MFN 200

User manual and installation guide

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Introduction

The MFN 200 is an industrial edge computing device and part of the Nerve platform, an industrial IoT solution designed to converge and connect automation systems. It is intended to be used for the hosting of industrial applications, connection to industrial infrastructure and processing of industrial data.
The variants of the MFN 200 come with different RAM and SSD sizes. Currently available variants that are covered by this document include:

Product name	Part number	Memory and storage	Version
MFN 200 08-128	14682	8 GB RAM and 128 GB storage	1.0.0
MFN 200 16-256	14671	16 GB RAM and 256 GB storage	1.0.0

Table 1: *MFN 200 variants*

The variant can be identified printed at the top left of the product label. The label of the MFN 200 can be found on the back of the device, close to the DIN rail clip.

Technical Data

CPU	MFN 200 08-128: Intel® Atom® x6414RE, 4 cores, 1.5 GHz, TCC MFN 200 16-256: Intel® Atom® x6425RE, 4 cores, 1.9 GHz, TCC
Memory	MFN 200 08-128: 8 GB RAM MFN 200 16-256: 16 GB RAM
Disc size and type	MFN 200 08-128: 128 GB SSD MFN 200 16-256: 256 GB SSD
Interfaces	1x 3-Pin Terminal Block Power connector, 60 W, 24 V/2.5 A 6 x 2.5 GbE (Intel® i226) 3x USB 3.2 Gen2x1 1x DP v1.4 4096 x 2160 @ 60 Hz
Operating temperature range	-20 °C to 60 °C
Dimensions	100 mm (L) x 100 mm (W) x 95 mm (H)
Weight	0.79 kg with DIN rail 0.78 kg without DIN rail
Shock	15 g with 11 ms impulse length, 18 shocks DIN-Rail (EN 60068-2-27)
Vibration	1 G, with DIN-Rail (EN 60068-2-6)
Ingress protection	IP 30

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Certification	CE (For the declaration of conformity, see https://docs.nerve.cloud) RoHS
Other environmental parameters	Indoor use only Relative Humidity 5 % to 95 % (in non-condensing environments)

Instructions for safe use

To ensure the proper operation of an MFN 200, follow all instructions given in this manual.

- Carefully read, understand, and follow the instructions and specifications listed in this document before operating the device.
  Failure to comply with these instructions or operation of the device outside the intended field of operation may result in serious damage to machinery and may seriously affect the safety of users. TTTech Industrial Automation AG cannot be held liable for any personal injury or property damage resulting from improper installation or use of the device, non-compliance with the instructions in this document, or non-compliance with the intended field of operation. Non-compliance will result in the exclusion of any liability and warranty.
- Always operate the product within the electrical and environmental specifications and follow the handling and mounting instructions provided by TTTech Industrial Automation AG. Usage of the product outside the specifications may be hazardous to persons or property.
- Only skilled and trained personnel are allowed to operate this device.
- The device must be mounted and operated using the type of connectors specified in this document.
- The label on the device contains important information. The label must not be destroyed or made unreadable.
- The device hardware does not require maintenance activities.
- Do not open and/or modify the device.

Warning: Hot Surface. The surface temperature of the MFN 200 can rise by up to 25 °C above the ambient temperature. Avoid touching the metallic parts of the housing at ambient temperatures above 40 °C.

Intended use

The MFN 200 is an industrial PC for a variety of applications in the industrial 4.0 world, to collect data from industrial processes and machines; store, analyze and transfer industrial machine data to data centers, host and execute customer applications and is specifically designed for industrial applications.

Improper use

The MFN 200 is not suited to execute safety relevant software or controls.

Disposal

Disposal of the device must be performed in accordance with prevailing national environmental regulations. WEEE 2012/19/EU is valid in Europe, while national laws and regulations may apply as well.

Front panel and indicators

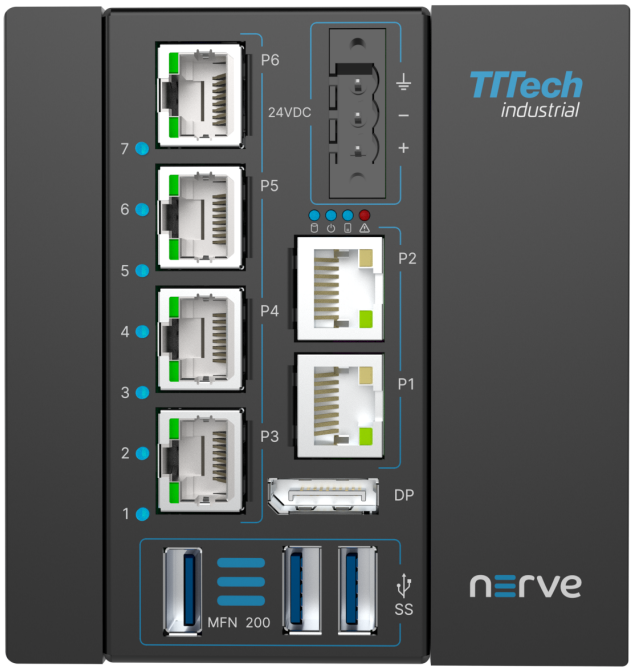

Figure 1: *MFN 200 front panel*

Label	Description
24 VDC	9 to 36 VDC with chassis GND
Status indicator LEDs	The LEDs from left to right are: • **Storage** Flashes green when storage is being accessed. Otherwise off. • **Power** Solid green when the device is powered on. • **EC ready** Solid green when ready. Otherwise off. • **Error** Solid red if the device is overheating. Solid orange when throttling.
P1	Console port. This port is typically used to connect a computer for configuration.

Label	Description
P2/P3/P4/P5/P6	Ethernet ports
DP	Display Port
SS	Three USB 3.2 ports
LED 1 to 7	Not in use

Table 2: *Front panel descriptions*

Physical ports and network interfaces

Physical port	Network name
P1	io0
P2	wan
P3	mgmt
P4	extern1
P5	extern2
P6	extern3

Table 3: *Physical ports and network interfaces*

Installation and removal

The MFN 200 is intended to be mounted on a 35 mm (W), 7.5 mm(H) DIN rail inside a closed cabinet. Before mounting, the DIN rail needs to be applied to the MFN 200. Fasten the DIN rail bracket with M3 x 5L screws on the MFN 200.
Due to its weight it is advisable to install a strong DIN rail. No tool is required to install or remove the MFN 200. Follow these steps to install the MFN 200 on a DIN rail:

1. Make sure that the DIN rail is fastened to the MFN 200.
2. Engage the DIN rail mounting clip of the MFN 200 with the upper edge of the DIN rail.
3. Push the MFN 200 down into the DIN rail.
4. Place the MFN 200 in a vertical position so that the mounting clip engages the lower edge of the DIN rail.

If you want to remove the MFN 200 from a DIN rail, follow these steps:

1. Push the MFN 200 down to un-secure the device on the rail.
2. Rotate the MFN 200 upwards so that the lower edge of the DIN rail disengages.
3. Lift the MFN 200 slightly to remove it.

Caution: For using the MFN 200 up to the maximum permissible environmental temperature, it must be mounted with at least 5 mm distance to neighboring units. The surface temperature of neighboring units shall not have more than 20 °C above ambient.

Caution: The MFN 200 needs to be mounted vertically to enable airflow through the cooling fins. No obstacles below and above the MFN 200 should hinder the air flow.

Caution: Follow the local regulations for installing the device.

Maintenance

Caution: Only the manufacturer may repair the device. If a repair should be necessary, please contact customer support.

Caution: Always install the product with sufficient surrounding space to allow for adequate heat dissipation and cooling effect.

Do not operate or store the MFN 200 in temperatures or humidity outside the range specified in the specifications; or in the locations with:

- high-frequency electromagnetic interference
- static electricity
- strong electromagnetic fields
- possible exposure to radioactivity

Cleaning

Warning: Working on the MFN 200 while it is live can lead to electric shock. Turn off the supply voltage before cleaning the device.

Caution: The use of unsuitable cleaning agents can damage the device. Only clean the MFN 200 as specified.

Observe the following aspects when cleaning the MFN 200:

- Make sure that no dust gets into the device.
- Do not use alkaline or corrosive cleaners to clean the device. Doing so may result in failure or malfunction.
- It is recommended to use a vacuum cleaner to clean the device.

Battery

The MFN 200 contains an active CR2032 battery at the point of the delivery. The battery is powering the BIOS and keeping the synchronization of the clock of the device in a powerless state. In case of a need of replacement, please contact customer support.

Caution: The MFN 200 shall not be opened by untrained personnel.

Power supply and peripheral connections

A 2-position, screw-type terminal block (MC 1,5/ 2-STF-3,5) is provided for connecting power to the terminal.

Warning: The device shall only be connected to 24 V DC supply networks which comply with the regulations for Safety Extra Low Voltage (SELV). In addition, the short-circuit current of the power supply and the cable cross-section must be selected as such that no damage occurs at the cabling. If the device is plugged into a live supply, ensure that the inrush current is not higher than 12 A.

Caution: The lengths of cables connected to the Display Port connector and to the USB connectors should not exceed 3 meters.

Warning: Use Input wire AWG16, rated for 90 °C for power supplies. Use copper conductors only.

Pin	Description
⏚	Chassis GND
-	GND
+	9 to 36 VDC

Table 4: *MFN 200 pins*

Customer support information

Company address:

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For technical assistance and support regarding TTTech Industrial Automation AG products, contact our customer support through the TTTech Industrial support portal at https://tttech-industrial.4me.com/.

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