INSTRUCTION
MANUAL

VERTICA PRO

enelion

Dear Reader

Congratulations on acquiring ENELION VERTICA PRO charging station and thank you for your confidence in us.

Kindly review this manual prior to installation or usage.

TECHNICAL SUPPORT

Most up-to-date device manuals always available at:

https://enelion.com/support-vertica-pro/

If you have any questions or require assistance

regarding your Vertica Pro EVSE,

please contact your distributor or our

Enelion Customer Service team.

Useful documentation and video
guides are available at:
https://enelion.com/support

Factory Service:
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Mialki Szlak 52,
80-717 Gdansk

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*This document includes information that may be modified without prior notice.

TABLE OF CONTENTS

TABLE OF CONTENTS II

8 FIRST-TIME STARTUP OF VERTICA PRO

9 STATION INFORMATION, SUPPORT, AND DIAGNOSTICS

10 USER INTERFACE CUSTOMIZATION

11 COMMISSIONING AND TECHNICAL INSPECTIONS

12 COMMUNICATIONS AND REMOTE MANAGEMENT – ENELION BRIDGE LTE

TABLE OF CONTENTS III

12 COMMUNICATIONS AND REMOTE MANAGEMENT – ENELION BRIDGE LTE

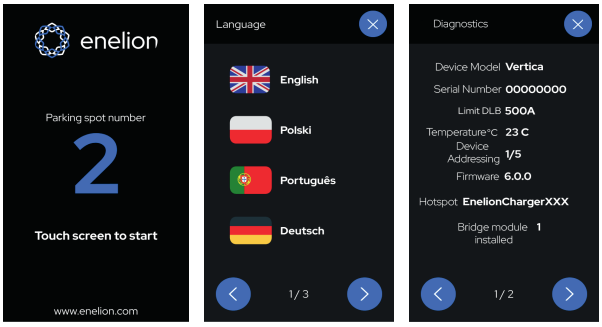
13 CONFIGURATION MANAGEMENT

14 CLEANING AND END-OF-LIFE HANDLING

15 REPAIRING THE STATION

16 SUPPORT AND FACTORY SERVICE

ENELION VERTICA PRO



VERTICA PRO SOCKET
WITH PAYMENT TERMINAL

VERTICA PRO SOCKET

VERTICA PRO CABLE

1.1 Key Features

ENELION VERTICA PRO

- High-resolution color touchscreen for displaying dynamic QR codes used in payment processing and advertising content.
- Supports customizable UI elements, allowing operator-specific branding and screen layout personalization.
- Compatible with optional payment terminals for seamless integration with contactless payment systems.
- Enables real-time operator-to-user communication via the display interface.
- Integrated diagnostic panel in service mode for streamlined maintenance and fault identification.
- Charging socket positioned at 94 cm, ensuring improved accessibility for users with reduced mobility.
- Fully compliant with AFIR (Alternative Fuels Infrastructure Regulation) requirements.
- Service access port at the base of the housing for efficient field maintenance.
- New hardware modules are backward compatible with revision 6 systems.
- Available in personalized configurations, pre-set for deployment in your existing charging infrastructure.

VERTICA PRO

2.1 GENERAL INFORMATION

	VERTICA PRO SOCKET	VERTICA PRO CABLE
Charging power	2 × 1.4 kW – 22 kW	2 × 1.4 kW – 22 kW
Socket / plug	2 × socket (Type 2) with lock	2 × plug (Type 2)
Spiral cable (max. length)	–	4 m working length
Minimum signal quality requirements	WiFi: -60 dBm; LTE: -85 dBm	
LED display	4.3", touch, color	
Available protections*	RCMB / RCDA / RCDB	
Charging authorization	RFID / OCPP / FreeCharge	
Communication (OCPP 1.6)	offline / WiFi / LTE	
Energy meter	3-phase energy meter > compatible with MID certified meter	
IK protection rating	IK10	
IP protection rating	IP54	
Operating temperature	(-35°C with Heater)* -25°C/+55°C	
Height	1310 mm	
Inspection door	optional	
Finish	powder-coated (RAL range; anodized finish)	
Payment Terminals*	Payter Apollo and PAX IM30	

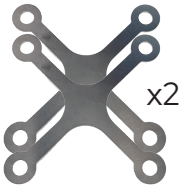
*available as an accessory

2.2 ACCESSORIES

Prefabricated foundation	*available as an accessory
Width	250mm
Height	550mm
Weight	≤ 60kg
Mounting	4pcs 12mm threaded rods, 8pcs M12 nuts with washers for 19mm metric wrench

Foundation set	*available as an accessory
Threaded rods	M12
Nuts	16pcs. M12 for 19mm metric wrench
Base plate VF-2.0	2pcs
Fixing	4pcs 12mm threaded rods with a length of 495mm and 20pcs M12 nuts for 19mm metric wrench

x4



x2

x20

Accessories included	
RFID cards	attached 1 pc per module
Bit safe	1 pc T25
Labels with the value of the supply current	3 pcs
Triangular key or magnetic key depending on the type of bottom panel used	1 pc

x1

x1

x3

x1 or

x1

General Information – Product Variants

ENELION VERTICA PRO is a modular charging station for electric vehicles, consisting of an enclosure in the form of the ENELION VERTICA PRO Pole, ENELION VERTICA PRO Modules responsible for the charging process, and optional add-ons and accessories.
The modular design allows the station's functions to be easily adapted by adding or replacing charging modules and accessories, ensuring the device meets the specific needs of the user.Installation and operation may vary depending on the selected device type and configuration.

2.3 Vertica Pro Module Variants

Before purchasing a VERTICA PRO charging station, it is recommended to consider which module variant best suits the intended application. The selection can also be consulted with the manufacturer or an authorized distributor.
The manufacturer offers **two standard** module configurations: Type 2 socket variant and a coiled cable variant equipped with a 4-meter Type 2 charging cable.
Both versions support charging of electric vehicles at up to 32 A, 3-phase, and can be installed on either side of the ENELION VERTICA PRO Pole.

Modules may also be equipped with the following optional accessories:

- *ENELION BRIDGE communication modem – provides Wi-Fi and LTE connectivity, remote monitoring, and access to advanced configuration settings*
- *RCM-B differential current sensor – enables enhanced protection by detecting direct current leakage, in accordance with IEC 62752*

The most optimal configuration is a VERTICA PRO device equipped with two modules, where the first module includes a communication modem, and the second module communicates with the first via the CAN bus. This setup provides full remote control and monitoring for both modules, even though only one contains the modem.

It is also possible to extend this setup using the ENELION CHAIN protocol, which allows a single master module with a modem to manage up to 98 slave modules without modems, all interconnected via the CAN bus.

2.4 Vertica Pro Column Variants

The ENELION VERTICA PRO Pole is a required structural component of the charging station. It serves as the mounting base for the ENELION VERTICA PRO Modules, which perform the core charging functions. Before selecting a VERTICA PRO Pole variant, it is important to consider the overall power installation design, safety and protection requirements, as well as the intended communication and user authorization methods. These factors will determine which pole configuration is most suitable for your specific deployment.

An important consideration when selecting a VERTICA PRO Pole is determining the number of charging modules to be installed:

a. Single-module *configuration – One charging module mounted on one side of the pole, complemented by a top cover panel on the opposite side.*

b. Dual-module *configuration – Two charging modules installed on opposite sides of the pole, providing full utilization of the station's capacity.*

A key feature of the VERTICA PRO Pole is the integrated bottom inspection panel, which allows convenient access to protective devices, power meters, and wiring without removing the charging modules.

Three variants of the bottom panel are available:

c. Standard inspection panel with a triangular key lock
d. Inspection panel with a patent (coded) key
e. Bottom panel with magnetic window for viewing the MID-certified energy meter, without a removable inspection cover

An additional new feature available for the VERTICA PRO Pole is the integration of a payment terminal, supporting on-site transaction processing:

f. PAX IM30 – A robust payment terminal designed for the EU market, supporting contactless and chip-based transactions.
g. Payter Apollo – A compact payment terminal dedicated to the UK market, optimized for public EV charging scenarios.

The standard version of the VERTICA PRO Pole includes the following components:

- *2 standard inspection panels with triangular key locks*
- *10 Degson DS2.5-01P-11-00A(H) connectors for CAN bus communication and connection to MID-certified energy meters*
- *8 Degson DS6-01P-11-00A(H) connectors for power supply wires (up to 6 mm²), supporting up to 2 charging modules and 2 power conductors*

ADDITIONAL EQUIPMENT IN THE VERTICA PRO CHARGING POLE

When placing an order with the manufacturer or an authorized distributor, you can specify the required safety devices and accessories, which are categorized into three application-based groups.
Before purchasing the VERTICA PRO Pole, it is essential to consider the power supply architecture of the charging station. One of the most critical factors is determining the method of powering the charging modules, as it directly impacts component selection, electrical protection, and installation layout.

3.1 Power Supply Terminal Blocks

When using a single-cable power supply configuration for the station, the following connectors are recommended based on the conductor cross-section:

- *Vertica Splitter – for copper cables with cross-sections below <16 mm²*
- *Universal Splitter – for ALU-CU cables up to 50 mm² (recommended CU: 35 mm²)*
- *Vertica Power Daisy Chain (2× Splitter 50 mm² Set) – for chaining power between two modules, compatible with ALU-CU conductors (recommended CU: 35 mm²)*

Important: In this configuration, overcurrent protection devices (fuses) are required to ensure electrical safety and regulatory compliance.
In other installation variants—particularly dual-module configurations—the charging station must be supplied using two separate power cables. The exact connection point for power cables varies depending on the selected module and pole variant. Refer to the wiring diagrams and installation instructions provided in the relevant section of this manual.

3.2 Electrical Protection

Types of Electrical Protection

The power supply for the ENELION charging terminal must be routed through an electrical switchboard equipped with the appropriate protection devices. The distribution board must include:
An overcurrent circuit breaker (MCB), Type B or C, rated at 32 A or less, depending on the selected module configuration.
In compliance with EN IEC 61851-1 and EN IEC 61851-1:2019, each individual charging point must be protected against:
Overcurrent Residual current leakage, using Type A + B residual current devices (RCDs).
To simplify compliance and reduce installation costs, ENELION modules may include an integrated Type B residual current monitor (RCM-B). In such cases, the system only requires an external Type A RCD and the appropriate overcurrent protection device. This configuration still ensures full protection during EV charging, including for DC leakage currents, while remaining cost-effective.
The final selection, rating, and coordination of protection devices must be determined by a licensed electrical designer or certified electrician, in accordance with local electrical codes and installation conditions.
Thanks to compatibility with DIN rail mounting, the following protective components may be installed in the electrical switchboard:

- *Overcurrent circuit breakers (MCBs)*
- *Certified Type A RCDs*
- *Certified Type B RCDs*
- *Auto-reclosing Type B RCDs (AutoRecloser RCD B) for improved fault recovery in unmanned installations*

3.3 Additional Accessories

Accessories

VERTICA PRO Pole units can be optionally equipped with enhanced features that improve security, measurement accuracy, and environmental resilience, particularly in challenging climates.
The following options are available as factory-installed or retrofit accessories:

- *MID-certified energy meter – Ensures precise energy measurement for billing purposes, compliant with the Measuring Instruments Directive (2014/32/EU)*
- *Patent-lock top cover – Provides increased physical security and access control for service panels*
- *HeatModule (integrated Heater) – Maintains reliable operation in ambient temperatures as low as -35°C, ideal for cold climate installations*

These add-ons can be selected during the ordering process or installed later by authorized service personnel, depending on project requirements.

4.1 General provisions

Important information

The ENELION charger (hereinafter referred to as the device, charger, or charging terminal) is an electric vehicle charging station designed in accordance with international standards, including IEC 61851-1 and IEC 62196-2, for charging electric vehicles equipped with compatible connectors.

Any unauthorized interference with the device's mechanical, electrical, electronic components, or software is strictly prohibited and will void the warranty. Exceptions include operations specifically described in this manual or those agreed upon in writing with the manufacturer. The manufacturer assumes no liability for damage to property resulting from such prohibited modifications.

The electrical installation to which the device is connected must meet the requirements outlined in the installation instructions. The manufacturer is not responsible for improperly executed or insufficiently protected electrical infrastructure. Furthermore, the electrical installation must comply with the applicable legal and safety standards of the country in which the device is installed and operated. The manufacturer assumes no liability for damage resulting from non-compliant or faulty installations.

The device is not equipped with a built-in power switch. It powers on automatically when supply voltage is present. Disconnection from the power source must be provided via external protective devices as specified in the installation documentation. Except in emergency situations, the device must not be powered down during an active charging session.

It is strictly forbidden to energize the device while the housing is open, or to operate a unit that is mechanically damaged or indicates a critical fault status on the display or LED indicators.

Only charging cables and plugs intended for EV charging may be inserted into the socket. The only approved connection is a functional Type 2 charging cable, suitable for the device's power rating and the vehicle's requirements, in compliance with IEC 62196-2. The use of extension cords, adapters, or conversion plugs is strictly prohibited.

Due to its IP54-rated enclosure, the device must not be cleaned with pressure washers, garden hoses, showers, or any other source of high-pressure water spray.

The manufacturer allows the purchase of support packages—including extended warranty and service options—during the warranty period, provided a qualifying inspection is completed beforehand. For details, please contact the ENELION Sales Department.

A service inspection must be performed annually. Mechanical components such as the socket, charging cable, plug lock, plug, plug holder, and other fixed components require only surface-level visual inspection. These elements are not considered wear parts and are not expected to require replacement under normal operating conditions during the station's service life.

During inspection, attention should be paid to:
Signs of corrosion, Water ingress, Salt crystallization, or any other indicators of deterioration in the condition of the unit.

If any damage is observed to components such as the socket, cable, plug, plug holder, or any other fixed part of the charger, this must be reported to the station operator. The replacement of these components must be carried out by an authorized ENELION service center.

All service work must be performed with the power supply disconnected.

Fault diagnostics are performed using the device's display, which presents error codes along with descriptive messages identifying the issue.

The electrical diagram and internal construction details for the charger are available in the installation manual specific to each VERTICA PRO model.

Note: The charging station does not support active ventilation.

4.2 Planning

Observe all applicable local, regional, and national regulations when designing the electrical installation and selecting the location for the charging station. Refer to the electrical installation design guidelines provided on the following page for system-specific requirements. During the planning stage, consider whether the installation will include modules equipped with an Ethernet communication modem. In such cases, it is necessary to use RJ45 CAT 5e CU (copper) or better network cabling to ensure reliable data communication. Do not use CCA (Copper-Clad Aluminum) cables, as they do not meet performance or durability standards required for EVSE systems. For stations using the ENELION CHAIN (CAN bus) protocol to connect multiple modules, use CAT 5e or higher copper cables. Communication between modules utilizes one twisted pair along with the cable shield. The total length of the CAN bus must not exceed 500 meters. Cables intended for underground routing must be installed in compliance with relevant construction and electrical codes, including proper mechanical and environmental protection. Finally, it is highly recommended to assess and account for future charging and communication needs at the site. Early planning for scalability can significantly reduce future infrastructure costs and complexity.

4.3 Site Selection and Accessibility Remarks

The ENELION VERTICA PRO charging station is suitable for both indoor and outdoor installation. It is intended to be installed near designated electric vehicle parking areas, in accordance with national regulations and site-specific constraints. When installed in vehicle collision zones, the station must be protected by physical barriers or bollards. These should be painted with yellow and black warning stripes in compliance with applicable safety marking standards.
Note: Always refer to national or local regulations for minimum clearance requirements and installation zoning.
Regulatory bodies may specify distances from roads, pedestrian paths, or other infrastructure.
Environmental and Spatial Considerations: Avoid installing the device in areas with prolonged direct sunlight, as excessive heat may affect performance or lead to overheating. Do not install the charger near heat sources or inside confined or unventilated enclosures (e.g., electrical boxes or cabinets). Installation is strictly prohibited in hazardous environments, such as explosive atmospheres, or in areas where falling objects could damage the device.
Clearance for Service Access:
Before installation, ensure there is a minimum of 1 meter of vertical clearance above the charger.
After installation, maintain this clearance zone free of any fixed structures (e.g., signage, billboards, awnings), as it is required for safe maintenance and servicing. The Vertica PRO charging station complies with PAS 1899:2022 regulations

4.4 Security

Outdoor installation must not be carried out during precipitation or strong wind, particularly if there is any risk of moisture or debris entering the device enclosure. All operations described in this manual must only be performed after ensuring that the power supply is disconnected and there is no voltage present in the power cable. The operation, installation, and maintenance of the device must comply with all applicable occupational health and safety (OHS) regulations for electrical equipment.
According to the installation requirements, a residual current protection device (RCD) must be installed in the switchgear. This serves both as a protection against leakage current imbalance and as a fire prevention measure.
If any visible damage is observed to components such as the charging socket, cable, plug, plug handle, or other fixed or permanent parts of the device, this must be reported immediately to the station operator. The station must not be used until the damage has been assessed and resolved.
Installation and servicing of the device must be carried out exclusively by qualified and authorized personnel. Repairs are only permitted to be performed by the manufacturer or by entities officially authorized by the manufacturer.

Abnormal Conditions, Safety Risks, and Fire Response

If a fault, damage, or any abnormal behavior is detected, immediately discontinue use of the charging station and report the issue to the station operator. In the event of a fire, disconnect the station from the power supply as quickly as possible. If it is safe to do so, disconnect the charging cable from the vehicle and move the vehicle to a safe distance. Then contact emergency services. Within the European Union, the general emergency number is 112.
Fire suppression must be performed using extinguishing agents suitable for electrical equipment rated up to 1000 V. Approved extinguishers include CO_2 (carbon dioxide), dry powder, or sand.
After charging is completed, the charging cable must be placed in its designated holder. It is essential to avoid leaving cables or plugs in areas where they may be run over or pose a tripping hazard. Do not use plugs that are visibly dirty or wet. The vehicle should be parked in such a way that the charging cable is not overstretched, as this could cause damage to the equipment or create a fall hazard for users and bystanders.

ATTENTION

The manufacturer is not responsible for damage resulting from failure to comply with the above recommendations.

5.1 Foundations (Prefabricated / Foundation Kit)

The ENELION VERTICA PRO Pole supports three installation methods, depending on the project site and foundation conditions:

• Installation on a dedicated ENELION prefabricated foundation – recommended for new installations requiring stable and certified base support.
• Mounting on an existing foundation – possible using additional mounting bolts, provided the existing surface meets load-bearing and alignment requirements.
• Installation with the ENELION Foundation Kit – includes anchoring elements and mounting hardware for secure installation on approved ground surfaces.

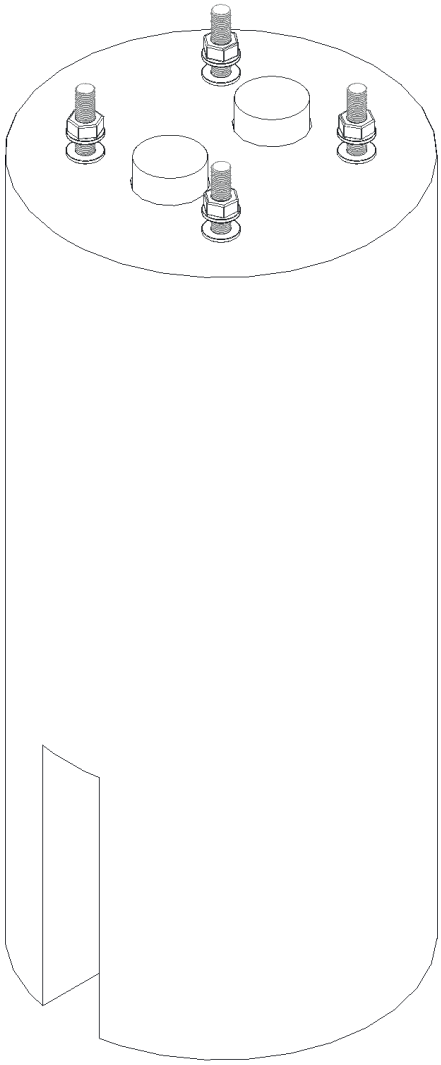
Each method must be carried out in accordance with the installation instructions and local construction standards.

The dedicated prefabricated foundation by ENELION

The dedicated prefabricated foundation by ENELION significantly reduces installation time by eliminating the need to wait for on-site concrete curing. It offers a ready-to-use, stable base designed specifically for compatibility with the VERTICA PRO Pole.

The prefabricated foundation set includes the following components:

• 1× prefabricated foundation block
• 8 x M12 nuts
• 8 x flat washers



Foundation Preparation Using ENELION Prefabricated Foundation

To begin the installation process, remove the M12 nuts and washers from the prefabricated ENELION foundation and set them aside. These components will be used later to secure the ENELION VERTICA PRO Pole.

Excavate a trench with dimensions larger than 400 mm × 600 mm (width × depth) or 400 mm × 400 mm × 600 mm (width × length × depth), depending on the site requirements and foundation orientation.

Ensure that the soil directly beneath the foundation is compacted to a minimum compaction ratio of 0.97 to guarantee structural stability and prevent settlement over time.

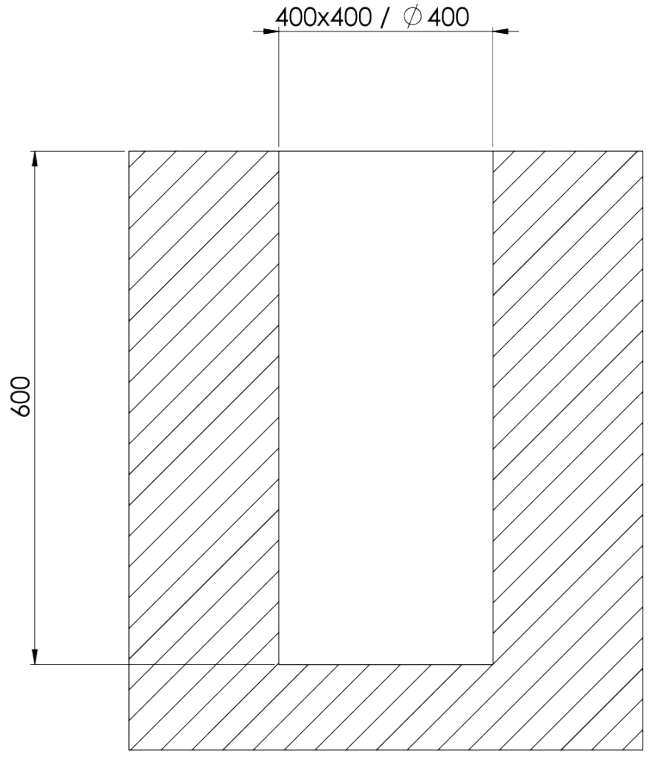
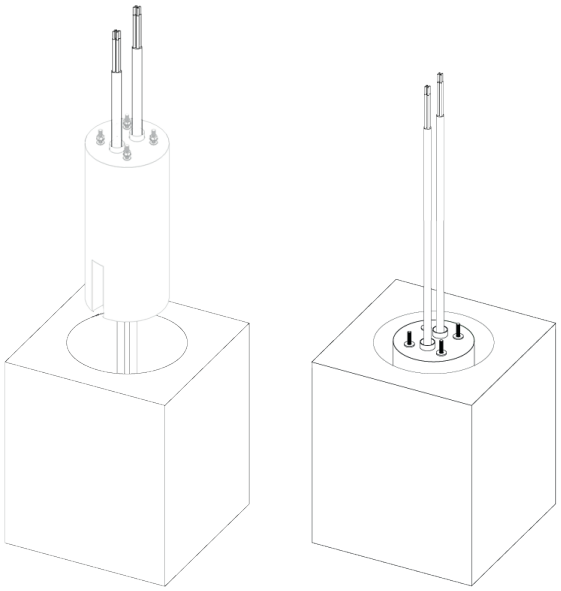


Diagram of the foundation excavation

5.2 Foundation

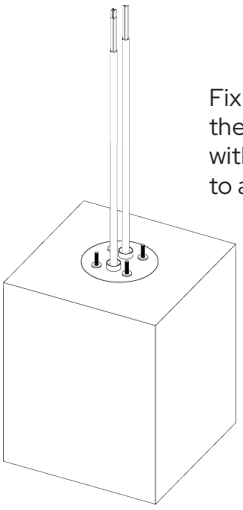
Place the prefabricated foundation into the prepared excavation and ensure it is properly leveled and aligned. The foundation should be set at a depth of no more than 0.55 meters below ground level, so that its upper surface is either flush with or slightly above the surrounding ground level.



Installation Diagram – Prefabricated Foundation and Supply Cable Routing

IMPORTANT

Pull the power cables through a prefabricated unit or one using the Enelion Splitter. Poles with terminals have Ethernet connectivity
and require RJ45 Cat5e CU network cable or better. The length of the cable counting from the base should be min. 150cm. For Enelion Chain communication, you need to add RJ45 CAT 5e CU network cables or better (for CAN bus) with a length of min. 100cm. Properly protected, in accordance with building regulations.



Fix the prefabricated element by filling the remainder of the excavation with soil and compact it to a compaction index of at least 0.97.

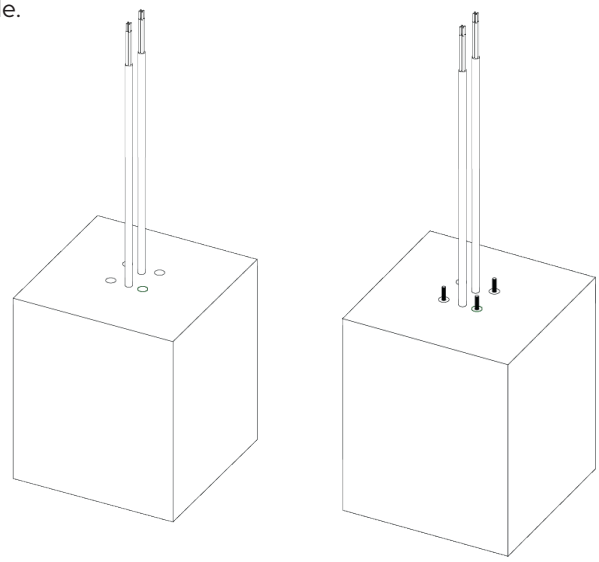
The foundation prepared in this way makes it possible installation of the ENELION Column VERTICA

5.3 Existing foundation

If a suitable existing foundation is available—equipped with a compliant electrical connection and meeting all legal and structural requirements—the ENELION VERTICA PRO Pole can be installed directly onto it. Before mounting, it is essential to verify the stability and load-bearing capacity of the foundation and to ensure that the pole can be securely fastened. It is recommended to use M12 threaded rods for anchoring the pole to the foundation, following the installation instructions and torque specifications provided by the manufacturer.

Preparing the existing foundation

To install the ENELION VERTICA PRO Pole on an existing foundation, begin by drilling anchor holes in accordance with the specifications provided by the manufacturer of the chemical anchors being used. The anchor layout must form a 120 mm × 120 mm square to match the base plate of the pole. After drilling, install the chemical anchors following the manufacturer's curing and installation guidelines. Ensure that all power and communication cables are routed so they can pass cleanly through the cable grommets located in the base of the ENELION VERTICA PRO Pole.

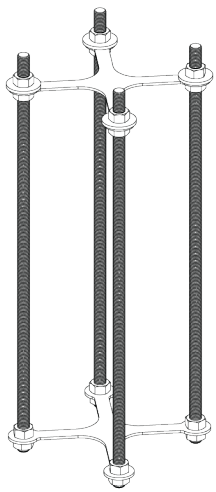


Chemical Anchor Installation

Install the chemical anchors strictly in accordance with the manufacturer's instructions. The minimum anchoring depth must be 110 mm to ensure proper load-bearing strength.
Threaded rods should be inserted so that they protrude between 40 mm and 60 mm above the foundation surface. This clearance is required to correctly secure the ENELION VERTICA PRO Pole to the foundation using washers and nuts.
Once the chemical anchors have been set and cured as specified, you may proceed with the installation of the ENELION VERTICA PRO column.

5.4 Enelion Foundation Kit

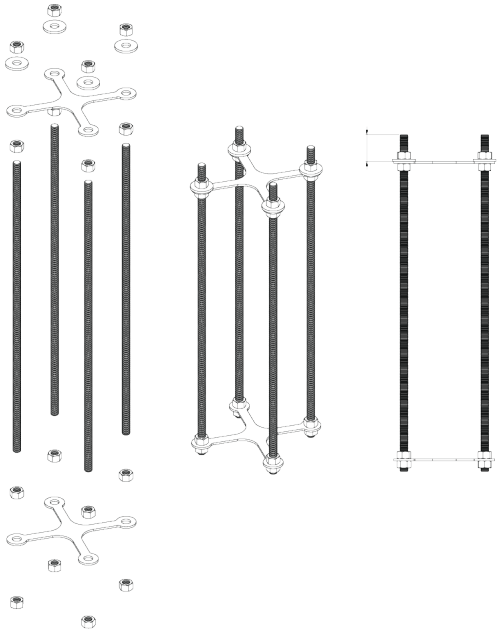
ENELION Foundation Kitallows you to make a foundation in the ground suitable for installation of the Pole ENELION VERTICA PRO.
Correct execution of the foundation with the use of foundation set ENELION requires concreting it in the excavation.



The Enelion Foundation Kit consists of :
- 4x threaded rods M12
- 2x baseplates
- 20 x nuts M12

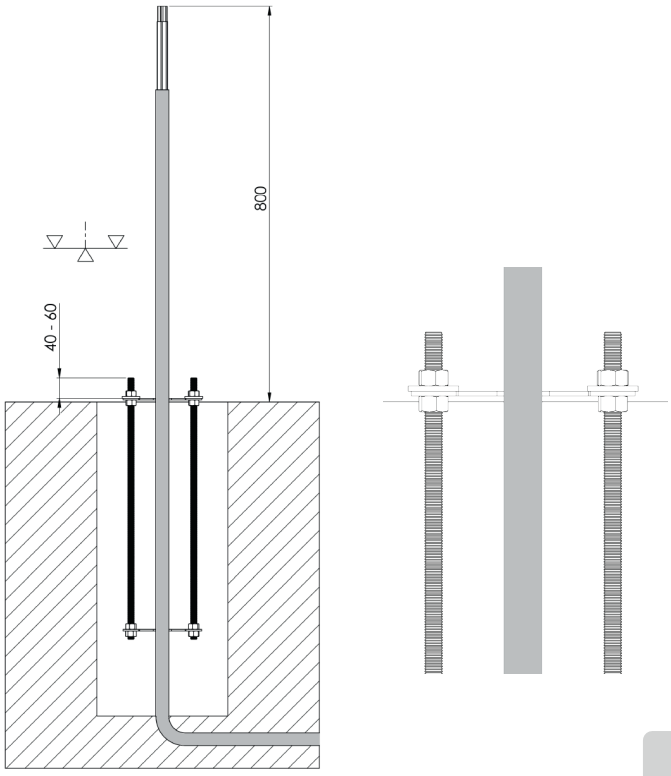
5.5 Foundation assembly using the ENELION foundation kit

Excavate a foundation pit with dimensions of 250 mm × 600 mm (width × depth) or 250 mm × 250 mm × 600 mm (width × length × depth), depending on the specific installation layout.
Compact the soil at the bottom of the excavation to a minimum compaction index of 0.97 to ensure proper structural support.
Assemble the ENELION foundation set according to the illustration.
The upper base plate should be at a distance of from 40mm to 60mm from the end of the threaded pin.

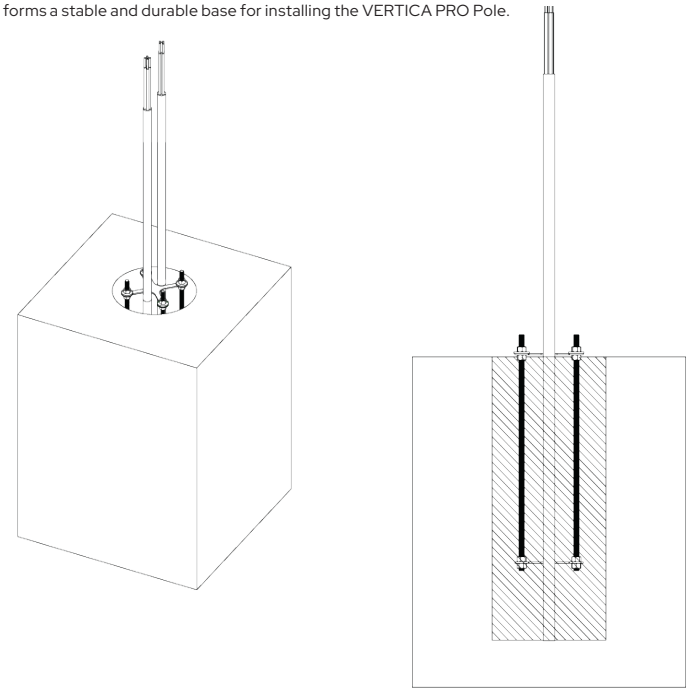


5.6 Installation of the Foundation Kit

Place the assembled ENELION foundation kit in the excavation. Bring the power cables above the surface to a height of about 800 mm. Fix the foundation set with verticality in such a way that the ends of the threaded rods protrude above the foundation surface at a distance of 45 mm to 60 mm. The upper base plate should be above the expected foundation surface and keep it level so that it can be removed after the concrete has cured.

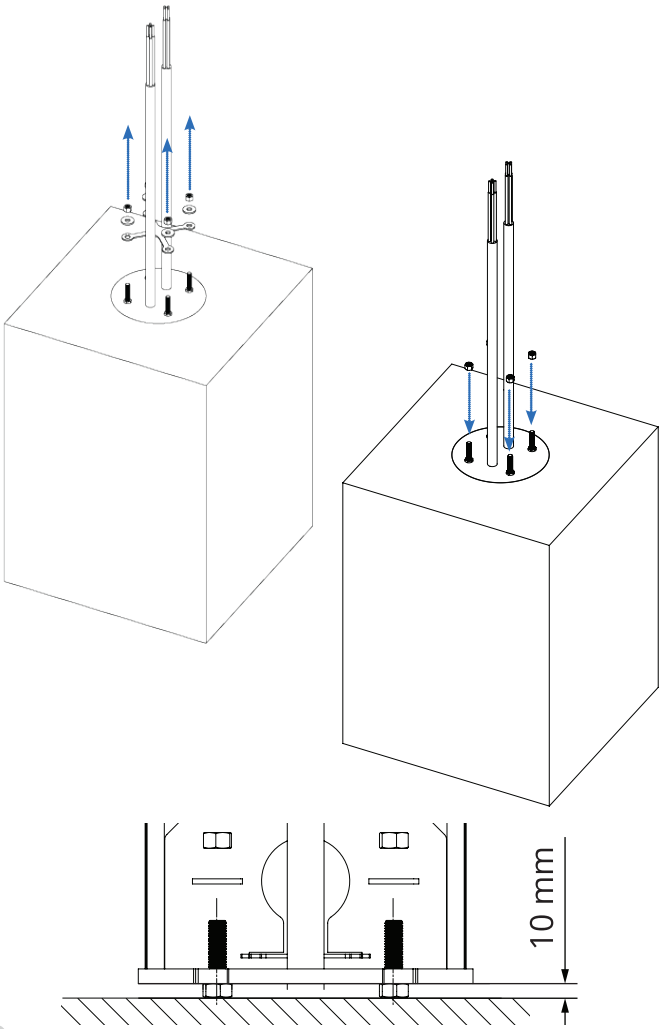


A correctly positioned and leveled ENELION Foundation Kit, once concreted in the excavation, forms a stable and durable base for installing the VERTICA PRO Pole.



After the concrete has cured

Once the concrete has fully cured, loosen the M12 nuts and carefully remove the upper base plate from the foundation kit.
Next, screw four M12 nuts back onto the threaded rods. Adjust and level these nuts as needed – they will serve as support and leveling points between the foundation surface and the base of the ENELION VERTICA PRO Pole during final installation.



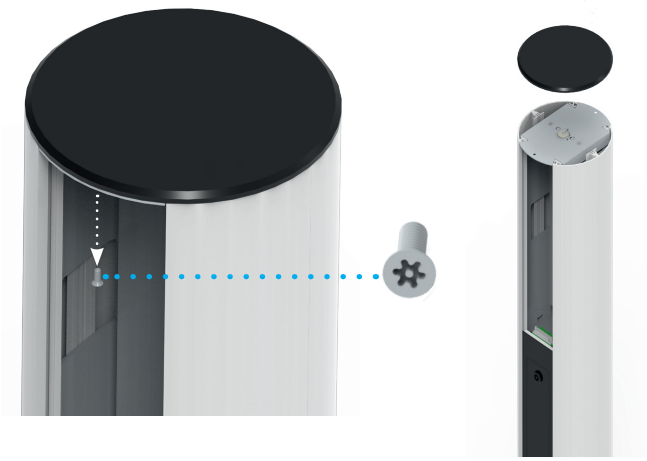
6.1 Preparation for installing the pole

Lay the packaged ENELION VERTICA PRO Pole in a horizontal position, following the orientation markings on the packaging. Carefully cut the carton along the marked cutting line. Remove the device from the box, detach the foam protections, and position the unit vertically in its intended installation orientation. The foam protections contain essential accessories required for installation. These must be removed and retained before discarding the packaging. The accessory set includes:

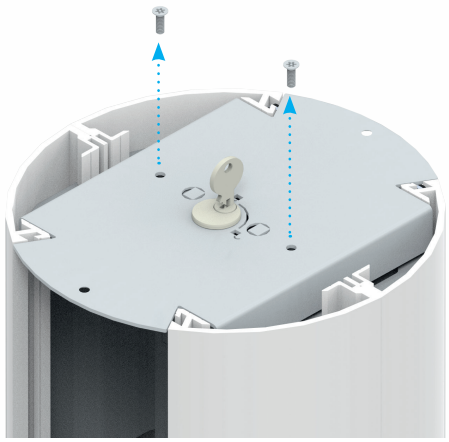
- Torx Security T25 bit
- RFID card
- Triangular or magnetic key (depending on version)
- Supply current value labels
- Quick-start manual for the device

6.2 Opening and closing the device

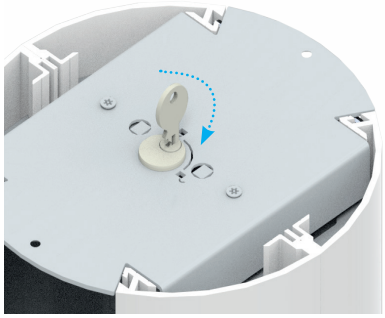
Access to the internal components of the charger is secured by the structure of the ENELION VERTICA PRO Pole. Before performing any operations on the device, the enclosure must be opened according to the following instructions.
Using the included Torx Security T25 bit, unscrew the lid fasteners located on both sides of the device. Once all screws are removed, carefully lift off the lid.
Place the lid in a safe, clean area to prevent scratches, deformation, or other damage during servicing or installation

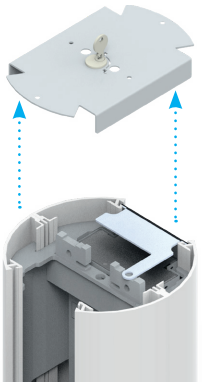


Then, loosen the M6 screws using a 5 mm Allen wrench. Please note that the Allen wrench is not included in the installation kit and must be provided separately by the installer.



If the device is equipped with a patent lock, use the corresponding key to unlock the lock plate and remove it.
The key is located beneath the top cover, positioned between the lock plate and the side of the pole. Remove the cover to access the key before proceeding.





Next, carefully slide the modules upward to release them from the mounting structure. Start with Module 2 or Module 2/2, depending on the configuration.
Place each removed module in a clean and secure location to prevent damage during the remainder of the installation process.

Then, gently slide the modules upward to detach them from the mounting frame and place them in a safe, stable location to avoid damage during further installation steps.

Slide the lower masking panels upward on both sides of the ENELION VERTICA PRO Pole. Once removed, place them aside in a safe area where they will not be exposed to damage. While sliding the panels, ensure that each one remains aligned in a plane parallel to the pole. Continue this motion steadily until the guide is fully disengaged.

ATTENTION

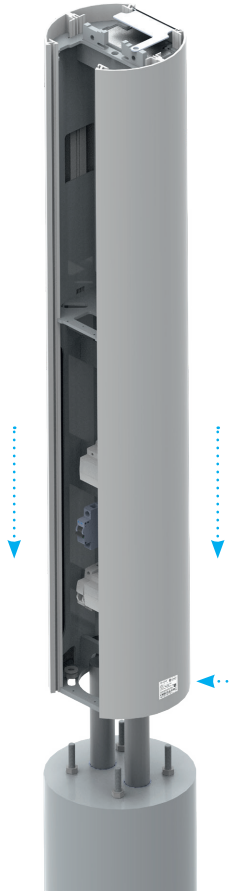
Before installation, disconnect the power supply in the power cables.

6.3 Mounting of the Vertica Pro pole

The ENELION VERTICA PRO Pole is mounted to the foundation using four M12 nuts on previously prepared threaded rods or a pre-fabricated foundation. For optimal alignment, we recommend positioning the pole on pre-leveled M12 nuts threaded onto the rods beforehand. This allows for precise adjustment of the pole's vertical position during installation. Ensure that any gap between the bottom of the pole and the foundation surface is properly filled with soil or non-compressive material to provide full support and maintain structural stability.

6.4 Mounting the power and communication cables

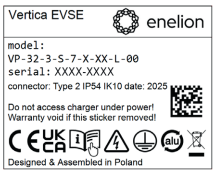
Route the power cables according to the installation diagram provided in the manual. Once the cables are correctly positioned, mount the ENELION VERTICA PRO Pole onto the prepared foundation. Ensure cable alignment and strain relief are maintained during placement to prevent damage or interference with installation.



INFO

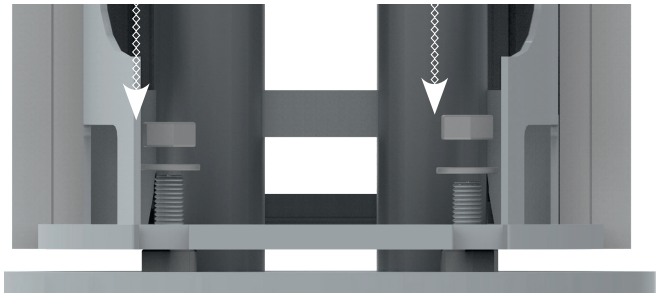
If at the planning stage, it was decided to have wired Ethernet communication to the payment terminal and Enelion Chain system, place additional network cables securing them according to building regulations with a length of 150cm from the foundation.

The serial number plate on the pole is an integral part of the device and must not be removed or damaged, otherwise the manufacturer's warranty will be void.



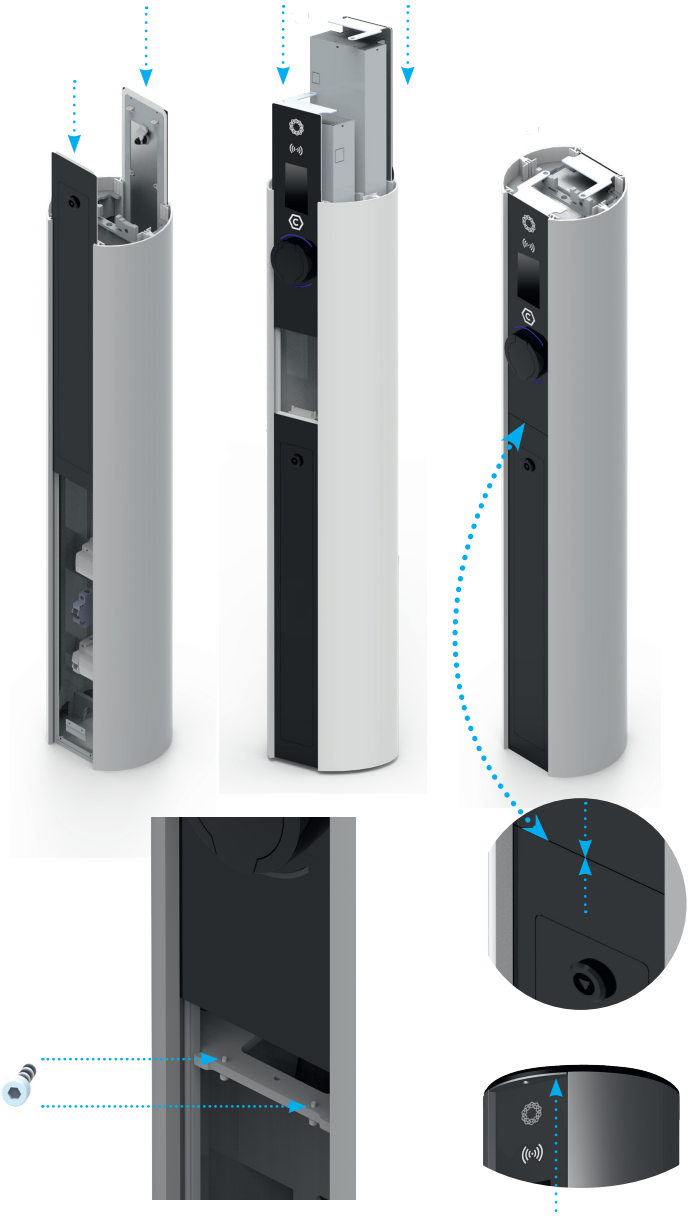
6.5 Fixing the Pole to the Foundation

Secure the ENELION VERTICA PRO Pole to the foundation using four M12 nuts and matching washers. Tighten the nuts to a torque of 40–45 Nm. After tightening, apply a thin layer of technical grease to the nuts, washers, and the exposed portion of the M12 threaded rods to protect against corrosion and ensure ease of future servicing.



6.6 Installing the bottom panel and modules

When installing the bottom panel and modules, it is possible to adjust the distance between the panel and the power module and lock plate so that they fit together perfectly.



M4 screws for adjusting the bottom panel using a 4 mm Allen key. The Allen key is not included in the set.

Pay attention to the height of the lock cover and the charging module. They should fit together perfectly. If necessary, adjust them using M4 screws.

INFO

Further steps to close the ENELION VERTICA pole should be performed in reverse order to opening the device.

7.1 Recommendations for electical and communication connections

ENELION VERTICA charging stations are designed for connection to a five-wire TN-S power network.
In the standard configuration, each ENELION VERTICA module should be supplied via a dedicated power line from the distribution switchboard. The switchboard must be equipped with suitable protection, including an overcurrent circuit breaker with a B or C characteristic and a rated current of 32 A or lower, depending on the device's configuration. To ensure conformity with EN IEC 61851-1:2019-10, each charging point must also be protected against residual currents of type A and B. This requirement can be fulfilled by installing: A Type B Residual Current Device (RCD B), rated at 30 mA / 40 A or a certified EV-specific RCD (e.g., RCD EV 30 mA / 40 A) in the upstream switchgear. The selection of protective devices must always be performed by a licensed electrical designer or certified electrician, in compliance with local regulations. Alternative Solution: Enelion Integrated Protections As a cost-effective and space-saving alternative, Enelion offers the option to install an RCD B circuit breaker bundled with the device.
Additionally, the Enelion RCM B module (Type B Residual Current Monitor) can be used as an accessory. When used in combination with a Type A RCD in the main switchgear, the RCM B ensures full compliance with safety and protection standards for differential current protection.

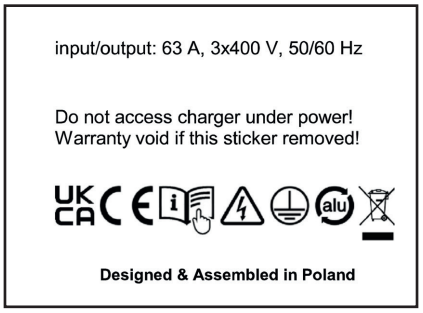
7.2 Cable Specifications, Connection Methods, and Accessories

The modular architecture of the ENELION VERTICA PRO System means that the electrical connection method will vary depending on the configuration and optional accessories installed. For certain advanced features, a fixed phase rotation connection is required to ensure proper functionality. When using the Vertica Power Daisy Chain system, the maximum permissible conductor size is 50 mm² for aluminum (Al) or 35 mm² for copper (Cu). Each ENELION VERTICA PRO Module must be protected by a residual current circuit breaker compliant with the requirements described in Section 7.1.
The cross-section of the supply wires must be selected by a licensed electrician, based on the distance from the distribution switchboard and local site conditions. For ease of installation, it is recommended to use flexible power conductors with pre-installed ferrules. These conductors should extend approximately 100 cm above the foundation level to allow sufficient working space. To enable Ethernet communication with integrated payment terminals, use RJ45 CAT 5e CU network cables or higher-grade equivalents. For setups using the ENELION Chain communication protocol (CAN bus), install RJ45 CAT 5e CU or better network cables with pure copper conductors (not CCA - Copper Clad Aluminum). These cables are required to establish communication between modules and enable advanced diagnostics and monitoring. The communication connection should use:
1 twisted pair for data transmission
Cable shielding to reduce interference
The maximum total cable length for CAN communication must not exceed 500 meters. All underground cables must be installed in accordance with local and national building codes.

INFO

Three self-adhesive labels indicating the rated supply current are included with the device.
Select the correct label according to the installation specifications and affix it next to the main nameplate on the device.

The nameplate affixed to the device is an integral component and must not be removed or tampered with, as doing so will void the manufacturer's warranty. The nameplate is required for inspection and certification by relevant local regulatory authorities.



Example of an information plate

ATTENTION

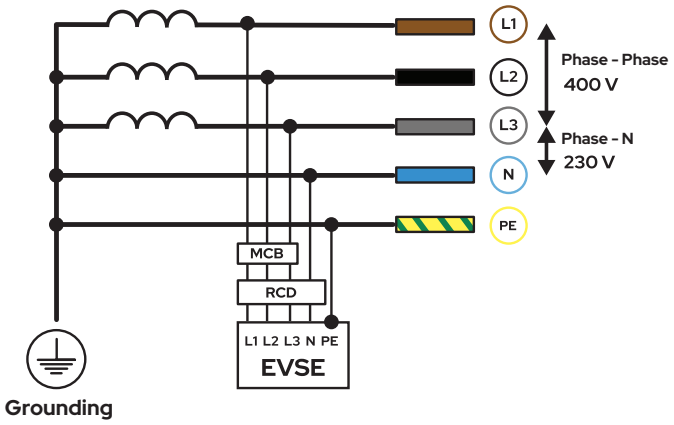
The manufacturer is not responsible for damage resulting from failure to comply with the above recommendations.

7.3 Installation design guidelines

Station Power Supply Network Systems

ENELION charging stations are designed for connection to a five-conductor power supply system. The standard supported configuration is the TN-S network type, operating at 230/400 V. This setup ensures safe and efficient operation in compliance with widely adopted electrical standards across Europe and other regions.

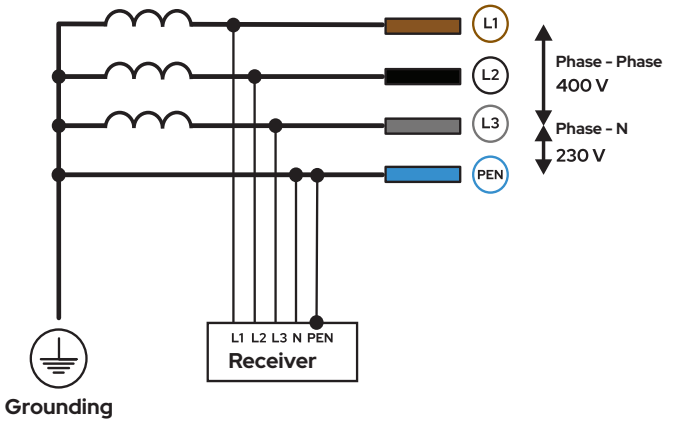
TN-S 230/400 V
Generator or transformer



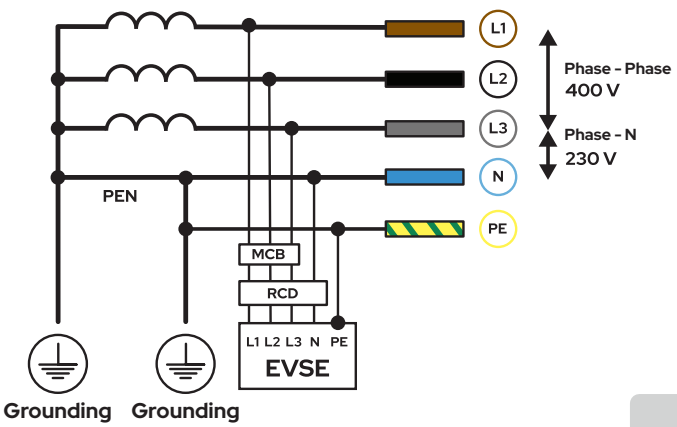
Powering the station from alternative network systems is possible under specific conditions:

In a TN-C network, the PEN conductor must be split into separate N (neutral) and PE (protective earth) conductors, in accordance with applicable standards and as illustrated in the diagram below.

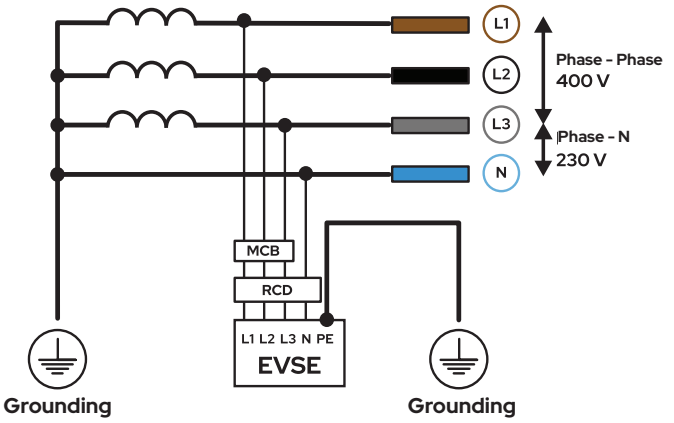
TN-C
Generator or transformer



TN-C-S 230/400 V
Generator or transformer

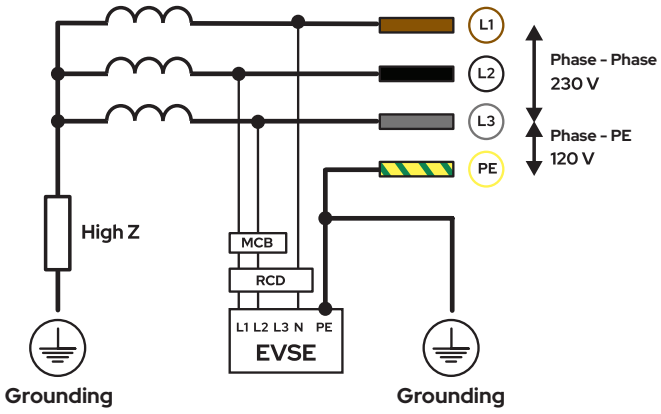


TT 230/400 V
Generator or transformer

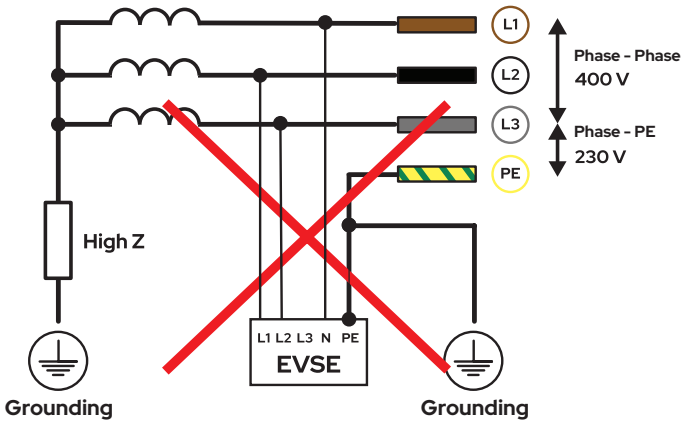


In 120/230 V IT networks, such as those commonly used in Norway, the connection must follow specific guidelines. One of the phase conductors is used as a neutral equivalent, which is a critical consideration when installing residual current devices (RCDs). Due to the network's characteristics, three-phase charging is not supported. Only certain vehicles that support two-phase charging will be compatible in this configuration.

IT 120/230V
Generator or transformer



IT 230/400 V - Not allowed !!!
Generator or transformer

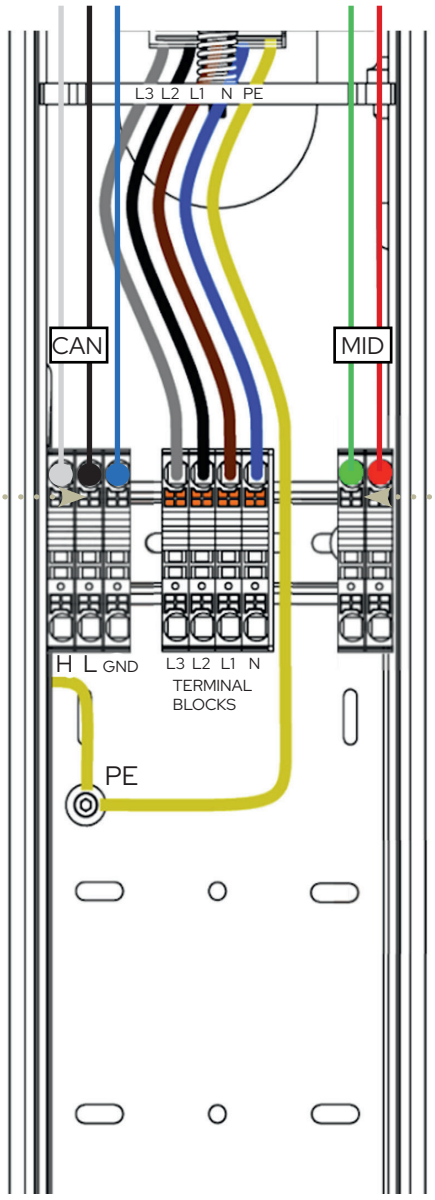


For other, more complex power supply configurations, technical consultation with the manufacturer or authorized distributor is recommended prior to purchase to ensure compatibility and safe operation.

7.4 Standard Electrical Connection

Correct wiring of the ENELION VERTICA PRO pole begins with observing the internal conductor markings. The standard configuration uses phase labeling in the default sequence: L3, L2, L1, N.
By default, the pole is powered using two independent 5 × 6 mm² cables, each serving one charging module. These conductors are connected via a four-pole terminal block (L, L, L, N), while the PE (Protective Earth) conductor is affixed directly to the aluminum frame using the supplied 6 mm² insulated M5 ring terminal. A dedicated crimping tool must be used to properly terminate insulated connectors.
Each module is supplied through 4 Degson DS6-01P-11-00A(H) terminals, supporting conductors up to 6 mm². The standard pole includes 4 power terminals per side to support two modules in total.
Additionally, Degson DS2.5-01P-11-00A(H) connectors are provided for communication wiring—used for the Enelion Chain (CAN bus) system and MID-certified energy meter signal connections.
All stranded wires must be terminated using insulated ferrule sleeves matched to the wire gauge, in accordance with electrical safety standards.

On the left side of the enclosure, there are three Degson DS2.5-01P-11-00A(H) connectors, designated for the CAN bus communication lines used in the Enelion Chain system.



On the right side of the enclosure, there are two Degson DS2.5-01P-11-00A(H) connectors designated for signal communication with the MID-certified energy meter.

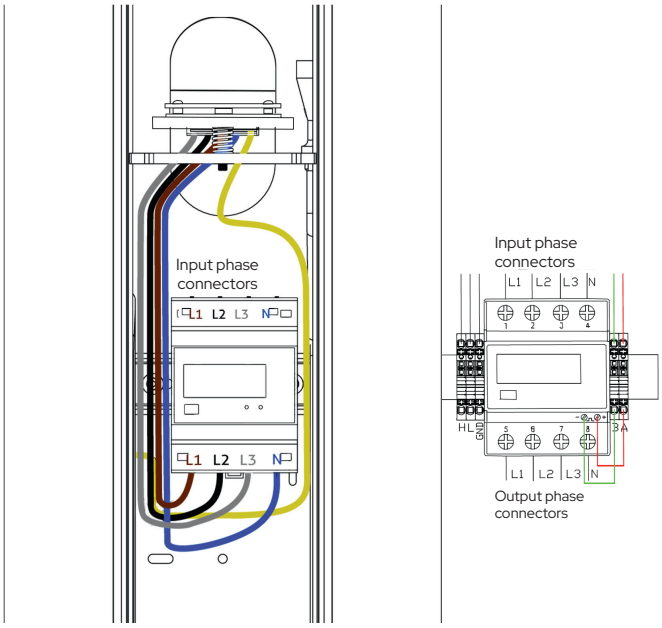
ATTENTION

The PE (Protective Earth) conductor must be connected at a single, common grounding point on one designated side of the ENELION VERTICA Pole. This is mandatory for proper grounding and safe operation.

IN THE SOLUTIONS BELOW, SUPPLY THE STATION WITH TWO SEPARATE CABLES

7.5 Connection scheme - MID energy meter

The ENELION MID-certified energy meter is an optional add-on installed individually for each ENELION VERTICA PRO Module, with one unit mounted per side. For proper operation, power phase conductors must be connected to the upper terminals of the meter, in accordance with the wiring diagram provided.

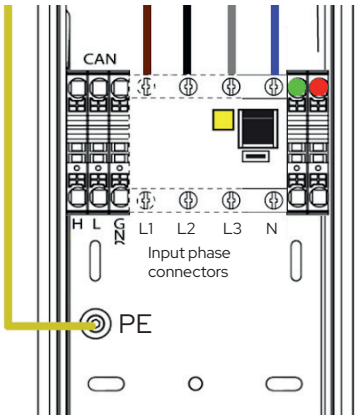


ATTENTION

The PE (Protective Earth) conductor must be connected at a single, common grounding point on one designated side of the ENELION VERTICA Pole. This is mandatory for proper grounding and safe operation.

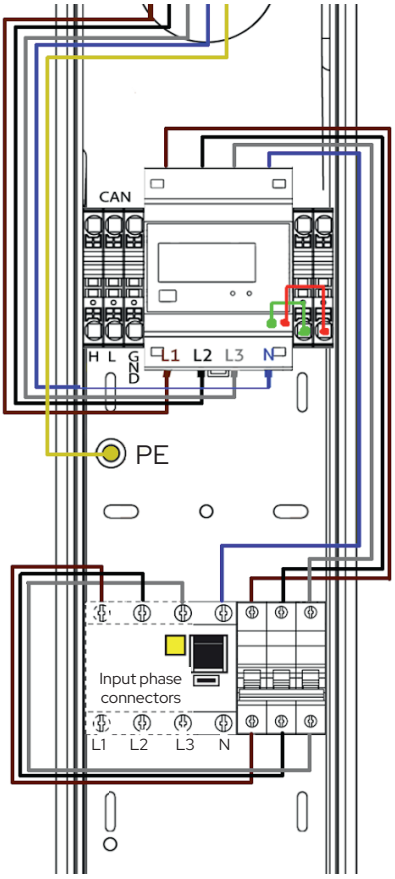
7.6 Connection scheme- RCD A

RCD A provides protection against alternating current (AC) leakage and should be used in conjunction with an RCM B (DC residual current monitor). Together, RCD A + RCM B form a complete residual current protection system equivalent to Type B protection, which is essential for electric vehicle charging stations.
To meet applicable safety standards (e.g., IEC 61851-1) and local commissioning authority requirements for public EVSE installations, it is recommended to order a module equipped with the RCM B monitor directly from the manufacturer or an authorized distributor.



7.7 Connection scheme - MID energy meter, RCD A / RCD B + overcurrent circuit breaker

The overcurrent circuit breaker serves as a protective device designed to interrupt the flow of electricity when the current exceeds a predetermined safe limit. Its primary function is to protect the electrical installation and connected components from overloads and short circuits, ensuring safe operation of the charging infrastructure.



INFO

Wiring diagrams for configuration variants 1, 2, 5, and 6 are provided in the later sections of this manual.

ATTENTION

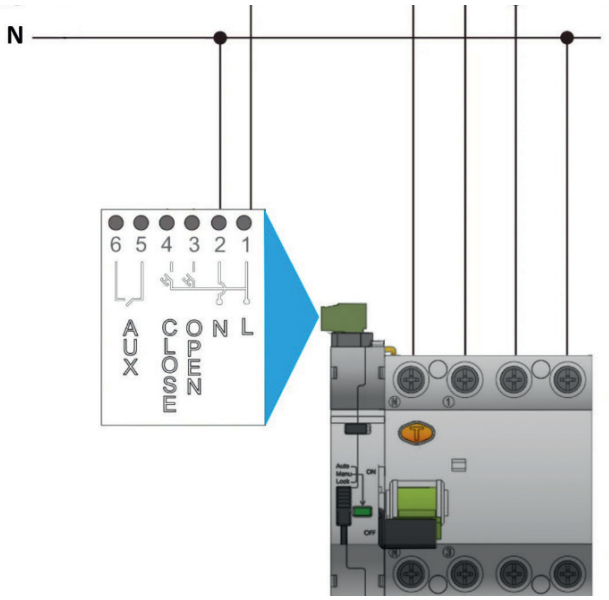
It is essential to observe the specified torque values for all connector terminals as outlined in the installation table.
Failure to apply the correct tightening torque may lead to overheating of the connector, increasing the risk of electrical fire.
The manufacturer shall not be held liable for any damage or hazard resulting from non-compliance with these torque specifications.

STK code	Product code	Color	Conductor (mm^2)	Um (V)	In (A)	Tightening torque
19 141 03	VC05-0013	Grey	1x Ai/Cu 1,5-50	1000	160 (Cu) / 145 (Ai)	1,5 Nm (1,5-2,5 mm^2) 5 Nm (4-10 mm^2) 10 Nm (16-50 mm^2)

Basic Specifications of the DIN Rail Connector:

7.8 Connection scheme - RCD B with automatic restart

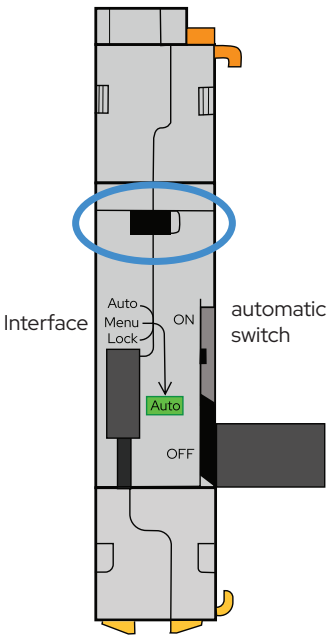
An RCD B circuit breaker can be equipped with an automatic reclosing device (lifter). The lifter is a separate physical unit that must be installed adjacent to the RCD on the DIN rail. Depending on the number of phases in the system, the combined circuit breaker and lifter assembly will occupy 4 to 5 slots (DIN rail bays).



Wiring diagram of RCD B with lifter for power supply

Lifter Status Indication – LED Interface

The automatic lifter is equipped with an LED interface that provides visual feedback on its operating status:
Solid green – The device is operational and ready for use.
Solid red – The device is locked after three unsuccessful reclosing attempts. Manual intervention at the station is required to reset the lifter.
Flashing red – The lifter is actively attempting to reclose the residual current circuit breaker (RCD).



The lifter can operate in three modes

Auto Mode
In this mode, the lifter attempts to automatically reclose the RCD B up to three times following a trip event:

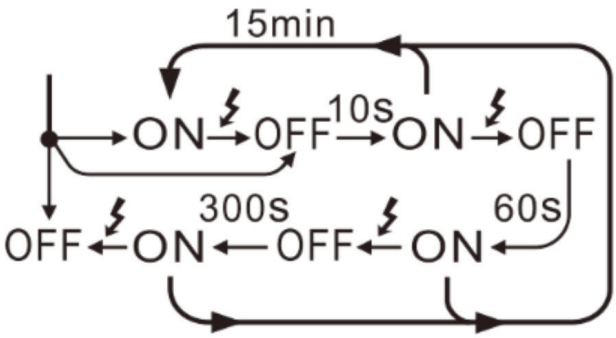
First attempt – Initiated 10 seconds after the circuit breaker trips.

Second attempt – If the RCD trips again within 15 minutes, the lifter will retry after a 1-minute delay.

Third attempt – If the RCD trips a third time within 15 minutes, the final reclose attempt will be made after a 5-minute delay.

Fourth trip – Automatic operation is disabled. Manual reset of the RCD is required at this point.

A schematic representation of this logic can be found in the following section of the manual.



Manual Mode
In this standard configuration, the lifter does not attempt to reclose the circuit breaker. After tripping, the RCD B must be reset manually.

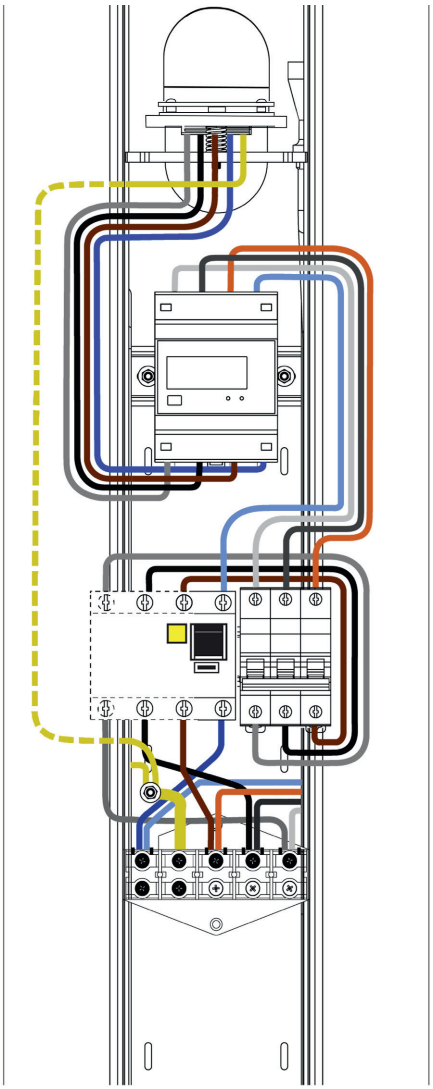
Lock Mode
This setting disables access to mode switching and allows for physical sealing of the mode selector to prevent unauthorized changes. It is intended for installations requiring tamper protection.

If the Enelion charging station is purchased with a residual current circuit breaker (RCD B) equipped with an automatic lifter, the device will be factory-configured to operate in Auto mode by default. This ensures automatic reclosing functionality in accordance with the defined lifting logic, enhancing operational continuity and reducing the need for on-site intervention after fault events.

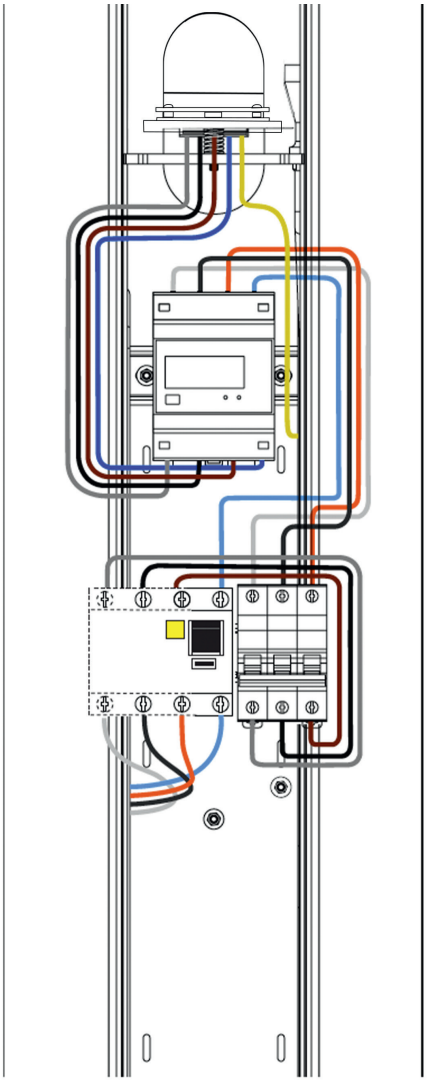
IN THE VARIANTS BELOW, THE STATION IS POWERED BY A SINGLE WIRE

7.9 Connection scheme to ENELION VERTICA Splitter, MID energy meter, RCD A / RCD B, diagrams - connection variants

If the ENELION VERTICA PRO pole is to be powered using a single supply cable for two charging modules, the use of the ENELION VERTICA Splitter accessory is required. This component enables the safe distribution of power to both charging panels housed within the same pole enclosure.
By default, the ENELION VERTICA Splitter is designed for copper conductors with a cross-section of 16 mm². Upon request, the splitter can accommodate larger conductor sizes – up to 50 mm² for aluminum or 35 mm² for copper.
For single-cable power delivery, it is mandatory to use a certified ENELION-supplied splitter. This solution integrates the following safety components: Power connection terminal block, Overcurrent protection, Residual current protection
These features ensure safe operation and compliance with applicable installation standards.
Note: The instructions herein assume that the ENELION MID energy meter accessory has already been installed.
Only copper conductors are permitted for use with the ENELION VERTICA Splitter terminal block.
Always refer to the wiring diagram provided in this manual when installing the ENELION VERTICA Splitter.



Obverse of ENELION VERTICA Pole after installation of ENELION VERTICA Splitter with current MID meter.



Reverse of ENELION VERTICA Pole after installation of ENELION VERTICA Splitter with current MID meter.

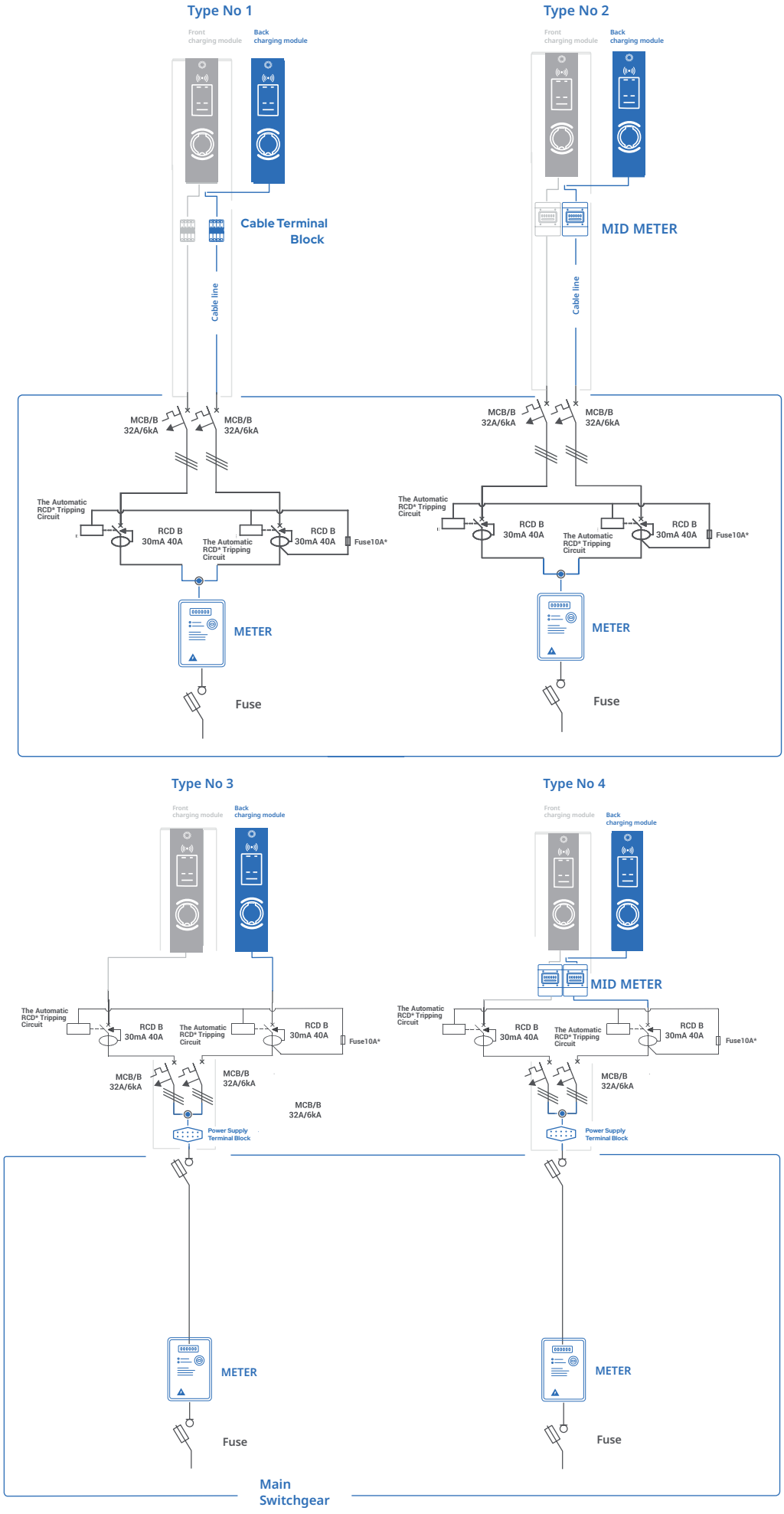
ATTENTION

The connections shown are examples. Before installation, check the markings on the meter to be installed. The way Enelion Splitter is connected may vary depending on the variant. Other more complex power systems require technical consultation before purchase

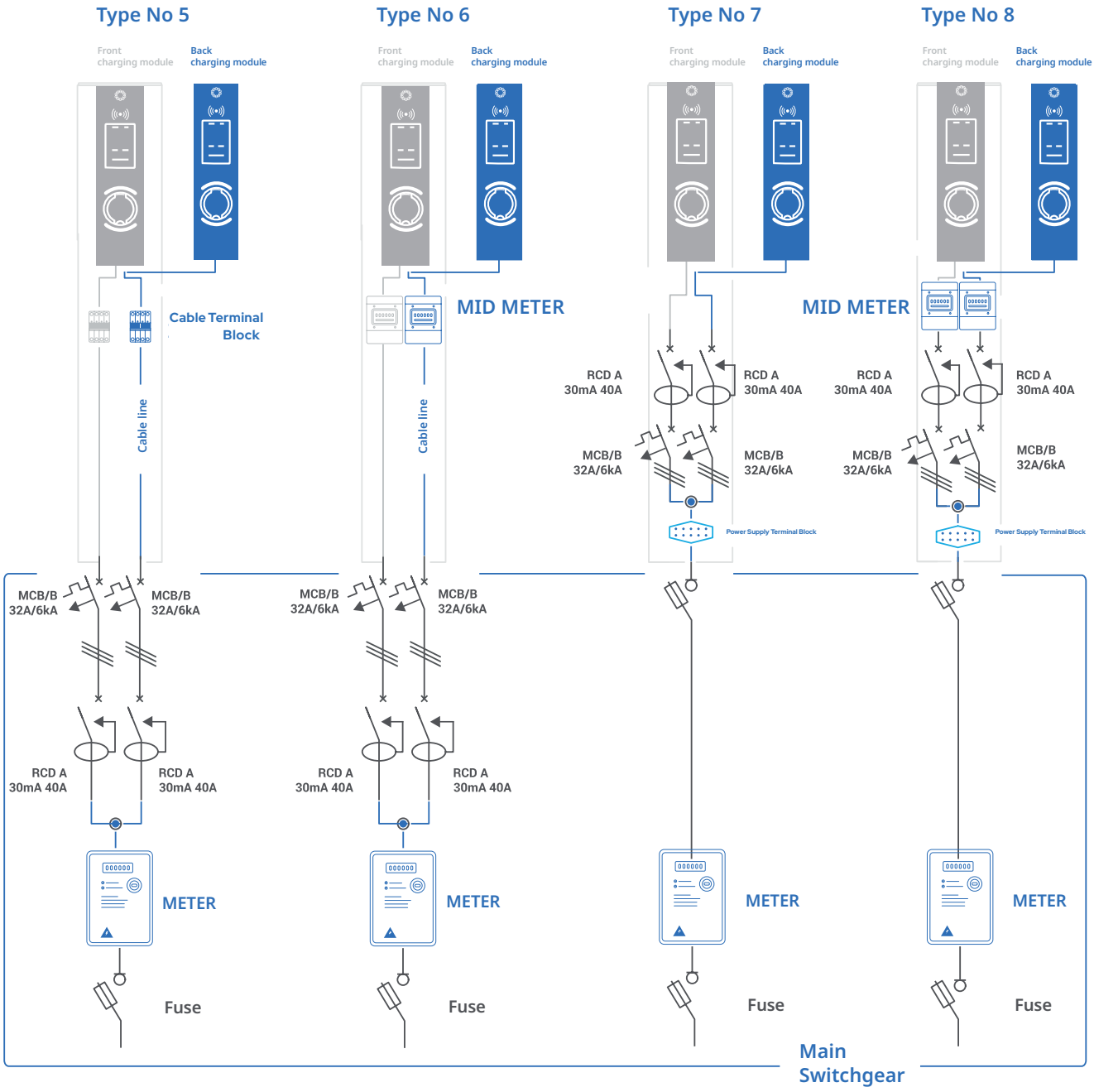
INFO

The wiring diagrams from Vertica Splitter will go down in the diagram of variants 3,4,7,8 later in this manual

7.10 Connection scheme - diagrams - variants



7.10 Connection scheme - diagrams - variants



IN THE VARIANTS BELOW, THE STATION IS POWERED BY A SINGLE WIRE

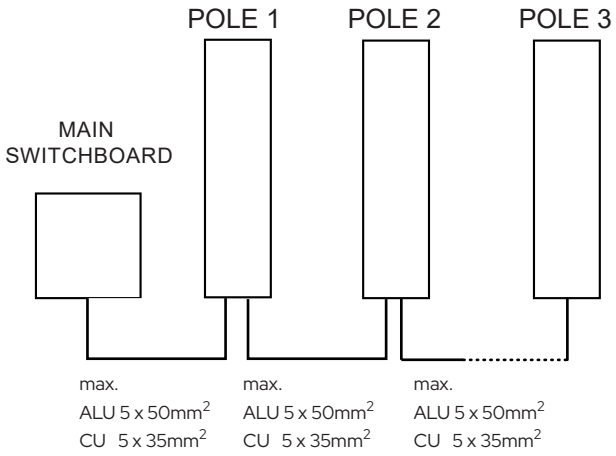
7.11 Connection scheme- VERTICA Power Daisy Chain

When installing multiple ENELION VERTICA PRO poles in a serial configuration – referred to as a "power chain" – it is recommended to use models equipped with Vertica Power Daisy Chain connectors. This system is engineered to streamline power distribution across several poles in sequence. The Vertica Power Daisy Chain supports conductor cross-sections up to 50 mm² for aluminum and 35 mm² for copper. Each VERTICA PRO module in the chain must be individually protected using residual current protection devices that meet the specifications outlined in the earlier section of this manual.
The sizing and selection of power supply cables must be performed by a qualified electrician, taking into account cable length, installation environment, and load requirements. For ease of installation and compliance with safety standards, it is advised to use flexible power cables, appropriately rated and terminated with insulated ferrule terminals.
The Daisy Chain assembly features two rail-mounted terminal blocks:
The input terminal (obverse side) receives power from the preceding pole or main distribution point.
The output terminal (reverse side) allows for power continuation to the next pole in the chain.
Each Daisy Chain connector includes built-in overcurrent protection, residual current protection, and optionally, a MID-compliant energy meter for precise billing and monitoring.
Note: Only certified aluminum or copper conductors should be used with these connectors, with cross-sections not exceeding the specified limits.

IN THE VARIANT BELOW, THE STATION IS POWERED BY A SINGLE WIRE

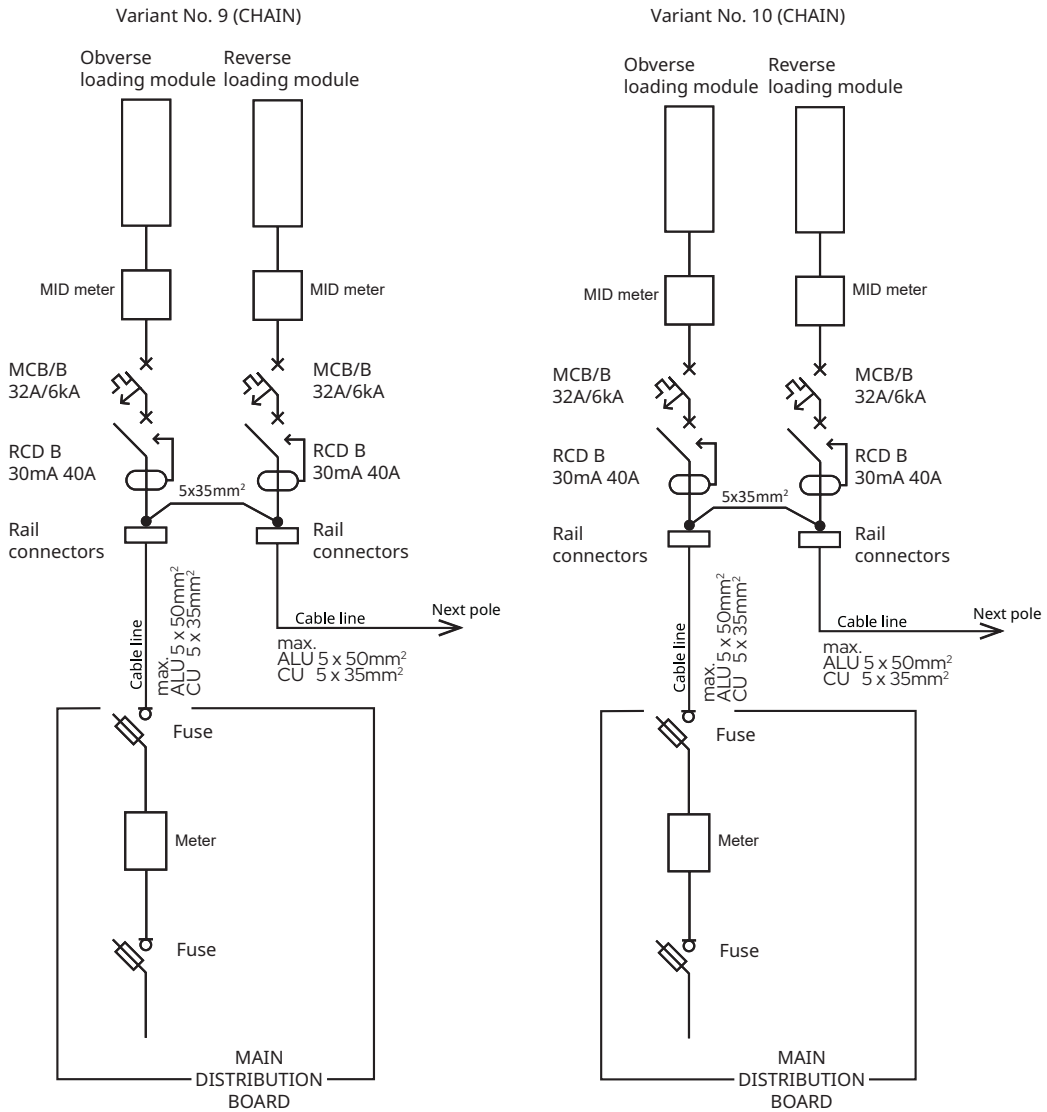
7.11 Connection scheme- VERTICA Power Daisy Chain

The diagram below shows such a way of mounting the devices:



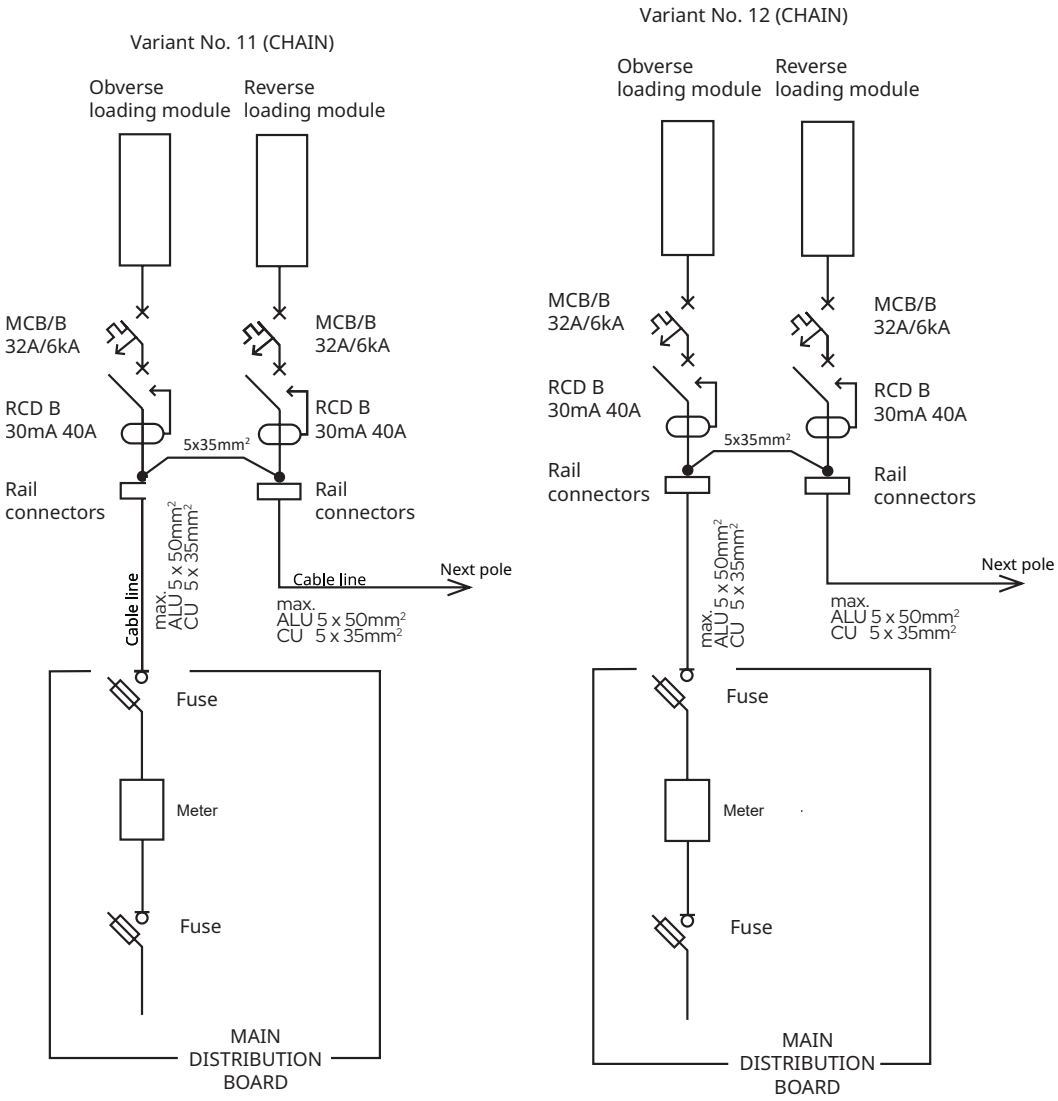
7.12 Installation Schemes- VERTICA Power Daisy Chain

Power Daisy Chain version poles should be connected according to the diagrams shown:



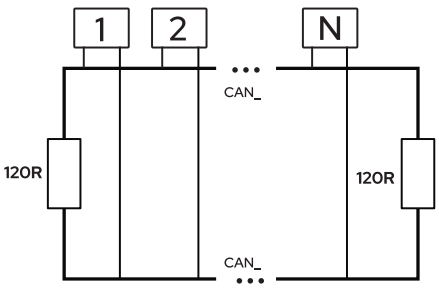
7.12 Installation Schemes- VERTICA Power Daisy Chain

Power Daisy Chain version poles should be connected according to the diagrams shown:



7.13 Enelion Chain (CAN)

The **ENELION CHAIN** network is based on a serial, wired CAN bus. Vertica Pro modules communicate with each other over this bus. It is also possible to connect one Master module with BRIDGE 2.6Q LTE modem with 98 modules without Bridge type Slave. Such a solution saves costs and gives the possibility to monitor and configure multiple stations in one modem.
In this way we have full control over modules without a modem. A popular yet common configuration is the Vertica Pro pole equipped with one module with Bridge communication and the other module without Bridge, in this case it is required to switch jumpers in the pole on both sides. In any other case, when we are going to connect multiple devices within a single CAN chain chain network into a protocol, it **is necessary to switch the termination** - jumper in the pole at number 1 and in the last pole, for example, at 10. Before starting the station, check that the other jumpers are on OFF to OFF. More jumpers on ON may lead to lack of communication. Only 2 in the whole chain can be switched on ON. At the beginning that is the first module and at the end the last one in the Enelion Chain module.



M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
Bridge LTE	brak	brak	brak	brak	brak	brak	brak	brak	brak

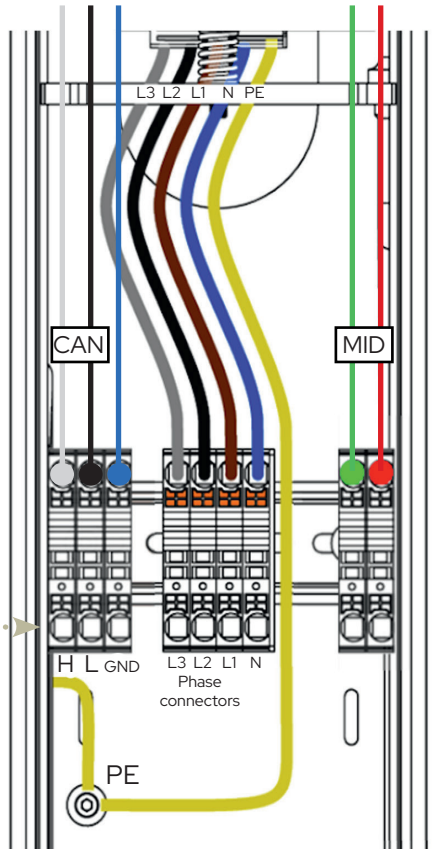
Example diagram for 10 modules connected in Enelion Chain network

M- MODULE AND NUMBER
ON and OFF - Termination is done by switching the slide switch to the right, to the "ON" position.
Presence in the LTE Bridge module

7.13 Enelion Chain (CAN)

Enelion Chain (the so-called chain in CAN bus). The requirement for this solution is to connect all devices with CAT5e or better network cable with copper conductors (not CCA - Copper Clad Aluminum). One twisted pair of wires and a cable shield are used for communication. Select one wire pair (color) and use it consistently throughout the installation.
There are also Degson DS2.5 communication connectors for Enelion Chain on the left side of the pole.
Wire type cables must be terminated with an insulated terminal sleeve of the appropriate size.

Degson DS2.5-01P-11-00A(H) connectors for Enelion Chain communication system (CAN bus). Note the H and L designations to connect correctly.



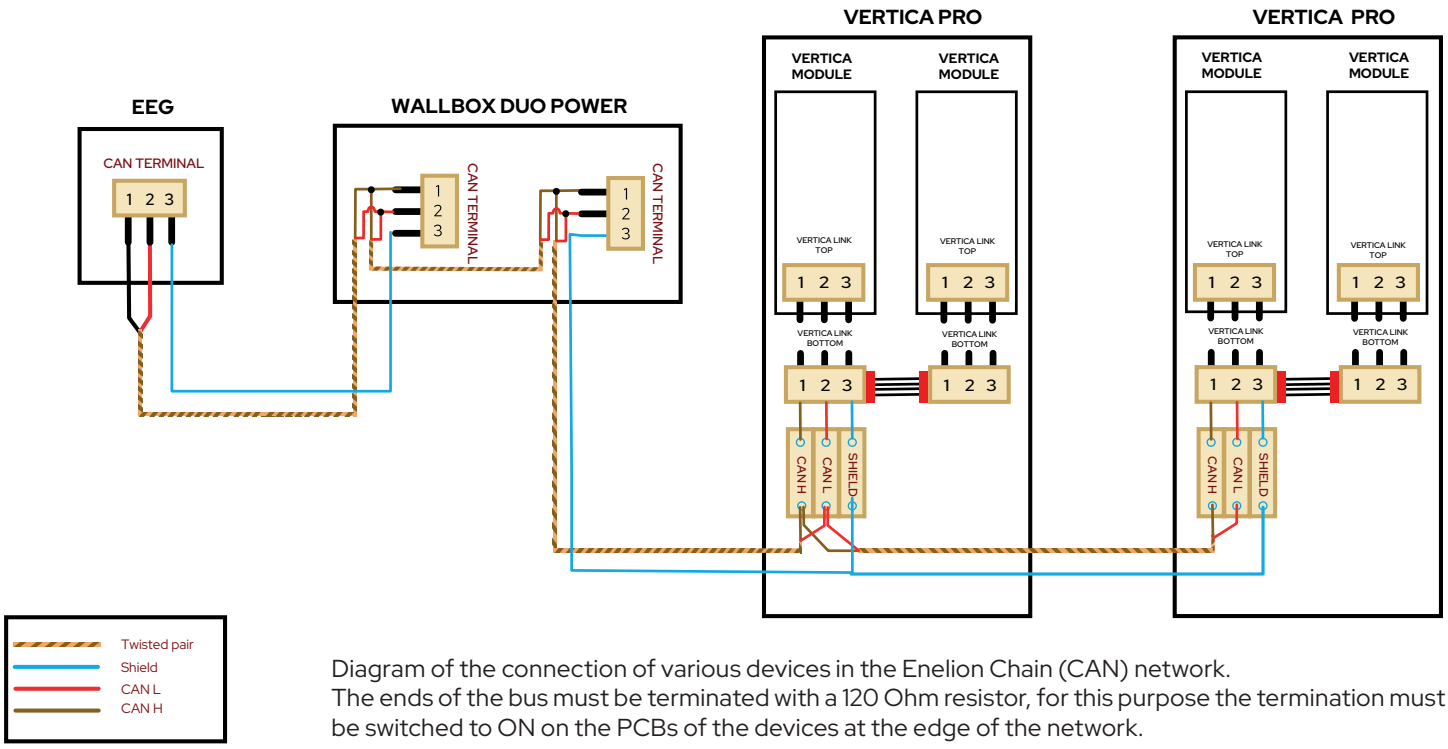
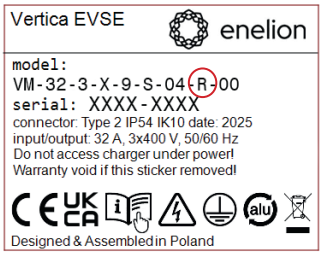


Diagram of the connection of various devices in the Enelion Chain (CAN) network.
The ends of the bus must be terminated with a 120 Ohm resistor, for this purpose the termination must be switched to ON on the PCBs of the devices at the edge of the network.

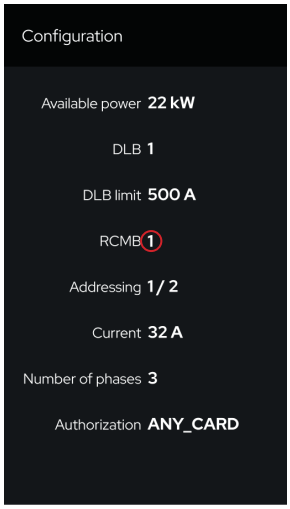
7.14 Enelion RCM B residual current monitor for charging stations in charging module

This is a DC leakage monitor, type B protection in an incomplete version. It is installed at the production stage in the Vertica Pro charging module. According to the EN IEC 61851-1 standard, each charging point must be protected by type A+B overcurrent and residual current circuit breakers. The use of a type B residual current leakage monitor inside the station, makes it possible to meet this requirement by adding only an overcurrent protection and a type A residual current circuit breaker. This reduces the cost at installation and allows the charging device to be used safely with the plug-in car. The RCM B and RCD A set is a complete type B electric vehicle charging station residual current protection, meeting, among other things, the requirements of the EN IEC 61851-1 standard for acceptance of a public charging station. 1 set of protection is per 1 charging point. A dual charger must be equipped with 2 sets of protection, one for each point.



INFO

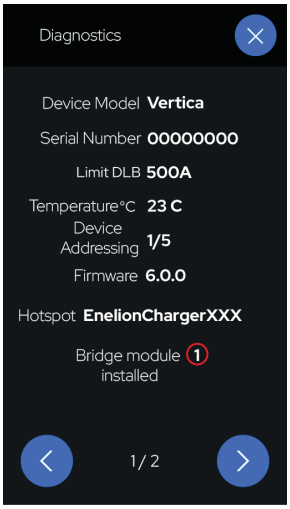
You can find the information which module you have on the model - serial number label on the back of the module. A module with a DC leakage monitor has the letter R in the model number, or the Configuration screen will appear on the screen immediately after powering up the modules for 2 seconds.
The number 1 indicates the RCM B monitor installed.

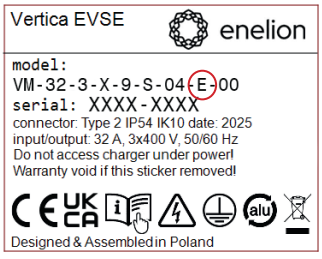


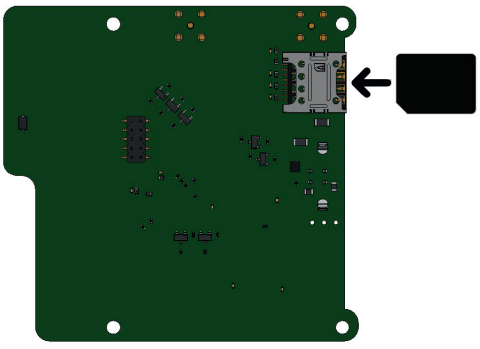
7.15 Installing the SIM Card in the VERTICA PRO Module

To provide an Internet connection to a charger equipped with an ENELION BRIDGE LTE modem using the LTE network, you must:

- Make sure that the module you have has an Enelion Bridge LTE modem (letter E in the model number BRIDGE 2.6Q)
- The module should be equipped with an LTE card before placing it in the pole.
- Note that the LTE card is to be placed in the LTE slot, with the contacts to the PCB.
- You will find the hole for mounting the SIM card on the side of the module.
- Slide the first module with the marking 1 or 1/.... into the pole
- Insert module number 2 or 2/....

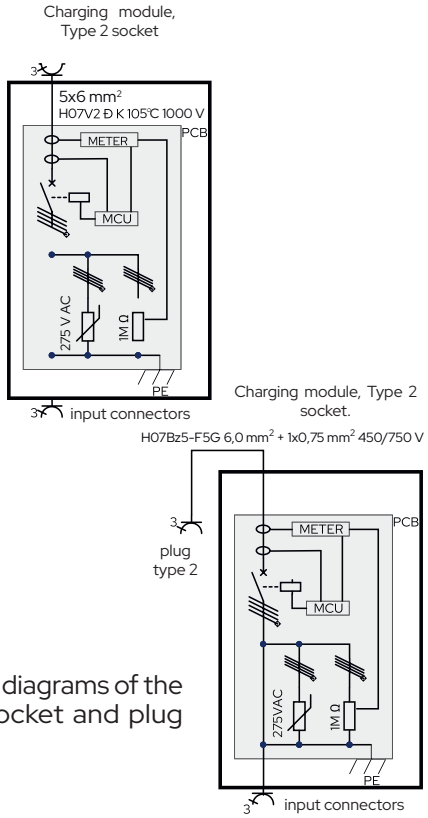




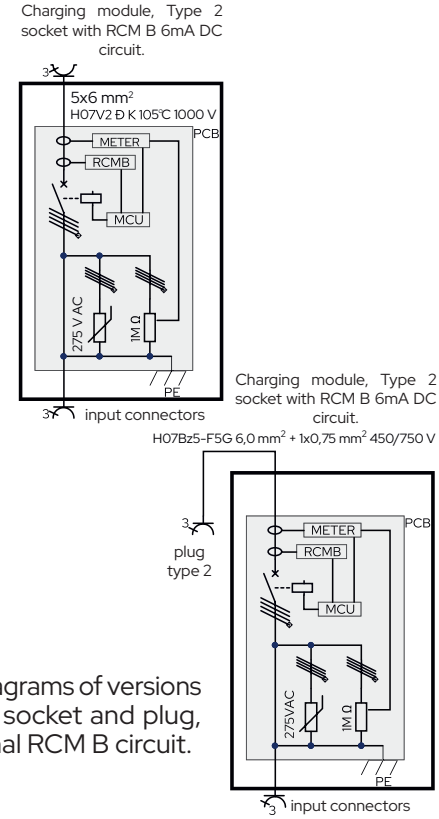


7.16 System Overview – VERTICA PRO Wiring Schematics

Illustrative schematics for socket and tethered Type 2 variants:



Overview diagrams of the Type 2 socket and plug version



Overview diagrams of versions with Type 2 socket and plug, and additional RCM B circuit.

7.17 Technical Specifications – VERTICA PRO with BRIDGE 2.6Q LTE

ENELION VERTICA PRO + Bridge 2.6Q (LTE)

General Specification	
Model	VERTICA PRO + Bridge 2.6Q (LTE)
Charging mode	Tryb 3 (IEC 61851-1)
Charging points	Up to 2
Connector type	Type 2 (IEC 62196-2), cable or socket
Charging power	Single-phase: 7.4 kW (32 A per phase, adjustable in 1 A steps) Three-phase: 22 kW (32 A per phase, adjustable in 1 A steps) Charging current: Adjustable from 6 to 32 A (1-/3-phase)
Charging current	Adjustable from 6 to 32 A (1-/3-phase)
Load balancing	SLB and DLB (Static and Dynamic Load Balancing) Network point addressing: Supported Socket lock control: Supported
Preconfigured phase rotation **	Yes
Nominal voltage	400 V (3×230 V)
Dimensions	Ø 250 mm × height 1310 mm
Weight	Pole: 22 kg ±5% Module with socket: 2,7 kg Module with cable: 8,5 kg
Standby power consumption	12 W per module
Protection rating	IP54 (enclosure) IK10 (mechanical impact resistance)
Built-in energy meter	1-/3-phase, measurement accuracy >99%
Lock	* Patent lock

Functionality and Communication

Functionality and Communication	
* Bridge 2.6Q communication module (LTE):	LTE (4G) support Wi-Fi 2.4 GHz Micro SIM, APN-based authentication (user/pass) OCPP 1.6 JSON (full stack + Smart Charging / custom keys) Smart Charging, network configuration options (4G) Full branding of configuration panel (logo, colors) Network connection pre-configuration (Wi-Fi, Ethernet, GSM) OCPP configuration keys, backend connection OTA updates Configuration panel access via: hotspot, USB type B
Authorization	Free Charge RFID (ISO/IEC 14443A, MIFARE Classic) Mobile apps / external systems (OCPP)

* Available as optional accessory
* Requires physical phase crossover during installation (as per DTB)

7.17 Technical Specifications – VERTICA PRO with BRIDGE 2.6Q LTE

ENELION VERTICA PRO + Bridge 2.6Q (LTE)

Functionalities and communication	
Payments	Dynamic QR codes Contactless payment terminal Payter Apollo 4G/WiFi* Mobile apps / external platforms (OCPP)
Management and storage	Up to 16,383 RFID cards Registration of up to 33,000 transactions and diagnostic data Remote updates (AES-256), diagnostic files (.tar.gz) No remote access to console
Dynamic Load Balancing (DLB)	Local load balancing within the Enelion Chain (CANbus), firmware-based, no network access required Support for up to 100 charging points in a single chain Dynamic power balancing of grid connection via Enelion Energy Guard Fallback mode in case of OCPP connection loss Smart Charging

User Interface and Communication

User Interface and Communication	
Display	Default UI language and language selection menu Customizable touchscreen (logo, color scheme, advertisements) 4.3" touch LCD 300 cd/m² 480 × 272 px
Status indicators	LED status bar Touch display
Third-party application support	Compatible with third-party OCPP applications

Electrical Specification

Electrical Specification	
Power systems	TN-S TN-C-S TN-C TT IT
Cable cross-sections	Standard: 6–10 mm² With accessory: up to 50 mm²
Switching elements	Relays compliant with IEC 61810-1
Power Daisy Chain	Support for serial power distribution Cable cross-sections: Al/Cu up to 50 mm² Maximum current per chain: 3×135 A Required overcurrent protection: same as for 35 mm² Cu conductor Theoretical maximum number of charging points per chain: 24 × 16 A (1-phase) Recommended number of charging points: up to 8 × 32 A (3-phase, with DLB)
Integrated protections*	RCD A + RCM B MCB B32

* Available as optional accessory

7.17 Dane techniczne Technical Specifications – VERTICA PRO

ENELION VERTICA PRO
Electrical Specification

MID Energy Meter*	
MID Energy Meter	Yes, optional
Type	Three-phase, impulse, 4-module
Voltage range	3 × 230 / 400 V
Current ratings	Min. 0,5 A Ref. 10 A Max. 100 A
Frequency	50 Hz
Pulse rate	1000 impulses/kWh
Accuracy class	Class B (MID compliant)
Protection rating	IP51
Compliance	EN 50470-1 EN 50470-3 MID 2014/32/UE

Electrical Protection

Electrical Protection	
Residual Current Device Type A (RCDA)*	4-pole Rated current: 40 A Tripping current: 30 mA AC Short-circuit capacity: 0.8 kA Protection rating: IP20
Residual Current Device Type B (RCDB) *	4-pole Rated current: 40 A Tripping current: 30 mA Trip time: <300 ms (AC), <40 ms (DC) Protection rating: IP20/IP40 Compliance: IEC/EN 62423
RCMB Detector *	Detection range: 6 mA DC Operating temperature: -40°C to +85°C Supply voltage: 5 V DC Compliance: IEC 62752:2016
Miniature Circuit Breaker (MCB) *	Type B, 3-pole Rated current: 32 A Short-circuit capacity: 6 kA Compliance: EN 60898 / IEC 60947-2 Protection rating: IP20
RCBO (Residual Current Circuit Breaker with Overcurrent Protection) *	Rated current: 32 A Residual current: 30 mA Trip characteristic: B/C Trip time: <300 ms Compliance: EN 61009-1, EN 61009-2-1 Protection rating: IP20/IP40

* Available as optional accessory

7.17 Technical Specifications – VERTICA PRO with BRIDGE 2.6Q LTE

ENELION VERTICA PRO

Installation

Installation	
Recommended cable cross-sections	16 A: 5×4 mm² 32 A: 5×6 mm²
SPLITTER*	5-pole Rated for up to 145 A, 690 V Supported conductor sizes: 2,5–50 mm² Mounting: solid surface, metal or concrete base

Operating Conditions

Operating Conditions	
Operating temperature	(-35°C with Heater)* -25°C/+55°C
Ambient humidity range	5% to 95% relative humidity, without condensation
Electrical safety class	Class I
Environmental protection	IP54 (dust and water resistance) IK10 (mechanical impact resistance)

* Available as optional accessory

7.18 Technical Specifications – VERTICA PRO Pole

ENELION VERTICA POLE

Electrical data	
Power cable routing	Underground / below ground level
Recommended minimum cable cross-section	5 × 6.0 mm² (for nominal current of 32 A)
Supply voltage (Europe)	3 x 230V / 400V AC (+-10%)
Frequency	50 Hz/60 Hz
Supported grid types	TN-S,TN-C-S,TN-C,TT,IT
Protection class	Class I

Mechanical Data	
Dimensions	250 mm x 1310 mm
Weight	22,5 kg ± 5%
Mechanical impact resistance	IK10
Ingress protection rating	IP54

Local Charging Network	
Charging network architecture	ENELION CHAIN (CAN bus-based multi-point communication system)
Additional element	Energy meter connector
Optional components	• ENELION MID (three-phase certified MID energy meter) • ENELION VERTICA Splitter (power distribution accessory) • RCD Type B (residual current device)

Environmental Conditions	
Operating temperature	(-35°C with Heater)* -25°C/+55°C
Storage temperature range	-40°C to 80°C
Permissible relative humidity	5% to 95%
Maximum installation altitude	2000 m above sea level

* Available as optional accessory

7.19 Technical data - Vertica Pro Socket Module

Technical Specifications

ENELION VERTICA Module with Socket

Electrical data	
Supply voltage (Europe)	3 x 230 V/400 VAC (+-10%)
Frequency	50 Hz/60 Hz
Supported grid types	TN-S,TN-C-S,TN-C,TT,IT
Overvoltage category	Category III in accordance with EN 60664–1
Rated short-time withstand current	RMS value <6 kA (EN 61439–1)
Overcurrent protection	Not included with the device. Protection must be implemented in compliance with local regulations and device version
Protection class	Class I
Socket variant	Type 2 standard socket, 32 A / 400 VAC (EN 62196–1)

Mechanical Data	
Dimensions	250 mm x 1310 mm
Weight	22,5 kg ± 5%
Mechanical impact resistance	IK10
Ingress protection rating	IP54

Optional components	
Optional components	• BRIDGE LTE* • RCM B*
RFID	MIFARE cards compliant with ISO 14443

Environmental Conditions	
Operating temperature	(-35°C with Heater)* -25°C/+55°C
Storage temperature range	-40°C to 80°C
Permissible relative humidity	5% to 95%
Maximum installation altitude	2000 m above sea level

* Available as optional accessory

7.20 Technical data - Vertica Pro Cable Module

ENELION VERTICA module with cable

Electrical data	
Supply voltage (Europe)	3 x 230 V/400 VAC (+-10%)
Frequency	50 Hz/60 Hz
Supported grid types	TN-S,TN-C-S,TN-C,TT,IT
Overvoltage category	Category III in accordance with EN 60664–1
Rated short-time withstand current	RMS value <6 kA (EN 61439–1)
Overcurrent protection	Not included with the device. Protection must be implemented in compliance with local regulations and device version
Protection class	Class I
Plug variant	Type 2 standard plug, 32 A / 400 VAC (EN 62196–1)

Mechanical Data	
Dimensions	250 mm x 1310 mm
Weight	22,5 kg ± 5%
Mechanical impact resistance	IK10
Ingress protection rating	IP54

Interfaces	
Charging cable	spiral type, reach 4 m; includes cable hanger
Local Charging Network	ENELION CHAIN
Additional connectors	Meter interface
Optional components	• BRIDGE LTE • RCM B

Environmental Conditions	
Operating temperature	(-35°C with Heater)* -25°C/+55°C
Storage temperature range	-40°C to 80°C
Permissible relative humidity	5% to 95%
Maximum installation altitude	2000 m above sea level

* Available as optional accessory

7.21 Inclusive Access Requirements

The VERTICA PRO charging station complies with United Kingdom's PAS 1899:2022

Charging Station / Public Charging Station	
Charging point forming part of the public transport road charging infrastructure	
Type	ENELION VERTICA PRO
Charging socket (center line) min. 800mm - max. 950mm	fulfilled
Power cable connector (lower part of the handle) min. 800 mm - max. 950 mm	fulfilled
Screen / Touch interface min. 800 mm - max. 1200 mm	fulfilled
Payment terminal min. 800 mm - max. 1000 mm	fulfilled

7.22 Three-Phase PEN Fault Detection (UK-Specific)

ENELION VERTICA PRO is equipped with an advanced three-phase PEN conductor fault detection system, designed to comply with UK safety requirements – whether installed in public, semi-public, or private locations.

In line with BS 7671:2018 (IET Wiring Regulations), Regulation 722.411.4.1, electric vehicle chargers connected to a TN-C-S (PME) earthing system must implement protective measures against faults involving the PEN conductor. Such faults can lead to dangerous voltage appearing on accessible metal parts.

To meet these requirements, ENELION VERTICA PRO:

- Monitors the PEN conductor for signs of disconnection or failure,
- Automatically halts charging if a fault is detected,
- Protects users by preventing hazardous touch voltages on exposed conductive components.

This integrated safety mechanism ensures that VERTICA PRO delivers a fully compliant and secure charging experience in all installation environments – even where installing a local earth rod is not feasible.

The function is enabled at the factory for UK deliveries or can be toggled using a dedicated RFID configuration card held by authorized service partners (APS).

The current status of the feature (1 - ON / 0 - OFF) is displayed in the Diagnostics screen upon first startup. To access it: tap the screen / headset icon / Diagnostics.

8.1 Preparation Before Startup:

- Ensure that the installation meets all electrical safety standards and that protective devices are correctly installed – especially the protective earth (PE) conductor, which is essential for user safety.
- Make sure all conductors are properly secured and not loose.
- Verify that the module has been fully and correctly inserted into the pole – the module's network connectors and those in the pole must be aligned horizontally.
- If the module is not properly seated, it may not power up – try swapping module positions as a solution.
- Always install modules in matching pairs – **e.g. 1/2 and 2/2**, or 3/4 and 4/4.
- Installing two identical modules in the same pole (e.g. 1 and 1 or 2 and 2) is strictly prohibited.
- Ensure the charging station has been installed correctly and does not pose a safety hazard to the user.
- More information is available at: https://enelion.com/en/support/

Signs of incorrect installation	
Damaged varistors on the PilotBox (Rubik) board	this indicates an incorrect connection of the power supply conductors.

ATTENTION

The above issues may void the product warranty.

ATTENTION

The manufacturer is not liable for any damage resulting from improper connection of power conductors.
Please note that the charging station does not have a power switch.
Any electrical installation error may result in damage to modules and other components.

8.2 Factory Settings and Configuration

When purchasing the charging station from the manufacturer or distributor, inform the seller of your preferred configuration settings. This will help speed up the setup process and ensure the station is tailored to your specific needs.
Each module is individually configured and tested at the production stage based on the order. Incorrect configuration may result in unstable operation and authorization issues. Make sure the module power settings match the electrical installation.
Instructions on how to change the configuration can be found later in this manual.
Please inform the vendor of the following parameters:

1. **Addressing**
How many modules and with what addressing order? (e.g. 1/1, 1/2, 2/2 – Local Charging Network Addressing)

A dual-module pole must use different addresses, e.g. 1/2 and 2/2 for each module. For a single-module installation, use address 1/1
Custom addressing option - (Enelion Chain np: for example in an Enelion Chain setup: 1/4, 2/4, 3/4, 4/4 X/X when numerous (max 100) charge points are connected via CAN bus.

2. **Authorization Method - (when OCPP CMS is inactive)**
   - Any RFID tag - any card starts the charging process
   - Plug and charge - charging starts automatically when the plug is inserted (Freecharge)
   - Plug and charge with lock - same as above, plus socket locking is activated (for socket-type modules only)
   - Authorized RFID - only pre-authorized cards allow charging

3. **If using Authorized RFID mode (Authorized RFID)**
   - How many user groups? - Default: 1 pole with two modules = 1 group
   - How many modules per group? - Configurable per customer requirement
   - How many cards per group? - 1 card per module included in the set

4. **Power Configuration Options**
   - 22 kW (3 phases 32A)
   - 11 kW (3 phases 16A)
   - 7,4kW (1 phases 32A)
   - 3.7 kW (1 phases 16A)
   - Custom - adjustable in 1 A steps, from 6 A to 32 A, depending on the installation.

Available power for one module

5. **Dynamic load balancing (DLB)**
   - enabled (default limit set to 500 A)
   - disabled
   - Custom - adjustable in 1 A steps

6. **RCM B Monitor**
   - enabled (if the monitor is installed in the module)
   - disabled

7. **Custom status bar** (custom logo on screen)
   - enabled - logo must be provided before production in .png, .eps, .ai or .svg format
   - disabled

8. **LED Colour Settings**
   - Default (blue) - Default (blue) – blue LED indicates ready status
   - Swapped (green) - green LED indicates ready status

9. **Default Interface Language**
   - English
   - Polski
   - Cymraeg (Welsh) or Český
   - Portugues
   - Deutsch
   - Francais
   - Romana
   - Italiano
   - Nederlands
   - Dansk
   - Lietuviu
   - Slovenscina

FACTORY SETTINGS

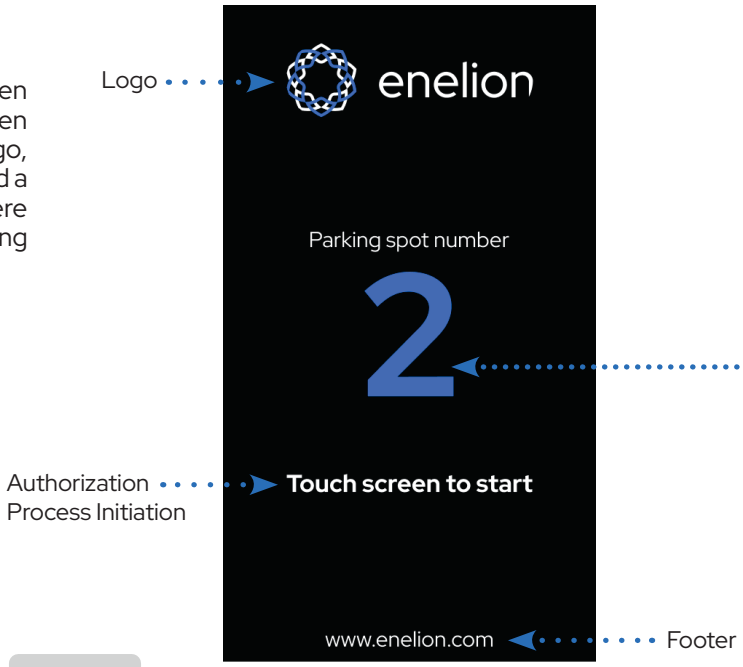
For more information on factory settings, please visit:
https://drive.google.com/file/d/1seagaxwfRgbgrjEW5nJzDsumky58pcu_/view?usp=drive_link

8.3 Powering On the Device

Before starting the charging process, pay attention to the configuration displayed immediately after powering on the device. The information provided will help you quickly identify the specific variant, power rating, power supply system, authorization method, addressing, and more. The image below shows an example configuration.
The number 1 in the configuration means enabled, 0 means disabled.

8.4 Initial Startup Procedure:

After the module is powered on, the initial startup screen will appear within approximately 10 seconds. This screen displays the manufacturer's logo (or a personalized logo, if configured), the device's assigned station number, and a prompt instructing the user to touch the screen anywhere to begin. The screen may also include a web address linking to user support or operator information.

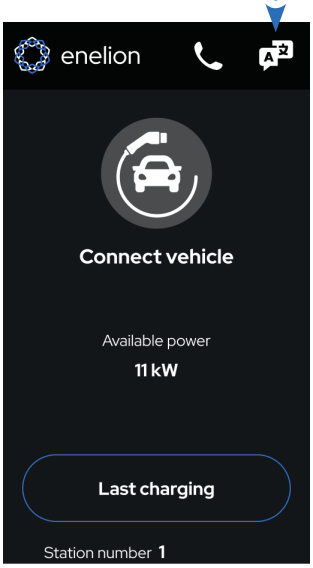


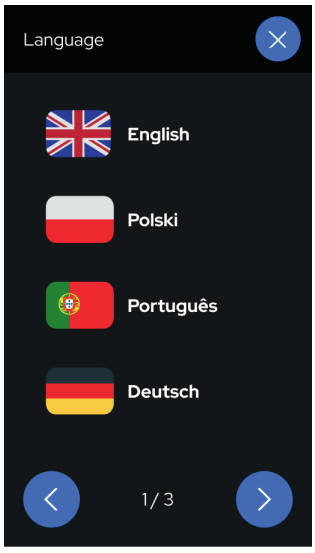
8.5 Advertisements on the Start Screen

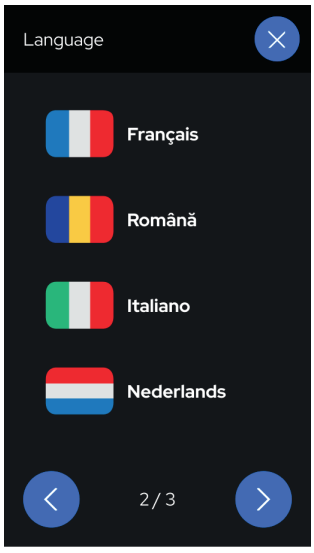
One of the new features is the ability to display advertisements on the screen. A maximum of 12 ads can be displayed, each with dimensions of 272x480 pixels at 72 dpi. Each ad is shown for 5 seconds in a rotating sequence.
Important notes:
Ads are uploaded during production only – there is no possibility to upload them remotely later.
When purchasing the station, please send the advertisement files to the sales department in the resolution specified above.
While an advertisement is being displayed, you can return to the start screen at any time by simply touching the screen.

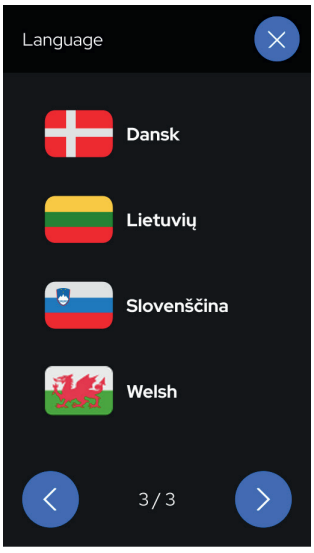
8.6 Language Selection

Additionally, you can change the interface language at any time:
Tap the language icon in the top right corner of the screen.
Then choose the language by tapping the left or right arrow





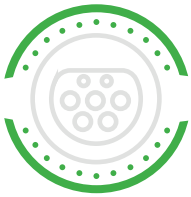




8.7 Signaling using light strips - LED interface

All Enelion charging stations are equipped with LEDs, called a light bar or LED interface, which provides information about the current status of the device using light signals. Light signals can be divided into **Continuous** charging point statuses and **Action** signals.

Availability status

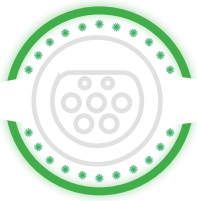


When available, the light bars glow with a uniform **green** light. The station is ready to start the charging process when the car is connected.

Action signaling

Some user actions are signaled by light effects on the LED interface.

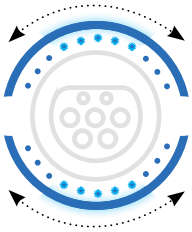
The colors of some light signals depend on the continuous status of the charging point.

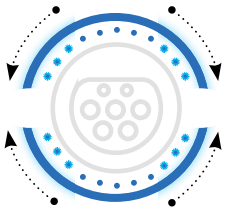


• Connecting or disconnecting the charging cable causes a single flash of the light bars in the current solid color of the charging point.
• Connecting or disconnecting the car causes two flashes of the light bars in the current solid color of the charging point, the same as in the "Connecting or disconnecting the charging cable" action.

Loading in progress

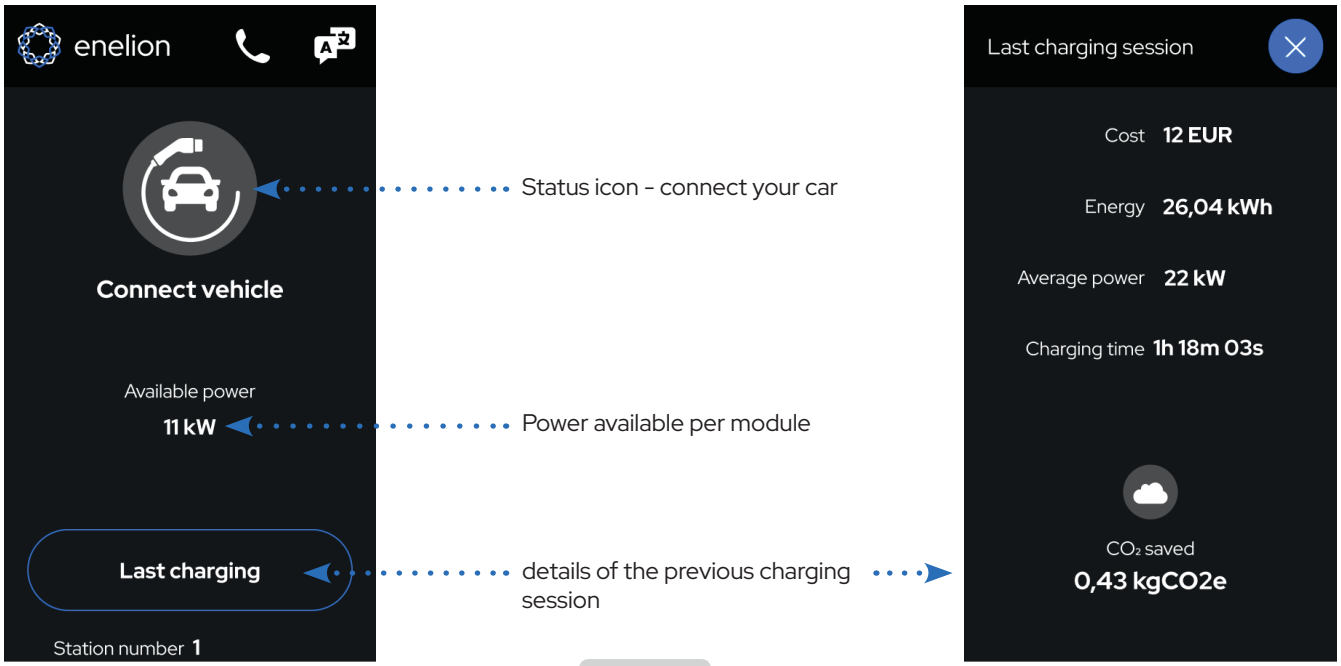
The LED interface glows **blue**, pulsing radially from the center towards the edges. The pulse rate depends on the charging power. When the power is less than 0.5 kW, the pulsing speed is 6 seconds, and for the maximum charging power of 22 kW, the pulsing speed is 1 second. If the charging station allows charging but the car is not drawing power, the light bar glows with a solid blue light.





8.8 First Charging Session:

Plug the cable into the vehicle first, then into the charging station. For cable-equipped modules, insert the plug directly into the vehicle. The station's LED indicator will flash in the default colour. Follow the on-screen prompts. On the lower part of the screen, you'll find details of the previous charging session.



8.9 Charging Activation and Authorization:

The charging activation method will require placing an RFID card in the space marked above the screen, activation from the operator's application, or it will start automatically if Plug and Charge (Freecharge) is set. Icons indicating the current status of the module will appear on the screen. This will determine how we start the vehicle charging process.

The activation process will be defined by the device operator and can be carried out via contactless payments in the case of a pole with a payment terminal.

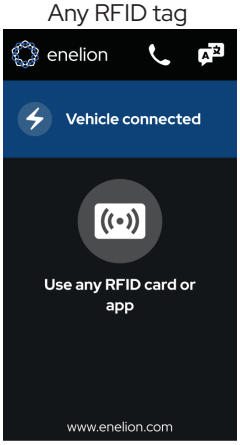
RFID reader is located above the screen.

There are 5 ways to activate charging:

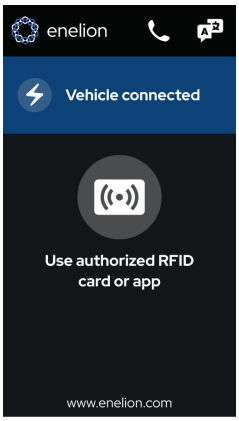
- Any RFID tag - any RFID card starts charging; socket lock engages (if applicable)
- Plug and charge (Freecharge) - charging starts automatically when the plug is inserted
- Plug and charge with lock (Freecharge with lock) - charging starts and socket lock is automatically engaged
- Authorized RFID - only authorised cards initiate charging; socket lock is engaged
- OCPP - charging controlled via operator app using Open Charge Point Protocol (only with LTE modem and CAN connection)

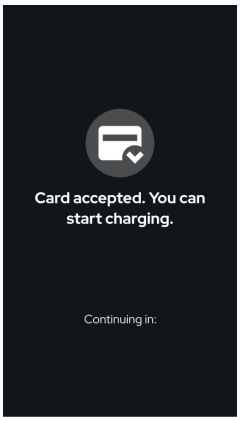
Remember about **Authorized RFID cards** – only these cards will be able to activate charging.

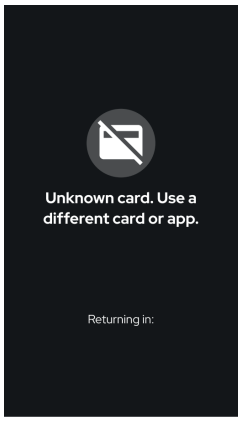
Any RFID tag



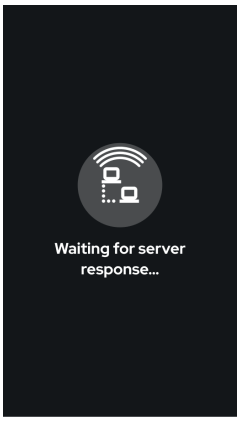
Authorized RFID







OCPP



8.10 Activation of charging via a payment terminal

The charging station can be optionally equipped with a payment terminal.

Starting charging in cooperation with a payment terminal:

1. Connect the cable to the charging station,
2. Connect the cable to the car,
3. Select the corresponding connector number on the payment terminal screen,
4. Follow the instructions displayed on the payment terminal screen,
5. Make sure that the lock is properly closed and that the charging procedure has started,

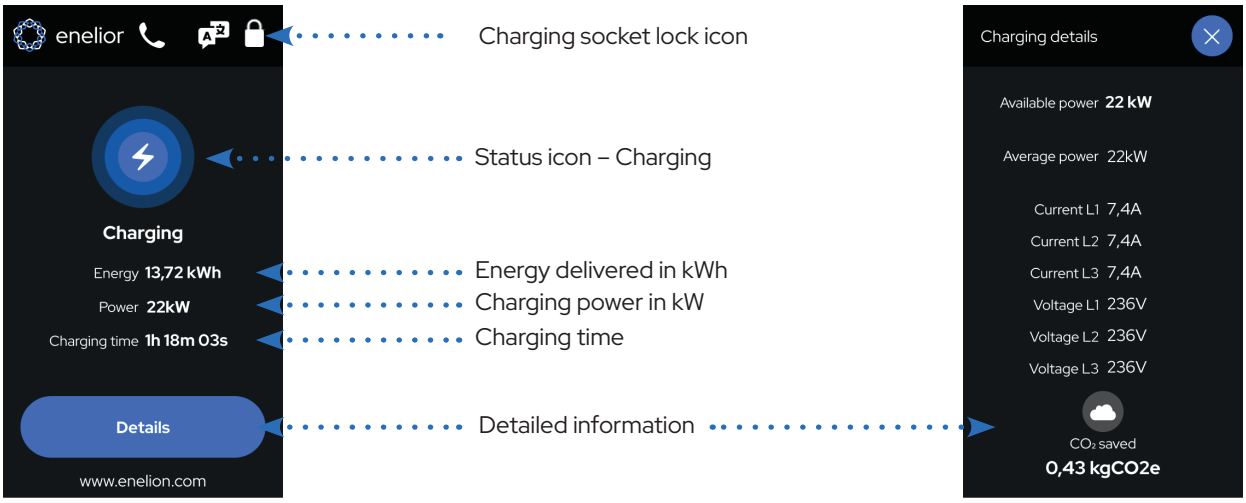
Ending charging in cooperation with the payment terminal:

To end the charging procedure, disconnect the charging cable from the car. This releases the cable lock on the charger and switches it to standby mode.

The default procedure for starting and ending charging in cooperation with the payment terminal can be modified by the station operator.

8.11 Charging Process

The charging process starts immediately after charging is activated. You can view charging details by tapping the Details button. The LED light color will change to indicate the charging status.



8.12 Charging Completion

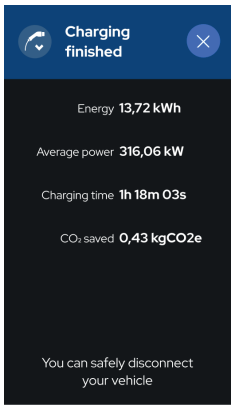
The charging process can be stopped at any time using several methods. The available options depend on the selected charging activation method. A universal solution that works with all configurations is to stop charging from the vehicle side and disconnect the charging cable from the vehicle first, then from the station. The available methods for stopping charging are listed below.

- **Any RFID tag** - tapping any RFID card on the reader
- **Plug and charge** (Freecharge) - unplugging the charging cable from the station
- **Plug and charge with lock** (Freecharge with lock) - stopping charging from the vehicle,

then unplugging the cable from the vehicle and finally from the station

- **Authorized RFID** - tapping an authorized RFID card on the reader
- **OCPP** - stopping the charging session via the operator's mobile app Operator App

(OCPP Operator App / STOP)



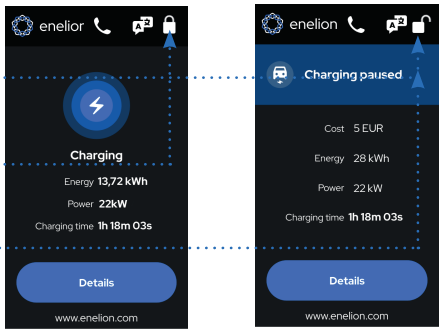
8.13 Emergency charging stop

Emergency stop method for stations without a STOP switch in the event of, for example, a malfunction or emergency situation.

The charging process can be interrupted by using the RFID card again or by unplugging the connector from the car.

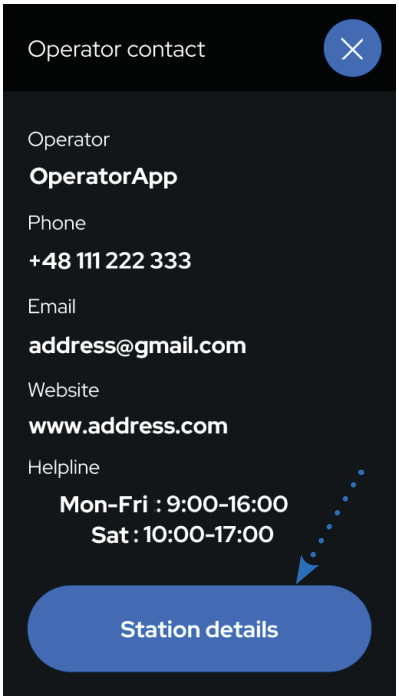
During charging, when the lock on the charging station is closed, it is not possible to pull the plug out of the socket.

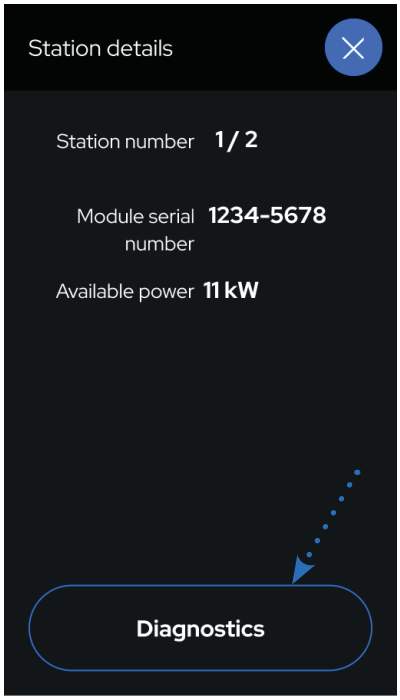
When the station is configured to operate with an inactive lock, it is possible to interrupt the charging procedure by unplugging the charging station.

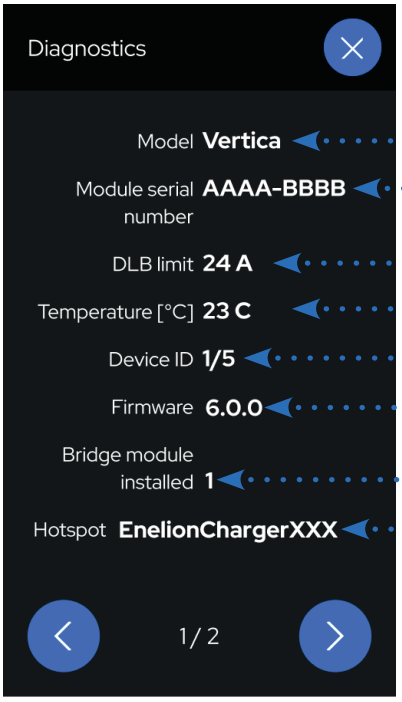


9.1 Device Overview, Support Options, and Diagnostic:

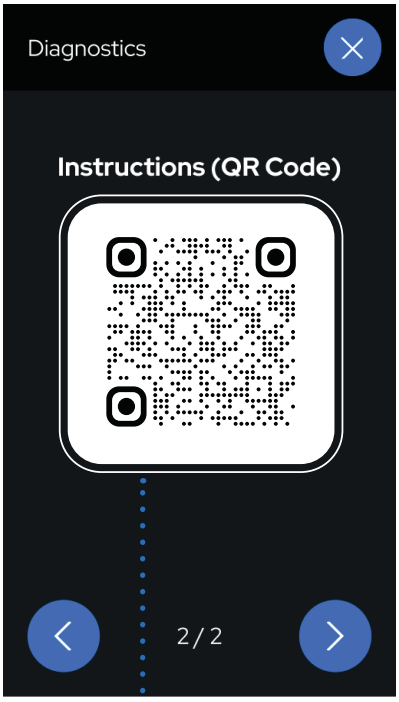
A new feature introduced in Vertica Pro modules is the ability to check a wide range of parameters and access quick technical support. In the Contact with Operator tab, you will find contact details in case support is needed, a failure occurs, or charging activation is required. In the Diagnostics tab on page 2, you will find a QR code linking to the complete documentation of the device. Reading this information is very straightforward. Simply tap anywhere on the home screen, then tap the receiver icon located at the top of the screen.
This opens the Contact with Operator screen, followed by the Station Details button, then the Diagnostics button.







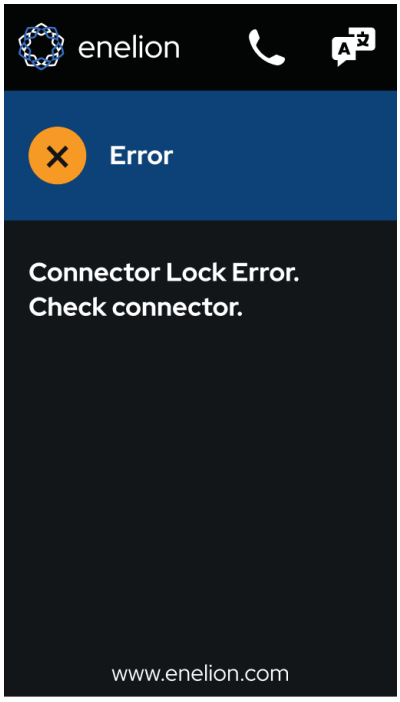
Device Model
Serial Number
Dynamic Load Balancing Limit / **A**
Temperature
Device Addressing
Firmware Version
Information about installed LTE modem: 1 – installed, 0 – not installed
Wi-Fi Network Name (Hotspot) for the ENELION BRIDGE LTE module

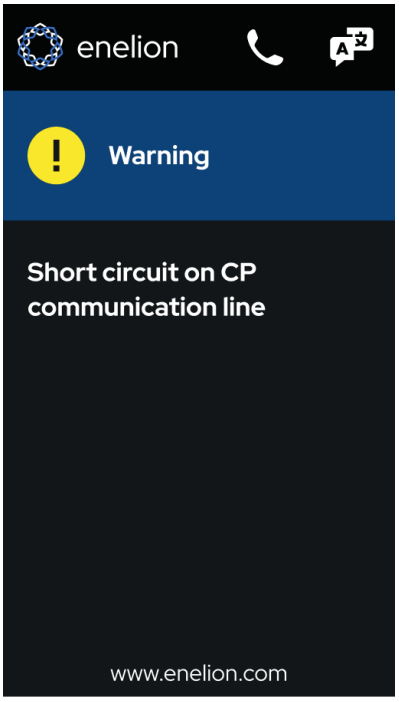


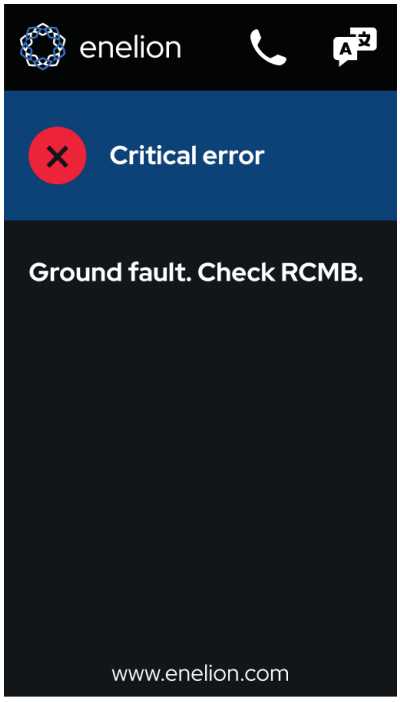
QR code link: https://enelion.com/pl/support-vertica-pro/ to the full technical documentation of the device.

9.2 Error Codes and Troubleshooting Guidelines

During regular operation, the device may display various error codes on the screen.
These may be caused by different factors – for example, an incorrectly inserted plug into the module socket.
A simple solution is to repeat the action and check whether the issue occurs again.
Follow the on-screen instructions. If a QR code appears, scan it and follow the provided guidance.
A full list of error codes is available at:
https://service-support-enelion.happyfox.com/kb/section/9/
Alternatively, scan the QR code.







10.1 Customizing the Touchscreen Interface

The touchscreen interface can be customized to meet specific needs using the open OCPP (Open Charge Point Protocol) standard.
More information is available in the document Vertica Pro – Touchscreen Customization available at:
https://drive.google.com/file/d/1PeY8JXPzFLL-QIFPHt9VpkmhJQ0FwQQG/view?usp=drive_link

Main customization options include:

- Tariff configuration – Set pricing by kWh, by minute, or a flat rate per session.
- Branding and contact information – Adjust the layout color, operator name, website, support data, and replace the Enelion logo with your own.
- Ad management – Enable automatic advertisements or manually select displayed content.
- Custom messages – Display important information directly on the charging station screen.

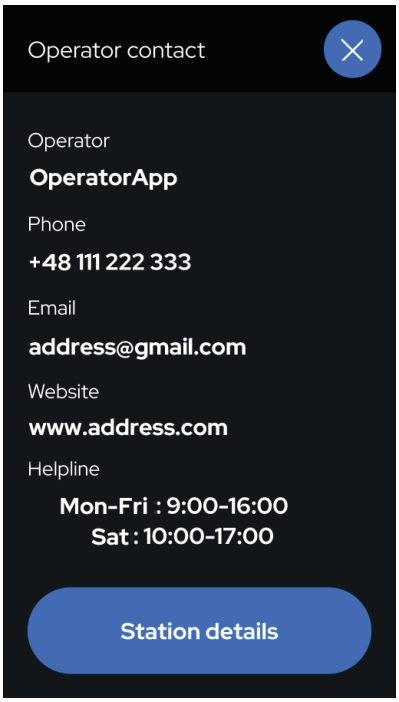
INFO

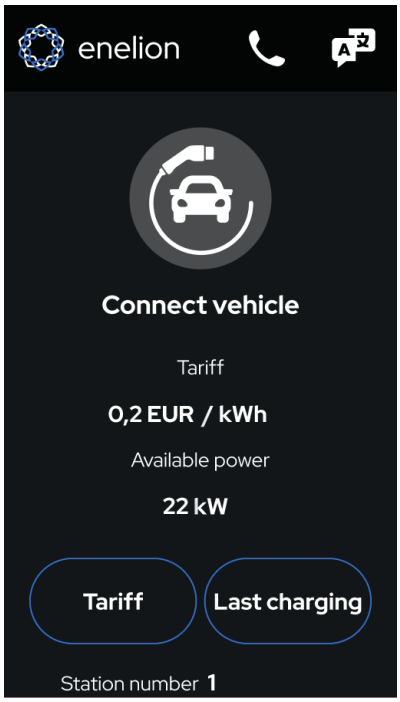
Some settings cannot be changed remotely via OCPP.
These include language selection, ad images, and branding elements (such as company logo and layout color). They must be configured during the manufacturing process.

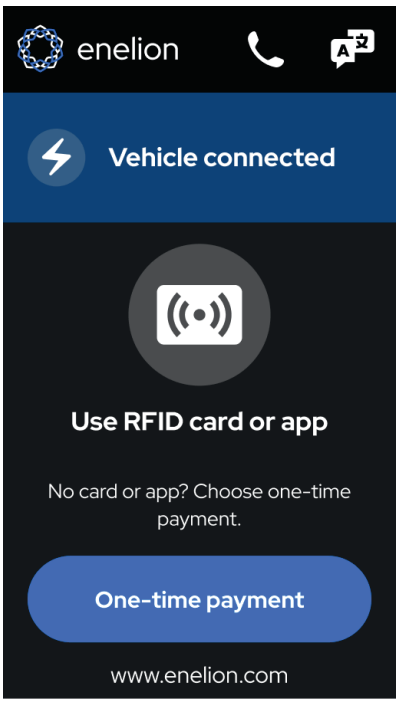
10.2 Data, logs, tariffs, operator messages

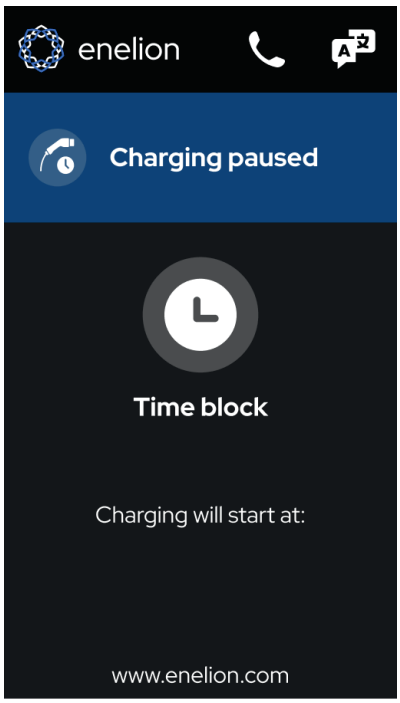
The new Vertica Pro modules allow for the display of various information through the OCPP protocol.
It is up to the device operator to decide which information will appear on the screen.
As of the purchase of the new Vertica Pro module, the operator no longer needs to apply a printed user manual to the device – instead, the manual can be uploaded via the OCPP protocol.

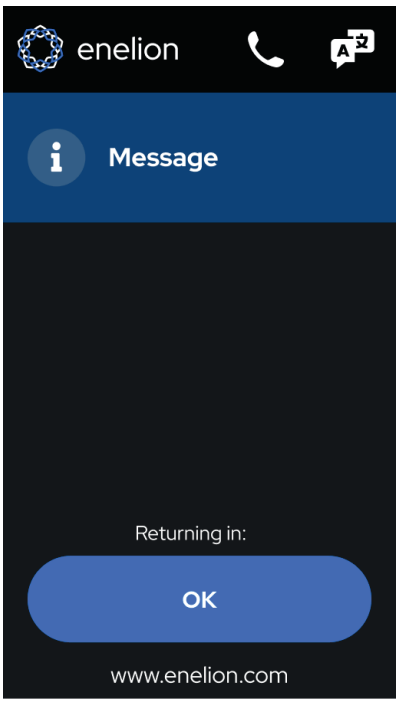
Examples of configurable options include:
- Display of operating instructions
- Tariff details
- Operator branding
- Support contact information
- Informational messages









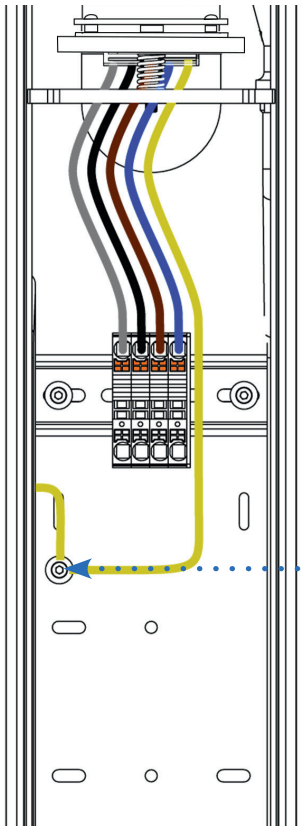


11.1 Commissioning and Periodic Safety Inspections

Charging stations should undergo comprehensive electrical inspections at intervals not exceeding five years.
Additionally, the residual current protection system should be tested annually to verify correct operation.
Other routine tests, such as checking the integrity of protective systems against electric shock, must be carried out in accordance with current regulations and standards. All inspections and tests must be conducted by qualified and certified personnel.
A practical improvement introduced in Vertica Pro posts is the lower inspection panel, which provides access to key measurement points without the need to remove any modules or bottom panels.
The inspection panel is secured with a triangular or cylinder lock included in the delivery kit.

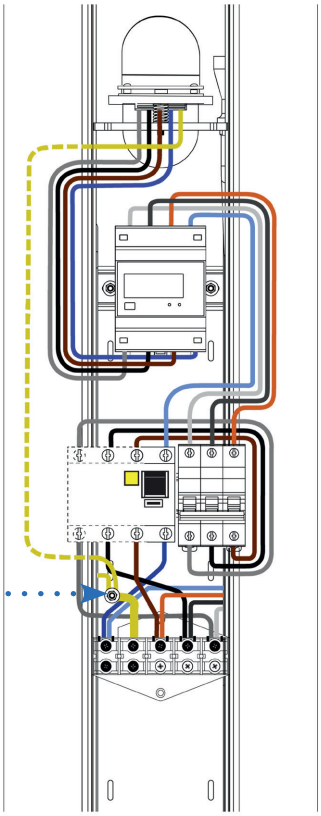
11.2 Measurement of Grounding Resistance at the Main Equipotential Bonding Point

Earthing Resistance Measurement
In the Vertica post, the main equipotential bonding point (PE bar) is a screw terminal block that connects the protective earth (PE) conductors from both the power supply and the charging modules.



Basic pole version

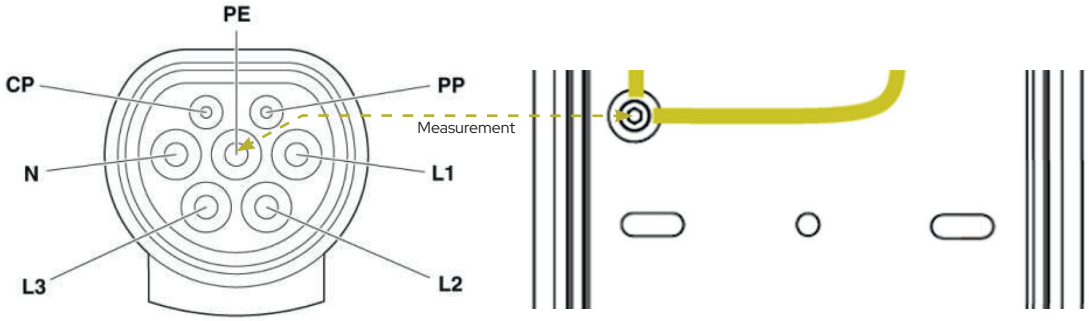
This point indicates where the earthing resistance of the station should be measured.



Wiring terminal block version: Splitter + MID energy meter, RCD A / RCD B, and circuit breaker

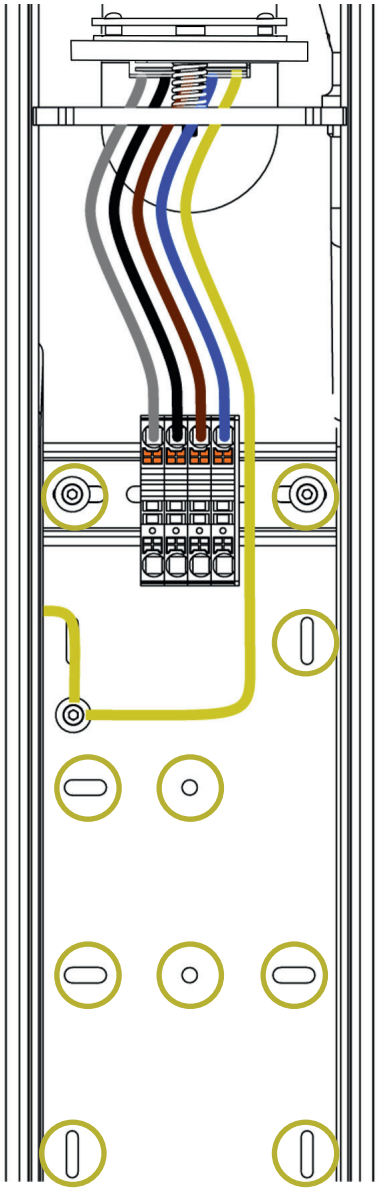
11.3 Continuity Testing of Protective Conductors

The continuity test should be performed between the main equipotential bonding point (PE bar) and the PE contact in the charging socket – or in the case of a tethered station, in the charging plug.
The test must be conducted in accordance with EN 61557-4:2007.
The open-circuit test voltage should range from 4 V to 24 V (AC or DC). The test current must be at least 200 mA. The required measurement accuracy must be better than 30%. The maximum allowable resistance is 3 Ω.



11.4 Measurement of Housing Ground Resistance

11.4 Enclosure Earthing Resistance Test
The charging stations feature an aluminium, grounded enclosure – corresponding to Protection Class I.
For aesthetic reasons, the surface is powder-coated, which makes it a poor electrical conductor.
When performing this test, the probes must be applied to unpainted areas – e.g. DIN rail mounting screw holes (examples marked in the documentation). Probes should be pressed firmly to the bare metal to pierce through oxide layers.
The test should be carried out at least three times, and the lowest measured resistance value should be considered the final result.
Measurements must comply with the EN 61557-4:2007 standard. Open-circuit test voltage: 4 V to 24 V (AC or DC)
Test current: ≥ 200 mA
Measurement accuracy: better than 30%
Maximum allowed resistance: 3 Ω



Designated measurement points on the Vertica PRO pillar are indicated in the diagrams.

11.5 Measurement of Operational Earth (Working Ground) Resistance

This test applies only if an operational earthing system has been implemented.
It may be performed using a technical, compensatory, clamp-based, or other permitted method in accordance with applicable regulations – EN 61557-5. Maximum allowed resistance: 30 Ω

11.6 Verification of Protective Conductor Current Imbalance Detection (Anti-Balance Protection)

This test is conducted at the power input terminals of the charging station. In the Vertica station, these terminals may be either: Screw terminal blocks (in versions powered by a single cable with a splitter), or Spring clamp connectors (push-in terminals)
The test must comply with the standards: HD 60364-6:2016-07 and HD 60364-4-41:2017, and should be performed on all supply phases of the charging point. The test should be conducted using a meter capable of working with RCD-protected circuits. Alternatively, the measuring instrument must support fault-loop impedance measurements without tripping the RCD.
You must verify that the short-circuit current at the measurement point is sufficient to trigger the overcurrent protection within the required time frame. Use the most favorable test result for evaluation.

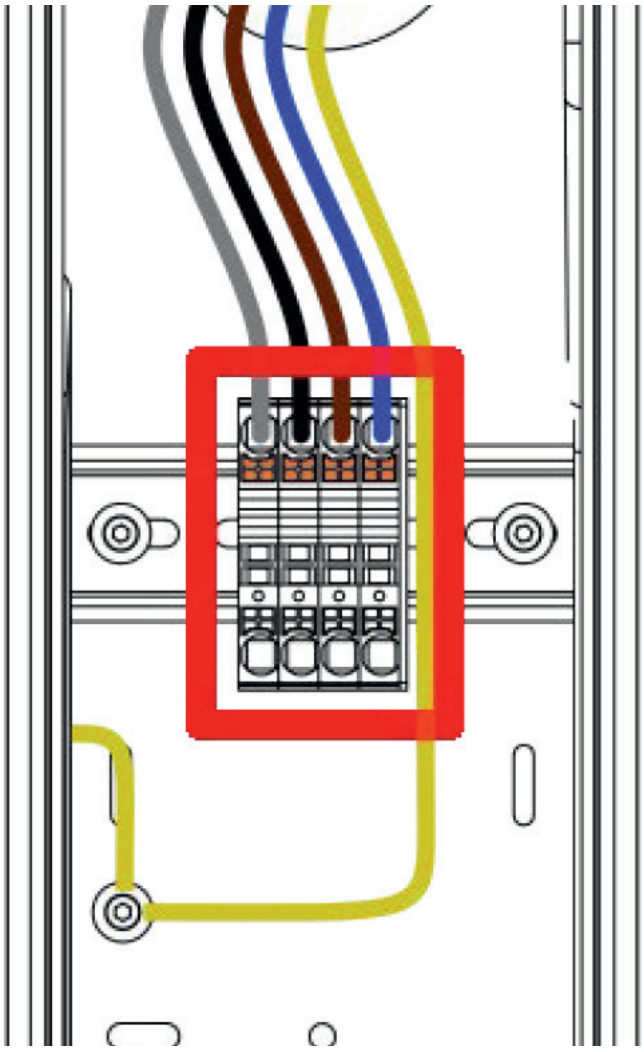
The following condition must be met:

$Z_s \times Ia \leq U_0$ for $t \leq 0, 4s$

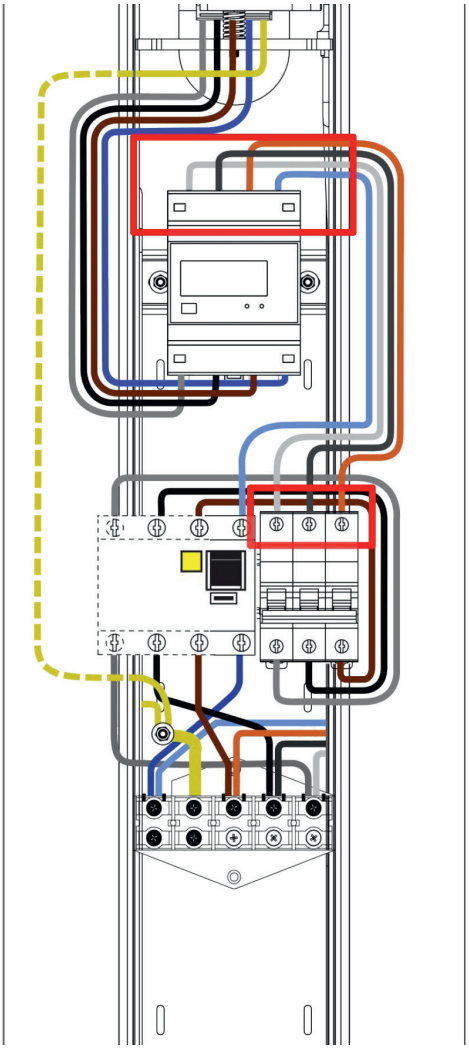
Z_s short-circuit loop impedance,

I_a current causing automatic power shutdown during $t \leq 0, 4s$,

U_0 rated voltage (phase) = 230 V



Spring clamp terminals inside the Vertica PRO pillar



Terminal blocks with splitter, MID energy meter, RCD A/B, and circuit breaker

11.7 Functional Testing of Residual Current Devices (RCDs)

Each charging point must be protected against residual direct current faults (DC) by means of a Type B residual current protection device. This requirement is based on the EU declaration of conformity to EN IEC 61851-1:2019-10. The requirement can be fulfilled by installing: an RCD Type B (30 mA / 40 A), or an RCD EV (0 mA / 40 A) in the distribution board. Alternatively, it is possible to use the Enelion RCM B accessory (Residual Current Monitor Type B). In combination with an RCD Type A in the distribution board, the Enelion RCM B meets all applicable safety requirements. In systems where the Vertica Pro pole powers two charging modules from a single power line (with Vertica Splitter accessory), both overcurrent and residual current protections are located in the lower compartment of the pillar. The RCD test may only be performed when the charging process has been initiated, i.e. with power present at the charging socket – State C. Use an appropriate RCD tester and a vehicle simulator (test adapter) to perform the test.
During testing, ensure access to: the distribution board or the lower compartment of the charging station, to reset protection devices. Each RCD trip event will disconnect power to the station. After restoring power, the charging session must be restarted.
For devices protected with RCD Type A and equipped with Enelion RCM B, the testing procedure is similar. In Type B mode, when the built-in RCM B triggers, all relays open immediately, charging is interrupted, a warning message is displayed on-screen, and the LED status interface starts blinking to alert the user. The charging process is halted until the user takes manual action. To reset the system and resume charging: Unplug the connector from the charging station. If the station uses RFID authentication, scan the RFID tag to release the plug lock. For public charging stations in Plug & Charge mode, unplug the vehicle — this also releases the lock.
After the session ends, the charger is ready for the next user. If overcurrent protection in the distribution board tripped earlier:

- Power must be restored by resetting the breaker, and the charging process must be restarted.

Repeat the process until all required tests have been completed.
RCD testing procedure:

- Ensure access to all RCDs
- Switch on the station power
- Use a test adapter (vehicle simulator) to begin charging
- Connect the RCD tester to the adapter
- Follow the tester's instructions to measure RCD parameters
- After each RCD trip, reset it and repeat the procedure until the test completes successfully

The actual tripping sensitivity of the installed residual current protection devices must be verified according to the following conditions:

RCD A = 0, $35I_{\Delta n} \leq I_{\Delta r} \leq 1, 4I_{\Delta n}$,
Where $I_{\Delta n}$ = 30mA

RCD B = 0, $5I_{\Delta n} \leq I_{\Delta r} \leq 2I_{\Delta n}$,
Where $I_{\Delta n}$ = 30mA

RCM B = 0, $5I_{\Delta n} \leq I\Delta r \leq I_{\Delta n}$,
Where $I_{\Delta n}$ = 6mA DC

According to IEC 62955

The response time of the device should be measured.

Standardized Maximum Tripping Times for RCD Type A [in seconds]:

$I_{\Delta n}$	$2I_{\Delta n}$	$5_{\Delta n}$	$I_{\Delta n}$ ≥5A
0,3	0,15	0,04	0,04

Standardized Maximum Tripping Times for RCD Type B [in seconds]:

$2I_{\Delta n}$	$4I_{\Delta n}$	$10_{\Delta n}$	$I_{\Delta n}$ ≥5A
0,3	0,15	0,04	0,04

Additionally, the proper operation of the "TEST" button on the RCD must be verified while the circuit is energized and the breaker is turned on. Pressing the button must result in: immediate power disconnection, and the toggle switch moving to the "OFF" (0) position.

11.8 Insulation Resistance Test of the Supply Electrical System

During testing, the charging station must be disconnected from the mains or the charging module must be removed from the Vertica pole. The test should be performed in 3-wire or 5-wire mode, depending on the installation. It is recommended to use devices dedicated to measuring insulation resistance with a valid calibration certificate. The meter can be connected, for example, to the output terminals of the overcurrent circuit breaker installed in the switchgear, the lower part of the pole, or another convenient location.

ATTENTION

During insulation resistance measurements, it is absolutely essential to disconnect the supply voltage and ensure that the voltage cannot be accidentally reconnected!

If surge protection devices are present in the tested installation, disconnect their connections to phases L1, L2, L3 and neutral (N) before the test, and reconnect them afterwards.
If the charging station includes energy meters, disconnect the cables from the input terminals and use them as the test points. Failure to disconnect the meter will lead to understated resistance values: approx. 1500 kΩ for phase-to-phase and approx. 750 kΩ for phase-to-neutral. The insulation test procedure, required test voltages, and minimum resistance thresholds during commissioning and periodic testing should comply with the IEC60364-6-61 standard.
In most cases, the test voltage is 500 VDC and the minimum required insulation resistance is 1 MΩ.
Insulation resistance measurements should be conducted between the conductors as indicated in the attached table.

Resistance [MΩ]									
L1-L2	L1-L3	L2-L3	N-L1	N-L2	N-L3	PE-L1	PE-L2	PE-L3	N-PE
min 1	min 1	min 1	min 1	min 1	min 1	min 1	min 1	min 1	min 1

11.9 Insulation Resistance Test of Charging Station with Installed Charging Module

It is recommended to use devices dedicated to insulation resistance measurements with a valid It is recommended to use devices dedicated to measuring insulation resistance with a valid
calibration certificate. The maximum permissible test voltage is 500 VDC. When testing the insulation resistance of a charging station, pay attention to the polarity of the test voltage. This is important because of the measuring and protection circuits used inside the device. The polarity of the insulation resistance meter can be easily checked with a universal multimeter on DC voltage measurement. If this is not possible, measuring the insulation between N and PE on the charging station socket will indicate the polarity of the meter. When the result is around 90 kΩ – 400 kΩ, the applied voltage has N-PE+ polarity. Otherwise, the meter will indicate >500 kΩ, which means N+ PE- polarity. For convenience, mark the measurement probes accordingly and perform the remaining measurements with the correct polarity from the table.
When performing measurements with the Sonel MPI 520/530 meter with the AUTO ISO-1000 attachment or similar, in automatic mode, all measurements will have the correct polarity.
The N-PE measurement only needs to be performed in one polarity. When performing measurements with the Gossen Metrawatt PROFITEST MXTRA meter and a 2-pole adapter, the measurement polarity is marked in the photo below.

11.9 Insulation Resistance Test of Charging Station with Installed Charging Module

The table below outlines the criteria for evaluating insulation condition and test polarity.

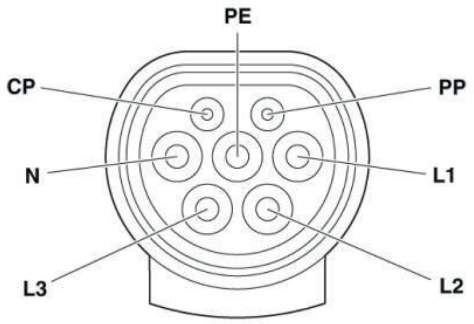
Measurement Configuration	Nominal Resistance	Minimum Acceptable
PE+ L1-	1 MΩ	800 kΩ
PE+ L2-	1 MΩ	800 kΩ
PE+ L3	1 MΩ	800 kΩ
N+ L1-	>500 kΩ	1 MΩ
N+ L2-	>500 kΩ	1 MΩ
N+ L3-	>500 kΩ	1 MΩ
N- PE+	>500 kΩ	90 kΩ
N- PE+	400 kΩ	90 kΩ
L1-L2+	2 MΩ	900 kΩ
L1- L3+	2 MΩ	900 kΩ
L3+ L2-	2 MΩ	900 kΩ

INFO

Insulation resistance measurements are conducted using DC voltage.
Different manufacturers apply various polarity conventions, and this is not standardized.
For instance, the Sonel MPI 520/530 applies negative voltage to phase wires and positive to N/PE.
If the polarity is reversed (positive to L, negative to N), the internal power circuit of the device is activated via the socket, simulating load.
As a result, the resistance readings may drop to a few dozen kΩ, which does not reflect the true insulation condition.

11.10 Test Adapter and Measurement Equipment Overview

An additional factor affecting the test is the adapter used between the charging station and the measuring device.
The Metrawatt adapter (PRO-TYP II Z525A) includes LED voltage indicators, which can be useful during basic functionality tests. However, these LEDs, together with 80 kΩ current-limiting resistors, significantly impact the insulation resistance test results (yielding values below 80 kΩ depending on polarity).
For this reason, such adapters or any other adapters containing voltage indicators should not be used for insulation resistance testing.
Only adapters acting as passive pass-through devices without additional internal circuits may be used.
Otherwise, measurements should be performed directly at the Type 2 socket contacts, observing all safety guidelines.
Below is an illustration describing the contacts in the socket.



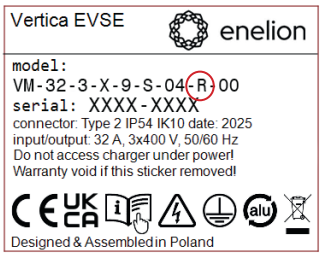
Pin designation for Type 2 charging station socket

11.11 Verification of Electric Shock Protection Effectiveness

Testing of the charging station must be performed up to the first overcurrent protection device. The measurements are conducted with the station disconnected and the charging module removed. All technical tests and measurements of the electrical installation must simulate normal operational conditions, in line with the applicable standard PN-HD 60364-4-41. The continuity check of protective and active conductors must be performed in accordance with PN-HD 60364-6.
In Vertica stations, where each module is powered by a dedicated cable, the circuit breaker is located in the appropriate distribution board. During installation, the breaker must be selected based on the installation environment and equipment configuration.
If a Vertica post is powered by a single, thicker cable feeding two modules, the overcurrent protection and branch connection are located in the lower section of the post. This branch element, called the Vertica Splitter, is available as an Enelion accessory. Circuit breakers with B or C characteristic and a rated current up to 32 A are used. The power supply cable must be protected in the distribution board according to the installation guidelines for the respective Enelion model.

11.12 Repeat Functional Test of Residual Current Devices

Each charging point must be protected against DC residual currents (Type B), according to EU compliance standards EN IEC 61851-1:2019-10.
This requirement may be met by installing a Type B RCD (Residual Current Device) rated at 30 mA / 40 A or an RCD EV (30 mA / 40 A) in the distribution board. Another method is to use the Enelion RCM B (Residual Current Monitor Type B), which, when paired with a Type A RCD in the distribution board, meets all applicable safety requirements. If a Vertica post with two modules is powered via a single cable (with a Vertica Splitter accessory), overcurrent and residual current protection is integrated into the lower part of the post.
Verification of proper operation of residual current protection devices must be performed in accordance with current standards HD 60364-6 and IEC 755+A1+A2.
Tests may be conducted during an active charging session (State C – voltage present at the output). To perform these tests, a suitable residual current device tester and a vehicle simulator (adapter) must be used.
During testing, ensure access to the distribution board or the lower compartment of the post to allow resetting the protective devices. Each trip will interrupt station power and will require restarting the charging process after restoring power.
In the case of stations protected by Type A RCDs combined with Enelion RCM B, the procedure is similar. The difference arises during Type B testing. If the RCM B detects a fault, it will instantly open the relays, stopping the charging process, and a relevant warning message will appear on the screen.
The message will include a fault description and code (refer to Section 9.2 – Error Codes), and the LED interface will blink in a defined pattern (see Section 4.3 – LED Light Bar) to alert the user. Charging will remain suspended until user intervention.
To reset the system and resume charging, unplug the vehicle from the charging socket. In RFID-enabled stations, use the authorized RFID tag to release the socket lock. In public stations using Plug & Charge, unplugging the vehicle will also release the socket lock.
Once charging ends, the station is ready for a new session. If the protection in the distribution board was tripped, power must be restored manually (e.g. by flipping the circuit breaker), after which a new charging session can be started.



INFO

Information about whether the module is equipped with an RCM B (Residual Current Monitor, Type B) can be found on the serial/model number label located on the rear of the module. A module with a DC leakage monitor includes the letter "R" in its model number.
This can also be confirmed immediately after powering on the station: a Configuration screen will appear for 3 seconds.
Value 1 indicates the RCM B monitor is present
Value 0 indicates it is not installed

11.13 Functional Testing of the Charging Station – Methodology and Procedure

Functional tests should be carried out using a suitable test device. The charging point should be handled as if going through a standard charging session. All steps for initiating, stopping, and completing the charging process are outlined in previous sections (First Charge, Charge Activation, Charging Process, and Charge Termination).
It is important to observe the different behavior of the station depending on its configuration — with RFID authorization or Free Charge.
The section Error Codes describes fault codes and diagnostics performed by the station. Based on these, it is possible to determine whether the station correctly identifies faults originating from the vehicle.
Examples of such faults include missing diode, CP short circuit, PP fault, etc.
These scenarios can be simulated using a dedicated AC EVSE test adapter.

12.1 ENELION BRIDGE LTE – Remote Communication, System Management, and OCPP Connectivity

The Enelion Bridge LTE is a key component for connecting one or more modules to the internet via an LTE network.
It supports multiple functionalities and is essential when using OCPP configuration.
One of its primary communication links is Enelion Chain (CAN), which enables one LTE-equipped master module (Bridge LTE) to manage up to 98 slave modules without LTE, using the Enelion Chain protocol (i.e., a CAN bus daisy-chain).
For more details, refer to the section Connection Variants – Enelion Chain (CAN).
Before using any of the available settings, ensure that a SIM card is properly installed in the Bridge LTE module.
See Connecting to LTE Network – SIM Card for more information.

The Enelion Bridge module installed inside the Enelion charging station enables:

Charging point monitoring and basic management includes:

- Charging point status
- Meter readings
- Charging power
- Available power
- Connector lock control
- Charging point restart
- LTE internet access
- WiFi internet access

Integration with Energy Management Systems supporting OCPP 1.6 (JSON)

– User authorization and billing

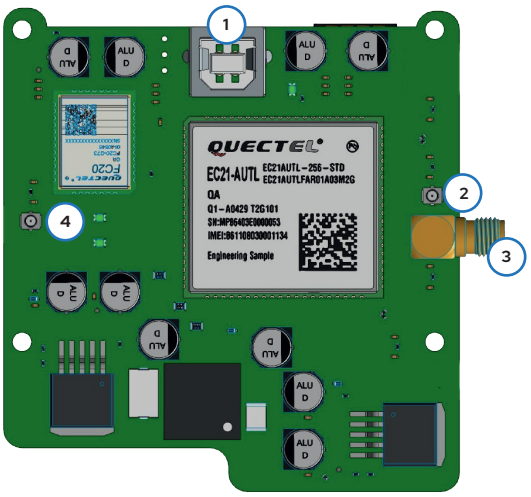
– Real-time monitoring of station status and charging power

– Reservation management

– Charging power profiling

– Access control to the charging point

– Remote diagnostics and firmware updates



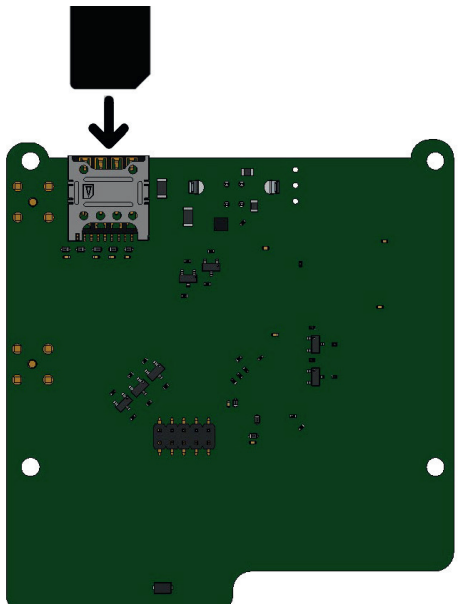
Enelion Bridge LTE

1. USB port
2. UFL socket for main LTE antenna
3. SMA socket for secondary antenna
4. UFL socket for WiFi antenna

Connectivity methods

The Bridge module can be accessed in two ways:

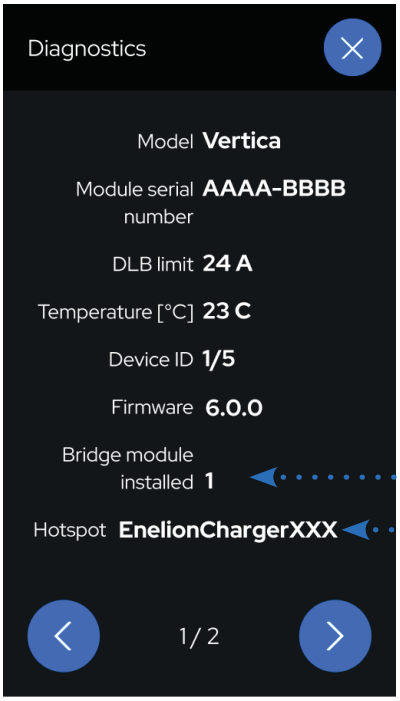
- Over the emitted WiFi network
- Using a USB cable, in cases where the WiFi connection to the Bridge LTE is not available



Bridge LTE (rear view) and SIM card orientation
Enelion Bridge LTE

12.2 Connecting to the Configuration Interface

The ENELION VERTICA PRO charger allows access to the configuration panel via its Wi-Fi hotspot.
Before attempting to connect, verify the name of the emitted Wi-Fi network.
To do this, tap anywhere on the start screen, then tap the handset icon located at the top of the screen.
This will bring up the Contact Operator screen. Then tap: Station Details / Diagnostics
Be sure to check both sides of the charger or all modules connected in the Enelion Chain.



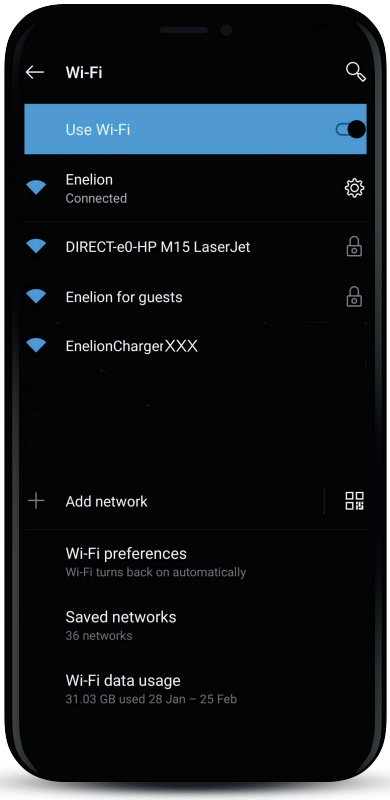
Information about installed LTE modem: 1 – installed, 0 – not installed

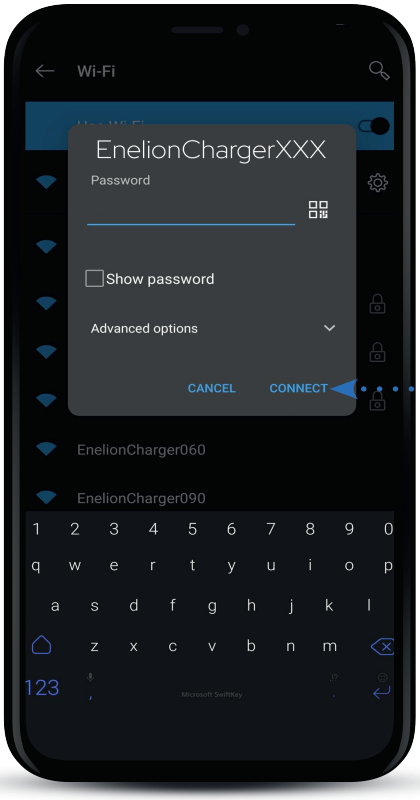
Wi-Fi Network Name (Hotspot) for the ENELION BRIDGE LTE module

INFO

In dual-module chargers or chargers connected via Enelion Chain (CAN), there should be only one module equipped with Bridge LTE.

To connect to the Wi-Fi hotspot:
Use a computer or smartphone to scan for available Wi-Fi networks. After powering on the device, wait approximately 3 minutes.
Then refresh your Wi-Fi networks list by toggling Wi-Fi off and on again on your device. The network will appear under the name:
"**EnelionChargerXXX**" where XXX refers to the last 3 digits of the Bridge LTE serial number.
By default, the network is not password-protected.
Selecting this network will establish a direct connection to the device.

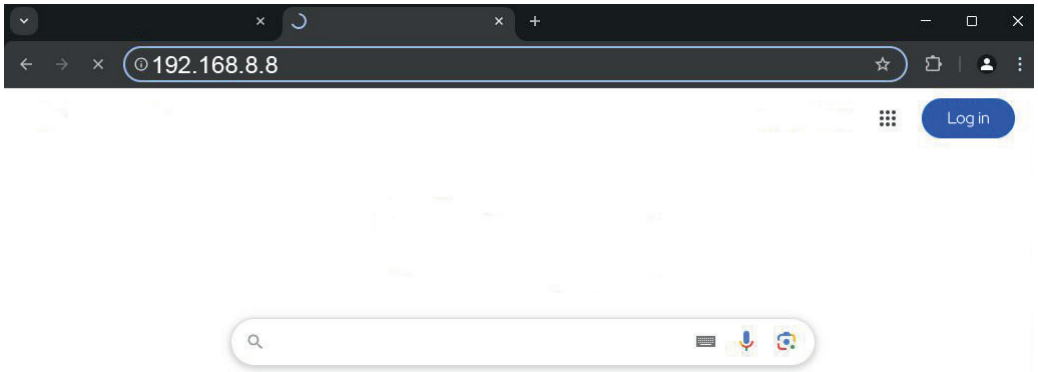




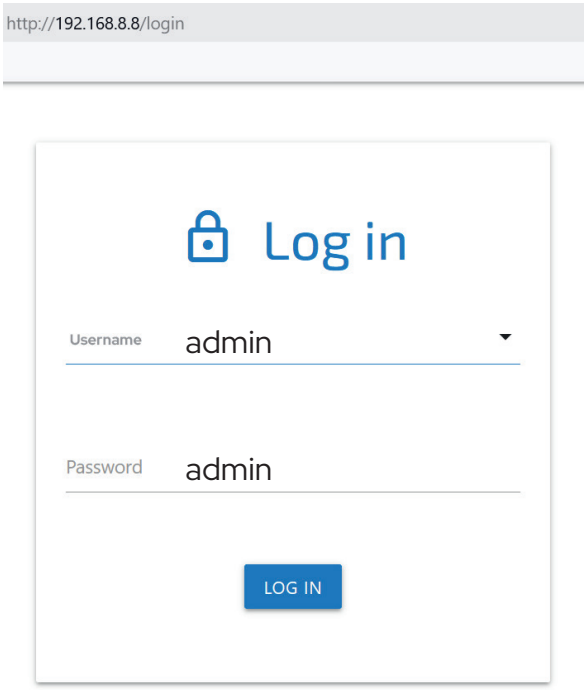
Connect to the network

12.3 Accessing the Configuration Panel

Once connected to the device network, you can access the configuration panel via a web browser.
Enter the address: **http://192.168.8.8** in the address bar and log in.



The configuration panel provides access to two accounts:
user (standard user)
admin (administrator)
The default password for both accounts is the same as the username and can be changed in the settings.

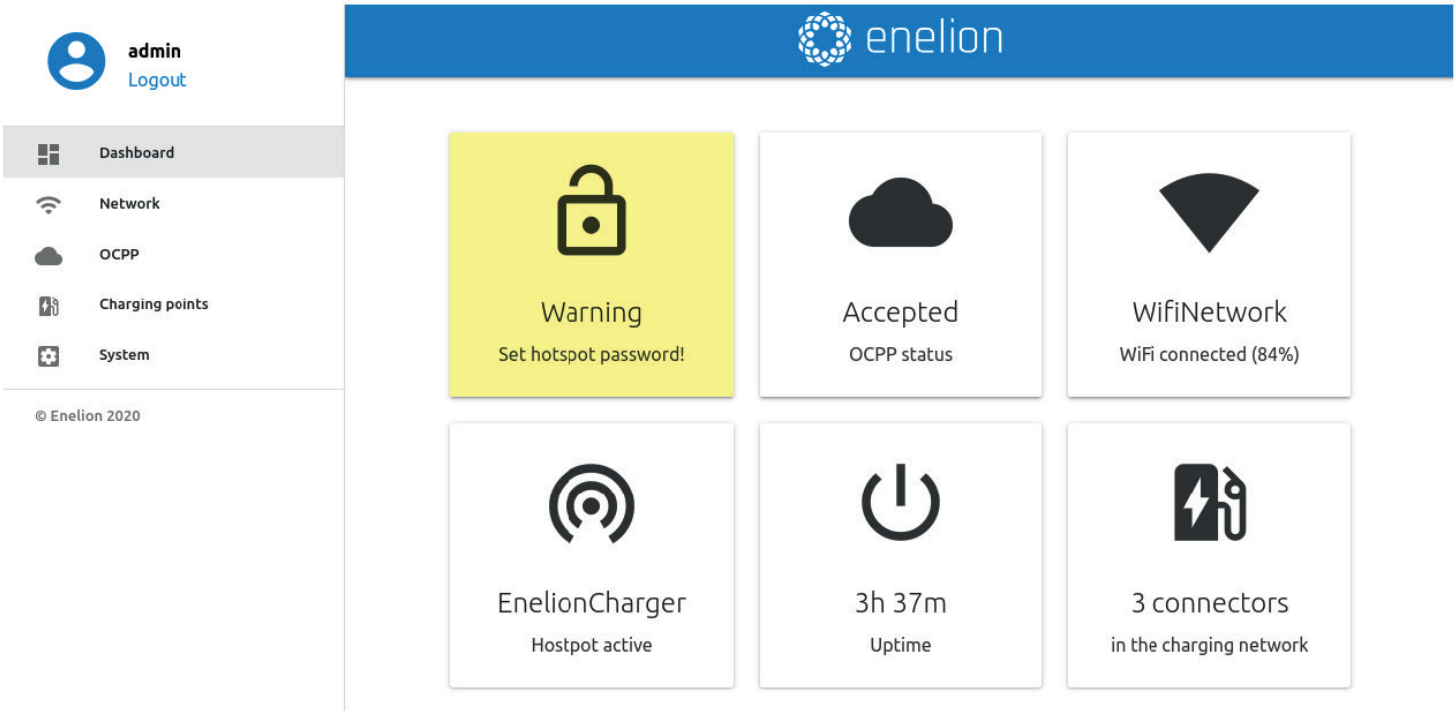


If the password to the configuration panel is lost, it is possible to reset the device to factory settings.

Please note:
All settings will be erased and must be reconfigured manually after the reset.

12.4 Charging Points – Status Overview

The configuration panel interface consists of: a top bar with the Enelion logo, consistent across all subpages,
a sidebar displaying the logged-in username and navigation to individual sections, and the main content area of the current section.



12.5 Dashboard Overview

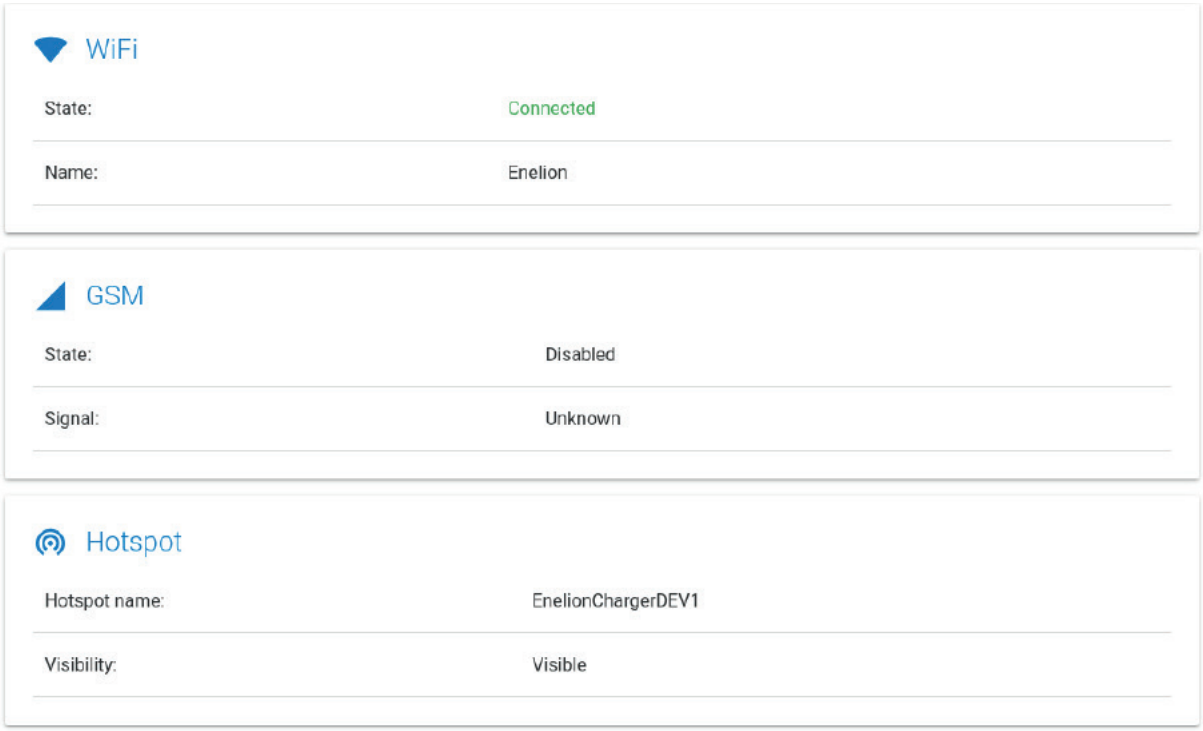
The Dashboard tab displays general information about the status of the Bridge LTE and the charging network, shown in the form of tiles. Depending on the device's state, not all tiles may be visible at once.

Available tiles include:

- OCPP status
- Wi-Fi connection status
- GSM connection status
- Hotspot status
- Device uptime
- Number of charging points in the network
- Individual tiles for each charging point currently in use
- Presence of Energy Guard in the network

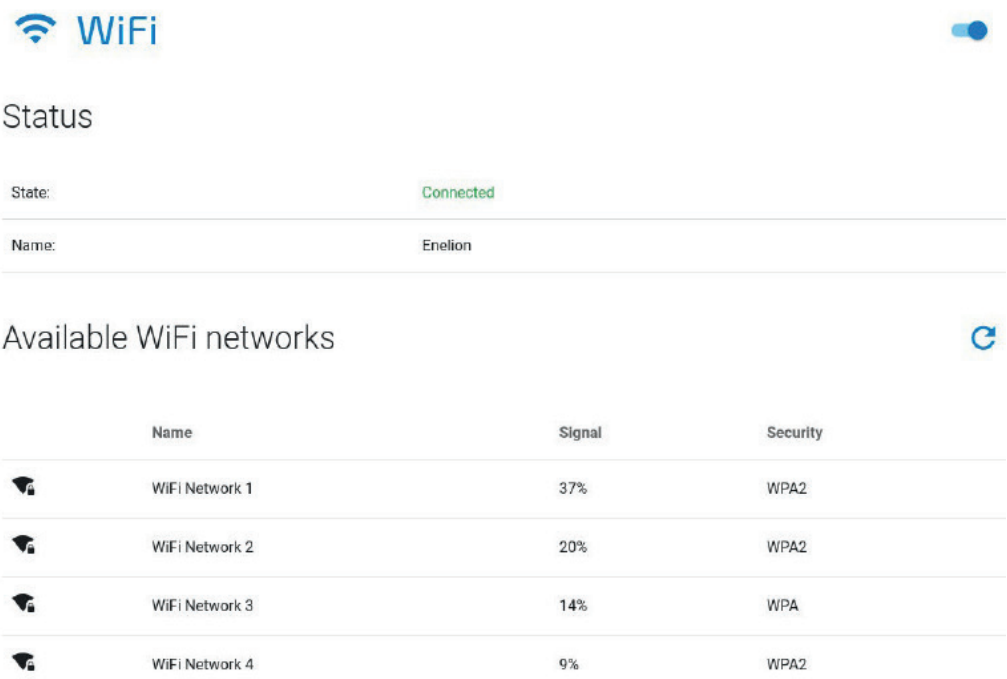
12.6 Network Settings Overview

The Network panel consists of three subpages: **WiFi, GSM, and Hotspot.** The Network tab provides an overview of all available network interfaces. Clicking on any interface tile will take you to the corresponding subpage.



12.7 Wi-Fi Configuration and Diagnostics

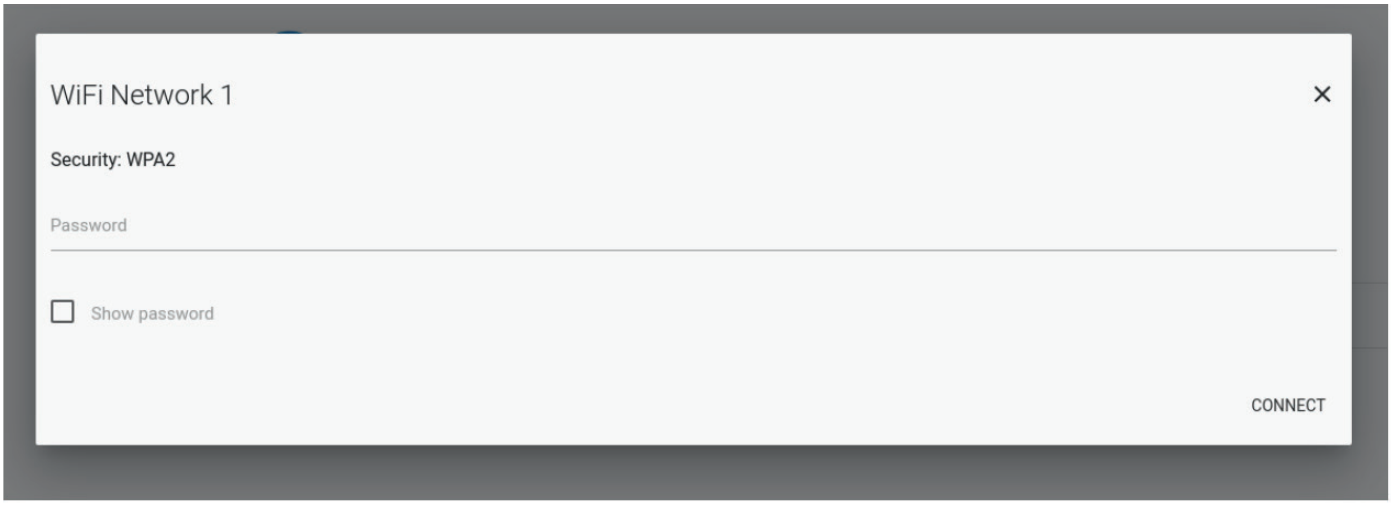
The Enelion Bridge supports Wi-Fi connectivity using the 802.11 b/g/n standard at 2.4 GHz. The WiFi subpage allows you to manage the Bridge's Wi-Fi connection. You can disable the Wi-Fi interface using the toggle switch on the right-hand side of the subpage header. The Status section displays detailed information about the current Wi-Fi connection.



The Available WiFi networks section shows a list of all Wi-Fi networks detected by the Bridge module in its surroundings.

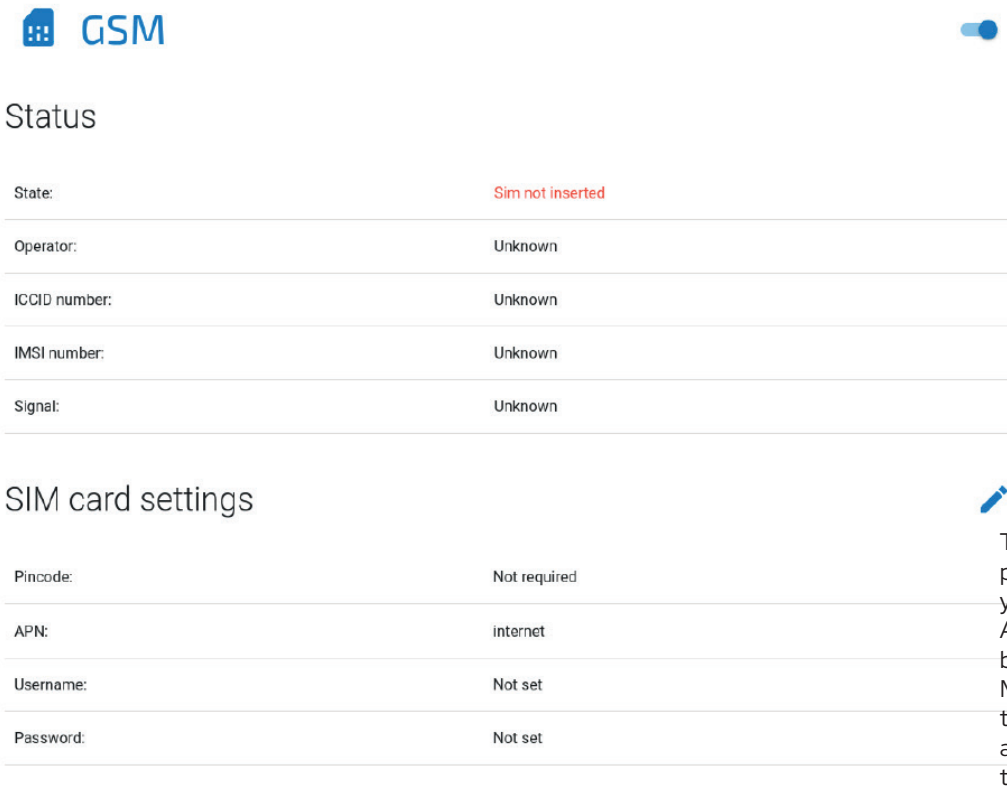
12.7 Wi-Fi Configuration and Diagnostics

In addition to displaying signal strength and security type, the list allows manual refresh by clicking the refresh icon on the right-hand side of the section header. Clicking on any network in the list will open a window where you can enter a password (for secured networks) and save the settings to establish the connection.



12.8 GSM (LTE) Configuration and Signal Status

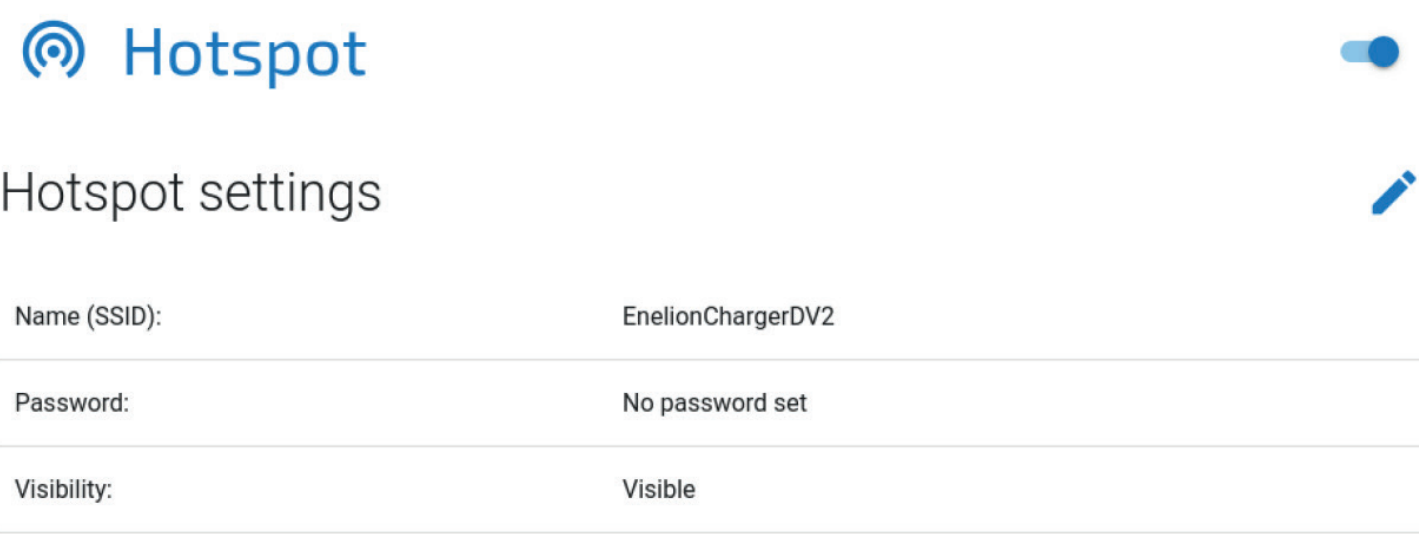
The Enelion Bridge is equipped with an LTE Cat 4 module.
To connect the Bridge to the GSM network, ensure that the SIM card is properly inserted into the SIM slot before powering up the charging station.
After starting the charging station, go to the GSM section and enable the LTE module using the toggle switch in the top-right corner. After a moment, the screen should display the SIM card status. If no PIN is required, the SIM card is active, and the device is within GSM network coverage, the GSM Status section will be populated with SIM card information and the State field will indicate “Ready”.

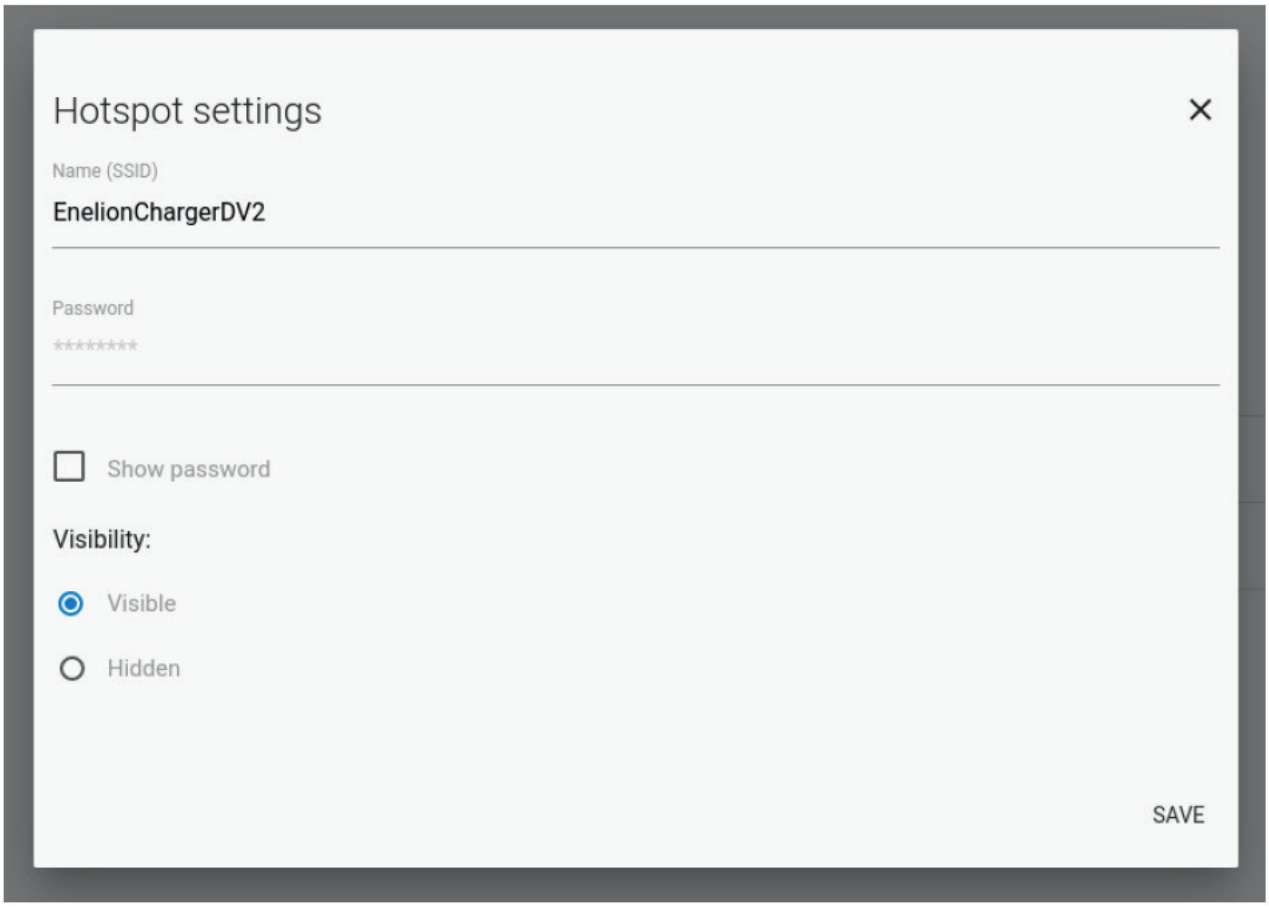


To change the configuration, click the pencil icon. This will open a window where you can enter the new configuration. After entering the data, click the Save button to apply the changes.
Make sure to enter the PIN number if the SIM card requires one, as well as the appropriate APN protocol depending on the LTE network operator.

12.9 Hotspot (SSID) Settings and Access

The Hotspot section displays the status of the WiFi network broadcasted by the Bridge module and its configuration settings.
Just like the main WiFi interface, the hotspot can be disabled using the toggle switch located on the right-hand side.
Hotspot configuration includes the network name, password, and an option to hide the network.
The password must be at least eight characters long.





12.10 OCPP Settings Overview

Connection to the backend management system is established using the OCPP 1.6 JSON over WebSocket protocol.
Enabling OCPP communication on the Bridge module will alter the behavior of charging points as follows:

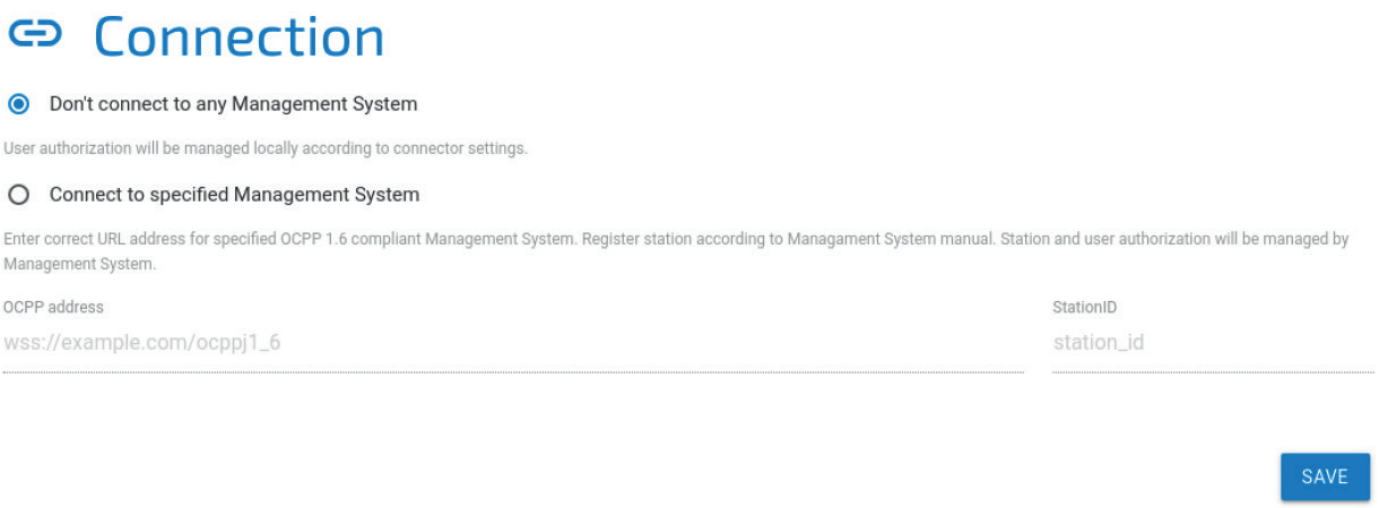
- Charging points configured in Free Charge mode will begin sending their serial number to the management system for authorization purposes. To allow charging, the respective serial number must be registered in the backend. In the case of the Enelink system, this process is handled automatically.
- Charging points set to RFID mode will begin authorizing RFID cards through the management system. Users who were previously able to charge may lose access unless their RFID cards are registered in the backend.
- Using the Emergency Start Charging button, available in the charging point settings, will send the point's serial number to the backend – similarly to Free Charge configuration.
- No RFID card will be accepted if the Bridge module cannot connect to the OCPP server. However, offline authorization settings can be configured from the management system.
- The communication module will begin caching the statuses of presented cards. This local cache can be cleared remotely via the management system.

12.11 OCPP – Server Connection Management

In the Connection subpage, you can choose one of the following connection modes with the OCPP server:

- Don't connect to Management System – the default setting. It disables the Bridge module's connectivity with the backend.
- Charging point behavior, including RFID authorization, remains unchanged.

Connect to specified Management System – connects the Bridge module to a third-party backend.
When selected, the following fields must be filled in:
OCPP URL – the server address.
Station ID – the charging station's unique identifier..



Click Save to apply your changes.
The result of the connection attempt (server response) can be viewed on the Dashboard under the OCPP Status tile.

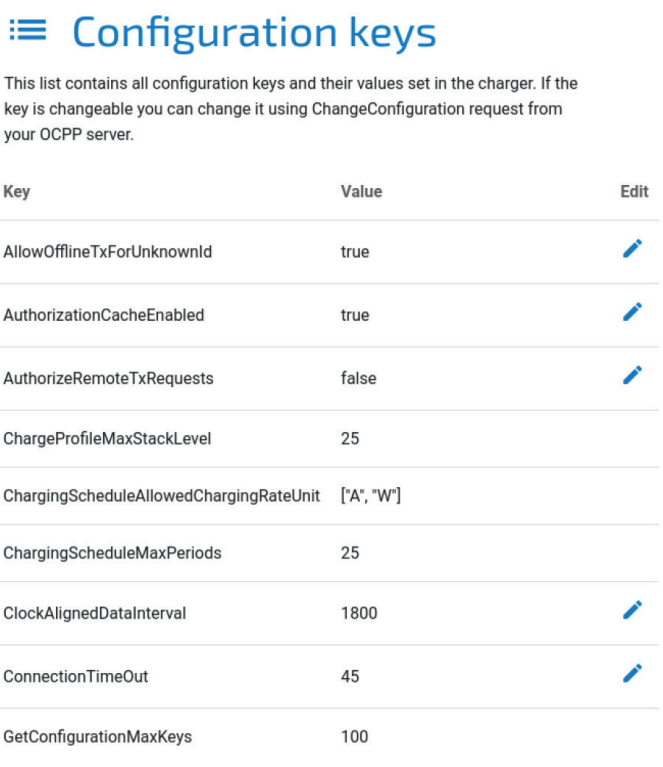
12.12 OCPP - Connection Status and Diagnostic

Possible OCPP connection statuses

OCCP status	OCPP Status
Accepted	The device has successfully connected to the backend management system.
Pending	The device is attempting to connect, but the backend is not yet ready to accept it.
Rejected	The device connects to the server, but is not accepted. Contact your backend provider.
Offline	OCPP communication is enabled, but the connection to the backend is currently inactive. Additional details can be found in the System Logs section. Inactive OCPP communication is disabled.
inactive	OCPP communication is disabled.

12.13 OCPP Configuration Keys

The Configuration Keys subpage allows you to view and edit the values of configuration keys defined by the OCPP 1.6 specification.
Clicking the pencil icon opens an editing window for the selected key.
Keys that are read-only cannot be modified.

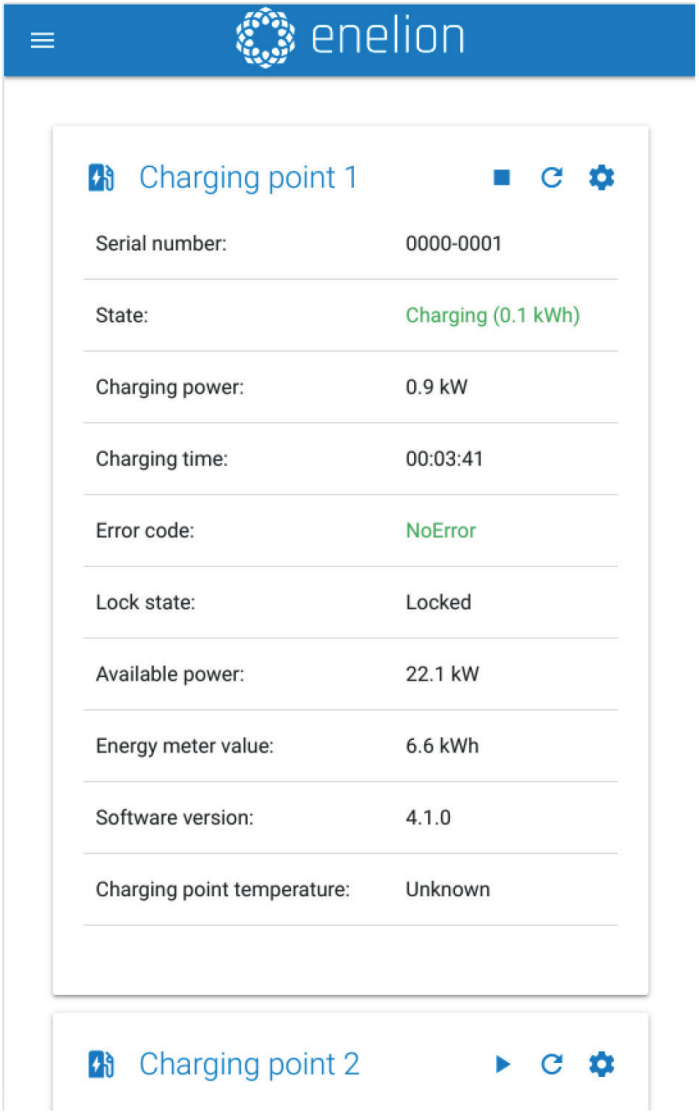


ATTENTION

Changing the values of these configuration keys may affect the behavior of the charging station in unexpected ways. Only use this feature if you understand the implications of the changes.

12.14 Charging points - Overview

The Charging Points section allows you to manage all devices connected to the charging network, including charging points and the Energy Guard module. The Overview subpage displays a list of charging points along with detailed information about each one. The Bridge module automatically detects the number of charging points. If any expected devices are missing from the list, check the physical connections between the charging stations.



The possible charging socket statuses are described in the table below

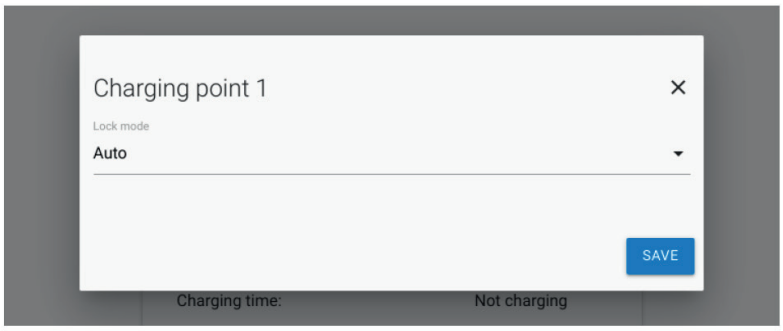
Socket Status	Description
Available	Charging point is available
Preparing	Preparing for charging. A vehicle is connected or the station is awaiting connection after successful authorization
Charging	Charging is in progress
SuspendedEV	Charging is suspended by the vehicle. This may occur when the vehicle is fully charged or charging has been paused for another reason
SuspendedEVSE	Charging is suspended by the charging station. This may be due to dynamic load balancing or power profile restrictions
Unavailable	The charging point is unavailable. Charging will not start. This status is enforced by the management system
Reserved	Charging point is reserved. Status enforced by the management system
Faulted	A fault has occurred. More information is available in the station's interface

The possible lock statuses are as follows:

Lock Status	Description
Unlocked	The socket lock is open.
Locked	The socket lock is engaged
Unsupported	The charging station does not have a socket lock or does not support this function

12.15 Charging Point Settings and Parameter Configuration

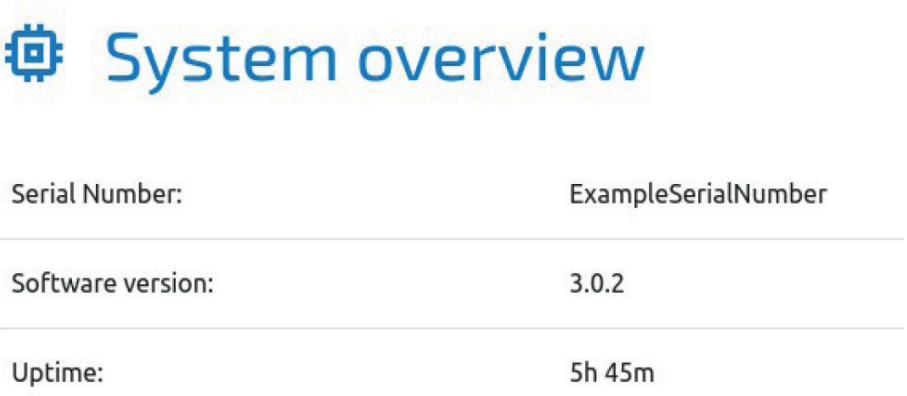
The buttons located to the right of each charging panel name allow you to restart the panel, start/stop charging, and adjust its configuration. Within the settings, you can change the socket lock mode, with the following options:



Lock Mode	Description
Automatic lock	The lock is managed automatically by the charging station. After successful user verification and plugging in the cable, the lock will engage. The lock is released upon completion of the charging session or when the cable is unplugged from the vehicle.
Always open	The lock remains open regardless of the charging state or cable connection.
Always closed	The lock remains closed at all times, allowing permanent locking of the cable on the station side

12.16 System – General Overview

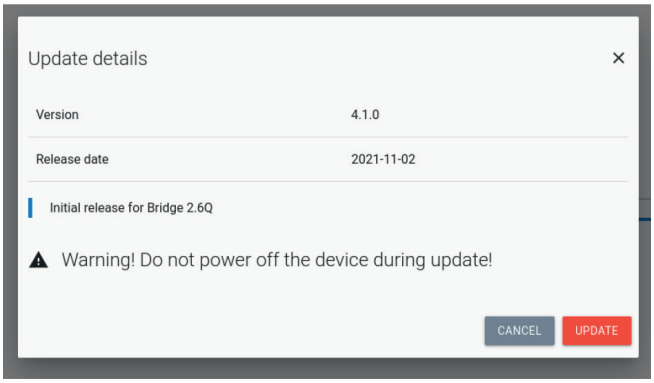
The System section provides tools for managing the settings of the Bridge module. In the Overview tab, you can view details such as: Serial number and model number of the Bridge module, Production date, Firmware version, Device uptime since last restart.



12.17 System – Firmware Update Management

The Update section allows you to update the firmware of the charging station using an update file.
To perform an update: Click the grey button to select the firmware file. Then click the **Submit** button to begin the update process.

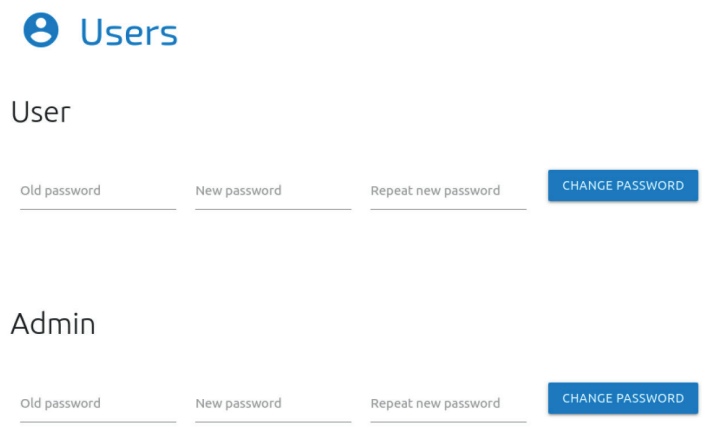
The Bridge module will begin the update process, which should take no longer than 3 minutes. After the update is complete, the configuration panel will automatically restart with the new firmware version.
Note: If the update is performed over the WiFi network generated by the Bridge module, you may need to reconnect to the network manually once the module restarts.



12.18 System – User Account Settings

The configuration panel includes two user accounts: **user** and **admin**.

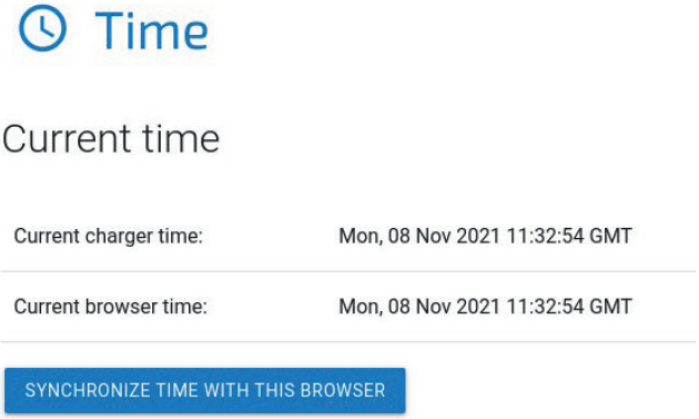
Tabs that are not accessible to the user account include: OCPP and Update.
Additional restricted functionalities include: Viewing logs, Changing the administrator password



The Users subpage allows you to change user passwords. To change a user's password, enter their previous password in the corresponding field, enter the new password twice, and then confirm the change by clicking Change password.

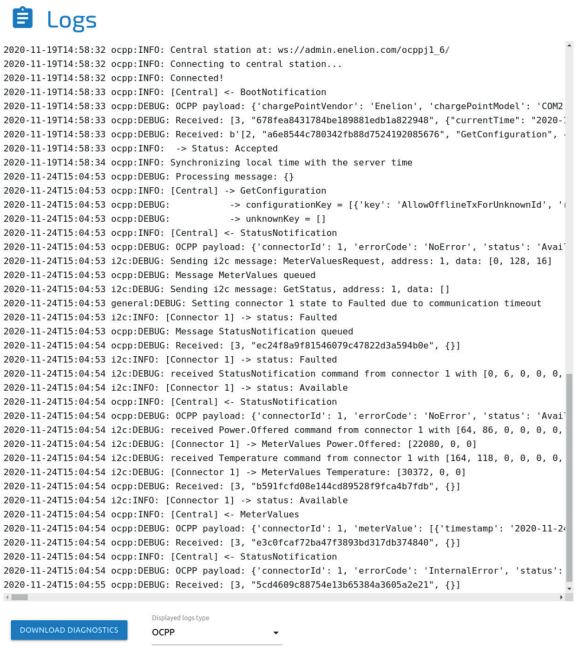
12.19 System – Time and Time Zone Configuration

The Bridge module synchronizes time using both OCPP commands and an NTP time server.
The Time tab allows you to view the current time used by the Bridge module and synchronize it with the time of the device currently accessing the configuration panel.



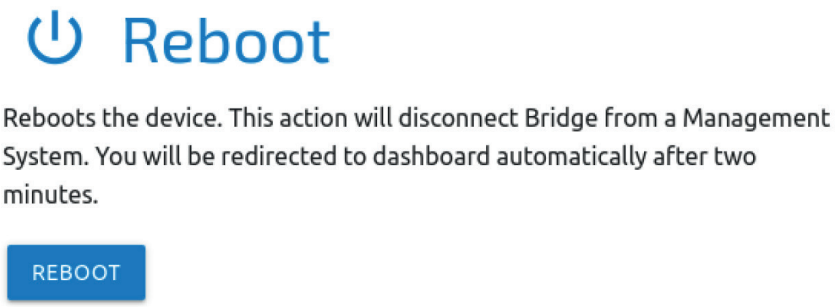
12.20 System – Event Logs and Session History

A list of events that occurred on the Bridge module can be viewed in the Logs tab.
Depending on the type of logs you're interested in (system, OCPP communication, or internal charging network communication), you can select the relevant category from the Displayed logs type dropdown list.
The list refreshes only when scrolled to the most recent events.
The Download diagnostics button allows you to download a diagnostics file to your device. In case of issues with the Bridge module, this file can assist Enelion Support in identifying the cause.
The Users subpage allows you to change user passwords. To change a user's password, enter the current password, then the new password twice, and confirm the change using the Change password button.



12.21 System – Restart Procedure

The Reboot button allows you to restart the Bridge module.
After restarting, the Bridge will reopen the Dashboard section of the configuration panel.



12.22 Technical Data and Device Information Summary

Bridge LTE – Technical Specifications

Dane techniczne	
WiFi	2.4 GHz, 802.11 bgn
GSM Modem	LTE Cat 4, Max. 150 Mbps (DL), Max. 50 Mbps (UL)
OCPP Version	OCPP 1.6 JSON over websocket
Network Ports Used	TCP 20 and 21 – FTP protocol used for remote firmware updates and diagnostic downloads TCP 80 and 8080 – OCPP connection with the backend management system TCP 443 – Encrypted OCPP communication TCP and UDP 53 – DNS protocol UDP 123 – NTP protocol for time synchronization
Supported Number of Charging Points	Up to 100

13.1 Manual Configuration Changes

The initialization process is performed for the first time during production. After each subsequent power-up, the charging station loads the previously saved configuration. If necessary, it is possible to change the configuration of an already initialized station. This requires issuing a new configuration card for the given unit. This may involve submitting a card issuance request to the Dealer who sold the station or using the DealerToolBox software along with the Enelion Reader Card and cards purchased from the manufacturer. To change the configuration using a new configuration card issued for the device, follow these steps:

- Disconnect the vehicle from the charging point
- Ensure the station is in standby mode and ready for use
- Tap the configuration RFID card on the reader.

The location of the RFID card reader - above the screen

- Wait a few seconds for the station to respond. A successful read will be indicated by the LED light bar flashing white four times.

The station will restart and show the Configuration screen for 3 seconds
Once the configuration is changed, the charging station will reboot and be ready for use upon restarting.
To review the updated configuration, simply power cycle the station again.

ATTENTION

Changing the configuration carries the risk of improper charger operation or authorization failure. Make sure that the station's power settings are correctly matched to the electrical installation

Configuration Change – DealerToolBox

The configuration can also be changed using the DealerToolBox software in combination with the DealerToolBox RFID Programmer and configuration cards provided by the manufacturer

Steps:
- Contact the manufacturer to obtain DealerToolBox login credentials
- Install the software on a desktop computer
- Connect the DealerToolBox RFID Programmer card reader to the desktop
- Place a blank card on the reader
- Log in to the DealerToolBox software

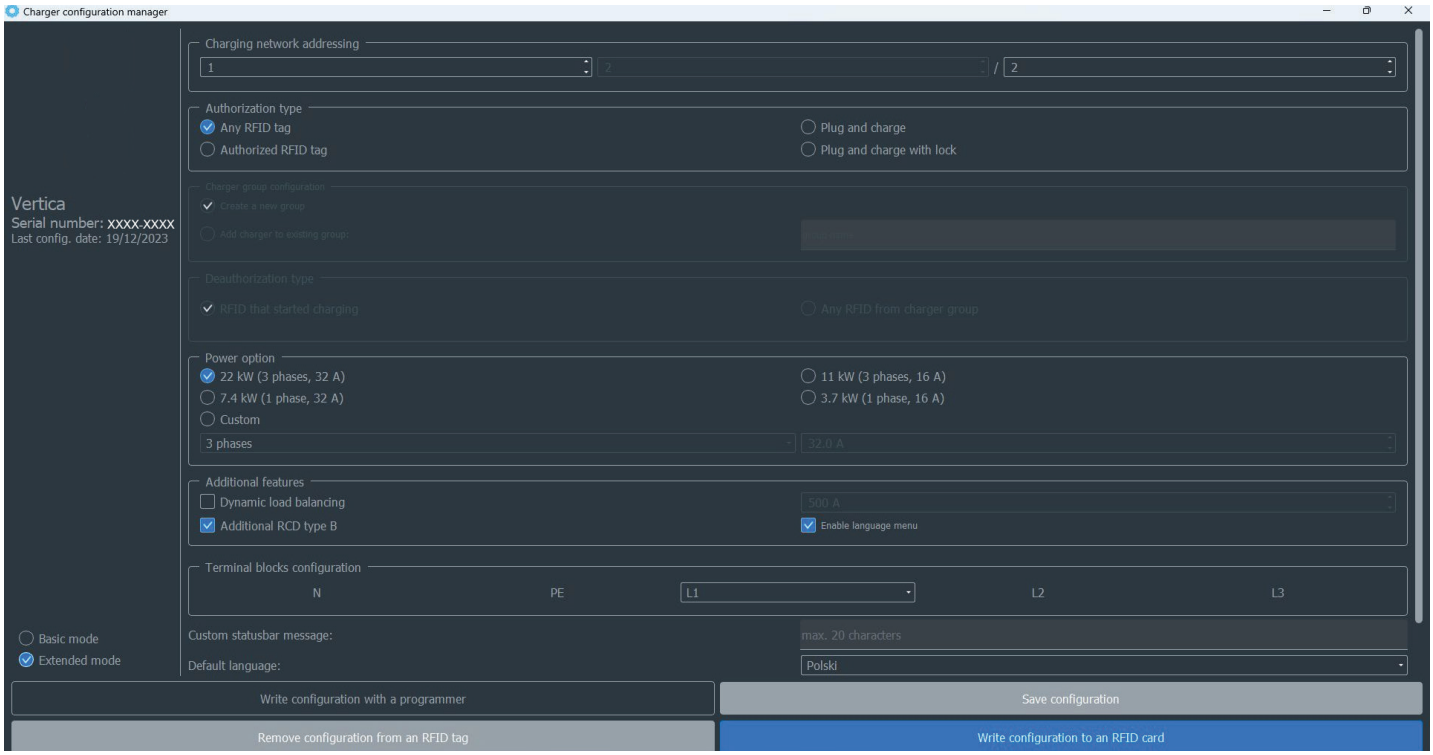
13.2 Configuration Management via DealerToolBox

After logging in and selecting the desired configuration, write it to the RFID card by clicking the "Write configuration to an RFID card" button. Once you have a new configuration card prepared, follow these steps:

- Disconnect the vehicle from the charging point
- Ensure the station is ready for use.
- Tap the RFID card on the reader.
- Wait a few seconds for the station to respond. A successful configuration read will be indicated by the LED light bar flashing white four times.

The location of the RFID card reader - above the screen

The station will restart and show the Configuration screen for 3 seconds
Once the configuration is changed, the charging station will reboot and be ready for use upon restarting.
To review the updated configuration, simply power cycle the station again.



14.1 Cleaning Guidelines

Due to the IP54 ingress protection rating, do not clean the charging station using pressure washers, garden hoses, showers, or any other water jets. Plastic elements should be cleaned with a microfiber cloth and a glass-safe cleaning agent.
Using other cleaning methods (e.g., wire brushes) may damage the device housing. Damage resulting from improper cleaning is not covered under warranty.
The correct method for cleaning the charger is to wipe the housing with a microfiber cloth using a cleaning agent suitable for anodized aluminum.
Plexiglass components (front panel) and plastic parts (socket) should be cleaned using a microfiber cloth and a glass cleaner.
Using other cleaning methods (e.g., wire brushes) may damage the housing.
Damage caused by improper cleaning will not be considered valid grounds for warranty claims.

14.2 Device Disposal and Environmental Compliance

This electronic device must not be disposed of with household waste. There may be free collection points in your area where old electronic devices can be returned. Please follow local regulations for proper and environmentally friendly disposal.

15.1 Basic Information

The ENELION charger (hereinafter referred to as the device, charger, or charging terminal) is an electric vehicle charging station designed in accordance with international standards, including IEC 61851-1 and IEC 62196-2, for charging electric vehicles equipped with compatible connectors.

Any unauthorized interference with the device's mechanical, electrical, electronic components, or software is strictly prohibited and will void the warranty. Exceptions include operations specifically described in this manual or those agreed upon in writing with the manufacturer. The manufacturer assumes no liability for damage to property resulting from such prohibited modifications.

The electrical installation to which the device is connected must meet the requirements outlined in the installation instructions. The manufacturer is not responsible for improperly executed or insufficiently protected electrical infrastructure. Furthermore, the electrical installation must comply with the applicable legal and safety standards of the country in which the device is installed and operated. The manufacturer assumes no liability for damage resulting from non-compliant or faulty installations.

The device is not equipped with a built-in power switch. It powers on automatically when supply voltage is present. Disconnection from the power source must be provided via external protective devices as specified in the installation documentation. Except in emergency situations, the device must not be powered down during an active charging session.

It is strictly forbidden to energize the device while the housing is open, or to operate a unit that is mechanically damaged or indicates a critical fault status on the display or LED indicators.

Only charging cables and plugs intended for EV charging may be inserted into the socket. The only approved connection is a functional Type 2 charging cable, suitable for the device's power rating and the vehicle's requirements, in compliance with IEC 62196-2. The use of extension cords, adapters, or conversion plugs is strictly prohibited.

Due to its IP54-rated enclosure, the device must not be cleaned with pressure washers, garden hoses, showers, or any other source of high--pressure water spray.
The manufacturer allows the purchase of support packages—including extended warranty and service options—during the warranty period, provided a qualifying inspection is completed beforehand. For details, please contact the ENELION Sales Department.

15.2 Station servicing and maintenance

A service inspection must be performed annually. Mechanical components such as the socket, charging cable, plug lock, plug, plug holder, and other fixed components require only surface-level visual inspection. These elements are not considered wear parts and are not expected to require replacement under normal operating conditions during the station's service life.

During inspection, attention should be paid to:
Signs of corrosion, Water ingress, Salt crystallization, or
any other indicators of deterioration in the condition of the unit.

If any damage is observed to components such as the socket, cable, plug, plug holder, or any other fixed part of the charger, this must be reported to the station operator. The replacement of these components must be carried out by an authorized ENELION service center.

All service work must be performed with the power supply disconnected.

Fault diagnostics are performed using the device's display, which presents error codes along with descriptive messages identifying the issue.

The electrical diagram and internal construction details for the charger are available in the installation manual specific to each VERTICA PRO model.

Note: The charging station does not support active ventilation.

15.3 Functional tests

Functional tests must be performed using an appropriate tester.
Functional tests must be performed at least once a year and after each installation and service.
The charging point should be treated as in a standard charging process.
The entire procedure for starting, ending charging, etc. is described in the chapter - Starting Vertica Pro.
Please note that the station operates differently depending on the configuration: with RFID authorization and in Freecharge mode.

The section **Troubleshooting - error codes** further on describes situations diagnosed by the charging station. Based on these, it is possible to determine whether the station is correctly diagnosing faults on the vehicle side.

15.4 PP contact – plug and charging cable detection

The charging station with a socket recognizes the rated load capacity of the connected cable based on the resistor between the PP and PE contacts located in its plug.

Below is a table showing the permissible load capacity of the cable expressed in [A] for a given resistance Rc.

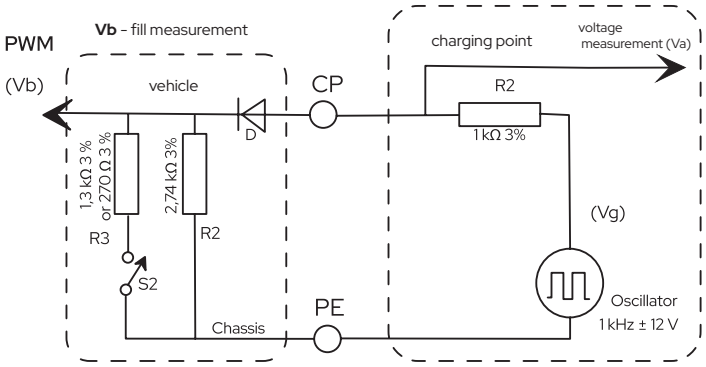
RESISTANCE VALUE RC (±3%)	NOMINAL CURRENT LOAD OF THE CABLE
220 Ω	32 A
680 Ω	20 A
1500 Ω	13 A

The PP status is checked before charging begins. In the event of a short circuit between PP and PE, charging will not start regardless of the vehicle's C or D status.

For charging stations with a cable, the load capacity of the cable is checked in the same way on the car side.

15.5 CP contact - communication line between the vehicle and the charging station

The vehicle, using appropriate resistors, changes the signal voltage to communicate its state to the charging station. Additionally, several abnormal situations can also be detected.



Simplified circuit diagram of the communication circuit:

15.6 Station statuses and alarms

The charging station responds to various states by displaying information on the LCD screen and LED bars. After functional testing, check the station's response to the following states:

- states A B C E,
- PP to PE short circuit error before charging starts,
- short circuit error of the diode inside the vehicle,
- warning, LED status – yellow, flashing.

VEHICLE STATUS	CONNECTION WITH THE VEHICLE	CHARGING CAPABILITY	DESCRIPTION
A	NO	NO	Charging station in standby mode - Status LED: Green, pulsating
B	YES	NO	Detection of vehicle presence - Status LED: Blue, pulsating
C	YES	YES	Charging in progress - Status LED: Blue, pulsating from the center towards the edges
D	YES	YES	Charging in progress - Status LED: Blue, pulsating from the center towards the edges
E	YES	NO	Warning - the charger interrupts the charging process but automatically attempts to restore the charging state. Status LED: Yellow, pulsating. Example: CP to PE short circuit.
F	YES	NO	Error - the indicator will pulsate with red light, indicating a problem that requires human intervention. The error can be reset by reconnecting the vehicle to the charger. Example: RCM B tripping.

Station states detected by the charging station

15.7 Error Codes

The error code consists of three parts corresponding to: error category, error source, and error number.

Where: W01/02

- **W** – error category (in this case: warning)
- 01 – error source (communication error with the car)
- / – Separator
- 02 – error number (short circuit on the CP signal line)

Sources of errors

Number	Source of error
01	Communication with the car
02	Detection of differential current
03	Power grid
04	Device defect

Error categories

There are three types of alarms: The category is indicated by the first letter in the error code and indicates how serious the error that occurred in the charging station is. There are three error categories:

- **W** - Warning

Warning errors are errors that the station will attempt to correct automatically, or after which it will be able to return to the state preceding the error.
The light strips will emit a uniform yellow light and flash green pulses. The number of flashes depends on the source of the error. The light bars will glow with a steady yellow light and flash with green pulses. The number of flashes depends on the source of the error.

- **E** - Error

Errors in this category are errors that require user intervention to return the charging station to working order. To reset the error, the user must disconnect the car from the charging point. After disconnecting the car, the charging point should return to its default state. When an error occurs, the light bars will be dimmed and will flash red. The number of flashes depends on the source of the error

- **F** - Defect - critical error

Damage errors are critical errors detected by the charging station that prevent the device from continuing to operate. When an error of this category is detected, the charging station should be sent for servicing. When an error occurs, the light bar will glow red continuously and flash red. The number of flashes depends on the source of the error.

Error numbers

The detailed error number can be read from the charging station display. Each error source has its own set of errors that may occur during device operation.

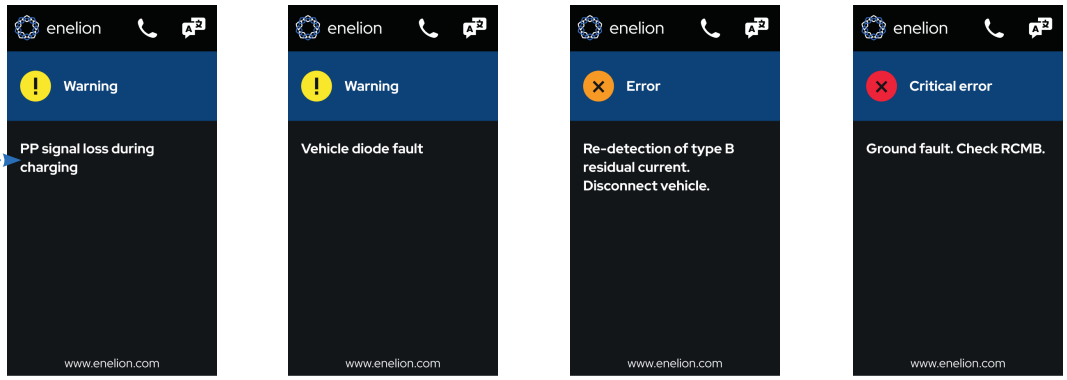
15.7 Error Codes - Warnings

In the event of a screen failure, errors can be read using light signals displayed on LED bars.

Warnings				
Source	**Number**	**Type of error**	**Possible solution**	**Light bar response**
01	01	Short circuit on the PP line	Check the cable connection to the charger or replace charging cable.	
	02	Short circuit on the CP line	Wait for another attempt to communicate with the car or try to disconnect and reconnect the car	
	03	Diode failure in the car		
	04	Wrong status in the communication protocol	Wait for another attempt to communicate with the car	
	05	PP signal disappeared during the charging process	Wait for another attempt to communicate with the car or press the charging cable plug with greater force.	
	06	No PP signal detected	Disconnect and reconnect the charging cable.	
02	01	Phase loss on the first phase connected to the charger	Check the circuit breakers which supply the charger and wait for the error to be reset.	
	02	Overvoltage in the power grid detected	Wait for the power grid to stabilize and the error to be reset.	
	03	Voltage dip in the power grid detected		
	04	Overvoltage in the car charging process detected	The charging will be stopped and retaken after some time.	
	05	Incorrect phase connection to the charger	Turn off the charger and check the power connection. The power supply can only be connected in the order: L1, L2, L3 or in the appropriate sequence. An error in the installation can lead to improper operation of the dynamic load balancing (DLB) function.	
03	01	First detection of type A differential current (AC 30 mA) during charging	Please wait for the error to reset. Loading will restart after a specified period of time.	
	02	First detection of type B differential current (DC 6 mA) during charging		

Error codes detected by the charging station and how to resolve them - Warnings

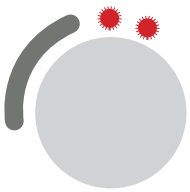
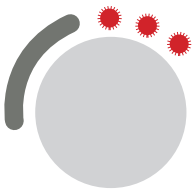
When a warning appears, the LCD screen will display, for example, the disappearance of the PP signal during charging.



The LCD screen and LED strips will also display errors and critical errors - damage.

15.7 Error Codes - Errors - Damage

Error codes

Errors				
Source	**Number**	**Type of error**	**Possible solutions**	**Light bar response**
02	01	Socket lock error	Adjust the cable plug in the charger socket. If necessary, re-authorize	
	02	Socket unlock error	Adjust the cable plug in the charger socket and wait for another attempt to unlock the socket.	
03	03	Residual current AC 30 mA type A detected when charging	Detection of the residual current causes the charging to stop. To reset the error, disconnect the car from the charger.	
	04	Residual current DC 6mA type B detected when charging		

Failure				
Source	**Number**	**Type of error**	**Possible solutions**	**Light bar response**
03	05	Residual current type A or B detected at any moment when no car is charging.	The charger may be damaged. The device should be immediately switched off and sent to the servicing point.	
04	05	Incorrect phase connection to the charger	Turn off the charger and check the power connection. The power supply can only be connected in the order: L1, L2, L3 or in the appropriate sequence.	
05	01	Communication module failure	Turn off the charger and disconnect the cables connecting the charger to the network. If the error still appears after switching on, the charger may require service. Contact the Dealer.	
05	02	The Bridge communication module has lost connection with the charging point.	Check the connection between the charging points and whether the communication cables have been terminated. For more information, refer to the installation instructions.	

Error codes detected by the charging station and how to resolve them - Errors - Damage

Error names

The detailed error name can be read from the charging station display. During operation, various error codes may appear on the device screen. This may be caused by various factors, e.g., a plug that is incorrectly inserted into the module socket. A simple method is to repeat the action and check if it occurs again. Follow the instructions on the screen. If a QR code appears on the screen, scan it and follow the instructions. All error codes can be found on the website:
https://service-support-enelion.happyfox.com/kb/section/9/

15.8 Frequently Asked Questions

Frequently Asked Questions

ENELION LUMINA CHARGER DOESN'T CONNECT TO THE Wi-Fi NETWORK

Make sure that the Wi-Fi password has been entered correctly. It may help to move the Wi-Fi router closer to the charging station. Check if your station has a communication module on the LCD screen and if the default SSID name EnelionChargerXXX is displayed.

ENELION LUMINA CHARGER DOESN'T CONNECT TO THE GSM NETWORK

Make sure the GSM network settings were entered correctly and that the charger is in the network signal range.

I CANNOT ACCESS THE CONFIGURATION PANEL

Make sure you are connected to the charger's Wi-Fi Hotspot. Please check if you use correct IP address: 192.168.8.8.

In other cases contact technical support.

Please describe the situation in which the problem occurred in detail so that our technicians can locate its source more quickly and provide more effective assistance. If you have a module equipped with a Bridge communication module, you can attach a file with event logs to your report, if possible (you can download it by pressing the System /Logs/ Download button.

16.1 SUPPORT AND SERVICE

The current full version of the device manual is available at:

https://enelion.com/support-vertica-pro/

Returns and complaints
For returns and warranty claims,
please contact your distributor or Enelion's customer support team.

Helpful documents and video materials can be downloaded from:
https://enelion.com/support

Factory Service:
Enelion sp. z o.o
Mialki Szlak 52,
80-717 Gdansk, Poland

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VERTICA PRO

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