Modibus (General)

Installation Guide

UMI-0010-00 1.2 en-US ENGLISH

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A. Important User Information

A.1. Disclaimer

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ModibusTech OÜ reserves the right to modify its products in accordance with its policy of continuous product development. Therefore, the information contained in this document shall not be construed as a commitment on the part of ModibusTech OÜ and is subject to change without prior notice. ModibusTech OÜ makes no commitment to update or keep current the information in this document.

The data, examples, and illustrations provided are intended solely to improve the understanding of the functionality and handling of the product. Given the wide range of possible applications, and the many variables and requirements associated with specific implementations, ModibusTech OÜ cannot assume responsibility or liability for actual use based on such information, nor for damages that may occur during installation or operation.

Users are responsible for acquiring sufficient knowledge to ensure that the product is used correctly within their specific application, and that the application complies with all performance, safety, and regulatory requirements, including applicable laws, codes, and standards. ModibusTech OÜ will not assume liability for issues arising from the use of undocumented features or functional side effects outside the documented scope of the product. Such use may lead to undefined behavior, including compatibility or stability issues.

B. Legal Information

B.1. Warning Notice System

This manual contains notices that must be observed to ensure personal safety and prevent property damage.

⚠ DANGER

Indicates that death or severe personal injury **will result** if proper precautions are not taken.

⚠ WARNING

Indicates that death or severe personal injury **may result** if proper precautions are not taken.

⚠ CAUTION

Indicates that minor personal injury **can result** if proper precautions are not taken.

CAUTION

Indicates that property damage **can result** if proper precautions are not taken.

NOTICE

Indicates that unintended results or situations can occur if the relevant information is not taken into account.

If multiple degrees of danger are present, the highest level will always be used. A notice that warns of injury to persons may also include a warning relating to property damage.

B.2. Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, warning notices, and safety instructions. Qualified personnel are those who, based on training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

B.3. Proper Use of Modibus Products

Products of ModibusTech OÜ may only be used for the applications described in the catalog and the relevant technical documentation. If products or components from other manufacturers are used, they must be recommended or approved by ModibusTech OÜ.

Proper transport, storage, installation, assembly, commissioning, operation, and maintenance are required to ensure safe and reliable product operation. The permissible ambient conditions must be observed, and all information in the relevant documentation must be followed.

B.4. Trademarks

All names identified by ® are registered trademarks of their respective owners. The remaining trademarks in this publication may be the property of third parties; unauthorized use of these may violate the rights of the owners.

B.5. Disclaimer of Liability

The contents of this publication have been carefully reviewed to ensure consistency with the hardware and software described. However, complete consistency cannot be guaranteed. The information is reviewed regularly, and any necessary corrections are included in subsequent editions.

C. Preface

C.1. Purpose of the Manual

The **ModibusTech OÜ - MB213 Industrial Remote Access Device** is designed to provide secure and reliable remote connectivity for a wide range of industrial automation applications. With its modular structure, compact design, and advanced communication capabilities, the MB213 offers an efficient solution for system monitoring, diagnostics, and control across different environments.

This manual provides information about installing, commissioning, and operating the MB213. It is intended for engineers, technicians, system integrators, and electricians who have a general knowledge of automation systems and industrial communication technologies.

C.2. Required Basic Knowledge

To fully understand and apply the instructions in this manual, users should have:

- A general knowledge of automation and industrial communication systems.
- Basic understanding of network technologies such as Ethernet, RS232/RS485, Wi-Fi, and LTE.
- Familiarity with safety procedures related to the installation and operation of electronic equipment.

C.3. Scope of the Manual

This manual covers the following:

- Technical specifications of the MB213 and its modules (Main, LTE, Ethernet switch, Serial port)
- Installation, configuration, and operating procedure
- Maintenance requirements and recommended practices.
- Safety instructions and troubleshooting guidelines.
- Storage, transportation, and disposal information

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For detailed product characteristics and parameters, refer to the **Technical Specifications** section of this manual.

C.4. Certification and Standards

The MB213 complies with international quality and safety standards. For detailed information about certification, CE labeling, and other applicable standards, please refer to the **Technical Specifications** section.

C.5. Service and Support

In addition to this documentation, ModibusTech OÜ provides customer support and technical expertise via its official website: **www.modibus.com**

For technical questions, training, or product orders, please contact your **ModibusTech OÜ distributor or sales office**. Our representatives are technically trained and can provide the fastest and most efficient support for your specific requirements and applications.

1. Product Summary

1.1. Introduction

The present Installation Guide describes the hardware of the **Modibus Industrial Remote Access Device Family.**

The MB213 series is a family of modular industrial remote access gateways designed for secure data exchange and system monitoring. These devices are fully compatible with the **MDS cloud connectivity platform (portal.modibus.com)**, which enables reliable remote access, configuration, and management of industrial equipment.

The device has been engineered to meet the following essential requirements:

Adaptive WAN Connectivity

Supports multiple Internet access technologies such as Ethernet, Wi-Fi, and 4G within a single unit. This versatility ensures long-term investment protection by allowing seamless migration to newer standards (e.g., from 3G to 4G).

Versatile Field Integration

Provides straightforward interfacing with a wide range of external equipment and supports different industrial communication protocols for maximum compatibility.

Integrated Applications

Includes built-in functionalities such as alarm management, data logging, secure remote access, routing, and web-based HMI tools accessible with simple user interaction.

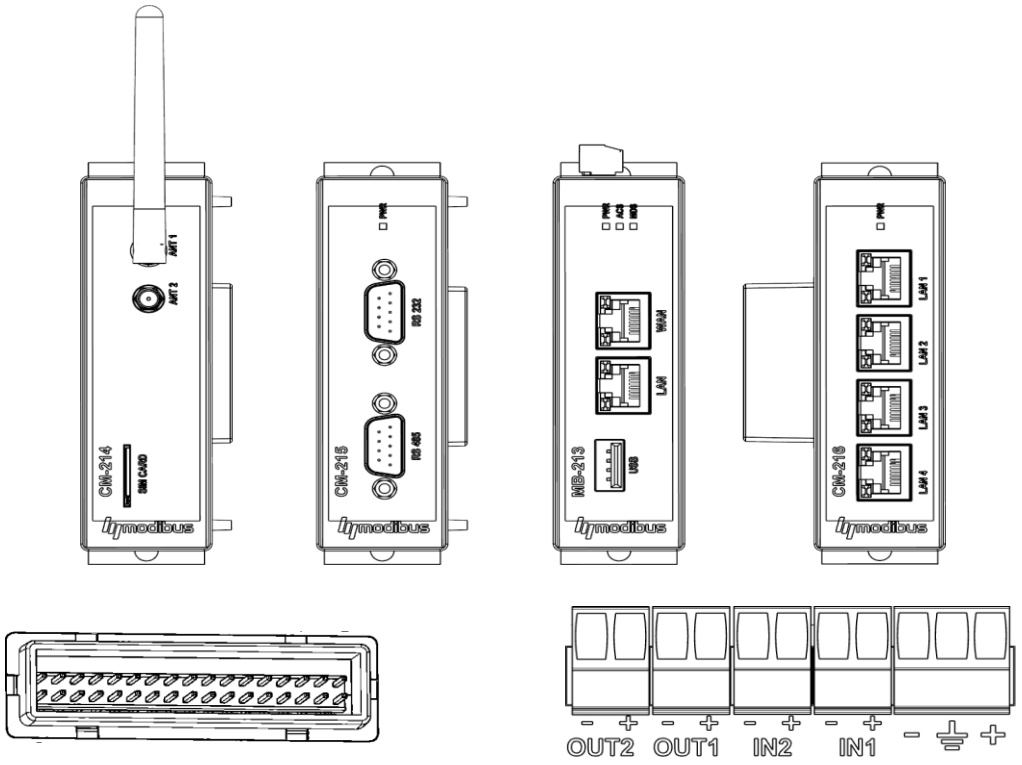
1.2. Parts of the Modibus Family

The Modibus Industrial Remote Access Device has a modular architecture that allows the integration of different expansion modules to adapt to specific application requirements. Up to three modules can be attached to the main unit. These are;

Model	Type	Description	Ethernet	Wi-Fi	4G/LTE
MB213	Base Unit	Main Module	✓	✓	
CM214	Extension	SIM Communication			✓
CM215	Extension	Serial Communication			
CM216	Extension	Ethernet Switch	✓		

1.3. Modular Structure of the Modibus

Modibus features a fully modular hardware design in which all expansion modules are powered directly through the main module. The main unit distributes both power and communication signals via integrated board-to-board connectors, eliminating the need for separate power supplies or external cabling between modules. This architecture not only simplifies installation and wiring but also ensures reliable electrical and data transmission across all connected modules. The main module manages overall power regulation and protection, guaranteeing stable operation of the LTE, Ethernet, and serial communication modules under varying industrial conditions.



General Specification of the Hardware Structure

MB213 Industrial Remote Access Device is designed with modular hardware architecture, providing scalability and flexibility for various industrial applications. The device is intended for DIN rail mounting and allows the integration of up to three expansion modules connected directly to the main unit.

The hardware structure of the MB213 consists of the following elements:

1.3.1. Main Module (MB213 Main Unit)

Contains the central processing unit (CPU), power management circuits, and the base communication interfaces. It serves as the core platform to which all expansion modules are attached.

1.3.2. Expansion Modules

CM214 and CM215 are installed on the left side of the main unit, enabling additional communication and control functionalities. CM216 is mounted on the right side of the main unit, providing extended Ethernet connectivity for industrial networks.

1.3.2.1. CM214 – SIM Communication Module

CM214 – Sim communication module is designed to provide the Modibus with reliable mobile network connectivity through 4G LTE communication. The module enables secure data transmission and remote access in applications where wired Internet connections are unavailable or impractical. It integrates seamlessly with the main MB213 unit via a board-to-board connector, through which both power and communication signals are supplied, eliminating the need for external cabling.

Module supports LTE Cat 4 communication with downlink speeds up to 150 Mbps and uplink speeds up to 50 Mbps, while maintaining backward compatibility with 3G UMTS and 2G GSM networks. Dual SMA antenna connectors (main and diversity) ensure stable signal reception even in environments with poor coverage. The Micro-SIM slot provides easy access for SIM

installation, and the integrated LED indicators display power, network, and data activity statuses.

1.3.2.2. CM215 – Serial Communication Module

CM215 - Serial communication module expands the MB213 system with industrial-grade serial interfaces, enabling integration with legacy controllers, sensors, and communication devices commonly used in automation networks. It provides both RS232 and RS485 ports through

DB-9 male connectors, supporting half-duplex and full-duplex data transmission modes.

1.3.2.3. CM216 - High-Speed Ethernet Switch Module

CM216 - High-Speed ethernet switch module extends the networking capabilities of the MB213 Industrial Remote Access Device by providing four independent Fast Ethernet (10/100 Mbps) ports for versatile system integration. Installed on the right side of the MB213 main module, the CM216 connects through a board-to-board interface, ensuring reliable power and data transfer without external cabling.

Each of the four Ethernet ports can be individually configured, allowing flexible network segmentation and connection to different subsystems such as PLCs, HMIs, data loggers, or remote I/O devices. The ports support auto-negotiation and auto-MDI/MDIX, ensuring seamless compatibility with various industrial Ethernet devices and simplifying setup.

1.3.3. Communication Interfaces

The system supports multiple industrial and IT communication standards, including Fast Ethernet, RS232, RS485, Wi-Fi, LTE, USB, and SD Card.

1.3.4. Typical Applications

- Remote Machine Monitoring; collect and visualize real-time data from industrial machines and equipment.
- Remote Maintenance and Troubleshooting; securely connect to PLCs, HMIs, and other automation devices for diagnostics and updates, and securely connect to PLCs, HMIs, and other automation devices for diagnostics and updates.
- OEM and System Integrator Solutions offer remote support and data services for deployed machines worldwide

2. Operating Environment

The device is designed for industrial environments and can operate within a wide temperature range of **-20 °C to +70 °C**, with humidity levels between **10% and 95% (non-condensing)**. It is typically mounted on a **35 mm DIN rail** and uses natural convection for cooling, requiring no additional fans. For storage and transportation, the device is designed to withstand a broader temperature range of -40 °C to +80 °C with humidity levels between **10% and 95% (non-condensing)** , ensuring reliability even under harsh non-operating conditions.

It complies with major international standards such as CE, UL, FCC, and RoHS, and is designed to meet EN 60068-2 requirements for vibration and shock resistance, making it well-suited for stable operation in industrial automation environments.

3. Safety, Environmental & Regulatory Information

3.1. Scope

The present section provides the safety, environmental, and regulatory information for the Modibus.

This information generally follows a common compliance framework across industrial communication devices, though specific aspects may differ depending on module configuration. For instance, when the MB213 operates with optional communication modules such as the CM214 4G Module, CM215 Serial Module, or CM216 Ethernet Switch Module, additional directives, standards, and safety instructions become applicable — particularly those concerning electromagnetic compatibility (EMC), telecommunication regulations, and low-voltage safety requirements.

Users must ensure that all connected modules conform to relevant local and international standards before installation and operation. The system should be powered and grounded according to industrial safety norms to prevent electrical hazards and ensure electromagnetic compliance.

3.2. Power Supply

MB213 operates with a 24 VDC power input and has a maximum power consumption of 6 W. This modular hardware design ensures long-term scalability, simplified maintenance, and adaptability to evolving industrial connectivity requirements.

3.3. ESD Damage Prevention

Preventing potential damage to the MB213 base unit and its expansion modules (CM214, CM215, CM216), always wait at least 30 seconds after powering down the system before inserting or removing any module.

⚠ WARNING

All operations involving the opening of the main unit or the handling of modules must be performed using **electrostatic discharge (ESD) protection measures**. Both the **base board** and the **expansion modules** contain sensitive electronic components that can be permanently damaged by electrostatic discharge.

When the slot covers are removed to install a module, certain sections of the printed circuit board (PCB) become exposed. To minimize the risk of ESD-related failures, the following precautions are mandatory during installation and servicing:

- Use a grounded ESD-safe workbench.
- Ensure personal grounding with an antistatic wrist strap.
- Verify that the hardware configuration corresponds to the firmware compatibility
- before powering on the system.

Each expansion module (CM214, CM215, CM216) exposes both sides of its PCB and is therefore supplied with antistatic packaging. Modules must remain inside their protective ESD bags until the moment of installation. Proper handling underground and ESD-protected conditions is required to prevent electrostatic discharge damage to the Modibus and its expansion modules.

3.4. Applicable Directives, Standards and Compliance

Modibus® belongs to Class A Industrial Equipment. In a domestic environment, this product may cause radio interference, in which case the user may be required to take appropriate corrective measures.

3.4.1. Conformity to European Directives

Modibus and its expansion modules are in conformity with the following European Community Directives:

- Low Voltage Directive (LVD) 2014/35/EU
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Radio Equipment Directive (RE) 2014/53/EU (when applicable to LTE or Wi-Fi modules)
- Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU
- Waste Electrical and Electronic Equipment (WEEE) Directive 2012/19/EU

The product has been designed and tested to meet the essential requirements and other relevant provisions of these directives for industrial applications.

3.4.2. Applicable Safety Standards

Modibus comply with the applicable safety standards for industrial electronic equipment. All safety-related documentation and certificates are available from the manufacturer upon request or can be accessed in the certifications section of the Modibus support portal.

3.5. Reference Standards for Type Tests

Modibus and modules have been fully validated under industrial environmental conditions, including temperature, vibration, and mechanical shock tests, in accordance with the following standards:

Operating & Storage Temperature

Test Name	Reference Standard
Cold Test	IEC 60068-2-1
Dry Heat Test	IEC 60068-2-2
Temperature Change Test	IEC 60068-2-14
Cyclic Damp Heat Test	IEC 60068-2-30

Vibration & Shock Tests:

Test Name	Reference Standard
Vibration Test (Sinusoidal)	**IEC 60068-2-6**
Vibration Test (Broad-Band Random)	**IEC 60068-2-64**
Shock Test	**IEC 60068-2-27**

Electromagnetic Compatibility & Environmental Tests:

Test Name	Reference Standard
EMC – Emission (Industrial Environment)	**EN IEC 61000-6-4:2019**
EMC – Immunity (Industrial Environment)	**EN IEC 61000-6-2:2019**
Electrostatic Discharge Immunity	**IEC 61000-4-2**
Radiated, Conducted RF Immunity	**IEC 61000-4-3 / IEC 61000-4-6**
Surge Immunity	**IEC 61000-4-5**
Power Frequency Magnetic Field immunity	**IEC 61000-4-8**

3.6. Field Implementation & Environmental Conditions

3.6.1. Ingress Protection

The Modibus MB213 and its expansion modules are designed with an IP20 protection rating in accordance with IEC 60529. This rating ensures protection against solid objects larger than 12 mm (e.g., fingers) but offers no protection against liquids.

NOTICE

The device must be installed in an electrical cabinet or enclosure that provides protection against water, humidity, and excessive dust accumulation.

3.6.2. Mounting Recomendations

To ensure proper heat dissipation and reliable operation, observe the following mounting rules:

- **Orientation:** Mount the device **vertically** on the DIN rail. Horizontal or angled mounting may impede natural airflow and cause overheating.
- **Clearance:** Maintain a minimum clearance of **x mm** (approx. x inch) above and below the device to allow for adequate ventilation.
- **Spacing:** If operating in high-temperature environments (>x°C), leave a gap of **x mm** between the Modibus and adjacent devices.

3.6.3. Cabling & Noise Immunity

To prevent Electromagnetic Interference (EMI), separate the low-voltage DC power cables from high-voltage AC wires and data cables (Ethernet/Serial). Do not run communication cables in the same cable duct as power lines.

3.6.4. Grounding & EMC Immunity

To ensure reliable operation and prevent data loss due to electromagnetic interference (EMC), proper grounding is mandatory. The Modibus MB213 utilizes a **Functional Earth (FE)** connection to divert electrical noise.

⚠ WARNING

Grounding Requirement: Do not operate the device without a proper ground connection.

- **Cable Specification:** Use a braided grounding strap or a cable with a minimum cross-section of 1.5 mm^2 (16 AWG).
- **Connection Point:** Connect the grounding wire to the dedicated screw terminal marked with the symbol (⏚) or ensure the DIN rail itself is grounded to the cabinet chassis.
- **Cable Length:** Keep the grounding cable as short as possible (< x cm) to minimize impedance at high frequencies.

3.6.5. Real-Time Clock & Data Retention

The Modibus MB213 is equipped with an internal "..." battery to maintain the system time (RTC) and retain log data during power outages.

- Lifespan: Under normal operating conditions (25°C), the battery is designed to last for approximately x to x years.
- Maintenance: The battery is maintenance-free. If the system resets after a power cycle, the battery may need replacement.

NOTICE

Battery replacement should only be performed by qualified personnel. The used battery should not be disposed of in household trash. Observe local laws on the disposal of lithium batteries and electronic trash (WEEE).

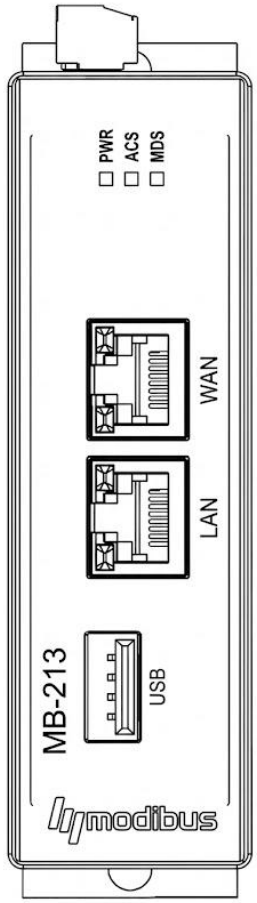
4. Hardware Description

4.1. Technical Data

Parameter	Specification
LED Indicators	PWR (Power), ACS (Internet Access), MDS (Modibus Distribution Service)
Structure	Modular design with DIN rail mounting; supports up to three expansion modules
Communication Interfaces	Fast Ethernet (RJ45), USB 2.0 TypeA), Micro-SD, Digital I/O
Processor	ARM
Memory	Internal memory and external Micro-SD slot for data logging
Power Supply	24 VDC nominal (via 3-pin 3.5 mm terminal block)
Power Consumption	Maximum 6 W
Operating Temperature	–20 °C to +70 °C
Storage Temperature	–40 °C to +80 °C
Humidity	10 % – 95 %, non-condensing
Protection Features	Reverse polarity and surge protection
Dimensions (W×H×D)	100 × 110 × 30 mm
Weight	Approx. 532 g
Mounting Method	DIN rail (EN 60715 standard)
Material and Housing	Industrial-grade ABS enclosure
Connectivity to Modules	Board-to-board connectors (2.54 mm pitch); provides both power and data signals
Standards Compliance	CE, RoHS, EMC compliant

4.2. Front Panel Overview

All necessary communication interfaces and status indicators are accessible through Modibus MB213's front panel. The following is a description of the numbered components:



4.3. LED Status Indicators

LED Label	State / Color	Description / Meaning
PWR (Power)	● Off	Device is powered off.
	◍ Solid Green	Power supply is stable (12-24V DC).
ACS (Access)	● Off	No Internet / WAN connection.
	◍ Blinking Green	Establishing connection / Data activity.
	◍ Solid Green	Internet connection established (Online).
MDS (Service)	● Off	Not connected to Modibus Cloud.
	◍ Solid Green	Connected to Modibus Distribution Service.
	◍ Blinking Red	Service Error / Cannot reach Cloud.

4.4. Connectivity Interfaces

4.4.1. Overview

The Modibus device is designed as a versatile industrial gateway, providing multiple connectivity interfaces to ensure seamless integration between field devices, local networks, and cloud-based systems.

It supports both **wired and wireless communication technologies**, enabling reliable data exchange in industrial automation, energy monitoring, and IIoT environments.

4.4.2. Ethernet Interface

The device is equipped with **two independent Ethernet ports**:

- **Interface Type:** RJ45 (10/100/1000 Mbps, auto-negotiation)
- **Functionality:**
    - LAN/WAN separation
    - Device-to-device communication
    - Integration with industrial networks

Key Features

- Auto MDI/MDI-X support
- DHCP client (default) and static IP configuration
- VLAN support (IEEE 802.1Q)
- Suitable for:
    - SCADA systems
    - PLC communication
    - Industrial network segmentation

The dual Ethernet architecture enables flexible deployment scenarios such as:

- Gateway mode (LAN ↔ WAN)
- Bridge mode
- Isolated subnet configurations .

4.4.3. Wireless Connectivity

The device includes **2.4 GHz Wi-Fi (IEEE 802.11 b/g/n)** for wireless communication.

- **Frequency Band:** 2.4 GHz
- **Antenna Interface:** External SMA connector
- **Modes:**
    - Client (Station mode)
    - Access Point (AP mode)

Key Features

- Wide coverage range
- Stable connectivity in industrial environments
- WPA2 security support
- Suitable for:
    - Basic wireless connectivity
    - Remote installations without Ethernet infrastructure
    - Service and maintenance access

NOTICE

2.4 GHz Wi-Fi may be subject to interference in crowded environments. For critical applications, wired Ethernet or cellular connectivity is recommended.

4.4.4. Cellular Connectivity (Optional)

Depending on the hardware configuration, the device supports **cellular communication (LTE/4G)**.

- **SIM Type:** Mini-SIM (2FF)
- **Interface:** Internal WWAN modem
- **Network Support:** LTE / 4G (region-dependent)

Key Features

- Wide-area connectivity independent of local infrastructure
- Suitable for remote or hard-to-reach installations
- Can be used as:
    - Primary communication channel
    - Backup (failover) connection

Ensure the SIM card is properly inserted and activated by the service provider before use.

4.4.5. Local Communication Interfaces (Optional / Configurable)

The Modibus platform supports additional industrial interfaces depending on the model:

- **Serial Interfaces:** RS-232 / RS-485 (Modbus RTU support)
- **Digital Inputs/Outputs:** For monitoring and control applications
- **USB Ports:** For peripheral connectivity or data logging

4.4.6. Internal Communication Architecture

The internal communication design separates system layers to improve performance and security:

- **Cloud Communication:** MQTT / HTTPS
- **Local Inter-Process Communication (IPC):** Unix Domain Sockets
- **Edge Processing:** Local data filtering, aggregation, and preprocessing

This architecture provides:

- Reduced latency
- Efficient resource utilization
- Improved system isolation

4.4.7. Supported Protocols

The device supports a wide range of industrial and IT communication protocols:

Industrial Protocols

- Modbus TCP / RTU
- OPC UA (optional)

IT / IoT Protocols

- MQTT
- HTTP / HTTPS REST APIs
- WebSocket (optional)

4.4.8. Security Features

All connectivity interfaces are designed with integrated security mechanisms:

- TLS/SSL encryption for secure data transmission
- Firewall and port control
- Role-based access control (RBAC)
- Secure authentication mechanisms

NOTICE

Disable unused interfaces and restrict access via network policies to minimize potential attack surfaces.

4.4.9. Deployment Considerations

For optimal performance and reliability:

- Use shielded Ethernet cables in industrial environments
- Ensure proper antenna placement for wireless connectivity
- Maintain adequate signal strength for cellular communication
- Separate operational (OT) and IT networks when possible
- Provide stable power within specified limits

4.5. Product Labeling

Each Modibus device is equipped with a permanent product label located on the enclosure. This label provides essential identification, compliance, and operational information required for installation, configuration, and regulatory purposes.

4.5.1. Label Overview

The product label includes both human-readable and machine-readable information. It must remain intact and legible throughout the product's lifecycle.

4.5.2. Label Content Description

4.5.2.1 Product Identification

- **Model (PN):** Indicates the product type (e.g., *MB-213*).
- **Serial Number (SN):** Unique identifier assigned to each device.
    - Used for support, warranty, and traceability.
    - Required when contacting technical support.

4.5.2.2 Network Identification

- **MAC Address:**
    - Unique hardware identifier for the device's network interface.
    - Used for:
        - DHCP reservations
        - Network access control
        - Device identification in cloud systems

4.5.2.3 Electrical Specifications

- **Input Voltage:**
  Example: *24 VDC*
- **Current Rating:**
  Example: *2.5 A*

CAUTION

Ensure that the supplied voltage and current meet the specified range. Incorrect power supply may cause permanent damage or unsafe operation.

4.5.2.4 Manufacturer Information

- **Company Name:** ModibusTech OÜ
- **Address:** Tornimäe tn 5, Estonia
- **Design Origin:** Designed in Estonia

This information is required for regulatory compliance and manufacturer traceability.

4.5.2.5 Compliance Markings

CE Mark

- Indicates conformity with European Union safety, health, and environmental protection standards.
- Confirms the device meets applicable directives (e.g., EMC, Low Voltage).

WEEE Symbol (Crossed-out Wheeled Bin)

- Indicates that the product must not be disposed of with household waste.
- Must be collected separately for recycling according to EU Directive.

4.5.2.6 QR Code

- Provides quick access to device-specific or product-related information.
- May include:
    - Product documentation
    - Configuration portal
    - Device registration page

Recommended usage:

- Scan during installation for faster onboarding.
- Use for accessing the latest firmware or manuals.

4.5.2.7 Additional Markings

- Certification or internal tracking codes (if applicable)
- Production batch identifiers (optional)

4.5.3. Handling and Maintenance of Label

- Do not remove, damage, or cover the label.
- Ensure visibility after installation.
- Avoid exposure to chemicals or abrasion that may degrade readability.

4.5.4. Installation Considerations

- Position the device so the label remains accessible for:
    - Maintenance
    - Troubleshooting
    - Regulatory inspection

4.5.5. Regulatory Compliance Note

The product labeling is part of the device's compliance requirements. Any modification, removal, or replacement of the label may:

- Void the warranty
- Violate regulatory standards
- Prevent proper device identification

4.5.6. Support Reference

When contacting Modibus support, always provide:

- Model (PN)
- Serial Number (SN)
- MAC Address

5. Hardware Installation

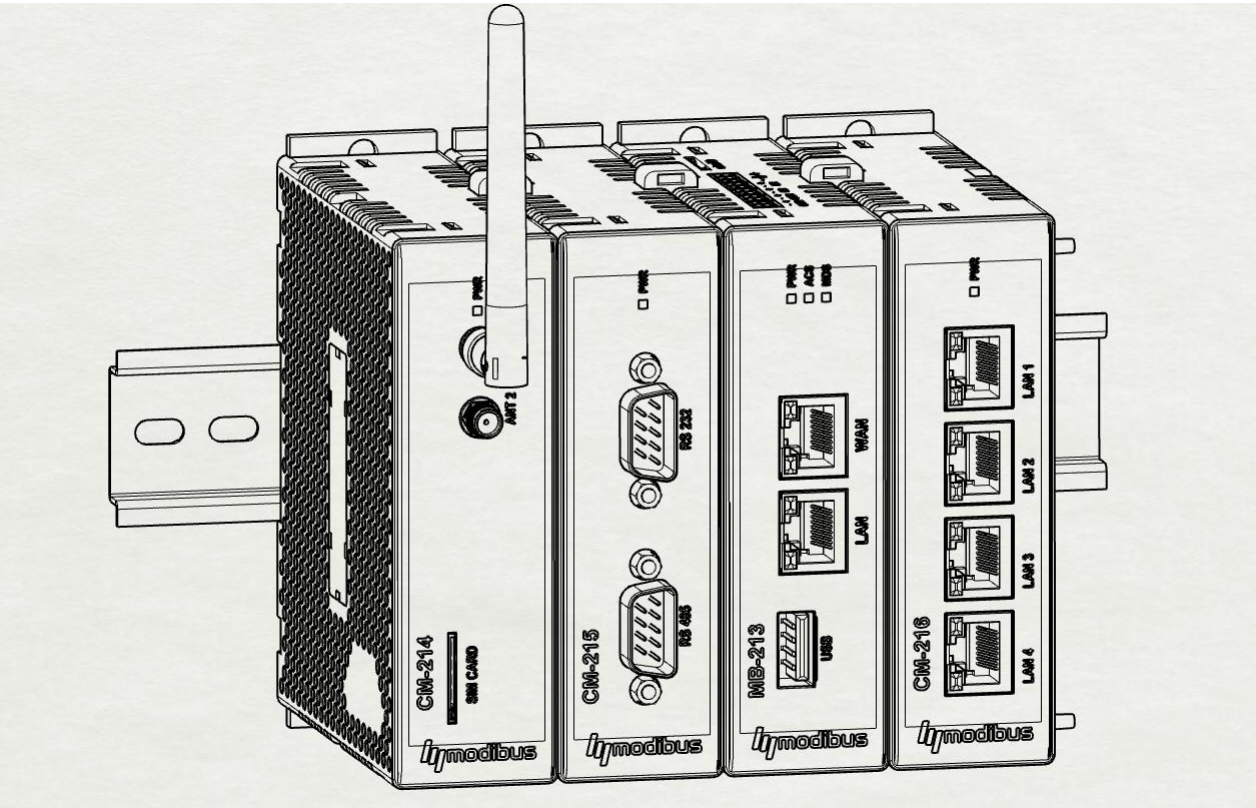
⚠ WARNING

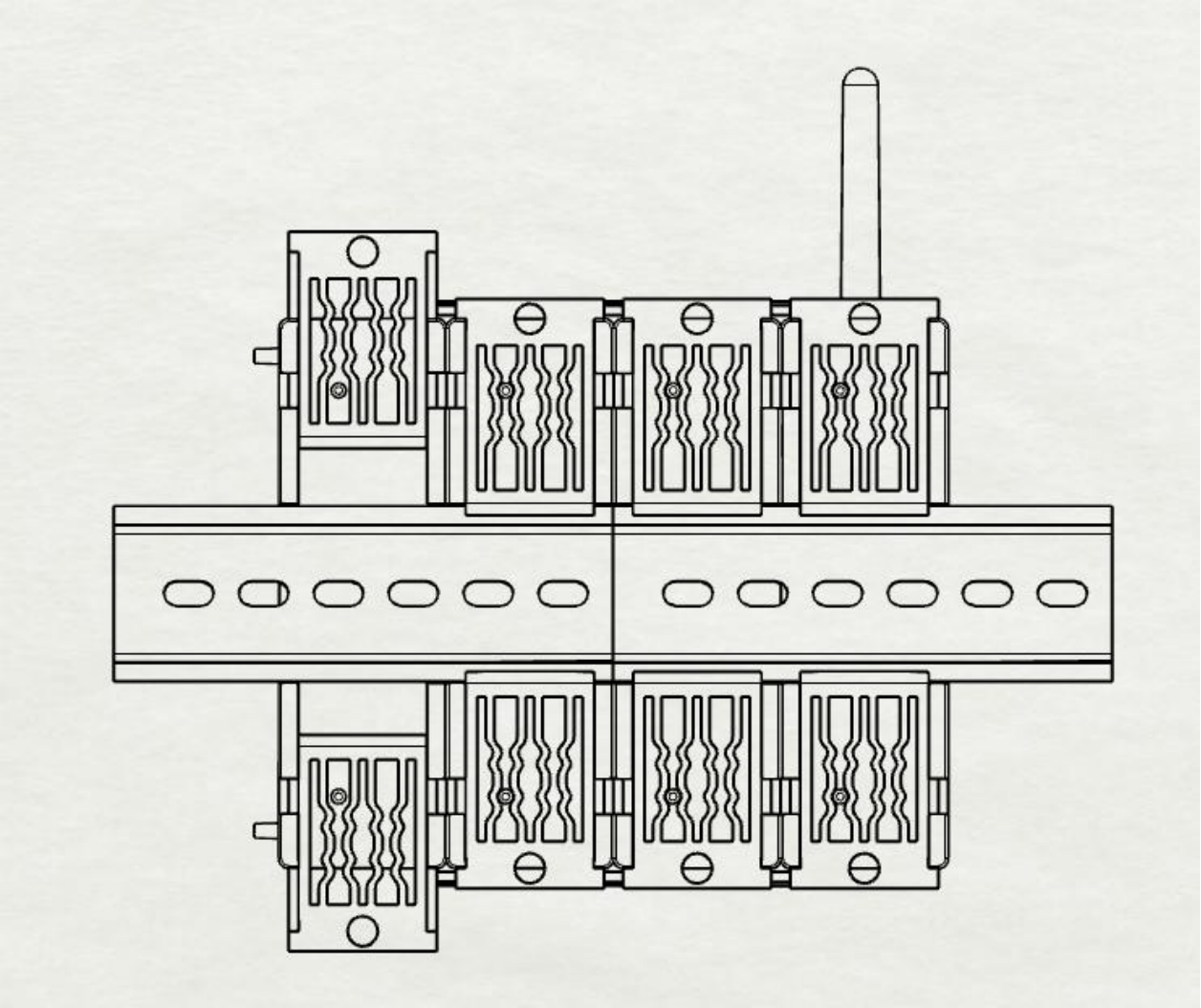
Before performing any installation procedures, ensure that the power supply is disconnected. Installing the device under live power may cause damage to the hardware or injury.

5.1. DIN Rail Mounting

The MB-213 is made to be easily installed on a typical 35mm DIN rail (EN 60715).

1. **Position:** Attach the mounting clip's top lip to the DIN rail's upper edge.
2. **Snap:** Press the device's bottom firmly in the direction of the rail until the release clip clicks into position.
3. **Check:** To make sure the gadget is safely locked, try lightly sliding it left and right.
4. **Clearance:** To provide adequate ventilation, keep a minimum of 25 mm of space above and below the device.


CM-214
SIM CARD
ANT 2
CM-215
RS 232
RS 485
MB-213
USB
WAN
LAN
CM-216
LAN 1
LAN 2
LAN 3
LAN 4
modibus



5.2. Power & Grounding Connection

In industrial settings, electromagnetic immunity (EMC) depends on proper grounding.

1. **Cable Preparation:** Use copper wires (12–24 AWG) to prepare the cables. Remove about 7 mm of insulation.

2. **Functional Earth (FE):** Use a short, low-impedance cable to connect the terminal block's ⏚ (FE) pin to the grounding bar of the cabinet. Avoid daisy-chaining the ground connection.

3. **Power Input:** Attach the V+ and V- wires to the 11-pin terminal block's matching pins. 12–24 VDC is the input voltage.

4. Secure: Make sure the terminal block fits tightly by inserting it into the device socket and tightening any available side screws.

5.3. Ethernet Cabling

The device features two Ethernet ports for network communication.

1. **WAN Port:** Connect your factory network or uplink connection to the top port.

2. **LAN Port:** Attach the bottom port to your nearby industrial equipment (PLC, HMI).

3. **Shielding:** To avoid data loss from electromagnetic interference from motors or drives, utilize Shielded CAT5e/6 cables (STP).

6. Initial Configuration

6.1. Powering Up & LED Verification

Check the device status before attaching your PC:

1. **Apply Power:** Turn on the 12-24 VDC power source to apply power.
2. **Watch LEDs:** The PWR LED ought to turn solid green right away. The SYS/ACS LED may flicker green during the boot process (approx. 30-60 seconds).
3. **Ready:** Hold off on moving forward until the system status LEDs steady.

6.2. Connecting to PC

Your computer's network adapter needs to be in the same IP range (Subnet) as the MB213 to access the device.

1. **Connect:** Attach an Ethernet wire to MB213's LAN Port (Bottom Port) from your PC.
2. **Check Default Settings:** 192.168.1.1 is the default IP

   Subnet Mask: 255.255.255.0
3. **Set up computer's IP:** Navigate to the Control Panel's Windows Network Settings.
4. **Configure PC IP:** Manually set the IPv4 address of your computer to 192.168.1.50 (or any address between 2 and 254).
5. **Note:** Avoid using the device's IP address.

6.3. Accessing the Web Interface

1. Browser: Open a modern web browser (Chrome, Firefox, or Edge).

2. URL: Type the default IP address into the address bar: http://192.168.1.1

3. Login: Enter the default credentials below:

   Username: admin

   Password: admin123

6.4. Troubleshooting Access

Try these steps if any trouble occurs within the login page:

- **Disable Wifi:** Ensure your PC is not connected to another Wi-Fi network that conflicts with the IP range.
- **Check VPN:** Turn off any active VPN software.
- **Ping Test:** Open Command Prompt (cmd) and type ping 192.168.1.1. If you get a reply, the connection is good; check your browser settings.

7. Basic Configuration

7.1. The Dashboard

The device's health is summarized in real time on the landing page.

- System Information: Displays CPU load, firmware version, and uptime.
- Interface Status: Shows the IP addresses and connection conditions of WAN and LAN ports as of right now.
- Service Status: Shows the Modibus Cloud (MDS) connection status.

Always Verify the System Uptime counter. Check the stability of your power supply if it keeps resetting.

7.2. Setting Up Internet Access (WAN)

To link the gateway to the internet or the factory network:

1. Go to Network > Interfaces > WAN.
2. Choose the protocol according to the configuration of your network:
    - DHCP Client: (Suggested) Gets an IP address from the manufacturer router automatically.
    - If IT demands a fixed IP, use a static address (IP, Netmask, and Gateway must be explicitly entered).
3. Click "Save & Apply."
4. Verification: Verify whether the WAN interface has an IP address by returning to the dashboard.

7.3. Configuring Local Network (LAN)

The network for your linked industrial equipment (PLC, HMI) is defined by this setting.

1. Go to Network > Interfaces > LAN.
2. 192.168.1.1 is the default IPv4 address. If this conflicts with your current PLC network, change it (e.g., set to 192.168.10.1).
3. Choose the protocol according to the configuration of your network:
   - **Enable:** If you want the gateway to assign IPs to connected laptops/devices.
   - **Disable:** If your PLCs have static IPs (Common in industrial setups).
4. If IT demands a fixed IP, use a static address (IP, Netmask, and Gateway must be explicitly entered).
5. Click "Save & Apply."

Your browser session will end if you modify the LAN IP address. To log in again, you have to enter the new IP address into the browser.

7.4. Maintenance & Backup

Always save your configuration before departing the website.

1. Navigate to System > Flash Firmware/Backup.
2. To download a backup file to your computer, click Generate Archive.
3. Keep this file secure. You can restore this file to quickly clone the settings in the event of a hardware change.

8. Troubleshooting

If you encounter issues during operation, refer to the following common symptoms and solutions before contacting support.

8.1. Device Not Power On

- **Check Wiring:** Ensure the power cables are securely fastened in the 11-pin terminal block.
- **Check Voltage:** Verify that the power supply is delivering stable DC voltage between 12V and 24V.
- **Check Polarity:** Ensure the positive (+) and negative (-) wires are not reversed. (The device has reverse polarity protection, but it will not turn on).

8.2. Password Forget / Factory Reset

If you lose your login credentials or cannot access the device due to network misconfiguration, you can restore the factory default settings.

1. Locate the *Reset Pinhole* on the device panel.
2. While the device is powered on, use a paperclip to press and hold the reset button for 10 seconds.
3. The *SYS/ACS* LED will flash rapidly. Release the button.
4. The device will reboot. You can now access it using the default IP and default credentials.

9. Support & Contact

If any technical assistance is needed beyond this manual, try to connect us via:

- **Firmware Updates & Documentation:** Visit our website to download the latest firmware, application notes, and software tools.
- **Website:**
- **Email Support:**
- **Phone:**
- **Address:**

Please have the following information ready when contacting support:

- Device Model (MB-213)
- Serial Number (Printed on the side label)
- Current Firmware Version