

mbNET.mini

Technical data

Version: 2.2.3
Date: Dec 4th, 2024

MDH860; MDH862 EU; MDH862 US; MDH863; MDH866 EU; MDH866 US; MDH867;
from HW02/03 and FW from 2.3.0

The **mbNET.mini** is a very compact industrial router for DIN-rail mounting. It offers secure IP-based access to Ethernet devices and networks through the remote service platform **mbCONNECT24**. Therefore, it is not only suitable for remote maintenance applications but also for tasks such as data collection, visualization, alerts and M2M communication.



- Integrated Ethernet switch (3-port or 4-port)
- 4G modem variant
- Wi-Fi variant
- Failover function
WAN to Modem
WAN to Wi-Fi
- OpenVPN security protocol
- 2 pieces I/Os
These connectors can be independently configured as a digital input or digital output.
- Robust metal housing
- Ideal for M2M applications



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1 General

Release notes

Version	Date	Comment
V 1.9.0 DR02	Jan 28 th , 2019	Previous version: 1.9.0 DR01 (May 4 th , 2018) Correction / completion of the encryption and OpenVPN parameters
V 1.9.19	Mar 11 th , 2019	The following new device types have been added: MDH 865, MDH 866 EU, MDH 866 AT & T and MDH 867. Technical feature of the new types: 3 x LAN interface, 1 x WAN interface with failover function WAN > Modem / Wi-Fi.
V 2.0.0	May 5 th , 2019	Inclusion of the hardware version HW2 in the extended temperature range.
V 2.0.0 DR01	Oct. 2 nd , 2019	Technical data exclusively for devices from hardware version HW02.
V 2.0.6	Dec 3 rd , 2019	For devices with hardware version HW 02 and firmware from V 2.0.6, the two I/Os can be configured independently of each other as a digital input or digital output.
V 2.0.6 DR01	Jan 13 th , 2020	Changed data (frequencies and target region) for devices with LTE (4G) module (MDH 862 EU, MDH 866 EU) with hardware version: HW 03
V 2.0.6 DR02	July 6 th , 2020	Adding the transmission power for radio modules.
V 2.0.6 DR03	Sept 23 rd , 2020	Adding processor speed and RAM
V 2.2.0	May 27 th , 2021	Elimination of devices with 3G modems (MDH 861, MDH 865). Adding the performance data for Wi-Fi devices (MDH 863, MDH 867) with hardware version: HW 03
V 2.2.0 DR01	Oct 27 th , 2021	Correction of the performance data for the Digital Outputs: Changed from 1.5 A to 0.5 A per output.
V 2.2.1	Mar 28 th , 2022	Addition of the performance data for device types with LTE (4G) module - AT&T from hardware version HW 03.
V 2.2.2	May 9 th , 2023	Adding the RedLion "Compact Remote Access Router" RA50C. Change of company address.
V 2.2.3	Dec 4 th , 2024	Renaming without technical changes of the types MDH 862 AT&T to MDH 862 US, MDH 867 AT&T to MDH 867 US. Elimination of the RedLion "Compact Remote Access Router" RA50C. Change of company address.

Issued by:

MB connect line GmbH

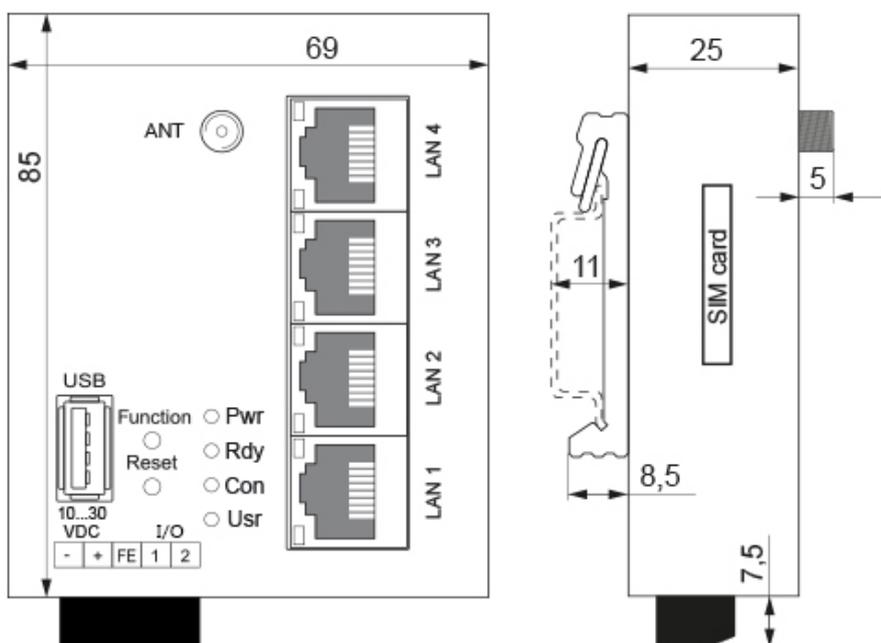
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Great care was taken in compiling the texts and illustrations. Despite all efforts, mistakes can never be completely avoided. We are always grateful for suggestions for improvement and / or references to errors.
The latest information can be obtained on our homepage.

2 Technical data industrial router *mbNET.mini* MDH 860 – MDH 867

(Type: MDH 860, MDH 862 US, MDH 862 EU, MDH 863, MDH 866 US, MDH 866 EU, MDH 867).
From hardware version HW02, HW03* and firmware version from V 2.3.0



* You will find the device type and the hardware version on the device nameplate.

Type: MDH 866 4G EU, LAN, WAN HW03
S/N : 18208660XXXXXX



General data

Voltage --- V (DC)	10 - 30 V DC (SELV and Limited Energy circuit)	
Power consumption (Normal mode)	250 mA @ 24 V - without additional consumers	
Power consumption under full load	max. 1.8 A @ 24 V - (including 2 digital outputs + USB port)	
Random Access Memory	128 MB	
Processor speed	454 MHz	
IP protection class	IP 30**	** at full occupancy of all connections and interfaces. Alternatively, unused interfaces can be covered with dust protection plugs.
Area of application	Dry environments	
Operating temperature	-40 – +75 °C (Type: MDH 860, MDH 862, MDH 866) -40 – +75 °C (Type: MDH 863, MDH 867 - HW 03)	
Operating temperature	0 – +60 °C (Type: MDH 863, MDH 867 - HW 02)	
Storage temperature	-40 – +85 °C	
Humidity	0 – 95% (non condensing)	
Weight (max.)	240 g	
Dimensions (max.)	69 mm x 38.5 mm x 92.5 mm (W x D x H)	
Housing (material)	metal	
Mounting	DIN rail mounting (based on DIN EN 50022)	

Interfaces / Communication

	Type				
	MDH 860	MDH 862 EU / US	MDH 863	MDH 866 EU / US	MDH 867
USB interface	1 x	1 x	1 x	1 x	1 x
Digital inputs / outputs	2 x	2 x	2 x	2 x	2 x
LAN interface	3 x	4 x	4 x	3 x	3 x
WAN interface	1 x	–	–	1 x	1 x
SIM card reader (mini SIM)	–	1 x	–	1 x	–
SMA socket 	–	2 x	–	2 x	–
RP-SMA socket 	–	–	1 x	–	1 x
GSM module 4G (LTE)	–	1 x	–	1 x	–
Wi-Fi modem	–	–	1 x	–	1 x
Failover WAN > Modem / Wi-Fi	–	–	–	✓	✓

Interface specification

LAN interface	10/100 Mbit/s full and half duplex operation, autodetection patch cable / crossover cable
WAN interface	10/100 Mbit/s full and half duplex operation, autodetection patch cable / crossover cable
USB interface	USB Host 2.0
2 pieces I/Os	These connectors can be independently configured as a digital input or digital output - only in the mbCONNECT24 V2 portal.
Digital input	10 – 30 V DC (low 0 – 3.2 V DC, high 8 – 30 V DC)
Digital output	10 – 30 V DC to a maximum of 0.5 A per output

VPN

Devices with firmware < V 3.0	
VPN protocol	OpenVPN, 1 tunnel
Encryption parameter	Control Channel: TLSv1.2, cipher ECDHE-RSA-AES256-GCM-SHA384 Data Channel: Cipher 'AES-256-GCM' initialized with 256 bit key
Authorization	Pre-Shared-Key, X.509
Devices with firmware > V 3.0	
VPN protocol	OpenVPN, 1 tunnel
Encryption method	AES (256-, 192-, 128-Bit), Blowfish (128-Bit), 3DES (168-Bit), DES (56-Bit)
Hash algorithms	SHA-2 (SHA-256, SHA-512), SHA-1, MD5
Authorization	Pre-Shared-Key, X.509

Network /Security

Firewall	1:1 NAT, IP-Filter, Port-Forwarding, stateful inspektion
IP router	NAT-IP, TCP/IP routing, IP forwarding
Service	DHCP client, NTP client
Time synchronization	NTP server

Communication

> Devices with **LTE (4G)** module (MDH 862 EU, MDH 866 EU); hardware version: **HW 04**

Target region*	EMEA
GSM/GPRS/EDGE	900 (B8), 1800 (B3) MHz; max. 236 kbps
HSxPA	900 (B8), 1800 (B3), 2100 (B1) MHz; Downlink max. 42 Mbps, Uplink max. 5,76 Mbps
LTE	800 (B20), 900 (B8), 1800 (B3), 2100 (B1), 2600 (B7), 700 (B28A) MHz; Downlink max. 150 Mbps, Uplink max. 50 Mbps

*Furthermore, the device can technically be operated in other countries.
Check the frequency bands used before connecting the device to the mobile network.

RF parameters	
Output power - typical values for max output level	Sensitivity - typical sensitivity levels
<ul style="list-style-type: none"> • 2G: LB: 33 dBm; HB: 30 dBm • 3G/TD-SCDMA: 24dBm • 4G (FDD & TDD): 23dBm @1RB 	<ul style="list-style-type: none"> • -108 dBm @ 2G • -113.5 dBm @ 3G • -103 dBm @ 4G FDD (BW=5 MHz)

Antenna connector	2 pieces SMA socket 
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TAC	35162610
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> Devices with **LTE (4G)** module - **US** - Type: MDH 862 US, MDH 866 US; from hardware version: **HW 03**

NOTICE

The device types MDH 862 US and MDH 866 US are not CE marked and must not be operated or commissioned in the European Economic Area (EEA)!

Target region*	North America (Public safety, AT&T, FirstNet, T-Mobile, Canada)
HSxPA	1900 PCS (B2), AWS (B4), 850 (B5) MHz; Downlink max. 42 Mbps
LTE	700 Lower (B12), 700 PS (B14), AWS (B4), 1900 PCS (B2), 850 (B5), 700 Upper (B13), AWS-3 (B66), 600 (B71) MHz; Downlink max. 150 Mbps, Uplink max. 50 Mbps

*The frequency bands used in the country of use vary depending on the provider.
Check the frequency bands used before connecting the device to the mobile network.



RF parameters	
Output power - typical values for max output level	Sensitivity - typical sensitivity levels
<ul style="list-style-type: none">• 2G: LB: 33 dBm; HB: 30 dBm• 3G/TD-SCDMA: 24dBm• 4G (FDD & TDD): 23dBm @1RB	<ul style="list-style-type: none">• -108 dBm @ 2G• -113.5 dBm @ 3G• -103 dBm @ 4G FDD (BW=5 MHz)
Antenna connector	2 pieces SMA socket 
TAC	35034498; 35432809; 35604311
FCC	Contains FCC ID: R17LE910CxNF

> Devices with **Wi-Fi** module (MDH 863, MDH 867); hardware version: **HW 03**

Wi-Fi	IEEE 802.11b/g/n	
Frequency bands	2.4 GHz, channel 1 - 13* (2.412 GHz - 2.472*)	
Channel bandwidth	20 MHz	
Data rates	802.11b	1, 2, 5.5 and 11 Mbps
	802.11g	6, 9, 12, 18, 24, 36, 48 and 54 Mbps
	802.11n	MCS0-MCS7 (max 72.2Mbps)
Hardware supported Encryptions/Decryption	AES/CCMP, AES/CMAC, WAPI, WEP/TKIP	
Max. output power	19 dBm EIRP**	
Max. sensitivity	-97 dBm EIRP**	
FCC	FCC ID: XPYLILYW1 IC: 8595A-LILYW1	
IC	IC: 8595A-LILYW1	

* Maximum, depends on the region. ** RF power including maximum antenna gain (3 dBi).



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SIMPLIFIED EU DECLARATION OF CONFORMITY

Hereby, MB connect line GmbH declares that the radio equipment types MDH 861; MDH 862 EU; MDH 863; MDH 865; MDH 866 EU; MDH 867 are in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address:

<https://mbconnectline.com/conformity/>