

Moxa IP Camera VPort 16-M12 Series Quick Installation Guide

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P/N: 1802000160010

Overview

The VPort 16-M12 is a compact, fixed-IP camera with EN 50155:2007 compliance that is specially designed for rolling stock CCTV applications. In addition to the -25 to 55°C operating temperature, IP66 rain and dust protection, anti-vibration M12 Ethernet connector, Power-over-Ethernet (PoE), and metal housing with glass lens cover, the VPort 16-M12 also has a built-in dehumidifying membrane for dissipating moisture trapped inside the camera and keeping other moisture out. This innovative design greatly reduces the impact of moisture on the lens.

To provide good video quality, the VPort 16-M12 uses a 1/3" CCD image sensor and advanced 3D-deinterlacing hardware enhancements, making it suitable for most lighting conditions. A maximum of 2 H.264 and 1 MJPEG video streams are provided by the VPort 16-M12. In addition, Moxa's DynaStream™ function allows you to change the video frame rate automatically, which can help you control your network bandwidth budget and ease network system management. The VPort 16-M12 also has a built-in SDHC slot for installing an SD card to provide up to 32 GB of local storage.

The VPort 16-M12 supports both surface mounting and embedded mounting, and for different viewing angles and distance requirements, 5 lens types with focal length from 3 mm to 16 mm are provided. Moreover, the camera head can be calibrated according to the scale on the camera and can be rotated 360° horizontally and 90° vertically, and DHCP opt 66/67 is also supported for automatic configuration, making mass installation a much easier task.

Package Checklist


Moxa's VPort 16-M12 is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

- 1 x VPort 16-M12 or VPort 16-M12-DO (Lens is included)

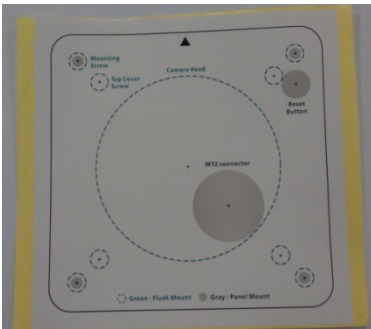
Standard model	Dome cover model	Lens	Modulation	
			NTSC	PAL
VPort 16-M12-CAM3L5430N	VPort 16-DO-M12-CAM3L5430N	3.0mm	✓	
VPort 16-M12-CAM3L5430P	VPort 16-DO-M12-CAM3L5430P	3.0mm		✓
VPort 16-M12-CAM3L5436N	VPort 16-DO-M12-CAM3L5436N	3.6mm	✓	
VPort 16-M12-CAM3L5436P	VPort 16-DO-M12-CAM3L5436P	3.6mm		✓
VPort 16-M12-CAM3L5460N	VPort 16-DO-M12-CAM3L5460N	6.0mm	✓	
VPort 16-M12-CAM3L5460P	VPort 16-DO-M12-CAM3L5460P	6.0mm		✓
VPort 16-M12-CAM3L5480N	VPort 16-DO-M12-CAM3L5480N	8.0mm	✓	
VPort 16-M12-CAM3L5480P	VPort 16-DO-M12-CAM3L5480P	8.0mm		✓

VPort 16-M12-CAM3L54160N	VPort 16-DO-M12-CAM3L54160N	16mm	✓	
VPort 16-M12-CAM3L54160P	VPort 16-DO-M12-CAM3L54160P	16mm		✓

- Screw handle accessory package

Torx screw driver for attaching/detaching the upper case	4 sets of nut, gasket and spring washer for mouting the camera	4 Nylock flush mount top cover screws for mounting the top cover on the ceiling
		

- Sticker for camera mounting positions



- Quick Installation Guide
- Document & Software CD (includes User's Manual, Quick Installation Guide, and VPort Utility)
- Warranty Statement

NOTE Check the model name on the VPort's side label to determine if the model name is correct for your order.

NOTE This product must be installed in compliance with your local laws and regulations.

Features

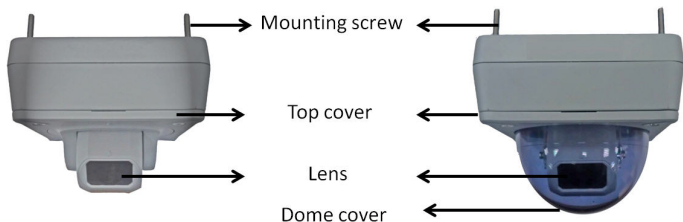
- 1/3" CCD image sensor
- Built-in 3D-Dinterlace for progressive video image
- Camera supports White Balance (ATW/AWC), 3DNR (3D Digital Noise Reduce), AGC, Slow shutter, AES (Automatic Electrical Shutter) and BLC (Back Light compensation)
- Minimum illumination is up to 0.02 lux (color)
- Support MJPEG and H.264 Dual Codecs
- Provide 3 video streams for H.264 and MJPEG simultaneously
- Video stream up to 30 frames/sec at SVGA (800x600) resolution
- Video latency under 200 ms
- DynaStream support for network efficiency with dynamic frame rate change
- SVGA/ Full D1/ 4CIF/ VGA/ CIF/ QCIF resolution
- TCP, UDP and HTTP network transmission mode
- Support DHCP OPT66/67 for automatic configuration from TFTP server, which can ease the installation efforts in mass installation.
- Support RTSP Streaming
- Support Multicast (IGMP) video streaming
- Support SNMP (V1/V2C/V3) for network system integration and management
- Support QoS (ToS) for transmission priority
- Built-in web server for easy configuration
- Adjustable frame rate and bit rate control
- Accessible IP filtering
- UPnP Supported
- Compliant with EN50121-3-2 and relevant sections of EN50155 (compliance with IEC 60571)
- 1 10/100BaseT (X) with M12 D-code connector
- IP 66 rain and dust protection with a dehumidifying membrane
- PoE (Power-over-Ethernet, 802.3af) supported
- Optional plastic dome cover model for EN62262 IK10 level vandal resistant
- Support both ceiling (panel) mounting and embedded (recessed) mounting
- -25 to 55°C operating temperature for rolling stock environment
- CE, FCC, UL 60950-1
- Built-in Video Motion Detection (VMD)
- Video loss alarm
- Pre, Trigger and post snapshot images supported
- Sequential pre-event snapshot images
- Sequential snapshot images supported
- Support SMTP and FTP for alarm message transmission
- Support HTTP Event Server
- 3-year warranty

Product Description of the VPort 16-M12

Appearance

VPort 16-M12

VPort 16-DO-M12



- **Mounting screw:** there are four nylock M4 screws for mounting the VPort 16-M12 on the wall or ceiling; the external length is about 20mm. These 4 mounting screws can work with the 4 sets of nut, gasket and spring washer, or directly mount on the screw hole.

NOTE If the length of the mounting screws is insufficient for your installation environment, please contact your Moxa sales representative for customization service.

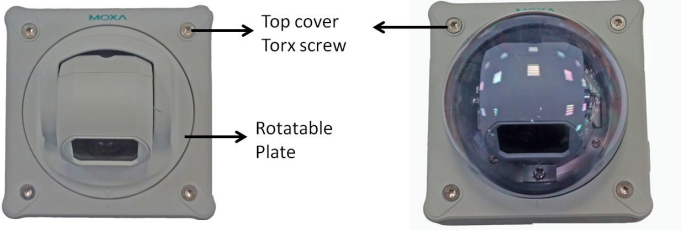
- **Top cover:** This top cover can be removed for tuning the camera lens position.
- **Lens:** VPort 16-M12 provides 5 kinds of lens with different focal length: 3.0mm, 3.6mm, 6mm, 8mm and 16mm, in different auxiliary model name (-CAMxxxxxxx).
- **Dome cover:** VPort 16-DO-M12 is the model with PC dome cover, which is vandal-proof with EN62262 (IEC62262) class IK10 level.

NOTE The color of the dome cover can be customized based on your installation environment. Please contact your Moxa sales representative for this customization service. But please note that the dome cover will decrease the light transmittance of the video image. The darker the dome cover is, the greater the decrease of light transmittance.

Top View

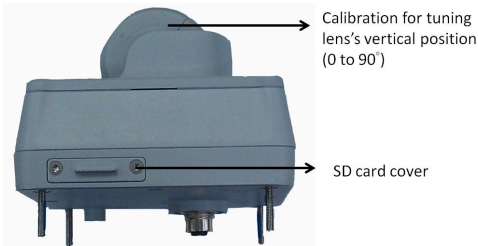
VPort 16-M12

VPort 16-DO-M12



- **Top cover torx screw:** To remove the top cover, you can use an L type torx screw driver.
- **Rotatable plate:** this plate can be turned manually to fix the horizontal lens position.

Side View



- **Calibration for tuning lens's vertical position (0 to 90°):** After tuning the lens vertical position, the user can mark the position with this calibration for future replacement or mass installation.
- **SD card cover:** To use an SD card for local storage, the user can remove this SD card cover with an L-type torx screw driver.

NOTE The VPort 16-M12 supports a standard SDHC interface. The user can use an SD card which is suitable this specification. It is recommended to use Transcend or Sandisk SD cards. Sandisk Extreme III SD cards are highly recommended due their read/write speed.

NOTE To check if the SD card is mounted successfully, please go to **system configuration-> Local storage** in the VPort's web-based manager.

Bottom View



- PoE & Ethernet M12 connector:** A 4-pin M12 A-code connector for both PoE power supply (Mode A) and Auto MDI/MDI-X Ethernet connection.

PIN	TX
1	TD+
2	RD+
3	TD-
4	RD-

The diagram shows a circular M12 connector with four pins numbered 1, 2, 3, and 4. Pin 1 is at the bottom, pin 2 is at the top, pin 3 is on the right, and pin 4 is on the left.

NOTE To connect the VPort 16-M12 series to the network, you need to use an Ethernet cable with a D-code M12 connector and a M12 PoE switch or RJ45 PoE switch.

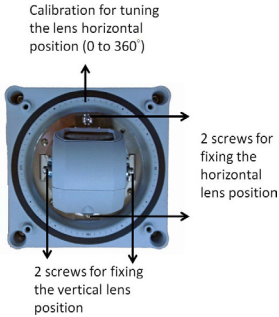
<p>M12 D-code to M12 D-code cable</p>	<p>M12 PoE Switch (ex. TN-5508-4PoE)</p>
<p>M12 D-code and RJ45 cable</p>	<p>RJ45 PoE switch (ex. EDS-P510)</p>

NOTE The power input rating of VPort 16-M12 is 48V/0.17A, and the maximum power consumption is about 6.5W.

NOTE The equipment is designed for in building installation only and is not intended to be connected to exposed (outside plant) networks.

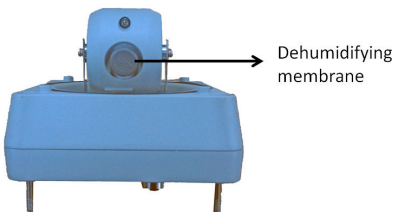
- **Reset button:** loosen the screw and use a pointed stick to push down the reset button to reboot or factor default.
 - **Reboot:** press the button once.
 - **Factory default:** press and hold the button for at least 5 seconds.

Top View without top cover and dome cover



- **Calibration for tuning the lens horizontal position (0 to 360°):** After tuning the lens horizontal position, the user can mark the position with this calibration for future replacement or mass installation.
- **2 screws for fixing the horizontal lens position:** there are 2 screws for fixing the horizontal lens position.
- **2 screws for fixing the vertical lens position:** there are 2 screws for fixing the vertical lens position.

Back View without top cover and dome cover



- **Dehumidifying membrane:** This built-in dehumidifying membrane is for dissipating moisture trapped inside the camera and keeping other moisture out.

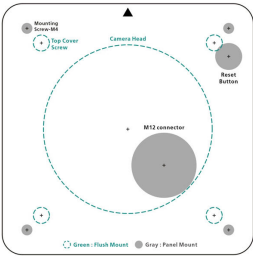
Hardware Installation

Step 1: Open and remove the upper case.

Use the security Torx to loosen the upper case screws.



Step 2: Use the installation sticker for drilling the holes (gray color for panel mounting, and green color for flush mounting).



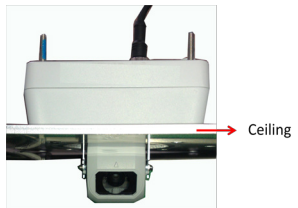
Step 3: Put VPort 16-M12 on the holes

Panel Mount

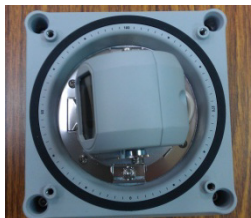
Screw the hex nuts, gaskets and washers for fixing it. Then connect the M12 Ethernet cable.

Flush Mount

Put the camera lens on the hole, and hide the VPort 16-M12's body behind the ceiling.



Step 4: Loosen the screws of horizontal and vertical lens position. Then tune the camera lens position by using the marked calibration or connecting to the VPort 16-M12's web console for viewing the video image. After the lens position is correct, fix the screws.



Step 5: Fix the top cover and then the installation is complete.

Panel Mount

Screw the 4 top cover screws back.



Flush Mount

Screw the 4 flush mount top screws (in accessory) on the top cover



NOTE The 4 flush mount top cover screws can fix VPort 16-M12's top cover on ceilings with a maximum 5 mm of thickness. You can find the M4 screws by yourself, or contact Moxa for special support if you require longer top screws.

Software Installation

Step 1: Configure the VPort 16-M12's IP address

When the VPort 16-M12 is first powered on, the POST (Power On Self Test) will run for a few moments (about 30 seconds). The network environment determines how the IP address is assigned.

Network Environment with DHCP Server

For this network environment, the unit's IP address will be assigned by the network's DHCP server. Refer to the DHCP server's IP address table to determine the unit's assigned IP address. You may also use the Moxa VPort and Ether Device Configurator Utility (edscfgui.exe), as described below:

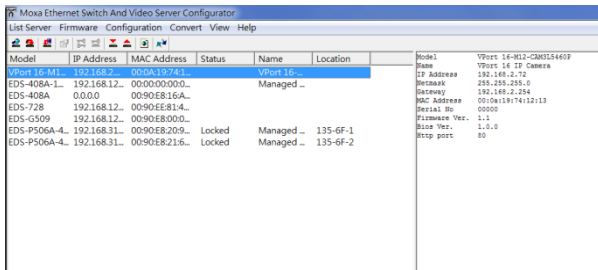
Using the Moxa VPort and EtherDevice Configurator Utility (edscfgui.exe)

1. Run the **edscfgui.exe** program to search for the VPort. After the utility's window opens, you may also click on the **Search** button



to initiate a search.

- When the search has concluded, the Model Name, MAC address, IP address, serial port, and HTTP port of the VPort will be listed in the utility's window.



- Users can double click the selected VPort, or use the IE web browser to access the VPort's web-based manager (web server).

Non DHCP Server Network Environment

If your VPort 16-M12 is connected to a network that does not have a DHCP server, then you will need to configure the IP address manually. The default IP address of the VPort 16-M12 is 192.168.127.100 and the default subnet mask is 255.255.255.0. Note that you may need to change your computer's IP address and subnet mask so that the computer is on the same subnet as the VPort.

To change the IP address of the VPort manually, access the VPort's web server, and then navigate to the **System Configuration → Network → General** page to configure the IP address and other network settings. Check the **Use fixed IP address** to ensure that the IP address you assign is not deleted each time the VPort is restarted.

Step 2: Accessing the VPort 16-M12's web-based manager

Type the IP address in the web browser's address input box and then press enter.

Step 3: Install the ActiveX Control Plug-in

A security warning message will appear the first time you access the VPort's web-based manager. The message is related to installing the VPort ActiveX Control component on your PC or notebook. Click Yes to install this plug-in to enable the IE web browser for viewing video images.



NOTE For Windows XP SP2 or above operating systems, the ActiveX Control component will be blocked for system security reasons. In this case, the VPort's security warning message window may not appear. Users should unlock the ActiveX control blocked function or disable the security configuration to enable the installation of the VPort's ActiveX Control component.

Step 4: Access the homepage of VPort 16-M12's web-based manager.

After installing the ActiveX Control component, the homepage of the VPort 16-M12's web-based manager will appear. Check the following items to make sure the system was installed properly:

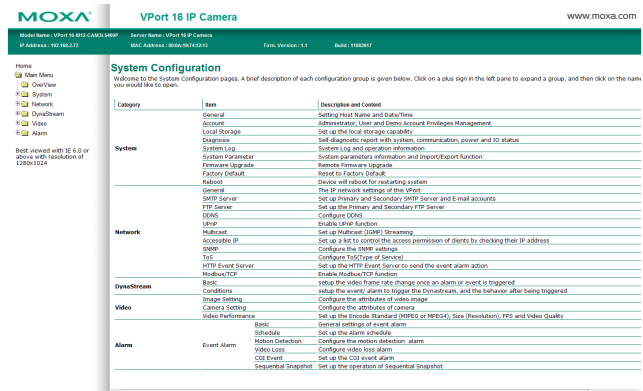
1. Video Images
2. Video Information



Step 5: Access the VPort's system configuration.

Click on **System Configuration** to access the overview of the system configuration to change the configuration. **Model Name, Server Name, IP Address, MAC Address and Firmware Version** appear in the green bar near the top of the page. Use this information to check the system information and installation.

For details of each configuration, check the User's Manual on the software CD.



Wiring Requirements



ATTENTION

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your Moxa VPort 16-M12.

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

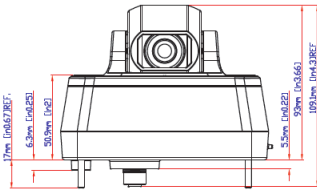
If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

You should also pay attention to the following:

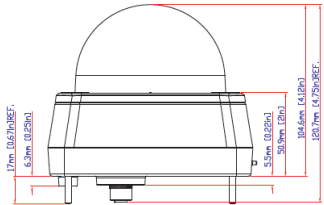
- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.
- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separated.
- It is strongly advised that you label wiring to all devices in the system when necessary.

Dimensions

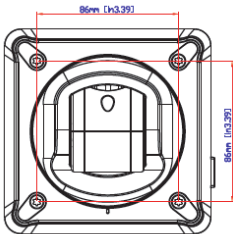
Front View



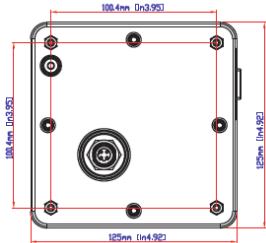
Front View (Dome Model)

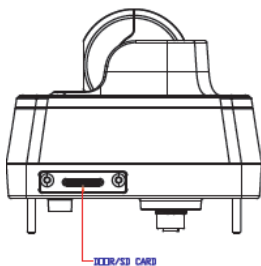
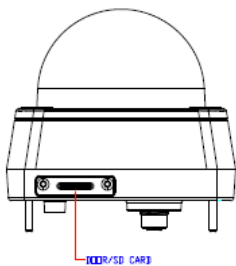


Top View



Bottom View



Side View**Side View (Dome Model)**

Specifications

Camera	
Sensor	1/3" CCD
Lens	3, 3.6, 6, 8, and 16 mm fixed focal length
Angle of view	3.0 mm / F2.0: 120° 3.6 mm / F2.0: 92° 6.0 mm / F1.8: 53° 8.0 mm / F2.0: 40° 16 mm / F2.5: 19°
Modulation	NTSC or PAL
Camera lens angle	pan 360°, tilt 90° (controlled manually)
Illumination (Low light sensitivity)	0.02 Lux at F2.0, color
Synchronization	Internal
White Balance	ATW/ AWC
Electronic Shutter	NTSC: 1/60 to 1/120,000 sec. PAL: 1/50 to 1/120,000 sec.
S/N Ratio	50 dB (MIN) / 58 dB (TYP) (Gamma, Aperture, AGC, OFF)
AGC Control	On/ Off
Flickerless Control	On/ Off
Backlight Compensation	On/ Off
Auto Exposure/ Auto Iris	On/ Off
Image Rotation	Flip, Mirror, and 180° rotation
Image Setting	Manually tuning with brightness, saturation, contrast and hue Built-in 3D-deinterlacing and 3D-DNR (3D digital noise reduction)
Horizontal Resolution	540 TVL
Video	
Video Compression	H.264 (ISO/IEC 14496-10) or MJPEG
Video Output	Via Ethernet port
Video Streams	Maximum of 3 video streams (2 H.264 and 1 MJPEG)

Video Resolution and FPS (Frame per second):

	NTSC		PAL	
	Size	Max. FPS	Size	Max. FPS
QCIF	176 x 112	30	176 x 144	25
CIF	352 x 240	30	352 x 288	25
VGA	640 x 480	30	640 x 480	25
4CIF	704 x 480	30	704 x 576	25
Full D1	720 x 480	30	720 x 576	25
SVGA	800 x 600	30	800 x 600	25

Video Viewing	DynaStream™ supported for changing the video frame rate automatically Adjustable image size and quality Timestamp and text overlay Maximum of 10 simultaneous unicast connections
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Network

Protocols	TCP, UDP, HTTP, SMTP, FTP, Telnet, NTP, DNS, DHCP, UPnP, RTP, RTSP, ICMP, QoS, SNMPv1/v2c/v3, DDNS, TFTP, OPT 66/67
Ethernet	1 10/100BaseT(X) Ethernet port, M12 D-code connector

Local Storage

SD Socket	Standard SD socket (SDHC)
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Power Requirements

Input	Power-over-Ethernet (IEEE 802.3af)
Consumption	Maximum 6.5W

Physical Characteristics

Housing	Metal and glass, optional PC dome cover, IP66-rated
Dehumidifying Membrane	GORE protective vent
Dimensions	Standard model: 125 x 125 x 109.1 mm (5.6 x 5.6 x 4.3in) Dome model: 125 x 125 x 120.7 mm (5.6 x 5.6 x 4.8 in)
Weight	Standard model: 840 g Dome model: 850 g
Installation	Surface (ceiling) or flush (recessed) mounting

Environmental Limits

Operating Temperature	-25 to 55°C (-13 to 131°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Regulatory Approvals	
Safety	UL60950-1
EMI	FCC Part 15 Subpart B Class A, EN 55022 Class A
EMS	EN61000-4-2 (ESD), Level 3 EN61000-4-3 (RS), Level 3 EN61000-4-4 (EFT), Level 3 EN61000-4-5 (Surge), Level 3 EN61000-4-6 (CS), Level 3 EN61000-4-8 EN61000-4-11
Rolling Stock	EN 50155:2007 compliance (shock, vibration, temperature, EMC)
Shock	IEC60068-2-27
Freefall	IEC60068-2-32
Vibration	IEC60068-2-6
Vandal resistance	IEC62262, Class IK10 (dome model)
MTBF (Mean-time between failure)	59,314 hours (Telcordia (Bellcore), 25°C)
Warranty	3 year
Alarm Features	
<p>Intelligent Video: Tamper alarm (Pending) Video Motion Detection: Includes sensitivity tuning Video Loss: Video loss alarm Scheduling: Daily repeat timing schedule Imaging: JPEG snapshots for pre/trigger/post alarm images Custom Alarms: HTTP event servers for setting customized alarm actions Pre-alarm Buffer: 9 MB video buffer for JPEG snapshot images Local Video Recording: Triggered by the alarm within the given time period</p>	
Security	
<p>User level password protection IP address filtering</p>	
Minimum Viewing System Requirements	
<p>Pentium 4, 2.4 GHz 512 MB of memory Windows XP/2000 with SP4 or above Internet Explorer 6.x or above DirectX 9.0c or above</p>	
Software Development Kit	
VPort SDK PLUS	Includes CGI commands, ActiveX Control, and API library for customized applications or system integration for third-party developer
Standard	ONVIF

Technical Support Contact Information
www.moxa.com/support

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