



Technical Specifications

MOBOTIX MOVE 2MP Vandal Bullet ALPR Camera

Performant 2MP resolution ALPR (Automatic License Plate Recognition) cameras with integrated high-performance ALPR/OCR engine. The MOBOTIX MOVE Mx-VB1A-2-IR-(D)-ALPR camera extends the existing range of MOVE IP cameras with advanced ALPR features and MMC (make, model, color) vehicle classification “on board”. The MOBOTIX EverClear superhydrophilic and self-cleaning nano coating of the front glass ensures best image quality even in rain and reduces cleaning efforts and operational costs.

- Automatic license plate recognition for all vehicle speeds and stop-and-go applications
- 64 GB SD card pre-installed
- EverClear coating of front glass
- **Mx-VB1A-2-IR-ALPR:** Motorized Vari-Focal Lens 2.7 to 12 mm, F1.6 to F2.9, Zoom, Focus, One-Push AF
- **Mx-VB1A-2-IR-D-ALPR:** Motorized Zoom Lens 9 to 22 mm, F1.6 to F2.4, Zoom, Focus, One-Push AF
- Wide Dynamic Range (WDR) max. 130 dB
- Integrated IR LEDs up to 60 m/197 ft distance visual, 20 m/35 m (66 ft/115 ft) effective for ALPR
- ONVIF Profile S/G/T/M support
- Triple power support (IEEE802.3bt/AC24V/DC24V)
- Temperature Range -55 to 60 °C/-67 to 140 °F with heater
- IP66/IP67 and IK10
- Easily integrated into many common VMS solutions



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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.



Product Information

Product Name	2MP Vandal Bullet ALPR Camera
Order Code	Mx-VB1A-2-IR(-D)-ALPR

Hardware Design

Processor	Ambarella CV22 (Quad-core ARM® Cortex®-A53, 1 GHz)
Memory	RAM: 512 MBytes FLASH: 256 MBytes
Image Sensor	2MP, 1/2.8" Progressive CMOS IMX462 (SONY STARVIS)
Effective (Used) Pixels	1920x1080 (2MP)

Lens

Minimum Illumination	Color: 0.02 lux B/W: 0.001 lux
Lens Characteristics	Mx-VB1A-2-IR-ALPR: Motorized Lens: Zoom, Focus, P-IRIS Focal Length: 2.7 to 12 mm Aperture: F1.6 to F2.9 Horizontal Field of View: 102.1° (Wide), 31.5° (Tele) Vertical Field of View: 70.3° (Wide), 22.7° (Tele) Mx-VB1A-2-IR-D-ALPR: Motorized Lens: Zoom, Focus Focal Length: 9 to 22 mm Aperture: F1.6 to F2.4 Horizontal Field of View: 36.1° (Wide), 15.4° (Tele) Vertical Field of View: 19.8° (Wide), 8.8° (Tele)
Front Glass 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 front glass, further reducing maintenance efforts. Coating endurance up to 3 years depending on environmental conditions and cleaning treatment.

Camera

Day/Night	Automatic mechanically switchable IR-cut filter
Shutter Speed	Up to 1/43040 s
Frame Rate (maximum)	H.265/H.264: 1920x1080@30 fps + 720x480@30fps MJPEG: 1080p@30fps
Auto Gain	Min. gain: 3 dB, max. gain: 48 dB, step size: 3
WDR	Up to 130 dB Multi Exposure WDR & HDR Engine support
Zoom	Optical zoom, digital zoom ready by lens type

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Image settings	Color, Brightness, Sharpness, Contrast, White Balance, Exposure Control, 2DNR, 3DNR, NR by Motion, Masking, Text Overlay
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Corridor Mode	90°, 180°, 270° Rotation
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Video Codec

Compression/Encoding	H.265/H.264/MJPEG
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Streaming	Up to 4 individually configurable streams in H.264/H.265/MJPEG; configurable resolution, frame rate, bandwidth LBR/VBR/CBR in H.265/H.264.
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Audio Codec

Compression/Encoding	G.711/G.726/AAC/LPCM
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Streaming	2-Way, bidirectional
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Audio Input	Line In: Max 6.2 Vpp Signal In, Input Impedance: 33 kΩ
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Audio Output	Line Out: 1 Vrms Signal Out, Output Resistance: 200 Ω
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Cyber Security Features

Password Protection	Yes (including “forced” password change during initial setup)
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IP address filtering	Yes (to restrict unauthorized access based on IP addresses)
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IEEE 802.1X network access control	Yes (for advanced network security and authentication)
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Digest authentication	Yes (for secure user authentication)
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Secure Boot	Yes (support of fixed IP setting and automatic DHCP IP configuration according to individual MAC address)
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AES encryption for password protection	Yes (to ensure strong encryption for password storage)
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HTTPS/SSL (using TLS)	Yes (TLS 1.2 default, TLS 1.0/1.1 optional selectable)
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User and Group Management	Yes (for fine-grained access control)
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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 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
ONVIF conformance	Supports profiles S/G/T/M
Supported Browsers	All current browsers are supported.

ALPR (Automatic License Plate Recognition) Features

NOTE! Formatted 64 GB SD card is pre-installed! For replacement cards, using a 64 GB or larger SD card is recommended. See **MicroSD Cards for MOBOTIX MOVE Cameras** document on www.mobotix.com > [Support > Download Center > Marketing & Documentation > White Lists](#).

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Operational Range

- Monitors 1 or 2 lanes
- **Mx-VB1A-2-IR-ALPR:**
 - Reading distance up to 18 m/59 ft
 - Effective IR distance up to 20 m/66 ft
 - Recommended speed range from 0 to 60 km/h/37.3 mph
 - Suitable for low-speed scenarios: parking, Smart City traffic, etc.
- **Mx-VB1A-2-IR-D-ALPR:**
 - Reading distance up to 35 m/115 ft
 - Effective IR distance up to 35 m/115 ft
 - Recommended speed range from 0 to 160 km/h/99.4 mph (up to 200 km/h/124.3 mph)
 - Suitable for low-speed to high-speed scenarios: parking, Smart City traffic, urban traffic, highway traffic, etc.
- Min. to max. characters height: 14 to 70 pixels.
- Operates under extreme conditions such as low lighting, shadows, overexposed/damaged/dirty plates
- Operates in bad weather and with extreme angles while maintaining high-accuracy readings

MOBOTIX ALPR
MOBOTIX Machine/Deep Learning Engine

- Full support of over a hundred countries (full list available upon request)
- High-performance DNN-based OCR engine for selected countries (full list available upon request)
- Support of Latin, Arabic, and Thai alphabets, GCC members, and enhanced North America state recognition
- Min. to max. characters height: 13 to 70 pixels (recommended 25 to 30)
- Max. rotation X (pitch) vertical angle $\pm 60^\circ$ (max $\pm 25^\circ$ for optimal performance)
- Max. rotation Y (yaw) horizontal angle $\pm 65^\circ$ (max $\pm 25^\circ$ for optimal performance)
- Max. rotation Z (roll) $\pm 35^\circ$ (max $\pm 10^\circ$ for optimal performance)
- Vehicle category, make, model, and color classification
- Direction of travel reporting/filtering
- Achieves >99% accuracy (several third-party independent assessments)

Results Integration

- Both push and pull modes supported (API available)
- Generic HTTP XML/2x JSON
- TCP/IP proprietary protocol (open)
- UTMC
- FTP
- TCP server
- Branded SW/VMS integration: MOBOTIX HUB, Genetec Security Center, Milestone XProtect, Axis Camera Station, Helix, Network Optix, among others.
- Branded HW integration: MOBOTIX MOVE NVRs.

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Additional Features

- Failover capabilities for transmission of results
 - Embedded whitelist/blacklist management
 - Video overlay
 - Customizable local relay triggering
 - Free-flow or signaled modes
 - 64 GB SD card pre-installed
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System Integration

Base Video Analytics

- Motion detection
- Audio detection

Event Triggers

- External input
- Analytics
- Network failure detection
- Periodical event
- Manual trigger
- MxMessageSystem messages

Event Actions

- External output activation
 - Video and audio recording to edge storage
 - File upload: FTP, network share and email
 - Notification: HTTP, FTP, email
 - MxMessageSystem messages
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General

Housing Materials

Metal Back Housing, PC Front

Housing Color

RAL 9003

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Device Color	PC front cover: RAL9003 Sunshield: <ul style="list-style-type: none">▪ Logo color: Pantone 286C and Pantone Gray 6 Cu▪ Body color: RAL9003▪ Back metal body: RAL9003
Power Requirements	PoE IEEE802.3af, class 0, max 12.95 W DC12V, max 15.59 W AC24V, max 13.31 W, max 25.08 VA
PoE Modes Supported	Mode A or Mode B
Connectors	RJ45, Alarm in x2, Alarm out x1, Audio in, Audio out terminal block, DC12V/AC24V terminal block, CVBS Connector COAX (75 Ohm) (CVBS output available with max. 2 activated streams)
IR Illumination	Visual up to 60 m/197 ft distance depending on scenery reflection
Video Storage	Micro SD/SDHC/SDXC card support up to 1 TB, Support for recording to NAS, MOBOTIX HUB, MOBOTIX MOVE NVR
SD Card pre-installed	64 GB
Environmental Protection Class	IP66/IP67 and IK10
Operating Temperature	-55 to 60 °C/-67 to 140 °F with heater
Cold Start Temperature	-30 °C/-22 °F
Relative Humidity	90 % non-condensing
Storage Conditions	-20 to 70 °C/-4 to 158 °F
Approvals	EMC: CE/FCC Safety: LVD Environmental: IP66/IP67, IK10
MTBF	95,000 hours
Warranty	5 years
Dimensions	ø 105x232 mm
Weight	1280 g

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

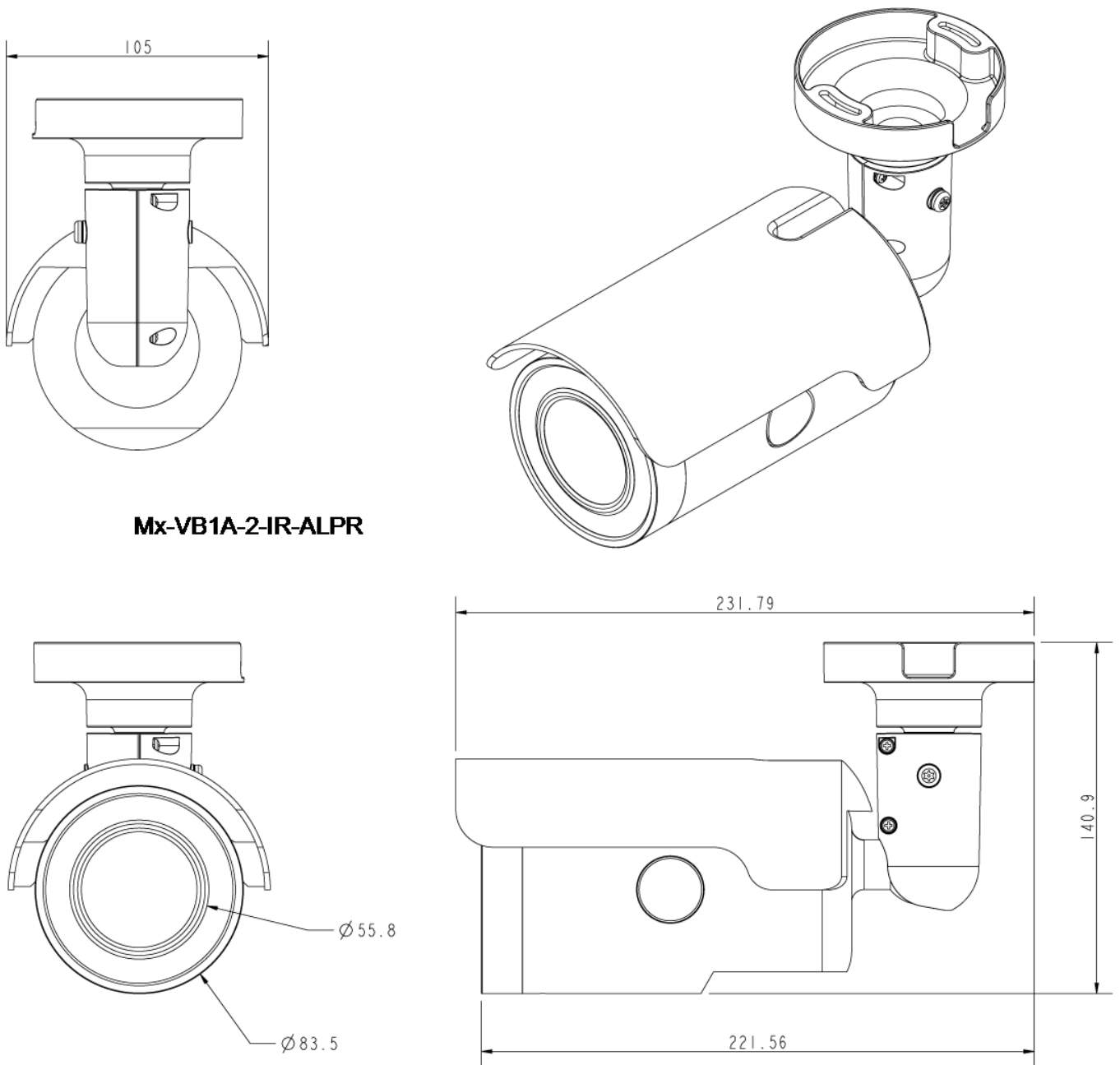
Alarm Input/Output Current and Voltage

Alarm In	Alarm Out
3.3 V with 10 k Ω pull up, 50 mA	350 V DC/AC, 130 mA

Dimensions

NOTE! Download the drilling template from the section or on the MOBOTIX website: www.mobotix.com > Support > Download Center > Marketing & Documentation > Drilling Templates.

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

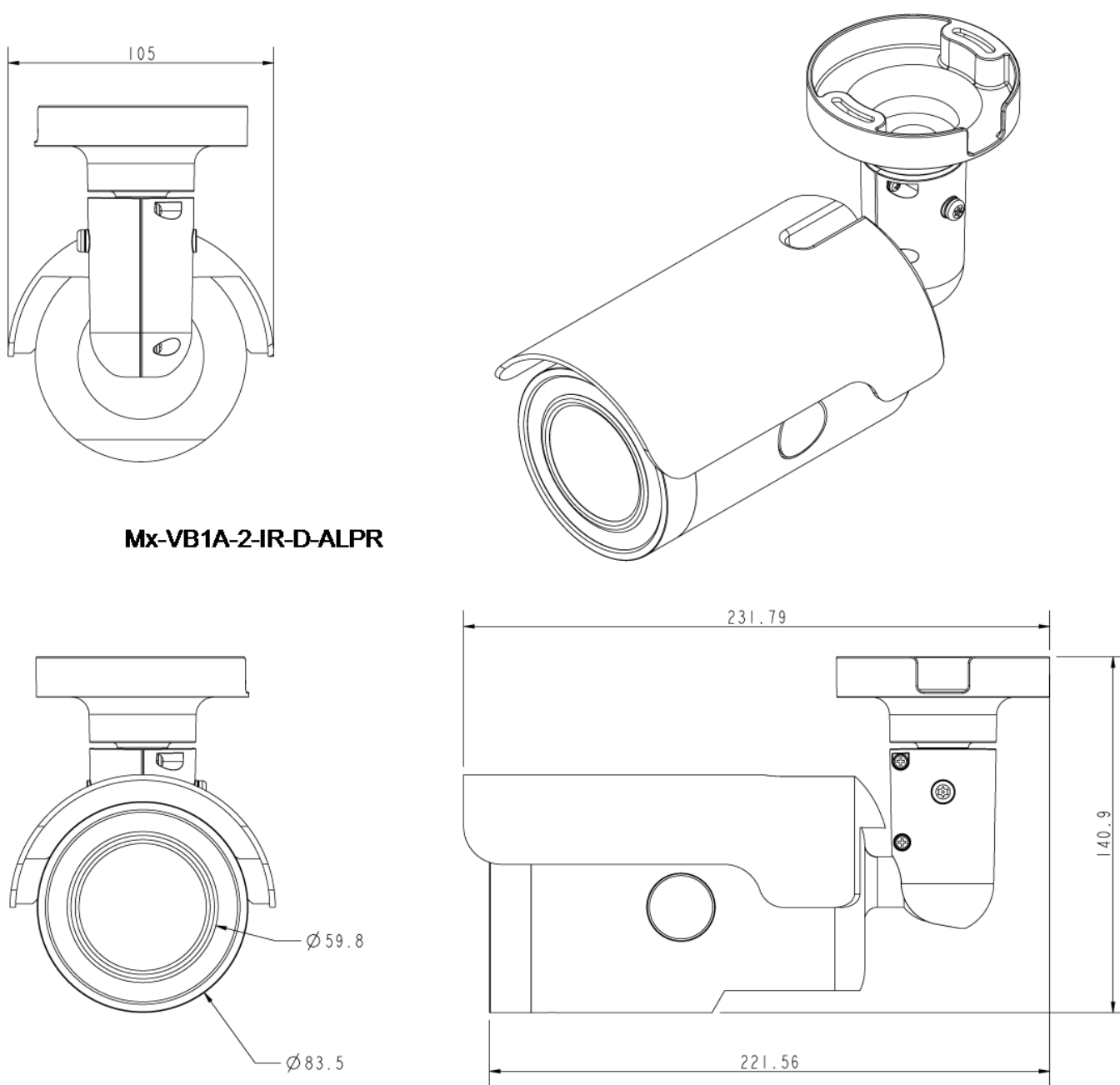


Mx-VB1A-2-IR-ALPR

Fig. 1: Mx-VB1A-2-IR-ALPR: All measurements in mm

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Mx-VB1A-2-IR-D-ALPR

Fig. 2: Mx-VB1A-2-IR-D-ALPR: All measurements in mm

Accessories for Bullet Cameras

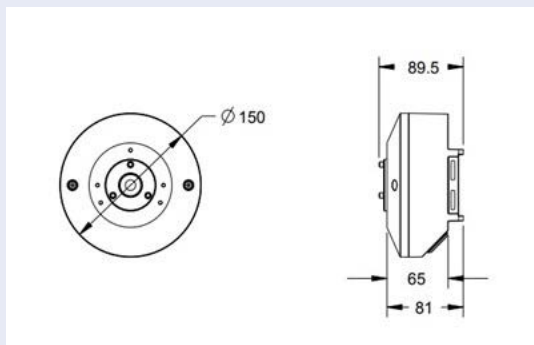
Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight (kg)
Mx-M-BC-P 	Weatherproof pole mount for MOVE bullet cameras.	All MOVE Bullet (BC) cameras except Mx-BC1A-2-IR.	Aluminum, RAL9003	1.0
Mx-M-BC-W 	Weatherproof wall mount for MOVE bullet cameras.	All MOVE Bullet (BC) cameras except Mx-BC1A-2-IR.	Aluminum, RAL9003	0.84
Mx-A-VB-FGK-EC 	EverClear-coated front glass for MOVE Vandal Bullet cameras.	All MOVE Vandal Bullet (VB) cameras from Nov. 2021.	Aluminum, glass, rubber	0.033

Dimensions

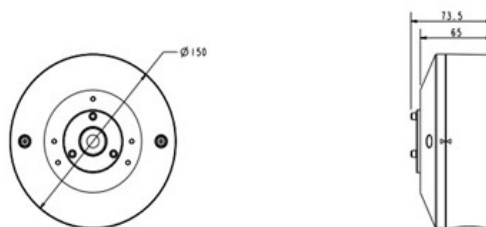
Order Code

Dimensions

Mx-M-BC-P




Mx-M-BC-W




Accessories for All Cameras

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MOBOTIX MOVE 2MP Vandal Bullet ALPR Camera

Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight (kg)
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

MOBOTIX MOVE 2MP Vandal Bullet ALPR Camera

Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight (kg)
<p>Mx-A-ETP1A-2601-SET</p> 	<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. • 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 Overvoltage protection (IEC 61000-4-5 4kV(1.2 / 50us), 2kA(8 / 20us)) • Power Supply: TX: T-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>All cameras. Requires Mx-A-ETP1A-2601-POW.</p>	<p>Plastic housing, black</p>	<p>0.368</p>


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Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight (kg)
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
Mx-A-KBD1A-PTZ- JOG 	MOBOTIX USB Keyboard with PTZ Joystick & 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.	All cameras. Requires Windows or macOS computer with USB 2.0 or better.	Plastic housing, black	1.9

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Order Code/ Picture	Description	Compatible Products	Material/ Color	Weight (kg)
MX-SWITCH1 	<p>MOBOTIX network switch for DIN (top-hat) rail mounting.</p> <p>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>	All cameras.	Plastic housing, gray	0.31

Further Reading

[Manuals and Quick Installation documents](#)



[Technical Specifications](#)



[MOBOTIX MOVE Installation Hints](#)



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MOBOTIX AG • Kaiserstrasse • D-67722 Langmeil • Tel.: +49 6302 9816-103 • sales@mobotix.com • www.mobotix.com

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