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## Second Generation MV Cameras: Overview and Specifications

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### Overview

The MV12 series, MV22 series, MV72 series and MV32 are part of the second generation of cameras from Cisco Meraki which introduces powerful onboard analytics capabilities, including machine learning for intelligent object detection and person tracking. This new generation of smart cameras also introduces the ability to deploy wirelessly, allowing for seamless deployment in almost any environment.

The MV12 series offers several different indoor, fixed focus models that each include all the advanced analytics and other new features introduced in this generation in a smaller form factor to more easily integrate into existing environments. The MV22 and MV72 series each bring the advanced analytics and wireless capabilities of the MV12 to the full sized lineup of varifocal cameras for both indoor and outdoor models. The MV32 features the same innovative [architecture](#) as the rest of the MV family, and adds 360° viewing to provide greater context of an area.

Alongside the new analytics and wireless capabilities the second generation also introduces audio recording, 256GB or 512GB of onboard storage, and up to 3x optical zoom on the MV22 / MV72 series that can be configured and adjusted directly from the Meraki Dashboard. The MV72 series also features increased weather and impact resistance when compared to the original MV71. All second generation Meraki cameras are NDAA compliant.



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## Features

- Managed via Meraki Dashboard
- Dynamic Day-Night transition with IR illumination\*
- Motion indexing with historical search
- Motion based heatmap generation
- Motion based Alerts
- Historical person tracking
- Direct or remote live streaming via Meraki Dashboard
- Shared, customizable video wall via Meraki Dashboard
- Full disk, AES-256 encryption
- NDAA compliant
- Selective video export capability via Meraki Cloud
- Customizable recording and retention settings
- Always-on, Scheduled, or Motion based recording options
- Optional backups to Cloud Archive
- Record up to 1080p at 20fps
- HDR recording
- Varifocal lens (up to 3x optical zoom)
- Configurable Privacy Windows
- Wired / Wireless deployment

\*Not currently supported on the MV32

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## Configuration

The basic initial configuration of the second generation cameras is just as simple as any other model of MV camera. The links below provide additional information and instructions relating to each step in getting the device setup and configured for the first time.

1. [Claim the device to an Organization on the Meraki Dashboard](#)
  - a. If a Dashboard Organization does not yet exist, [Create one](#)
2. [Add the device to a Dashboard Network](#)
  - a. If a Network does not yet exist, [Create one first](#)
3. Physically connect the device to the local network
  - a. Follow the steps in the corresponding [Installation Guide](#)
  - b. Connect the device to any existing network infrastructure that provides PoE, DHCP, and Internet access
  - c. Boot the device and let it check in to the Dashboard
4. Allow the device to completely check-in and perform any initial firmware upgrades
5. Finish configuring the device from the Meraki Dashboard
  - a. Configure [Wireless Profiles](#)
  - b. Configure [Privacy Windows](#)
  - c. Configure [Recording / Retention Settings](#)

# Technical Breakdown

## Hardware Breakdown

	MV12WE	MV12W	MV12N	MV22 Series	MV72 Series	MV32	
<b>Maximum Possible Video Quality</b> <a href="#">(Full quality options here)</a>	Up to 1080p HD w/ H.264, up to 20fps	Up to 1080p HD w/ H.264, up to 20fps	Up to 1080p HD w/ H.264, up to 20fps	MV22: Up to 1080p HD w/ H.264, up to 20fps  MV22X: Up to 4MP w/ H.264, up to 15fps	MV72: Up to 1080p HD w/ H.264, up to 20fps  MV72X: Up to 4MP w/ H.264, up to 15fps	Up to 4.2MP (2058x2058) with H.264, up to 15fps	Up to 4.2MP (2058x2058) with H.264, up to 15fps
<b>Image Sensor</b>	1/3" 4MP (2688x1520) progressive CMOS	1/3" 4MP (2688x1520) progressive CMOS	1/3" 4MP (2688x1520) progressive CMOS	1/3" 4MP (2688x1520) progressive CMOS	1/3" 4MP (2688x1520) progressive CMOS	1/2.5" 8.4MP (4.2MP effective or 2058x2058) progressive CMOS	1/2.5" 8.4MP (4.2MP effective or 2058x2058) progressive CMOS
<b>Focal Length</b>	2.8mm	2.8mm	3.8mm	3-9mm	3-9mm	1.19mm	2.8mm
<b>Aperture</b>	f/1.8	f/1.8	f/1.8	f/1.2-2.3	f/1.2-2.3	f/2.0	f/2.0
<b>Shutter Speed</b>	1/30s - 1/32000s	1/30s - 1/32000s	1/30s - 1/32000s	1/30s - 1/32000s	1/30s - 1/32000s	1/30s to 1/32000s	1/30s to 1/32000s
<b>Field of View</b>	Horizontal: 114° Vertical: 61° Diagonal:	Horizontal: 114° Vertical: 61° Diagonal:	Horizontal: 73° Vertical: 44° Diagonal: 86°	Horizontal: 36° - 112° Vertical: 20° - 57°	Horizontal: 36° - 112° Vertical: 20° - 57°	Horizontal: 180° Vertical: 180°	Horizontal: 180° Vertical: 180°

	132°	132°		Diagonal: 42° - 138°	Diagonal: 42° - 138°		
<b>Lens Adjustment Range</b>	Tilt: 65° Rotation: 350° Pan: 350°	Tilt: 65° Rotation: 350° Pan: 350°	Tilt: 65° Rotation: 350° Pan: 350°	Tilt: 65° Rotation: ±90° Pan: 354°	Tilt: 65° Rotation: ±90° Pan: 354°		
<b>IR Illuminators</b>	Yes, up to 15m (49ft)	Yes, up to 15m (49ft)	Yes, up to 15m (49ft)	Yes, up to 30m (98ft)	Yes, up to 30m (98ft)	Not supported	Yes 8m
<b>Minimum illumination (Standard / Night mode)</b>	0.18 Lux / 0.01 Lux	0.18 Lux / 0.01 Lux	0.18 Lux / 0.01 Lux	0.18 Lux / 0.01 Lux	0.18 Lux / 0.01 Lux	0.18 Lux / -	0.01 Lux
<b>Video Storage</b>	128GB high endurance solid state	256GB high endurance solid state	256GB high endurance solid state	MV22: 256GB high endurance solid state MV22X: 512GB high endurance solid state	MV72: 256GB high endurance solid state MV72X: 512GB high endurance solid state	256GB high endurance solid state	Live
<b>Wireless</b>	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n/ac
<b>Thermal Elements</b>	No	No	No	No	Yes	No	
<b>Ratings</b>	NDA compliant	NDA Compliant	NDA Compliant	IK08 vandal-resistance NDA compliant	IK10 vandal-resistance IP67 weather-proofing NDA compliant	NDA Compliant	Co

For details on how many days of retention can be achieved per MV model, please refer to the [Video Retention](#) knowledge base article.

## Wireless Radio

	<b>MV12WE/W/N / MV22 / MV72 / MV32/ MV2 / MV52</b>
<b>Radios</b>	2.4 GHz 802.11b/g/n 5 GHz 802.11a/n/ac
<b>Antenna</b>	Integrated 1x1 MU-MIMO Omnidirectional (4.4 dBi gain at 2.4 GHz, 6.3 dBi gain at 5 GHz)
<b>Channel Width</b>	20, 40, and 80 MHz channels
<b>Supported Frequencies</b>	2.412 - 2.484 GHz 5.150 - 5.250 GHz (UNII-1) 5.250 - 5.350 GHz (UNII-2) 5.470 - 5.600, 5.660 - 5.725 GHz (UNII-2e) 5.725 - 5.825 GHz (UNII-3)
<b>QAM</b>	Up to 256 QAM on both 2.4 GHz and 5 GHz bands
<b>802.11 Security</b>	WPA, WPA2-PSK, WPA2-Enterprise with 802.1X, EAP-TTLS, TKIP and AES encryption, NDAA Compliance.

## Physical

	<b>MV12 Series</b>	<b>MV22 Series</b>	<b>MV72 Series</b>	<b>MV32</b>	<b>MV2</b>	<b>MV52</b>
<b>Mount Type (out-of-box)</b>	Wall / Ceiling	Wall / Ceiling	Wall / Ceiling Mount	Ceiling Mount	Table Top, Wall / Ceiling Mount	Wall / Ceiling Mount

	Mount	Mount	(conduit adapter included)	<a href="#">(Installation guide)</a>		
<b>Supported Mount Accessories</b>	Wall Mount Arm, Telescoping Pendant Mount	L-Shape Wall Mount Bracket, T-Rail Mount Clip	Wall Mount Arm, Pole Mount	Telescoping Pendant Mount, Wall Mount Arm (but not recommended)		Pole Mount
<b>Dimensions (dia x h)</b>	4.2 x 2.9 in / 106 x 74 mm	5.9 x 3.8 in / 149 x 97 mm	6.5 x 4.0 in / 165 x 103 mm	4.2 in x 1.8 in / 106mm x 45.86mm	76mm x 68-129mm (diameter x height)	90mm x 145mm
<b>Weight</b>	0.63 lb / 0.28kg	1.8 lb / 0.84 kg	3.0 lb / 1.35 kg	0.47 lb / 215 g	1.03 lb / 0.46kg	3.3 lb / 1.5 kg
<b>Power Supply</b>	802.3af PoE	802.3af PoE	802.3at PoE+	802.3af PoE	10W DC/ 802.3af PoE	12V DC/ 802.3at PoE+
<b>Power Load (max)</b>	12.95W	12.75W	23.4W (802.3at)	12.95W	12.95W	25.5W
<b>Operating Temperature (starting / working)</b>	0°C - 40°C (32°F - 104°F) / 0°C - 40°C (32°F - 104°F)	0°C - 45°C (32°F - 113°F) / 0°C - 45°C (32°F - 113°F)	-40°C - 50°C (-40°F - 122°F) / 0°C - 50°C (32°F - 122°F)	0°C - 40°C (32°F - 104°F) / 0°C - 40°C (32°F - 104°F)	0°C - 35°C (32°F - 95°F) / 0°C - 35°C (32°F - 95°F)	40°C - 50°C (-40°F - 122°F)

## Accessories

A complete set of options and guidelines are outlined in the article: [MV Mounting Options and Guidelines](#).

	Description
<b>MA-MNT-MV-10</b>	Wall Mount Arm for MV72. Used for attaching camera perpendicular to mounting surface
	Dimensions for wall bracket (l x w x d) 160 x 104 x 286mm Combined weight: 0.67kg
<b>MA-MNT-MV-20</b>	Pole Mount for MV72. Can be used in conjunction with MA-MNT-MV-10.
	Dimensions (l x w x d): 163.5 x 107.6 x 34mm Combined weight: 0.289kg
<b>MA-MNT-MV-21</b>	Pole mount for MV52. Used for attaching to poles ranging from 40-80 mm and 85-145 mm in diameter
	Dimensions (l x w x d): 180.93 x 111.92 x 58mm Combined weight: 0.876 kg
<b>MA-MNT-MV-30</b>	Wall Mount Arm for MV12 series. Used for attaching camera perpendicular to mounting surface. Also used for MV32.
	Dimensions for wall bracket (l x w x d): 91.3 x 94 x 302.3mm Combined weight: 0.697kg
<b>MA-MNT-MV-31</b>	Wall Mount Bracket for MV22
	Dimensions (l x w x d): 48 x 130 x 156.2mm Combined weight 0.503kg
<b>MA-MNT-MV-40</b>	Telescoping Pendant Mount for MV12 and MV32. Used to attach camera an extended distance from mounting surface
	Dimensions (l x d): 1293-2300 x 144mm (distance configurable) Combined weight 1.75kg

<b>MA-PWR-MV-LV</b>	Meraki Low Voltage Power Adapter for MV cameras.
	<p>Dimensions (d x h): 82 x 35.5mm</p> <p>Weight: 0.42lbs (190g)</p> <p>Input Rating: 24 VAC/ 2.2A, 12VDC/ 2.75A.</p> <p>Output Rating: 54V / 0.43A</p>
<b>MA-INJ-4-US</b>	Meraki 802.3at PoE Injector (US plug)
<b>MA-INJ-4-EU</b>	Meraki 802.3at PoE Injector (EU plug)
<b>MA-INJ-4-UK</b>	Meraki 802.3at PoE Injector (UK plug)
<b>MA-INJ-4-AU</b>	Meraki 802.3at PoE Injector (AU plug)
<b>MA-PWR-ETH</b>	Meraki Ethernet to USB-C adapter for MV2
<b>MA-PWR-USB-US</b>	Meraki USB-C Power Adapter for MV2 (US Plug)
<b>MA-PWR-USB-UK</b>	Meraki USB-C Power Adapter for MV2 (UK Plug)
<b>MA-PWR-USB-EU</b>	Meraki USB-C Power Adapter for MV2 (EU Plug)
<b>MA-PWR-USB-AU</b>	Meraki USB-C Power Adapter for MV2 (AU Plug)
<b>MA-PWR-USB-JP</b>	Meraki USB-C Power Adapter for MV2 (JP Plug)

## Comparisons with Similar Models

There are no similar models to the MV32 to compare against.

	<b>MV12W</b>	<b>MV21</b>	<b>MV22 Series</b>	<b>MV71</b>	<b>MV72 Series</b>
<b>Max Video Quality</b>	1080p HD, up to 20fps	720p HD, up to 15fps	<p>MV22: 1080p HD, up to 20fps</p> <p>MV22X: 4MP,</p>	720p HD, up to 15fps	<p>MV72: 1080p HD, up to 20fps</p> <p>MV72X: 4MP,</p>



			up to 15fps		up to 15fps
<b>Image Sensor</b>	1/3" 4MP (2688x1520) progressive CMOS	1/3.2" 5MP (2560x1920) progressive CMOS	1/3" 4MP (2688x1520) progressive CMOS	1/3.2" 5MP (2560x1920) progressive CMOS	1/3" 4MP (2688x1520) progressive CMOS
<b>Optical Zoom</b>	No	Yes	Yes	Yes	Yes
<b>Field of View</b>	Horizontal: 114° Vertical: 61° Diagonal: 132°	Horizontal: 28° - 82° Vertical: 21° - 61° Diagonal: 37° - 107°	Horizontal: 36° - 112° Vertical: 20° - 57° Diagonal: 42° - 138°	Horizontal: 28° - 82° Vertical: 21° - 61° Diagonal: 37° - 107°	Horizontal: 36° - 112° Vertical: 20° - 57° Diagonal: 42° - 138°
<b>Lens Adjustment Range</b>	Tilt: 65° Rotation: 350° Pan: 350°	Tilt: 65° Rotation: 350° Pan: 350°	Tilt: 65° Rotation: ±90° Pan: 354°	Tilt: 65° Rotation: 350° Pan: 350°	Tilt: 65° Rotation: ±90° Pan: 354°
<b>Video Storage</b>	256GB	128GB	256GB	128GB	256GB
<b>Wireless</b>	Yes	No	Yes	No	Yes
<b>Ratings</b>	-	-	IK08 vandal-resistance	IK10 vandal-resistance  IP66 weather-proofing	IK10 vandal-resistance  IP67 weather-proofing

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## Troubleshooting

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### Common Troubleshooting

#### **My MV isn't connecting to the wireless network.**

Ensure that the Wireless Profiles are configured correctly on the Dashboard (Camera > Settings > Wireless) and that the device has checked in to the Meraki Dashboard to pull the configuration and perform any necessary firmware updates via a hardwired connection before attempting to connect to a wireless network.

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#### **The Video Feed is all white / too bright**

Ensure that Night Mode (Camera > Settings > Night mode) is not set to 'Always On' if the camera is in a location with adequate lighting. This makes the camera much more sensitive to infrared light and can cause the picture to appear washed out.

### **The Video Feed is all black / too dark**

Ensure that Night Mode is not set to 'Always Off' if the camera is in a location that experiences low lighting levels. Night Mode makes the camera much more sensitive to infrared light and can help improve visibility in low light conditions.

### **I can't get the direct LAN stream to work, even when connected to the same network**

Each MV12 will generate a unique domain name to allow for secured direct streaming functionality. These domain names resolve an A record for the private ip address of the camera. Any public recursive DNS server will resolve this domain.

If utilizing an on-site DNS server, please allow '\*.devices.meraki.direct' or configure a conditional forwarder so that local domains are not appended to '\*.devices.meraki.direct' and that these domain requests are forwarded to Google public DNS.

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## **Event Log**

The most common Event Log messages and their meaning are listed below.

### **Night mode transition**

This event indicates the camera transitioned into or out of Night Mode. Includes the current lux reading and the new state of Night Mode.

### **Image settings change**

Indicates there was a change to the image or recording configuration. Includes the user that applied the change, the option that was changed, old value, and new value

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## **FAQ**

### **How do I know if the MV is using a wireless connection?**

The Status LED on every MV model will display a solid Blue LED if the device is connected using a wireless connection and a solid Green LED when using a hardwired connection.

## **How do I know if the MV is recording Audio?**

Any MV that has audio recording enabled will always display a solid Purple LED to indicate it is recording audio, regardless of the connection type used by the device.