MXNVR-RO-T

Industrial network video recorder for harsh environments

> Compliant with EN 50121-3-2 and essential sections* of EN 50155
> -40 to 70°C (TX temperature) operating temperature range, without a fan
> Record 1080P (1920 x 1080) images at up to 450 FPS
> Live view of 720P (1280 x 720) images at up to 120 FPS
> Multi-channel live view in 1/4 layout
> Redundant video recording
> Two built-in hot-swappable storage trays for 2.5" SSDs or HDDs
> ONVIF support for standardization and interoperability

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

c(UL)us LISTED EN 50155 CE FC

: Introduction

The MXNVR-RO-T is an onboard NVR (network video recorder) specially designed for live viewing and recording video on trains. It is compliant with essential sections of EN 50155 (performance, TX temperature, shock vibration, and EN 50121-3-2 EMC), which allows the onboard CCTV system to keep operating in critical onboard environments (requires solid-state disks that supports -40 to 70°C operating temperatures). The MXNVR-RO-T can record 1080P (1920 x 1080) images at up to 450 FPS, and supports live view of 720P (1280 x 720) images at up to 120 FPS. The user interface is compatible with a touch panel, and is designed for use by train engineers and operators.

: Specifications

Recording
Recoding Capability: Record 1080P (1920 x 1080) images at up to 450 FPS
Record Modes: Continuous, Schedule, Event
Stream Types: Video, Audio, Video/Audio
Video Input: IP video via Ethernet
Video Codecs: H.264, MPEG4, MJPEG
Audio Input/Output: 1 line-in, 1 line-out, M12 connector
Audio Format: PCM (G.711), AAC
Event Record: Triggered by CGI/DI digital input, motion detection, or time period
Pre/Post Record: 1 to 600 seconds (can be exported as a single video file)
Recycling Record: Enable/ Disable
Authentication:
• Digital Signature, Onvif export file format compliant
• Hash Function: SHA-256
• Encryption: RSA (key length 512 bits)
• Padding scheme: RSA-PSS

Local Live View
Display Capability: 720P (1280 x 720) images at up to 120 FPS
Display Mode: 1/4 multi-channel layout
Display Sequence: Based on a multi-channel layout
Monitor Interfaces: 2, 1 VGA DB15 female connector, 1 DVI-D connector
Snapshot Images: Save snapshot images to JPEG/PNG format

Searching and Exporting
Search Modes: Camera, date/time, event
Exporting: Export (download) recorded video files remotely by file or time period

Exporting File Formats: MP4
Authentication: Export recoded video files with watermark

Playback
Method: Export (download) video files for playback
Playback Modes: Continuous, timeline
Playback Operation: Play, Pause, Stop, Fast Forward, Fast Rewind

Storage
Disk Interface: 2 hot-swappable 2.5" SATAII sockets
Note: Storage disks are not included. Users will need to purchase 2.5" hard disks or SSDs (solid state disks) from a hard disk vendor.

Display Interface
VGA Interface: DB15 female connector, 2048 x 1536 resolution (max.)
DVI Interface: DVI-D connector (Chrontel CH7307 SDVO to DVI transmitter), 1920 x 1200 resolution (max.)

Network
Ethernet: 2 auto-sensing 10/100/1000 Mbps ports (M12 X-coded)
Network Configuration: IP address, subnet mask, gateway, DNS servers

Digital Input
Input Channels: 6, source type
Input Voltage: 0 to 30 VDC at 25 Hz
Digital Input Levels for Dry Contacts:
• Logic level 0: Close to GND
• Logic level 1: Open
Digital Input Levels for Wet Contacts:
• Logic level 0: +3 V max.
• Logic level 1: +10 V to +30 V (Source to DI)
Isolation Protection: 3 kV

MOXA®

Digital Output

Output Channels: 2, sink type
Output Current: 200 mA (max.) per channel
On-State Voltage: 24 VDC nominal, open collector to 30 VDC
Connector Type: 10-pin screw-fastened terminal block (6 DI points, 2 DO points, DI Source, GND)
Isolation: 3 kV optical isolation

LED Indicators

System: Power x 1, Storage x 1
LAN: 100M/Link x 2, 1000M/Link x 2
Serial: TX x 2, RX x 2

Power Requirements

Input Voltage: 24 to 110 VDC, M12 connector
Input Current: 2.5 A @ 24 VDC to 0.55 A @ 110 VDC (without SSD/HDD attached)
Power Consumption: 60 W (without SSD/HDD attached)

Physical Characteristics

Housing: Aluminum
Dimensions: 287 x 290 x 101 mm (11.29 x 11.41 x 3.97 in)
Weight: 5 kg (11.02 lb)
Installation: Wall mounting (standard)

Environmental Limits

Operating Temperature: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Standards and Certifications

Safety: UL 60950-1, CSA C22.2 No. 60950-1-07, EN 60950-1
Rail Traffic: EN 50155 (essential compliance*), EN 50121-3-2, EN 50121-4, IEC 61373
*Moxa defines "essential compliance" to include those EN 50155 requirements that make products more suitable for rolling stock railway applications.
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Green Product: RoHS, CRoHS, WEEE

MTBF (mean time between failures)

Time: 261,297 hrs
Standard: Telcordia SR332

Warranty

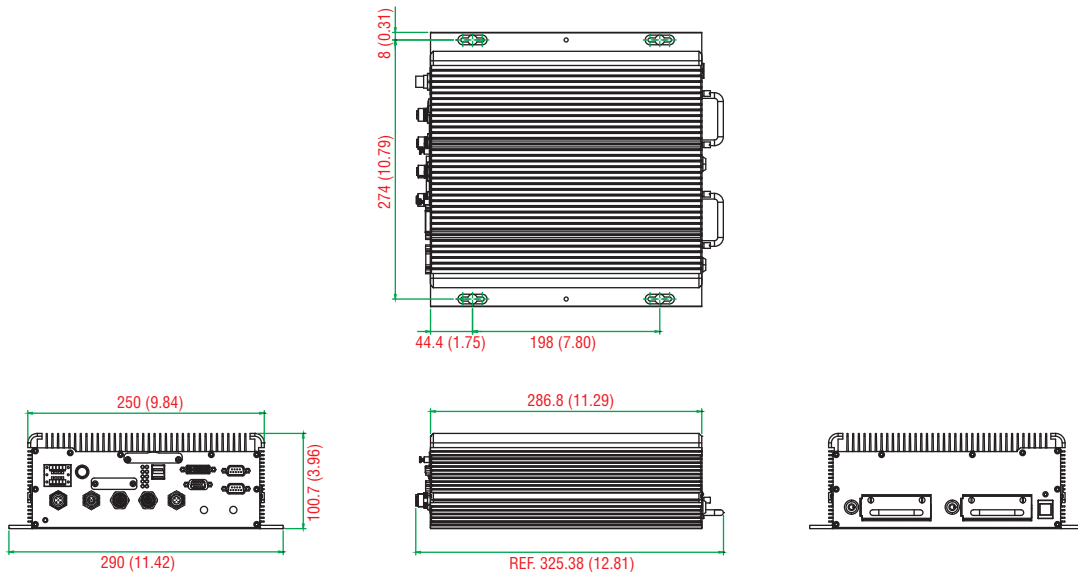**Warranty Period:** 3 years
Details: See www.moxa.com/warranty

Minimum Viewing System Requirements

Note: These specifications describe the network video recorder itself, but not its official accessories. In particular, the wide temperature range supported by this product does not apply to accessories such as power adapters and cables.

Dimensions

Unit: mm (inch)

8 (0.31)
274 (10.79)
44.4 (1.75)   198 (7.80)
250 (9.84)   100.7 (3.96)
290 (11.42)
286.8 (11.29)
REF. 325.38 (12.81)

⁝ Ordering Information

Available Models

MXNVR-RO-T: Onboard NVR, x86 embedded computer with Intel Core i7-3517UE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, Windows Embedded Standard 7, -40 to 70°C operating temperature (EN 50155 Class TX)

Package Checklist

- MXNVR-RO-T NVR
- 2 storage tray keys
- Power cable (CBL-M12FF5PPJ21-BK-15-IP68)
- 2 5-pin terminal blocks
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

Optional Accessories (can be purchased separately)

Type		Model	Description
Ethernet			
	Cable & Connector	CBL-M12XMM8PRJ45-BK-100-IP67	1-meter X-coded M12-to-RJ45 Cat-5E UTP gigabit Ethernet cable, 8-pin male M12 connector, IP67-rated
	Connector	M12X-8PMM-IP67	Field-installable X-coded screw-fastened gigabit Ethernet connector, 8-pin male M12 connector, IP67-rated
Power			
	Connector	M12A-5P-IP68	Field-installable A-coded screw-fastened power connector, 5-pin female M12 connector, IP68-rated
	Power Adapter	PWR-24250-DT-S1	Input: 100 to 240 VAC, 50 to 60 Hz, 1.5 A Output: 24 VDC, 2.5 A, 60 W, for testing and system development in the office under ambient temperature conditions
	Power Cord	PWC-C7US-2B-183	Power cord with 2-pin connector, US plug
	Power Cord	PWC-C7EU-2B-183	Power cord with 2-pin connector, EU plug
	Power Cord	PWC-C7UK-2B-183	Power cord with 2-pin connector, UK plug
	Power Cord	PWC-C7AU-2B-183	Power cord with 2-pin connector, AU plug
	Power Cord	PWC-C7CN-2B-183	Power cord with 2-pin connector, CN plug
Audio			
	Connector	M12A-8PMM-IP67	Field-installable A-coded 8-pin male screw-fastened M12 connector, IP67-rated
USB			
	Connector	M12A-5PMM-IP68	D-coded screw-fastened USB connector, 5-pin male M12 connector, IP68-rated