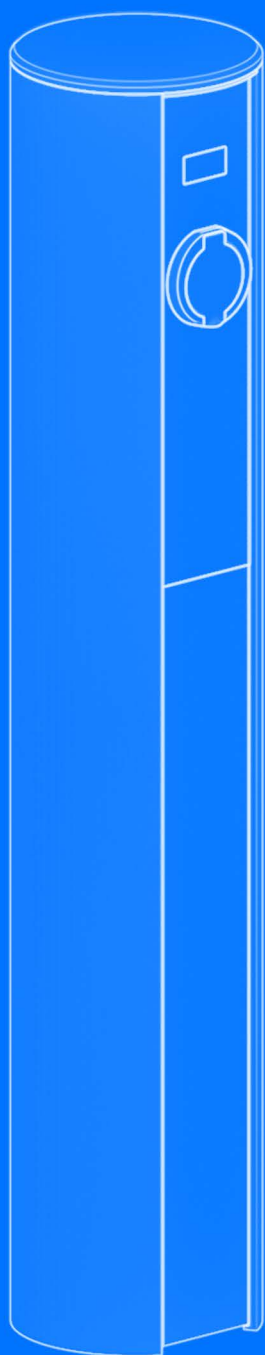


Enelion VERTICA

Manual for Enelion VERTICA Modules,
Enelion VERTICA Pole and
accessories.



Congratulations on the purchase of the Enelion charger and thank you for your trust.
Before the installation, make sure that the module packages contain all the elements. Current version of the operation manual can be accessed at: <https://enelion.com/en/support/>

See the contents of the manual before initiating any activities related to the installation or the activation of the charger.

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The manual may change as the product develops.
The information provided may not be correct.
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1. Important information

1.1. General Provisions

The Enelion charger (here in after referred to as the device, charger, or charging terminal) is a charging station designed for electric vehicle charging within the meaning of the 'Act on Electromobility and Alternative Fuels' dated January 11, 2018, in paragraphs 5, 12, 13, and 27 of Article 2 of the aforementioned act.

The installation and servicing of the device must be carried out by qualified and authorized individuals, and repairs may only be performed by the manufacturer or entities authorized by the manufacturer. During the warranty period, only authorized service centers and the manufacturer are allowed to perform warranty repairs.

Interference with mechanical, electrical, and electronic components, as well as the device's software, is strictly prohibited and may void the warranty. Exceptions are actions described in the following instruction manual or those agreed upon in writing with the manufacturer.

The manufacturer is not responsible for property damage resulting from prohibited interference with the product.

The electrical installation to be used during device operation must meet the conditions described in the installation manual. The manufacturer is not responsible for incorrect execution and/or protection of the electrical installation to which the device is connected.

The manufacturer is not responsible for the improper functioning of the electrical installation to which the device is connected.

The electrical installation to be used during device operation must comply with the legal standards applicable at the installation and operation location of the device.

The manufacturer is not responsible for damages caused by an electrical installation that does not comply with legal standards.

The device does not have a built-in power switch.

The device is activated when the power supply voltage is applied. Power disconnection must be ensured by appropriate devices in the electrical installation described in the installation manual. Except in emergency situations, the device should not be switched

off during the charging process.

It is prohibited to power on the device when the device housing is open.

It is prohibited to use a charger that is mechanically damaged or indicates a critical error.

Objects not intended for this purpose must not be placed in the charger socket. The only object intended for insertion into the charger socket is a functional power cable with the appropriate power and type for the electric vehicle, terminated with a functional type 2 plug according to EC 621962.

The use of extension cords, adapters, and charging cable extensions is prohibited.

The manufacturer is not responsible for loss of health or life resulting from non-compliance with the above recommendations.

During the warranty period, the manufacturer allows the purchase of support packages for the device (extended warranty/service) subject to a qualifying review before purchasing the package. Details can be obtained from the Enelion sales department.

The charging station does not support ventilation functions.

The nameplate present on the device is an integral part of it and must not be removed or damaged, as this may result in the loss of the manufacturer's warranty.

INFO

Three self-adhesive labels with information about the current value have been included in the set. Please select the appropriate one according to the specifications and affix it next to the nameplate.

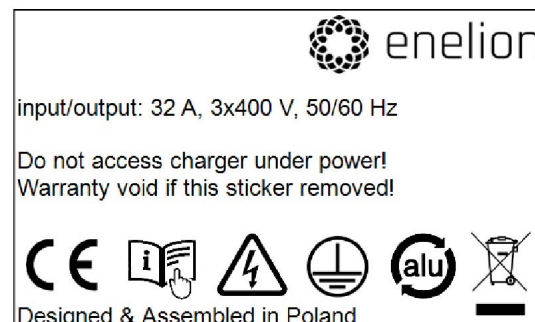


Fig. 1: Example of info plate

1.2. Safety instructions

Do not carry out external installation during atmospheric precipitation or strong winds if there is a risk of water or contaminants entering the device.

All actions described in this manual should be performed after ensuring that there is no voltage in the power cable.

If any damage to components such as the socket, charging cable, plug, plug holder, or any other fixed/permanent component is observed, it should be reported to the charging station operator.

2. General information

ENELION VERTICA is a modular charging station for electric cars, which consists of ENELION VERTICA Pole as a casing, Enelion VERTICA Modules involved in the charging process and optional addons and accessories.

The modular design facilitates an easy modification of the functions of the device by replacing or adding charging modules and accessories to best suit customers' needs. Preparation for use depends on the selected machine functions of the device.



Fig. 2: Enelion Enelion VERTICA charging station.

2.1. Additional functions

All Enelion charging stations are compatible with the original Enelion Chain communication protocol, which enables operation in the local network of chargers. This enables the Enelion DLB function to be activated for dynamic load balancing, reducing the number of devices that require an Internet connection and optimizing the use of power in charging vehicles.

All Enelion devices can also be fitted with the Enelion Bridge (an add-on sold separately), which equips the devices with smart functions and facilitates their connection to a remote management system (OCPP 1.6 compliant) via the Internet.

INFO

For more information, please refer to the User Manual. It contains detailed information about the functionality and use of the device.

2.2. Enelion VERTICA Pole

Enelion VERTICA Pole is a necessary part of the device. Enelion VERTICA Modules are installed in it, which are the executive part of the charging process. It is available in 2 colors: silver and black.

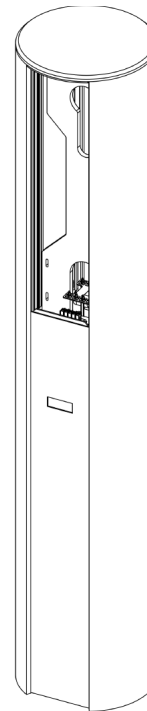


Fig. 3: Enelion VERTICA Pole without the charging modules installed.

2.2.1. Opening and closing of the device

Enelion VERTICA Pole structure secures the access to the interior of the device. Before performing any operations on the device, open the Enelion VERTICA Pole according to the instructions.

1 INFO

In order to close the Enelion VERTICA Pole, perform all steps in reverse order.

1 INFO

Closing and opening of the Enelion VERTICA Pole does not change depending on the presence of Enelion VERTICA Modules in the device.

1. Using the Torx Security T25 bit provided, unscrew the device cover bolts. They are located on both sides of the device. Put the cover in a safe place where it will not be exposed to damage.

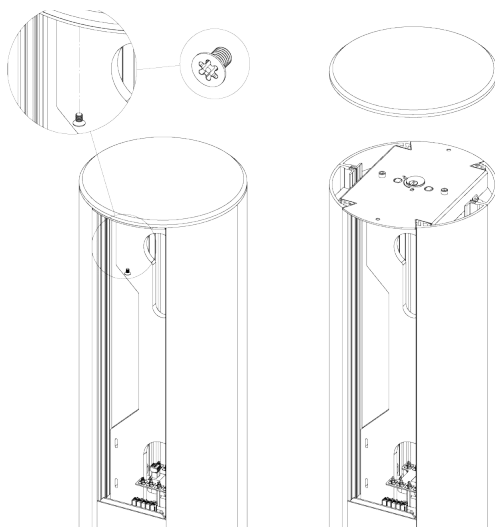


Fig. 4: Removing the cover of the Enelion VERTICA Pole.

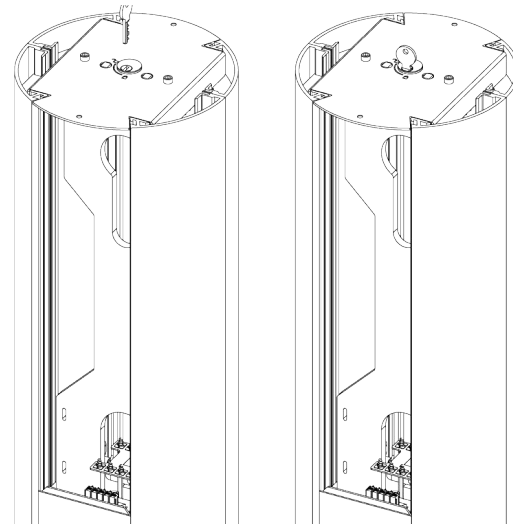


Fig. 5: Unlocking the lock plate.

3. Dismantle the lock plate by lifting it upwards.

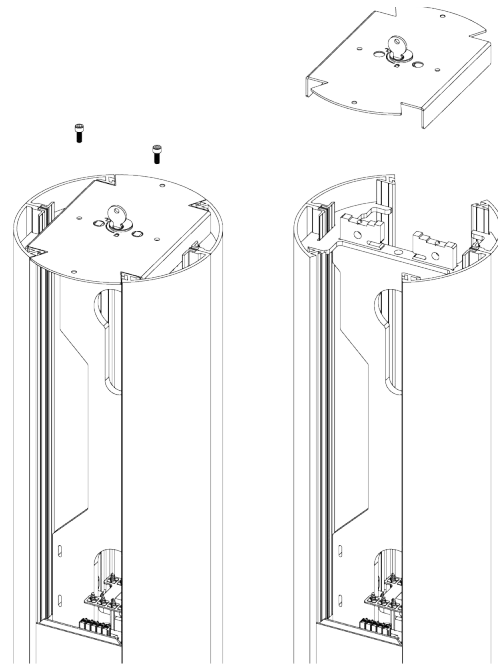


Fig. 6: Removing the lock plate.

2. Unlock the lock plate with the key (if there is a Yale lock). Next, using the 5 mm Allen key, unscrew the M6 bolts and remove the lock plate.

2.3. Enelion VERTICA Module

2.3.1. Enelion VERTICA Module with a socket

The Enelion VERTICA module with a socket is a functional part of the charging station.

This module provides a Type 2 socket for charging vehicles with up to 32A three phase and can be mounted on either side of the Enelion VERTICA Pole. It is equipped with an OLED screen displaying instructions and information about the charging in progress.

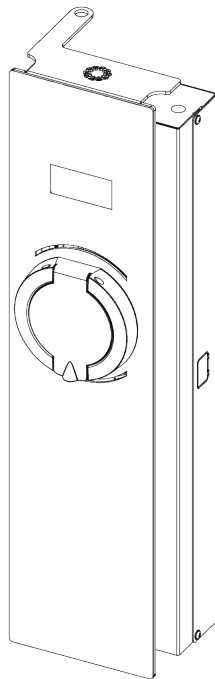


Fig. 7: Enelion Enelion VERTICA Module with a socket.

2.3.2. Enelion VERTICA module with a cable

The Enelion VERTICA module with a cable is a functional part of the charging station.

The Enelion VERTICA module with a cable is a functional part of the charging station. This module provides a charging cable for charging vehicles with up to 32A three phase and can be mounted on either side of the Enelion VERTICA Pole. It is equipped with an OLED screen displaying instructions and information about the charging in progress.

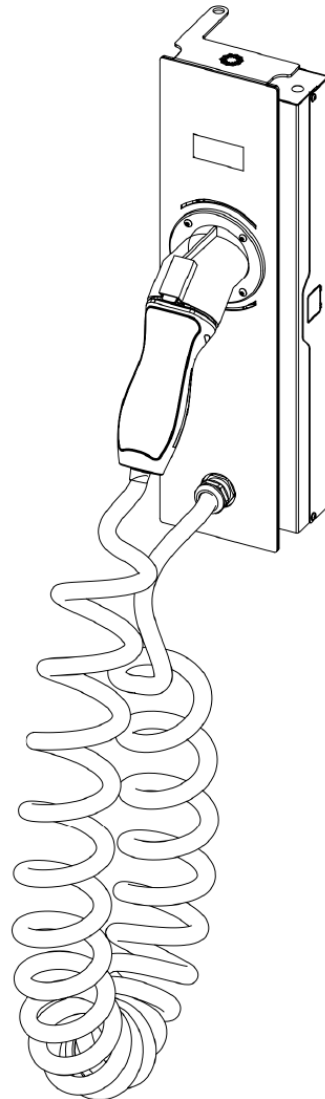


Fig. 8: Enelion Enelion VERTICA Module with a cable.

2.3.3. Assembly and disassembly of Enelion VERTICA Modules

INFO

To shut down the device, perform all steps in reverse order.

WARNING

Enelion VERTICA modules equipped with Enelion VERTICA link are only compatible with Enelion VERTICA poles that are equipped with Enelion VERTICA link modules!

Enelion VERTICA modules equipped with Enelion VERTICAN are only compatible with Enelion VERTICA poles that are equipped with Enelion VERTICAN modules!

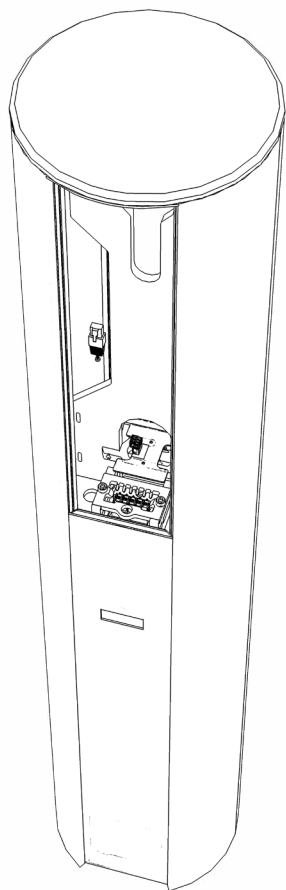


Fig. 9: Enelion VERTICA pole equipped with Enelion VERTICA link module

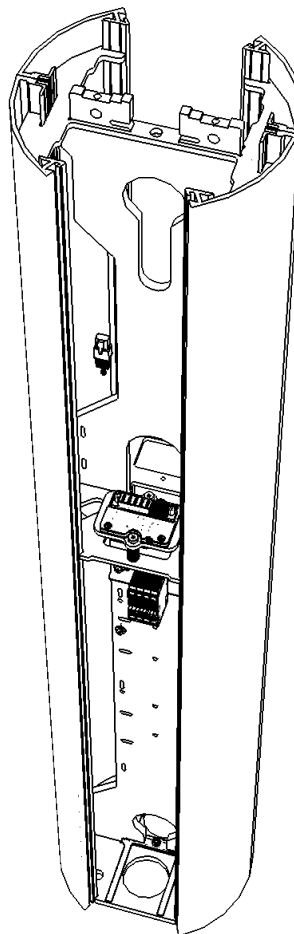


Fig. 10: Enelion VERTICA pole equipped with Enelion VERTICA link module

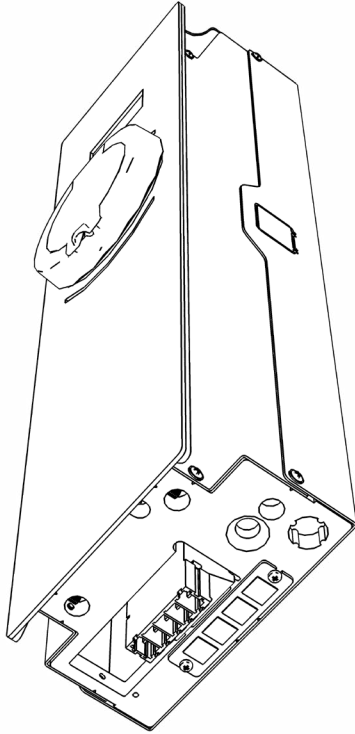


Fig. 11: Enelion VERTICA module compatible with a pole equipped with a Enelion VERTICAN module

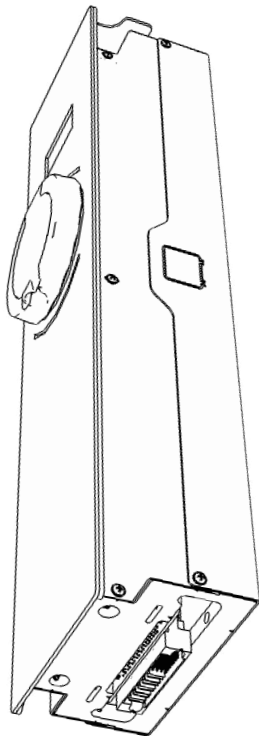


Fig. 12: Enelion VERTICA module compatible with a pole equipped with a Enelion VERTICA link module

1. Open the Enelion VERTICA Pole according to the instructions in section **2.2.1 Opening and closing of the device**.
2. Lift the module above the Enelion VERTICA Pole and place the bottom edge in the guide slot. Carefully insert the Enelion VERTICA Module into the power socket until its top edge is flush with the edge of the Enelion VERTICA Pole.

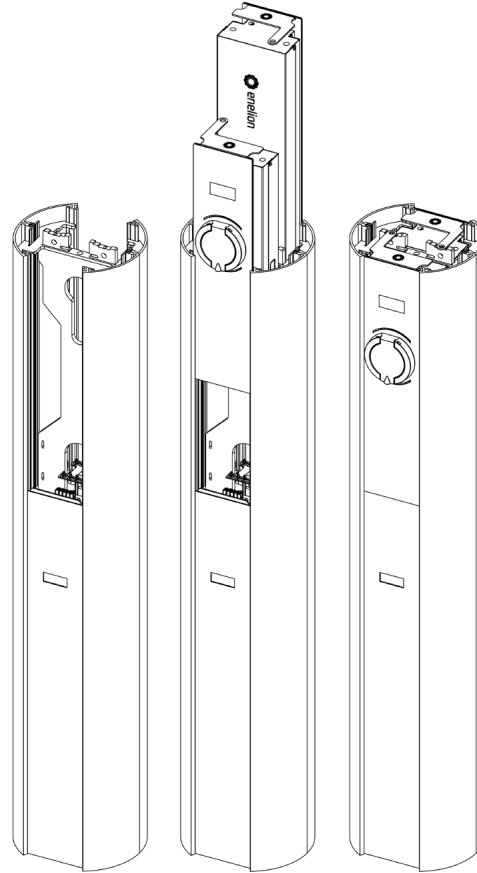


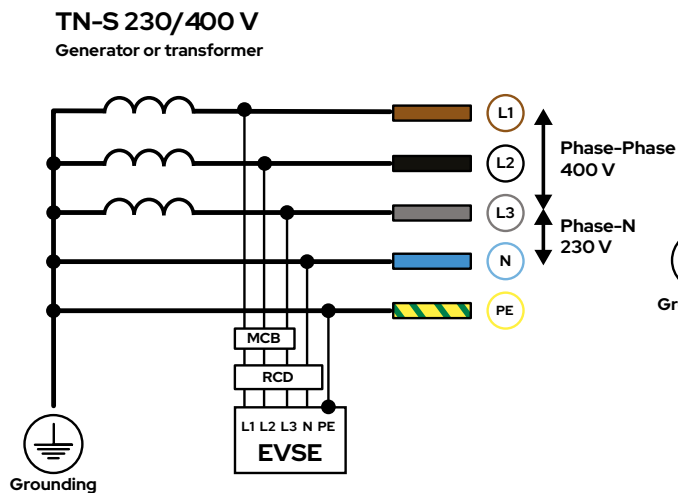
Fig. 13: Assembly of Enelion VERTICA Modules

3. Close the Enelion VERTICA Pole in accordance with the instruction **2.2.1 Opening and closing of the device**.

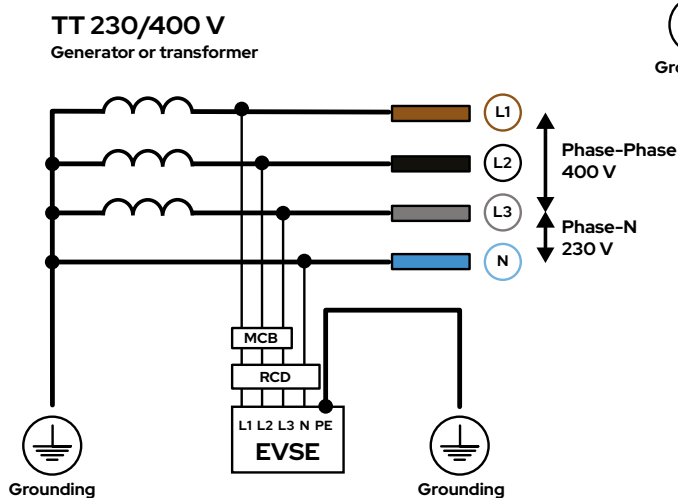
3. Design guidelines for installation

3.1. Power network systems for charging stations

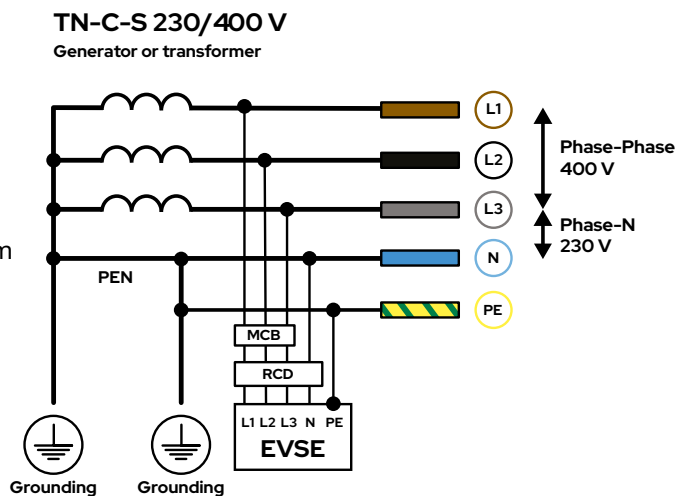
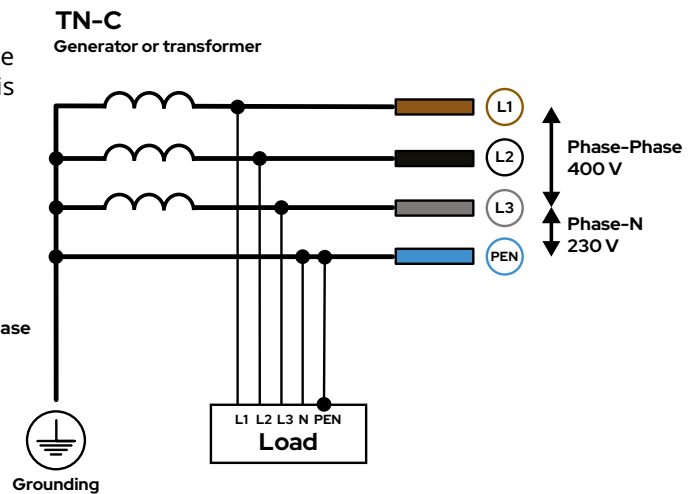
Enelion charging stations are adapted for five-wire power supply. In a TN-S 230/400 V network, this is the standard option.



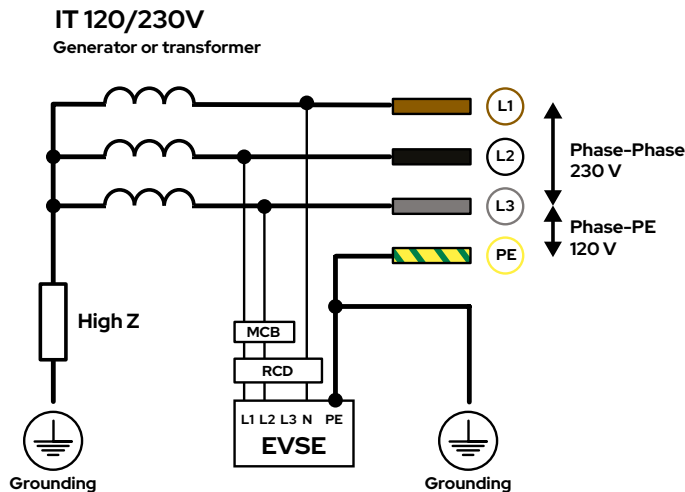
It is possible to supply power to the stations from other network systems described below:



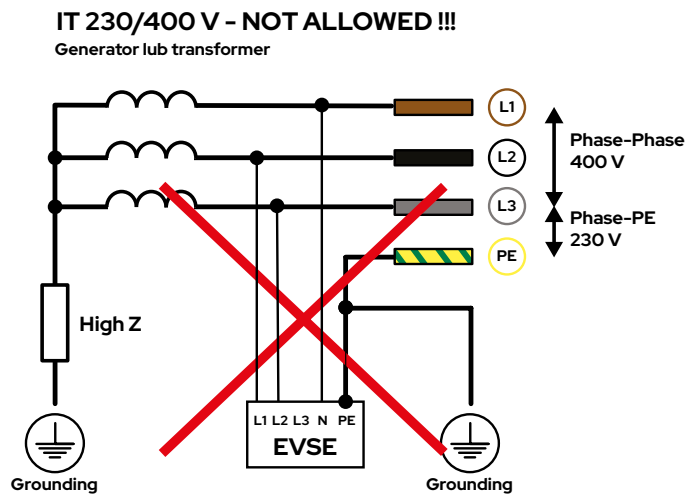
In the TN-C system, you should separate the PEN conductor into N and PE, as shown in the diagram below.



In the case of an IT network 120/230 V, which is present in Norway, the connection looks as follows. Please note that one of the phases serves as the Neutral conductor; this is important during RCD installation. In such a network, it is not possible to charge in 3 phases; only some vehicles will be able to charge in 2 phases.



It is not possible to power the stations from an IT network 230/400V.



Other, more complex power supply systems require technical consultation before purchase."

3.1.1. RCD B with automatic reclosing device

There is an option to install an RCD B circuit breaker with an automatic reclosing device. The automatic reclosing device is a separate physical device mounted on a DIN rail and must be installed next to the circuit breaker. Depending on the number of phases, the circuit breaker with an automatic reclosing device occupies 4 or 5 positions on the DIN rail.

The power supply to the automatic reclosing device should be connected before the power supply to the RCD B to prevent it from being switched off when the RCD B activates.

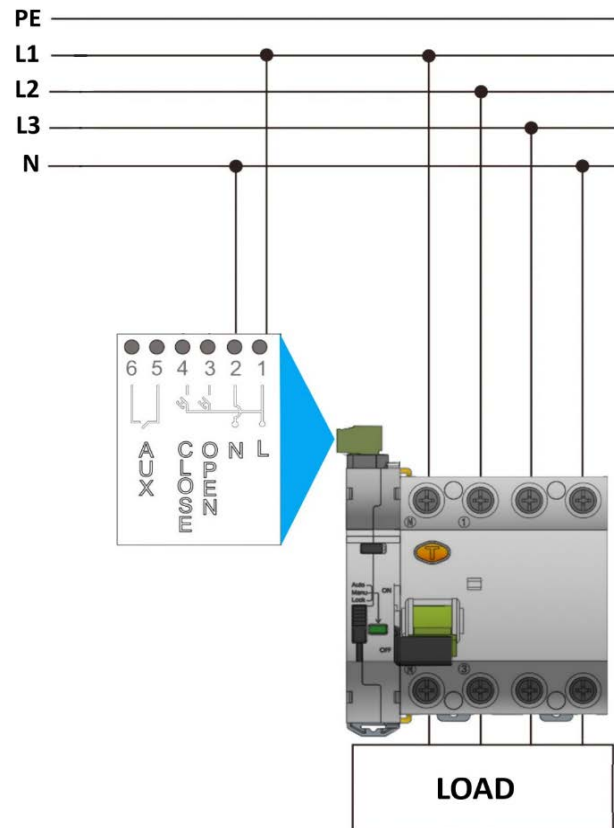


Fig. 14: Instructions for connecting RCD B with an automatic reclosing device to the power supply.

The automatic reclosing device is equipped with an LED interface that indicates its status:

1. Continuous green means the device is ready to operate.
2. Continuous red indicates device lockout after 3 unsuccessful lift attempts. In this case, the presence at the station is required, and the automatic reclosing device must be raised manually.
3. Flashing red indicates that the automatic reclosing device is attempting to lift the differential current switch lever.

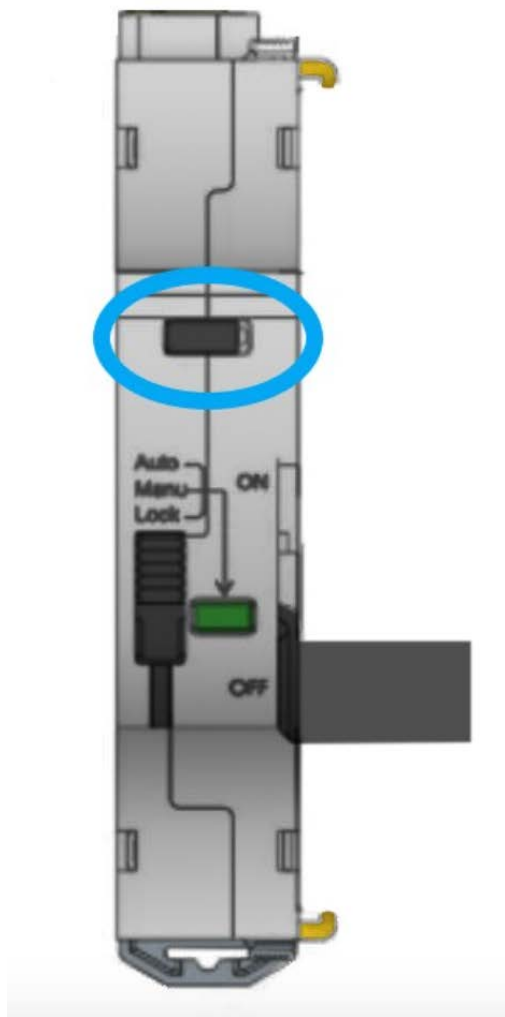


Fig. 15: Automatic reclosing device Interface

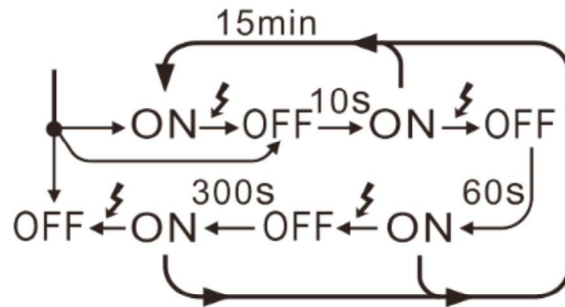
The automatic reclosing device can operate **in three modes**:

Auto mode: In this mode, the automatic reclosing device attempts to lift the RCD a maximum of 3 times in case the differential current switch is tripped.

1. The first attempt is made 10 seconds after the differential current switch is triggered.
2. If the switch is tripped again within 15 minutes, the automatic reclosing device will make a second attempt after 1 minute.
3. If the switch is tripped again within a time frame of less than 15 minutes, the third lift attempt will be made after 5 minutes.

The fourth trigger of the differential current switch deactivates the automatic reclosing device. At this point, manual lifting of the RCD B switch lever is required.

The process has been presented in the form of a diagram in the illustration below.



Manual mode: Standard operation of the differential current switch. After tripping, RCD B requires manual lifting.

Lock mode: Protection against unauthorized access. When the automatic reclosing device is set to this mode, a seal can be applied to prevent unauthorized individuals from changing the automatic reclosing device's operating mode.

When purchasing an ENELION station with a differential current switch with an automatic reclosing device, the automatic reclosing device will be set to auto mode."

3.2. Recommendation for electrical connection

Enelion VERTICA Charging Stations are designed for a five-wire power supply in a TN-S network. In the standard installation configuration, each Enelion VERTICA Module should be powered by a separate cable from the distribution board. The distribution board should have the required protection in the form of a circuit breaker with characteristics B or C and a rated current of 32A or less, suitable for the device configuration. To declare compliance with the PN-EN IEC 61851-1:2019-10 standard, each charging point must also be individually protected against both Type A and Type B residual currents. This requirement can be met by installing a Type B residual current circuit breaker (RCDB 30mA/40 A) or an RCD EV (30 mA/40A) in the distribution board at your own discretion. The final selection of protective equipment should be made by a qualified designer or electrician.

Another recommended and more economical solution is to install an RCDB circuit breaker purchased together with the equipment from ENELION. There is also an option to use the ENELION RCMB accessory - Residual Current Monitor Type B - see subsection 6.3.2 ENELION RCMB. ENELION RCMB protects the station and, when

used with RCDA in the distribution board, meets all safety requirements. In case it is necessary to power a pillar with two charging modules using a single cable, you should use the accessory - Enelion VERTICA Splitter, described in Chapter 5 **Installation of Enelion VERTICA Pole** - allowing for the safe splitting of the power supply to two charging panels inside the ENELION VERTICA Pole. The ENELION Splitter accessory includes a distribution strip, two B32 overcurrent protection devices, a set of cables and mounting accessories. The whole thing is mounted on the attached TS35 rails in the lower part of the ENELION VERTICA Pole. Please remember to protect each ENELION VERTICA Module with a residual current device with the characteristics described above. The cross-section of the power cables must be selected based on the distance from the switchgear and other location conditions by a licensed electrician.

Cables running underground must be installed in accordance with applicable building regulations. For convenient installation, flexible, cable-type power cables with ends are recommended compression sleeves.

The cable should protrude approximately 80 cm above the horizontal foundation.

! INFO

In the case of the Enelion Splitter block, the standard cross-section of the Cu (copper) conductor is 16 mm². Upon customer request, the maximum cross-section of the Cu/Al (copper/aluminum) conductor can be 50 mm²

3.3. Equipping with accessories and electrical connections.

Due to the modular construction of the Enelion VERTICA Charging Station, the method of electrical connection depends on the accessories used. Additionally, to implement certain device functions, connection with established phase rotation is required. The electrical connection of the Enelion VERTICA Pole is typically made with two separate cables, each of 5 x 6 mm². These cables are inserted into a four-pole terminal block (L, L, L, N), and the grounding cable (PE) is directly attached with an insulated eyelet terminal (6 mm², M5 mounting) to the aluminum structure. The use of a dedicated crimping tool for insulated connectors is required. Cables of the cable type must be terminated with an appropriate-sized insulated ferrule.

3.4. Location selection criteria

Enelion Vertica may be installed both inside or outside.

The device is designed for installation near parking spaces dedicated to electric vehicles. When used in the vehicle collision hazard zone, the structure should be secured with appropriate fenders painted in yellow and black stripes (warning about the gauge).

! INFO

The Enelion VERTICA Pole mounting system allows it to be rotated in the vertical axis by multiples of 90 degrees.

Please bear in mind that the national regulations may define the space for the installation. The device should not be located in a place of high exposure to sunlight, which could cause its overheating. Do not install the device near heat sources or in small, closed cubicles (e.g. in a box).

It is forbidden to install a power cord that does not comply with the guidelines in section 3.2 Recommended electrical connection. It is forbidden to install the device in potentially explosive environment.

Local regulations for electrical installations, fire prevention measures and accident prevention must be taken into account, and escape routes at the installation site must be provided.

It is forbidden to install the device in a location where falling objects may damage the charger.

Before installation, make sure that there is free space above the charger at least one meter from its outline.

Also after installation, make sure that no fixed objects (e.g. advertising boards, road signs, etc.) appear in the space above the outline of the device. This space is required for servicing the charging station.

! WARNING

The manufacturer is not responsible for damage resulting from non-compliance with the above-mentioned recommendations.

3.4.1. Connection type diagrams

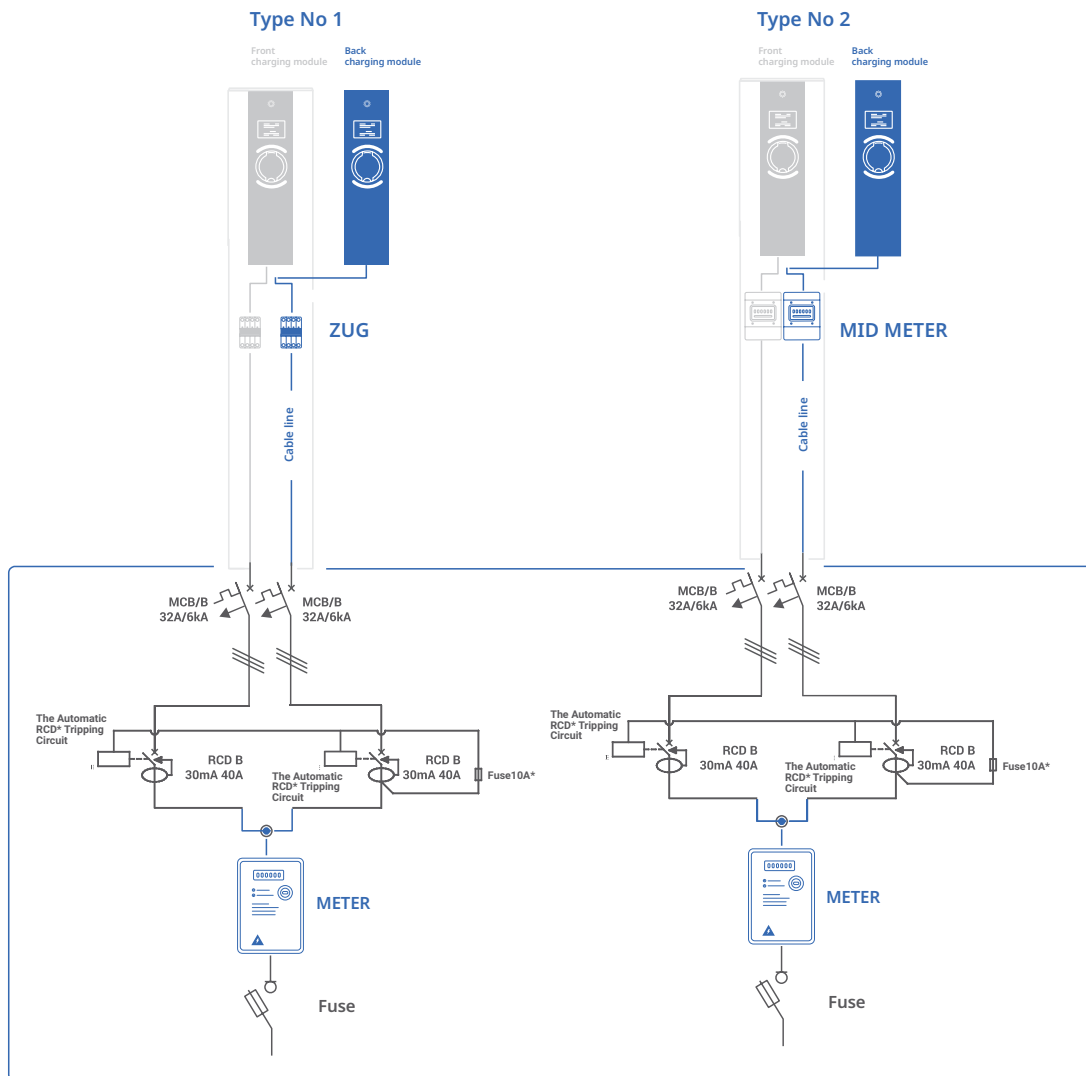


Fig. 16: Connection types part 1/3

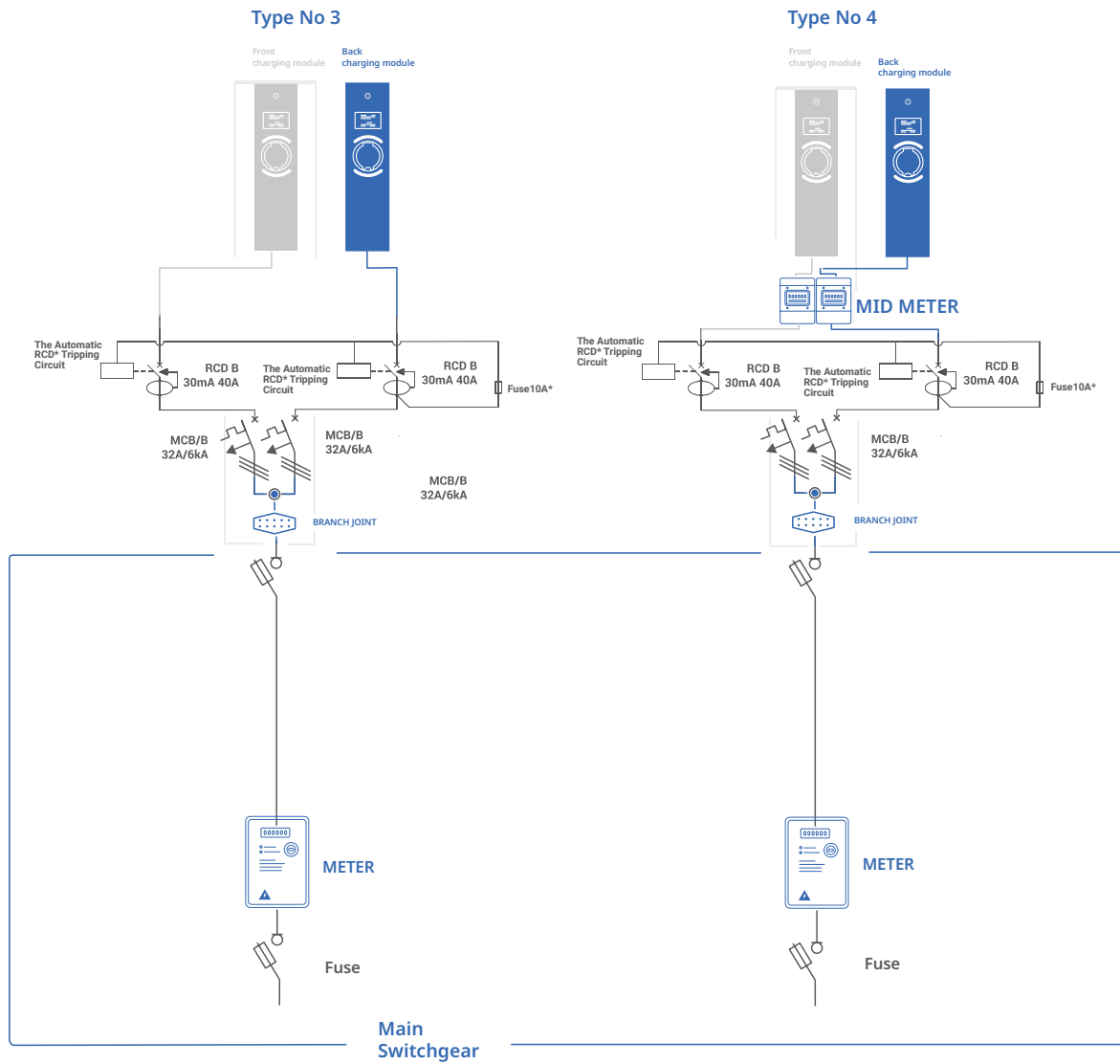


Fig. 17: Connection types part 2/3

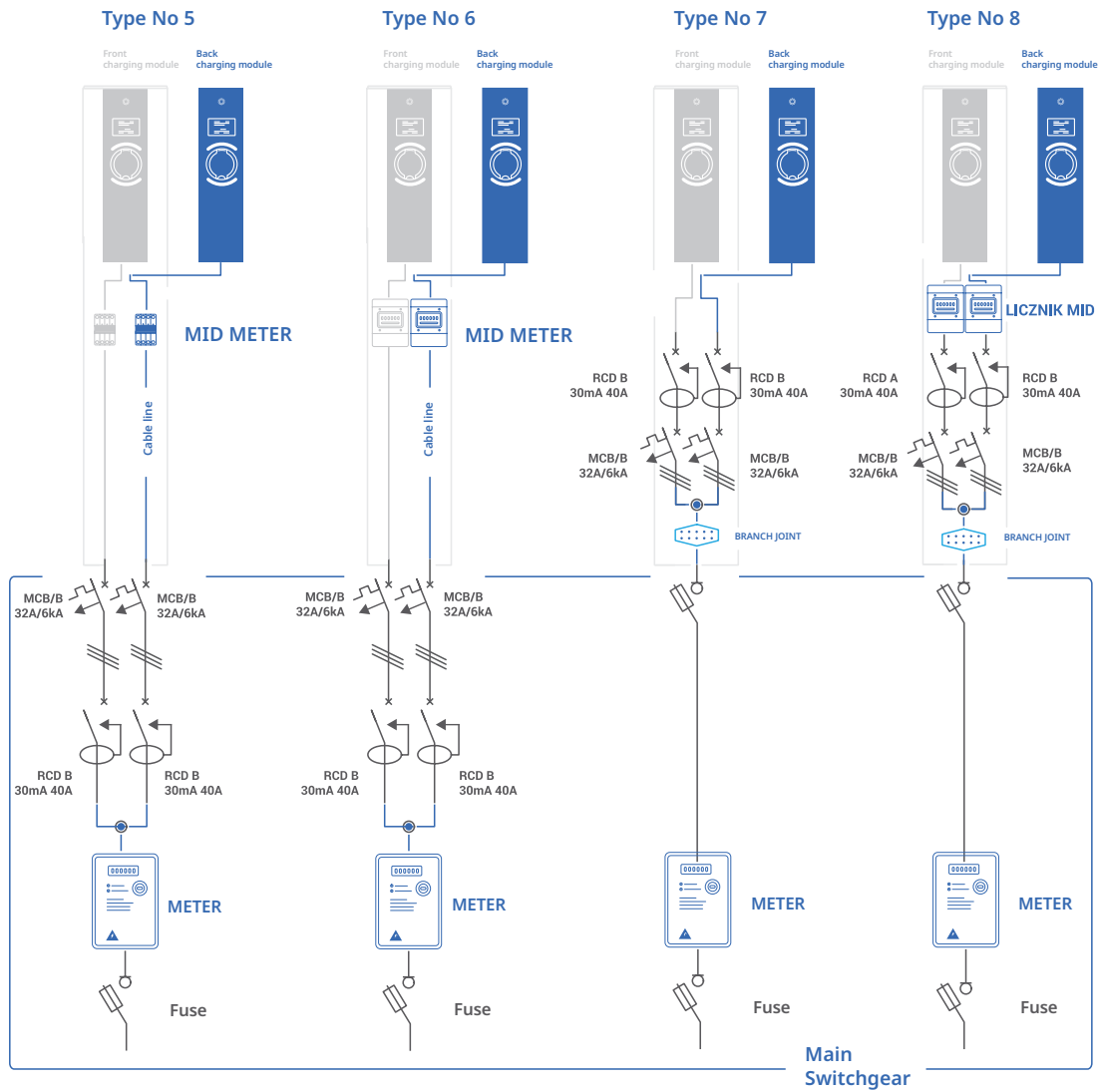


Fig. 18: Connection types part 3/3

3.4.2. Pictorial diagrams of Enelion VERTICA Modules

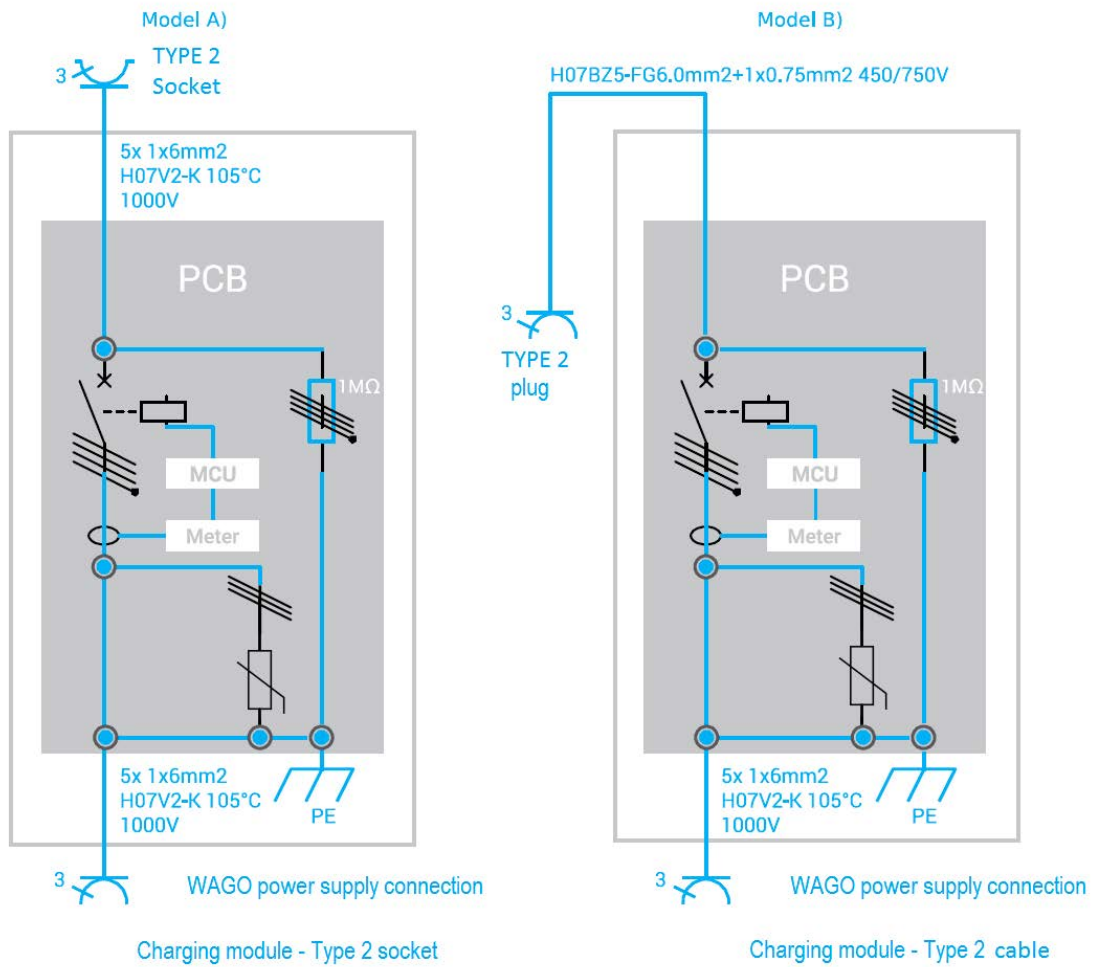


Fig. 19: Pictorial diagrams of Enelion VERTICA Modules part 1/2.

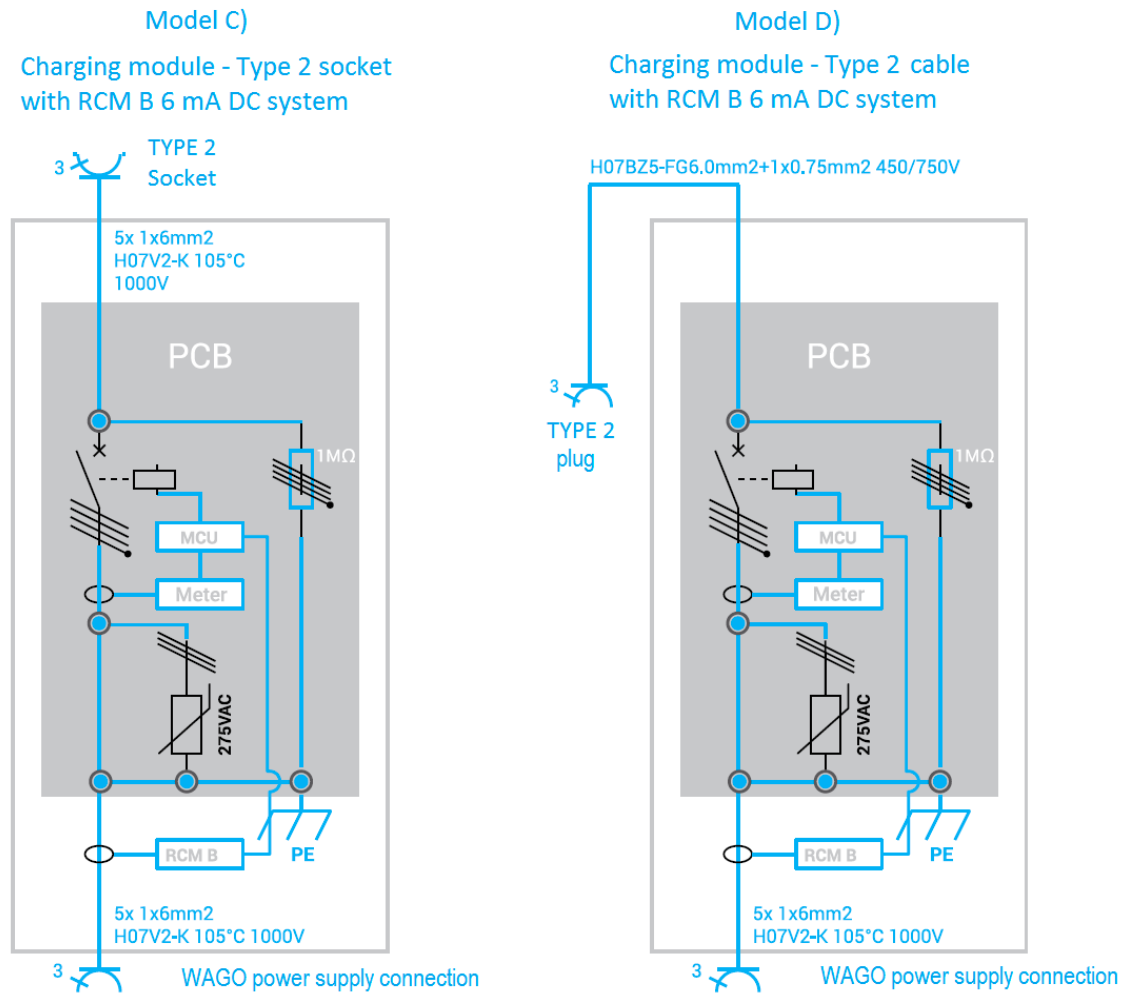


Fig. 20: Pictorial diagrams of Enelion VERTICA Modules part 2/2.

4. Foundation

Enelion VERTICA Pole can be installed in three ways:

- on a customized Enelion prefabricated foundation,
- on an appropriate existing foundation with the use of additional mounting bolts,
- using the Enelion foundation set.

4.1. Enelion prefabricated foundation

The customized Enelion prefabricated foundation enables shortening the assembly period by eliminating the need to wait for the concrete to cure.



Fig. 21: Enelion prefabricate foundation.

The foundation set consists of:

- 1 x prefabricated foundation,
- 8 x washers,
- 8 x M12 nuts.

4.1.1. Construction of the foundation applying the Enelion prefabricated element

1. Remove the M12 nuts and washers from the prefabricated foundation and secure them until Enelion VERTICA Pole has been installed.

2. An excavation of over 400 mm x 600 mm (diameter x depth) or 400 mm x 400 mm x 600 mm (width x length x depth) should be made. Compact the soil directly under the foundation to the compaction index of at least 0.97.

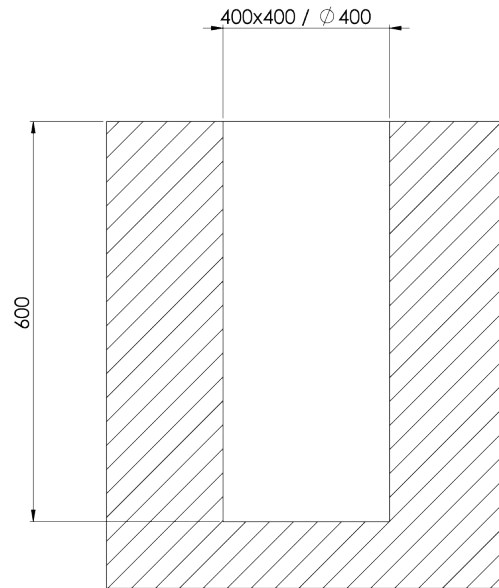


Fig. 22: Diagram of the foundation excavation.

3. Thread all the required cables through the cable ducts of the prefabricated foundation. Place the prefabricated element and plumb it in the trench at a depth of 0,55 m below the ground level.

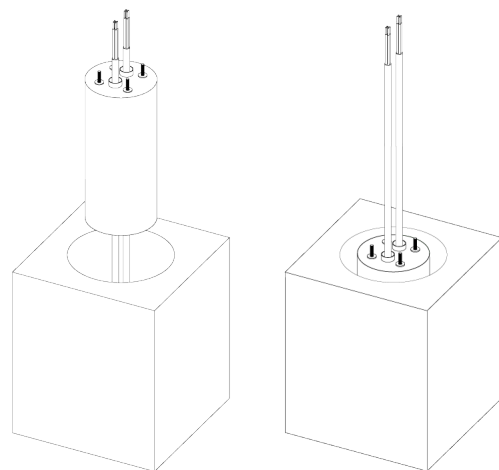


Fig. 23: Placing the prefabricated element in the excavation.

4. Fix the prefabricated element by filling the remaining space in the excavation with soil and compact it to the compaction index of at least 0.97.

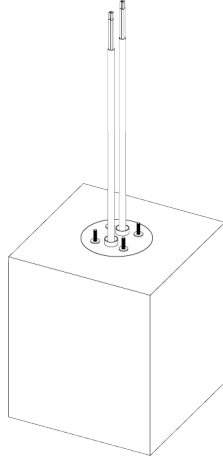


Fig. 24: Properly constructed foundation using the prefabricated element.

The foundation prepared in this way enables the installation of Enelion VERTICA Pole.

4.2. Appropriate existing foundation

In case there is an existing foundation suitable for the purpose, equipped with an electrical connection, meeting the legal and construction requirements, it is possible to install Enelion VERTICA Pole after ensuring that Enelion VERTICA Pole is properly attached to the foundation. It is recommended to apply M12 threaded rods.

4.2.1. Preparation of the existing foundation

1. Drill holes for chemical anchor bolting in the foundation in accordance with the instructions of the manufacturer of the applied bolting. Install the anchors in a square of 120 mm x 120 mm. The cables must fit into the cable grommets of Enelion VERTICA Pole.

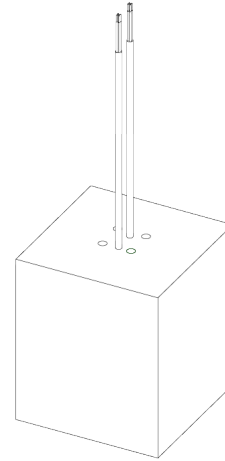


Fig. 25: Drilled holes for chemical anchor bolting.

2. Install chemical anchor bolting in accordance with the instructions of the manufacturer. The minimum anchorage depth is 110 mm. The installation should result in the ends of the threaded rods protruding 40 mm to 60 mm above the foundation surface.

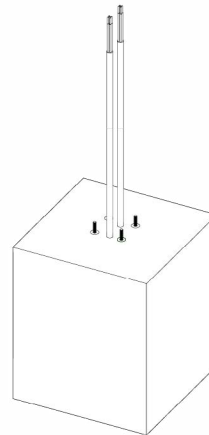


Fig. 26: Properly constructed foundation with the use of anchors.

After preparing the anchors according to the instructions, the installation of Enelion VERTICA Pole may proceed.

4.3. Enelion foundation set

The Enelion foundation set enables the construction of a foundation suitable for the installation of the Enelion VERTICA Pole. To construct the foundation correctly, the Enelion foundation set needs to be set in concrete in the excavation.

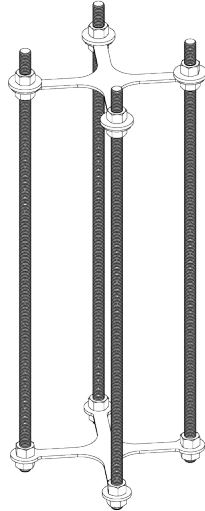


Fig. 27: Enelion foundation set.

The foundation preparation set consists of:

- 4 x threaded rods,
- 2 x base plates,
- 8 x washers,
- 20 x M12 nuts.

4.3.1. Construction of the foundation using the Enelion foundation set

1. Make a trench in the substrate with dimensions of 250 mm x 600 mm (diameter x depth) or 250 mm x 250 mm x 600 mm (width x length x depth). Compact the soil directly under the foundation to the compaction index of at least 0.97.
2. Assemble the Enelion foundation set as shown. The upper base plate should be 40 mm to 60 mm from the end of the threaded stud.

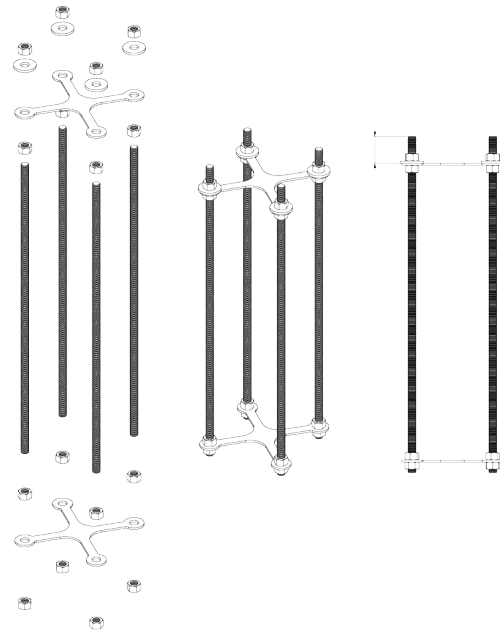


Fig. 28: Guidelines for the installation of the Enelion foundation set.

3. Place the assembled Enelion foundation set in the trench. Run the power cables above the surface to a height of about 800 mm. Fix the foundation set Enelion VERTICALLY so that the ends of the threaded rods protrude 45 mm to 65 mm above the intended foundation surface. The upper base plate should be above the intended foundation surface and be level so that it can be removed once the concrete has cured.

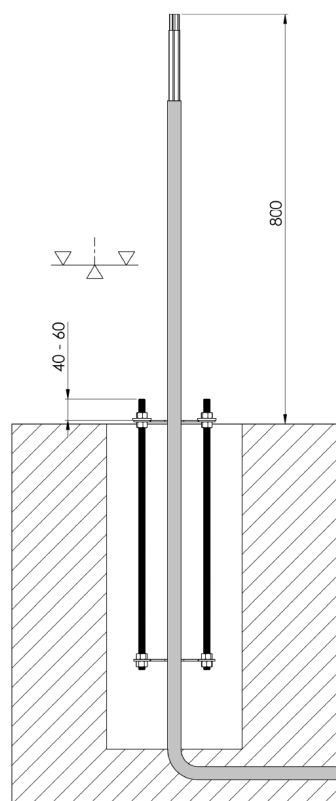


Fig. 29: Diagram of placing the foundation set in the excavation

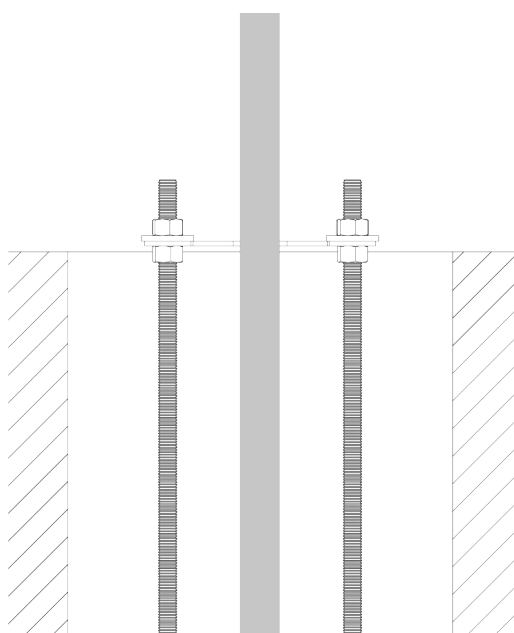


Fig. 30: Details of placing the upper base plate in the excavation

4. Put concrete B25 (C20/25) in the foundation.

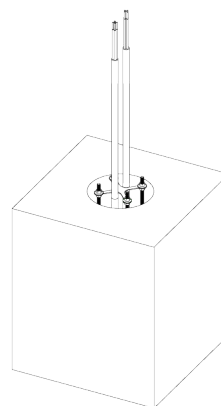


Fig. 31: Foundation set correctly placed in the excavation

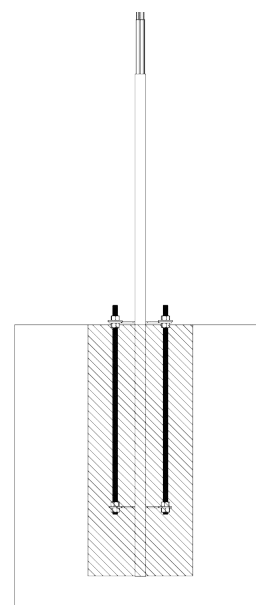


Fig. 32: Cross-section of the foundation set cast in the concrete

5. Once the concrete has cured, unscrew the M12 nuts, remove the washers and the upper base plate. The washers and nuts will be needed later to affix Enelion VERTICA Pole.

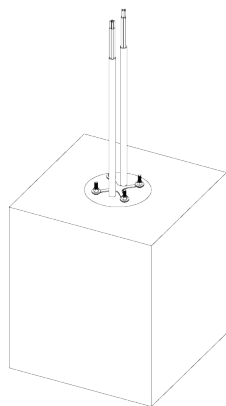


Fig. 33: Correctly cast foundation set.

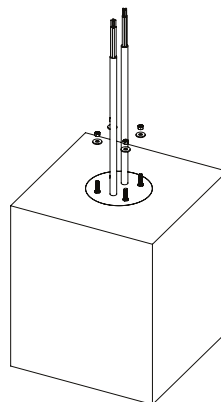


Fig. 35: Screwing nuts and spacer washers onto protruding rods.

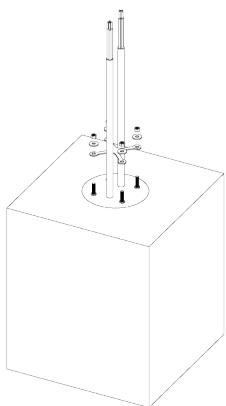


Fig. 34: Removing of the upper base plate from the foundation set.

6. Secure the bolts partly protruding from the concrete with bituminous mass (do not cover the thread).

The foundation prepared in accordance with the above instructions is ready for Vetrlica Pole to be mounted.

5. Installation of Enelion VERTICA Pole

! WARNING

Before proceeding with the installation, disconnect the power supply from the power cables.

! WARNING

Before proceeding with the installation, prepare the products according to the instructions regarding the accessories.

5.1. Preparation for installation

1. Place the packed Enelion VERTICA Pole horizontally, as indicated on the packaging. Cut the package along the marked line. Take the device out of the cardboard box, remove the foam protection and place the device Enelion VERTICALLY in the correct position.
2. The foam protections contain useful accessories that are necessary for mounting the device. The accessories should be collected before disposing of the packaging:
 - Torx Security T25 bit.
3. Open Enelion VERTICA Pole as instructed in section 2.2.1 Opening and closing of the device
4. The lower masking panels should be slid up on both sides of Enelion VERTICA Pole and put away where they will not be at risk of damage. When being pulled out, the panel should always be in a plane parallel to Enelion VERTICA Pole, until they are completely pulled out from the guide slots.

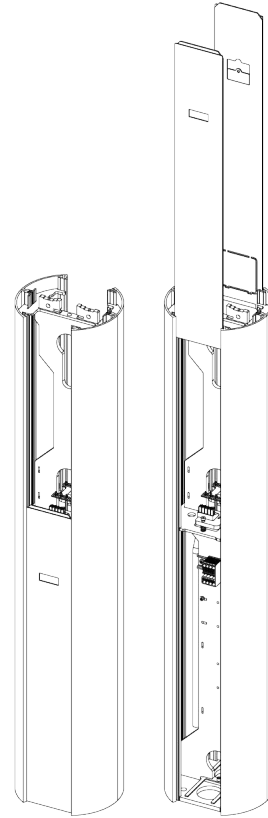


Fig. 36: Sliding the lower masking panels out of the Enelion VERTICA Pole.

Enelion VERTICA Pole is mounted to the ground with 4 M12 nuts screwed onto the previously prepared threaded rods. We recommend the installation on a previously leveled surface. If it is necessary to adjust the Enelion VERTICAL position of the device, it is permissible to install additional M12 nuts or washers on the bolts, before mounting Enelion VERTICA Pole. In such a case, however, one should ensure that the space between the foundation surface and the bottom of Enelion VERTICA Pole is filled.

1. Route the power cables as shown in the figure. Mount Enelion VERTICA Pole on the prepared foundation.
2. Screw the Enelion VERTICA Column to the foundation using 4 pieces of M12 nuts and washers, with a torque within the range of 40 Nm-45 Nm. Protect the nuts, washers, and the remaining M12 bolt with a thin layer of technical grease.

Enelion VERTICA Pole installed in this way can be equipped with accessories and can be connected to the electricity network.

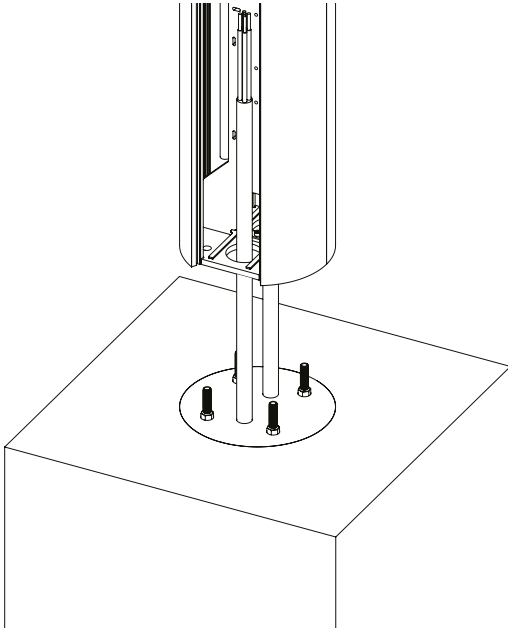


Fig. 37: Mounting Enelion VERTICA Pole on the foundation.

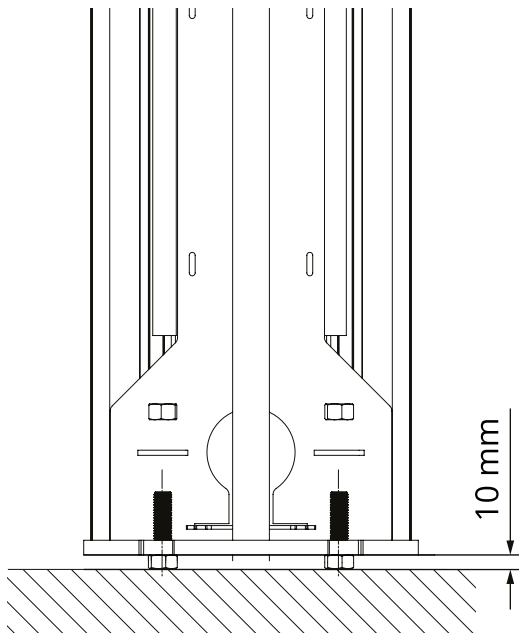


Fig. 38: Cross-section through the base of the Enelion VERTICA Pole during assembly.

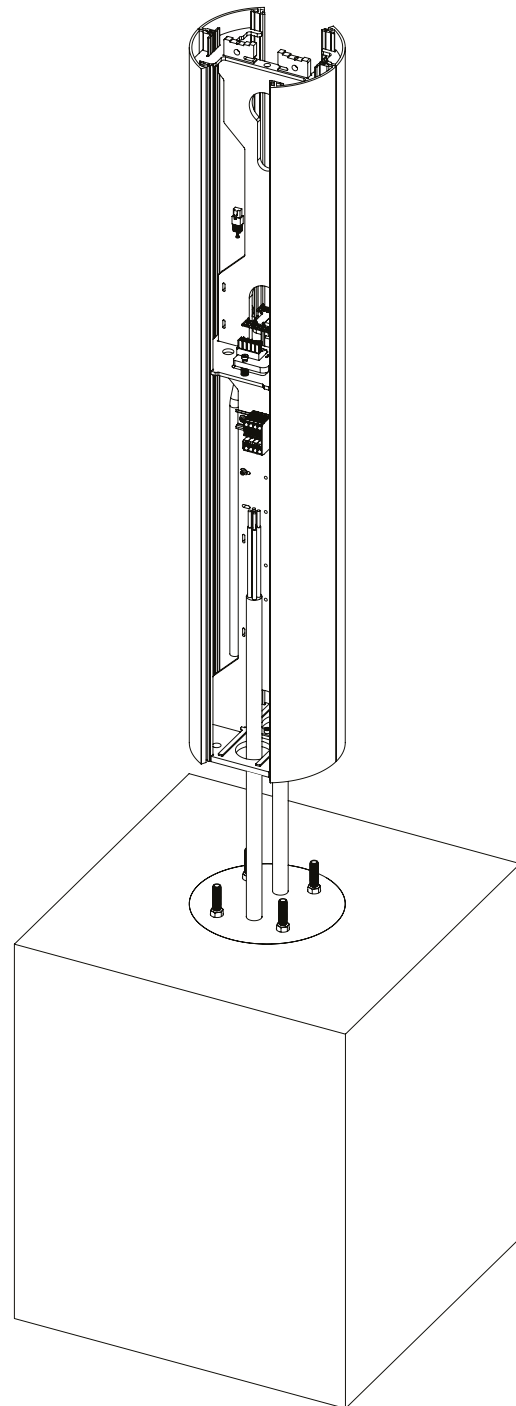


Fig. 39: Mounted and bolted Enelion VERTICA Pole.

5.1.1. Standard connection

The connection may be performed based on the markings on the packaging label of the Enelion VERTICA Module intended for this Enelion VERTICA Pole socket. An example marking specifying the connection of phases in the default order (L3, L2, L1, N) on the label is shown below.

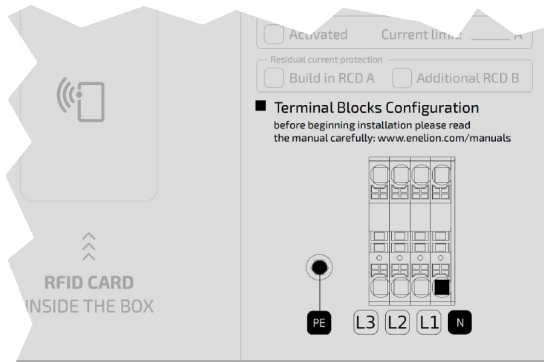


Fig. 40: Sample part of a product label

1. A sample connection is as follows.

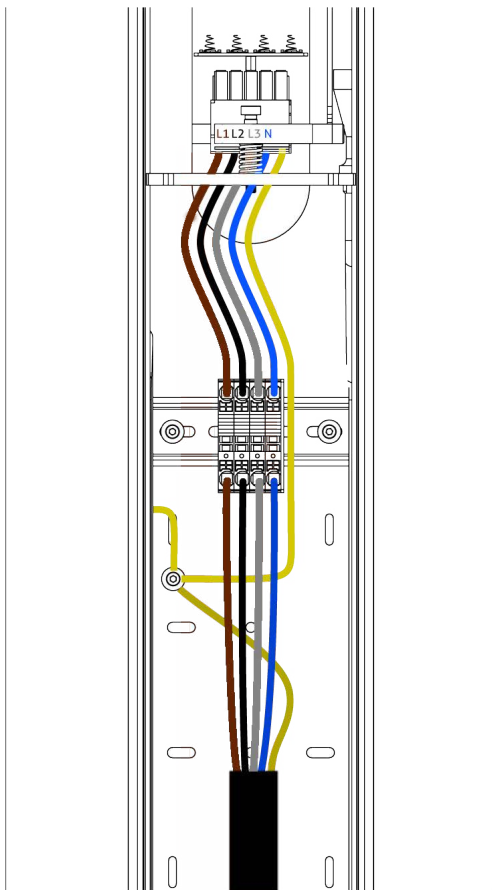


Fig. 41: Example Enelion VERTICA Pole connection.

2. A similar connection may be made on the opposite side of Enelion VERTICA Pole.

! WARNING

The PE protective conductor absolutely must be connected to one common point on one selected side of the Enelion VERTICA Pole!

💡 HINT

The colors of the wires in Enelion VERTICA Pole may not match the colors of the power cables maintaining, however, the guidelines on the Enelion VERTICA Module label. This is a correct and expected situation.

5.1.2. Enelion MID Add-on

Enelion MID, which is an additional certified electricity meter, is installed individually for each of the Enelion VERTICA Modules.

💡 HINT

Keep the clamp connection from the neutral conductor equipped with the side hole plug, in case Enelion Enelion VERTICA Splitter will be installed at a later time.

1. Disconnect the power cables from the clamp connectors by pressing the orange release holds and pulling the wires. Then dismantle all clamp connections.

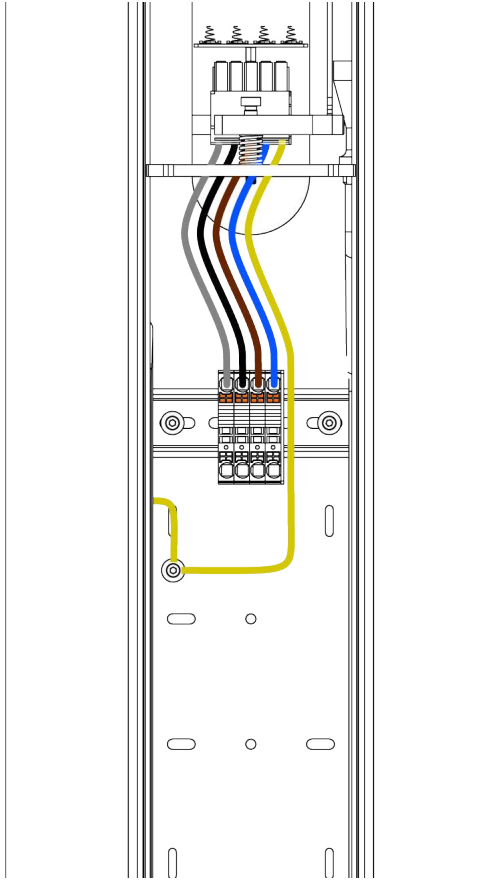


Fig. 42: Standard connection of Enelion VERTICA Pole.

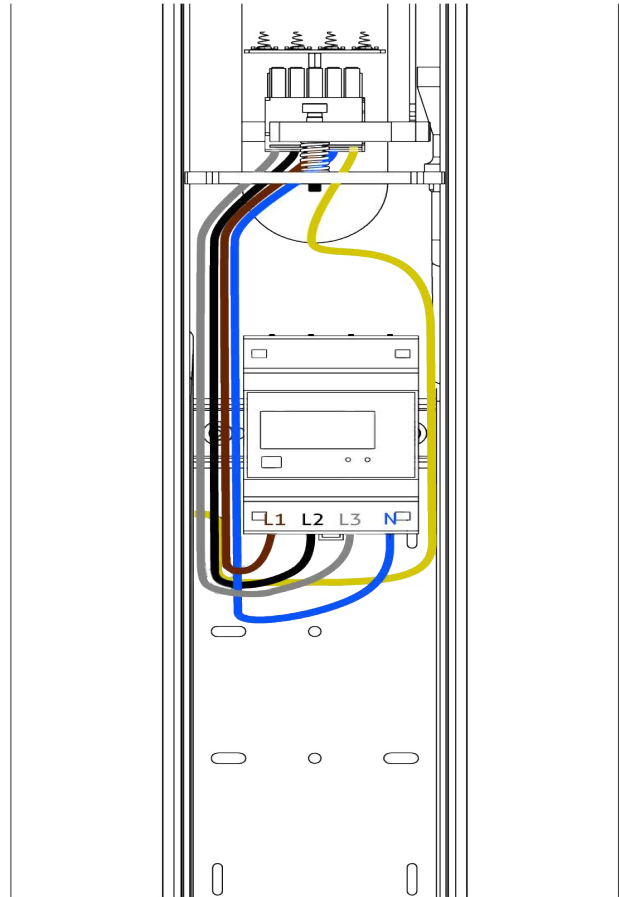


Fig. 43: MID meter fitted in Enelion VERTICA Pole.

2. Mount Enelion MID on the free DIN3 rail and connect the phase conductors and the neutral one to the meter terminals, in accordance with the markings on the applied meter.
3. In the case of a Enelion VERTICA pole equipped with a Enelion VERTICAN module, connect two signal wires to the socket located on the PCB plate mounted in the Enelion VERTICA Pole. Connect the red wire to the ,A+' port, and the green wire to the ,B-' port - see Figure 44.
4. In the case of a Enelion VERTICA pole equipped with a Enelion VERTICA link module, connect two signal wires to the rail connectors located on the top DIN rail (on the right side). Connect the red wire to the connector labeled ,A+' (to which the red wire is already connected), and the green wire to the connector labeled ,B-' (to which the green wire is already connected) - see Figure 48.

⚠ WARNING

The presented connection is exemplary. Before installation, check the markings on the mounted meter.

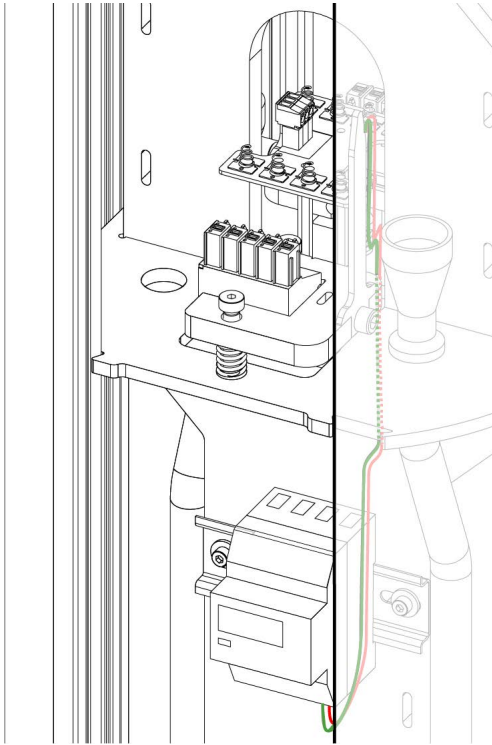


Fig. 44: Routing the MID meter signal cables.

5. The basis for the connection are the markings on the packaging label of the Enelion VERTICA module, intended for this socket of Enelion VERTICA Pole, which should be interpreted in accordance with the attached diagram.

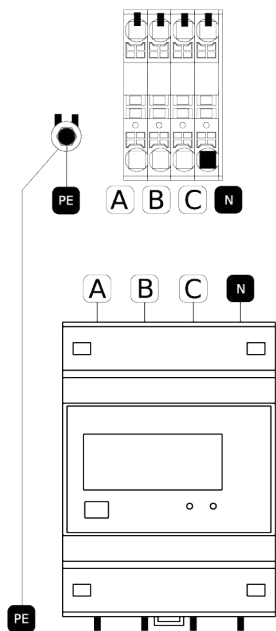


Fig. 45: Diagram of the relationship between standard connection and the one using a MID meter.

6. An example connection is as follows.

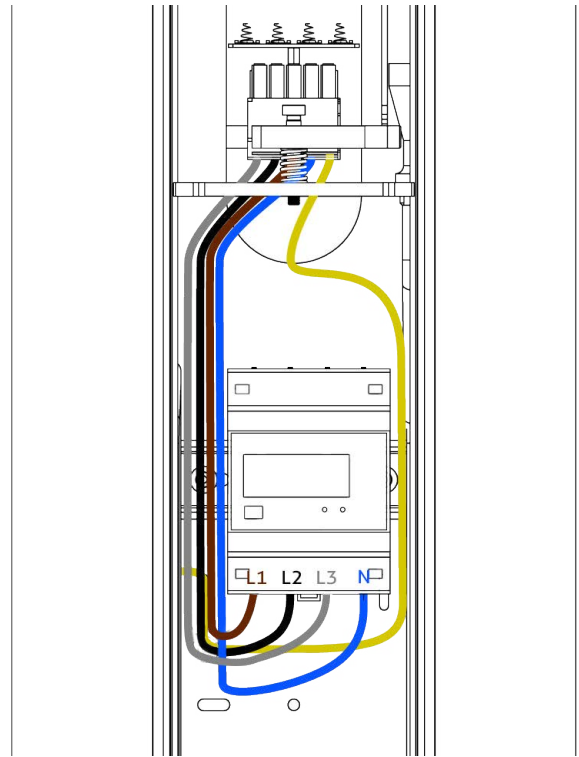


Fig. 46: Example of Enelion VERTICA Pole connection with the use of MID meter.

⚠ WARNING

The presented connection is exemplary. Before installation, check the markings on the mounted meter.

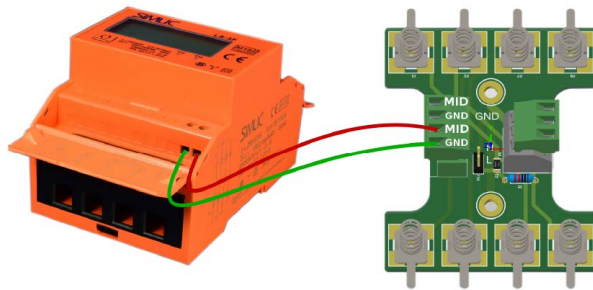


Fig. 47: Wiring diagram for MID meter communication wires for a Enelion VERTICA pole equipped with a Enelion VERTICAN module.

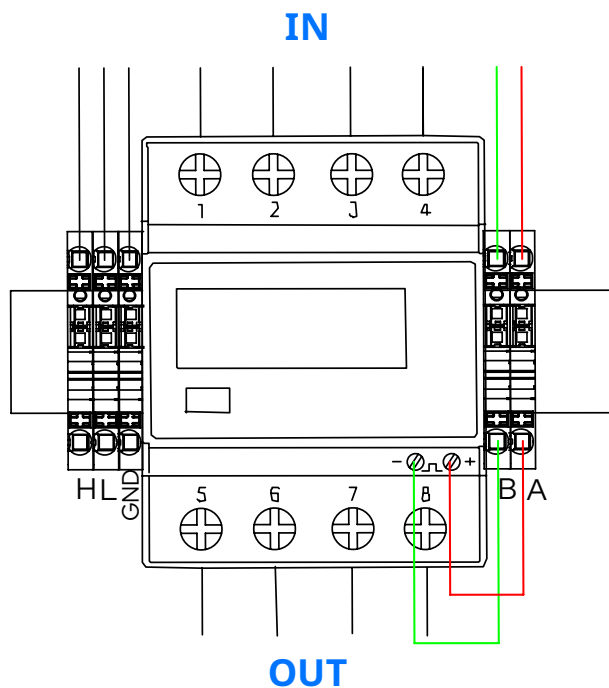


Fig. 48: Wiring diagram for MID meter communication wires for a Enelion VERTICA pole equipped with a Enelion VERTICA link module.

INFO

After correct connection, the charging station will recognize the presence of the meter and start charging energy on its basis.

HINT

In case of two MID meters in the Enelion VERTICA pole, the second one should be connected correspondingly, to the other two pins.

HINT

The colors of the wires in Enelion VERTICA Pole may not match the colors of the power cables maintaining, however, the guidelines on the Enelion VERTICA Module label. This is a correct and expected situation.

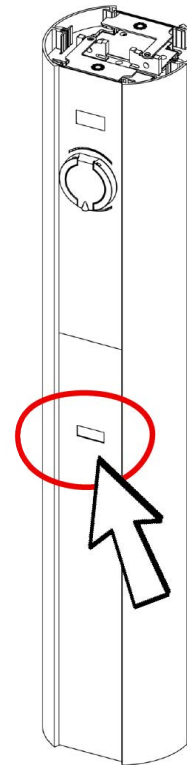


Fig. 49: Location of a MID meter window.

5.1.3. Supplement - an accessory enabling ENELION VERTICA to operate at a temperature of -35°C

Heating system with a power of 100 W enables stable operation of the ENELION VERTICA charger at temperatures down to -35°C. It is installed within the ENELION VERTICA POLE column and is not sold as a separate accessory.

Setting the thermostat to 12.5°C ensures proper functioning at temperatures down to -35°C and initiates heating if the temperature at the station drops below 0°C.

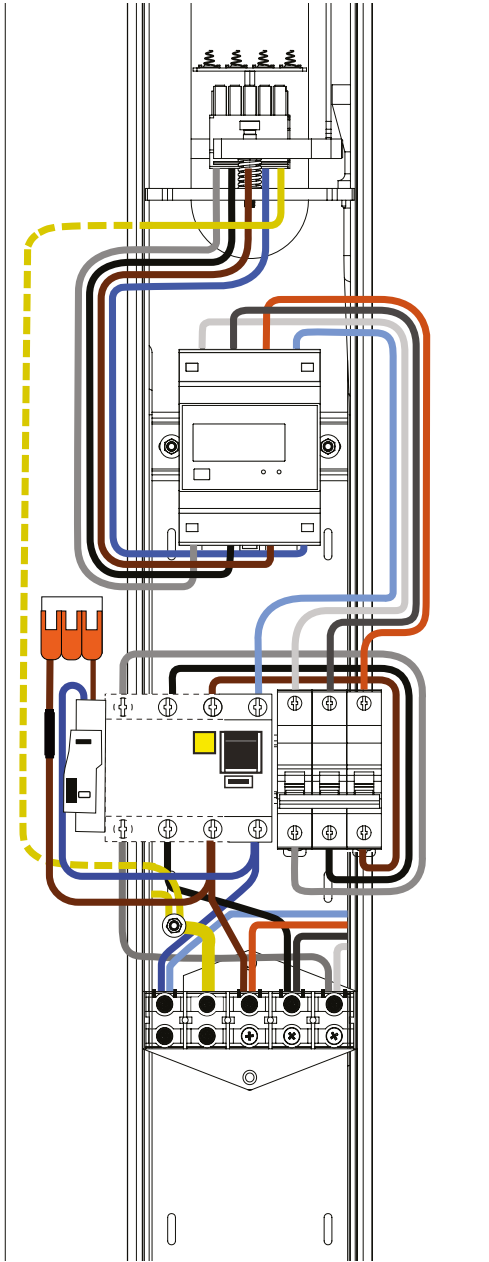


Fig. 50: Connecting the heating system in the ENELION VERTICA station

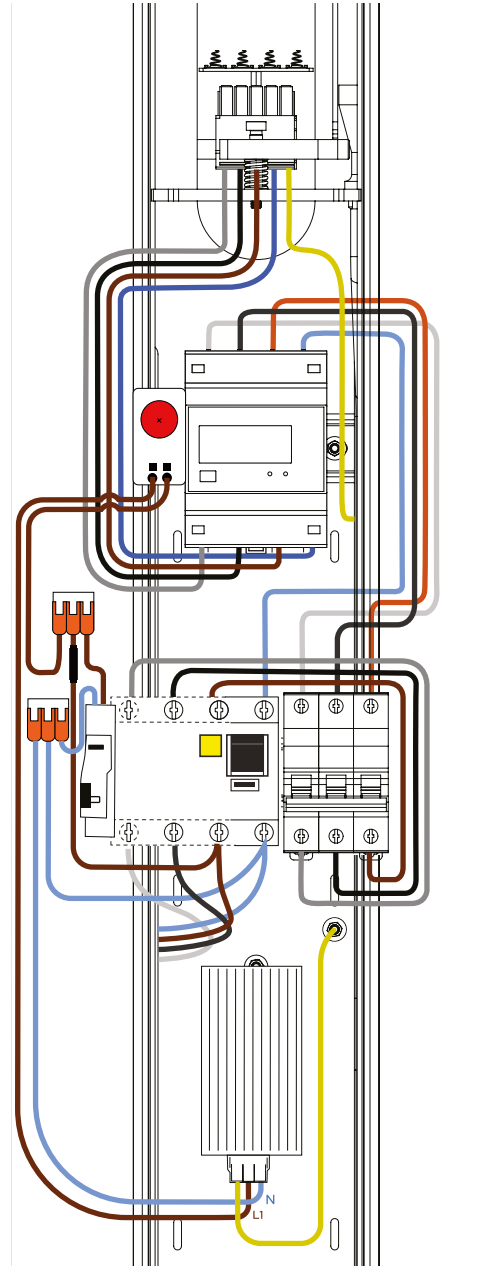


Fig. 51: Connecting the heating system in the ENELION VERTICA station on the opposite side of the pole.

⚠ WARNING

During the initial startup at a temperature of -35°C , the heating system requires 2 hours for the temperature inside the Enelion Vertica station to rise to -25°C , which is the safe operating temperature for the components inside the Enelion Vertica charger.

Parameters of heating system	
Power [W]	100
Max operating voltage [V]	AC 250
Operating frequency [Hz]	50-60
Operating temperature [°C]	-45 - 70
Lifespan [number of cycles]	100 000
Switching hysteresis [°C]	7 (+/-4)

5.2. Internet connection via Ethernet interface in the LAN

To ensure internet connection to a charger equipped with an Enelion Bridge module via the Ethernet interface:

1. Insert the Ethernet patchcord into the device through the gland for communication cables.
2. End the cable with the RJ45 connector according to the TIA-568A/B do 100BaseT.
3. Connect the above mentioned Ethernet cable to the WAN/INTERNET Enelion Bridge module marked with number 2.

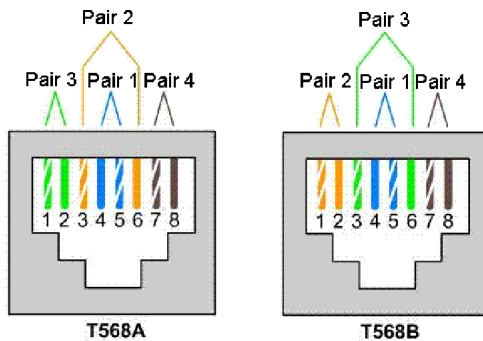


Fig. 52: Ending the Ethernet Patchcord according to TIA-568A/B do 100BaseT



Fig. 53: Short RJ45WK connector.

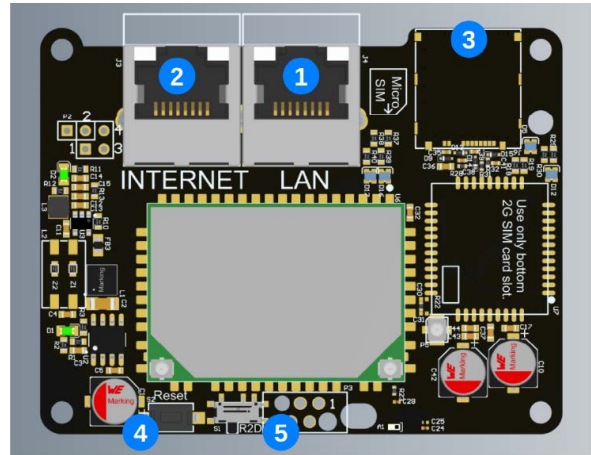


Fig. 54: The Enelion Bridge module

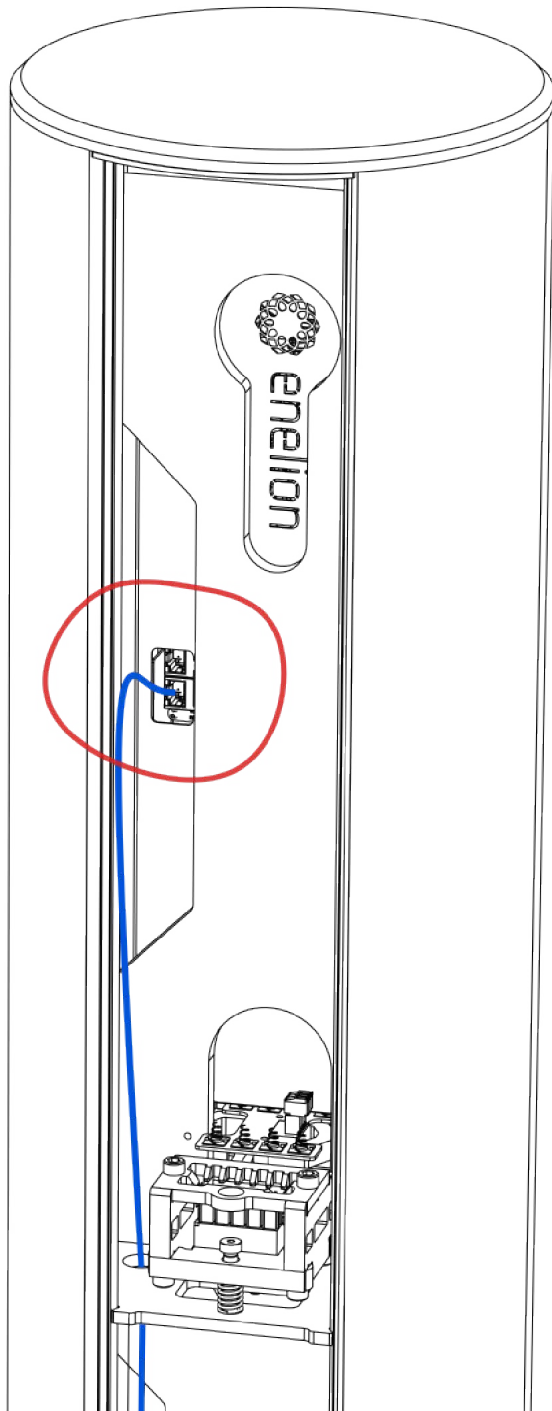


Fig. 55: Cable routed to the Ethernet socket.

5.2.1. Enelion Chain Add-on

ENELION CHAIN network is based on a serial, wired CAN bus. For installation, it's recommended to use CAT5e or better network cable with copper wires, not CCA - Copper Clad Aluminium. Communication

utilizes one twisted pair of wires and the wire shield. Select one pair of wires (color) and consistently use it throughout the installation. The wire shield should be connected only at one end of each network section, as shown in the sample diagram (see Fig. 57).

Depending on the device, the connection to the ENELION CHAIN network can be established in various ways.

1. Prepare communication cables

- For an ENELION VERTICA pole equipped with an ENELION VERTICAN module, secure the cables in the screw terminal connector (winder) according to the markings on the ENELION VERTICAN base plate (see Fig. 56)
- For an ENELION VERTICA pole equipped with an ENELION VERTICA link module, connect the cables to the rail connectors located on the upper DIN rail (on the right, left side) according to the markings (see Fig. 57).

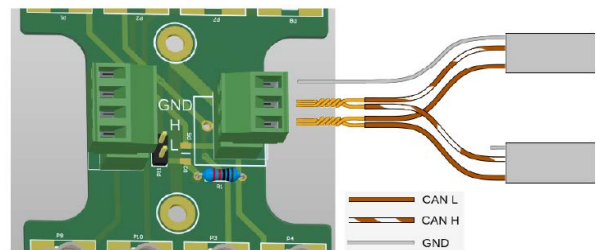


Fig. 56: Connecting communication cables to the Enelion VERTICAN board (for the Enelion VERTICA pole equipped with a Enelion VERTICAN module).

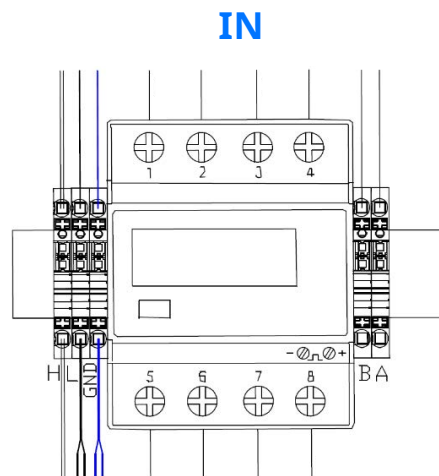


Fig. 57: Connection of communication cables (for the Enelion VERTICA pole equipped with the Enelion VERTICA link module).

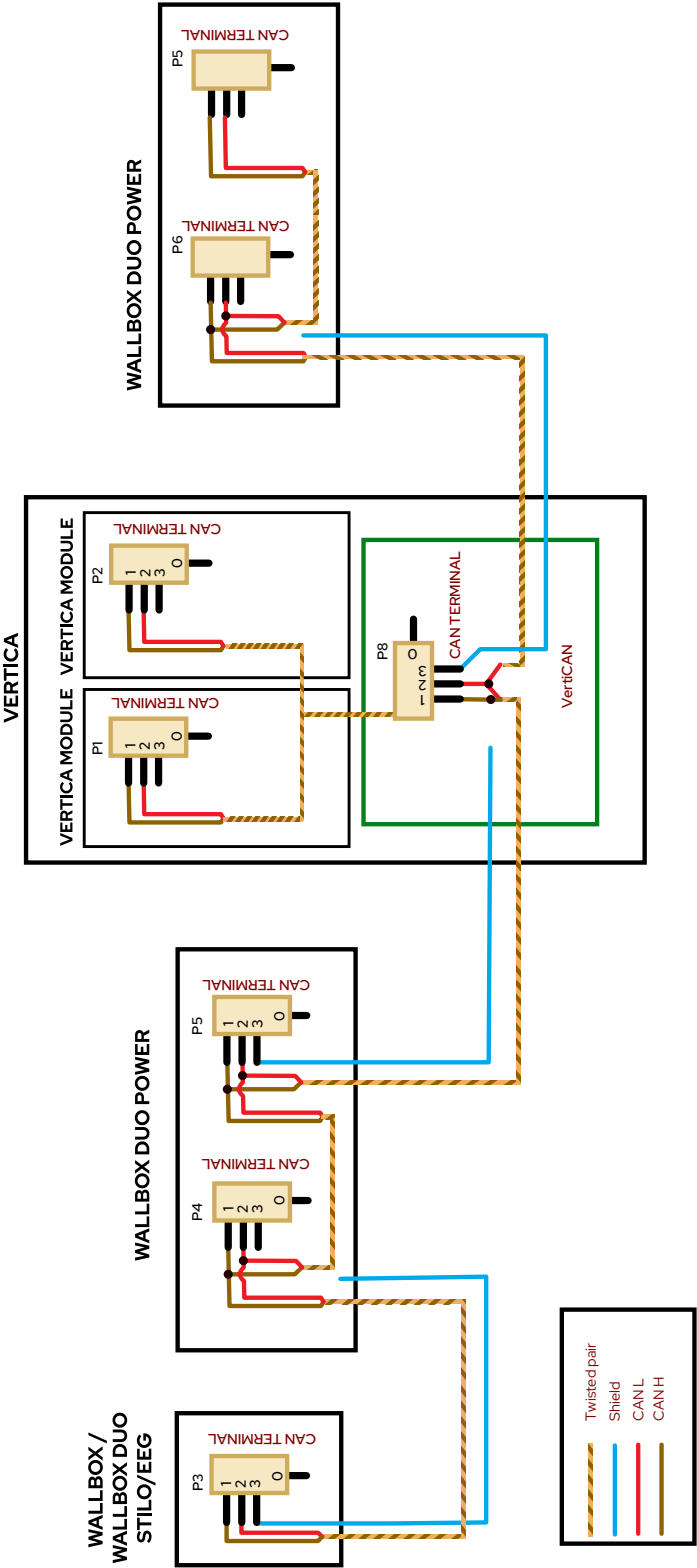


Fig. 58: The ends of the bus must be terminated with a 120 Ohm resistor; to achieve this, termination should be enabled on the PCBs of devices at the network edge.

1. Termination should be applied to devices at the beginning and end of the network.
 - For the VERTICAN variant, termination is achieved by placing the provided jumper (refer to Fig. 60) on the pins according to the enclosed diagram (see Fig. 61).
 - For the VERTICA Link variant (see Fig. 63), termination is accomplished by switching the slide switch to the left, to the "ON" position

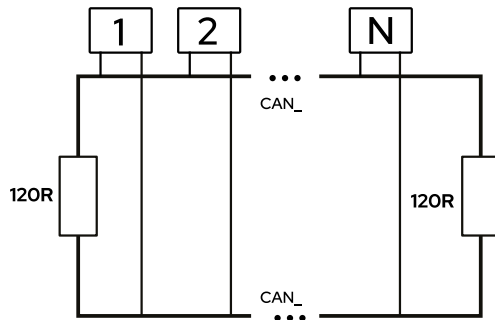


Fig. 59: Termination scheme of the communication bus.



Fig. 60: Provided jumper.

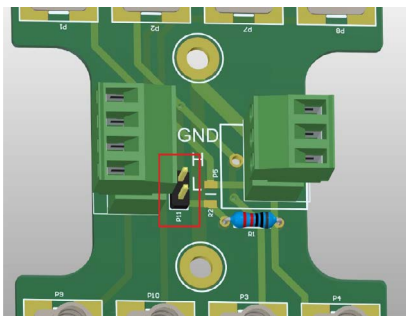


Fig. 61: Place for the jumper.

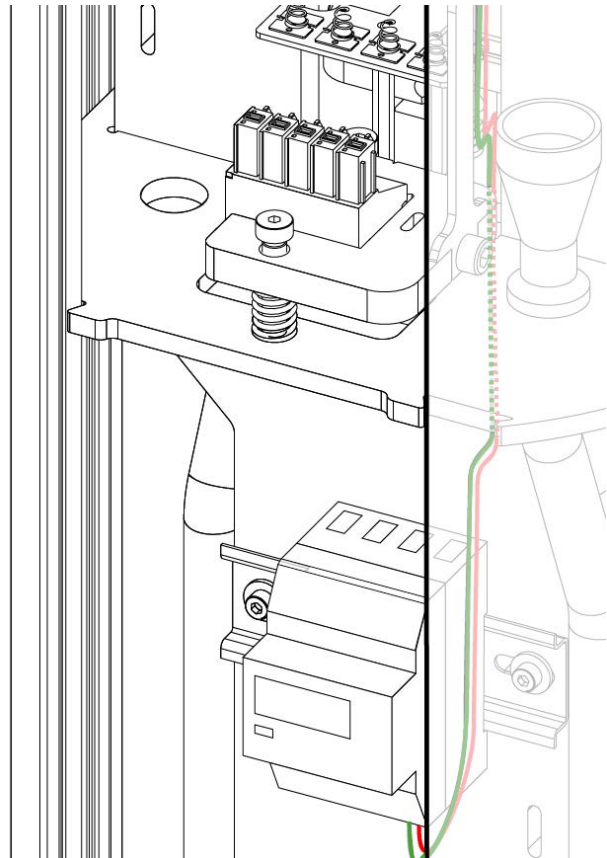


Fig. 62: Marking place in the pole for Enelion VERTICAN.



Fig. 63: CAN bus termination switch on the Enelion-VERTICA link module. To enable termination, set the switch to the "ON" position.

! WARNING

It should be noted that in the case of a single ENELION VERTICA pole with two modules, a short CAN network is created. In such a situation, termination is required on the ENELION VERTICAN board, or at least one ENELION VERTICA link module.

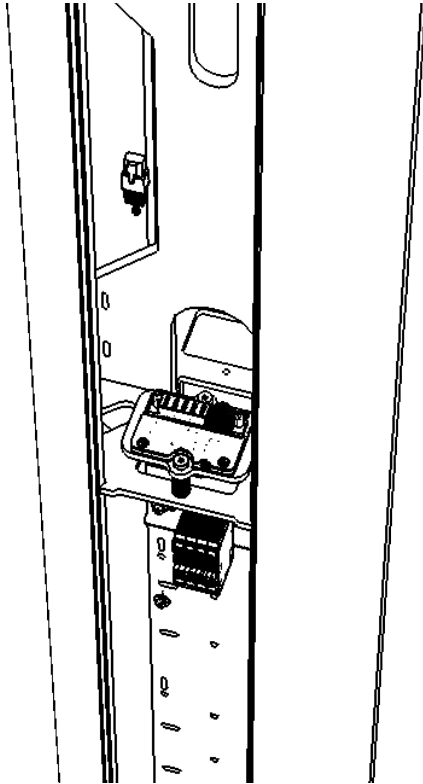


Fig. 64: Lokalizacja ENELION VERTICA link na słupie.

5.2.2. Add-on - Enelion VERTICA Splitter with an additional meter and residual current protection

If power is supplied to the charging station using a single cable, it is necessary to use a safe Enelion-provided branching. It includes a connection terminal, overcurrent protection, and residual current protection. The instructions below apply to the situation where the Enelion MID add-on has already been installed.

Only copper cables can be used with Enelion VERTICA Splitter terminals.

When using the Enelion VERTICA Splitter, follow the presented diagram.

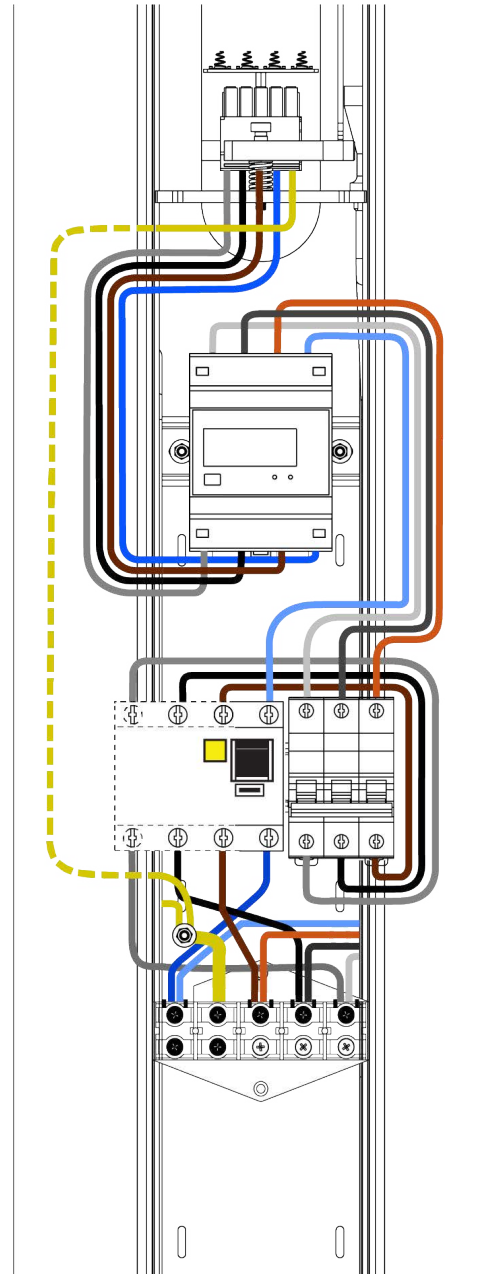


Fig. 65: Obverse of the Enelion VERTICA Pole after mounting the Enelion VERTICA Splitter with the MID meter present.

⚠ WARNING

The presented connection is exemplary. Before installation, check the markings on the mounted meter.

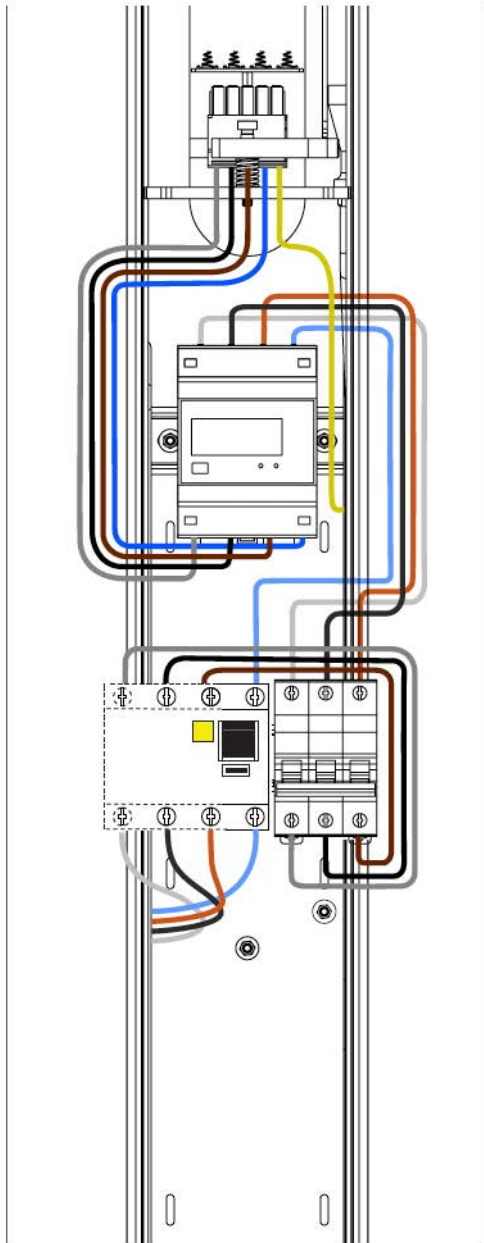


Fig. 66: Reverse of the Enelion VERTICA Pole after mounting the Enelion VERTICA Splitter with the MID meter present.

INFO

It is permissible to install the protections in a different orientation and/or using other mounting points as long as the connections are consistent with the presented diagram.

5.3. Installation of Enelion VERTICA bottom maskingpanels

Enelion VERTICA bottom filler panels cover the lower part of Enelion VERTICA Pole, while providing the ability to read the optional Enelion MID meters.

The bottom filler panels should be raised above the Enelion VERTICA Pole, then inserted into the guides and lowered until the panels rest on the springs located at the bottom of Enelion VERTICA Pole.

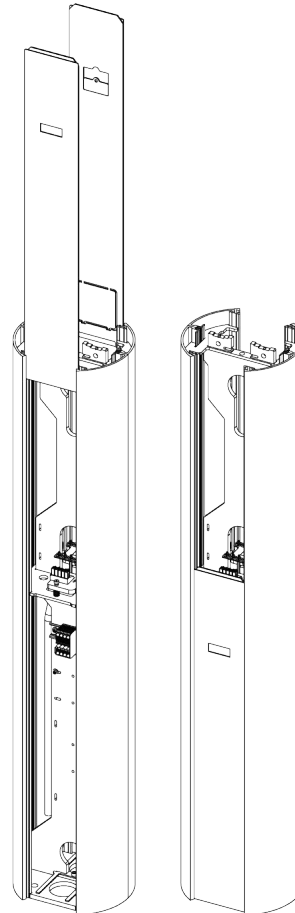


Fig. 67: Reverse of the Enelion VERTICA Pole after mounting the Enelion VERTICA Splitter with the MID meter present.

6. Installation of the Enelion VERTICA Module

❗ INFO

If you are building an advanced charging station system using the Enelion Chain and Enelion Bridge systems, please contact the Enelion support department. Contact information is available at <http://enelion.com/en/help/>.

6.1. Preparation for installation of the Enelion VERTICA Module with socket

1. Place the packed Enelion VERTICA Module with its socket in a horizontal position, as indicated on the package. Cut the package along the marked line. Take the device out of the cardboard box, remove the foam protection and place the device horizontally with the front facing up.
2. The key accessories required to start the device are placed in the foam protections. The accessories should be collected before disposing of the packaging:
 - RFID configuration card.

❗ WARNING

The attached configuration card is intended only for the Charging module to which it was attached. It contains device configuration parameters, recorded in accordance with customer requirements. If the card is lost or damaged, please contact your vendor.

💡 HINT

The label on the Enelion VERTICA Module packaging provides key information regarding electrical connection. Save the packaging or copy information on the packaging before disposing of the packaging.

❗ INFO

The prepared Enelion VERTICA module can be equipped with accessories or installed in the basic version.

6.2. Preparation for installation of the Enelion VERTICA Module with a cable

The Enelion VERTICA module with a cable is delivered individually in a package.

1. Place the packed Enelion VERTICA Module with the cable in a horizontal position as indicated on the package. Cut the package along the marked line. Leave the charging cord in the cardboard intact.
2. Carefully remove the Enelion VERTICA Module with regard to the weight of the charging cable.
3. Remove the cardboard partition that divides the packaging.
4. Remove the charging cable.
5. Take the device out of the cardboard box, remove the foam protection and place the device horizontally with the front facing up.
6. The key accessories required to activate the device are placed in the foam protection. The accessories should be collected before disposing of the packaging:
 - RFID configuration card.

❗ WARNING

Enelion VERTICA modules equipped with Enelion VERTICA link are compatible exclusively with Enelion VERTICA poles equipped with Enelion VERTICA link modules!
Enelion VERTICA modules equipped with Enelion VERTICAN are compatible exclusively with Enelion VERTICA poles equipped with Enelion VERTICAN modules!

(To distinguish between the modules, see pages 10-11)

6.3. Installation of accessories

HINT

Some steps for installing add-ons are common. When installing multiple add-ons, consult their installation instructions before starting the installation.

6.3.1. Enelion Bridge

Enelion Bridge is mounted in one selected Enelion

! WARNING

Bridge modules with firmware version 3.0.0 and newer don't support GSM 2G. To connect the charger to Interhet using GSM network you need to install LTE module, sold separately.

VERTICA Module. Thanks to the integrated Enelion Chain connection within the Enelion VERTICA Pole, the Smart and Online functions are available for both Enelion VERTICA Modules. The installation of Enelion Bridge is identical for the module with a cable and with a socket.

1. Place the equipped Enelion VERTICA Module on a stable and flat surface with the front facing down. In the case of the Enelion VERTICA Module with a cable, the fact of the device having larger dimensions should be taken into account during its installation. Unscrew the four marked screws with a PH1 screwdriver. Next, remove the rear cover of the Enelion VERTICA Module.
2. Install Enelion Bridge in accordance with the markings on the charging controller, fastening it with the three present clasp locks.
3. Use the enclosed mounting tape to mount the antennas set on the plastic surface under the charging controller.
4. Remove the plugs for Enelion Bridge service openings from the rear cover. Reinstall the Enelion VERTICA Module back cover and fix it with the original screws.

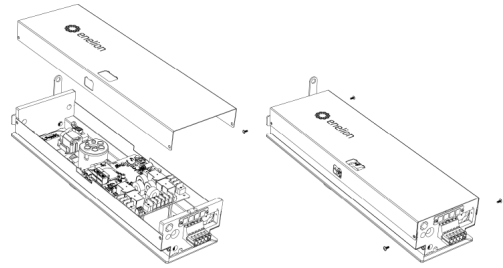


Fig. 68: Opening the Enelion VERTICA Module.

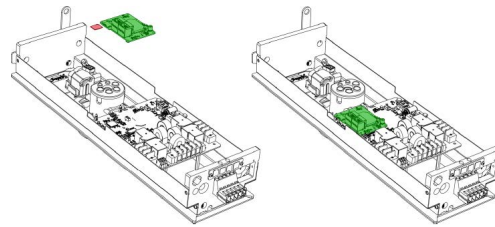


Fig. 69: Installing Enelion Bridge in the Enelion VERTICA Module.

! WARNING

Pay particular attention to the orientation of Enelion Bridge. The Ethernet ports must line up with the opening on the back cover of the module.

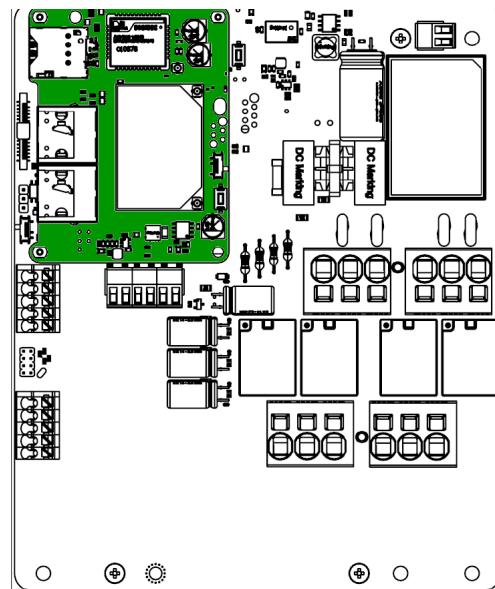


Fig. 70: Enelion Bridge attached to the Enelion VERTICA Module.

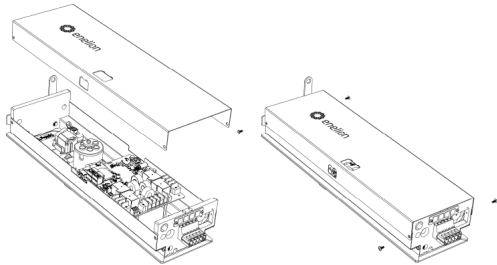


Fig. 71: Closing the Enelion VERTICA Module.

⚠ WARNING

To get the full range of functions offered by Enelion Bridge, it needs to be configured. „User Manual“ contains instructions on this subject. The device will not use any additional functions without the configuration!

ℹ INFO

It is good practice to mark the Enelion VERTICA Module equipped with Enelion Bridge. When installing in the Enelion VERTICA Pole and connecting the internet connection via Ethernet, it is necessary to install this module first.

6.3.2. Enelion RCMB

Enelion RCM B should be installed in each Enelion VERTICA Module where additional protection against electric shock (6 mA DC) is to be provided.

ℹ INFO

Before installing Enelion RCMB, make sure that the information label on the package contains information about the startup configuration of the installed add-on. Otherwise, despite the installation of Enelion RCM B, the Enelion VERTICA Module will not respond to its presence.

1. Place the equipped Enelion VERTICA Module on a stable and flat surface with the front facing down. In the case of the Enelion VERTICA Module with a cable, the fact of the device having larger dimensions should be taken into account during its installation. Unscrew the four marked screws with a PH1 screwdriver. Next, remove the rear

cover of the Enelion VERTICA Module.

2. Loosen the 4 screws marked with a PH1 screwdriver, then remove the rear cover of the Enelion VERTICA Module.
3. Disconnect the 4 wires marked N, L1, L2, L3 from the power connector. Use a PZ2 screwdriver to do this.
4. Plug the sensor connector in the socket on the charging controller labeled “P19 P20” placed on its left side.
5. Reinstall the Enelion VERTICA Module rear cover and reattach it with the original screws.

After entering the device configuration, Enelion RCMB will continue to function while the device is in use.

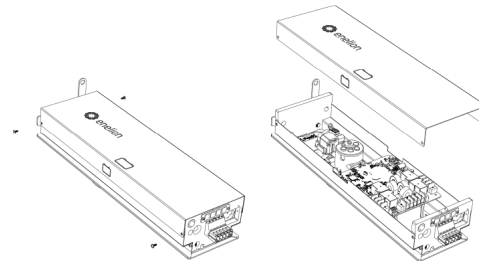


Fig. 72: Opening the Enelion VERTICA Module.

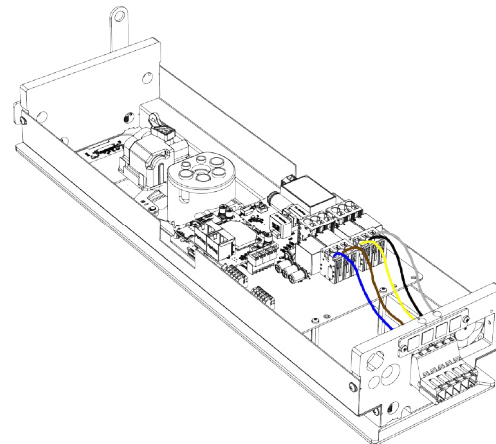


Fig. 73: The charging controller power connector on the Enelion VERTICA Module.

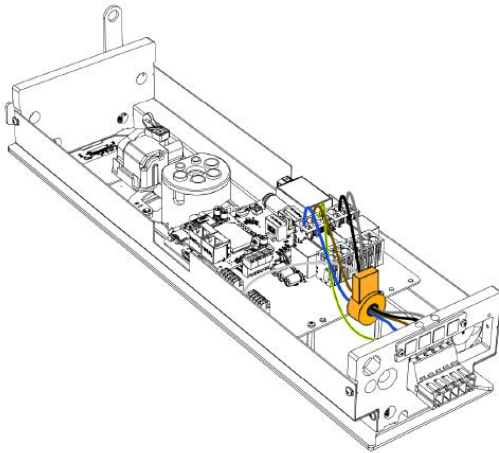


Fig. 74: Enelion VERTICA module during installation of Enelion RCMB.

HINT

The direction of cables going through the RCMB hole does not matter. The RCMB monitor can be freely assembled on the socket cables or on the main income cables.

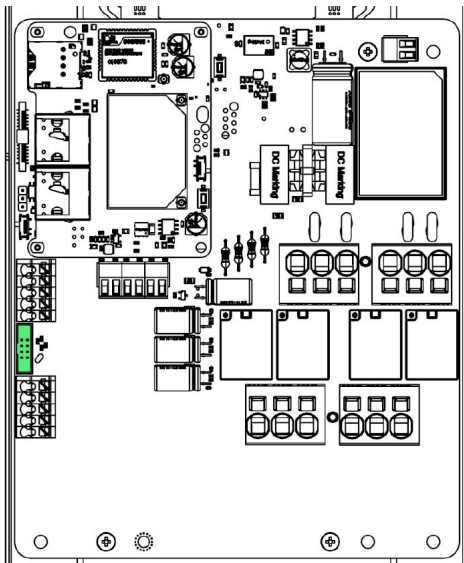


Fig. 75: Communication connector of the Enelion RCMB add-on.

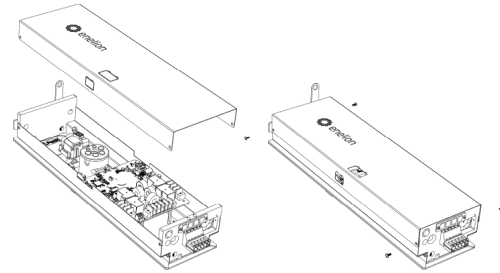


Fig. 76: Closing the Enelion VERTICA Module with RCMB.

After introducing the device configuration, Enelion RCMB will function during the device's operation.

6.3.3. Enelion Modul LTE

Enelion LTE module is mounted in the same module as Enelion Bridge. As with the Bridge module, thanks to the integrated Enelion Chain connection within the Enelion VERTICA Pole, the Online functions are available for both Enelion VERTICA Modules. The installation of Enelion Bridge is identical for the module with a cable and with a socket.

INFO

To the launch the LTE module, Enelion Bridge Module is required.

1. Place the equipped Enelion VERTICA Module on a stable and flat surface with the front facing down. Next, remove the rear cover of the Enelion VERTICA Module.

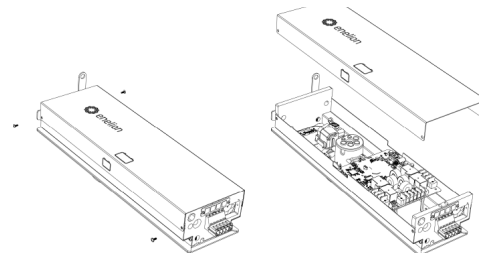


Fig. 77: Opening the Enelion VERTICA module.

2. Put LTE Module into a hole prepared in the upper side of the housing, according to the diagram below.

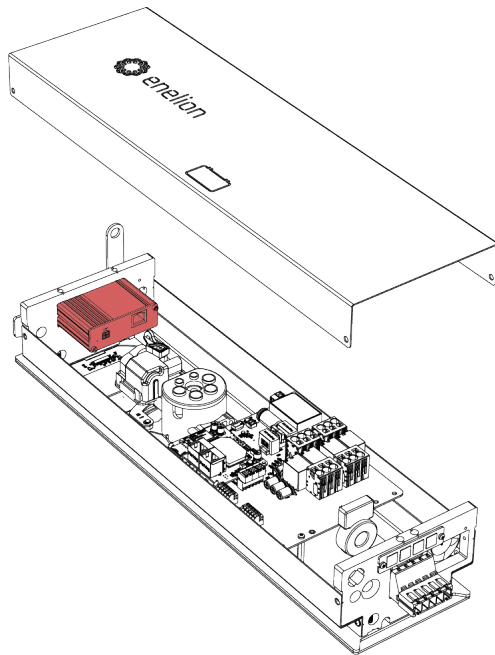


Fig. 78: Mounting the LTE module.

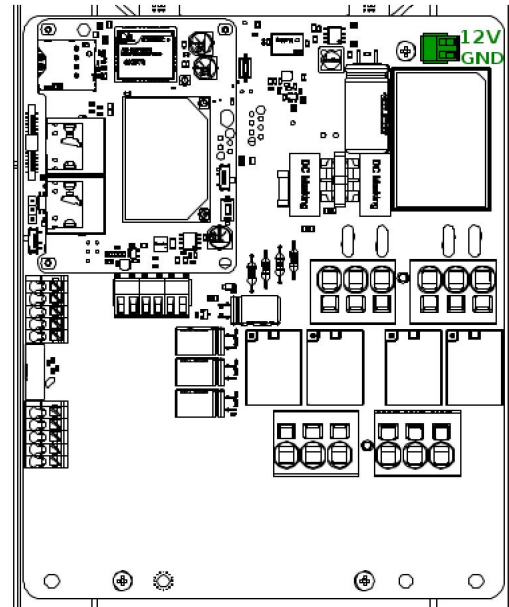


Fig. 79: Location of the power socket for LTE module power cable

ⓘ WARNING

Make sure that the plug is put in correct position.

3. Connect RJ45 patchcord.

ⓘ INFO

Make sure that the patchcord is connected to the proper RJ45 socket on the Bridge Module, labeled as „Internet“.

4. Connect the antenna cable. Guide the antenna cable through the dedicated hole and screw the SMA connector from the outside part of the Enelion VERTICA panel.

ⓘ INFO

The antenna should be placed on the dedicated pad to improve a magnetic connection.

5. Connect power cable of the LTE module to a dedicated socket on the main board.

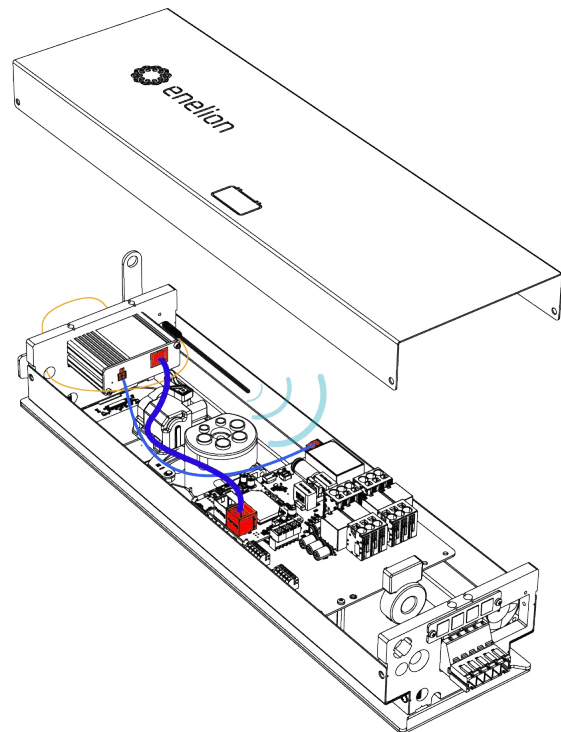


Fig. 80: Properly mounted LTE module.

6.4. Activation and use

After installing add-ons, Enelion VERTICA Modules should be mounted in the installed and connected Enelion VERTICA Pole.

1. Open the Enelion VERTICA Pole (if closed after installation) according to section **2.2.1 Opening and closing of the device**.
2. Install the Enelion VERTICA Modules according to section **2.3.3 Assembly and disassembly of Enelion VERTICA Modules**.

INFO

When connecting Enelion Bridge to the Internet via Ethernet, make the connection before installing the next Enelion VERTICA Module.

3. Close the Enelion VERTICA Pole.
4. Power up the Enelion VERTICA charging station.
5. Initialize the Enelion VERTICA Modules, if not configured, with the provided configuration cards.

HINT

Full information on the initialization and use of the device can be found in the "User Manual".

A charging station prepared in this way is ready for use.

UWAGA

Manufacturer recommends conducting equipment inspection every 12 months for safety and maintenance purposes. The inspection is not mandatory.

7. Maintenance

The device is designed to operate in temperatures from -35°C* to 55°C. The manufacturer does not guarantee the proper functioning of the charging station in temperatures outside the specified range. Chargers that are damaged because of exposure to temperatures below -25°C or above 55°C are not covered under the warranty. In case it is necessary to open the device, make sure that it is disconnected from the power source. With the device installed outdoors, make sure that there is no precipitation or strong wind.

WARNING

The device may only be opened by a qualified and authorized person.

7.1. Cleaning

The correct way to clean the charger is to wipe the housing with a microfiber cloth using a cleaning agent dedicated to anodized aluminum. Plexiglas elements (front panel) and plastic elements (socket) should be cleaned with a microfiber cloth using a cleaning agent dedicated to cleaning windowpanes. Other cleaning methods (e.g. wire brush) may lead to the damage of the device housing. Damage resulting from improper cleaning of the device does not constitute grounds for warranty claims.

WARNING

The device meets the IP 54 standard. Therefore, it is forbidden to wash the charger with pressure washers, garden hoses, shower or any other water stream sources.

7.2. Repair

The manufacturer allows for the repair of publicly accessible charging stations without the need for UDT re-inspections.

The manufacturer permits modular repairs, i.e., replacing entire modules or devices instead of repairing components.

8. Technical data

8.1. Enelion VERTICA Pole

Electrical data	
Routing of the power cord	Sub-surface
Power cord cross-section	Recommended minimum cross-section • 5 x 6,0 mm ² (32 A nominal current)
Supply voltage (Europe)	3 x 230 V/400 VAC (+/-10%)
Voltage frequency	50 Hz/60 Hz
Network type	TN, TT (IT per request)
Protection Class	Class I

Mechanical data	
Dimensions (height x width x depth)	250 mm x 1310 mm
Weight	22,5 kg ± 5%
IP Class	IP54
Mechanical strength class	IK10

Interface	
Charging network assembly	Enelion Chain
Additional elements	Meter connector/coupling
Add-ons	<ul style="list-style-type: none"> • Enelion MID • Enelion Enelion VERTICA Splitter • RCDB

Ambient conditions	
Working temperature	from (-35°C)* -25°C to 55°C
Storage temperature range	from -40°C to 80°C
Permitted relative air humidity	from 5% to 95%
Elevation	max 2000 m above the sea level

8.2. Enelion VERTICA Module with a socket

Electrical data	
Supply voltage (Europe)	3 x 230 V / 400 VAC (+/-10%)
Voltage frequency	50 Hz / 60 Hz
Network type	TN, TT (IT per request)
Overvoltage category	III according to EN 60664-1
Rated short-circuit current	Effective value < 6 kA according to EN 61439-1
Overcurrent protection	Not included. Protection to be made in accordance with the locally valid regulations and according to the version of the device.
Protection Class	Class I
Socket type	Type 2, standard socket 32 A/400VAC according to EN 62196-1

Mechanical data	
Dimensions (height x width x depth)	530 mm x 149 mm x 132 mm
Weight	3,1 kg ± 5%
IP Class	IP54
Mechanical strength class	IK10

Interface	
Adds-on	<ul style="list-style-type: none"> • Enelion Bridge • Enelion RCMB • modem LTE
RFID	MIFARE cards in accordance with ISO 14443

Ambient conditions	
Working temperature	from (-35°C)* -25°C to 55°C
Storage temperature range	from -40°C to 80°C
Permitted relative air humidity	from 5% to 95%
Elevation	max 2000 m above the sea level

8.3. Enelion VERTICA Module with a cable

Electrical data	
Supply voltage (Europe))	3 x 230 V/400 VAC (+/-10%)
Voltage frequency	50 Hz/60 Hz
Network type	TN, TT (IT per request)
Overvoltage category	III according to EN 60664-1
Rated short-circuit current	Effective value < 6 kA according to EN 61439-1
Overcurrent protection	Not included. Protection to be made in accordance with the locally valid regulations and according to the version of the device.
Protection Class	Class I
Socket type	Type 2, standard socket 32 A/400VAC according to EN 62196-1

Mechanical data	
Dimensions (height x width x depth)	530 mm x 149 mm x 180 mm
Weight	8,1 kg
IP Class	IP54
Mechanical strength class	IK10

Interface	
Adds-on	<ul style="list-style-type: none"> • Enelion Bridge • Enelion RCMB • modem LTE
RFID	MIFARE cards in accordance with ISO 14443

Ambient conditions	
Working temperature	from (-35°C)* -25°C to 55°C
Storage temperature range	from -40°C to 80°C
Permitted relative air humidity	from 5% to 95%
Elevation	max 2000 m above the sea level

9. Technical description

9.1. Form with boxes to fill in

Charging Station/General Access Charging Station	
Charging point, an element of public road transport infrastructure	
Type	Enelion VERTICA
Pole Model Number
Module Model Number
Pole Serial Number
Module Serial Number
Number of charging points	1 / 2
Connection power
Supply voltage	3 x 230 V/400 V AC (+-10%)
Network type	TN, TT (IT per request)
Output voltage	3 x 230 V/400 V AC 50 Hz/60 Hz
Charging current
Protection class	Class I
IP class	IP54
Mechanical strength class	IK10
Dimensions (diameter x height)	250 mm x 1310 mm
Pole Weight	22 kg ± 5%
Module weight with socket/cable	2,7 kg / 8,5 kg
Interface height	1220 mm
Charging connector Type 2 EN62196-1	Socket/Cable with a plug
Working temperature	from -25°C to 55°C
Device location – WGS84	
Latitude	N S°°,°°
Longitude	N S°°,°°

Signs of installation faults	
Damaged varistors on PilotBox	It means faulty connection powering cords

WARNING

Information above may be the basis for exclusion of warranty.

