EN50155 Compliant 18-port managed PoE Ethernet switch NM3050-24V

Features

- Leading EN50155-compliant Ethernet switch for rolling stock applications;
- 8-x ports P.S.E. fully compliant with IEEE802.3af standard, provide up to 15.4 Watts per port;
- Support of the standard IEC 62439-2 MRP*NOTE (Media Redundancy Protocol) function;
- STP/RSTP/MSTP supported;
- Support of PTP Client (Precision Time Protocol) clock synchronization;
- IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic;
- SNMP v1/v2c/v3 support for secured network management;
- RMON for traffic monitoring;
- Support VLAN and LLDP protocol;
- M12 connectors to guarantee reliable operation against environmental disturbances;

reliable operation against environmental disturbances, such as vibration and shock. In addition, the wide operating temperature range from -40 ºC to 70ºC can satisfy most of operating environments. Therefore, the switch is one of the most reliable choices for rolling stock and highly-managed PoE Ethernet applications.

Overview

NM3050-24V managed Ethernet switches are designed for a number of industrial applications, including: rolling stock, vehicle, and railway applications. The devices is a managed PoE Redundant Ring Ethernet switch with 8x10/100Base-T(X) P.S.E., 8x10/100Base-T(X) and 2x10/100/1000Base-T(X) ports which is specifically designed for mission-critical applications and is fully compliant with EN50155 requirements. With a complete support of Ethernet Redundancy protocol, the device can protect your mission-critical applications from network interrupts or temporary malfunctions with its fast recovery technology. It also supports Power over Ethernet, a system that transmits electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. Each NM3050-24V switch has 8X10/100Base-T(X) P.S.E. (Power Sourcing Equipment) ports. P.S.E. is a device (switch or hub for instance) that will provide power in a PoE setup. The EN50155-compliant Ethernet switch uses M12 connectors to ensure tight, robust connections, and guarantee

TECHNICAL SPECIFICATIONS

- **Physical Ports**
  - 10/100Base-T(X) Ports in M12, Auto MDI/MDIX with P.S.E, 8 x M12 connector (4-pin D-coding)
  - 10/100Base-T(X) Ports in M12 Auto MDI/MDIX, 8 x M12 connector (4-pin D-coding);
  - 10/100/1000Base-T(X) ports in M12, 2 x M12 connector (8-pin A-coding);
  - RS-232 Serial Console Port, RS-232 in M12 connector (A-coding). Baud rate setting: 9600bps, 8, N, 1;

- **Technology**
- Ethernet Standards:
  - IEEE 802.3 for 10Base-T;
  - IEEE 802.3u for 100Base-TX;
  - IEEE 802.3ab for 1000Base-T;
  - IEEE 802.3x for Flow control;
  - IEEE 802.3ad for LACP (Link Aggregation Control Protocol);

- IEEE 802.1D for STP (Spanning Tree Protocol);
- IEEE 802.1p for COS (Class of Service);
- IEEE 802.1Q for VLAN Tagging;
- IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol);
- IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol);
- IEEE 802.1x for Authentication;
- IEEE 802.1AB for LLDP (Link Layer Discovery Protocol);
- IEEE 802.3af PoE specification (up to 15.4 Watts per port for P.S.E.);

- MAC Table: 8192 MAC addresses;
- Priority Queues: 4;
- Processing: Store-and-Forward;
- Switch Properties:
  - Switching latency: 7 us;
  - Switching bandwidth: 7.2Gbps;
  - Max. Number of Available VLANs: 4096;
  - IGMP multicast groups: 1024;
  - Port rate limiting: User Define;
- Security Features:
  - Enable/disable ports, MAC based port security;
  - Port based network access control (802.1x);
  - VLAN (802.1Q) to segregate and secure network traffic;
  - Supports Q-in-Q VLAN for performance & security to expand the VLAN space;
  - Radius centralized password management;
  - SNMP v1/v2c/v3 encrypted authentication and access security;
- Software Features:
  - STP/RSTP/MSTP (IEEE 802.1D/w/s)
  - Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units
  - TOS/Diffserv supported
  - Quality of Service (802.1p) for real-time traffic
  - VLAN (802.1Q) with VLAN tagging and GVRP supported
  - IGMP Snooping for multicast filtering
  - Port configuration, status, statistics, monitoring, security
  - SNTP for synchronizing of clocks over network
  - Support PTP Client (Precision Time Protocol) clock synchronization
  - DHCP Server / Client support

- Port Trunk support
- MVR (Multicast VLAN Registration) support

- Warning / Monitoring System:
  - Relay output for fault event alarming;
  - Syslog server / client to record and view events;
  - Include SMTP for event warning notification via email;
  - Event selection support;

■ **LED Indicators**
- Power Indicator: Green: Power LED x 2
- R.M. Indicator: Green: Indicate system operated in Master mode
- Fault Indicator: Amber: Indicate unexpected event occurred;
- 10/100Base-T(X) M12 PoE Port Indicator: Top Green for port Link/Act. Middle Green for PoE indicator. Bottom Amber for Collision/Duplex indicator;
- 10/100Base-T(X) M12 Port Indicator: Green for Link/Act. Amber for duplex/collision indicator;
- 10/100/1000Base-T(X) M12 Port Indicator: Green for Link/Act. Amber for 100Mbps indicator;

■ **Fault contact**
- Relay: Relay output to carry capacity of 3A at 24VDC on M12 connector (5-pin A-coding);

■ **Power**
- Redundant Input Power: Dual DC inputs. 24 (12~57VDC) VDC on 5-pin M23 connector;
- Power Consumption (Typ.): 14.88 Watts (power consumption of P.S.E. is not included);
- PoE Output Power: 60 Watts (12~24VDC) / 120 Watts (24~57VDC);
- Overload Current Protection: Present;
- Reverse Polarity Protection: Not Present

■ **Physical Characteristic:**
- Enclosure: IP-40;
- Dimension (W x D x H): 260(W)x91.3(D)x216(H)mm;
- Weight (g): 2140;

■ **Environmental:**
- Storage Temperature:- 40 to 85ºC (-40 to 185ºF);
- Operating Temperature: -40 to 70ºC (-40 to 158ºF);
- Operating Humidity: 5% to 95% Non-condensing;
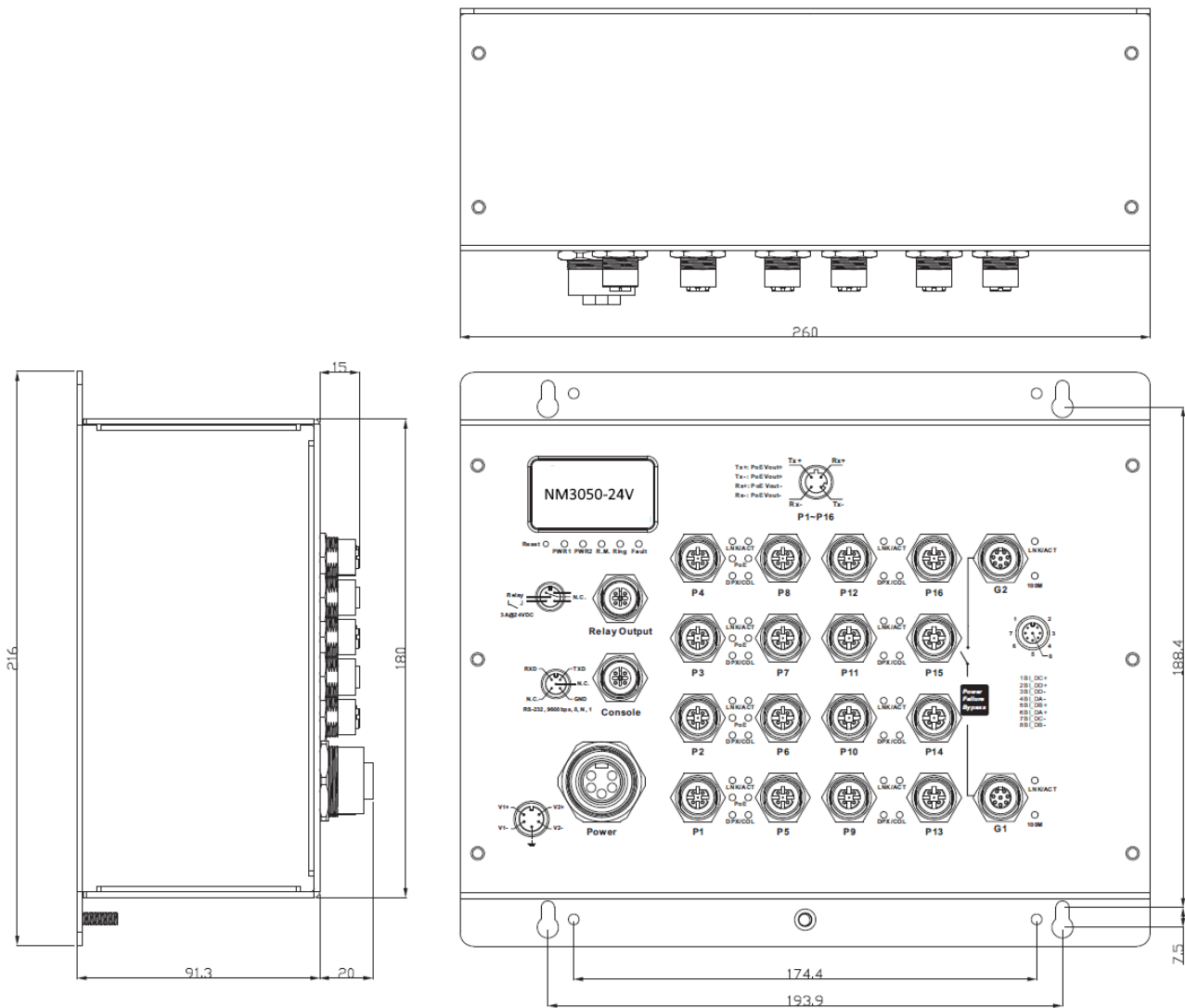
- **Regulatory approvals**
  - EMC: CE EMC (EN 55024, EN 55032), FCC Part 15 B, EN 50155(Pending);
  - EMI: EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A;
  - EMS: EN 55024 (IEC/EN 61000-4-2 (ESD), IEC/EN 61000-4-3 (RS),IEC/EN 61000-4-4 (EFT), IEC/EN 61000-4-5 (Surge), IEC/EN 61000-4-6 (CS), IEC/EN 61000-4-8(PFMF), IEC/EN 61000-4-11 (DIP));
  - Shock: IEC60068-2-27;
  - Free Fall: IEC60068-2-31;
  - Vibration: IEC60068-2-6;
  - Safety: EN60950-1;
  - Other: EN 50155(IEC 61373) (pending);
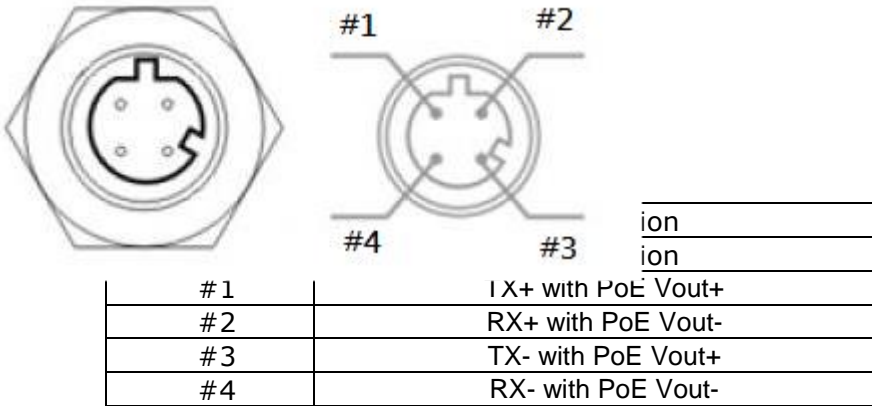
- MTBF: 298468 hours;
- **Warranty:**
  - 5 years;
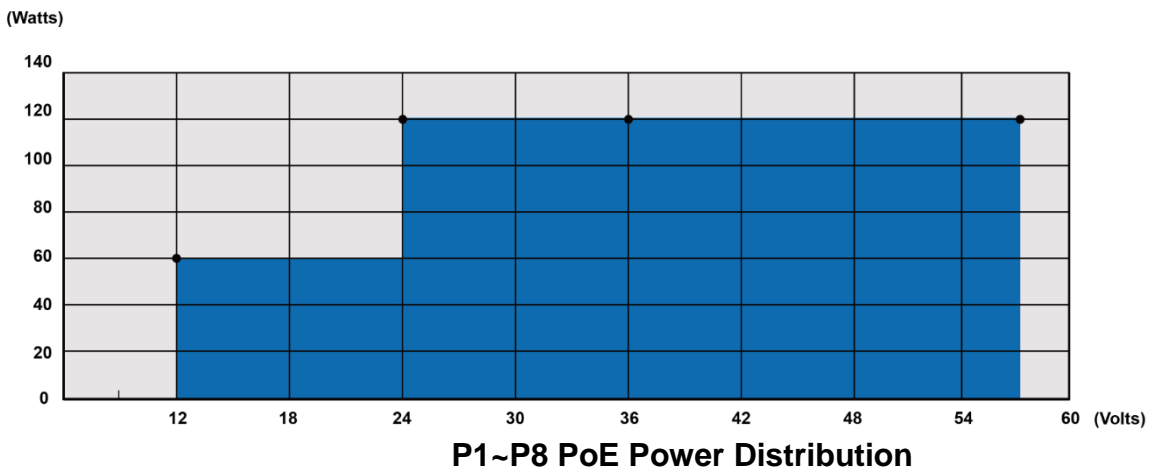
BOARD LAYOUT

PIN DEFINITION

	ion
	ion
#1	TX+ with PoE Vout+
#2	RX+ with PoE Vout-
#3	TX- with PoE Vout+
#4	RX- with PoE Vout-

* **10/100/1000Base-T(X) M12 port**

M12 Pin Definition	
#1	BI_DC+
#2	BI_DD+
#3	BI_DD-
#4	BI_DA-
#5	BI_DB+
#6	BI_DA+
#7	BI_DC-
#8	BI_DB-

PoE POWER DISTRIBUTION

P1~P8 PoE Power Distribution

ORDERING INFORMATION

NM3050-24V Configurations

Configurations

Model name	Description
NM3050-24V	EN50155 18-port managed PoE Ethernet switch with 8x10/100Base-T(X) P.S.E., 8x10/100Base-T(X) and 2x10/100/1000Base-T(X), M12 connector and 1xbypass included, 24VDC power inputs

Delivery checklist:

- NM3050-24V18-port managed PoE Ethernet switch;
- Packaging;

Optional accessories:

- Open-Vision M500: Powerful Network Management Windows utility Suit, 500 IP devices;
- M12C: M12 cable accessories;
- DR-75-48: 75 Watts DIN-Rail power supply;
- DR-120-48: 120 Watts DIN-Rail power supply;