



\*Variant Mx-M16B supports MOBOTIX MxBus modules

# M16 AllroundDual

Quick Install



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BeyondHumanVision

MOBOTIX

## Standard Delivery M16



Item	Count	Part Name
1.1	1	Camera housing with mainboard and wall mount (installed), without sensor modules and front element
1.2	1	Front element with additional sensors (installed)
1.3	2	Transport plugs (installed)
1.4	1	Blind module (must be installed when using only one sensor module)
1.5	4	Inner housing cover (installed)
1.6	4	Stainless steel Allen screw with flat head M4x8 for inner housing cover (installed)

Item	Count	Part Name
1.7	2	Cable lock black with bayonet catch (Ethernet patch cable, USB, one installed, one supplied)
1.8	2	Single wire plug, blue (MxBus, USB, installed)
1.9	1	MicroSD card (SDXC, SDHC pre-installed)
1.10	1	Ethernet patch cable, 50 cm/19.7 in with sealing (installed)
1.11	2	Sensor module cable 15 cm/6 in (installed in camera)
1.12	1	I/O cable with red clips to front element 15 cm/6 in (installed)
1.13	1	Hinged ferrite for Ethernet cable (installed)
1.14	1	Hinged ferrite for sensor module cable (installed)
1.15	2	Rubber plug for covering mounting screws, white
1.16	3	Stainless steel Allen screw M6x30 (installed)
1.17	3	Stainless steel washer dia. 6.4 mm (installed)
1.18	1	Stainless steel spring washer dia. 6.4 mm (wall/ceiling mount, installed)
1.19	1	Stainless steel lock nut M6 (wall/ceiling mount, installed)
1.20	1	Rubber plug, black (installed)

Item	Count	Part Name
M.1	4	Stainless steel washer dia. 6.4 mm
M.2	4	Dowels 8 mm
M.3	4	Stainless steel wood screw with hex head 6x50 mm
M.4	1	Allen wrench 2.5 mm
M.5	1	Allen wrench 5 mm
M.6	1	Lens wrench (SMA-S-6D/N/L016 lens, glass/filter insert, dome)
M.7	1	Module key (sensor module, focusing of lenses)
M.8	1	Rubber sealing for wall/ceiling mount, white
M.9	1	Ceiling mount for VarioFlex mount
M.10	4	Protection cover for screw, white
M.11	4	Security clip for sensor or blind modules, red

## Sensor Modules of the M16 (to Be Ordered Separately, Thermal Sensor Pre-Installed)

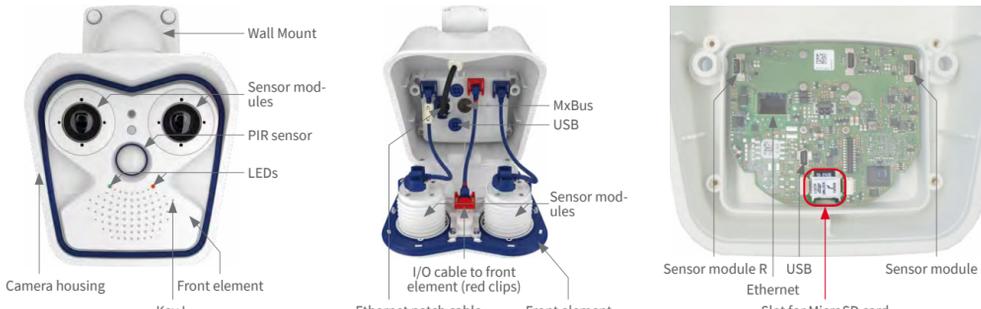


## Connections and Initial Operation of the M16

You can find detailed information on the **installation** and **connections** of the M16 in the M16 Camera Manual (PDF, available on [www.mobotix.com](http://www.mobotix.com) > Support > Download Center > Documentation > Manuals).

Please note that the position of the SD card holder has changed (see figure below, at the right), the boot options of this camera have changed compared to its predecessor (see «Boot Options of the M16» on page 2) and the camera only has one key ("L").

Regarding the rest of the **initial operation** of the M16, please see the M16 Camera Manual in Chapter 3, «Initial Operation». The first access follows the procedure described in the same manual in the section «Initial Operation of the Camera». All other tasks require access to the camera's user interface in the browser. Enter the camera's IP address into the address bar of the browser (user "admin", password "meinsm"; password must be changed upon first login – camera software V5.1.x and higher).



## Preparing the M16 for Installation

To facilitate the installation of the camera, you should complete the following tasks before actually installing the camera.

### 1. CAUTION!

- Only exchange sensor modules when powered off!
- When operating the camera with only one sensor module, always install the supplied blind module. No operation with transport plugs!
- Thermal sensor modules are always pre-installed and cannot be removed!

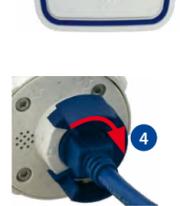


### 2. Installing the Sensor Modules

Remove the plastic nut from the sensor module **1**. Remove the transport plugs **2**.



Push the sensor module cable plug into the connector at the back of the module housing **3**. Secure the plug using the blue bayonet catch as shown **4**.



Insert the sensor module. Make sure that the MOBOTIX lettering on the sensor module is at the "9 o'clock" position as in the figure **5**. Place the back of the black module wrench onto the two holes of the sensor module **6**.



Using the black module wrench, turn the sensor module clockwise until it stops **7**. If desired, insert the two security clips **8**. Open the camera housing as described in «Opening/Closing the Camera Housing».



### Opening/Closing the Camera Housing

The following tasks require opening the camera housing and removing the front element of the M16 in order to get to the interior of the camera:

Inserting the security clips, exchanging the Ethernet patch cable, connecting the MxBus two-wire line, connecting the USB cable, exchanging the MicroSD card (see also «Inserting/Exchanging the SD Card» on page 2).

**CAUTION: Make sure the power supply to the camera is disconnected before opening the housing!**

#### 1. Opening the Camera Housing

Place the camera face-down on a clean and dry surface. Remove the two rubber plugs at the back of the camera housing. Using the supplied 5 mm Allen wrench, loosen the two bolts at the back of the camera housing. Leave the bolts and washers in the camera housing.



Using the Allen wrench, **cautiously** push from behind **in an alternating fashion** onto the left and the right bolt **1** and push the front element out of the front of the housing.

Tilt the front element forward as shown in the figure **2**.

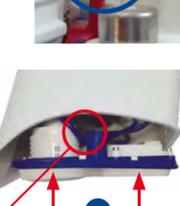
#### 2. Inserting the Security Clips

To protect the modules against unwanted removal, insert the two red security clips at the insides of the sensor modules at the proper location **1** inserted, **2** locked). Make sure that the security clips are properly locked in their seatings **3**.



#### 3. Closing the Camera Housing

Before inserting the front element, make sure that the sensor module cables of both image sensors are running at the **inside** of the screw bore **1**.



Place the camera on its right side (as seen by the camera) as shown and insert the front element. When pushing the front element into the housing **2**, red arrows), take care not to crush any cables.

When inserting and closing the front element, take special care to guide the cable of the left sensor module under the rubber hook **3**!



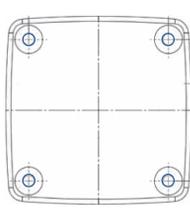
Press the front element into the camera housing by evenly applying pressure **4**. Tighten the screws with washers.

Finally, apply the rubber plugs at the back of the housing that you removed earlier.

## Installing the M16

### 1. Drill the holes for the dowels (if required)

Use the drilling template for this step (see below). Mark the holes for dowels or screws (blue circles in figure). If required, drill the holes for the dowels, push them in and cut the hole for the cables. Guide the Ethernet cable and any other cables that are to be connected through the cut-out.



### 2. Install the camera

Press the wall/ceiling mount and the wall sealing against the mounting position and align the holes with the holes for the dowels/screws. Insert the screws with washers and tighten them using a torque of 0.4 Nm. Finally, press the white covers onto the screw heads.



## Inserting/Exchanging the SD Card

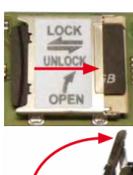
All camera models can use the integrated MicroSD card (SDHC) to record video data. In order to exchange the MicroSD card, please proceed as outlined in the following instruction. For information on reliable SD cards, please see the MOBOTIX website [www.mobotix.com](http://www.mobotix.com) > **Support** > **Download Center** > **Documentation** > **White Lists** in the document MicroSD Card Whitelist for MOBOTIX Cameras.

When replacing the SD card, make sure that recording has been deactivated in the browser (**Admin Menu** > **Storage** > **Storage on External File Server / Flash Device**; activate recording again in the same dialog after exchanging the card).



### 1. Remove the SD Card

Open the camera (see «Opening/Closing the Camera Housing» on page 1), remove all connectors in the cover of the inner housing, then remove the cover. Using your fingernail, carefully slide the metal cover of the slot in the direction of the arrow and flip the cover open. You can now lift the card out of the slot.



### 2. Insert the SD Card

Place the MicroSD card into the slot and lock the cover by carefully sliding it in the direction of the arrow. Make sure that the cover is locked properly. Apply the cover of the inner housing and reconnect the cabling. Finally, install the front element of the camera (see «Opening/Closing the Camera Housing» on page 1).



## Boot Options of the M16

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

### 1. Preparing the Camera

- Disconnect the camera's power supply.
- Make sure that you have suitable item such as a paper clip at hand, **but never use sharp or pointed objects!**
- Reconnect the power supply of the camera.

### 2. Activating the Boot Menu

The red LED lights up 5 to 10 seconds after establishing the power supply and will stay on for 10 seconds. Briefly press the key by inserting the paper clip into the hole indicated by the red circle in the figure. The camera enters the boot menu, ready for selecting one of the boot options.



The LED now flashes once and repeats the flash signal after pausing for one second (the number of flashes indicates the current boot option). To go to the next boot option, briefly press the key again (< 1 sec). After the last boot option, the camera returns to the first option (LED flashes once).

LED flashes	Boot Option	Meaning	Audio Confirmation*
1 x	—	This option is not used on this camera model.	—
2 x	Factory Defaults	Starts the camera with factory defaults (factory default IP address, users and passwords will not be reset).	Boing
3 x	Automatic IP Address	Starts the camera as DHCP client and tries to obtain an IP address from a DHCP server. If a DHCP server cannot be found or no IP address can be obtained, the camera starts with its factory default address.	Boing Boing
4 x	Recovery System	Starts the camera with the recovery system, e.g., in order to recover from a failed update of the camera software.	Alarm Sound

\*Only on cameras with audio option and installed speaker.

### 3. Selecting a Boot Option

Press the paper clip longer (> 2 sec) into the hole. The camera confirms the selection by flashing rapidly three times. You can now remove the paper clip. After 20 sec, the camera will confirm the selection by playing a sound according to the table above.

If nothing is selected, the camera will resume its normal boot process after a certain time.

## Important Notes

### Safety Warnings

#### Notes on Installing:

- This product must not be used in locations exposed to the dangers of explosion.
- Make sure that you install this product as outlined in Chapter 2, «Installation» of the corresponding manual. A faulty installation can damage the camera!
- When installing this product, make sure that you are only using genuine MOBOTIX parts and MOBOTIX connection cables.
- Only install this product on suitable, solid materials that provide for a sturdy installation of the fixing elements used.



**Electrical installation:** Electrical systems and equipment may only be installed, modified and maintained by a qualified electrician or under the direction and supervision of a qualified electrician in accordance with the applicable electrical guidelines. Make sure to properly set up all electrical connections.



**Electrical surges:** MOBOTIX cameras are protected against the effects of 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 to ensure proper protection against lightning, since this also protects the building and the whole network infrastructure.



**Max. power consumption of attached extension modules:** The power consumption of all attached **MxBus modules** must **not exceed 3 W**. When attaching modules to the MxBus connector and the USB socket, the **power consumption of all attached modules must not exceed 4 W, if the camera is powered by PoE class 3**. If **PoE class 2** is used, **the power consumption of all attached modules must not exceed 1 W!**



**Never touch the lenses:** Due to the high performance of the M16, the area of the image sensor can get quite hot, especially when the ambient temperature is also high. This does not affect the proper functioning of the camera in any way. For this reason, the product must not be installed within the reach of persons without domes or protective lens covers.



**Power off before opening the camera:** Make sure the power supply to the camera is disconnected before opening the camera housing (e.g., when inserting or exchanging lenses, lens units and SD cards).



### Legal Notes

**Legal aspects of video and sound recording:** You must comply with all data protection regulations for video and sound monitoring when using MOBOTIX products. Depending on national laws and the installation location of the M16, 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.



### 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](http://www.mobotix.com) by clicking on the **COS** link at the bottom of every page.



### Notes on System Security (“Cyber Security”)

To protect the camera against security risks in data technology, the following measures are recommended after the installation has been completed:



- **MxManagementCenter:**
  - Menu View > Wizards & Tools > Secure System:
    - Change camera factory default password: √
    - Enable encrypted HTTPS: √
    - Disable public access: √
  - User Management (for all users):
    - Force Complex Password: √
    - Logout on Inactivity: After 5 min
- **User interface of the camera in the browser:**
  - Admin Menu > Network Setup > Web Server:
    - Enable MxWeb: –
    - Enable intrusion detection: √
    - Notification threshold: 10
    - Timeout: 60 Minutes
    - Block IP Address: √

### Attention – Special Export Laws Apply!

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



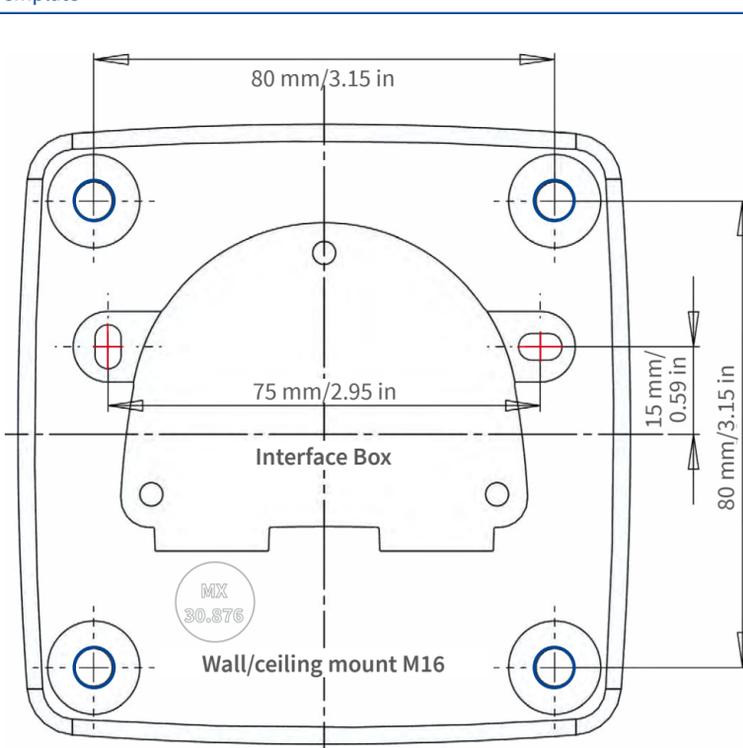
- According to the currently applicable export regulations of the U.S.A. and the ITAR, cameras with thermal image sensors or parts thereof **must not be exported to countries embargoed by the U.S.A. or the ITAR**. At present, this applies to the following countries: Syria, Iran, Cuba, North Korea and Sudan. The same export ban applies to all persons and institutions listed in “The Denied Persons List” (see [www.bis.doc.gov](http://www.bis.doc.gov) > **Policy Guidance** > **Lists of Parties of Concern**).
- 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.**

## Technical Specifications M16/M16-Thermal/M16-Thermal-TR

Model Versions	Mx-M16A/B* (any comb. of Day/Night/LPF sensor modules) Mx-M16A/B-Thermal(-TR)* (optionally one add. Day/Night/LPF sensor module) *Variant Mx-M16B supports MOBOTIX MxBus modules
Lens Options Mx Sensor Module	10 to 270 mm (35 mm format), hor. angles of view 180° to 8° (GMP)
Lens Options Thermal Image Sensor	43, 65, 135 mm (in 35 mm format), 45°, 25°, 17° horizontal angle of view
Sensitivity Mx Sensor Module	Color sensor (GMP): 0.1 Lux at 1/60 s, 0.005 Lux at 1 s Black&White sensor (GMP): 0.02 Lux at 1/60 s, 0.001 Lux at 1/1 s
Sensitivity Thermal Image Sensor	NETD typ. 50 mK, IR range 7.5 to 13.5 µm Range of temperature measuring: -40 to 550 °C/-40 to 1,022 °F Precision Sensor Module Thermal-TR: ±10 K of the thermal radiation received at the sensor
Image Sensor Mx Sensor Module	1/1.8" CMOS, 6MP, progressive scan
Image Sensor Thermal Image Sensor	Uncooled microbolometer, 336x252 pixels
Max. Image Size Mx Sensor Module	Color: 3072x2048 (6MP), 6144x2048 (12MP) Black&White: 3072x2048 (6MP), 6144x2048 (12MP)
Max. Image Size Thermal Image Sensor	Can be scaled up to 3072x2048 (6MP), automatically scaled to size of Mx sensor module
Image Formats (Independent of Type, Per-Sensor Setting)	3072x2048 (6MP), 2592x1944 (5MP), 2048x1536 (QXGA), 1920x1080 (Full-HD), 1280x960 (MEGA), 1280x720 (HD), 1024x768, 800x600, 768x576 (D1-PAL), 704x576 (TV-PAL), 640x480, 384x288, 320x240, 160x120, custom formats
Max. Frame Rate Mx sensor module	MxPEG* (max): 42@HD (1280x720), 34@Full-HD, 24@QXGA, 15@5MP, 12@6MP, 6@2x6MP M-JPEG* (max): 26@HD (1280x720), 13@Full-HD, 9@QXGA, 5@5MP, 4@6MP, 2@2x6MP H.264 (max): 25@Full-HD, 20@QXGA *Single core use only
Max. Frame Rate Thermal Image Sensor	9 fps (when displaying an Mx sensor module and a thermal sensor module, the overall frame rate of the camera is reduced to 9 fps)
Video Codec	MxPEG, M-JPEG, JPEG (max. output size GMP) H.264 (max. output size QXGA, bandwidth limitation applicable)
ONVIF	ONVIF-S (camera software V5.2.x and higher, 2 <sup>nd</sup> half of 2018)
Internal DVR	MicroSD card (SDXC, SDHC pre-installed)
External Video Ring Buffer	Directly on NAS or PC/Server, no additional recording software required
Software (Included)	MxManagementCenter video management software
Image Processing	Backlight compensation, automatic white balance, image distortion correction, panorama correction, video sensors (video motion detection/MxActivitySensor), optional off-color/black & white display of thermal image sensor
Virtual PTZ	Digital pan/tilt/zoom, continuous up to 8X

Alarm/Events	Video Motion detection, MxActivitySensor, external signals, temperature sensor, PIR, microphone, shock detector (with firmware version 5.0.1 and higher), notification via e-mail, FTP, IP telephony (VoIP, SIP), visual/sound alarms, pre- and post-alarm images
Microphone and Speaker	Integrated microphone and speaker
Audio Functions	Lip-synchronous audio, two-way communication, audio recording
Interfaces	Ethernet 100Base-T, MiniUSB, MxBus*; inputs/outputs and RS232 via accessories *Only variant Mx-M16B
Video Telephony	VoIP/SIP, two-way communication, remote controlling using key codes, event notification
Security	User/group management, HTTPS/SSL, IP address filter, IEEE 802.1x, intrusion detection, digital image signature
Certifications	EN55032:2012, EN55022:2010, EN55024:2010, EN50121-4:2015, 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
Power Supply	Year-round Power-over-Ethernet (IEEE 802.3af); PoE class variable (M16-Thermal(-TR): class 3 required)
Power Consumption	M16: Typ. 5W with one sensor module, 5.5W with two sensor modules M16-Thermal/M16-Thermal-TR Typ. 5.5W with thermal image sensor, 6W with 1 additional sensor module
Power Consumption of External Devices	At MxBus: max. 3W, at USB: max. 2.5W, total max. 4W The power consumption of the camera will increase accordingly!
Operating Conditions	IP66, -30 to 60 °C/-22 to 140 °F, air humidity up to 90-100% (according to EN 50155 Chap. 12.2.5)
Protection Against Mechanical Impact	(According to IEC 62262/EN 50102) M16 with hemispheric sensor modules: IK07 M16 with other sensor modules: IK04
Dimensions M16, M16-Thermal(-TR)	W x H x D with wall mount: 158 x 24 x 239 mm; W x H x D with ceiling mount: 158 x 210 x 207 mm
Weights M16 without Sensor Modules	Weight with wall mount: approx. 1,160 g Weight with ceiling mount: approx. 1,110 g
Weights M16-Thermal(-TR) without Add. Sensor Module	Weight with wall mount: approx. 1,320 g Weight with ceiling mount: approx. 1,270 g
Dimensions/Weights Sensor Modules	SMA-S-6D/N/L016: Ø x D: 43 x 45 mm (installation dim.), weight 85 g SMA-S-6D/N/L041/079: Ø x D: 43 x 57 mm (installation dim.), weight 111 g SMA-S-6D/N/L061/119/237: Ø x D: 43 x 60 mm (installation dim.), weight 122 g SMA-S-6D/N/L500: Ø x D: 43 x 60 mm (installation dim.), weight 160 g
Standard Delivery	Housing (high-resistance composite, PBT), white, shock-resistant dome for SMA-S-6D/N/L016 sensor module, coated glass pane for all other Mx sensor modules, protective Germanium cover for thermal image sensor (only M16-Thermal/M16-Thermal-TR), accessories for installation on wall and ceiling, Allen wrench, 50 cm patch cable, software, MicroSD card (pre-installed)

## Dimensions/Drilling Template



Further information on [www.mobotix.com](http://www.mobotix.com):

- Products > Indoor Cameras > M16 Allround Dual
- Support > Download Center > Documentation > Certificates & Declarations of Conformity

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