Moxa VPort 16-M12 User's Manual

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www.moxa.com/product

Moxa VPort 16-M12 User's Manual

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Technical Support Contact Information

www.moxa.com/support

Moxa Americas
Toll-free: 1-888-669-2872
Tel: +1-714-528-6777
Fax: +1-714-528-6778

Moxa Europe
Tel: +49-89-3 70 03 99-0
Fax: +49-89-3 70 03 99-99

Moxa China (Shanghai office)
Toll-free: 800-820-5036
Tel: +86-21-5258-9955
Fax: +86-21-5258-5505

Moxa Asia-Pacific
Tel: +886-2-8919-1230
Fax: +886-2-8919-1231

Before Getting Started

Before using your VPort 16-M12, please pay close attention to the following instructions:

❒ After opening the VPort 16-M12 box, compare the contents of the box with the **Package Checklist in Chapter 1**. Notify your sales representative if any of the items are missing or damaged.

❒ To prevent damage or problems caused by improper use, read the **Quick Installation Guide** (the printed handbook included in the package) before assembling and operating the device and peripherals. You may also refer to **Chapter 1**, under **Product Description**, and all of **Chapter 2**, of this manual.

❒ If you experience a system error, and the system cannot be recovered, refer to the **Troubleshooting** section in **Chapter 7** to learn how to restore factory default settings and reinstall the system.

❒ The VPort 16-M12 IP Camera has been designed for various environments and can be used to build various applications for general security or demonstration purposes. For standard applications, refer **Chapter 2, Getting Started**, and **Chapter 3, Accessing the VPort 16-M12 Web-based Manager**.

Important Note

❒ Surveillance devices may be prohibited by law in your country. Since VPort is both a high performance surveillance system and networked video server, verify that the operations of such devices are legal in your locality before installing this unit for surveillance purposes.

Table of Contents

1

Introduction

The VPort 16-M12 is a rugged IP camera designed for use in harsh environments. In addition to being able to handle basic video feeds, many advanced features are also included to set up surveillance or web multimedia applications. The VPort 16-M12 is designed to provide stability, robustness, ease-of-use, and flexibility.

The following topics are covered in this chapter:

❑ **Overview**
❑ **Package Checklist**
❑ **Product Features**
❑ **Typical Application**
❑ **Product Description**

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.

High Quality 1/3" Sony CCD sensor with advanced 3D de-interlacing

The VPort 16-M12 IP camera uses a 1/3" Sony CCD sensor with high sensitivity to light, especially in a low illumination (lux) environment. To eliminate interlacing artifacts, a dedicated de-interlacing chip featuring advanced 3D de-interlacing is used for processing to progressive video monitors.

Comes with 5 fixed focal length lenses, to meet a variety of viewing requirements

The VPort 16-M12 IP camera is designed for rolling stock IP CCTV applications. For different viewing angle requirements, it comes with 5 fixed focal length lenses to satisfy most application needs: 3.0mm, 3.6mm, 6.0mm, 8.0mm and 16mm.

High Performance H.264/MPEG4 Video Compression

Video input can be efficiently compressed into H.264/MJPEG video stream packets in real time. This is done without sacrificing remote monitoring capability or storage. Five levels of compression quality and four different image resolutions provide greater versatility.

Three video streams for meeting versatile application requirements

VPort 16-M12 is a powerful IP Camera. Aside from the high quality H.264 video compression, it can also generate a maximum of three video streams: two H.264 and one MJPEG simultaneously, to meet the needs of specific applications. For example, the user can view the h.264 video streams with full D1 resolution at 30FPS, do MJPEG image analysis with full D1 resolution at 10FPS, and record the H.264 video streams with CIF resolution at 30FPS.

Video latency under 200ms (milliseconds) for more real-time video

In some mission critical environments, low video latency is a key requirement. For example, a highway transportation system monitors vehicles that are moving very quickly. The video display in the traffic control center needs to reflect actual current traffic conditions. Therefore, the video latency must be under 200ms.

Rugged design for mobile video surveillance environments

The VPort 16-M12 is a rugged IP camera designed for mobile IP CCTV applications. With its PoE (Power-over-Ethernet, 802.3af) power input, M12 Ethernet connector, IP66 protection, and surface/flush mounting, the VPort 16-M12 meets the critical requirements of mobile video surveillance applications like rolling stock, buses, and mining vehicles. Most importantly, the VPort 16-M12 can operate reliably within a -25 to 55°C temperature range, placing it within the T1 class of the EN50155's temperature requirements. It also satisfies the anti-vibration criteria in EN61373, making it especially suitable for rolling stock video surveillance. In addition, a dehumidifying membrane is provided to dissipate moisture inside the camera while also protecting the camera from exterior water, giving it full IP66 protection to help it deliver clear images, even in low-temperature environments.

SD Card for recording video locally when the network is down

The VPort 16-M12 is equipped with an SD card socket (SDHC, V2.0) for local storage and offline data logging, in the event of network interruptions. Currently, the VPort 16-M12 supports SD cards up to 32 GB.

RTSP for easy integration with existing systems

RTSP (Real-time Streaming Protocol) is a client-server multimedia presentation control protocol, which ensures interoperability among video devices and software. Hardware or software that supports RTSP streaming can easily identify and decode the video stream without the hassle of codec installation. For example, users can view video images from the VPort 16-M12 directly with Quick Time and VLC, both of which support RTSP streaming.

Multicast (IGMP) transmission for network efficiency

Transmitting digital video images via an IP network requires many times the bandwidth required for transmitting general data. For this reason, the efficiency of network bandwidth management is one of the most important factors that determine the performance of a video over IP surveillance system. The VPort 16-M12 supports multicast transmission with the IGMP protocol, which can reduce the bandwidth requirements when multiple clients access the same video stream, and greatly increases the efficiency of network bandwidth management.

Easy web access using standard browsers

There is no need to install new software to access the IP camera, since the embedded web server allows users to use any popular web browser to access the IP camera from anywhere over the Internet. As long as you are connected to the network, you will be able to view the same images seen by your cameras.

Built-in 3 area-selectable Video Motion Detection (VMD)

External sensors are not required, since the video image can be configured to detect motion in 3 areas, making it easy to set up a security system either in your office or in the field. And the customizable settings allow you to tune the system for both object size and sensitivity, making the IP Camera adaptable to different environments.

Weekly schedule for automated surveillance

The user-defined time period will check security settings on a weekly basis, and send notifications or drive external devices, making the VPort 16-M12 suitable for more versatile applications.

SDK support for developers

The high-performance IP camera can be integrated into many applications—without busting your budget—and the complete programming interface of the Moxa VPort SDK PLUS makes the developer's job easy and straightforward. To ask about SDK requirements, please contact a Moxa sales representative for details and an application form.
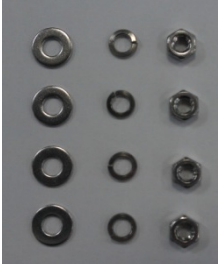
Package Checklist

The Moxa VPort 16-M12 is shipped with the following items. If any of these items are missing or damaged, please contact your sales representative for assistance.

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

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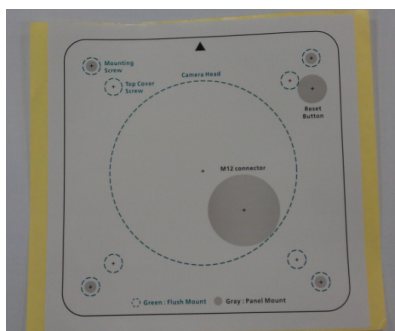
- Quick Installation Guide
- Document & Software CD (includes User's Manual, Quick Installation Guide, and VPort Utility)
- Warranty Statement

NOTE: *Notify your sales representative if any of the above items is missing or damaged.*

Product Features

- 1/3" Sony CCD image sensor
- 3D de-interlacing, for display on progressive video monitors
- Features white balance (ATW/AWC); 3D Digital Noise Reduction (3DNR); Automatic Gain Control (AGC); slow shutter; Automatic Electronic Shutter (AES); and Back Light Compensation (BLC)
- Minimum illumination of 0.02 lux (color)
- Supports the MJPEG and H.264 Codecs
- Provides 3 simultaneous H.264/MJPEG video streams
- Streaming framerates up to 30 frames/sec at SVGA (800x600) resolution
- Video latency under 200 ms
- DynaStream support with dynamic frame rate change, for network efficiency
- Can accomodate VGA/SVGA/QCIF/CIF/4CIF and Full D1 resolutions
- Supports TCP, UDP and HTTP network transmission modes
- Supports DHCP OPT66/67 for automatic configuration from a TFTP server, which can ease installation efforts during mass installations.
- Supports RTSP
- Supports Multicast (IGMP) video streaming
- Supports SNMP (V1/V2C/V3), for network system integration and management
- Supports QoS (ToS) transmission prioritizing
- 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 essential sections of EN50155 (IEC 60571)
- 1 10/100BaseT(X) with M12 D-code connector
- IP66 rated rain and dust protection, with dehumidifying membrane
- Power-over-Ethernet enabled (PoE, 802.3af)
- Optional domed polycarbonate cover rated at IK10 vandal resistance, to meet EN62262
- Supports both flat (ceiling) and flush (recessed) mounting
- Operates within -25 to 55°C temperature range: suitable for rolling stock environments
- CE, FCC, UL60950-1
- Built-in Video Motion Detection (VMD)
- Video loss alarm
- Supports pre-, post-, and trigger snapshots
- Sequential pre-event snapshot images
- Sequential snapshot images supported
- Supports SMTP and FTP for transmission of alarm messaging
- Event-driven HTTP server
- 3-year warranty
- Meets ONVIF standards
- Supports Moxa SoftNVR-IA IP surveillance software, a video recording and management solution
- Free Moxa VPORT SDK PLUS support, with flexible interface and sample code for customized applications or system integration
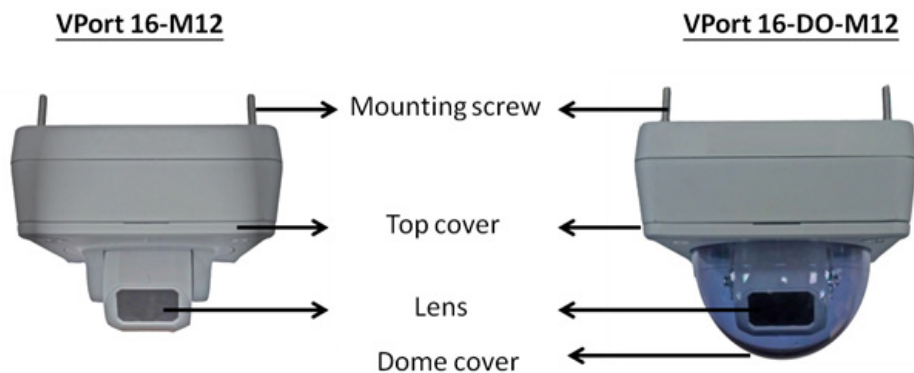
NOTE   If you are interested in Moxa's VPORT SDK PLUS, please go to Moxa's website www.moxa.com to download the package, or contact a Moxa sales representative for more information about this SDK

Typical Application
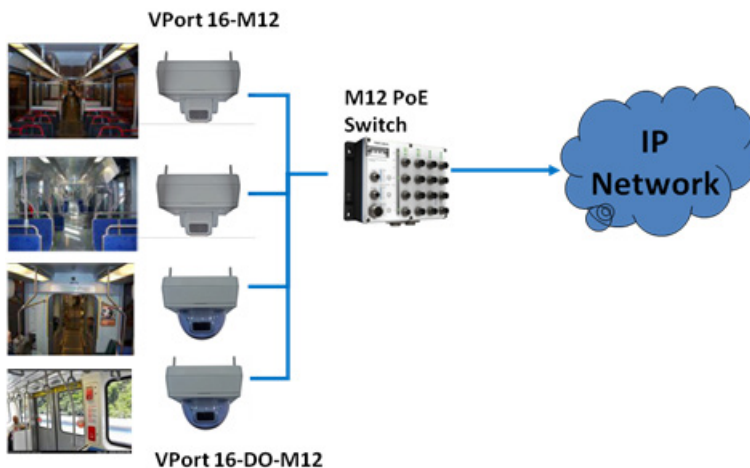
Product Description

<u>**Appearance**</u>

- **Mounting screw:** there are four nylock M4 screws for mounting the VPort 16-M12 on walls or ceilings, giving an external length of about 20mm. These 4 mounting screws can be fastened with nuts, gaskets and spring washers, or directly screwed into a pilot hole.

NOTE	If the mounting screw length does not satisfy your installation requirements, please contact your Moxa sales representative for customization service.

- **Top cover:** The clear top cover can be removed for adjusting lens position.
- **Lens:** The VPort 16-M12 provides 5 fixed focal length lenses with distinct auxliary model names (-CAMxxxxxxx): 3.0mm, 3.6mm, 6mm, 8mm and 16mm
- **Domed cover:** The VPort 16-DO-M12 comes with a polycarbonate (PC) domed cover that is certified vandal-proof to IK10 according to the EN62262 (IEC62262) standard.

NOTE	The color of the domed cover can be customized based on your installation environment, but please note that tinted covers will decrease video image light transmittance (lux). The darker the cover is, the greater the lux decrease will be. Please contact your Moxa sales representative for details on any proposed customization.

Top View
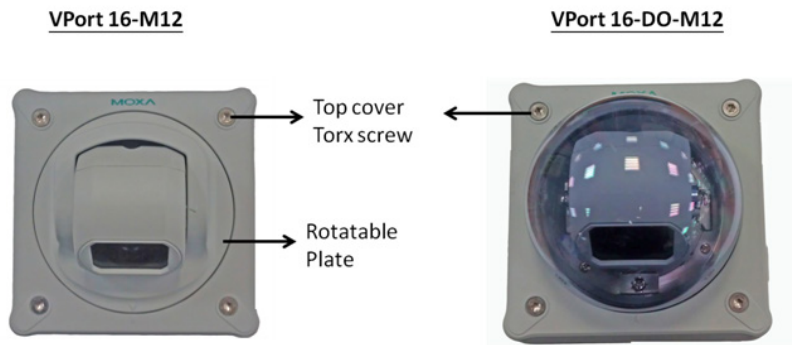
- **Base cover torx screw:** To remove the top (base) cover, you can use the L type torx screw driver.
- **Rotation plate:** this plate can be turned manually to fix the horizontal position of the lens.

Side View
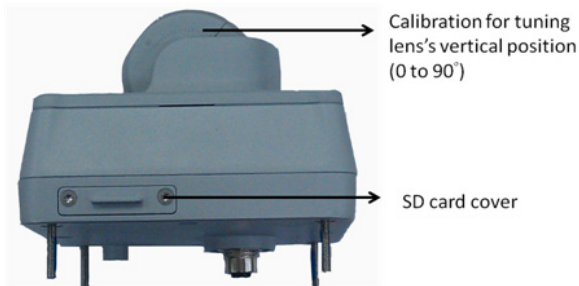
- **Calibration for vertical tuning of the lens position (0 to 90˚):** After vertically positioning the lens, users can mark the position for future placements or mass installations.
- **SD card cover:** to utilize the SD slot for local storage, users must remove the slot cover with an L-type torx screwdriver.

NOTE	The VPort 16-M12 supports a standard SDHC interface. Users can use SD cards suitable for this specification. Transcend or Sandisk SD cards are recommended, particularly Sandisk Extreme III SD, because of their rapid read/write speed.

NOTE	To check if the SD card has been successfully mounted, access the VPort's web-based manager and check under system configuration-> Local storage.

Bottom View

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

PIN	TX
1	TD+
2	RD+
3	TD−
4	RD−

NOTE   To connect the VPort 16-M12 to a network, use Ethernet cables with D-code M12 connectors and either an M12 PoE or RJ45 PoE switch

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

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

NOTE   This equipment is designed for interior installations only, and is not intended for use in exposed (exterior) networks.

- **Reset button:** Loosen the screw and use a pointed wire to depress the reset button for either simple rebooting or resetting to factory defaults.
    - ➢ **Reboot:** Depress the button one time, and release.
    - ➢ **Reset to factory defaults:** Depress the button and hold for at least 15 seconds.

Top view, with top (base) and domed cover removed

Calibration for tuning
the lens horizontal
position (0 to 360°)

2 screws for
fixing the
horizontal
lens position

2 screws for fixing
the vertical lens
position
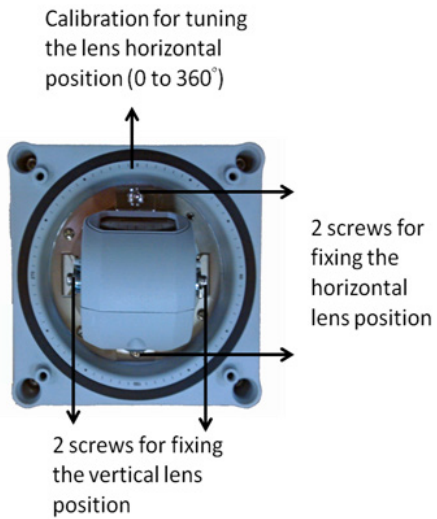
- **Calibration for tuning horizontal lens position (0 to 360˚):** After horizontally positioning the lens, users can mark the position for future placements or mass installation.
- **Fixing the horizontal lens position:** The 2 screws at the camera side will aid in fixing the horizontal lens position.

Back View with top (base) cover and domed cover removed

Dehumidifying
membrane
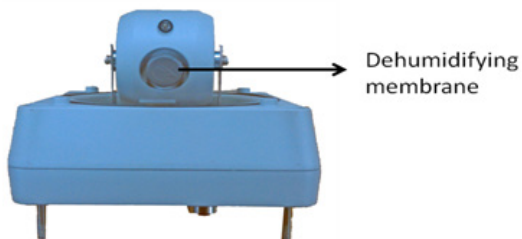
- **Dehumidifying membrane:** This built-in dehumidifying membrane dissipates condensed moisture inside the camera while keeping exterior moisture out.

2

Getting Started

This chapter includes information about how to install a VPort 16-M12 IP camera.

The following topics are covered in this chapter:

❒ **Before Getting Started**

❒ **First-Time Installation and Configuration**

    ➢ Hardware Installation

    ➢ Software Installation

❒ **VPort 16-M12 Dimension**

❒ **Wiring Requirements**

Before Getting Started

In what follows, "user" refers to those who can access the IP camera, and "administrator" refers to the person who knows the root password that allows changes to the IP camera's configuration, in addition to providing general access. Administrators should read this part of the manual carefully, especially during installation.

First-Time Installation and Configuration

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 template for drilling mount holes (gray marks are for a panel layout, green marks are for a flush layout).
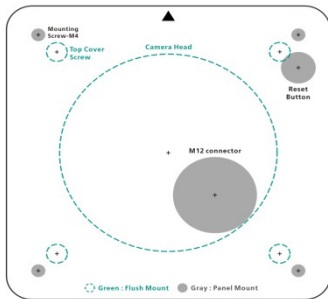
Step 3: Mount the VPort 16-M12 over the holes

Panel Mount	Flush Mount
Fasten hex nuts, gaskets and washers, then connect the M12 Ethernet cable. 	Insert the camera lens through the hole, leaving the VPort 16-M12's body concealed behind the mounting surface.

Step 4: To tune lens position, loosen the screws that fix the camera's horizontal and vertical axes; next, users may position the camera according to previously marked calibrations, or via the VPort 16-M12's web console. After the desired lens position has been acquired, affix the screw
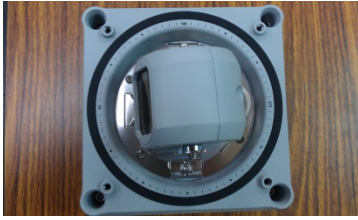
Step 5: Affix the top cover, and the installation is completed.

For Panel Mounts	For Flush Mounts
Re-fasten the 4 base cover screws directly into the base.	Fasten the top (base) cover with the 4 screws (accessories) as shown

---

NOTE   For flush mounts, the 4 top (base) cover screws will fix the VPort 16-M12's top cover to a ceiling panel of 5 mm thickness, maximum. If the standard M4 screws are inadequate, customers may contact their Moxa sales rep to order longer 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 will determine how the IP address is assigned.

Network Environment with DHCP Server

When automatically assigning IP addresses via DHCP server, refer to the DHCP server's IP address table to determine the unit's assigned address. You may also use the Moxa VPort and Ether Device Configuration Utility (edscfgui.exe), as described below:

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

1. Run the **edscfgui.exe** program to search for the VPort device. After the application window opens, click on the **Search** button ⬚ to initiate a search.
2. When the search has concluded, the VPort's Model Name, MAC address, IP address, serial port, and HTTP port should be listed in the utility's window.
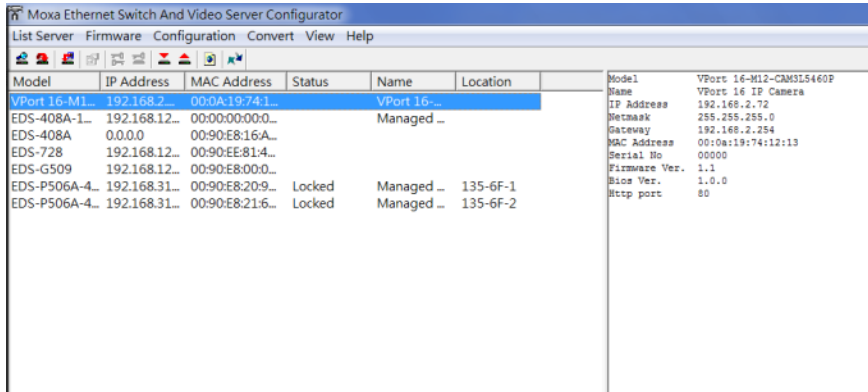
3. Users can double click the selected VPort, or use the IE web browser to access the VPort's web-based manager (web server).

Manual Address Assignment

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 navigate the **System Configuration → Network → General** page to configure the IP address and other network settings. Toggle 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 AcitveX Control component on your PC or notebook. Click **Yes** to install this plug-in to enable viewing of video images over the IE web browser.

NOTE	For Windows XP SP2 systems or later, 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 access the operating system control panel to unblock ActiveX controls or disable the security configuration to enable the installation of the VPort's ActiveX Control component.

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

After installing the ActiveX Control component, enter the IP address of the VPort device to access its web-based controls; they should immediately appear. Check the following items to make sure the system was installed properly:

1. Video Images
2. Video Information

Step 5: Access the VPort system configuration.

Click on **System Configuration** to display a system overview. The **Model Name**, **Server Name**, **IP Address**, **MAC Address** and **Firmware Version** will appear in the green bar at the top of the page. Use this information to review the installation details.

For details about configuration settings, check the User's Manual on the software CD.

VPort 16-M12 Dimension

Front View

Front View (Dome Model)

Top View

Bottom View

Side View

Side View (Dome Model)
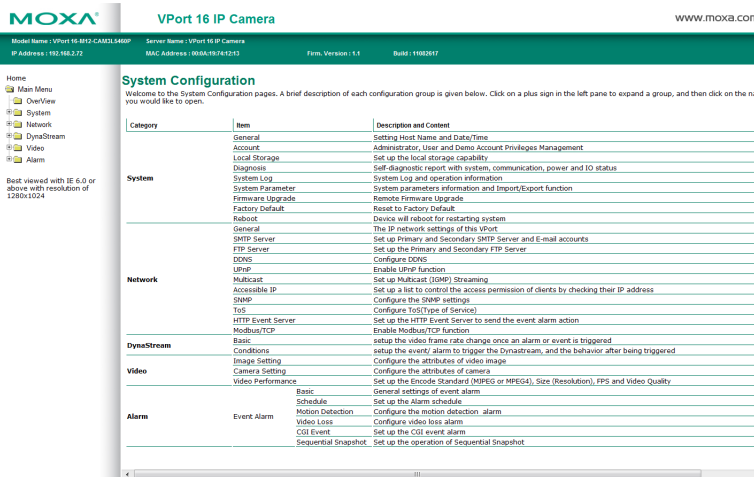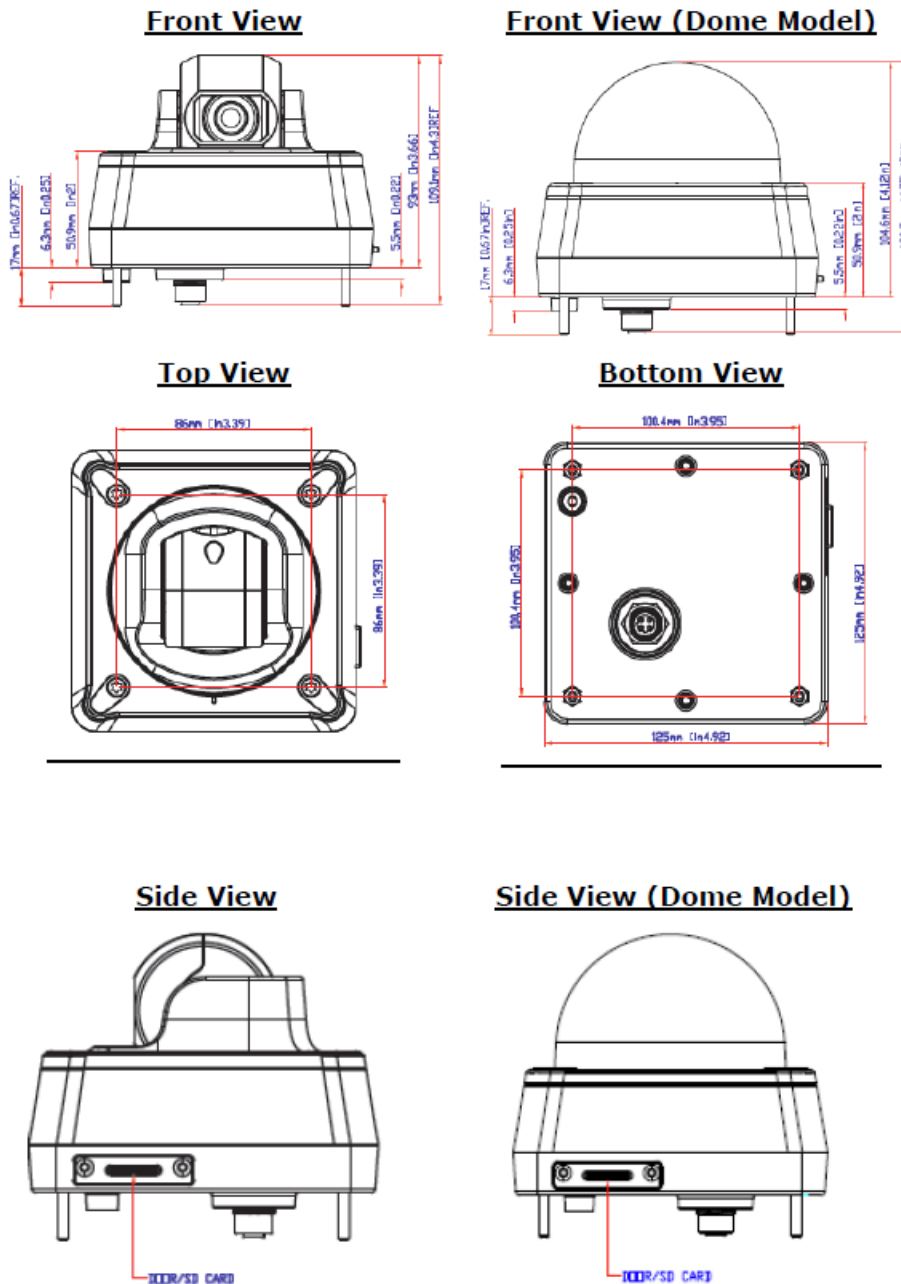
(Unit=mm)

Wiring Requirements

⚠️ **ATTENTION**

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.
NOTE: Do not run signal or communications wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- 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 separate.
- It is strongly advised that you label wiring to all devices in the system when necessary.

3

Accessing the VPort 16-M12's Web-based Manager

This chapter includes information about how to access the VPort 16-M12 IP camera for the first time.

The following topics are covered in this chapter:

❑ **Functions Featured on the VPort's Web Homepage**

  ➢ VPort's Information

  ➢ IP Camera Name

  ➢ Camera Image View

  ➢ Client Settings

  ➢ System Configuration

  ➢ Video Information

Functions Featured on the VPort's Web Homepage

The homepage of the VPort's web console shows information specific to that VPort, the camera image, and configurations for the client and server.
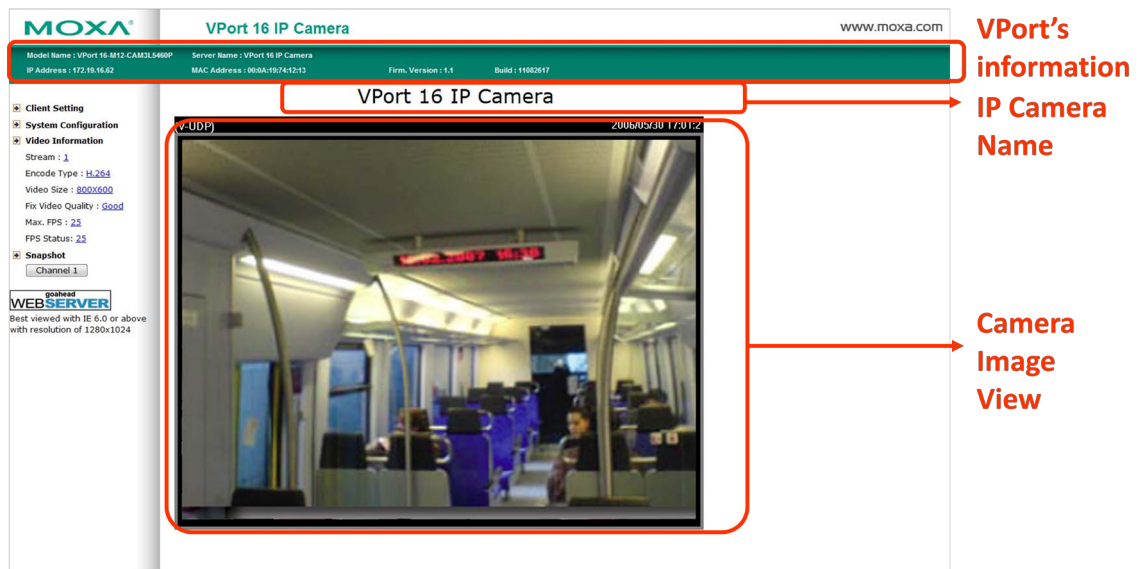
VPort's Information

This section shows the VPort's model name, server name, IP address, MAC address, and the firmware version.

IP Camera Name

A server name can be assigned to each server. Administrators can change the name in **System Configuration/System/General**. The maximum length of the sever name is 40 bytes.

Camera Image View

The assigned image description and system date/time will be displayed in the caption above the image window. You may disable the caption or change the location of the image information in **System Configuration/Video/Image Setting**. Note that if the VPort's motion detection function is active, some windows in the video picture might be framed in red.

Client Settings

Users can configure the following functions in **Client Settings**.

1. **Encoder standard:** Shows the encoding algorithm currently being used. VPort 16-M12 features built-in 2 encode engine to generate a maximum of three simultaneous video streams. Each client can select the H.264 video streams from Stream 1, or the MJPEG/ H,264 video stream from Stream 2. To configure these video streams, please go to:
   System Configuration/Video/Video Performance.

2. **Protocol Options:** Choose one of four protocols to optimize your usage—Multicast (RTSP or Push) or Unicast (UDP, TCP, HTTP).

- **Multicast** protocol can be used to send a single video stream to multiple clients. In this case, a lot of bandwidth can be saved since only one video stream is transmitted over the network. However, the network gateway (e.g., a switch) must support the multicast protocol (e.g., IGMP snooping). Otherwise, the multicast video transmission will not be successful.

  ➢ **RTSP:** Enable the multicast video stream to be sent in RTSP control, which means the multicast video stream will be sent only it receives the client's request.

  ➢ **Push:** Enable the multicast video stream to be sent in Push control, which means that after this setting is selected the multicast video stream will be sent continuously even without any client request.

- Unicast protocol is used to send a single video stream to one client.

  ➢ **UDP** can be used to produce audio and video streams that are more real-time. However, some packets may be lost due to network burst traffic, and images may become blurred.

  ➢ **TCP** can be used to prevent packet loss, which results in a more accurate video display. The downside of using TCP is that the real-time delay is worse than with UDP protocol.

  ➢ **HTTP** can be used to prevent being blocked by a router's firewall. The downside of using HTTP is that the real-time delay is worse than with UDP protocol.

- **Network Interface** designates the connection interface for multicast video streams selection. The box lists the current NIC interfaces. Select which NIC interface will receive multicast streams.

Once the IP camera is connected successfully, Protocol Options will indicate the selected protocol. The selected protocol will be stored on the user's PC, and will be used for the next connection.

NOTE   For multicast video stream settings, please refer to **System Configuration → Network → Multicast**.

Client Setting

Channel 1

Encode Standard
◉ **Stream 1:** H.264   ◯ **Stream 2:** MJPEG ▾
Protocol Option
◯ Multicast RTSP ▾ ◉ Unicast UDP ▾

Network Interface 172.19.10.17 ▾

Save

System Configuration

A button or text link on the left side of the system configuration window only appears on the administrator's main page. For detailed system configuration instructions, refer to Chapter 4, **System Configuration**.

Video Information

Users can easily monitor the current video performance by looking at the **Video Information** shown on the left side of the homepage. The following properties are shown: Video Size, Video Quality (Fixed bit rate or Fixed video quality), Max. FPS (frames per second), and (current) FPS Status. Users can select the target camera image to view each camera's video performance.

4

System Configuration

After installing the hardware, the next step is to configure the VPort 16-M12's settings. Users can configure by web console.

The following topics are covered in this chapter:

❑ **System Configuration by Web Console**

➢ System

➢ Network

➢ DynaStream™

➢ Video

➢ Alarm

System Configuration by Web Console

System configuration can be done remotely with Internet Explorer. To access the server, type the system configuration URL, **http://<IP address of Video Server>/overview.asp**, to open the configuration main page.

There are six configuration categories: **System, Network, Video, Serial Port, Audio**, and **Alarm**. A description of each configuration item is shown in the table below:

Category	Item		Description and Contents
System	General		Set Host Name and Date/Time
	Accounts		Administrator, User, and Demo Account Privileges Management
	Local Storage		Configure the local storage settings
	Diagnosis		Self-diagnostic report with system, communication, power, and LED status
	System Log		System Log and operation information
	System Parameter		System parameter information and Import/Export functions
	Firmware Upgrade		Remote Firmware Upgrade
	Factory Default		Reset to Factory Default
	Reboot		Device will reboot for restarting system
Network	General		The IP network settings of this VPort
	SMTP Server		Set up Primary and Secondary SMTP Server and e-mail accounts
	FTP Server		Set up the Primary and Secondary FTP Server
	DDNS		Configure Dynamic DNS service
	Universal PnP		Enable UPnP function
	Multicast Setting		Set up Multicast (IGMP) Streaming
	Accessible IP		Set up a list to control the access permission of clients by IP address
	SNMP		Configure the SNMP settings
	ToS		Configure ToS (Type of Service)
	HTTP Event Server		Set up the HTTP Event Server to send the event alarm action
	Modbus/ TCP		Enable Modbus/TCP function
DynaStream	Basic		setup the video frame rate change once an alarm or event is triggered
	Conditions		setup the event/ alarm to trigger the Dynastream, and the behavior after being triggered
Video	Image Settings		Configure the attributes of the video image
	Camera Settings		Configure the attributes of camera
	Video Performance		Set up the Encode Standard (MJPEG or MPEG4), Size (Resolution), FPS and Video Quality
	Event Alarm	Basic	General event alarm settings
		Schedule	Set up the Alarm schedule
		Motion Detection	Configure the motion detection alarm
		Video Loss	Configure the video loss alarm
		CGI Event	Set up the CGI event alarm
		Sequential Snapshot	Set up the operation of Sequential Snapshot

This table can also be found on the **System Configuration → Overview webpage**.

System Configuration

Welcome to the System Configuration pages. A brief description of each configuration group is given below. Click on a plus sign in the left pane to expand a group, and then click on the name you would like to open.

Category	Item		Description and Content
System	General		Setting Host Name and Date/Time
	Account		Administrator, User and Demo Account Privileges Management
	Local Storage		Set up the local storage capability
	Diagnosis		Self-diagnostic report with system, communication, power and IO status
	System Log		System Log and operation information
	System Parameter		System parameters information and Import/Export function
	Firmware Upgrade		Remote Firmware Upgrade
	Factory Default		Reset to Factory Default
	Reboot		Device will reboot for restarting system
Network	General		The IP network settings of this VPort
	SMTP Server		Set up Primary and Secondary SMTP Server and E-mail accounts
	FTP Server		Set up the Primary and Secondary FTP Server
	DDNS		Configure DDNS
	UPnP		Enable UPnP function
	Multicast		Set up Multicast (IGMP) Streaming
	Accessible IP		Set up a list to control the access permission of clients by checking their IP address
	SNMP		Configure the SNMP settings
	ToS		Configure ToS(Type of Service)
	HTTP Event Server		Set up the HTTP Event Server to send the event alarm action
	Modbus/TCP		Enable Modbus/TCP function
DynaStream	Basic		setup the video frame rate change once an alarm or event is triggered
	Conditions		setup the event/ alarm to trigger the Dynastream, and the behavior after being triggered
Video	Image Setting		Configure the attributes of video image
	Camera Setting		Configure the attributes of camera
	Video Performance		Set up the Encode Standard (MJPEG or MPEG4), Size (Resolution), FPS and Video Quality
Alarm	Event Alarm	Basic	General settings of event alarm
		Schedule	Set up the Alarm schedule
		Motion Detection	Configure the motion detection alarm
		Video Loss	Configure video loss alarm
		CGI Event	Set up the CGI event alarm
		Sequential Snapshot	Set up the operation of Sequential Snapshot

System

General Settings

On the **General Settings** page, administrators can set up the video **Server name** and the **Date and Time**, which is displayed in the image's caption.

General Settings

Server name :   VPort 16 IP Camera

Date and Time:

- ◉ Keep current date and time
- ○ Sync with computer time
  - PC date: 2012/01/16 [yyyy/mm/dd]
  - PC time: 19:14:04 [hh:mm:ss]
- ○ Manual
  - Date: 2006/05/30 [yyyy/mm/dd]
  - Time: 17:36:00 [hh:mm:ss]
- ○ Automatic
  - 1st NTP server:
  - 2nd NTP server:
  - Time zone: GMT ▼
  - Update interval: 15 min ▼

[Save]

Server name

Setting	Description	Default
Max. 40 characters	Use a different server name for each server to help identify the different servers. The name appears on the web homepage.	VPort 16 IP camera

Date and Time

Setting	Description	Default
Keep current date and time	Use the current date and time as the VPort's time setting.	Keep current date and time
Sync with computer time	Synchronize VPort's data and time setting with the local computer time.	
Manual	Manually change VPort's date and time setting.	
Automatic	Use the NTP server for changing VPort's date and time setting in a given period.	

NOTE	Select the **Automatic** option to force the VPort to synchronize automatically with timeservers over the Internet. However, synchronization may fail if the assigned **NTP server** cannot be reached, or the VPort is connected to a local network. Leaving the **NTP server** blank will force the VPort to connect to default timeservers. Enter either the Domain name or IP address format of the timeserver if the DNS server is available.
	2 NTP servers may be set as backups, and update intervals can be configured from a minimum of 15 minutes to a maximum of one month.
	Don't forget to set the **time zone** in local settings. Refer to Appendix C for your region's time zone.

Account Privileges

Different account privileges are available for different purposes.

Admin password

Setting	Description	Default
Admin Password (max. 14 characters)	The administrator can type the new password in this box.	Default admin password is "admin"
Confirm Password (max. 14 characters)	If a new password is typed in the **Admin Password** box, you will need to retype the password in the **Confirm Password** box before updating the new password.	

NOTE	The default account name for administrator is **admin**; the administrator account name cannot be changed.

User's Privileges

VPort products provide 10 user accounts for accessing the VPort.

Setting	Description	Default
User Name	Type a specific user name for user authentication.	None
Password	Type a specific password for user authentication.	

NOTE	The FPS of the video stream will be reduced as more and more users access the same VPort. Currently, the VPort 16-M12 is only allowed to send 10 unicast video streams. Therefore, limit the number of users simultaneously accessing a VPort 16-M12 to prevent performance problems.

Local Storage

The VPort 16-M12 supports an SD card slot (SDHC interface) for recording video when the network goes offline, or when preconfigured events (alarms) occur. Administrators can download these recorded videos via FTP, or remove the SD card and directly copy the files via a card reader.

Local Video Recording Setting

Setting	Description	Default
Enable video recording once there is an event/alarm	Enable the video recording action once there is an event/alarm	Enable

Recording Stream

Setting	Description	Default
Stream 2: H.264 or Stream 2: MJPEG	Select the H.264 or MJPEG of stream 2 for video recording	Stream 2: MJPEG

FTP Daemon

Setting	Description	Default
Enable FTP daemon	Enable the FTP service for downloading the recorded video files by the administrator	Enable
Server Port	The FTP server port number	21

SD card

Setting	Description	Default
Reboot the system when the SD card fails to mount	This function can reboot the system when the SD card mount fails to re-detect the SD mount.	Enable

NOTE	The recorded videos will be stored in the "/VPortfolder" folder. Each recorded file is 10 seconds of video. These are AVI files for playback in a popular media player.

NOTE	Due to file system limitations, the maximum number of files is 16584. When the number of files in the SD card is up to 16584, or the free space is under 100MB, the system will start to delete the oldest files.

System Diagnosis

VPort products have a self-diagnosis function to let the administrator get a quick view of the system and connection status. Administrators can save this diagnosis information in a file (diagnosis.log) by clicking the **Export to a File** button, or send the file via email by clicking the **Send a Report via Email** button.

System Diagnosis

System Status

System

Serve Name:VPort 16 IP Camera	Firmware Version:1.1 Build 11082617
Date/Time: Keep current data and time	User Accounts:0
Local Recording Setting	
Local Record: Enable	
FTP Server Daemon	
FTP Daemon: Disable	Server Port: 21

Network

Access Method:Get IP address automatically	IP Address:172.19.16.62
Gateway:172.19.16.254	Subnet Mask:255.255.255.0
Primary DNS:192.168.50.33	Secondary DNS:192.168.1.97
HTTP Port:80	RTSP Port:554
Unicast Access Name:udpstream	Multicast Access Name:multicaststream
HTTP Access Name:/moxa-cgi/udpstream	
1st SMTP Server:Disable	2nd SMTP Server:Disable
1st Recipient Email Address:	2nd Recipient Email Address:
1st Sender Email Address:	2nd Sender Email Address:
1st FTP Server:Disable	2nd FTP Server:Disable
1st FTP Passive Mode:Disable	2nd FTP Passive Mode:Disable
Accessible IP List:Disable	UPnP:Enable
SNMP Version:V1, V2c, V3	Admin Auth. Type:No-Auth
ToS:Disable	DSCP Value:00
DDNS:Disable	Modbus/TCP:Enable
1st Stream Multicast	
Multicast Address:239.127.0.100	Multicast TTL:128
Multicast video port:5556	Auto Multicast:Disable
2nd Stream Multicast	
Multicast Address:239.127.0.100	Multicast TTL:128
Multicast video port:5560	Auto Multicast:Disable

Video

Camera Modulation:PAL

System Log History

The system log contains useful information, including current system configuration and activity history with timestamps for tracking. Administrators can save this information in a file (system.log) by clicking the **Export to a File** button, or send the file by email by clicking the **Send a Report via Email** button. In addition, the log can also be sent to a **Log Server** for backup. The administrator can set up the Syslog Server 1 and Syslog server 2 below the system log list.

System Log History

Index	Time	Type	Description
0001	Wed Nov 11 10:35:56 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0002	Wed Nov 11 10:35:57 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0003	Wed Nov 11 10:35:58 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0004	Wed Nov 11 10:35:59 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0005	Wed Nov 11 10:36:00 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0006	Wed Nov 11 10:36:01 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0007	Wed Nov 11 10:36:02 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0008	Wed Nov 11 10:36:03 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0009	Wed Nov 11 10:36:04 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0010	Wed Nov 11 10:36:05 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0011	Wed Nov 11 10:36:06 2009	FTP	Connect to Server 192.168.127.9:21 Failed
0012	Wed Nov 11 10:36:07 2009	FTP	Connect to Server 192.168.127.9:21 Failed

Export to a File   Send a Report via E-mail   Clear

☐ Send to system log Server

Syslog Server 1 [   ]
Port Destination [514]
Syslog Server 2 [   ]
Port Destination [514]

Save

Send to system log server

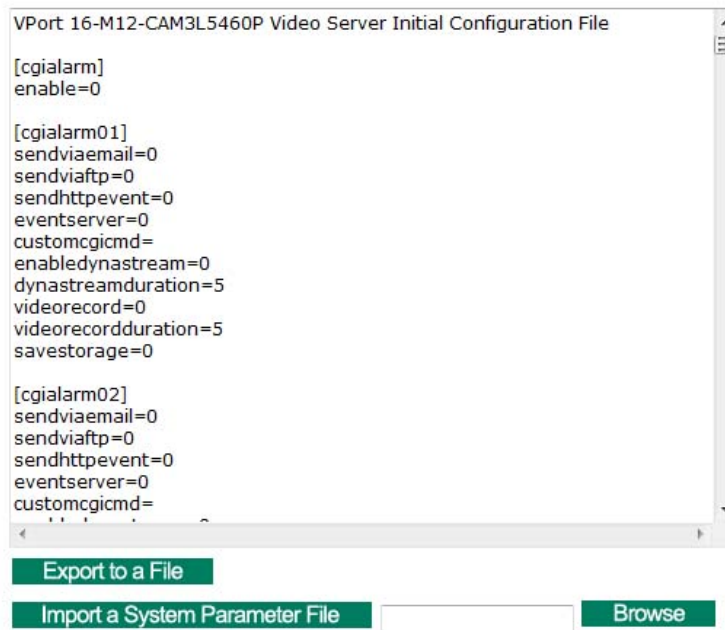| Setting	Description	Default
Send to system log server	Enables sending the system log to the log sever.	Disable
Syslog Sever 1	The address of the first system log server.	Blank
Port Destination	The port number of first system log server.	514
Syslog Sever 2	The address of the second system log server.	Blank
Port Destination	The port number of second system log server.	514

NOTE	A maximum of 500 lines is displayed in the log. Earlier data beyond the first 500 entries are still in the VPort's database; the administrator can export them at any time.

System Parameters

The **System Parameters** page allows you to view all system parameters, which are listed by category. The content is the same as the VPort's sys_config.ini file. Administrators can also save this information in a file (sys_config.ini) by clicking the **Export to a File** button, or import a file by clicking the **Browse** button to search for a sys_config.ini file and then clicking the **Import a System Parameter File** button to update the system configuration quickly.

System Parameters

```
VPort 16-M12-CAM3L5460P Video Server Initial Configuration File

[cgialarm]
enable=0

[cgialarm01]
sendviaemail=0
sendviaftp=0
sendhttpevent=0
eventserver=0
customcgicmd=
enabledynastream=0
dynastreamduration=5
videorecord=0
videorecordduration=5
savestorage=0

[cgialarm02]
sendviaemail=0
sendviaftp=0
sendhttpevent=0
eventserver=0
customcgicmd=
```

Export to a File

Import a System Parameter File | | Browse

NOTE   The system parameter import/export functions allow the administrator to backup and restore system configurations. The Administrator can export this sys_config.ini file (in a special binary format) for backup, and import the sys_config.ini file to restore the system configurations of VPort IP cameras. System configuration changes will take effect after the VPort is rebooted.

Firmware Upgrade

Firmware Upgrade

Browse | Upgrade

Take the following steps to upgrade the firmware:

Step 1:   Press the **Browse** button to select the firmware file.

NOTE   For the VPort 16-M12, the firmware file extension should be **.rom**.

Step 2:   Click on the **Upgrade** button to upload the firmware to the VPort.

Step 3:   The system will start to run the firmware upgrade process.

Step 4:   Once **Firmware Update Success.....Reboot....** is displayed, please wait for few seconds for the VPort to reboot. The reboot process is finished once the **STAT** LED is lit continuously in green.

NOTE	Upgrading the firmware will not change the original settings.

Reset to Factory Default

From the "Reset to Factory Default" page, click on **OK** (as shown in the following figure) to reset the VPort to its factory default settings.

Reset to Factory Default
Reset to Factory Default will restart the system and delete all the changes that have been made to the configuration. Are you sure you want to reset to factory default?

OK

NOTE	All parameters will be reset to factory defaults when you use the Factory Default function. For this reason, if you want to keep a digital copy of the current configuration, remember to export the sys_config.ini file before using the Factory Default function.

Reboot

From the "Device Reboot" page, click **OK** (as shown in the following figure) to restart the VPort's system.

Device Reboot

This device will reboot for restarting system.
Are you sure you want to reboot?

OK

Network

General Network Settings

The **General Network Settings** page includes some basic but important network configurations that enable the VPort to be connected to a TCP/IP network.

General Network Settings

Access Method
- DHCP
- DHCP + Auto configure
- Use fixed IP address

General Settings

IP address	172.19.16.62
Subnet mask	255.255.255.0
Gateway	172.19.16.254
Primary DNS	192.168.50.33
Secondary DNS	192.168.1.97

HTTP

| HTTP port | 80 |

RTSP Streaming

| RTSP port | 554 |

Save

Access Method

VPort products support the DHCP protocol, which means that the VPort can get its IP address from a DHCP server automatically when it is connected to a TCP/IP network. The Administrator should determine if it is more appropriate to use DHCP, or assign a fixed IP.

| Setting	Description	Default
DHCP	Get the IP address automatically from the DHCP server.	DHCP
DHCP + Auto configure	Get the IP address automatically from the DHCP server, and download the configurations from the TFTP server with Opt 66/67 mechanism.	
Use fixed IP address	Use the IP address assigned by the administrator.	

NOTE	We strongly recommend that the administrator assign a fixed IP address to the VPort, since all of the functions and applications provided by the VPort are active when the VPort is connected to the network. Use DHCP to determine if the VPort's IP address may change when then network environment changes, or the IP address is occupied by other clients.

Auto Configuration

In a mass installation, it is time consuming to configure each of the many devices one by one. Therefore, DHCP Opt 66/67 provides a mechanism whereby configurations can be saved on a TFTP server. Once a new device is installed, the configurations can be downloaded to this new device automatically. By doing this, the installer can save a lot of time and efforts in mass device installation. Follow the steps below to use the auto-configuration function via Opt 66/67.
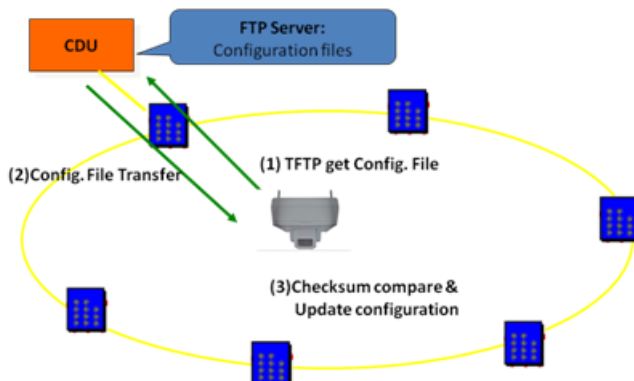
Step 1:
When VPort 16-M12 enables the auto-configuration function, it will ask for the IP address from DHCP server, and the path of the TFTP server and configuration file.
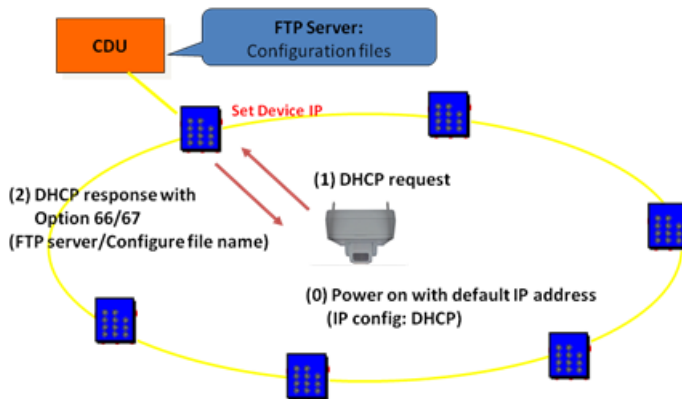
Step 2:
Once VPort 16-M12 completes the IP settings, it will acquire the configuration file from the TFTP server, and check if this configuration file is right or not.

NOTE	For auto-configuration to work properly, the system should:
	1. Have a DHCP Server that supports DHCP Opt 66/67 in the network switches and routers.
	2. Have a TFTP server that supports the TFTP protocol

General Settings

Setting	Description	Default
IP address	Variable IP assigned automatically by the DHCP server, or fixed IP assigned by the Administrator.	192.168.127.100
Subnet mask	Variable subnet mask assigned automatically by the DHCP server, or a fixed subnet mask assigned by the Administrator.	255.255.255.0
Gateway	Assigned automatically by the DHCP server, or assigned by the Administrator.	Blank
Primary DNS	Enter the IP address of the DNS Server used by your network. After entering the DNS Server's IP address, you can input the VPort's url (e.g., www.VPort.company.com) in your browser's address field, instead of entering the IP address.	Obtained automatically from the DHCP server, or left blank in non-DHCP environments.
Secondary DNS	Enter the IP address of the DNS Server used by your network. The VPort will try to locate the secondary DNS Server if the primary DNS Server fails to connect.	Obtained automatically from the DHCP server, or left blank in non-DHCP environments.

HTTP

Setting	Description	Default
HTTP Port (80, or 1024 to 65535)	HTTP port enables connecting the VPort to the web.	80

RTSP Streaming

The VPort 16-M12 supports standard RTSP (Real Time Streaming Protocol) streaming, which means that all devices and software that support RTSP can directly acquire and view the video images sent from the VPort 16-M12 without any proprietary codec or SDK installations. This makes network system integration much more convenient. For different connection types, the **access name** is different. For UDP and TCP streams, the access name is **udpStream**. For HTTP streams, the access name is **moxa-cgi/udpstream_ch<channel number>**. For multicast streams, the access name is **multicastStream_ch<channel number>**. You can access the media through the following **URL: rtsp://<IP address>:<RTSP port>/<Access name> for software that supports RTSP**.

| Setting	Description	Default
RTSP Port	An RTSP port is similar to an HTTP port, which can enable the connection of video/audio streams by RTSP.	554

The Apple QuickTime media player is used here as an example of a RTSP streaming application:

Step 1:   Open Apple QuickTime Player and select **File - Open URL in New Player**.

Step 2:   When the following pop-up window appears, type the URL in the input box. E.g., type
**rtsp://<VPort 16-M12's IP address>[:<RTSP Port]/udpstream_ch1_stream< 1 or 2>
rtsp://<VPort 16-M12's IP address>[:<RTSP Port]/multicaststream_ ch1_stream<1 or
2>**
RTSP Port: 554 Is default, and then click on **OK** to connect to the VPort 16-M12.
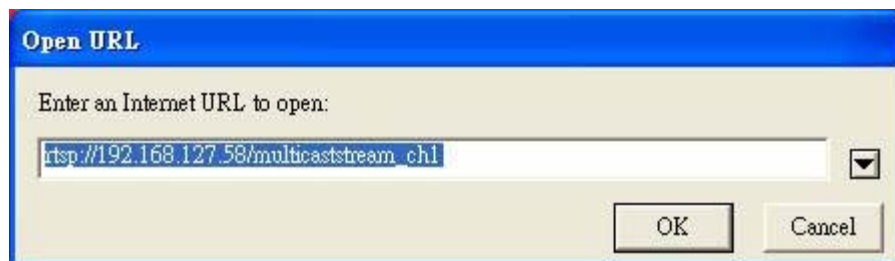
Step 3:   Wait a few seconds for QuickTime Player to establish the connection.

Step 4:   After the connection has been established, the VPort 16-M12's video will appear in the QuickTime
Player display window.

NOTE   The video performance of the VPort 16-M12 may vary when using other media players. For example, you will notice a greater delay when viewing the VPort 16-M12's video from the QuickTime player compared to viewing it directly from the VPort 16-M12's built-in web server. In addition, viewing the VPort 16-M12's video from the Quicktime player through a router or Internet gateway could result in a broken connection.

NOTE   For the time being, the VPort 16-M12's RTSP video/audio stream can be identified and viewed by Apple QuickTime Ver. 6.5 and above, and the VLC media player. System integrators can use these 2 media players to view the VPort 16-M12's video directly, without needing to use the VPort's SDK to create customized software.

NOTE   When using RTSP, the video stream format should be H.264 or MPEG4. MJPEG does not support RTSP.

SMTP Server and Email Account Settings

The VPort not only plays the role of a server, but can also connect to outside servers to send alarm messages and snapshots. If the administrator has set up some applications in either system information or alarm, the VPort will send out messages or snapshots once these conditions occur.

SMTP Server and Email Account Settings

1st SMTP Server and Sender Email

1st SMTP (mail) server
1st SMTP account name
1st SMTP password
1st Sender's email address

2nd SMTP Server and Sender Email

2nd SMTP (mail) server
2nd SMTP account name
2nd SMTP password
2nd Sender's email address

Note: There are 2 SMTP servers and sender Email accounts for sending system information and alarms. enable the email transmitting system.

Recipient's Email

1st Recipient's Email Address:
2nd Recipient's Email Address:

Note: There are 2 recipient email accounts for receiving system information and alarms.

Save

1st SMTP Server and Sender Email

Setting	Description	Default
1st SMTP (mail) server	SMTP Server's IP address or URL address.	None
1st SMTP account name	For security reasons, most SMTP servers require the account	None
1st SMTP password	name and password to be authenticated.	None
1st Sender's email address	For security reasons, SMTP servers must see the exact sender email address.	None

> **NOTE**   Note that if the **Sender's email address** is not set, a warning message will pop up and the e-mail system will
>   not be allowed to operate.

> **NOTE**   The **2nd SMTP Server** and Sender Email are backups that are used if the 1st SMTP Server and Sender Email
>   fail when connecting or sending email.

Two recipient email accounts are available for receiving emails sent by the VPort. For redundancy, both
addresses receive the sent messages and alarm snapshots simultaneously.

Setting	Description	Default
1st Recipient's Email Address	Email address of the 1st recipient.	None
2nd Recipient's Email Address	Email address of the 2nd recipient.	None

FTP Server Settings

FTP is the other method available for the VPort to send alarm messages and snapshots.

FTP Server Settings

1st FTP server
- 1st FTP server
- 1st FTP server port
- 1st FTP user name
- 1st FTP password
- 1st FTP remote folder
- ☐ 1st FTP passive mode

2nd FTP server
- 2nd FTP server
- 2nd FTP server port
- 2nd FTP user name
- 2nd FTP password
- 2nd FTP remote folder
- ☐ 2nd FTP passive mode

Note: There are 2 FTP servers for sending alarms. At least one of them should be set up correctly to enable the FTP s

Save

1st FTP Server

Setting	Description	Default
1st FTP server	FTP server's IP address or URL address.	None
1st FTP server port	FTP server's authentication.	None
1st FTP user name		None
1st FTP remote folder	FTP file storage folder on the remote FTP server.	None
1st FTP passive mode	Passive transfer solution for FTP transmission through a firewall.	Disabled

> **NOTE**   The **2nd FTP Server** is a backup in case the 1st FTP Server fails to connect or has trouble sending files.

NOTE	Whenever the system reboots, a system log will be sent by email or FTP to show the login status of the VPort. The system log will be sent to the Sender email address if the SMTP server settings are correct. To send the system log via FTP, the SMTP server should be erased since the E-mail system is used by default to transmit the system log.

NOTE	For either e-mail or FTP, the information of the 1st server should be entered first. If the 1st server is not set, the related FTP or email will be cancelled. Note that it may take time to connect to the 2nd server after the first server fails, and this may affect some applications when adverse conditions occur too often.

Dynamic DNS

DDNS (Dynamic Domain Name System) is a combination of DHCP, DNS, and client registration. DDNS allows administrators to alias the VPort's dynamic IP address to a static hostname in any of the domains provided by the DDNS service providers listed on the VPort's Network/DDNS configuration page. DDNS makes it easier to access the VPort from various locations on the Internet.

Dynamic DNS

The Dynamic DNS function allows your VPort to get a domain name linked to a changeable IP address w
IP address if you want to remote access this VPort from Internet.

☐ Enable DDNS

Provider   DynDNS.org(Dynamic) ▼
Host name   [   ]
Username/E-mail   [   ]
Password/Key   [   ]

Note: If you don't have a DDNS account, please follow the application procedure on the website listed above.

[Save]   [Update]

Setting	Description	Default
Enable DDNS	Enable or disable DDNS function	Disable
Provider	Select the DDNS service providers, including DynDNS.org (Dynamic), DynDNS.org (Custom), TZO.com, and dhs.org.	None
Host Name	The Host Name you use to link to the VPort.	None
Username/ E-mail	The Username/E-mail and Password/Key are used to enable	None
Password/ Key	the service from the DDNS service provider (based on the rules of DDNS websites).	None

NOTE	Dynamic DNS is a very useful tool for accessing a VPort over the Internet, especially for xDSL connections with a non-fixed IP address (DHCP). The administrator and users can simplify connecting to a VPort with a non-fixed IP address, by using the unique host name in the URL to establish a connection with the VPort.

NOTE	Different DDNS service providers have different application rules. Some applications are free of charge, but most require an application fee.

Universal PnP

UPnP (Universal Plug & Play) is a networking architecture that provides compatibility among the networking equipment, software, and peripherals of the 400+ vendors that are part of the Universal Plug and Play Forum. This means that they are listed in the network devices table for the operating system (such as Windows XP) supported by this function. Users can link to the VPort directly by clicking on the VPort listed in the network devices table.

Universal PnP

UPnP (Universal Plug & Play) is a function that provides compatibility among networking equipment, software and peripherals. By enabling this function, you can find this VPort directly from the operating system's network device list.

☑ Enable UPnP

Note: Please make sure your OS or software supports UPnP first if you want to enable VPort's UPnP function.

[Save]

Setting	Description	Default
Enable UPnP	Enable or disable the UPnP function.	Enable

Multicast

The VPort 16-M12 supports the advanced Multicast network protocol IGMP, which can greatly improve the efficiency of network traffic. In this section, we explain multicasts, multicast filtering, and how multicast can be implemented on your VPort.

What is Multicast?

A multicast is a packet that is intended for "one-to-many" and "many-to-many" communication. Users explicitly request to participate in the communication by joining an end-station to a specific multicast group. If the network is set up correctly, a multicast can only be sent to an end-station or a subset of end-stations on a LAN or VLAN that belongs to the relevant multicast group. Multicast group members can be distributed across multiple subnetworks. Therefore, multicast transmissions can occur within a campus LAN or over a WAN. In addition, networks that support IP multicast send only one copy of the desired information across the network. The packets are only replicated if they reach a network node that links to two or more members of the multicast network. Transmitting packets in this way makes more efficient use of network bandwidth. A multicast packet is identified by the presence of a multicast group address in the destination address field of the packet's IP header.
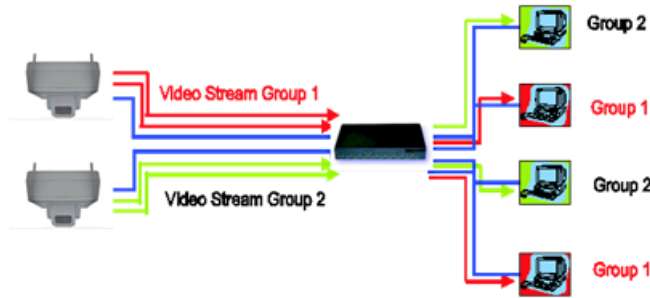
Benefits of Multicast

The benefits of using IP multicast are that it:

- Enables the simultaneous delivery of information to many receivers in the most efficient, logical way.
- Reduces the load on the source (for example, a server) because it does not need to produce multiple copies of the same data.
- Makes efficient use of network bandwidth and scales well as the number of participants or collaborators expands.
- Works with other IP protocols and services, such as Quality of Service (QoS).

There are situations where a multicast approach is more logical and efficient than a unicast approach. A typical use of multicasts is in video-conferencing, in which high volumes of traffic need to be sent to several end-stations simultaneously, but for which broadcasting that traffic to all end-stations would seriously reduce network performance. Several industrial automation protocols, such as Allen-Bradley, EtherNet/IP, Siemens Profibus, and Foundation Fieldbus HSE (High Speed Ethernet), use the multicast approach. These industrial Ethernet protocols use publisher/subscriber communications models by multicasting packets that could flood a network with heavy traffic. IGMP provides the ability to prune multicast traffic so that it travels only to those end destinations that require the traffic, thus reducing the amount of traffic on the Ethernet LAN.

The network WITHOUT Multicast

The network WITH Multicast
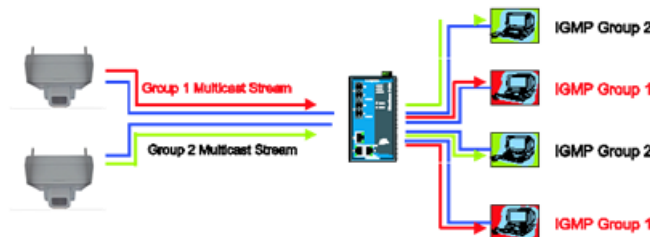
NOTE	The VPort 16-M12 is the source that delivers the multicast video stream. To benefit from the Multicast protocol, the gateway or network switch should support the multicast filtering function (such as IGMP Snooping) so that the multicast stream is delivered correctly and precisely. To learn more about IGMP Snooping, refer to the Moxa EtherDeviceTM series Industrial Ethernet Switch user's manual.

Configuring Multicast Settings

Setting	Description	Default
Multicast group address	Multicast Group address for sending video stream.	239.127.0.100
Multicast video port	Video port number.	Stream 1: 5556 Stream 2: 5560
Multicast TTL	Multicast-TTL (Time-to-live) threshold. There is a certain TTL threshold defined for each network interface or tunnel. A multicast packet's TTL must be larger than the defined TTL for that packet to be forwarded across that link.	128
Continuous Multicast Push	Enable PUSH control of the multicast video stream	Disable

Accessible IP List

The VPort uses an IP address-based filtering method to control access to the VPort.

Accessible IP List

☐ Enable accessible IP list ("Disable" will allow all IPs to connect)

Index	IP	NetMask
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Save

Accessible IP Settings allow you to add or remove "Legal" remote host IP addresses to prevent unauthorized access. Access to the VPort is controlled by IP address. That is, if a host's IP address is in the accessible IP table, then the host will be allowed access to the VPort. Administrators can allow one of the following cases by setting this parameter:

- Only one host with a specific IP address can access the VPort. Enter "IP address/255.255.255.255" (e.g., 192.168.1.1/255.255.255.255)
- Hosts on a specific subnet can access the VPort. Enter "IP address/255.255.255.0" (e.g., "192.168.1.0/255.255.255.0")
- Any host can access the VPort. Disable this function.

Refer to the following table for more configuration examples.

Allowable Hosts	Input Formats
Any host	Disable
192.168.1.120	192.168.1.120/255.255.255.255
192.168.1.1 to 192.168.1.254	192.168.1.0/255.255.255.0
192.168.0.1 to 192.168.255.254	192.168.0.0/255.255.0.0
192.168.1.1 to 192.168.1.126	192.168.1.0/255.255.255.128
192.168.1.129 to 192.168.1.254	192.168.1.128/255.255.255.128

SNMP

The VPort 16-M12 supports three SNMP protocols. The available protocols are SNMP V1, SNMP V2c, and SNMP V3. SNMP V1 and SNMP V2c use a community string match for authentication, which means that SNMP servers access all objects with read-only or read/write permissions using the community string public/private (default value). SNMP V3, which requires you to select an authentication level of MD5 or SHA, is the most secure protocol. You can also enable data encryption to enhance data security. SNMP security modes and security levels supported by the VPort are shown in the following table. Select one of these options to communicate between the SNMP agent and manager.

Protocol Version	Security Mode	Authentication Type	Data Encryption	Method
SNMP V1, V2c	V1, V2c Read Community	Community string	No	Use a community string match for authentication
	V1, V2c Write/Read Community	Community string	No	Use a community string match for authentication
SNMP V3	No-Auth	No	No	Use account with admin or user to access objects
	MD5 or SHA	MD5 or SHA	No	Provides authentication based on HMAC-MD5, or HMAC-SHA algorithms. 8-character passwords are the minimum requirement for authentication.
	MD5 or SHA	MD5 or SHA	Data encryption key	Provides authentication based on HMAC-MD5 or HMAC-SHA algorithms, and data encryption key. 8-character passwords and a data encryption key are the minimum requirements for authentication and encryption.

Configuring SNMP Settings

The following figures indicate which SNMP parameters can be configured. A more detailed explanation of each parameter is given below the figure.

SNMP Read/ Write Settings

SNMP Versions

Setting	Description	Default
V1, V2c, V3	Select SNMP protocol versions V1, V2c, V3 to manage the switch	V1, V2c, V3
V1, V2c	Select SNMP protocol versions V1, V2c to manage the switch	
V3 only	Select SNMP protocol versions V3 only to manage the switch	

V1, V2c Read Community

Setting	Description	Default
V1, V2c Read Community	Use a community string match for authentication, which means that the SNMP agent accesses all objects with read-only permissions using the community string **public**.	public (max. 30 characters)

V1, V2c Read/Write Community

Setting	Description	Default
V1, V2c Read/Write Community	Use a community string match for authentication, which means that the SNMP agent accesses all objects with read-only permissions using the community string **public**.	public (max. 30 characters)

For SNMP V3, there are two levels of privilege for different accounts to access the VPort. Admin privilege allows access and authorization to read and write MIB files. User privilege only allows reading the MIB file, but does not authorize writing to the file.

Root Auth. Type (For SNMP V1, V2c, V3 and V3 only)

Setting	Description	Default
No-Auth	Use admin. account to access objects. No authentication.	No
MD5-Auth	Provide authentication based on the HMAC-MD5 algorithms. 8-character passwords are the minimum requirement for authentication.	No
SHA- Auth	Provide authentication based on the MAC-SHA algorithms. 8-character passwords are the minimum requirement for authentication.	No

Root Data Encryption Key (For SNMP V1, V2c, V3 and V3 only)

Setting	Description	Default
Enable	8-character data encryption key is the minimum requirement for data encryption. Maximum 30-character encryption key.	No
Disable	No data encryption.	No

User Auth. Type (For SNMP V1, V2c, V3 and V3 only)

Setting	Description	Default
No-Auth	Use account of admin or user to access objects. No authentication.	No
MD5-Auth	Provide authentication based on the HMAC-MD5 algorithms. 8-character passwords are the minimum requirement for authentication.	No
SHA- Auth	Provide authentication based on the HMAC-SHA algorithms. 8-character passwords are the minimum requirement for authentication.	No

User Data Encryption Key (For SNMP V1, V2c, V3 and V3 only)

Setting	Description	Default
Enable	8-character data encryption key is the minimum requirement for data encryption. Maximum 30-character encryption key.	No
Disable	No data encryption.	No

Trap Settings

Setting	Description	Default
Trap Server IP/Name	Enter the IP address or name of the Trap Server used by your network.	No
Trap Community	Use a community string match for authentication; Maximum of 30 characters.	No

Private MIB information

The private SNMP Object ID of the VPort is the enterprise value: 8691.8.4.2. This number cannot be changed.

NOTE   The MIB file is MOXA-VPORT16-MIB.mib (or.my). You can find it on the software CD or the download center of the Moxa website.

QoS (ToS)

Quality of Service (QoS) provides traffic prioritization capabilities to ensure that important data is delivered consistently and predictably. The VPort can inspect layer 3 ToS (Type of Service) information to provide a consistent classification of the entire network. The VPort's ToS capability improves your industrial network's performance and determinism for mission critical applications.

QoS(ToS)

Configure the QoS (ToS) to add the ToS (Type of Service) tag onto the video streaming data for transmitting this video stream with higher priority compared to other data.

☐ Enable ToS
DSCP Value   [0 ▾] [0 ▾]

Save

Setting	Description	Factory Default
Enable ToS	Enable the ToS for transmitting the video stream with the given priority	Disable
DSCP Value	Set the mapping table with different ToS values	0, 0

NOTE   To configure the ToS values, map to the network environment settings for QoS priority service.

HTTP Event Server

The VPort can send the customized alarm actions and messages to the HTTP Event Servers, which allows users to design a customized alarm system.

HTTP Event Servers

VPort can send the customized alarm actions and messages to the HTTP Event Ser capability for the users designing the customized alarm system.

Hostname
Server 1
    User name:
    Password:
Server 2
    User name:
    Password:
Server 3
    User name:
    Password:
Server 4
    User name:
    Password:

Save

Setting	Description	Factory Default
Host Name	User-defined name for identification	Blank
Server 1, 2, 3, 4	The server's URL address with complete CGI commands Ex. http:// http event server:Port/CGI_Name	Blank
User name	The account name for accessing the HTTP server	Blank
Password	The password for accessing the HTTP server	Blank

Once the Http Alarm is triggered, the VPort will send the following HTTP commands to the HTTP event servers.

```
GET CGI_Name?address=<Hostname or IP Address>&[Custom CGI] HTTP/1.0\r\n
User-Agent: IP camera V1.1\r\n
[Authorization: Basic <Buse64(username:password)>\r\n]
Host: <HTTP Server IP Address>\r\n
Connection: Keep-Alive\r\n
\r\n
```

Modbus/TCP

Modbus is a serial communications protocol which is often used to connect a supervisory computer with a remote terminal unit (RTU) in supervisory control and data acquisition (SCADA) systems. To transmit Modbus over a TCP/IP network, a standard Modbus/TCP protocol is provided. With the support of the Modbus/TCP protocol, the SCADA/HMI system can directly communicate with the VPort to acquire its operational status.

ModBus/TCP

Modbus is a serial communications protocol for the industrial devices' communications with the SCADA/HMI system. With the Modbus/TCP protocol, the SCADA/ HMI system can directly communicate with VPort for acquiring the working status.

☑ Enable ModBus/TCP

Save

Setting	Description	Factory Default
Enable Modbus/TCP	Enable the Modbus/TCP protocol	Enable

NOTE   For Modbus address table, please refer to the Modbus_Address_Define.pdf. You can find it on the software CD or the download center of the Moxa website.

DynaStream™

DynaSteam™ is a unique and innovative function that allows for adaptive frame rates in response to events on the network, such as event triggers and system commands. When network traffic becomes congested, DynaStream™ allows VPort products to respond to CGI, SNMP, and Modbus commands from SCADA (as well as the MxNVR-MO4's VMD, DI, CGI events, and video loss triggers) and automatically decrease the frame rates to reduce bandwidth consumption. This reserves bandwidth for the SCADA system to maintain Quality of Service (QoS) and guarantees that the SCADA performance will not be impacted by video traffic. For example, the frame rate can be set low during regular streaming to reduce bandwidth usage and automatically switch to a high frame rate during triggered events to ensure quick transmission of critical video data or video streams, or to provide detailed visual images for problem analysis.

NOTE   For enabling the DynaStream function from CGI commands and Modbus TCP, please refer to the CGI Commands User's Manual of VPort SDK PLUS and Modbus Address Table

---

Basic

The administrator can adjust the number of frames per second for each channel. There are two types of frame rate status: Live and Alarm. Live status refers to the normal frames rates for live video displays. Alarm status refers to what the frame rate will be adjusted to when the DynaStream function is activated.

Currently, the video stream for DynaStream is only set up for H.264 video streams, and the resolution and quality are the same as for the settings in the Video Performance configuration.

Setting	Description	Factory Default
Max. FPS	For setting the maximum frame rate per second.	PAL: 25 NTSC: 30

After setting the Alarm frame rate, you may preview the video performance by clicking the Test button to ensure it meets your requirements

Conditions

The administrator can set up DynaStream's trigger conditions for facilitating automatic frame rate adjustment, e.g., from Live to Alarm status.

Currently, there are four types of trigger conditions: CGI Event, Motion Detection, and Video Loss.

Setting	Description	Factory Default
Enable	To enable or disable the DynaStream function.	Disable
Duration	This refers to the time period that DynaStream is in operation. For example, if the duration is set to 5 seconds, then the frame rate will change from the Live to the Alarm status for the duration of 5 seconds. After 5 seconds, the frame rate will return to the Live status setting.	5 seconds
Trigger Channel	To enable or disable the video channels.	Disabled

Video

Image Settings

Video Rotation

Setting	Description	Default
H-mirror	Rotate the image direction horizontally	None
V-mirror	Rotate the image direction vertically	None

Image Information Setting

	Description	Default
Description (max. of 14 characters)	The customized description shown on the caption to identify this video camera.	None

Image Appearance Setting

	Description	Default
Image Information	To determine what style of image information is being shown. Includes **Not Shown, Show on the Caption and Show on image**	Not Shown

Camera Setting

A few camera parameters can be configured for improving image quality according to the recording environment.

Setting	Description	Default
Electronic Shutter	Set the electric shutter to **Auto** or **Fixed**. **Auto** sets the camera to use AES (Automatic Electronic Shutter). The camera will adjust shutter speed to respond to keep signal output at optimum level relative to available light. AES changes the iris level automatically without using the auto iris lens. **Fixed:** means ALC (Automatic Light Control). Shutter speed will be fixed, while the iris automatically adjusts to lighting conditions.	Auto
Auto Gain Control (AGC)	The AGC function provides clearer images in low light conditions by using an amplifier to boost video signals when light is dim, effectively increasing camera sensitivity. In some bright environments, the amplifier may be overloaded and may distort the video signal. Thus, it is necessary to monitor signal levels relative to AGC control circuits and, when overloaded, switch off AGC.	On
White Balance	White balance is a basic form of color balance. It sets for the camera a "true white" referent, telling the camera what the color white should look like so it may record it correctly. Since white light is the sum of all other colors, the camera will then display all colors correctly. To set "White balance" in the VPort 16 camera: Step 1: Aim the camera lens at a well-lit patch of white in the local environment. Step 2:	ATW

	Initiate the ATW (Auto-Tracking White balancing) feature, to calibrate the camera to this local white. Step 3: Select the AWC (Auto White balance Control) to adjust the color in the environment	
Backlight Compensation (BLC)	Backlight Compensation (BLC) is an adjustment of video gain done either manually or automatically, to correctly illuminate subjects that are in front of or behind a bright light source. "Off": disables backlight compensation "On": enables backlight compensation	Off
Slow shutter (sense up)	Allows user-selectable slow shutter speeds on digital cameras, giving extra exposure for higher sensitivity in low light conditions. "Off": normal shutter speed "On": 4X (times) slower than the normal shutter speed	On
Brightness, Saturation, Contrast and Hue	Tunes image attributes to user preference, in a range of -5 to +5.	0

Video Performance

The VPort 16-M12 can send a maximum of three simultaneous video streams: two H.264 and one MJEPG. In fact, the VPort 16-M12 has two encoder engines. The first encoder engine can generate one H.264 video stream, and this H.264 video stream is a completely independent video stream, which means its resolution, FPS and video quality can be configured independently. The second encoder engine can generate one H.264 video stream and one MJPEG video stream. Because both the H.264 and MJPEG video streams come from the same encoder engine, their resolution must be the same, but the FPS and the Video Quality can be configured separately. The administrator can set the Resolution, Max. Frame Rate and Video Quality on this web page.

Streams

Setting	Description	Default
Enable the video streams	To enable the VPort to send this video streams or not.	Enable stream 1: H.264 and stream 2: MJPEG

Codec Type

This codec type shows the codec of each video stream.

Resolution

The VPort 16-M12 supports 5 different resolutions: SVGA, Full D1, 4CIF, VGA, CIF, and QCIF.

Setting	Description	Default
Select the image size	6 image resolutions (size) are provided. The administrator can choose each option with NTSC or PAL modulation.	800 x 600

Resolution	NTSC	PAL
SVGA	800 x 600	800x 600
Full D1	720 x 480	720 x 576
4CIF	704 x 480	704 x 576
VGA	640 x 480	640 x 480
CIF	352 x 240	352 x 288
QCIF	176 x 112	176 x 144

Max. FPS (Frame per second)

Setting	Description	Default
Maximum frame rate	The maximum frame rate is different to accommodate different modulations of video input. Administrators can also set up the maximum frame rate to optimize bandwidth use. NTSC: 1, 3, 5, 10, 15, 20, 25, 30 PAL: 1, 3, 5, 8, 12,16, 20, 25	30 for NTSC, 25 for PAL

NOTE   Frame rate (frames per second) is determined by the resolution, image data size (bit rate), and transmission traffic status. The Administrator and users can check the frame rate status in the **FPS Status** on the VPort's web homepage.

NOTE   The VPort 16-M12 supports a maximum of three simultaneous video streams, and the FPS will be affected when all three video streams are enabled. If the video quality is set very high for all three video streams, the total FPS for the three streams combined is about 75. We strongly recommended that you configure these three video streams based on specific requirements to optimize video performance.

Video Quality Control

Video Quality Control is used to optimize the bandwidth of the MPEG4 video stream. There are 2 modes for video quality control.

Setting	Description	Default
Fixed bit rate (Only for H.264)	The administrator can fix the bandwidth to tune the video quality and FPS (frames per second) to the optimum combination. Different resolutions have different bandwidth parameters. The VPort will tune the video performance according to the bandwidth. A higher bandwidth means better quality and higher FPS.	600Kbps in 800x600 resolution
Fixed Quality	The administrator can set the image quality to one of 5 standards: **Medium, Standard, Good, Detailed**, or **Excellent**. The VPort will tune the bandwidth and FPS automatically to the optimum combination.	Good

Video Size Bit rate	800x600	720x480(NTSC) 720x576(PAL)	704x480(NTSC) 704x576(PAL)	640x480(NTSC) 640x480(PAL)	352x240(NTSC) 352x288(PAL)	176x122(NTSC) 320x288(PAL)
B1	600 kbps	518 Kbps	507 Kbps	384 Kbps	126 Kbps	31 Kbps
B2	1200 kbps	1036 Kbps	1014 Kbps	768 Kbps	253 Kbps	63 Kbps
B3	1800 kbps	1555 Kbps	1521 Kbps	1152 Kbps	379 Kbps	95 Kbps
B4	2400 kbps	2073 Kbps	2028 Kbps	1536 Kbps	506 Kbps	126 Kbps
B5	3000 kbps	2592 Kbps	2535 Kbps	1920 Kbps	633 Kbps	158 Kbps
B6	3600 kbps	3110 Kbps	3042 Kbps	2304 Kbps	759 Kbps	290 Kbps
B7	4200 kbps	3628 Kbps	4549 Kbps	2688 Kbps	886 Kbps	221 Kbps

NOTE   The image quality, FPS, and bandwidth are influenced significantly by network throughput, system network bandwidth management, applications the VPort runs (such as VMD), how complicated the image is, and the performance of your PC or notebook when displaying images. The administrator should take into consideration all of these variables when designing the video over IP system, and when specifying the requirements for the video system.

Alarm

Event Alarm

Four kinds of event alarm are provided by the VPort for building an intelligent video surveillance system.

Alarm Type	Triggered Condition	Triggered Action
Video Motion Detection (VMD)	VMD 1 VMD 2 VMD 3	1. Email 2. FTP 3. HTTP Event Server 4. Record on SD card
Video Loss	Video signal is lost	1. Email 2. HTTP Event Server 3. Record on SD card
CGI Event	The CGI trigger message	1. Email 2. FTP 3. HTTP Event Server 4. Record on SD card
Sequential Snapshot	Enable sequential snapshot	1. Email 2. FTP

Basic

Event Alarm Basic Settings

Alarm Time Interval

Delay 32   second(s) before detecting the next alarm

Send Alarm with Snapshot images

☐ Take snapshot in 2   seconds(s) before event
☐ Take snapshot in 11   seconds(s) after event

Suffix of Image File Name in FTP and Mail attachment

☐ With Date and Time
☐ With Customized words

Sequential PreAlarm Images Setting

Max Frame Rate : 10 ▼

Save

Alarm Time Interval

Setting	Description	Default
Delay second(s) before detecting the next alarm	Set the minimum time interval before another event alarm is triggered.	32 seconds (10 to 999 seconds)

NOTE	The delay before triggering the next alarm cannot be less than the time needed to take a snapshot after an event (post-event image).

Send Alarm with Snapshot images

Setting	Description	Default
Take snapshot seconds(s) before the event	A snapshot image is taken this number of seconds before the event alarm is triggered.	2 seconds (from 1 to 6 seconds)
Take snapshot seconds(s) after the event	A snapshot image is taken this number of seconds after the event alarm is triggered.	11 seconds (from 1 to 999 seconds)

NOTE	VPort products will take 3 JPEG snapshot images: VPRE.JPG (pre-event), VTRG.JPG (the moment of event) and VPOS.JPG (post-event) for the video channel when the trigger condition is met. The three snapshots can also be downloaded by Email and FTP.

Suffix of Image File Name in FTP and Mail attachment

The snapshot images can be sent either by email or FTP. Administrators can add a suffix to the filename of each JPEG snapshot image to make it easier to identify the files when using FTP to download the snapshots.

Setting	Description	Default
With Date and Time	Enable or disable adding the date and time to the filename.	Disable
With Customized words	Enable or disable adding some additional custom text to the filename to identify the snapshot image.	Disable

Sequential PreAlarm Image Setting

The VPort 16-M12 supports a 9MB memory buffer to record pre-alarm MJPEG images up to 15FPS. This function configures the frame rate of the MJPEG images being recorded.

Setting	Description	Default
Max. Frame Rate	Configures the maximum pre-alarm frames-per-second to be logged, either 1, 3, 5, 10, 12, or 15.	10

NOTE	Pre-alarm buffers are 9MB in size. So if the maximum frame rate is set to 10, and the video size of each image is 30KB, then there will be 30 seconds of pre-alarm MJPEG images recorded: 9000KB/30KB/10=30. If the maximum frame rate is set to fifteen, then there will be 20 seconds of pre-alarm images recorded: 9000KB/30KB/15=20.

Schedule

A schedule is provided to set event alarms for daily security applications.

Event Alarm Schedule Settings

Event Type   [Video Loss ▾]

Weekly Schedule

○ Event Alarms are active all the time
◉ Event Alarms are active based on weekly schedule
☐ SUN Begin 00:00   Duration 00:01   [hh:mm]
☐ MON Begin 00:00   Duration 00:01   [hh:mm]
☐ TUE Begin 00:00   Duration 00:01   [hh:mm]
☐ WEN Begin 00:00   Duration 00:01   [hh:mm]
☐ THU Begin 00:00   Duration 00:01   [hh:mm]
☐ FRI Begin 00:00   Duration 00:01   [hh:mm]
☐ SAT Begin 00:00   Duration 00:01   [hh:mm]

[Save]

Event Type

Setting	Description	Default
Video Loss, Digital Input, CGI Event, and Sequential Snapshot	Set up the schedule of each kind of event type.	Video Loss

Weekly Schedule

Setting	Description	Default
Event Alarms are active all the time	Select the option "Event Alarms are active all the time"	Event Alarms are active based on a weekly schedule
Event Alarms are active based on a weekly schedule	Select to operate event alarms on a weekly schedule.	

NOTE   The applications described in the following sections will only work properly if either **Event Alarms are active all the time** or **Event Alarms are active based on weekly schedule** is Selected.

Setting	Description	Default
☐Sun ☐Mon ☐Tue ☐Wed ☐Thu ☐Fri ☐Sat	Select the weekday for scheduling event alarms.	None
Begin 00:00	Set the start time of the event alarm.	00:00
Duration 00:00	Set the duration for the event alarm to be active.	00:00

NOTE   Administrators can use the following steps to set up an event schedule:
1. Select Event Type
2. Enable "Event Alarms are active based on weekly schedule"
3. Select the weekday
4. Set the start time
5. Set the duration this event will be active.
6. Save

Video Motion Detection

Video Motion Detection (VMD) is an intelligent event alarm for video surveillance network systems. With the 3 area-selectable VMDs and sensitivity/percentage tuning, administrators can easily set up the VMD alarm to be active 24 hours a day, 7 days a week.

Setting	Description	Default
Enable VMD alarm	Enable or disable the Video Motion Detection alarm	Disabled
Show alert on the image when VMD is triggered	Enable or disable the "show the alert," which when enabled displays a red square frame on the video image of the VMD alarm notification	Disabled

> **NOTE** Once the Show alert on the image when VMD is triggered is enabled, the red frames that appear on the homepage image indicate the size of the VMD window set up by the administrator.
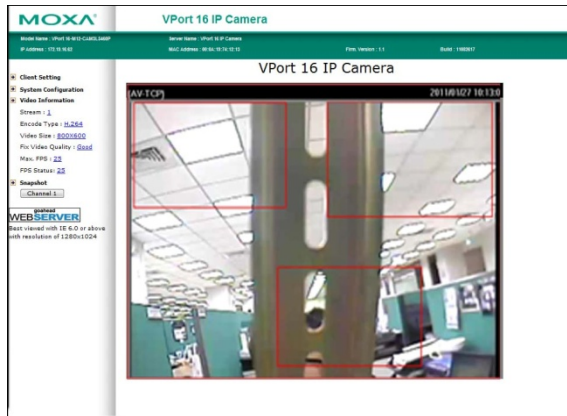
Setup a VMD Alarm

Setting	Description	Default
Enable	Enable or disable the VMD1, 2, and 3	Disabled
Window	The name of each VMD window	Blank
Percent	The minimum percentage of an image change for triggering VMD. Decrease the percentage to make it easier to trigger VMD.	80
Sensitive	The measurable difference between two sequential images for triggering VMD. Increase the sensitivity to make it easier for VMD to be triggered.	1

> **NOTE** After setting the VMD Alarm, click the **Save** button to save the changes

Trigger Conditions and Actions

For each VMD administrators can set triggers, such as "send snapshot image via E-mail", "send snapshot image via FTP", "send Message via HTTP event servers", "save snapshot on storage" and "record video on SD card".

Setting	Description	Default
Send snapshot image via E-mail	Once this VMD is triggered, the VPort will send the snapshot images set in the Event Alarm/Basic page to the E-mail addresses, which are set in the Network/ SMTP Server page.	Disabled
Send snapshot image via FTP	Once this VMD is triggered, the VPort will send the snapshot images set in the Event Alarm/Basic page to the FTP server, which are set in the Network/ FTP Server page.	Disabled
Send message via HTTP Event Servers	Once this VMD is triggered, the VPort will send the message set in HTTP Action Setting to the HTTP event servers, which are set in the Network/ HTTP Event Server page.	Disabled
Save snapshot on storage	The pre-alarm, trigger, and post-alarm snapshot images can be saved on an (optional) SD card.	Disabled
Record video on SD card for ⬜ Sec	Once this VMD is triggered, then for a configured time period VPort will record video to an (optional) SD card.	Disabled

HTTP Action Setting

Setting	Description	Default
Server 1, 2, 3, or 4	Select the HTTP event server for sending the HTTP action	Disabled
Blank text box	For customizing the message to the HTTP event server.	Blank

Video Loss

The Video Loss event means that the VPort cannot detect the camera module.

Video Loss Trigger Actions

Setting	Description	Default
Enable video loss alarm	Enable or disable video loss alarm.	Disable
Send snapshot image via FTP	Once the Video Loss alarm is triggered, the VPort will send the snapshot images set in the **Event Alarm/Basic** page to the FTP server, which are set in the **Network/ FTP Server** page.	Disable
Send message via HTTP Event Servers	Once the Video Loss alarm is triggered, the VPort will send the message set in the **HTTP Action Setting** to the HTTP event servers, which are set in the **Network/ HTTP Event Server** page.	Disable
Save snapshot on storage	The pre-alarm, trigger, and post-alarm snapshot images can be saved on an (optional) SD card.	Disabled
Record video on SD card [ ] sec	Once this VMD is triggered, then for a configured time period the VPort will record video to an (optional) SD card.	Disabled

HTTP Action Setting

Setting	Description	Default
Server 1, 2, 3, 4	Select the HTTP event server for sending the HTTP action.	Disable
Blank column	Administrators can customize the message sent to the HTTP event sever in this column.	Blank

CGI Event

The VPort can accept 5 CGI commands, which are sent from external devices, such as ioLogik series Ethernet I/O, to be the event alarms.

NOTE	The VPort only can accept the CGI commands that follow the VPort's CGI commands format.

CGI Event Trigger Actions

Setting	Description	Default
Enable CGI Event alarm	Enable or disable CGI Event alarm.	Disable
Event	Select the Event 1, 2, 3, 4, 5	Disable
Send snapshot image via FTP	Once this CGI Event is triggered, the VPort will send the snapshot images set in the **Event Alarm/Basic** page to the FTP server, which are set in the **Network/FTP Server** page.	Disable
Send message via HTTP Event Servers	Once this CGI Event is triggered, the VPort will send the message set in the **HTTP Action Setting** to the HTTP event servers, which are set in the **Network/HTTP Event Server** page.	Disable
Save snapshot to storage	The pre-alarm, trigger, and post-alarm snapshot images can be saved on an (optional) SD card.	Disabled
Record video on SD card ☐ Sec	Once this VMD is triggered, then for a configured time period the VPort will record video to an (optional) SD card.	Disabled

HTTP Action Setting

Setting	Description	Default
Server 1, 2, 3, 4	Select the HTTP event server for sending the HTTP action	Disable
Blank column	Administrators can customize the message sent to the HTTP event sever in this column	Blank

Alarm/Event Alarm/Sequential Snapshot

With this feature, the VPort can upload snapshots periodically to an external E-mail or FTP server as a live video source. Use the **Send sequential snapshot image every seconds** option to set the time interval. The interval can be set to any number between 1 and 9999 seconds.

Setting	Description	Default
Enable Sequential Snapshots	Enable or disable the Sequential Snapshots.	Disable
Send sequential snapshot image every seconds	Set the time interval of each snapshot image.	30 seconds (from 1 second to 30 seconds)
Send Snapshot image via E-mail	Choose how to send the snapshot images.	Send Snapshot image via Email
Send Snapshot image via FTP		

Sequential Snapshots

☐ Enable sequential snapshots

Send sequential snapshot image every [30   ] [1~30] second(s)

◉ Send snapshot image via E-mail

○ Send snapshot image via FTP

Save

A

Frequently Asked Questions

Q: What if I forget my password?

A: Every access to the IP camera needs authentication, unless the admin password is set up as blank. If you are one of the managed users, you will need to ask the administrator for the password. If you are the administrator, there is no way to recover the admin password. The only way to regain access to IP camera is to utilize the **RESET** button on the top panel to restore the factory settings (see Chapter 1 for details).

Q: Why can't I see video from the IP camera after it has been authenticated?

A: There are many possible scenarios:
If the IP camera is installed correctly and you are accessing the IP camera for the first time using Internet Explorer, adjust the security level of Internet Explorer to allow installation of plug-ins.
If the problem still exists, the number of users accessing the IP camera at the same time may exceed the maximum that the system allows.

Q: What is the plug-in for?

A: The plug-in provided by IP camera is used to display motion pictures. The plug-in is needed because Internet Explorer does not support streaming technology. If your system does not allow installation of plug-in software, the security level of the web browser may need to be lowered. It is recommended that you consult the network supervisor in your office before adjusting the security level.

Q: Why is the timestamp different from the system time of my PC or notebook?

A: The timestamp is based on the system time of the IP camera. It is maintained by an internal real-time clock, and automatically synchronizes with the time server if the video encoder is connected to the Internet and the function is enabled. Differences of several hours may result from the time zone setting.

Q: How many users are allowed to access the IP camera at the same time?

A: Basically, there is no limitation. However the video quality also depends on the network. To achieve the best effect, the VPort 16-M12 IP camera will allow 10 video streams for udp/tcp/http connections. We recommend using an additional web server that retrieves images from the IP camera periodically if you need to host a large number of users.

Q: What is the IP camera's video rate?

A: The codec can process 30 frames per second internally. However the total performance is subject to many variables, as listed below:
1. Network throughput.
2. Bandwidth share.
3. Number of users.
4. More complicated objects result in larger image files.
5. The speed of the PC or notebook that is responsible for displaying images.

Q: How can I keep the IP camera as private as possible?

A: The IP camera is designed for surveillance purposes and has many flexible interfaces. The user authentication and special confirmation when installing can keep the video encoder from unauthorized access. You may also change the HTTP port to a non-public number. Check the system log to examine any abnormal activities and trace the origins.

Q: Why can't I access the IP camera when I set up some options in the application?

A: When the IP camera is triggered by events, video and snapshots will take more time to write to memory. If the events occur too often, the system will always be busy storing video and images. We recommend using sequential mode or an external recorder program to record motion pictures if the event is frequent. If you prefer to retrieve images by FTP, the value could be smaller since an FTP server responds more quickly than a web server. Once the system is too busy to configure, use the restore factory default and reset button to save the system.

B

Modbus Address Table

Read/Write Registers (Support Function Code 4 & Function Code 3)

Address	Access	Data Type	Description
System Information			
0x0000	R	1 word	Vendor ID = 0x1393
0x0001	R	1 word	Unit ID (Ethernet = 1)
0x0002	R	1 word	Product Code = Magic Code(2 byte)
0x0010	R	20 word	Vendor Name = "Moxa" Word 0 Hi byte = 'M' Word 0 Lo byte = 'o' Word 1 Hi byte = 'x' Word 1 Lo byte = 'a' Word 2 Hi byte = '\0' Word 2 Lo byte = '\0'
0x0030	R	20 word	Product Name = "VPort 16" Word 0 Hi byte = 'V' Word 0 Lo byte = 'P' Word 1 Hi byte = '0' Word 1 Lo byte = 'r' Word 2 Hi byte = 't' Word 2 Lo byte = ' ' Word 3 Hi byte = '1' Word 3 Lo byte = '6'
0x0050	R	1 word	Product Serial Number
0x0051	R	2 word	Firmware Version Word 0 Hi byte = major (A) Word 0 Lo byte = minor (B) Word 1 Hi byte = release (C) Word 1 Lo byte = build (D)
0x0053	R	2 word	Firmware Release Date Firmware was released on 2007-05-06 at 09 o'clock Word 0 = 0x0609 Word 1 = 0x0705
0x0055	R	3 word	Ethernet MAC Address Ex: MAC = 00-01-02-03-04-05 Word 0 Hi byte = 0x00 Word 0 Lo byte = 0x01 Word 1 Hi byte = 0x02 Word 1 Lo byte = 0x03 Word 2 Hi byte = 0x04 Word 2 Lo byte = 0x05
0x005B	R	1 word	Channel 1 Video Signal 0x0000:Off 0x0001:On

0x0700	RW	1 word	Record Duration
0x0701	RW	1 word	Record Always Enable 0x0000:Disable 0x0001:Enable
0x0800	RW	1 word	DynaStream Duration
0x0801	RW	1 word	DynaStream Always Enable 0x0000:Disable 0x0001:Enable

C

Time Zone Table

The hour offsets for different time zones are shown below. You will need this information when setting the time zone in automatic date/time synchronization. GMT stands for Greenwich Mean Time, which is the global time that all time zones are measured from.

(GMT-12:00)	International Date Line West
(GMT-11:00)	Midway Island, Samoa
(GMT-10:00)	Hawaii
(GMT-09:00)	Alaska
(GMT-08:00)	Pacific Time (US & Canada), Tijuana
(GMT-07:00)	Arizona
(GMT-07:00)	Chihuahua, La Paz, Mazatlan
(GMT-07:00)	Mountain Time (US & Canada)
(GMT-06:00)	Central America
(GMT-06:00)	Central Time (US & Canada)
(GMT-06:00)	Guadalajara, Mexico City, Monterrey
(GMT-06:00)	Saskatchewan
(GMT-05:00)	Bogota, Lima, Quito
(GMT-05:00)	Eastern Time (US & Canada)
(GMT-05:00)	Indiana (East)
(GMT-04:00)	Atlantic Time (Canada)
(GMT-04:00)	Caracas, La Paz
(GMT-04:00)	Santiago
(GMT-03:30)	Newfoundland
(GMT-03:00)	Brasilia
(GMT-03:00)	Buenos Aires, Georgetown
(GMT-03:00)	Greenland
(GMT-02:00)	Mid-Atlantic
(GMT-01:00)	Azores
(GMT-01:00)	Cape V erde Is.
(GMT)	Casablanca, Monrovia
(GMT)	Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
(GMT+01:00)	Amsterdam, Berlin, Bern, Stockholm, Vienna

(GMT+01:00)	Belgrade, Bratislava, Budapest, Ljubljana, Prague (GMT+01 :00) Brussels, Copenhagen, Madrid, Paris
(GMT+01:00)	Sarajevo, Skopje, Warsaw, Zagreb
(GMT+01:00)	West Central Africa
(GMT+02:00)	Athens, Istanbul, Minsk
(GMT+02:00)	Bucharest
(GMT+02:00)	Cairo
(GMT+02:00)	Harare, Pretoria
(GMT+02:00)	Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius
(GMT+02:00)	Jerusalem
(GMT+03:00)	Baghdad
(GMT+03:00)	Kuwait, Riyadh
(GMT+03:00)	Moscow, St. Petersburg, Volgograd
(GMT+03:00)	Nairobi
(GMT+03:30)	Tehran
(GMT+04:00)	Abu Dhabi, Muscat (GMT+04:00) Baku, Tbilisi, Yerevan (GMT+04:30) Kabul
(GMT+05:00)	Ekaterinburg
(GMT+05:00)	Islamabad, Karachi, Tashkent (GMT+05:30) Chennai, Kolkata, Mumbai, New Delhi
(GMT+05:45)	Kathmandu
(GMT+06:00)	Almaty, Novosibirsk (GMT+06:00) Astana, Dhaka
(GMT+06:00)	Sri Jayawardenepura (GMT+06:30) Rangoon
(GMT+07:00)	Bangkok, Hanoi, Jakarta (GMT+07:00) Krasnoyarsk
(GMT+08:00)	Beijing, Chongqing, Hongkong, Urumqi
(GMT+08:00)	Taipei
(GMT+08:00)	Irkutsk, Ulaan Bataar (GMT+08:00) Kuala Lumpur, Singapore (GMT+08:00) Perth
(GMT+09:00)	Osaka, Sapporo, Tokyo (GMT+09:00) Seoul
(GMT+09:00)	Yakutsk
(GMT+09:30)	Adelaide
(GMT+09:30)	Darwin
(GMT+10:00)	Brisbane
(GMT+10:00)	Canberra, Melbourne, Sydney
(GMT+10:00)	Guam, Port Moresby (GMT+10:00) Hobart
(GMT+10:00)	Vladivostok
(GMT+11:00)	Magadan, Solomon Is., New Caledonia
(GMT+12:00)	Auckland, Wellington (GMT+ 12:00) Fiji, Kamchatka, Marshall Is.
(GMT+13:00)	Nuku'alofa

Technical Specifications

Camera

Sensor: 1/3" CCD

Lens: 3, 3.6, 6, 8, and 16 mm fixed focal length

Angle of View (Diagonal):

• 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 Angle: Pan 360°, Tilt 90° (controlled manually)

Illumination (low light sensitvity): 0.02 Lux at F2.0, color

Synchronization: Internal

White Balance: ATW/AWC

Auto 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: On/Off

Image Rotation: Flip, Mirror, and 180° rotation

Image Setting:

• Manual 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 Outputs: Via Ethernet

Video Streams: Maximum of 3 video streams (2 H.264 and 1 MJPEG)

Video Resolution and FPS (frames per second):

<insert TABLE_>

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

Network

Protocols: TCP, UDP, HTTP, Multicast, SMTP, FTP, NTP, DNS, DHCP, UPnP, RTP, RTSP, ICMP, QoS, SNMPv1/v2c/v3, DDNS, TFTP, OPT 66/67

Ethernet: 1 10/100BaseT(X) Ethernet port, 4-pin M12 D-code connector

Local Storage

SD Socket: Standard SD socket (SDHC)

Power Requirements

Input: Power-over-Ethernet (IEEE 802.3af)

Power Consumption: 6.5 W

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 4.3 in)

• Dome model: 125 x 125 x 120.7 mm (5.6 x 5.6 x 4.8 in)

Installation: Surface (ceiling) or flush (recessed) mounting

Security

Password: User level password protection

Filtering: By IP address

Alarms

Intelligent Video: Tamper alarm

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

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)

Conformal Coating: Available on request

Standards and Certifications

Safety: UL 60950-1

EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A

EMS:

EN 61000-4-2 (ESD), Level 3,

EN 61000-4-3 (RS), Level 3,

EN 61000-4-4 (EFT), Level 3,

EN 61000-4-5 (Surge), Level 3,

EN 61000-4-6 (CS), Level 3,

EN 61000-4-8,

EN 61000-4-11

Rolling Stock: EN 50155:2007 compliance (shock, vibration, temperature, EMC)

Shock: IEC 61373

Freefall: IEC 60068-2-32

Vibration: IEC 61373

Vandal resistance: EN 62262, IK10 level (dome cover model)

Note: Please check Moxa's website for the most up-to-date certification status.

Warranty

Warranty Period: 3 years

Details: See www.moxa.com/warranty

Minimum Viewing System Requirements

CPU: Pentium 4, 2.4 GHz

Memory: 512 MB of memory

OS: Windows XP/2000 with SP4 or above

Browser: Internet Explorer 6.x or above

Multimedia: DirectX 9.0c or above

Software Development Kit

VPort SDK PLUS: Includes CGI commands, ActiveX Control, and API library for customized applications or system integration for third-party developers (the latest version of SDK is vailable for download from Moxa's website).

Standard: ONVIF