



# Technical Specifications

## MOBOTIX MOVE Vandal Multisensor PTZ Combo 20MP Video Analytics Camera

The MOBOTIX MOVE Vandal Multisensor PTZ Combo 20MP Video Analytics Camera incorporates four 5MP fixed-lens sensors plus one 2MP (1080p) PTZ network camera with remote-controlled 21x zoom/focus lens for optimum positioning and alignment to the application needs. The camera provides four individual video-streams plus a combined stream of all four video streams for undistorted 360° views, making it ideally suited for surveillance of large areas or road intersections. Multiple sensor modules and the integrated AI-VMD analytics features enable the detection of vehicles and motion, as well as object tracking via the motorized PTZ unit.

- 4 x 5MP multi-directional camera + 2MP (1080p) 21x PTZ camera
- Fixed-focus lens 3.2 mm (<Multisensor>) and 21x motorized zoom/focus lens 4.0 to 84.6 mm (<PTZ>)
- WDR up to 144 dB
- Quad streaming H.264/H.265/MJPEG
- Intelligent encoding, smart low-bitrate control
- MOBOTIX MxMessageSystem
- ONVIF Profile S/G/T/M support
- Integrated AI-VMD analytics
- microSD/SDHC/SDXC card support up to 512 GB
- Audio Line In/Out
- PoE++ (IEEE802.3bt compliant) DC54 V: max. 35.6 W
- Operating temperature range -40 to 55 °C/-40 to 131 °F
- Outdoor protection rate IP66/IP67, IK10
- NDAA and NEMA 4x compliant
- Built-in FIPS 140-2 Level 3-certified TPM hardware/firmware



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## Product Information

Product Name	Vandal Multisensor PTZ Combo 20MP Video Analytics Camera
Order Code	Mx-VMSD1A-2021-VA

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## Hardware Design

Processor	<Multisensor>: Ambarella CV2 (Quad-core ARM® Cortex®-A53, 1 GHz) <PTZ>: Ambarella CV25m (Quad-core ARM® Cortex®-A53, 1 GHz)
Memory	RAM: 1 GByte FLASH: 256 MBytes
Image Sensors	<Multisensor>: 4 x 5MP 1/2.7" Progressive CMOS <PTZ>: 1 x 2MP (1080p) 1/2.8" Progressive CMOS
Effective (Used) Pixels	<Multisensor>: 2560x1920 (5MP) (per image sensor) <PTZ>: 1920x1080 (2MP)

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## Lens

Optical Zoom	<Multisensor>: 1x <PTZ>: 21x (motorized zoom/motorized focus)
Digital Zoom	<Multisensor>: max. 4x (resolution 640x360) <PTZ>: max. 31x (resolution 1280x720)
Minimum Illumination	<b>&lt;Multisensor&gt;</b> Color: 0.12 lx (30IRE, F2.0, 1/30 s) Color: 0.17 lx (50IRE, F2.0, 1/30 s) BW: 0.10 lx (50IRE, F2.0, 1/30 s) <b>&lt;PTZ&gt;</b> Color: 0.011 lx (30IRE, F1.6, 1/30 s) Color: 0.015 lx (50IRE, F1.6, 1/30 s) BW: 0.006 lx (50IRE, F1.6, 1/30 s)

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**MOBOTIX MOVE Vandal Multisensor PTZ Combo 20MP Video Analytics Camera**

Focus Adjustment                    <Multisensor>: –  
    <PTZ>: Auto focus

Lens Characteristics  
 (per image sensor)

**<Multisensor>**  
 Focal length: 3.2 mm  
 Aperture: F1.6  
 Field of view: horizontal 97°, vertical 71°  
 Focus range: 1 m/3.28 ft to ∞

**<PTZ>**  
 21x motorized lens: zoom, focus  
 Focal length: 4.0 to 84.6 mm  
 Aperture: F1.6 (wide), F4.5 (tele)  
 Field of view: horizontal 3.7 to 77°, vertical 2.2 to 44°  
 Focus range: 1.5 m/4.92 ft to ∞

**Camera**

Shutter Speed                        <Multisensor>: 15 fps: 1/10000s to 16/30s  
    <PTZ>: 15/30/60 fps: 1/4000s to 16/30s

Shutter Priority Mode                Up to 1/45s

Frame Rates (maximum)            **<Multisensor>**  
    H.265/H.264: 5MP@15 fps  
    MJPEG: 1080p@15 fps

**<PTZ>**  
    H.265/H.264: 2MP (1080p)@60 fps  
    MJPEG: 1080p@60 fps

Auto Gain                                Min. gain: 0 dB, max. gain: 11 dB, step size: 1

WDR                                        <Multisensor>: 108 dB max.  
    <PTZ>: 144 dB max.

White Balance                         ATW1/ATW2/AWC

Back Light/High Light Com-        BLC (Back light compensation)/HLC (High light compensation)/Off (only when  
 pensation                                Super Dynamic/Intelligent Auto: Off)

Fog Compensation                    On/Off (only when Intelligent Auto/Auto Contrast Adjust: Off)

Maximum Gain (AGC)                Level 0 to 11

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Color/BW (ICR) Off/On/Auto1(Normal)/Auto2(IR Light)/Auto3(SCC)

Digital Noise Reduction Level 0 to 255

Image Rotation 180°

Adjusting Angles **<Multisensor> Camera 1,2,3,4:**  
Vertical: 40 ±7° (adjust by vertical (TILT) angle)  
**<PTZ>**  
Horizontal: 360° endless panning  
Vertical: -15 to +195°/Yaw: 0°

## PTZ Features (<PTZ> Only)

Preset Positions 256

Auto Mode Auto track/Auto pan/Preset sequence/Patrol

Auto Return 10 s/20 s/30 s/1 min/2 min/3 min/5 min/10 min/20 min/30 min/60 min

Pan Range 360° endless

Tilt Range -15° to +195°

Pan Speed Manual Pan Speed: 0.065° to 150°/s  
Preset Pan Speed: Up to 500°/s

Tilt Speed Manual Tilt Speed: 0.065° to 150°/s  
Preset Tilt Speed: Up to 500°/s

## Video Codec

Compression/Encoding H.265/H.264/MJPEG

Streaming Up to 4 individually configurable streams for MS and 1 combined stream in H.264/H.265/MJPEG  
Configurable resolution, frame rate, bandwidth CBR/VBR in H.265/H.264.

## Audio Codec

Compression/Encoding G.711/G.726/AAC-LC

Streaming Bi-directional

**MOBOTIX MOVE Vandal Multisensor PTZ Combo 20MP Video Analytics Camera**

Audio Input	3.5 mm stereo mini jack
Audio Output	3.5 mm stereo mini jack

### Cyber Security Features

Password Protection	Yes
IEEE 802.1X network access control	Yes (for advanced network security and authentication)
Digest authentication	Yes (for secure user authentication)
FIPS 140-2 Level 3	Yes (NXP® EdgeLock® SE050F Trusted Platform Module: Certificate #3840) Security Level Exceptions: <ul style="list-style-type: none"> <li>▪ Physical Security: Level 4</li> </ul>
Secure Boot	Yes (support of fixed IP setting and automatic DHCP IP configuration according to individual MAC address)
AES encryption for password protection	Yes (to ensure strong encryption for password storage)
HTTPS/SSL (using TLS)	Yes
Digital Certificate	Yes, GlobalSign® device certificate pre-installed
User Authentication	Yes
Host Authentication	Yes
Alteration Detection	Yes

### Network

Interface	10/100/1000 Mbps Ethernet
Supported Protocols	ARP, IPv6, ICMP, TCP, UDP, DHCPv6, SNMP, SMTP, RTP, HTTP, HTTPS, NTP, DNS, LLDP, MQTT, IEEE 802.1X, MLD
ONVIF Conformance	Supports profiles S/G/T/M
Supported Browsers	Microsoft Edge, Firefox, Google Chrome
Concurrent Users	<Multisensor>: 24 (depending on network load) <PTZ>: 14 (depending on network load)

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## System Integration

Video Motion Detection (VMD)	On/Off, up to 4 areas
Scene Change Detection (SCD)	On/Off, up to 1 area
Audio Detection	On/Off
AI Sound Classification	Selectable from Gunshot, Yell, Vehicle horn, Glass break
AI Analytics	<ul style="list-style-type: none"><li>■ AI Video Motion Detection</li><li>■ AI Privacy Guard</li><li>■ AI Face Detection</li><li>■ AI People Detection</li><li>■ AI Vehicle Detection</li><li>■ AI No-mask Detection</li><li>■ AI Occupancy Detection</li><li>■ AI Scene Change Detection</li></ul>
Alarm Sources	3 input pins, VMD alarm, SCD alarm, Command alarm, Audio detection alarm
Alarm Actions	SD card recording, E-mail notification, HTTP alarm notification, Indication on browser, TCP alarm notification
Privacy Zones	<Multisensor>: On/Off, up to 8 zones <PTZ>: On/Off, up to 32 zones
VIQS	<Multisensor>: On/Off, up to 8 zones <PTZ>: On/Off, up to 8 zones
Camera Title (OSD)	On/Off, up to 40 characters, up to 2 Lines (alphanumeric and special characters)

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## General

Housing Materials	Main body: Aluminum die cast, white Outer fixing screws: stainless steel (corrosion-resistant treatment) Dome cover: PC resin, clear
Housing Color	RAL 9003

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### MOBOTIX MOVE Vandal Multisensor PTZ Combo 20MP Video Analytics Camera

Power Requirements	PoE++ (IEEE802.3bt compliant): DC 54 V: 0.66 A/max. 35.6 W (Class 5 device)
Connectors	<ul style="list-style-type: none"> <li>▪ Network: 10 BASE-T/100 BASE-T/1000 BASE-T, RJ45 connector</li> <li>▪ Audio input: 3.5 mm stereo mini jack</li> <li>▪ Audio output: 3.5 mm stereo mini jack</li> <li>▪ Alarm I/O: 3x Alarm in, 2x Alarm out</li> </ul>
Video Storage	microSD SDHC/SDXC card support up to 512 GB Support for recording to NAS, MOBOTIX HUB, MOBOTIX MOVE NVR
Remotely Upgradable	Yes
Environmental Protection Class	IP66/IP67/IK10, Type 4X (UL50E), NEMA 4X-compliant
Operating Temperature	-40 to +55 °C/-40 to 131 °F (Power On range: -20 to +55 °C/-4 °F to 131°F) Maximum temperature according to NEMA TS 2 (2.2.7): 74°C/165°F
Relative Humidity	10 to 100 % non-condensing (using Temish element to protect against condensation)
Approvals	EMC: FCC (Part15 ClassA), ICES-003 ClassA, EN55032 ClassA, EN55024 Safety: UL (UL62368-1), c-UL (CSA C22.2 No.62368-1), CE, IEC62368-1 IT Security: FIPS 140-2 Level 3-certified (using certified TPM chipset)
Other Supported Standards	NEMA TS 2 (2.2.7-2.2.9)
Warranty	5 years; mechanically wearable parts (motor, gears, belts, etc.) excluded
Dimensions	ø 250 x 195 mm
Weight	3800 g

**NOTE!** Observe the [MOBOTIX MOVE Installation Hints](#) document to ensure optimum performance of the camera features.

# DORI Specifications

In the video surveillance context, “DORI” stands for Detection, Observation, Recognition and Identification and is based on IEC EN62676-4: 2015. These levels define the minimum pixels that a face of a person must have to provide proper identification, for example.

- **Detection:** Up to this distance, you can reliably determine if a person or vehicle is present.
- **Observation:** Up to this distance, you can see characteristic details of an individual, such as distinctive clothing.
- **Recognition:** Up to this distance, you can determine with a high degree of certainty whether an individual is the same as someone that has been seen before.
- **Identification:** Up to this distance, you can determine the identity of an individual beyond reasonable doubt.

## Multisensor Cameras

DORI Level	Detection	Observation	Recognition	Identification
Mx-VMSD1A-2021-VA	45.3 m/148.6 ft	18.1 m/59.4 ft	9.1 m/29.7 ft	4.5 m/14.9 ft

## PTZ Camera

DORI Level	Detection		Observation		Recognition		Identification	
	Wide	Tele	Wide	Tele	Wide	Tele	Wide	Tele
Mx-VMSD1A-2021-VA	48.3 m/ 158.4 ft	1188.9 m/ 3900.5 ft	19.3 m/ 63.4 ft	475.5 m/ 1560.2 ft	9.7 m/ 31.7 ft	237.8 m/ 780.1 ft	4.8 m/ 15.8 ft	118.9 m/ 390.0 ft



# Dimensions

**NOTE!** Download the drilling template from the section or on the MOBOTIX website: [www.mobotix.com](http://www.mobotix.com) > Support > Download Center > Marketing & Documentation > Drilling Templates.

**CAUTION!** Always print or copy the drilling template at 100% of the original size!

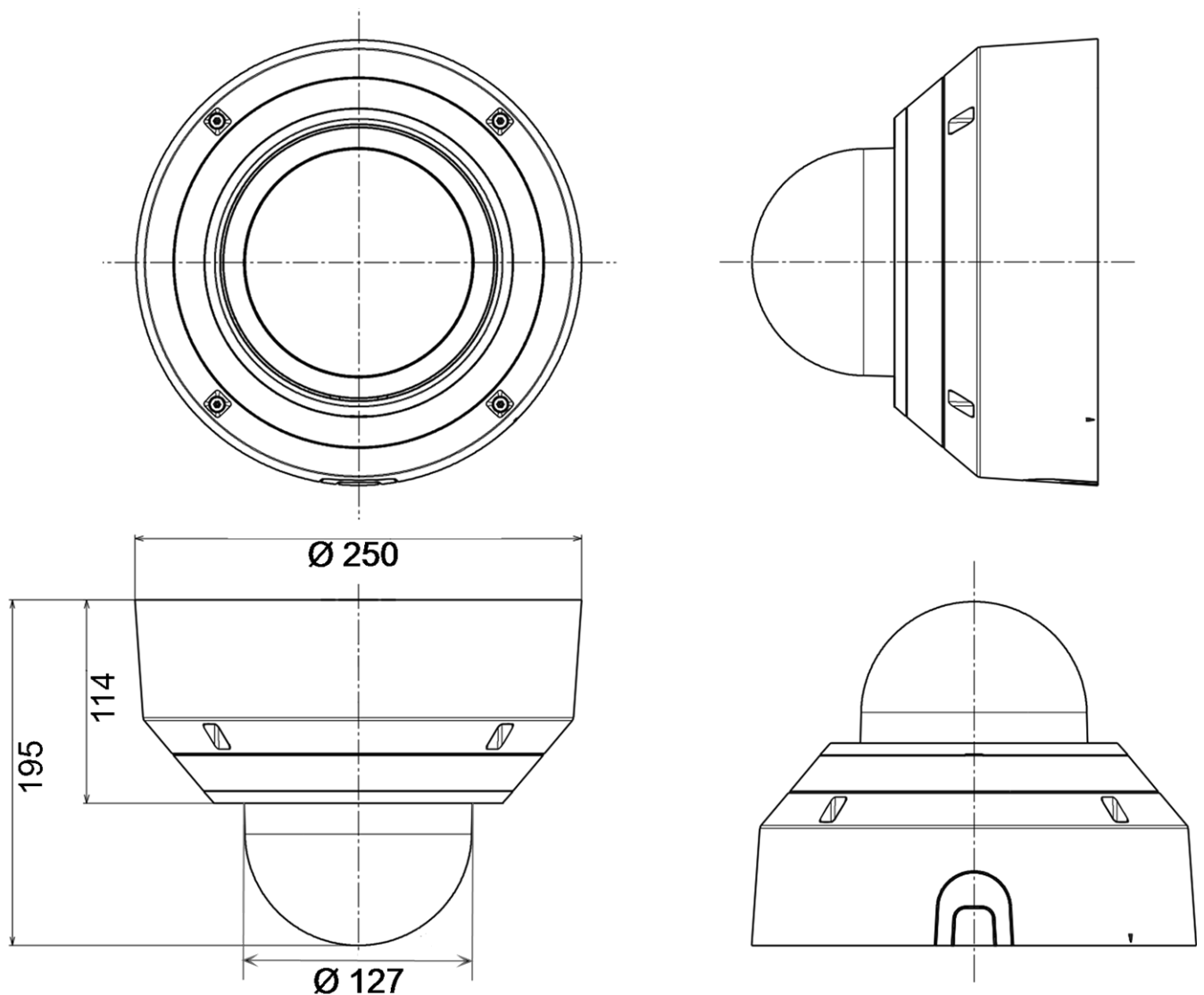


Fig. 1: Mx-VMSD1A-2021-VA: All measurements in mm

## Accessories for Multisensor Cameras

Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight
<p>Mx-M-VM-AP</p> 	<p>Adapter mounting plate for MOVE Vandal Multisensor camera Mx-M-VM1A-20-IR-VA.</p>	<p>MOVE Vandal Multisensor camera Mx-M-VM1A-20-IR-VA.</p> <p>Can be combined with MX-M-SD-GN, MX-M-SD-PM, MX-M-SD-PMEXT, Mx-M-SD-W, Mx-M-SD-WL, Mx-M-SD-WM.</p>	<p>Aluminum, RAL9003</p>	<p>1.95 kg</p>
<p>Mx-M-VM-IC</p> 	<p>Indoor in-ceiling mount for MOVE Vandal Multisensor camera Mx-M-VM1A-20-IR-VA.</p>	<p>MOVE Vandal Multisensor camera Mx-M-VM1A-20-IR-VA.</p>	<p>Aluminum, RAL9003</p>	<p>0.965 kg</p>
<p>Mx-A-VM-DBC</p> 	<p>Clear replacement dome for MOVE Vandal Multisensor camera Mx-VM1A-20-IR-VA.</p>	<p>MOVE Vandal Multisensor camera Mx-VM1A-20-IR-VA.</p>	<p>Polycarbonate, clear</p>	<p>0.53 kg</p>

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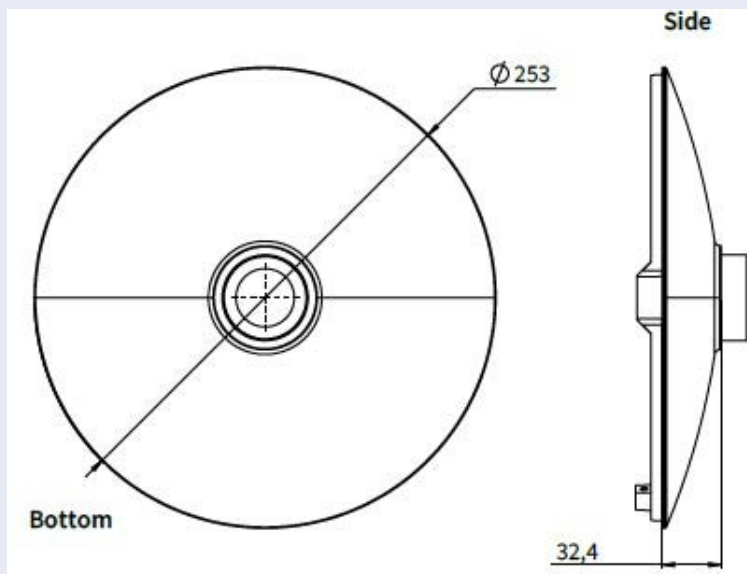
Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight
Mx-A-VM-DBT 	Tinted replacement dome for MOVE Vandal Multisensor camera Mx-VM1A-20-IR-VA.	MOVE Vandal Multisensor camera Mx-VM1A-20-IR-VA.	Polycarbonate, tinted	0.53 kg
Mx-M-VMSD-AP 	Adapter mounting plate for MOVE Vandal Multisensor PTZ Combo camera Mx-M-VMSD-2021-VA.	MOVE Vandal Multisensor PTZ Combo camera Mx-M-VMSD-2021-VA.	Aluminum, RAL9003	1.57 kg
Mx-M-VMSD-IC 	Indoor in-ceiling mount for MOBOTIX MOVE Vandal Multisensor PTZ Combo camera Mx-M-VMSD-2021-VA.	MOVE Vandal Multisensor PTZ Combo camera Mx-M-VMSD-2021-VA.	Aluminum, RAL9003	3.5 kg

# Dimensions

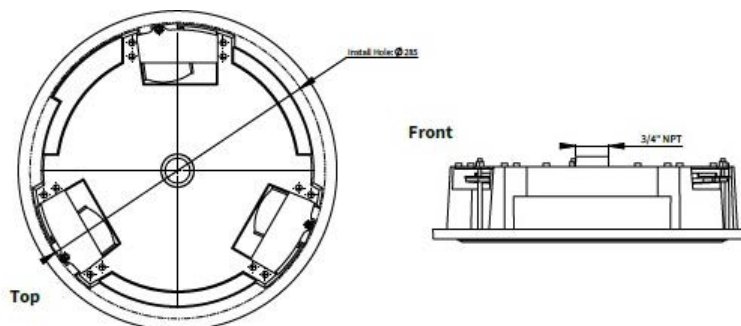
**Order Code**

**Dimensions**

Mx-M-VM-AP



Mx-M-VM-IC

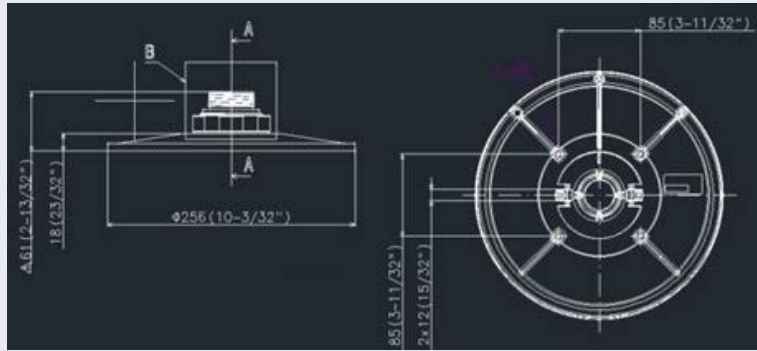


MOBOTIX MOVE Vandal Multisensor PTZ Combo 20MP Video Analytics Camera

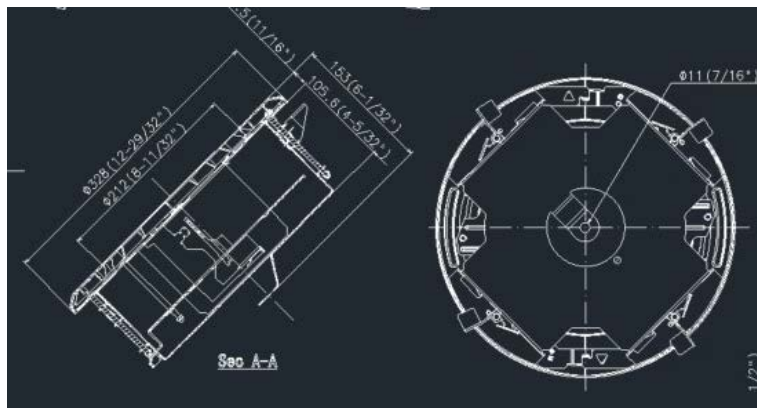
Order Code

Dimensions

Mx-M-VMSD-AP




Mx-M-VMSD-IC



## Accessories for All Cameras

**MOBOTIX MOVE Vandal Multisensor PTZ Combo 20MP Video Analytics Camera**

Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight
MX-NPA-UPOE1A-60W 	UPoE Power Injector 60W. PoE++ 60W Network Power injector • AC Input Voltage: 100 to 240 VAC (50 to 60Hz) • AC Input Current: 1.5A @100-240 VAC • Operating Ambient Temperature: • -10° to 40°C @60W • -10° to 50°C, humidity 10 to 90% @30W • IEEE 802.3bt compliant • Output power of 60W over 4-pairs • Supports 10/100/1000Base-T applications • Plug-and-play installation • Full Protection OVP, OCP• Supports 10/100/1000Base-T applications.	All cameras.	Plastic housing, black	0.45 kg

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Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight
Mx-A-ETP1A-2601-SET 	<p>Media converter set Ethernet (PoE+) – Twisted-Pair.</p> <p>Complete set consisting of two two-wire transmit/receive units for establishing an Ethernet transmission path via twisted-pair cables.</p> <ul style="list-style-type: none"><li>• Transmission of Ethernet and PoE+ power supply via two-wire line according to IEEE1901.</li><li>• Simple connection of 10/100 Mbps Ethernet end devices</li><li>• Max. 95 Mbps transmission bandwidth, range up to 600 m/656 yd for data only, 300 m/328 yd for PoE depending on the quality of the twisted-pair link</li><li>• 128 bit AES network data encryption</li><li>• Power supply 2-wire transmitter (Tx) and receiver (Rx) as well as end device via PoE+ network switch or external power supply 56VDC / 1.2A (not included!)</li><li>• Connected end devices are supplied via PoE switch IEEE802.3af(PoE), IEEE802.3at (PoE+), UPoE up to 60W (requires ext. power supply unit).</li><li>• Status LEDs (data, power supply, data link, PoE)</li><li>• Integrated Overvoltage protection (IEC 61000-4-5 4kV (1.2 / 50us), 2kA(8 / 20us))</li><li>• Power Supply: TX: T-Linx or DC12V~57V, RX: PoE Switch or</li></ul>	<p>All cameras.</p> <p>Requires Mx-A-ETP1A-2601-POW.</p>	<p>Plastic housing, black</p>	0.368 kg

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**MOBOTIX MOVE Vandal Multisensor PTZ Combo 20MP Video Analytics Camera**

Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight
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DC48V~57V • Operational temperature: -20 to 60°C • Dimensions: 80.4(L) x 61.6(W) x 24 (H)mm • Weight: RX/TX: 102g • Warranty: 2 years

Mx-A-ETP1A-2601-POW



Plug-type power supply for Mx-A-ETP1A-2601-SET.  
Output: 57V DC +/-3% / 1.2 A •  
Input: 90-260V AC (47-63Hz) •  
68,4 Watt • Operating Temperature: 0-40°C/32-122°F

Mx-A-ETP1A-2601-SET

Plastic housing, black

0.49 kg

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Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight
Mx-A-KBD1A-PTZ-JOG 	<p>MOBOTIX USB Keyboard with PTZ Joystick &amp; Jog-Shuttle. USB control panel for operating MOBOTIX MxMC 2.6 and higher and MOBOTIX HUB incl. Control of software PTZ and motorized PTZ cameras and pan/tilt devices • Integrated 3-axis joystick • Integrated jog shuttle • 38 control keys with backlight predefined for MxMC functions or freely definable for MOBOTIX HUB • Integrated alarm buzzer • Suitable for operation as HID device on MOBOTIX VMS with Windows and MAC based operating systems via USB 2.0 • Suitable for right- and left-handed users • Power supply: USB, max. 350 mA • Operating temperature: 0°–45°C/32–113 °F.</p>	<p>All cameras. Requires Windows or macOS computer with USB 2.0 or better.</p>	<p>Plastic housing, black</p>	<p>1.9 kg</p>
MX-SWITCH1 	<p>MOBOTIX network switch for DIN (top-hat) rail mounting. 5x RJ45 port with 100 MBit/s (1x uplink, 4x PoE+ with max. 75 W). Supply: 48 V DC, max. 75 W. Simplified cabling for door stations due to available connectivity for anti-theft protection, door opener and MxBus. MxBus, anti-theft protection, door and lock contact can be connected via separate wires of Ethernet cable.</p>	<p>All cameras.</p>	<p>Plastic housing, gray</p>	<p>0.31 kg</p>

## Further Reading

[Manuals and Quick Installation documents](#)



[Technical Specifications](#)



[MOBOTIX MOVE Installation Hints](#)



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# MOBOTIX

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[EN\\_10/24](#)

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