ceiling (wall and ceiling mount included)
Dimensions (height x width x depth)	With wall mount bracket (default): 244 x 158 x 239 mm With ceiling mount bracket (optional accessory MX-DH-M24-SecureFlex): 210 x 158 x 207 mm
Weight	1,320 g
Housing	PBT-30GF, color: white
Standard accessory	Screws, dowels, screw caps, 2 Allen wrenches, module key, VarioFlex wall and ceiling mount with rubber sealing, 0.5 m ethernet patch cable, 1 blind module, Quick Install
Detailed technical documentation	www.mobotix.com > Support > Download Center
Online version of this document	www.mobotix.com > Support > Download Center

MTBF	> 80,000 hours
Certifications	EN54-10:2002, EN54-10:2002/A1:2005, EN55032:2012 EN55022:2010; EN55024:2010 EN61000-6-1:2007; EN 61000-6-2:2005 EN61000-6-3:2007+A1:2011 EN61000-6-4:2007+A1:2011 AS/ NZS CISPR22:2009+A1:2010 CFR47 FCC part15B
Protocols	IPv4, IPv6, HTTP, HTTPS, FTP, FTPS, SFTP, RTP, RTSP, UDP, SNMP, SMTP, DHCP (client and server), NTP (client and server), SIP (client and server) G.711 (PCMA and PCMU) and G.722
Manufacturer‘s warranty (since May 2018)	5 years

Image Formats, Frame Rates, Image Storage

Available video codecs	MxPEG/MJPEG/H.264
Image formats	Freely configurable format 4:3, 8:3, 16:9 or customized format (Image Cropping), such as 2592x1944 (5MP), 2048x1536 (QXGA), 1920x1080 (Full-HD), 1280x960 (MEGA)
Multistreaming	Yes
Multicast stream via RTSP	Yes
Max. image format (dual image from both sensors)	2x 6MP (6144 x 2048)
Max. frame rate for thermal images, Thermal Overlay and dual images (thermal & optical)	9 frames per second (fps)
Max. frame rate for optional optical 6MP sensor module (fps, only single core used)	MxPEG: 42@HD(1280x720), 34@Full-HD, 24@QXGA, 15@5MP, 12@6MP, 6@2x 6MP MJPEG: 26@HD(1280x720), 13@Full-HD, 9@QXGA, 5@5MP, 4@6MP, 2@2x 6MP H.264: 25@Full-HD, 20@QXGA
Number of images with 4 GB microSD (internal DVR)	CIF: 250,000, VGA: 125,000, HD: 40,000, QXGA: 20,000, 6MP: 10,000

General Functions

TR temperature measurement in the whole image area	Yes
Event trigger for temperatures above or below a limit between -40 to 550°C/-40 to 1022°F	Yes
Digital zoom and pan	Yes
ONVIF compatibility	Yes (Profile S, audio support with camera firmware V5.2.x and higher)
Genetec protocol integration	Yes
Programmable exposure zones	Yes
Snapshot recording (pre/post-alarm images)	Yes
Continuous recording with audio	Yes
Event recording with audio	Yes
Time controlled flexible event logic	Yes
Weekly schedules for recordings and actions	Yes
Event video and image transfer via FTP and email	Yes
Playback and QuadView via web browser	Yes
Bidirectional audio in browser	Yes
Animated logos on the image	Yes
Master/Slave functionality	Yes
Privacy zone scheduling	Yes
Customized voice messages	Yes
VoIP telephony (audio/video, alert)	Yes
Remote alarm notification (network message)	Yes
Programming interface (HTTP-API)	Yes

DVR/Storage Management	Inside camera via microSD card, externally via USB device and NAS, different streams for live image and recording, MxFFS with archive function, pre-alarm an post-alarm images, monitoring recording with failure reporting
Camera and data security	User and group management, SSL connections, IP-based access control, IEEE802.1x, intrusion detection, digital image signature
MxMessageSystem: Sending and receiving of MxMessages	Yes

Video Analysis

Video motion detector	Yes
MxActivitySensor	Yes

Video Management Software

MxManagementCenter	Yes
Mobile MOBOTIX App	Yes

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