

NM50

Mobile Gateway & WLAN Access Point Industrial Stand-Alone Device

- » NXP PowerPC QorIQ P1013, 800 MHz
- » Fanless and maintenance-free design
- » 2 Gigabit Ethernet ports on M12 connectors
- » 1 USB 2.0 series A port, 1 USB 2.0 series B port
- » Up to 6 antennas on RP-TNC connectors
- » Wireless LAN according to IEEE802.11b/g/n
- » Aluminum housing with IP30 protection
- » -40°C to +85°C operating temperature
- » Dual RF, simultaneous 2.4 GHz and 5 GHz band support
- » Ultra wide range power supply input, with interruption class S2
- » Electrically isolated
- » Compliant to EN 50155 (railways)
- » Compliant to ISO 7637-2 (E-mark for automotive)



Maintenance Free and Extremely Rugged

The NM50 is a fanless and maintenance-free wireless access point, specifically designed for use in railway cars and automotive applications operating in rugged environmental conditions.

High Speed Internet for Multiple WLAN Devices

The NM50 Access Point can support up to two WLAN modules, and provides reliable high speed internet and local data connection to multiple WLAN compatible devices. A configurable firewall protects WLAN clients and supports secure and uninterrupted internet data access.

High Performance Processor

The NM50 Access Point is based on QorIQ Power PC CPU technology from NXP. The system is designed for fanless operation in temperatures ranging from -40 to +70°C (+85°C for up to 10 minutes). Its special aluminium housing with cooling fins serves 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 NM50 provides the same flexibility and scalability, as well as a look and feel which is common to the family.

Extended Coverage and Service Availability

A redundant upstream connection to a local server, or downstream to other access points, to extend coverage and increase availability of service, is achieved via the two Gigabit Ethernet ports available on 8-pin M12 connectors.

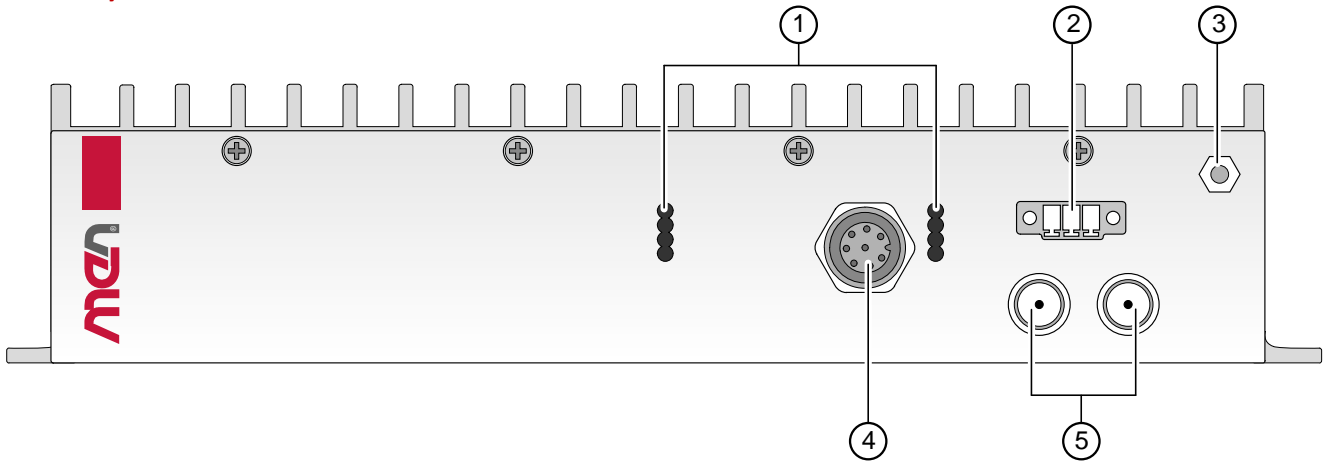
Compliant to Railway and Automotive Standards

The voltage supply for the fully configured NM50 Access Point 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 ISO 7637-2 (E-mark for automotive) standard.

Adaptable to Specific Application Needs

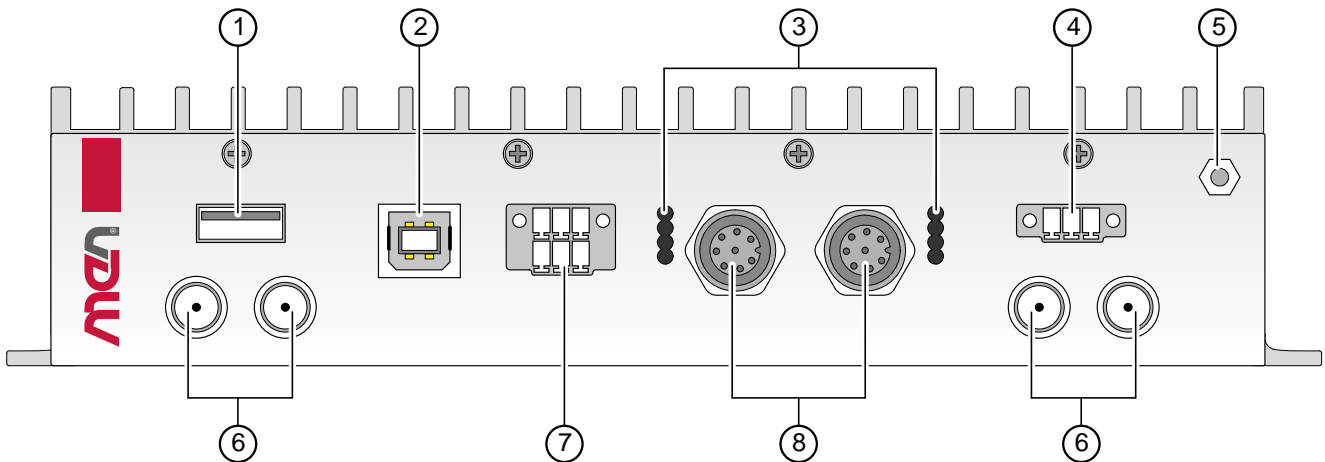
The NM50 comes in two standard versions and can be adapted to meet specification application needs. Some of the most important configuration options include the number of WLAN radios and type of upstream link.

Entry 09NM50-00



- ① Status/Activity LEDs
- ② Power Supply Connector
- ③ Earthing Stud
- ④ Gigabit Ethernet M12 A-Coded Connector
- ⑤ Antenna RP-TNC Connectors

High End: 09NM50-01



- ① USB 2.0 Series A Interface
- ② USB 2.0 Series B Interface
- ③ Status/Activity LEDs
- ④ Power Supply Connector
- ⑤ Earthing Stud
- ⑥ Antenna RP-TNC Connectors
- ⑦ Discrete I/O
- ⑧ Gigabit Ethernet M12 A-Coded Connectors

Supported Port Types

- The following configurations are available:
 - Entry: 1x 10/100/1000BASE-T M12 connector, wide range power input, 1x WLAN Radio, 2x RP-TNC antenna connectors (Model: 09NM50-00)
 - High End: 2x 10/100/1000BASE-T M12 connectors, wide range power input, 2x WLAN radio, 4x RP-TNC antenna connectors, 1x USB 2.0 series A, 1x USB 2.0 series B, 2x discrete I/O) (Model: 09NM50-01)
- Please contact MEN sales for configuration possibilities.

CPU

- NXP QorIQ P1013
 - One high-performance Power Architecture e500v2 core
 - 800 MHz processor core frequency

Memory

- 32 KB L1 instruction cache
- 32 KB L1 data cache
- 256 KB L2 cache/SRAM
- 1 GB DDR3 SDRAM system memory
 - Soldered
- 32 MB NOR Flash

Mass Storage

- Via USB 2.0 host port at the front (Model: 09NM50-01)

Protocols and Functionality

- Management I/F
 - Integrated FW WEB/browser based setup and maintenance
 - Local interface
 - Firmware update from USB and Ethernet
- Firewall
 - Full featured firewall
 - SSID show/hide
 - MAC/IP/port filtering
 - Multiple zone
- Security
 - WEP 64 and 128 bit
 - WPA/WPA2 Personal and Enterprise
- General Protocols
 - Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNMP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP
- AP Protocols
 - ARP, BOOTP, DHCP, STP/RSTP (IEEE 802.1D/w)
- Routing
 - Optional feature when Cellular upstream option is selected
 - Static and dynamic routing, IPv4 IPv6, TCP/IP, UDP, ICMP, STP, RSTP, MSTP, RIPv1, RIPv2, RIPng?
- Remote monitoring and maintenance via Ethernet and WLAN
- Local monitoring and maintenance via USB device port (Model: 09NM50-01)
- Software initiated restart
- Watchdog

Connectivity

- USB host at front for mass storage (Model: 09NM50-01)
- USB device for maintenance (Model: 09NM50-01)
- WiFi Network
 - Up to two WiFi 802.11b/g/n/ac modems (UC-Option)
 - 2x2 MIMO supported
 - Optional antenna diversity for each radio
 - Maximum data rate 300 Mbit/s (n); 54 Mbit/s (g), 11 Mbit/s (b)
 - Both 2.4GHz and 5GHz supported (depending on configuration)
 - Unlimited parallel users; Bandwidth-limited to 60 per WiFi RF interface
- Cellular Network
 - 3.5G/4G modem (UC-Option)

Discrete I/O (Model: 09NM50-01)

- Opto-isolated output (open collector) user programmable status output
 - Reports device status to external devices
 - Freely programmable via Web browsers or console I/F
 - Report service error signal/flag to host option
- Opto-isolated output user programmable input
 - Freely programmable via Web browsers or console I/F
 - Report external device status to Access Point option
 - Report 'engine off' in bus application option
- One dedicated W_Disable input
 - Active low signal to disable RF operation
 - Direct disable of radio operation on either WLAN or cellular cards
- Discrete input levels
 - Input current for high: >5 mA
 - Input current for low: <1 mA
 - Input switching level: 40..±5%
- Independent input reference voltage range 0..154 V
- Optocoupler shutter control option
- Only available on the NM50 version with full configuration

Front Interfaces

- One USB 2.0 series A, host port (Model: 09NM50-01)
 - Series A connector at front panel
 - Firmware and configuration update support
- One USB 2.0 series B, device port (Model: 09NM50-01)
 - Series B connector at front panel
 - Console-mode maintenance support
- Ethernet 1
 - 10/100/1000Base-T Ethernet channels
 - M12 8-pin A-coded connector
 - Two LEDs to signal LAN link and activity status
- Ethernet 2 (Model: 09NM50-01)
 - 10/100/1000Base-T Ethernet channels
 - M12 8-pin A-coded connector
 - Two LEDs to signal LAN link and activity status
- Antenna
 - Two Type RP-TNC antenna connectors (Model: 09NM50-00)
 - Four Type RP-TNC antenna connectors (Model: 09NM50-01)
- Discrete I/O (Model: 09NM50-01)
 - 6-pin double row connector, 3.5 mm
- LEDs
 - Power status
 - Fault LED: Indicates error codes from the board controller
 - Ethernet link and activity status
 - User LEDs for WLAN activity
- Power Input
 - RM3.5 3-pol plug-in connector

In-System Interfaces

- Two PCI Express Mini Card slots
 - Mobile service standards: GSM (2G), UMTS (3G), LTE (4G) and derivatives
 - Wireless communication: WLAN / WiFi IEEE 802.11 and derivatives
 - Positioning: GPS, GLONASS, GALILEO
- One SIM card slot on PCI Express Mini Card slot2

Electrical Specifications

- Primary power supply
 - 14.4 to 154 VDC, nominal voltages 24, 36, 48, 72, 96 and 110VDC according to EN50155
- Power consumption: Less than 15 W
- Power interruption class S2 (10 ms)

Mechanical Specifications

- Dimensions: Height 44 mm x Width 125 mm x Length 220 mm
- Weight: approx. 1.5 kg (depending on configuration)
- Mounting
 - Wall mount or top mount

Environmental Specifications

- Temperature range (operation):
 - -40 to 70°C, with up to 85°C for 10 minutes according to class Tx (EN 50155)
 - Fanless operation
- Temperature range (storage): -40..+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 - 150 Hz (EN 61373)
- Vibration (lifetime): 7.9 m/s², 5 Hz - 150 Hz (EN 61373)
- Conformal coating on request [oder: (falls Standard)] (standard)

MTBF

- 70 000 h

Safety

- Flammability
 - UL 94V-0
- Fire Protection
 - EN 45545-2
- Electrical Safety
 - EN 60950-1, class I equipment

EMC Conformity (Automotive)

- ISO7637-2 (E-mark)

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