Technical Specifications

MOBOTIX MOVE 4K (8MP) Vandal Bullet Analytics Camera

The MOBOTIX MOVE 4K (8MP) Vandal Bullet Analytics Camera extends the existing range of MOVE IP Camera series with a performant 4K (8MP) resolution camera with DNN (Deep Neural Network) video analytics features. The camera performs fast and reliable auto focus and adapts to different indoor and outdoor scenes. The integrated MOBOTIX MxMessageSystem allows direct communication and interaction with MOBOTIX IoT cameras via the IP network. 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.

- EverClear coating of front glass
- Motorized Vari-Focal Lens 3.6 to 11 mm, F1.5 to F2.0 with Zoom and One-Push Auto Focus
- Wide Dynamic Range (WDR) max. 130 dB
- MOBOTIX MxMessageSystem communication system
- Integrated DNN-based video analytics with object classification/filtering

- Integrated IR LEDs up to 50 m/164 ft distance
- ONVIF Profile S/G/T/M support
- Triple power support (IEEE802.3af/AC24V/DC12V)
- Temperature Range –55 to 60 °C/-67 to 140 °F with integrated heater ON
- IP66, IP67 and IK10

HEVCAdvance™   NDAA Compliant   Ambarella AI envisioned™   MOBOTIX

Beyond Human Vision

MOBOTIX MOVE

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.

Product Information

Product Name	4K (8MP) Vandal Bullet Analytics Camera
Order Code	Mx-VB1A-8-IR-VA

Hardware Design

Processor	Ambarella CV22 (Quad-core ARM® Cortex®-A53, 1 GHz)
Memory	RAM: 512 MB
	FLASH: 256 MB

Image Sensor	4K (8MP), 1/1.8" Progressive CMOS IMX334 (SONY STARVIS)
Effective (Used) Pixels	3864x2180 (4K/8MP)

Lens

Minimum Illumination	Color: 0.04 lux B/W: 0.002 lux
Lens Characteristics	Motorized Lens: Zoom, Focus, P-IRIS Focal Length: 3.6 to 11 mm Aperture: F1.5 to F2.0 Horizontal Field of View: 115.0° (Wide), 47.5° (Tele) Vertical Field of View: 61.2° (Wide), 27.0° (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	**Manual Mode:** WDR: up to 1/67500 s Linear: up to 1/13500 s **Automatic Mode:** Up to 1/10000 s
Frame Rate (maximum)	H.265/H.264: 3864x2180@30 fps + 1920x1080@30 fps MJPEG: 1080p@30 fps
Auto Gain	Min. gain: 3 dB, max. gain: 48 dB, step size: 3
WDR	Up to 130 dB Multi Exposure WDR & HDR Engine support
EIS (Electronic Image Stab-	No

ilizer)

Zoom	Optical: 3.1x, Digital: 10x
Image settings	Color, Brightness, Sharpness, Contrast, White Balance, Exposure Control, 2DNR, 3DNR, NR by Motion, Masking, Text Overlay
Corridor Mode	90°, 180°, 270° Rotation

Video Codec

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

Audio Codec

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

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)
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 (TLS 1.2 default, TLS 1.0/1.1 optional selectable)

Direct to Cloud support	Yes (uses TLS 1.2 by default, MOBOTIX CLOUD account and newest firmware required)
User and Group Management	Yes (for fine-grained access control)
VPN	Yes (to establish secure network connections)
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.

System Integration

Base Video Analytics	■ Motion detection ■ Audio detection
DNN-Based Video Analytics	■ 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) 2 analytics functions can be activated simultaneously
Enhanced DNN-Based Video	■ Face Recognition (incl. gender & age estimation)

Technical Specifications
MOBOTIX MOVE 4K (8MP) Vandal Bullet Analytics Camera

Analytics	▪ 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
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

General

Housing Materials	Metal Back Housing, PC Front
Housing Color	RAL 9003
Device Color	PC front cover: RAL9003 Sunshield: ▪ 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	850 nm; up to 50 m/164 ft distance depending on reflection of scenery
Video Storage	Micro SD/SDHC/SDXC card support up to 1 TB,
	Support for recording to NAS, MOBOTIX HUB, MOBOTIX MOVE NVR
Environmental Protection Class	IP66, IP67 and IK10
Operating Temperature	–55 to 60 °C/-67 to 140 °F with integrated heater ON
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, BIS
	Safety: LVD
	Environmental: IP66, IP67, IK10
MTBF	95,000 hours
Warranty	5 years
Dimensions	ø 105x232 mm
Weight	1280 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
3.3 V with 10 kΩ pull up, 50 mA	350 V DC/AC, 130 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	Overview		Outline		Discern		Perceive		Characterize		Validate		Scrutinize	
Order Code	Wide-Angle ⇔/⇕	Tele ⇔/⇕	Wide-Angle ⇔/⇕	Tele ⇔/⇕	Wide-Angle ⇔/⇕	Tele ⇔/⇕	Wide-Angle ⇔/⇕	Tele ⇔/⇕	Wide-Angle ⇔/⇕	Tele ⇔/⇕	Wide-Angle ⇔/⇕	Tele ⇔/⇕	Wide-Angle ⇔/⇕	Tele ⇔/⇕
Mx-VB1A-8-IR-VA	61 m/91 m 200.13 ft/298.56 ft	218 m/225 m 715.22 ft/738.19 ft	31 m/46 m 101.71 ft/150.92 ft	109 m/112 m 357.61 ft/367.45 ft	15 m/23 m 49.21 ft/75.46 ft	55 m/56 m 180.45 ft/183.73 ft	10 m/15 m 32.81 ft/49.21 ft	35 m/36 m 114.83 ft/118.11 ft	5 m/7 m 16.40 ft/22.97 ft	17 m/18 m 55.77 ft/59.06 ft	2 m/4 m 6.56 ft/13.12 ft	9 m/9 m 29.53 ft/29.53 ft	1 m/1 m 3.28 ft/3.28 ft	3 m/3 m 9.84 ft/9.84 ft

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!
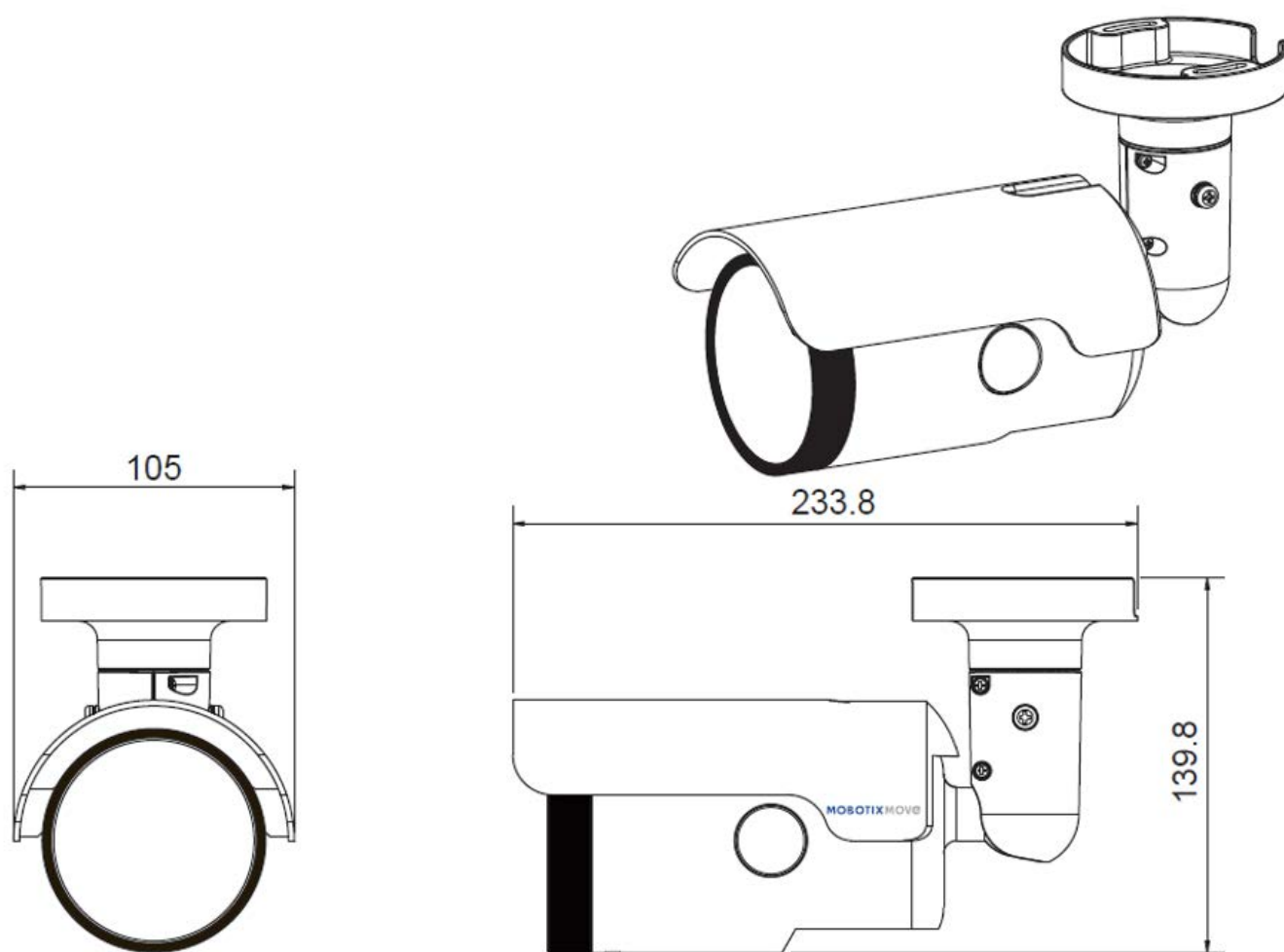
Fig. 1: Mx-VB1A-8-IR-VA: All measurements in mm
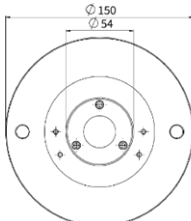
Accessories for Bullet Cameras
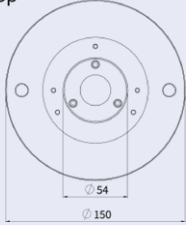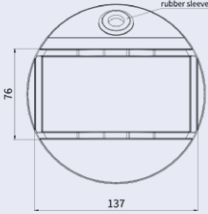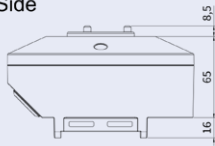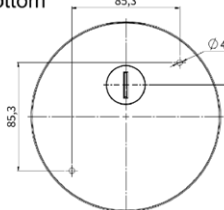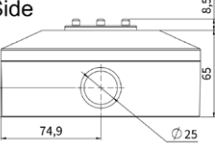
Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
Mx-M-BC-P	Weatherproof pole mount for MOVE Bullet cameras (IP66, IP67).	All MOVE Bullet cameras except Mx-BC1A-2-IR.	Die-cast ADC12 aluminium alloy, hammer blow-painted RAL9003	1.0 kg
Mx-M-BC-W	Weatherproof wall mount for MOVE Bullet cameras (IP66, IP67).	All MOVE Bullet cameras except Mx-BC1A-2-IR.	Die-cast ADC12 aluminium alloy, hammer blow-painted RAL9003	0.84 kg
Mx-A-VB-FGK-EC	**EverClear-coated** front glass for MOVE2, 5, and 8 MP Vandal Bullet cameras.	All MOVE Vandal Bullet (VB) cameras **from Nov. 2021**.	Aluminum, glass, rubber	0.033 kg

Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
Mx-A-VB1A-2-IR-ALPR-FGK-EC	**EverClear-coated** front glass for MOVE 2MP ALPR cameras.	MOVE 2MP ALPR camera Mx-VB1A-2-IR-ALPR.	Aluminum, glass, rubber	0.033 kg
Mx-A-VB1A-2-IR-**D**-ALPR-FGK-EC	**EverClear-coated** front glass for MOVE 2MP ALPR (**D variant**) cameras.	MOVE 2MP ALPR camera Mx-VB1A-2-IR-**D**-ALPR.	Aluminum, glass, rubber	0.033 kg

Dimensions

Order Code	Dimensions
Mx-M-BC-P	
Mx-M-BC-W	

All measurements in mm.

Accessories for All Cameras

Picture/ Order Code	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: • -10º to 40ºC @60W • -10º to 50ºC, 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
Mx-A-ETP1A-2601-SET	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 •	All cameras. Requires Mx-A-ETP1A-2601-POW.	Plastic housing, black	0.368 kg

Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
	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			

Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
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
MX-SWITCH1	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.	All cameras.	Plastic housing, gray	0.31 kg

Further Reading

Manuals and Quick Installation documents

Video Analytics Manual

Technical Specifications

MOBOTIX MOVE Installation Hints

MOBOTIX Community

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