Technical Specifications

MOBOTIX MOVE 12MP Vandal Hemispheric Analytics Indoor Camera

This high-performance 12MP indoor camera with Edge and backend dewarping delivers a 360-degree view of the entire surveillance area. Thanks to its integrated IR illumination and advanced exposure control, darkness poses no problem to this camera, which also offers eight embedded video analysis functions. DNN (Deep Neural Network) support for intrusion detection, loitering detection, object counting, face and license plate recognition. Easy installation and ready-to-go straight out of the box.

- Edge Dewarping and Backend Dewarping
- IR LED (true day/night function, up to 15 m/49 ft)
- Vandal-Proof IK10 (indoor)
- Sony Progressive Scan CMOS
- Image Sensor Resolution up to 12MP
- Multi Codec support (H.265/H.264/MJPEG)
- Multiple Dewarp Display Modes Digital PTZ/Panorama View/Quad View
- True Day/Night function (ICR)

- 3D Motion Compensated Noise Reduction
- ONVIF Profile S/G/T/M support
- Smart Event Functions: External Input/Manual Trigger, Motion Detection/Periodical Event, Network Failure Detection/Audio Detection
- Micro SD/SDHC/SDXC Card support up to 1 TB
- Enhanced Video Analytics Package (abandoned objects/sabotage/wrong direction/object count and removal)

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High-Quality DNN Edge Video Analytics

Counting	Intrusion	Removed Objects	Sabotage	Face Recognition
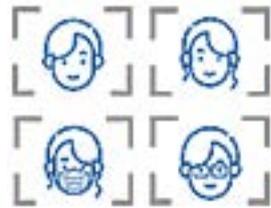
Abandoned Objects	Stopped Vehicle	Wrong Direction	Loitering	ALPR
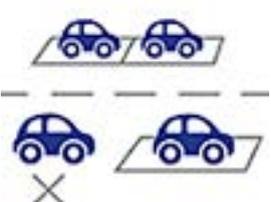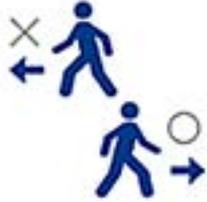
The latest computer vision technology makes the DNN-accelerated video processing engine efficient at the edge. This integrated engine provides high accuracy, and 10 (DNN-based) video analytics functions including ALPR and human face recognition. Moreover, it allows simultaneous detection on multiple objects.

Product Information

Product Name	12MP Vandal Hemispheric Analytics Indoor Camera
Order Code	Mx-VH1A-12-IR-VA

Hardware Design

Processor	Ambarella CV22 (Quad-core ARM® Cortex®-A53, 1 GHz)
Memory	RAM: 512 MB FLASH: 256 MB
Image Sensor	12MP, 1/1.7" Progressive CMOS IMX226 (SONY STARVIS)
Effective (Used) Pixels	4000x3000 (12MP)

Image Quality

Frame Rate (maximum)	**H.265/H.264**
	
	■ Single-stream, **Backend** (software) dewarping:
	    ■ 12MP@20 fps
	    ■ 2992x2992@30 fps
	
	■ Single-stream, **Edge** (camera) dewarping:
	    ■ 8.9MP@27 fps
	    ■ 2048x2048@30 fps
	
	MJPEG
	
	■ **Backend** (software) dewarping:
	    ■ 1920x1080@60 fps
	
	■ **Edge** (camera) dewarping:
	    ■ 1920x1080@30 fps

Lens

Minimum Illumination	Color: 0.1 lux B/W: 0.01 lux
Lens Characteristics	Type: 1/1.7" Hemispheric Lens Focal Length: 1.65 mm Aperture: F2.8 Horizontal Field of View: 190° Vertical Field of View: 190°

Camera

Day and Night	Automatic mechanically switchable IR-cut filter
Shutter Speed	1 – 1/24767 sec.
Auto Gain	Min. gain: 3 dB, max. gain: 45 dB, step size: 3
Zoom	Digital zoom
Image Settings	Backlight Compensation, White Balance, Noise Reduction, Wide Dynamic Range, Privacy Mask, Brightness, Exposure, Sharpness, Contrast, Saturation,

	Hue, Digital Zoom, Privacy Mask Type, ICR, IR Threshold
Rotation Mode	180° rotation

Video Codec

Compression	H.265/MJPEG/H.264 (MPEG-4 Part 10/AVC) Baseline/Main Profile/High Profile
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	G.711/G.726/AAC/LPCM
Streaming	2 way
Audio Input	Microphone built-in
Audio Output	Speaker built-in

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)
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	RJ45, 1 Gbps Ethernet
Supported Protocols	ARP, IPv4/v6, TCP/IP, UDP, RTP, RTSP, HTTP, HTTPS, ICMP, FTP, SMTP, DHCP, PPPoE, UPnP, IGMP, SNMP, QoS, ONVIF
ONVIF	Supports profiles S/G/T/M

System Integration

Base Video Analytics	■ Motion Detection ■ Tampering ■ Audio Detection
Enhanced Video Analytics (embedded)	■ Abandoned objects ■ Intrusion (object classification) ■ Sabotage ■ Wrong direction ■ Loitering (object classification) ■ Object counting (object classification) ■ Object removal ■ Stopped vehicle (object classification) 2 analytics functions can be activated simultaneously

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Event Triggers	- External input - Analytics - Network failure detection - Periodical event - Manual trigger
Event Actions	- External output activation - Video and audio recording to edge storage - File upload: FTP, network share and email - Notification: HTTP, FTP, email

General

Housing Materials	Metal and Plastic
Housing Color	RAL 9003
Power Requirements	PoE IEEE802.3af, class 0, max 12.95 W
PoE Modes Supported	Mode A or Mode B
Connectors	RJ45 Alarm in x1, Alarm out x1, Terminal Block Audio in Terminal Block Audio out Terminal Block
Storage	Micro SD/SDHC/SDXC card support up to 1 TB, Support for recording to NAS, MOBOTIX MOVE NVR
IR Illumination	850 nm; up to 15 m/49 ft distance depending on reflection of scenery
Operating Temperature	–10 to 55 °C/14 °F to 131 °F
Relative Humidity	90 % non-condensing
Storage Conditions	–20 to 70 °C/–4 to 158 °F
Approvals	EMC, Safety, Environment, CE/FCC, RoHS, IK10
MTBF	95,000 hours
Warranty	5 years

Dimensions	Ø 130x57.8 mm
Weight	565 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 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
Mx-VH1A-12-IR-VA							

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!
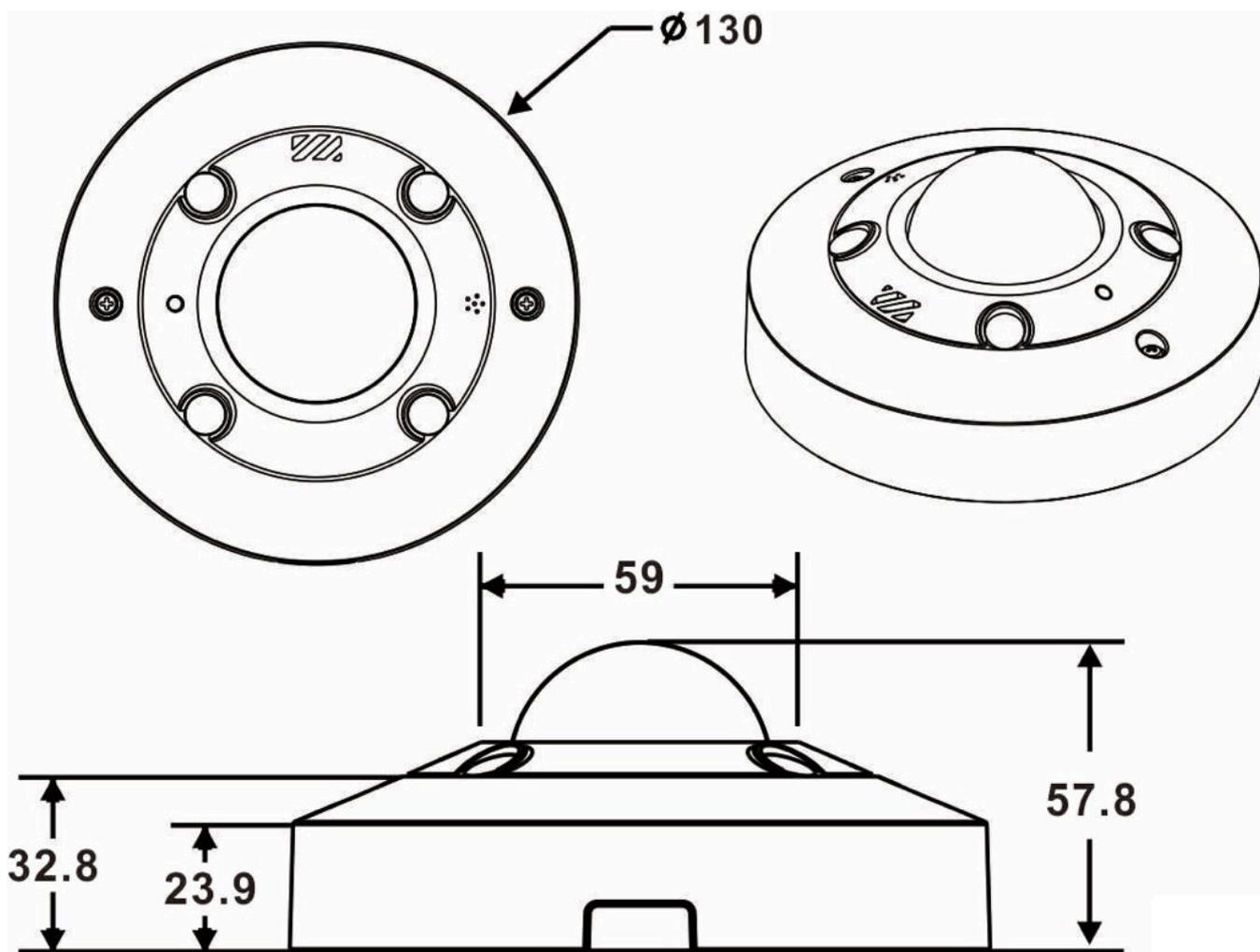
Fig. 1: Mx-VH1A-12-IR-VA: All measurements in mm

Accessories for Hemispheric Cameras
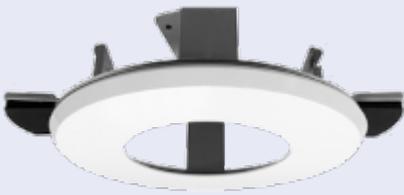
Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
Mx-M-VH1A-IC	Indoor in-ceiling mount for MOVE 12MP Hemispheric cameras.	MOVE 12MP Hemispheric camera Mx-VH1A-12-IR-VA.	Zinc-galvanized SECC steel, powder-coated RAL9003	0.8 kg

Dimensions

Order Code	Dimensions
Mx-M-VH1A-IC	
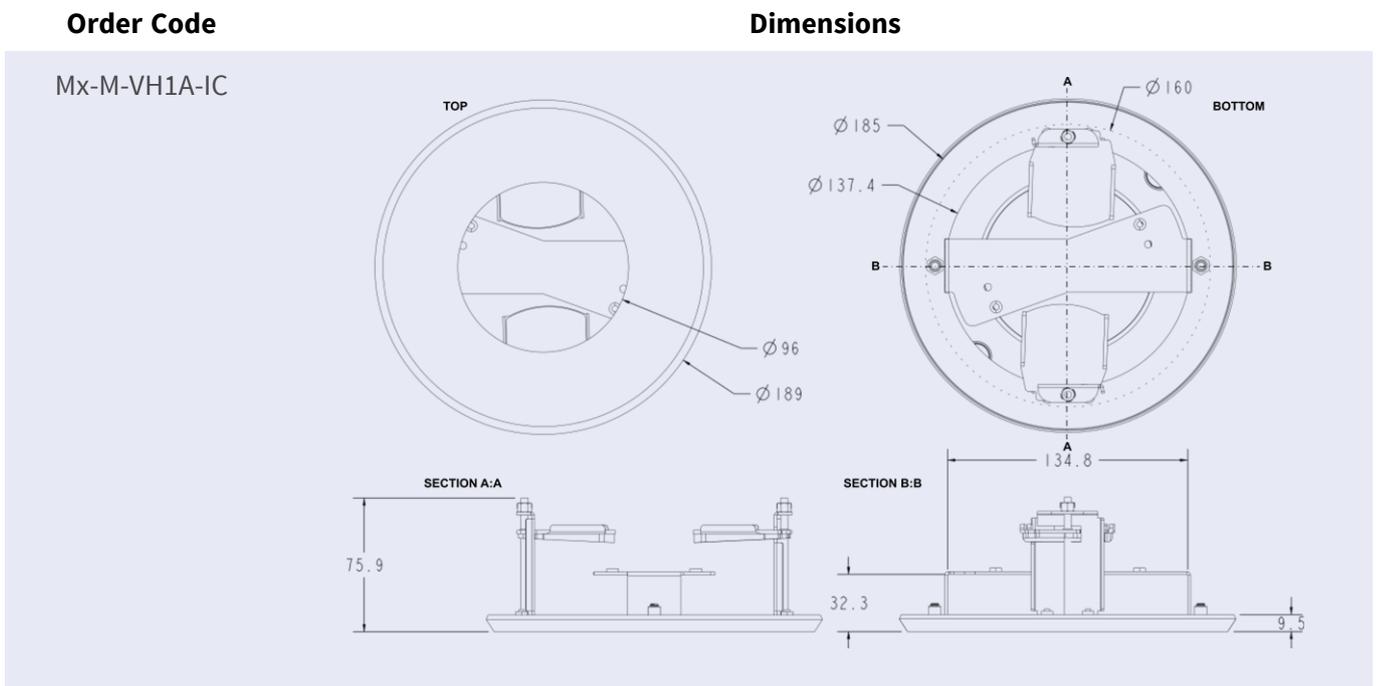
All measurements in mm.

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 • Max. 95 Mbps transmission	All cameras. Requires Mx-A-ETP1A-2601-POW.	Plastic housing, black	0.368 kg

Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
	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			

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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-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 kg

Picture/ Order Code	Description	Compatible Products	Material/ Color	Weight
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

Technical Specifications

MOBOTIX MOVE Installation Hints

MOBOTIX Community

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