

# ICU Compact Mini™

MANUAL / HANDBOEK / ANLEITUNG / MANUEL /  
MANUALE



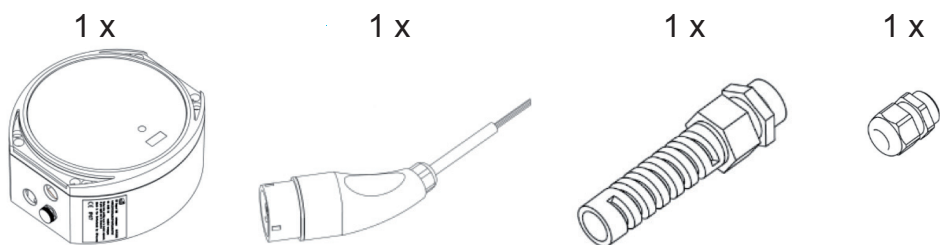
CHARGING EQUIPMENT



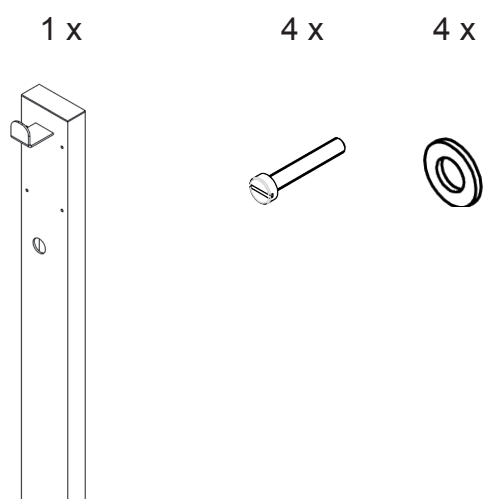
SOLID SMARTWARE

# Package Contents / Inhoud Verpakking / Inhalt Verpackung / Contenu de l'emballage / Contenuto della confezione

## ICU Compact Mini



## Pole / Paal / Säule / Pôle / Polo



## Types / Varianten / Varianten / Variantes / Varianti



excl. kWh



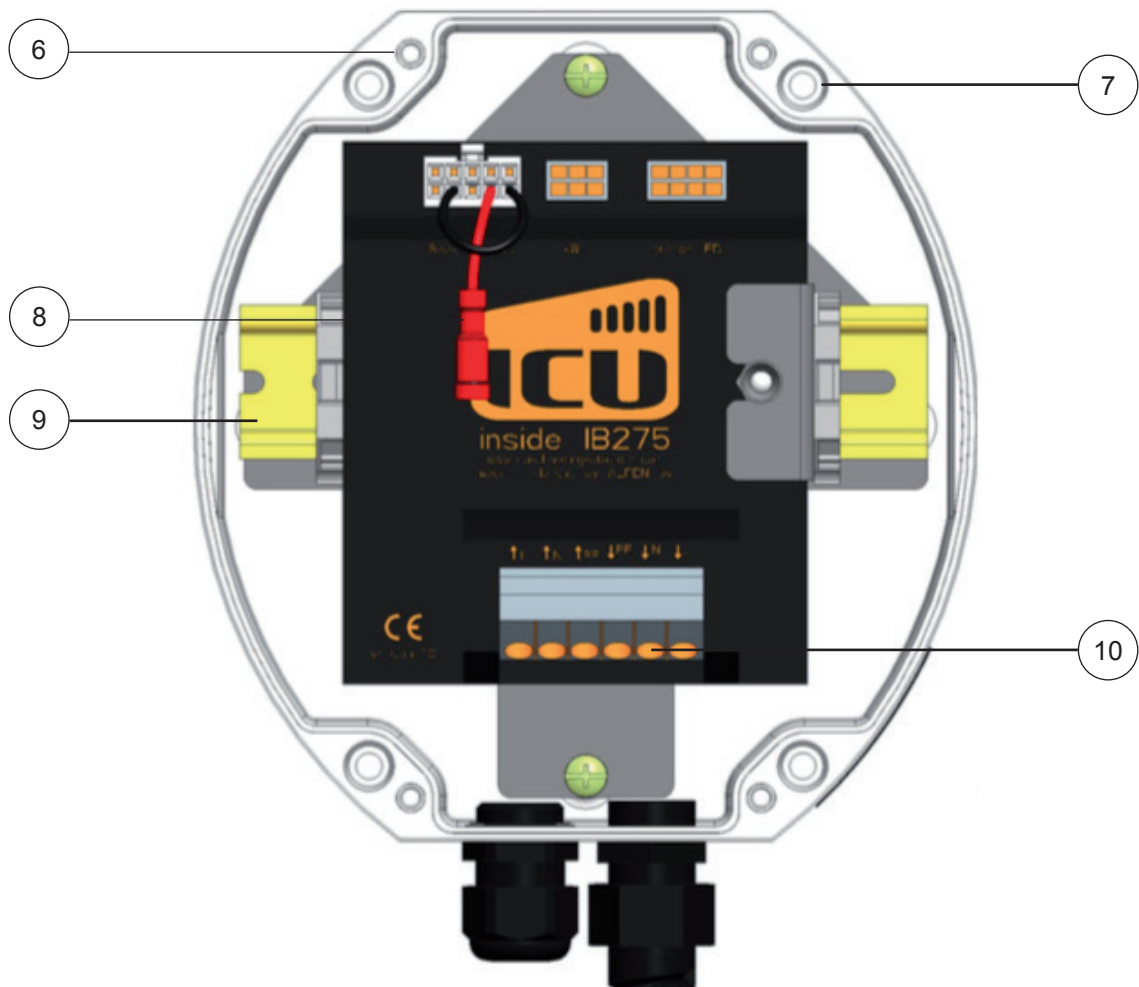
incl. kWh

# Outside / Buiten / Außen / Extérieur / Esterno

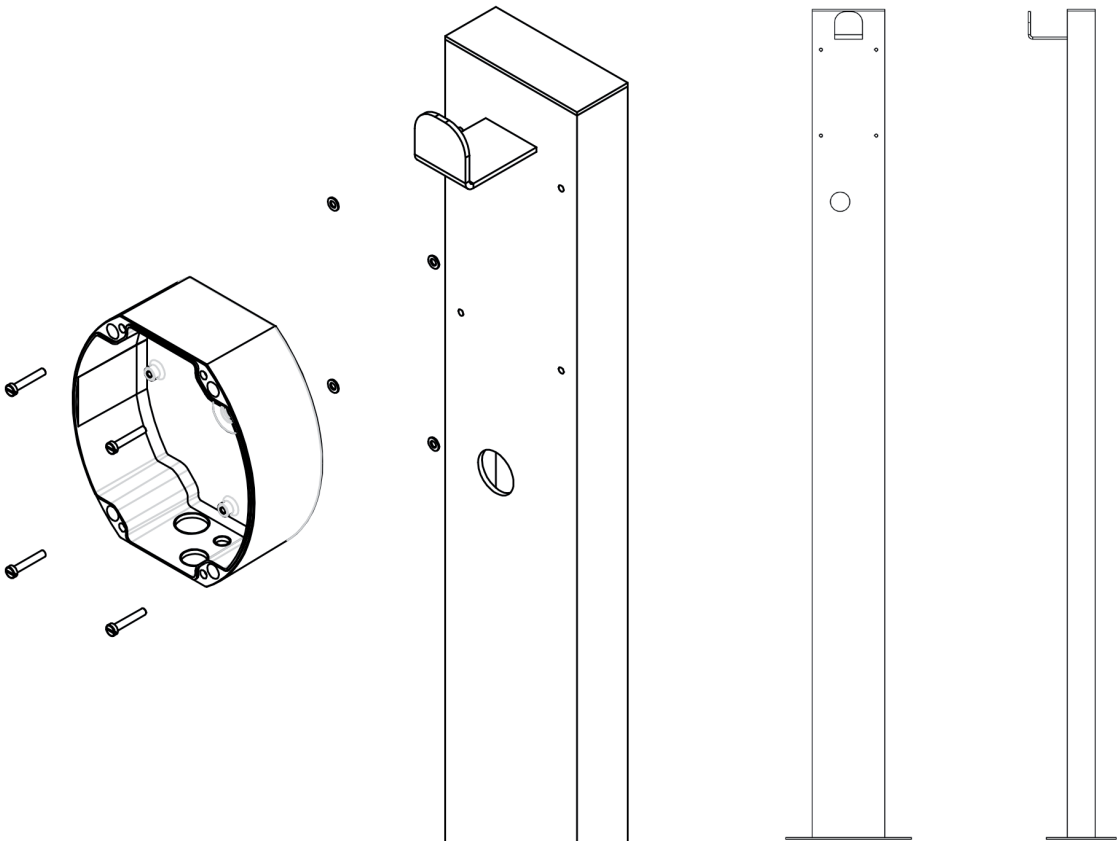
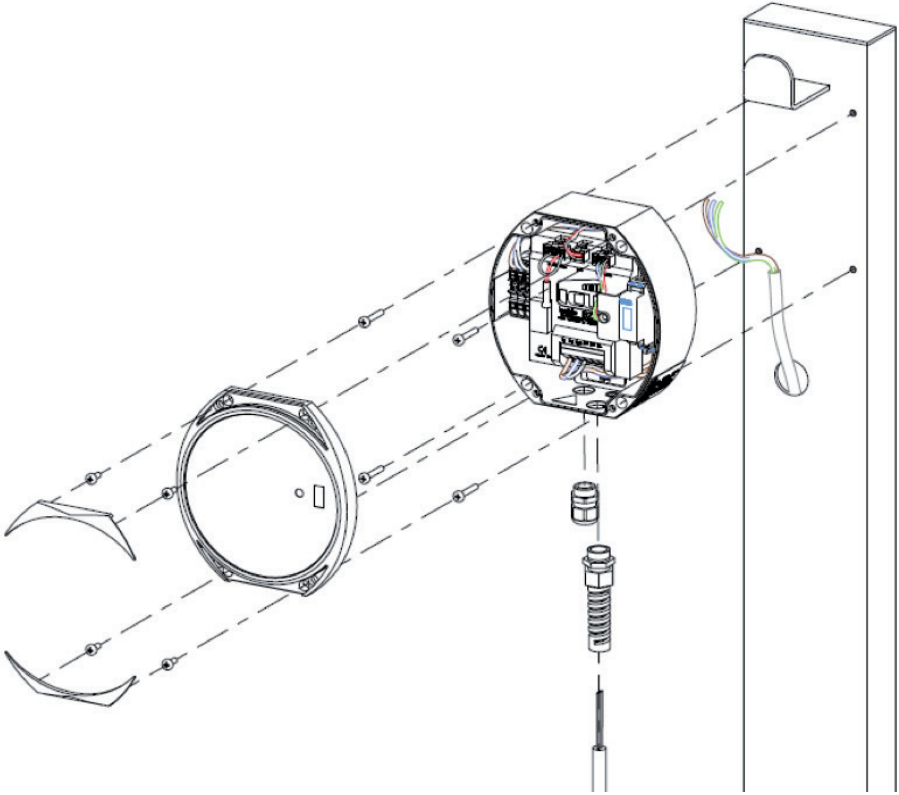


H x W x D: 190 x 179 x 90 mm

## Inside / Binnenzijde / Innen / Intérieur / Interno

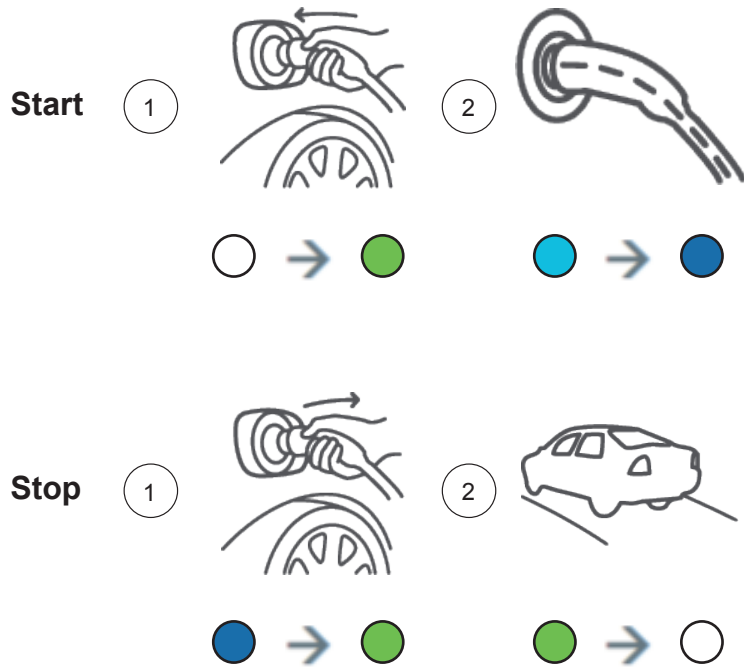


# Installation / Installatie / Installation / Installation / Installazione



# Operating / Operating / Betrieb / Opération / Operazione

## Plug & Charge





## Contact / Contact / Kontakt / Contact / Contatto

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## Status LED / Status LED / Status-LED / LED d'état / LED di stato

11



12



13



14



15

Flicker:



16



17

Flicker:



Subject to modifications and amendments.

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## Declaration of Conformity

### Name of manufacturer:

Alfen ICU B.V.  
 Spleijtbakweg 15  
 1333 HC Almere  
 The Netherlands

### Declares the conformity of the product:

Charging stations of Type ICU Compact Mini

### Following the European Directives:

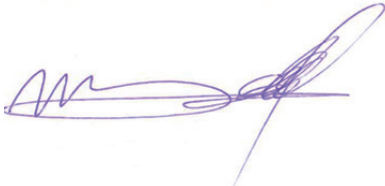
Low Voltage Directive 2014/35/EU  
 EMC directive 2014/30/EU

### Applied (harmonized) standards:

NEN-EN-IEC 61851-1  
 NEN-EN-IEC 61851-22  
 NF-EN-IEC 61851-1  
 NF-EN-IEC 61851-22  
 DIN EN 61851-1  
 DIN EN 61851-22  
 BS EN 61851-1  
 BS EN 61851-22

All mentioned products are marked with the CE mark.

Almere, April 20<sup>th</sup>, 2016.



**Dipl.-Ing. M Roeleveld**

# 1. Safety and operation instructions

## 1.1 Aim of the manual and target group


The ICU Compact Mini charging station is intended exclusively for charging of electric vehicles without the need for a separate grid connection (house connection box). Follow the instructions to ensure proper operation of the charging station.

The installation, commissioning and maintenance may only be performed by a qualified electrician (Alfen ICU certified partner).

The following requirements must be met by the qualified electrician:

- Knowledge of the general and specific safety and accident prevention regulations
- Knowledge of the relevant electrical regulations
- Ability to identify risks and avoid potential hazards
- Knowledge of the Installation and Operating Instructions

## 1.2 General safety

 **DANGER!**

The safety notes are intended to ensure proper operation in practice. An infringement or non-compliance with safety regulations and instructions in this manual and on the device can result in electric shock, fire and/or serious injury.

In the following cases the use of the product is prohibited:

- When explosive or highly flammable substances are close
- If the product is in the water
- At ambient temperatures of less than -30 °C or over 40 °C
- When the product or individual components are damaged
- For children or persons who can not assess the risk in handling the product

In the following cases Alfen ICU B.V. accepts no liability for damages. The warranty on products and accessories expires in the following cases:

- Failure to follow these Installation and Operation Instructions
- Improper use
- Improper handling
- Use of non-qualified personnel
- Additions or modifications to the product
- Use of replacement parts that are not manufactured or approved by Alfen ICU

Additional safety information is available in the relevant sections in this document.

## 2. Product

### 2.1 The charging station

In the cover of this manual you will find the corresponding pictures of the charging station. You will also find more information about the package contents and charging.

#### The charging station (outside)

- ① LED Identifications
- ② kWh-meter (optional)
- ③ Cable screw connection for tethered charging cable (car)
- ④ Cable screw connection for power cable
- ⑤ Identification label

**The charging station (inside)**

- ⑥ Screws front cover
- ⑦ Screws wall mounting
- ⑧ Communication cable
- ⑨ Terminal block for power cable
- ⑩ Terminal block for tethered cable

**Identification Label**

The identification label (⑤) specifies, for example, the model, production date and serial number. It can be found on the side of the charging station.

Always make reference to the serial number when contacting to Alfen ICU so that you receive the fastest support.

**2.2 LED-status display**

The ICU Compact Mini comes with one colored LED which indicates the status of the socket. Please find below an overview of the different states:

Status LED	Meaning
⑪	<ul style="list-style-type: none"> <li>• Available</li> </ul>
⑫	<ul style="list-style-type: none"> <li>• There is a connection between the vehicle and the charging station</li> </ul>
⑬	<ul style="list-style-type: none"> <li>• The charging station and vehicle are communicating</li> <li>• Electric vehicle is full or charging is on hold</li> </ul>
⑭	<ul style="list-style-type: none"> <li>• Vehicle is charging</li> </ul>
⑮	<ul style="list-style-type: none"> <li>• Charging has been put on hold because the vehicle is asking for more power than the charging station allows</li> </ul>
⑯	<ul style="list-style-type: none"> <li>• The charging station has an internal error</li> </ul>
⑰	<ul style="list-style-type: none"> <li>• The charging station is performing a self test before the first operation</li> </ul>

## 2.3 Technical specifications

<b>Input/power supply</b>	
Power supply	3 x 2,5 mm <sup>2</sup>
Rated voltage	230 V
Mains connection	16 A 1-phase 230 V 50 Hz (3.7 kW)
Rated frequency	50 Hz
Back-up fuse	20 A (required on site)
Connecting terminals	M20 terminal block, for cable sizes from 6 - 13 mm <sup>2</sup>
Grounding	TN-system: PE-wire
<b>Output/vehicle connection</b>	
Connection system	1 x type 1 or type 2 connector in accordance with IEC62196-2
Output Voltage	230 V
Max. charging current	16 A, 1-phase
Max. output	3,7 kW
Shut down (Standby)	all contacts
Dynamic load balancing	-
<b>Protection/integrated components</b>	
RCCB	Residual-current circuit breaker (RCCB) - external (required on site)
Energy meter	kWh-meter, integrated, MID certified, Modbus (optional)
Installation contactor	2-pole (charging procedure activation) at 230 V
<b>Standards/Directives</b>	
IEC 61851-1 (2010), IEC 61851-22 (2010), Renault Z.E. Ready Guidelines	

<b>Charge control/status indicators</b>	
Charge controller	1 x IB275
Communication with vehicle	Mode 3, Renault Z.E. Ready (optional)
Operating status indicator	LED
Card reader	-
Internet / Network ability	-
Communication protocol	-
Communication with Smart Meter	-
<b>Operating conditions</b>	
Operating temperature	-30°C to 40°C
Relative humidity	5% to 95%
Class of protection	I
Degree of protection (housing)	IP67
IK Protection	IK10
Stand-By consumption	C. 1 W
<b>Housing</b>	
Type	Wall-mounted housing
Fixing type	Plug and screw mounting or screwed to a pole (optional)
Material	Aluminium
Colour	RAL 9010 (Traffic white), Powder coated, semi-gloss
Locking	-
Weight	C. 2 kg



### 3. Mounting and connecting

#### 3.1 Installation and connection

Read these instructions before installing the charging station carefully. Alfen ICU B.V. are not liable for any consequential damages that occur due to the use of this manual.

**NOTICE**

The installation must be performed by qualified personnel that have read this manual and operate in accordance with the guidelines IEC 60364. Otherwise it may result in injury or dangerous situations when dealing with electricity.

**NOTICE**

Work may not be performed when it is raining or the air humidity is higher than 95%.

**NOTICE**

A charging station should always be installed on a dedicated circuit.

**⚠ DANGER!**

**Danger to life through improper installation!** Non-observance of the following installation and environmental requirements can lead to dangerous situations when dealing with electricity.

**⚠ DANGER!**

The electrical system must be dead (disconnected from the power supply) during all installation and maintenance work.

#### 3.2 Requirements for assembly and installation

**NOTICE**

Cables should be laid based on maximum charging rate of the charging station under continuous load (no diversity). The cable diameters in this manual are indicative. The technician is responsible for determining the correct cable diameter and compliance with applicable standards.

Make sure that the following requirements for the installation of the ICU Eve are fulfilled:

- The cable route from the main distribution to the ICU Compact must be secured with a miniature circuit breaker (MCB) with characteristic B or a screw or blade fuse gG against overvoltage and short circuit
- The cable route must be secured against accidental contact 30 mA by a type A or B-residual-current circuit breaker
- The cable route and the charging station are part of a TN-S system; the device is grounded via the main distributor
- The cable route must be laid in accordance with applicable standards
- The cable tray is made of copper cable with a maximum conductor temperature of at least 90 °C

**NOTICE**

Installation requirements may be dependent on the location.

The table below shows the safety options and the necessary cable diameters:

Type	Protection Option 1	Protection Option 2	Min. core cross section
1 x type 2 charging socket, 1-phase, 16 A	1 x 20 A fuses + 20 A - 30 mA RCCB	20 B - 30 mA 1p + N RCBO	3 x 4 mm <sup>2</sup>

When selecting the installation site the following conditions must be assessed:

- Installation not in potentially explosive atmospheres
- Installation not in flood-prone areas
- Compliance with local technical connection requirements and safety rules
- The mounting surface should have a flat and sufficiently firm ground
- Humidity maximum 95% (non-condensing)
- Ambient temperature of -25 °C to 40 °C
- Average temperature within 24 hours < 35 °C
- As a installation height: a distance of 50 to 150 cm is recommended from the ground to the lower housing edge
- The charging socket on the vehicle should be easily reachable with the tethered charging cable or the charging cable intended for use. The charging cable must not be under tension when it is connected to the vehicle
- It should not be possible to drive over the cable

### 3.3 Mechanical installation

The following tools and materials to install the ICU Compact Mini:

- Spirit level
- Impact Drill
- Screwdriver for an M5 cross recess hole
- Torx M5 (T25)
- Pencil and provided drilling template
- Wire Stripper
- 4 x screws M5 x 30 mm
- 4 x plugs M5 x 30 mm
- 4 x rings M5

**Wall mounting: Drilling using the drilling template**

#### NOTICE

**Please check the indicated dimensions with a tape measure.**

The distance between holes is 99 mm (width) and 155.5 mm (height).

1. Cut the drilling template from the cardboard packaging
2. Place the template on the desired location
3. Check with a spirit level whether the template is applied straight
4. Draw the drill holes using the template
5. Drill holes at the marked points
6. Check the drilled holes

**Pole Mounting: Mounting the pole with the concrete base (optional):**

1. Dig a hole about 50 x 50 cm with a depth of 50 cm
2. Place the pole in the hole
3. Run the ground cable through the pedestal to the charging station
4. Fill the hole and pave the area
5. Cover the area afterwards with a clean trim (e.g. tiles)

### Preparation of the charging station

The front cover of the charging station must be opened before installing. Proceed as follows:

The front cover is firmly attached to the charging unit and is secured with two screws at the top and bottom.

1. Place the device on its back
2. Remove the cover strips on the top and bottom
3. Loosen the four screws
4. Now take off the front cover

### Mounting the charging station

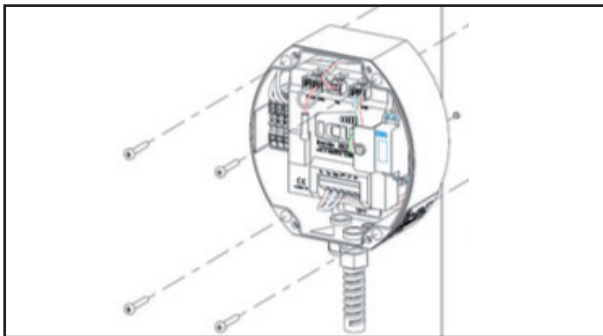


Fig. 1: Attachment to the wall

1. Insert appropriate wall plugs into the four holes
2. Attach the ICU Compact Mini on the wall with four M5 x 30 mm screws

### 3.4 Electrical Installation

**CAUTION!**  
Read and follow all safety instructions in this manual!

**DANGER!**  
The electrical system must be disconnected from the power supply during assembly and maintenance work!

1. Slide the gland over the power supply and fixed cable

**NOTICE**  
The M20 gland belongs to the power supply cable and the M20 gland with cable bend protection belongs to the fixed cable.

2. Insert the power supply and fixed cable through the opening in the screw connection of the charging station

**NOTICE**  
Ensure that 80 mm of cable is available in the charging point.

3. Remove the sleeve of the power supply and fixed cable using a wire stripper so that the cores are sufficiently exposed to be able to be installed in the connecting terminals
4. Connect the inserted fixed cable to the IB275 module on the outgoing PE, N and L (10) on the left of the cover)
5. Connect the red communication cable
6. Connect the inserted power supply cable to the connecting terminal (9) on the left of the cover)

**NOTICE**  
Always install the earthing first.

7. Tighten the glands
8. Screw the cover on the housing. Ensure that the red connection cable is not pinched

## 4. Commissioning the charging station

### 4.1 Safety instructions before operating

Follow the below safety instructions before putting your charger into operation:

1. Make sure that the charging station is securely connected to the house supply line as specified in this manual
2. Make sure that the supply line in the house distribution is separately protected by an appropriate circuit breaker (B-characteristic)
3. Make sure that the built-in charger or external upstream RCD is switched on
4. Make sure that the charging station has been installed in accordance with this guidance
5. Make sure that the housing is always locked in normal operation
6. Make sure that the charging cable is not twisted and make sure that cable, charging plug and housing are free of damage

### 4.2 Putting into operation

1. Turn on the power at the power supply cable

The charger now performs a self test. The following actions are performed by the charging station:

1. The status LED flashes red for two seconds
2. The status LED flashes violet for eight seconds
3. The status LED flashes blue for one second
4. The status LED lights up green
5. The ICU Compact Mini is now ready for charging