



Technical Specifications

MOBOTIX MOVE 20MP Multisensor IR Video Analytics Camera

The MOBOTIX MOVE 20MP Multisensor IR Video Analytics Camera incorporates four individually adjustable 5MP sensors with remote zoom/focus lenses for optimum positioning and alignment to the observation needs. Four individual video streams plus a combined stream of all four sensors that provides an undistorted view up to 360 degrees make this camera the best choice for monitoring large areas or road intersections. The integrated DNN-based video analytics features include Face and License Plate recognition for 24/7 video surveillance with simultaneous detection of multiple objects. The MOBOTIX EverClear superhydrophilic and self-cleaning nano coating of the multisensor bubble ensures best image quality even in rain and reduces cleaning efforts and operational costs.

- 4 x 5MP image sensors, freely adjustable (1/2.8" Progressive CMOS IMX 675 SONY STARVIS II)
- High light sensitivity: 0.02 Lux color, 0.001 Lux B/W
- Motorized 3x zoom/focus lens 2.8 to 8 mm
- WDR up to 130 dB
- Integrated IR surround illumination up to 30 m/98 ft
- Supports up to nine streams H.264/H.265/MJPEG
- Smart event functions
- Intelligent encoding, smart low-bitrate control
- Integrated microphone and speaker, bi-directional audio Line In/Out
- MOBOTIX MxMessageSystem
- 2D & 3D motion-compensated noise reduction (MCTF)
- ONVIF Profile S/G/T/M support
- DNN video analytics (8 VA, Face & ALPR)
- M.2 SATA3 SSD support up to 8 TB
- microSD SDHC/SDXC card support up to 1 TB (2 slots)
- Triple power support (IEEE802.3bt/AC24V/DC24V)
- Protection class IP66/IK10
- NEMA 4x-compliant
- Built-in FIPS 140-2 Level 2-certified TPM hardware/firmware
- Temp. Range -40 to 60 °C/-40 to 140 °F with integrated heater ON
- EverClear coating of multisensor bubble



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High-Quality DNN Edge Video Analytics

Counting	Intrusion	Removed Objects	Sabotage	Face Recognition
				
Abandoned Objects	Stopped Vehicle	Wrong Direction	Loitering	ALPR
				

The latest computer vision technology makes the DNN-accelerated video processing engine efficient at the edge. This integrated engine provides high accuracy, and 10 (DNN-based) video analytics functions including ALPR and human face recognition. Moreover, it allows simultaneous detection on multiple objects.

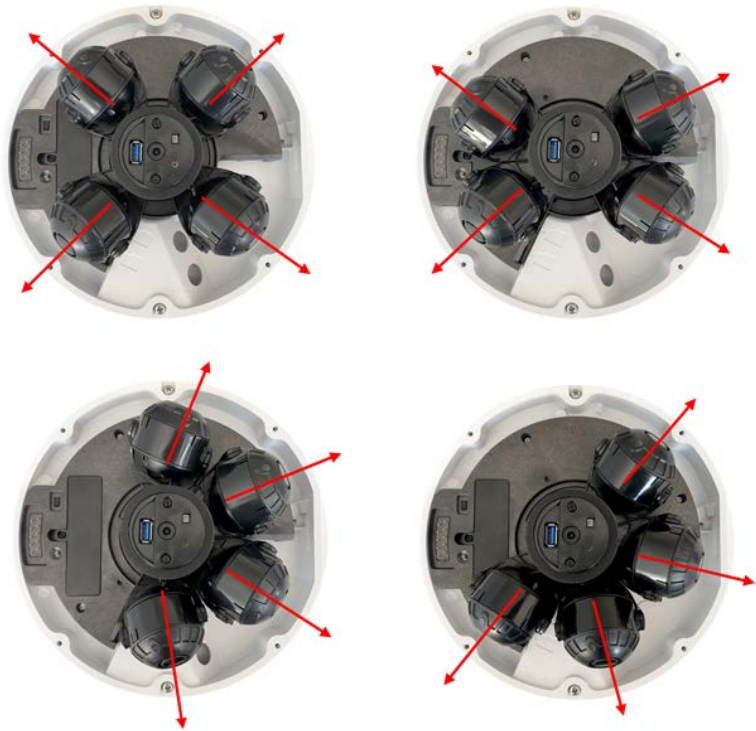
MOBOTIX EverClear Nano Coating

The new, groundbreaking MOBOTIX EverClear coating uses a special nano technology that transforms water droplets into an ultra-thin water film immediately upon impact. This ensures the highest image quality in rain and difficult environmental conditions and reduces maintenance costs due to its “self-cleaning” effect.

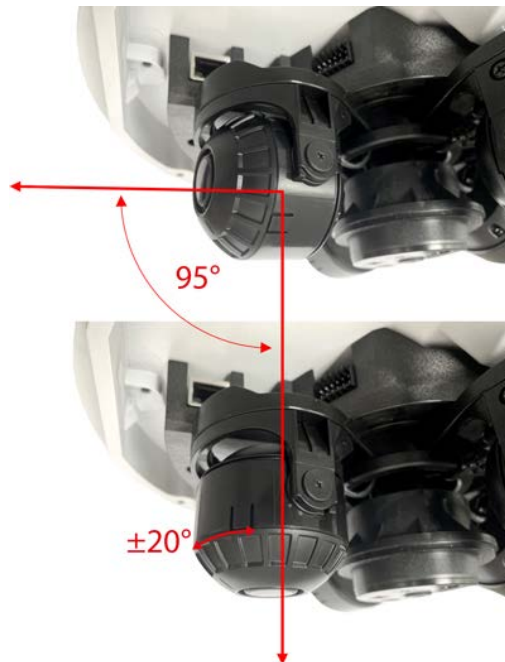


Freely Positionable Image Modules

The four sensor modules can be arranged next to each other as required and thus optimally aligned to the detection area.



Every sensor module can be tilted by up to 95 degrees. In addition, you can pivot every module by ± 20 degrees.



Product Information

Product Name	20MP Multisensor IR Video Analytics Camera
Order Code	Mx-VM1A-20-IR-VA

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MOBOTIX MOVE 20MP Multisensor IR Video Analytics Camera

Hardware Design

Processor	Ambarella CV52 (Dual-core ARM® Cortex®-A76, 1.6 GHz)
Memory	RAM: 512 MB FLASH: 256 MB
Image Sensors	4 x 5MP 1/2.8" Progressive CMOS IMX675 (SONY STARVIS 2)
Effective (Used) Pixels (per image sensor)	2608x1964 (5MP)
Pixel Size	2.0 µm

Lens

Minimum Illumination	Color: 0.02 Lux B/W: 0.001 Lux F1.6, AGC=on, 30 IRE, 1/1 s
Lens Characteristics (per image sensor)	Motorized Lens: Zoom, Focus Focal Length: 2.8 to 8 mm Aperture: F1.6 Horizontal Field of View: 111.5° (Wide), 53.7° (Tele) Vertical Field of View: 79° (Wide), 40.2° (Tele)
Multisensor Bubble Coating	Superhydrophilic MOBOTIX EverClear nano coating transforms water droplets into an ultra-thin water film upon impact. The coating ensures best image quality in rain and difficult external conditions and it reduces reflections and noise in low-light scenarios. EverClear is dirt-repellent and increases the stability as well as the scratch-resistance of the multisensor bubble, further reducing maintenance efforts. Coating endurance up to 3 years depending on environmental conditions and cleaning treatment.

Camera

Day/Night	Automatically switchable IR-cut filter
Shutter Speed (Auto)	1 to 1/10000 s

MOBOTIX MOVE 20MP Multisensor IR Video Analytics Camera

Shutter Speed (Manual)	WDR: 1 to 1/67500 s Linear: 1 to 1/67500 s
Shutter Priority Mode	Up to 1/45 s
Frame Rate (maximum)	WDR on/off: H.265/H.264: 5MP@30 fps MJPEG: 1080p@30 fps
Auto Gain	Min. gain: 3 dB, max. gain: 48 dB, step size: 3
WDR	Up to 130 dB
Zoom	Optical: 3x, Digital: 10x
Image Settings	Color, Brightness, Sharpness, Contrast, White Balance, Exposure Control, 2DNR, 3DNR, NR by Motion, Masking, Text Overlay
Image Rotation	90°, 180°, 270°
Camera Module Adjustment (per image sensor)	Pan/tilt/rotate/twist

Video Codec

Compression/Encoding	H.265/H.264/MJPEG
Streaming	Up to 9 individually configurable streams (4 streams, 4 sub streams, 1 Quad stream) in H.264/H.265/MJPEG; configurable resolution, frame rate, bandwidth LBR/VBR/CBR in H.265/H.264

Audio Codec

Compression/Encoding	G.711/G.726/AAC/LPCM
Streaming	Bi-directional

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Audio Input	Integrated microphone and speaker Line In: <ul style="list-style-type: none">Max. 2.28 V_{pp} for line signalInput impedance: 33 kΩ
Audio Output	Line Out <ul style="list-style-type: none">Output resistance: 220 ΩOutput voltage: 1 V_{rms}

Cyber Security Features

Password Protection	Yes (including “forced” password change during initial setup)
IP address filtering	Yes (to restrict unauthorized access based on IP addresses)
IEEE 802.1X network access control	Yes (for advanced network security and authentication)
Digest authentication	Yes (for secure user authentication)
FIPS 140-2 Level 2	Yes (Infineon OPTIGA™ TPM SLB 9670 TPM 2.0, NIST/CMVP Certified Trusted Platform Module: Certificate #3492) Security Level Exceptions: <ul style="list-style-type: none">Physical Security: Level 3EMI/EMC: Level 3
Secure Boot	Yes (support of fixed IP setting and automatic DHCP IP configuration according to individual MAC address)
True random number generator	Yes (via TPM chipset)
AES encryption for password protection	Yes (to ensure strong encryption for password storage)
HTTPS/SSL (using TLS)	Yes (TLS 1.2 default, TLS 1.0/1.1 optional selectable)
User and Group Management	Yes (for fine-grained access control)
VPN	Yes (to establish secure network connections)

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Digitally signed firmware	Yes (to prevent firmware file tampering)
RSA encryption	Yes (to support stronger ciphers; supported: RSA (2048 bits), AES-128, AES-256, SHA-256, SHA-384)

Network

Interface	10/100/1000 Mbps Ethernet
Supported Protocols	ARP, PPPoE, IPv4/v6, ICMP, IGMP, QoS, TCP, UDP, DHCP, UPnP, SNMP, SMTP, RTP, RTSP, HTTP, HTTPS, FTP, NTP, DDNS, SMBv2, VPN
ONVIF conformance	Supports profiles S/G/T/M
Supported Browsers	All current browsers are supported.

System Integration

Base Video Analytics	<ul style="list-style-type: none"> ▪ Motion detection ▪ Audio detection
DNN-Based Video Analytics	<ul style="list-style-type: none"> ▪ Abandoned objects ▪ Intrusion (object classification/filtering for people, vehicles, etc.) ▪ Sabotage ▪ Wrong direction ▪ Loitering (object classification/filtering for people, vehicles, etc.) ▪ Object counting (object classification/filtering for people, vehicles, etc.) ▪ Object removal ▪ Stopped vehicle (object classification/filtering) <p>1 analytics function can be activated for every image sensor</p>
Enhanced DNN-Based Video Analytics	<ul style="list-style-type: none"> ▪ Face Recognition (incl. gender & age estimation) ▪ Number Plate Recognition – supported countries: Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Israel, Italy, Japan, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Moldova, Monaco, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Taiwan, Turkey, Ukraine, United Kingdom, Uzbekistan, Vietnam

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Event Triggers	<ul style="list-style-type: none">External inputAnalyticsNetwork failure detectionPeriodical eventManual triggerMxMessageSystem messages
Event Actions	<ul style="list-style-type: none">External output activationVideo and audio recording to edge storageFile upload: FTP, network share and emailNotification: HTTP, FTP, emailMxMessageSystem messages

General

Housing Materials	Metal and plastic
Housing Color	RAL 9003
Power Requirements	IEEE802.3bt, Type 3, class 6, max 51 Watt AC24V, max 53.1 Watt, max 74.8 VA DC24V, max 27.55 Watt
Connectors	<ul style="list-style-type: none">RJ45 (Ethernet)USB Type A2 x Alarm in, 2x Alarm out, Audio in, Audio out terminal blockDC24V/AC24V terminal blockLine In/Out
IR Illumination	850 nm; up to 30 m/98 ft distance depending on reflection of scenery
Video Storage	microSD SDHC/SDXC card support up to 1 TB (2 slots), M.2 SATA3 SSD card support up to 8 TB (NO SCSI support!), support for recording to NAS, MOBOTIX HUB, MOBOTIX MOVE NVR, MOBOTIX CLOUD
Remotely Upgradable Firmware	Yes
Environmental Protection Class	IP66/IK10

MOBOTIX MOVE 20MP Multisensor IR Video Analytics Camera

Operating Temperature	-40 to 60 °C/-40 to 140 °F with integrated heater ON
Relative Humidity	90 % non-condensing
Storage Conditions	-20 to 70 °C/-4 to 158 °F
Approvals	EMC: CE, FCC, BIS Safety: LVD IT Security: FIPS 140-2-compliant (using certified TPM chipset) Environmental: IP66, IK10, NEMA-4x-compliant
MTBF	95,000 hours
Warranty	5 years; mechanically wearable parts (motor, gears, belts, etc.) excluded
Dimensions	ø 255 x 105 mm
Weight	2400 g

NOTE!

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

Alarm Input/Output Current and Voltage

Alarm In

Alarm Out

5 V with 10 kΩ pull up, 50 mA

400 V DC/AC, 120 mA

DORI Specifications

In the video surveillance context, “DORI” stands for Detection, Observation, Recognition and Identification and was originally based on IEC EN62676-4: 2015. The current DORI standard IEC EN62676-4: 2024 defines the levels listed below.

DORI Levels According to IEC EN62676-4: 2024

These levels define the minimum pixels that a face of a person must have to provide proper identification, for example.

1. **Overview:** To display moving objects at far distances, a minimum of 20 pixels per meter (PPM) is required. This allows for basic perimeter detection and border control applications.
2. **Outline:** For outlining moving objects and their direction, at least 40 PPM is necessary. This is useful for tracking object movements.
3. **Discern:** To discern targets or crowds at a distance, more than 80 PPM is required. This level of detail helps in identifying movements of people, vehicles, or animals.
4. **Perceive:** To perceive targets or crowds, a minimum of 125 PPM is required. Although people cannot be differentiated by gender, their movements can be tracked.
5. **Characterize:** Characterizing people and vehicles requires more than 250 PPM. This level allows for identifying person type, gait, behavior, and vehicle category.
6. **Validate:** For validating known persons or reading vehicle license plates, over 500 PPM is necessary. This is also sufficient for most automatic face recognition software.

- 7. **Scrutinize:** To scrutinize people, capturing at least 1500 PPM is essential. This ensures high certainty in identifying individuals and recognizing vehicle details like model and year of manufacture. The value for Scrutinize is equivalent to the passport photo size of a person.

DORI Distances

DORI Level Order Code	Overview		Outline		Discern		Perceive		Characterize		Validate		Scrutinize	
	Wide-Angle ↔/⌘	Tele ↔/⌘	Wide-Angle ↔/⌘	Tele ↔/⌘	Wide-Angle ↔/⌘	Tele ↔/⌘	Wide-Angle ↔/⌘	Tele ↔/⌘	Wide-Angle ↔/⌘	Tele ↔/⌘	Wide-Angle ↔/⌘	Tele ↔/⌘	Wide-Angle ↔/⌘	Tele ↔/⌘
Mx-VM1A-20-IR-VA	50 m/65 m 164.04 ft/213.25 ft	131 m/140 m 429.79 ft/459.32 ft	25 m/32 m 82.02 ft/104.99 ft	65 m/70 m 213.25 ft/229.66 ft	12 m/16 m 39.37 ft/52.49 ft	33 m/35 m 108.27 ft/114.83 ft	8 m/10 m 26.25 ft/32.81 ft	21 m/22 m 68.90 ft/72.18 ft	4 m/5 m 13.12 ft/16.40 ft	10 m/11 m 32.81 ft/36.09 ft	2 m/3 m 6.56 ft/9.84 ft	5 m/6 m 16.40 ft/19.69 ft	1 m/1 m 3.28 ft/3.28 ft	2 m/2 m 6.56 ft/6.56 ft

Dimensions

NOTE! Drilling template: www.mobotix.com > Services > Download Center > Marketing & Documentation > Drilling Templates.

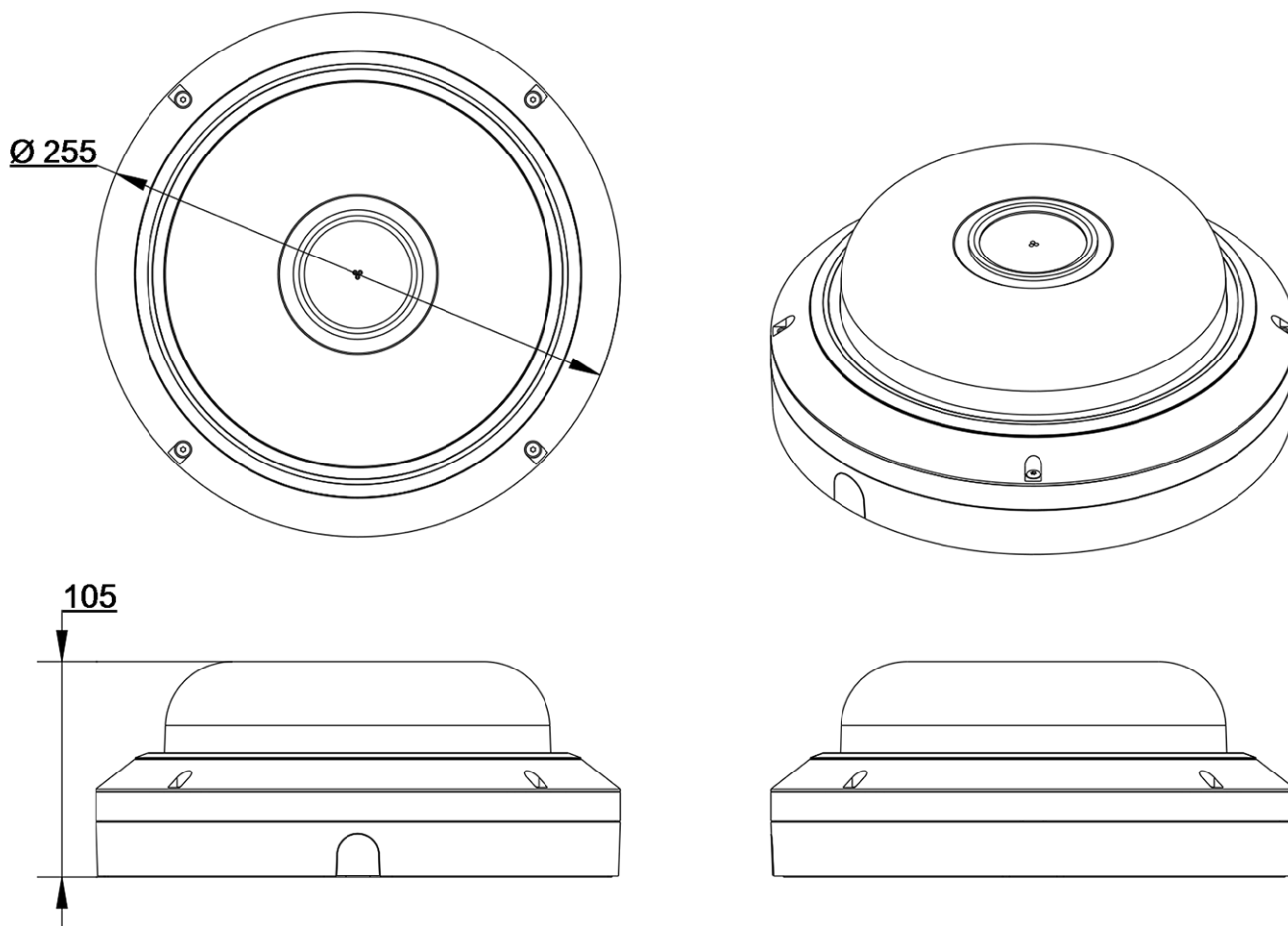




Fig. 1: Mx-VM1A-20-IR-VA: All measurements in mm

Accessories for Multisensor Cameras

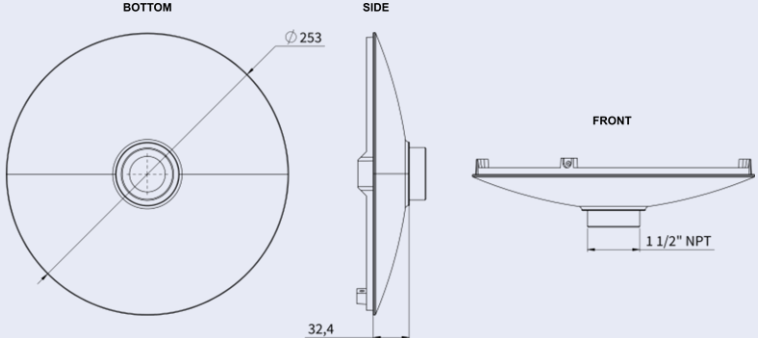
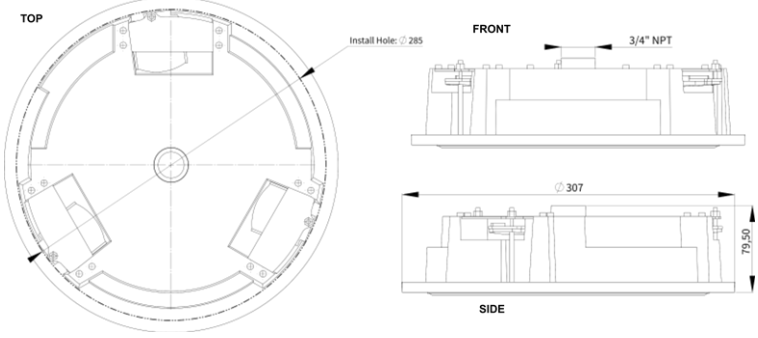
Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
 <p>Mx-M-VM-AP</p>	<p>Adapter mounting plate for MOVE Vandal Multisensor camera Mx-M-VM1A-20-IR-VA.</p>	<p>MOVE Vandal Multisensor camera Mx-M-VM1A-20-IR-VA.</p> <p>Can be combined with MX-M-SD-GN, MX-M-SD-PM, MX-M-SD-PMEXT, Mx-M-SD-W, Mx-M-SD-WL, Mx-M-SD-WM.</p>	<p>Die-cast ADC12 aluminium alloy, powder-coated 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>Zinc-galvanized SECC steel, powder-coated RAL9003</p>	<p>0.965 kg</p>

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Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
 Mx-A-VM-DBC	Clear replacement dome for MOVE Vandal Multisensor camera Mx-VM1A-20-IR-VA.	MOVE Vandal Multisensor camera Mx-VM1A-20-IR-VA.	Polycarbonate, clear	0.53 kg
 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

Dimensions

Order Code	Dimensions
Mx-M-VM-AP	
Mx-M-VM-IC	

All measurements in mm.

Accessories for All Cameras

MOBOTIX MOVE 20MP Multisensor IR Video Analytics Camera

Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
	<p>PoE++ Power Network Injector 60 Watt.</p> <p>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 • Additional required power cord C14-type not included • Warranty: 1 year.</p>	<p>All cameras.</p>	<p>Plastic housing, black</p>	<p>0.318 kg</p>
<p>Mx-NPA-PoE1A-60W-BT</p>				

Technical Specifications

MOBOTIX MOVE 20MP Multisensor IR Video Analytics Camera

**Picture/
Order Code**



Mx-A-ETP1A-2601-SET

Description

Media converter set Ethernet (PoE+) – Twisted-Pair. Complete set consisting of two two-wire transmit/receive units for establishing an Ethernet transmission path via twisted-pair cables. • Transmission of Ethernet and PoE+ power supply via two-wire line according to IEEE1901. • Simple connection of 10/100 Mbps Ethernet end devices • 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 • 128 bit AES network data encryption • 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!) • Connected end devices are supplied via PoE switch IEEE802.3af(PoE), IEEE802.3at (PoE+), UPoE up to 60W (requires ext. power supply unit). • Status LEDs (data, power supply, data link, PoE) • Integrated Over-voltage protection (IEC 61000-4-5 4kV(1.2 / 50us), 2kA(8 / 20us)) • Power Supply: TX: T-

**Compatible
Products**

All cameras. Requires Mx-A-ETP1A-2601-POW.



**Material/
Color**

Plastic housing, black

Weight

0.368 kg

MOBOTIX MOVE 20MP Multisensor IR Video Analytics Camera

Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
	<p>Linx or DC12V~57V, RX: PoE Switch or 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</p>	<p>Mx-A-ETP1A-2601-SET</p>	<p>Plastic housing, black</p>	<p>0.49 kg</p>
<p>Mx-A-ETP1A-2601-POW</p>	<p>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</p>			
	<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>
<p>MX-SWITCH1</p>				

Further Reading

[Manuals and Quick Installation documents](#)



[Video Analytics Manual](#)



[Technical Specifications](#)



[MOBOTIX MOVE Installation Hints](#)



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