Industrial IP Surveillance Solutions for Mission-Critical Applications

telsa®
La Alternativa en Conectividad
Más de 30 años de experiencia en soluciones de TIC

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MOXA®
Reliable Networks ▲ Sincere Service

Moxa Serves Your Needs, Even in the Toughest Situations

Moxa has been a leading player in the industrial automation field for over 25 years. The expertise we have accumulated has enabled us to serve as a consultant for industrial surveillance application deployments. Our impressive IP surveillance solution portfolio ensures we can serve a broad spectrum of industries around the world regardless of the extremities of their environments and Moxa has become respected throughout the industry for our excellent product quality and effective, reliable solutions.

Surveillance solutions that are deployed in harsh industrial environments require products that adhere to tough industrial-grade standards. In addition to the robust design that allows products to operate reliably within these harsh environments, a long product lifetime is also required in order to help minimize interruptions with the system, and reduce maintenance costs and efforts. The industrial-grade design, long warranties, superior MTBF (Mean Time Between Failures) and extremely low RMA (Return Merchandise Authorization) rate of Moxa's IP surveillance solutions ensure reliable performance in extreme environments.

FEATURE HIGHLIGHTS*

Industrial-grade design to ensure reliability in extreme environmental conditions

- Wide temperature operability (-40 to 75°C)
- IK8 to IK10 vandal resistant
- IP66-rated

Commitment to product reliability and high quality standards

- 3- or 5-year warranty
- Excellent customer service

Minimize maintenance effort and replacement cost

- Industry leading high MTBF (Mean Time Between Failures)
- Low 0.19% RMA (Return Merchandise Authorization) rate

Certified for Maximum Security and Reliability

EN 50155 EN 50121 NEMA TS2

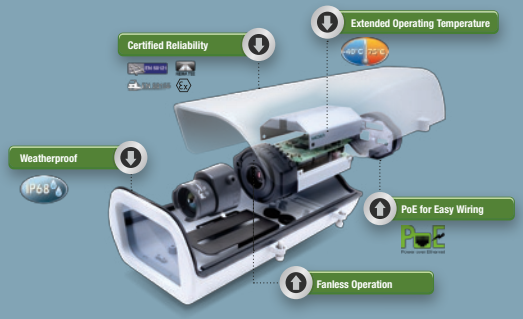
* Varies between models - please see detailed specs on pages 13 and 14 for full details

Committed to the Reliability and Quality of Moxa's IP Cameras

Creating a Consistent Rugged Design

Moxa's entire IP camera line is produced with the same consistent rugged design and quality:

- We select only the highest quality, industrial grade materials and components for our IP cameras
- Our expertise in thermal design ensures reliable operation in extreme, -40 to 75°C environments
- Our rugged cameras are water and dust-proof, vandal-resistant, and protect against shock and vibration



Designed for Optimal Image Quality

Regardless of the environment, Moxa's IP cameras produce the same high quality images with crystal clear details:

- Our cameras undergo several consecutive hours of testing in outdoor, onboard, and day-and-night conditions to simulate real-world environments
- Image quality in accordance with EN 50132-7
- DNR, WDR, and BLC for image optimization
- Auto-iris lens and IR for day and night visibility

Day & Night Image Quality

Strict Industrial-Strength Testing

Moxa's IP cameras undergo strict industrial-strength testing to guarantee a rugged design and top quality:

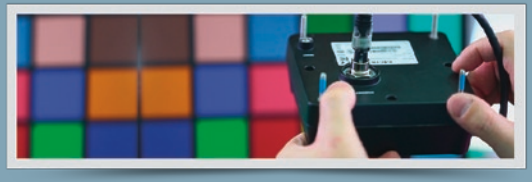
- Key component cyclic burn-in test includes 20+ days of testing for the lens and 200+ hours of testing for the IP camera motor in a testing chamber at -45 to 85°C
- 40+ hours of cyclic wide-temperature testing and burn-in*
- Shock and vibration tests simulating rolling stock conditions that comply with IEC 61373
- Our cameras are IP66-rated airtight and IK-8/10 (EN 62262) vandal-proof

IP66 waterproof test IK10 vandal resistant test

100% Product and Quality Inspection

All Moxa IP cameras undergo strict inspections to ensure product quality and reliability:

- All camera functions are tested, including the light sensor, light and dark spots, and color calibration
- Our cameras undergo chambered burn-in for 6 to 40 hours, at temperatures ranging from 60 to 75°C
- After burn-in, all IP camera functionality is re-tested. Airtight testing takes place during this stage to ensure that the cameras are IP66 dust- and waterproof.



Color Calibration Test

* Cyclic burn-in duration/temperature/shock/vibration/IK-rating varies depending on the IP camera's specs and warranty. See product specs for details.

Rugged Design, Wide Temperature, Total IP Surveillance Solutions

PTZ Speed Dome IP Cameras Pages 5 and 6

- -40 to 65°C operating temperature
- Maximum 1920 x 1080 resolution at 60 FPS
- NEMA TS2 compliance
- Supports 360° endless pan and -6° to +96° tilt
- 22x/30x optical zoom; 20x digital zoom

Stationary 1080P IP Cameras Page 6

- -40 to 75°C operating temperature without fan
- Maximum 1920 x 1080 resolution at 30 FPS
- 10x optical zoom and 16x digital zoom (VPort 56-2MP Series only)
- SD card interface for disconnection and event recording

Onboard IP Cameras Pages 7 and 8

- -40 to 70°C operating temperature without fan or heater
- EN 50155 compliant
- IK8, IK10 vandal-proof
- Built-in IR illuminator and ICR (Infrared Cut-filter Removal) for day and night images (VPort P16 Series only)

Industrial-Grade Video Encoders Pages 9 and 10

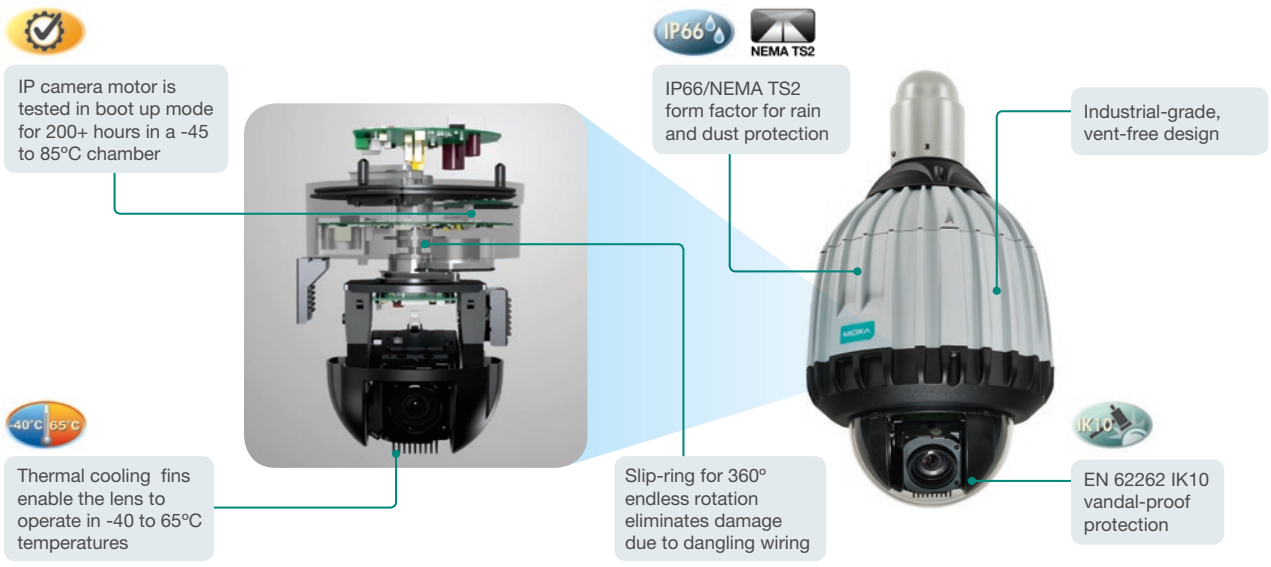
- -40 to 75°C operating temperature without fan
- Maximum 4 video streams at up to 120 FPS
- NEMA TS2 compliance

Industrial Network Video Recorder Pages 11 and 12

- -40 to 70°C operating temperature without fan
- EN 50155 compliant
- Record 1080P (1920 x 1080) images at up to 900 FPS
- Live view of 1080P images at up to 120 FPS

Rugged 1080P Full HD PTZ Speed Dome IP Camera for Extreme Applications

Moxa's VPort 66-2MP Full HD PTZ speed dome IP camera provides 360° endless pan, wide tilt range, and zoom capability to enable the broadest coverage and the finest details for surveillance operations. The industrial-grade design makes the VPort 66-2MP extremely reliable, and delivers exceptional durability for any outdoor or harsh surveillance applications.



VPort 66-2MP Accessories

	Wall-mounting kit	Pendant-mounting kit	Pole-mounting kit (for the VP-520LB)	Sunshield
				
	VP-520LB	VP-520HB	VP-510CPM	VP-SH1
Dimensions	204(W) x 284(H) x 255(D) mm	284(L) x 204(W) x 149.5(H) mm	275(W) x 91(H) x 182(D) mm	236((Ø) x 180(H) mm
Weight	3.1 kg	2.7 kg	0.5 kg	0.5 kg
Material	Aluminum	Aluminum	Aluminum	Aluminum
Remarks	–	Straight tube (optional): 300 mm	Stainless straps x 2	–

Precise, Zero Blind Spot Coverage

To provide coverage of a large area, the VPort 66-2MP features 360° endless pan, enabling continuous tracking of a subject. Its wide tilt range and zoom functionality allow operators to capture the finest details. Subject to 128 user-defined presets, the VPort 66-2MP provides fast preset movements for automatic guard tour for unstaffed applications.

- 360° pan, -6° to +96° tilt for wide area coverage
- 22x/30x optical; 20x digital zoom to view the finest details
- 1° to 255°/s preset moving and 360°/s alarm trigger moving

Rugged Design for Critical Environments

Setting an industry leading standard for robust engineering, the industrial-grade VPort 66-2MP features a robust IP66-rated, vent-free, and vandal proof housing design. Along with wide operating temperature capability, the VPort 66-2MP assures exceptional durability and reliability for railway, public security, oil and gas, and extreme outdoor applications.

- -40 to 65°C wide operating temperature range
- IP66-rated and NEMA Type 4 form factor
- EN 50121-4 compliant
- Vent-free design; high-tech heat dissipation; water- and dustproof

Superior Image Quality

With 1080P resolution at 60 FPS, the VPort 66-2MP features low lux sensitivity and uses 3D DNR, sense up, and ICR technology to overcome poor lighting conditions. Images can be displayed in a wide dynamic range of dark to light conditions.

- 1080P (1920 x 1080) at 60 FPS
- Auto sense up; Auto-iris; Day & Night; ICR; 3D DNR image stabilizer
- CBR Pro supported for excellent image quality in fast motion
- Supports DynaStream™ for adaptive bandwidth control

Easy Deployment and Integration

The VPort 66-2MP supports ready-to-use NVR and VMS software for video surveillance systems, and provides a variety of software development kits for use with third-party VMS and SCADA software. Moreover, the VPort 66-2MP supports industry standard ONVIF specifications for simpler and faster integration, and supports the NTCIP for ITS.

- ONVIF Profile S conformity for IP video interoperability
- NTCIP supported for ITS

Stationary 1080P IP Cameras

VPort 56-2MP

1080P day-and-night H.264 zoom IP camera

- -40 to 75°C operating temperature without fan
- 1080P (1920 x 1080) H.264 image quality
- 10x optical and 16x digital zoom
- H.264 and triple MJPEG streams at up to 30 FPS
- Optional fiber port

VPort 36-2L

1080P, day-and-night, rugged box IP camera

- -40 to 75°C operating temperature without fan
- 1080P (1920 x 1080) H.264 image quality
- Built-in P-IRIS zoom lens with 3x (3 to 9 mm) and 2x (10 to 23 mm) optical zoom
- Four video streams with H.264 and MJPEG
- SD card interface for disconnection and event recording

Versatile EN 50155 IP Cameras for Extreme Onboard Railway Applications

IP-based CCTV systems are becoming essential for train operations. Effective video surveillance protects passenger safety and makes train operations more efficient, which has led to increased investment in onboard IP CCTV systems. As these systems are adding more and more cameras and NVRs throughout the train, the scope and reach of these systems has been expanded. These new video surveillance applications have introduced important new IP video requirements: As IP cameras and NVRs are deployed in more and more locations onboard a train, there is a corresponding increase in the performance, reliability, and design requirements for those IP cameras and NVRs.

Find the Best-Fit Products for Your Onboard CCTV Applications

Front/Rear-Facing Camera

VPort P16-1MP-M12

- Clear color images both day and night
- Good image performance in fast changing lighting conditions
- High-speed imaging

Driver Car Camera and NVR

VPort P16-1MP-M12-IR and VPort P16-2MR IP Cameras

- Built-in IR for 0 lux environments
- Color image for identifying the panel LED indicator

New Locations and New Requirements for Onboard IP CCTV

- More cameras with different form factors and easy installation for different locations on trains
- Continuous, crystal-clear image quality in a wide dynamic range of dark and light environments
- High performance video streams for smooth video surveillance
- Vibration, humidity, EMC, and dust resistant devices for harsh onboard environments

Moxa Solutions

Any Scene, Any Location, Any Condition

Superior Image Quality under Any Lighting Conditions

Trains are not an ideal filming environment. The lighting conditions onboard a train will vary wildly as the vehicle passes through a variety of different environments, including tunnels, open air, and shade. To continuously provide crystal clear image quality, the IP cameras must capture a wide dynamic range of dark and light, as well as reduce noise and motion blur. Moxa's IP cameras capture sharp full motion video images at HD resolution, and use advanced image technologies such as DNR (Digital Noise Reduction), BLC (Backlight Compensation), and WDR (Wide Dynamic Range) to provide a clear picture in any lighting condition or environment.

Good WDR performance

Clear/color low lux image

Strong light inhibition

Fast imaging in quick light change

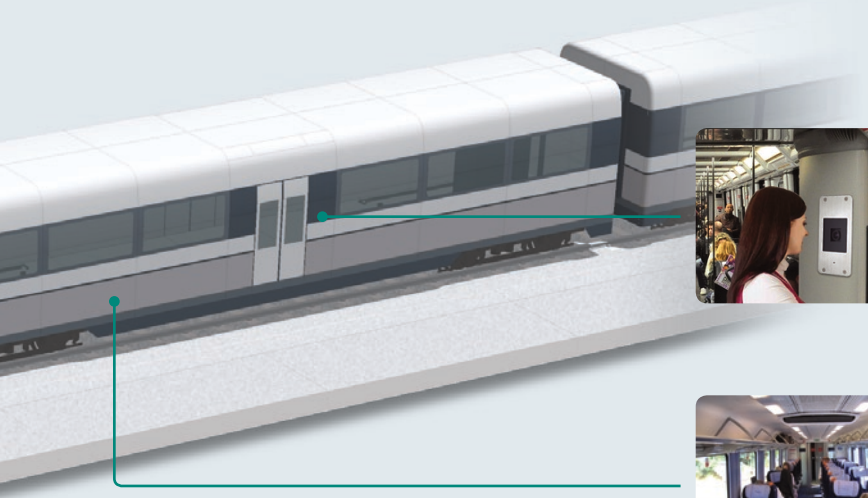
Optimal Streaming Performance in Low-Bandwidth Environments

Video streaming is a major component of IP surveillance systems, and affects both the network and video performance. Moxa's systems use customized technology to deliver consistent video quality without overwhelming network resources. Moxa's IP cameras deliver up to a maximum of three independent video streams (two H.264, one MJPEG) simultaneously, and CBR Pro™ technology stabilizes the bit rate and guarantees that even in low-bandwidth environments, the system will maintain consistent video performance.

-40 to 70°C Temperature Tolerance

All of Moxa's EN 50155 products are compliant with the essential* sections of EN 50155 and EN 50121-3-2. The VPort P06-1MP-M12-T is the world's first IP camera that can operate safely in -40 to 70°C temperatures, without fans or heaters, and complies with the highest EN 50155 TX temperature criteria.

* Moxa defines "essential compliance" to include those EN 50155 requirements that make products more suitable for rolling stock railway applications.



Intercom Camera

VPort P06HC-1MP-M12

- Video/audio recording
- Interoperation with intercom
- Flush mountable

Consist Camera

VPort P06-1MP-M12 and VPort 06-2 IP Cameras

- Clear daylight images
- Compact size
- Audio or microphone input

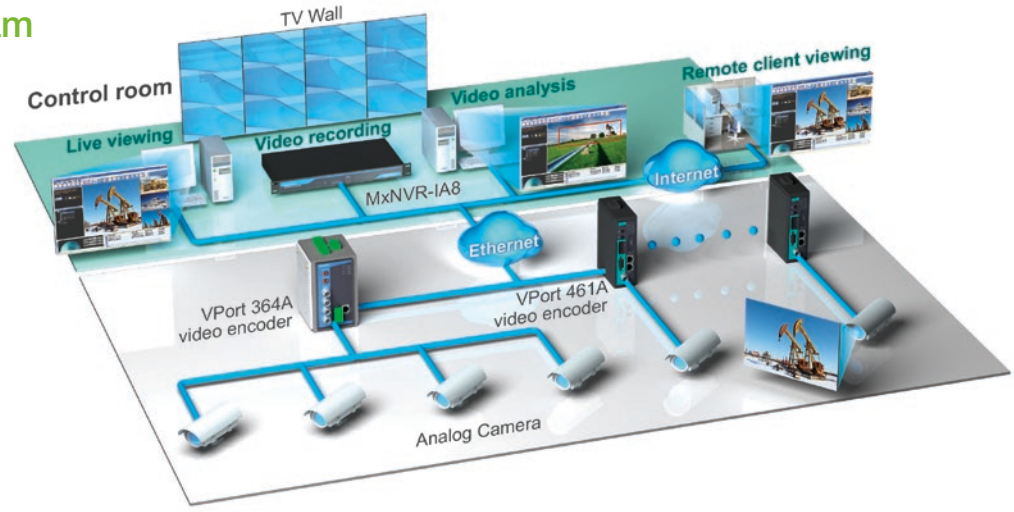
MXNVR-RO-T NVR

- Record up to 900 FPS @ 1080P
- Live view up to 120 FPS @ 1080P
- ONVIF Profile S supported
- Two 2.5" HDD/SSD hot-swappable slots

The Encoder Built for Mission-Critical Surveillance

Moxa's industrial video encoders cover 1-channel and 4-channel video captures that converts analog video up to four simultaneous streams* in H.264 and MJPEG formats. Furthermore, Moxa offers security professionals a seamless viewing experience with an end-to-end system latency of less than 200 ms. Users can easily integrate the video encoders into their existing CCTV systems in order to upgrade to an IP surveillance system, without replacing their original equipment.

System Diagram



Video Encoders

Model	VPort 461A	VPort 364A
Video Inputs	1	4
No. of Streams	4*	2 (for each channel)
Max. Resolution	NTSC: 720 x 480/ PAL: 720 x 576	
10/100BaseT(X) Ports	2	1
100BaseFX Ports	–	1
I/O	PTZ Port / COM Port / RS-232 Console Port	PTZ Port / RS-232 Console Port
SD Card Slot	SDHC/SDXC*	–

*This function will be supported after the VPort 461A's V1.1 firmware is released.

Key Features

Rugged Design

Designed for critical industrial applications, Moxa's video encoders can operate reliably in temperatures ranging from -40 to 75°C. The video servers come with an IP30 protected metal housing, Level 3 EMC/EMI protection, and can be mounted on a DIN rail.

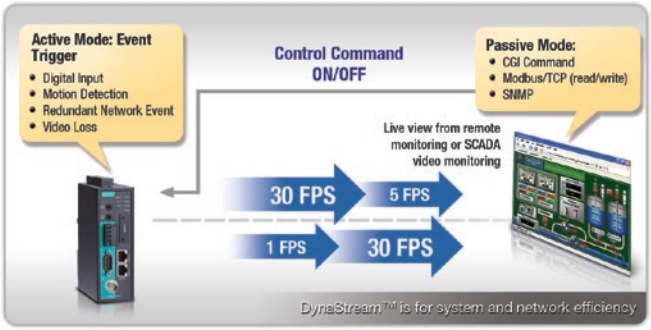
Four Video Streams at 120 FPS*

Including a high performance codec chip, Moxa's VPort 461A can support up to 4 independent video streams with H.264 and MJPEG formats at 120 FPS. Security professionals can utilize these 4 video streams for different purposes, such as live view, video recording, and video analysis. Each of these 4 video streams can support up to 30 FPS at maximum D1 resolution.

High Video Performance

DynaStream

To increase network transmission efficiency, Moxa's innovative DynaStream™ function is designed to change the video frame rate automatically, in accordance with the current status of the network bandwidth, thus making the management of the network system easier. Additionally, an advanced bit rate flow control technology, called CBR Pro™, is built in to guarantee the lowest levels of packet loss in limited bandwidth transmission, ensuring that images do not exhibit the mosaic effect.



ONVIF Compatibility

ONVIF

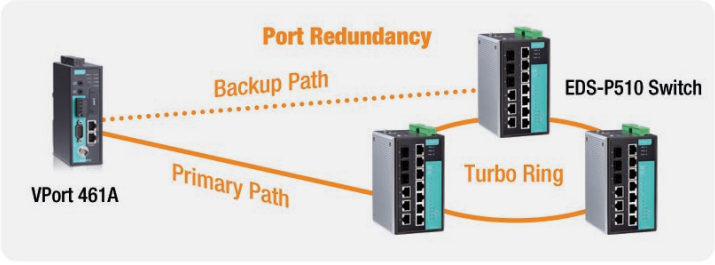
Complying with ONVIF specifications enables Moxa's encoders to communicate with other ONVIF-enabled security and surveillance equipment via a wide range of protocols. ONVIF compatibility makes it easier for system integrators and end users to integrate IP-based security products from other ONVIF compatible vendors, leading to reduced installation costs.

5-Year Warranty

To demonstrate our commitment to product reliability and providing excellent customer service, Moxa's video encoders are protected by a 5-year warranty, one of the best in the industry. Moxa's video servers meet the highest standards, and are suitable for surveillance applications in harsh environments.

Two Ethernet Ports for Cascading or Port Redundancy

The VPort 461A has two built-in 10/100 Mbps Ethernet ports for cascading multiple VPort 461A units. The cascade feature means fewer switch ports are needed, and users also save on cabling costs and effort when setting up their system. Alternatively, the same Ethernet ports can be used to set up a backup path to continue transmitting video when the primary path is disconnected.



Local Video Recording

An SD card slot is incorporated into the VPort 461A for local video recording via an SD card. It can support SD cards larger than 64 GB by utilizing the SDHC/SDXC* interface. Currently, local video recording can be triggered by an event or an interruption in network connectivity, which provides the added security of preserving important video images if there is a problem in network transmission or with the NVR.

*This function will be supported after the VPort 461A's V1.1 firmware is released.

Industrial Network Video Management Solution

Network Video Recorders

Rugged Network Performance for Centralized Video Recording

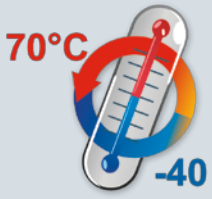
MxNVR-RO-T Series

EN 50155 compliant onboard NVR

- Records 1080P images at up to 900 FPS
- Live view of 1080P images at up to 120 FPS
- EN 50155:2007 and EN 50121-3-2 compliant
- Operating temperature: -40 to 70°C for EN 50155 TX
- ONVIF Profile S supported

Industial Grade, Rugged Design

Rugged design, with wide -40 to 70°C operating temperature, redundant recording, and EN 50155:2007 and EN 50121-3-2 compliance.



Onboard Real-Time Live-Viewing

The MxNVR-RO-T provides recording, live viewing, and DriverView, a simple, easy-to-use interface designed for onboard drivers. With DriverView, drivers can easily access and control recorded images in real time.

Easy Integration and Management

Provides ONVIF Profile S conformity for IP video interoperability, and camera management is easy with a user-friendly interface for configuring and controlling all Moxa IP camera functions.

Minimize Network Bandwidth with Distributed Video Recording

Standalone MxNVR-IA8

8-channel industrial network video recorders

- Supports H.264/MJPEG/MPEG4 video recording
- Embedded Linux system for high reliability
- -40 to 75°C operating temperature (requires solid state disk)
- No heater or fan for high MTBF
- Schedule and event recording

Tailor-Made for Field Site Applications

Rugged design features: -40 to 75°C operating temperature without heater or fan, protection against high EMI and surges, and less bandwidth required to transmit video streams.

Zero Bandwidth Recording

Recording is unaffected by bandwidth limitations since video is recorded and stored in its own internal memory. Only uses network resources when responding to a request.

Communicate with SCADA

With Modbus/TCP support for communicating with SCADA systems, the MxNVR-IA8 is ideal for automation applications. The MxNVR-IA8 can record, and event videos can be uploaded using simple SCADA system commands.

Video Management Software

SoftNVR-IA

64-channel IP video surveillance software

- Up to 64 channels
- Built-in OPC Server
- H.264/MPEG4/MJPEG viewing
- Dual monitor display

VPort SDK Plus

- User-friendly software development kits for third-party developers to customize their IP video management system
- URL (CGI) commands
- ActiveX Control SDK Plus
- API SDK Plus

ONVIF Profile S Conformity

With ONVIF Profile S conformity, Moxa's IP cameras and NVRs offer excellent system flexibility and can communicate with any major video management software or IP camera. In virtually any application, users can quickly add Moxa's IP cameras or NVRs to existing surveillance systems.

IP Camera Selection Guide




	VPort 66-2MP	VPort 56-2MP	VPort 36-2L	VPort 36-1MP Series	VPort 26A-1MP Series
Video Performance					
Resolution (max.)	1920 x 1080	1920 x 1080	1920 x 1080	1280 x 800	1280 x 800
FPS (max.)	60	30	30	30	30
Connections (max.)	5 unicast 50 multicast RTSP	10 unicast 50 mulitcast RTSP	5 unicast 50 multicast RTSP	5 unicast 50 mulitcast RTSP	5 unicast 50 mulitcast RTSP
Video Stream					
H.264	✓	✓	✓	✓	✓
MJPEG	✓	✓	✓	✓	✓
No. of Streams	3	3	4	3	3
DynaStream™	✓	✓	✓	✓	✓
CBR Pro™	✓	✓	✓	✓	✓
Image Stabilizer	✓	✓	✓	–	–
Camera					
Image Sensor	1/2.8" CMOS	1/2.5" CMOS	1/3" CMOS	1/2.7" CMOS	1/2.7" CMOS
Lens (mm)	4.3 to 94.6, 4.3 to 129	6.3 to 63, zoom lens	3 to 9, 10 to 23 , zoom lens	C/CS-mount lenses	3 to 9, vari-focal lens
Day & Night	✓	✓	✓	✓	✓
Minimum Illumination	0.4 Lux @ F1.6, color 0.03 Lux @ F1.6, B/W	2 Lux @ F1.8, Color 0.1 Lux @ F1.8, B/W	0.2 Lux @ F1.2, color 0.05 Lux @ F1.2, B/W	0.2 Lux @ F1.2, color 0.05 Lux @ F1.2, B/W	0.2 Lux @ F1.2, color 0.05 Lux @ F1.2, B/W
White Balance	ATW/AWB	ATW/AWB	ATW/AWB	ATW/AWB	ATW/AWB
Electronic Shutter (sec)	Auto (1/120 to 1/16000)	Auto (1/50 to 1/10000)	Auto (1/30 to 1/25000)	Auto (1/30 to 1/25000)	Auto (1/30 to 1/25000)
Sense up	✓	✓	✓	–	–
AGC Control	✓	✓	✓	✓	✓
Wide Dynamic Range	✓	–	✓	✓	✓
Back Light Compensation	✓	✓	✓	–	–
Auto Exposure	✓	✓	✓	✓	✓
Image Rotation (flip, mirror, 180° rotation)	✓	✓	✓	✓	✓
Digital Noise Reduction	✓	✓	✓	✓	✓
Network Connections					
10/100 Mbps, M12 Connector	–	–	–	–	–
10/100 Mbps, RJ45 Connector	1	1	1	1	1
100 Mbps Fiber Connector	–	1, single-mode	1, single-mode	–	–
Peripherals					
Audio	1 line-in, 1 line-out	1 line-in, 1 line-out	1 line-in, 1 line-out	–	1 line-in, 1 line-out
DI/Relay	1 DI, 1 relay	1 DI, 1 relay	1 DI, 1 relay	1 DI, 1 relay	1 DI, 1 relay
SD Slot	1, SDHC/SDXC	1, SDHC/SDXC	1, SDHC/SDXC	1, SDHC	1, SDHC
Network Management and Control					
Web Browser	✓	✓	✓	✓	✓
SNMP Protocols	v1/v2c/v3	v1/v2c/v3	v1/v2c/v3	v1/v2c/v3	v1/v2c/v3
RTSP (Real Time Streaming Protocol)	✓	✓	✓	✓	✓
Multicast (IGMP)	v3	v3	v3	v3	v3
QoS	✓	✓	✓	✓	✓
Automatic Configuration	–	–	–	DHCP Opt 66/67	–
Form Factor					
Protection Rating	IP66	IP30	IP30	IP30	IP66
Surface/Ceiling Mounting	✓	✓	✓	✓	✓
Flush-Mounting	–	–	–	–	–
Outdoor Installation Accessory	✓	✓	✓	✓	✓
Power Requirements					
Power-over-Ethernet (PoE)	–	✓ (PoE+)	✓	✓	✓
12/24 VDC, 24 VAC	✓	✓	✓	✓	✓
Alarms					
VMD (Video Motion Detection)	✓	✓	✓	✓	✓
Alarm Snapshot Image	✓	✓	✓	✓	✓
Tamper Alarm	✓	✓	✓	✓	✓
Supported Operating Temperature Ranges					
Standard Models	-40 to 65°C (-40 to 149°F)	-25 to 60°C (13 to 140°F)	-25 to 60°C (13 to 140°F)	-25 to 60°C (13 to 140°F)	-40 to 50°C (-40 to 122°F)
Wide Temp. Models	–	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)	-40 to 75°C (-40 to 167°F)
Regulatory Approvals					
CE/FCC	✓	✓	✓	✓	✓
UL 60950-1	✓	✓	✓	✓	✓
EN 50155:2007	–	–	–	–	–
EN 50121-3-2	–	–	–	–	–
EN 50121-4	✓	✓	✓	✓	✓
NEMA TS2	✓	✓	✓	✓	–
Class 1 Division 2 / Atex Zone 2	–	–	–	✓	–
EN 62262	IK10	–	–	–	IK10
ONVIF	✓	✓	✓	✓	✓
Profile S	✓	✓	✓	✓	✓
Warranty and MTBF					
Warranty Period	3 years	3 years	5 years	5 years	5 years
MTBF (Mean Time Between Failures)	525,491 hours	169,886 hours	630,908 hours	541,826 hours	201,721 hours

	VPort P16-1MP-M12	VPort P16-2MR Series	VPort P16-1MP-M12-IR	VPort 06-2 Series	VPort P06-1MP-M12 Series	VPort P06HC-1MP-M12 Series
Video Performance						
Resolution (max.)	1280 x 800	1920 x 1080	1280 x 800	1920 x 1080	1280 x 800	1280 x 800
FPS (max.)	30	30	30	30	30	30
Connections (max.)	5 unicast 50 mulitcast RTSP	5 unicast 50 multicast RTSP	5 unicast 50 multicast RTSP	5 unicast 50 multicast RTSP	3 unicast 5 mulitcast RTSP	5 unicast 50 mulitcast RTSP
Video Stream						
H.264	✓	✓	✓	✓	✓	✓
MJPEG	✓	✓	✓	✓	✓	✓
No. of Streams	3	4	3	4	3	3
DynaStream™	✓	✓	✓	✓	✓	✓
CBR Pro™	✓	✓	✓	✓	✓	✓
Image Stabilizer	–	–	–	–	–	–
Camera						
Image Sensor	1/2.7" CMOS	1/3" CMOS	1/2.7" CMOS	1/3" CMOS	1/2.7" CMOS	1/2.7" CMOS
Lens (mm)	3.6, 8.0	3.6, 4.2, 6.0, 8.0	3.6, 8.0	2.5, 3.6, 4.2, 6.0, 8.0	2.5, 3.6, 4.2, 6.0, 8.0	3.6
Day & Night	✓	✓	✓	–	–	–
Minimum Illumination	0.2 Lux @ F1.2, color 0.05 Lux @ F1.2, B/W	0.2 Lux @ F1.2, color 0.05 Lux @ F1.2, B/W	0.2 Lux @ F1.2, color 0.05 Lux @ F1.2, B/W	0.2 Lux @ F1.2, color	0.2 Lux @ F1.2, color	0.2 Lux @ F1.2, color
White Balance	ATW/AWB	ATW/AWB	ATW/AWB	ATW/AWB	ATW/AWB	ATW/AWB
Electronic Shutter (sec)	Auto (1/30 to 1/25000)	Auto (1/30 to 1/25000)	Auto (1/30 to 1/25000)	Auto (1/30 to 1/25000)	Auto (1/30 to 1/25000)	Auto (1/30 to 1/25000)
Sense up	–	–	–	–	–	–
AGC Control	✓	✓	✓	✓	✓	✓
Wide Dynamic Range	✓	✓	✓	✓	✓	✓
Back Light Compensation	–	–	–	–	–	–
Auto Exposure	✓	✓	✓	✓	✓	✓
Image Rotation	Flip, mirror, 180° rotation	Flip, Mirror, 90°, 180°, 270° rotation	Flip, Mirror, 180° rotation	Flip, Mirror, 90°, 180°, 270° rotation	Flip, mirror, 180° rotation	Flip, mirror, 180° rotation
Digital Noise Reduction	✓	✓	✓	✓	✓	✓
Network Connections						
10/100 Mbps, M12 Connector	1	1	1	1	1	1
10/100 Mbps, RJ45 Connector	–	–	–	–	–	–
100 Mbps Fiber Connector	–	–	–	–	–	–
Peripherals						
Audio	–	1 built-in microphone	1 built-in microphone	1 line-in or mic-in	1 line-in or mic-in	1 mic-in
DI/Relay	–	1 DI	1 DI	1 DI	–	1 DI
SD Slot	–	✓	✓	✓	–	–
Network Management and Control						
Web Browser	✓	✓	✓	✓	✓	✓
SNMP Protocols	v1/v2c/v3	v1/v2c/v3	v1/v2c/v3	v1/v2c/v3	v1/v2c/v3	v1/v2c/v3
RTSP (Real Time Streaming Protocol)	✓	✓	✓	✓	✓	✓
Multicast (IGMP)	v3	v3	v3	v3	v3	v3
QoS	✓	✓	✓	✓	✓	✓
Automatic Configuration	DHCP Opt 66/67	DHCP Opt 66/67	DHCP Opt 66/67	DHCP Opt 66/67	DHCP Opt 66/67	DHCP Opt 66/67
Form Factor						
Protection Rating	IP66	IP66	IP66	IP66	IP66	IP66
Surface/Ceiling Mounting	✓	✓	✓	✓	✓	–
Flush Mounting	✓	✓	✓	✓	✓	✓
Outdoor Installation Accessories	–	–	–	–	–	–
Power Requirements						
Power-over-Ethernet (PoE)	✓	✓	✓	✓	✓	✓
12/24 VDC, 24 VAC	–	–	–	✓	–	–
Alarms						
VMD (Video Motion Detection)	✓	✓	✓	✓	✓	✓
Alarm Snapshot Image	✓	✓	✓	✓	✓	✓
Tamper Alarm	✓	✓	✓	✓	✓	✓
Supported Operating Temperature Ranges						
Standard Models	-25 to 55°C (-13 to 131°F)					
Wide Temp. Models	-40 to 70°C (-40 to 158°F)					–
Regulatory Approvals						
CE/FCC	✓	✓	✓	✓	✓	✓
UL 60950-1	✓	✓	✓	✓	✓	✓
EN 50155:2007	✓	✓	✓	✓	✓	✓
EN 50121-3-2	✓	✓	✓	✓	✓	✓
EN 50121-4	–	–	–	–	–	–
NEMA TS2	–	–	–	–	–	–
Class 1 Division 2 / Atex Zone 2	–	–	–	–	–	–
EN 62262	IK10	IK8	IK10	IK8	IK9	–
ONVIF	✓	✓	✓	✓	✓	✓
Profile S	✓	✓	✓	✓	✓	✓
Warranty and MTBF						
Warranty Period	5 years	5 years	5 years	5 years	5 years	5 years
MTBF (Mean Time Between Failures)	1,602,553 hours	997,474 hours	1,052,184 hours	977,972 hours	1,944,687 hours	1,275,915 hours

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