NM10 – Unmanaged 8-Port Rugged Industrial Ethernet Switch

- **Unmanaged 8-port rugged Ethernet switch**
- **Fast or Gb BASE-T Ethernet via M12 connectors on the front panel**
- **PoE+ Power Sourcing Equipment (PSE), up to 60 W output power**
- **Rugged aluminium enclosure with IP40 protection**
- **Fanless and maintenance-free design**
- **Ultra wide range power supply input (14.4 to 154 VDC) with interruption class S2**
- **-40°C to +85°C operating temperature**
- **LED indicators on the front panel**
- **Compliant to EN 50155 (railways)**
- **Compliant to ISO 7637-2 (E-mark for automotive)**

The NM10 family is a range of fanless and maintenance-free Ethernet switches, which have been specifically designed for use in rolling stock and automotive applications operating in extremely rugged environmental conditions.
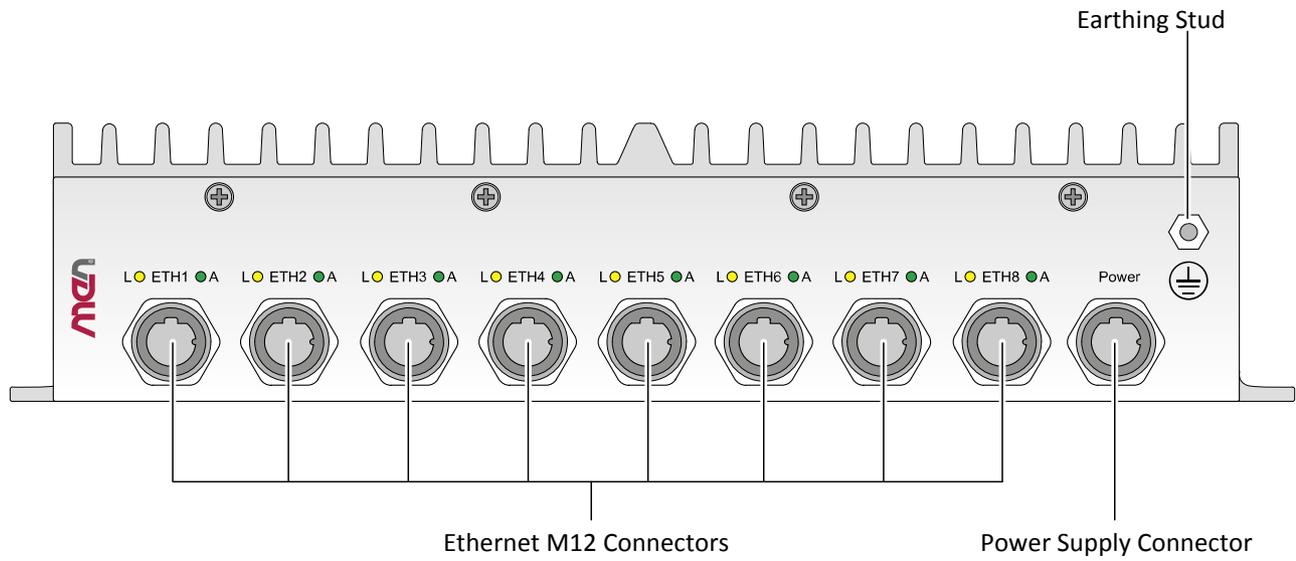
The NM10 range of switches provide eight channels at the front panel, accessible through M12 connectors, and cover different application requirements including with or without Power over Ethernet (PoE), and either 100 Mb or 1 Gb Ethernet interfaces.

The voltage supply for the NM10 Ethernet Switch is designed for maximum flexibility and supports wide range input supply voltages from 14.4 to 154 VDC, and meets all EN 50155 requirements for voltages ranging from 24 to 110 VDC. It is also fully compliant to the ISO 7637-2 (E-mark for automotive) standard.

The NM10 Ethernet Switch is designed for fanless operation at temperatures ranging from -40 to +70°C. Its special aluminium housing has ingress protection IP40 and cooling fins which serve as a heatsink for the internal electronics, and in this way provides conduction cooling.

As a member of MEN's family of extremely rugged industrial box PCs, the NM10 provides the same flexibility and scalability, as well as a look and feel which is common to the family.

Diagram

Earthing Stud

Ethernet M12 Connectors

Power Supply Connector

Technical Data

Supported Port Types	■ The following configurations are available:
	  □ 8x 10/100BASE-T unmanaged switch (Model: 09NM10-00)
	  □ 8x 10/100BASE-T unmanaged switch, 8x PoE + PSE with max. 60 W output power (Model: 09NM10-01)
	  □ 8x 10/100/1000BASE-T unmanaged switch (Model: 09NM10-02)
	  □ 8x 10/100/1000BASE-T unmanaged switch, 8x PoE + PSE with max. 60 W output power (Model: 09NM10-03)

Protocols and Functionality	■ Throughput
	  □ Dual-speed 10/100 Mbit/s unmanaged switch (Models: 09NM10-00 and 09NM10-01)
	  □ Tri-speed 10/100/1000 Mbit/s unmanaged switch (Models: 09NM10-02 and 09NM10-03)
	■ MAC tables
	  □ 8192 MAC addresses
	■ Processing
	  □ Store-and-Forward
	■ Energy Efficient Ethernet (IEEE 802.3az) on all ports
	■ VLAN
	  □ 4096 VLANs (IEEE 802.1q)
	■ Flow Control
	  □ IEEE 802.3x supported

Power Over Ethernet Features	■ Power over Ethernet functions on all ports (Models: 09NM10-01 and 09NM10-03)
	  □ PSE (Power Sourcing Equipment) function
	  □ Up to 60 W total output power
	  □ PoE starts in auto mode

Front Interfaces	■ Ethernet
	  □ Eight M12 4-pin D-coded connectors, 100BASE-T (100 Mbit/s) (Models: 09NM10-00 and 09NM10-01), or
	  □ Eight M12 8-pin A-coded connectors, 1000BASE-T (1 Gbit/s) (Models: 09NM10-02 and 09NM10-03)
	■ Ethernet LEDs
	■ Power supply
	  □ One M12 4-pin A-coded connector for ultra wide range power
	■ Power status LED
	  □ Indicates power supply stability or range validity

Electrical Specifications	■ Supply voltage
	  □ 14.4 VDC to 154 VDC
	  □ Nominal voltages 24, 36, 48, 72, 96 and 110 VDC, according to EN 50155
	  □ Power interruption class S2 (10 ms)
	  □ Code H, Starting Profile Level II, according to ISO 16750
	■ Power consumption
	  □ +10 W Max. (Models: 09NM10-00 and 09NM10-02)
	  □ +85 W Max. with 60W PoE Max. (Models: 09NM10-01 and 09NM10-03)

Mechanical Specifications	■ Dimensions: Height 44.1 mm x Width 220 mm x Length 164 mm ■ Weight: Less than 1.5 kg (depending on configuration)

Technical Data

Environmental Specifications	- IP protection - IP40 (except front plate) - Front plate: IP30 - Up to IP65 (Option) - Temperature range (operation) -40°C to 70°C (screened), with up to 85°C for 10 minutes according to class Tx (EN 50155) - Fanless operation - Temperature range (storage): -40°C to +85°C - Relative humidity (operation): max. 95% non-condensing - Relative humidity (storage): max. 95% non-condensing - Altitude: -300 m to +3000 m - Shock: 50 m/s², 30 ms (EN 61373) - Vibration (function): 1 m/s², 5 Hz to 150 Hz (EN 61373) - Vibration (lifetime): 7.9 m/s², 5 Hz to 150 Hz (EN 61373) - Conformal coating of internal components
Reliability	MTBF: 200.000 h @ 40°C according to IEC/TR 62380 (RDF 2000)
Safety	- Flammability - UL 94V-0 - Fire Protection - EN 45545-2 - Electrical Safety - EN 60950-1, class I equipment
EMC Conformity (Automotive)	- ECE R10 (prepared for E-Mark) - ISO 16750-H-K-D-C-C-IP30 (On request)
EMC Conformity (Railway)	EN 50121-3-2
Software Support	Switch firmware included

Configuration & Options

Standard Configurations

Article No.	Housing	Input Voltage	Ethernet Connectors	PoE
09NM10-00	Aluminium with IP40 protection	14.4 to 154 VDC, 24 to 110 VDC nom.	8 x 10/100BASE-T	No
09NM10-01	Aluminium with IP40 protection	14.4 to 154 VDC, 24 to 110 VDC nom.	8 x 10/100BASE-T	Yes
09NM10-02	Aluminium with IP40 protection	14.4 to 154 VDC, 24 to 110 VDC nom.	8 x 10/100/1000BASE-T	No
09NM10-03	Aluminium with IP40 protection	14.4 to 154 VDC, 24 to 110 VDC nom.	8 x 10/100/1000BASE-T	Yes

Ordering Information

Standard NM10 Models		
	09NM10-00	Unmanaged 8-port 10/100 MBit Ethernet switch, no PoE, 14.4 to 154 VDC, EN 50155 class Tx compliant -40 to +70°C (screened), conformal coating
	09NM10-01	Unmanaged 8-port 10/100 MBit Ethernet switch, with PoE, 14.4 to 154 VDC, EN 50155 class Tx compliant -40 to +70°C (screened), conformal coating
	09NM10-02	Unmanaged 8-port 10/100/1000 MBit Ethernet switch, no PoE, 14.4 to 154 VDC, EN 50155 class Tx compliant -40 to +70°C (screened), conformal coating
	09NM10-03	Unmanaged 8-port 10/100/1000 MBit Ethernet switch, with PoE, 14.4 to 154 VDC, EN 50155 class Tx compliant -40 to +70°C (screened), conformal coating

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