

**KeContact P20**  
**Installation manual**  
(for the specialist)

**KEBA<sup>®</sup>**

Automation by innovation.

## Comments to this manual

In this manual you will find warnings against possible dangerous situations. The used symbols apply to the following meanings:



### **WARNING!**

Indicates a potentially hazardous situation which, if not avoided could result in death or serious injury.



### **CAUTION!**

Indicates a potentially hazardous situation which, if not avoided may result in minor or moderate injury.

### **ATTENTION**

Indicates a situation which, if not avoided could result in property damage.



### **ESD**

This symbol reminds you of the possible consequences of touching electrostatically sensitive components.



### **Notice**

*Notes on use of equipment and useful practical tips are identified by "i". Notices do not contain any information that draws attention to potentially dangerous or harmful functions.*



*Additional important information.*

▶ This icon marks **steps** of a sequence of operations.

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Pages: 48

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The device bears the CE mark.  
The declaration of conformity is being held by KEBA AG.



The device meets the ROHS directive (RL 2011/65/EU).  
The declaration of conformity is being held by KEBA AG.



#### Information on disposal

The symbol with the crossed-out garbage can points out that electrical and electronic devices including their accessories should not be disposed of in the household garbage. Information on correct disposal can be found on the product itself, in the instructions for use or on the packaging.

Depending on their coding, the raw materials are recyclable. By disposing of such used devices correctly, you can ensure that they can be reused, their raw materials recycled or put to another use, and you will be making an important contribution to the protection of our environment.

#### Disposal of batteries

Batteries or rechargeable batteries are hazardous waste and must be disposed of in the correct manner. Although batteries have a low voltage, in the event of a short-circuit, they can still emit a charge sufficient to ignite flammable materials. Batteries should therefore not be disposed of together with conductive materials (such as iron filings, wire wool contaminated with oil etc.).



You can download the **KeContact P20 Installation Manual** on the Internet at [www.kecontact.com](http://www.kecontact.com).

Service



You can download the latest **KeContact P20 Firmware** on the Internet at [www.kecontact.com](http://www.kecontact.com) (download area).

A new firmware can take into account modified standards or improve the compatibility to new electric vehicles, for example.

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# 1 Important information

## 1.1 Safety information

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### **WARNING!**

Not observing the safety instructions can result in risk of death, injuries, and damage to the device! KEBA AG assumes no liability for claims resulting from this!

- **Electrical hazard!**

The installation, commissioning and maintenance of the charging station may only be performed by correctly trained, qualified and authorized electricians <sup>(1)</sup> who are fully responsible for the compliance with existing standards and installation regulations.

Please observe that an additional overvoltage protection can be required by vehicles or national regulations.

Also observe that some countries or vehicle manufacturers may require a different triggering characteristic of the fault-current circuit breaker (Type B).

- Only connect voltages and circuits in the right-hand connection area (Ethernet, terminals for control lines) that have a secure separation to dangerous voltages (e.g. sufficient isolation).

Only supply the terminals (X2) from voltage sources which have safety extra-low voltage!

- Before commissioning, check all screw and terminal connections for tightness!
  - The connector panel cover may never be left open unattended. Mount the connector panel cover if you leave the charging station.
  - Do not carry out any unauthorized conversion work or modifications to the charging station!
  - Repair work to the charging station is not permitted and may only be performed by the manufacturer (replacement of the charging station)!
  - Do not remove any notices on the device, such as safety symbols, warning notices, rating plates, nameplates or cable markings!
  - The charging station does not have its own power switch! The FI circuit breaker and the line circuit breaker of the building installation serve as mains disconnecter.
  - Pull the charging cable out of the plug connection by the plug only and not by the cable.
  - Make sure that the charging cable is not damaged mechanically (kinked, pinched or driven over) and do not allow the contact area to come into contact with sources of heat, dirt or water.
- 

<sup>(1)</sup> Persons who, due to their special training, expertise and experience as well as knowledge of current standards, are able to assess the work performed and the possible hazards.

### ATTENTION

#### Risk of damage!

- Make sure that the charging station is not damaged by improper handling (anchoring, housing cover, socket, inner parts etc.).
  - Do not open the connector panel cover in the rain!
  - Risk of breaking the plastic housing!
    - Countersunk screws may not be used for the mounting!
    - The included washers must be used.
    - Do not tighten the mounting screws with force.
    - The mounting surface must be completely level (max. 1 mm difference between the support points or mounting points). Warpage of the housing must be prevented.
- 



### ESD

Information for technicians who are permitted to open the device:

Risk of damage! Electronic components can be destroyed if touched!

- Before handling the modules, touch a grounded metal object in order to discharge any static electricity from your body.
- 



### CAUTION!

5 safety rules:

- Shut down all poles and all sides!
  - Secure against reactivation!
  - Check that the equipment is voltage-free!
  - Provide earthing and short-circuit protection!
  - Cover adjacent live parts and restrict access to hazardous areas!
-

### 1.2 Intended use

The device is a "charging station" for the indoor and outdoor area at which electrically operated vehicles can be charged (e.g. electric automobiles).

The charging station is designed for installation on a wall or in a floor-mounted column.

The respective national regulations must be observed with regard to the installation and connection of the charging station.

The intended use of the device always includes the compliance with the environmental conditions for which this device was developed.

The device was developed, manufactured, inspected and documented in compliance with the relevant safety standards. Therefore, the products do not pose any danger to the health of persons or a risk of damage to other property or equipment under normal circumstances, provided that the instructions and safety precautions relating to the intended use are properly observed.

The instructions contained in this manual must be precisely followed in all circumstances. Failure to do so could result in the creation of potential sources of danger or the disabling of safety devices. Apart from the safety instructions given in this manual, the safety precautions and accident prevention measures appropriate to the situation in question must also be observed.

Only electrical vehicles or their chargers may be connected. The connection of other devices (e.g. electric tools) is not allowed!

Due to technical or legal restrictions, not all versions/options are available in all countries.

### 1.3 About this manual

**This manual is valid for devices of the type:**

- KeContact P20

#### **Use of this manual**

This installation manual is intended for qualified personnel<sup>(1)</sup> only.

The figures and explanations contained in this manual refer to a typical device design. The design of the device may deviate from it.

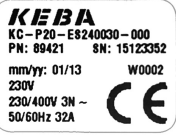
Please refer to the "KeContact P20 User Manual" for information and instructions about operating the device.

<sup>(1)</sup> Persons who, due to their special training, expertise and experience as well as knowledge of current standards, are able to assess the work performed and the possible hazards.



## 1.4 Product description

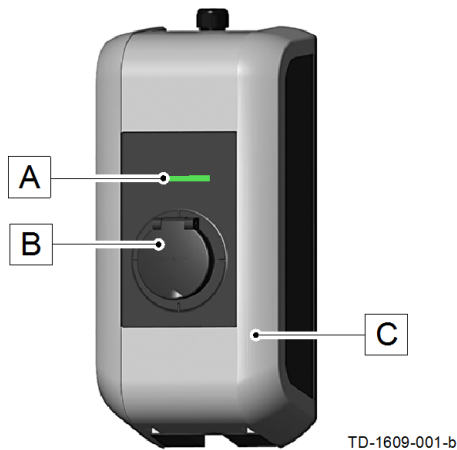
Example KC-P20-ES240030-000-xxxx

Product description		
Model plate See top on the device		
Product family	<b>KC</b>	KeContact
	-	
Product type	<b>P</b>	Charge Point
Type / Version	<b>20</b>	Type

Design versions		
Basic versions	<b>E</b>	<b>E...Europe</b>
Cable / Socket	<b>S</b>	<b>S...Socket</b> C...Cable
	<b>2</b>	1...Type 1 <b>2...Type 2</b> S...Shutter
	<b>4</b>	1...13A 2...16A 3...20A <b>4...32A</b>
	<b>00</b>	<b>00...no cable</b> 01...4m straight 04...6m straight 99...4m spiraled
Electronics	<b>3</b>	0...e-series 1...b-series 2...c-series <b>3...c-series + PLC</b>
Electrics	<b>0</b>	<b>0...protection</b> / 1...protection 1-phase

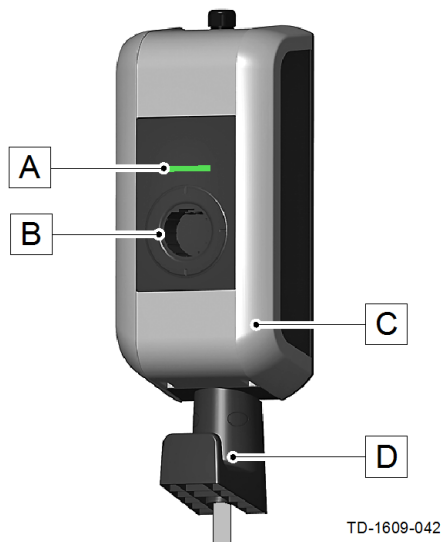
Options		
Key Left	<b>0</b>	<b>0...not populated</b>
Key right	<b>0</b>	
Authentication	<b>0</b>	<b>0...not populated</b> R...RFID K...Key switch
	-	
Optional customer code 2-digit	<b>xx</b>	

## 2 Variant overview



### Base model with socket (Type 2)...

- [A]...Status LED
- [B]...Standard socket (variants possible)
- [C]...Housing cover



### Base model with charging cable Type 1, Type 2)...

- [A]...Status LED
- [B]...Parking bay for charging connector
- [C]...Housing cover
- [D]...Bracket for charging cable

### Storing the charging connector/charging cable...

If no charging procedure is being performed, the charging connector can be plugged into the parking bay [B] for safe storage.

The charging cable can be coiled up and placed on the hanger [D].

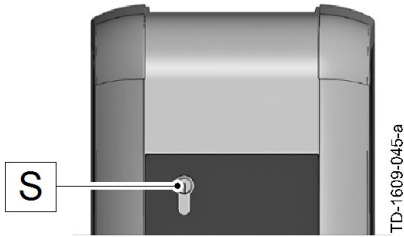
## 2.1 Optional equipment

### RFID sensor



The RFID sensor [R] is used for touchless authorization of a user with MIFARE cards or tags according to ISO14443.

### Key switch



The key switch **[S]** is used for authorizing a user.

### Additional optional equipment

- Network capability
- Switch contact (for control of external additional equipment)
- Enable input for e.g. ripple control receivers, time switches, ...  
(This permits a scheduled (time-controlled) charging of the vehicle to be realized.)
- PLC (Power Line Communication) according to GreenPhy standard
- Mounting column

## 3 Installation guidelines

### 3.1 General criteria for the site selection

The charging station was constructed for the indoor and outdoor area. Accordingly it is necessary to ensure the installation conditions and the protection of the device at the installation site.

- Take into account the local electrical installation regulations, fire prevention measures and accident prevention regulations as well as emergency routes at this site.
- The charging station may not be installed in potentially explosive zones (Ex environment).
- Mount the charging station so that it is not located in the direct flow of passersby and so that no one can trip over connected charging cables and so that the charging cables do not cover or cross passing pedestrian and motorized traffic.
- Do not install the charging station at locations where ammonia or ammonia gas is exposed (e.g. in or at stables).
- The mounting surface must be sufficiently stable in order to withstand the mechanical forces.
- Do not install the charging station at locations where falling objects could damage the device (e.g. hung up ladders or automobile tires).
- According to product standard, the charging station must be located at a height between 0.4 m and 1.5 m.  
We recommend mounting the charging station (height of the socket or parking bay) at a height of 1.2 m. Observe that national regulations can limit this height.
- The device may not be exposed to direct spray water (e.g. neighboring manual carwash facility, high-pressure cleaner, garden hose).
- The device should be protected against direct rain as far as possible to prevent icing, hail damage or similar.
- The device should be mounted protected from direct sunlight as far as possible to reduce the charging current or the interruption of the charging due to excessive temperatures of the components of the charging station.
- When set up unprotected against the weather (e.g. outside at a parking space), the charging current specification is reduced to 16A if the maximum permitted temperature is exceeded. The charging procedure can also subsequently be switched off.

**For information about environmental conditions, please refer to the "[5.5 Technical data](#)" chapter.**

**Observe the internationally valid installation standards (e.g. IEC 60364-1 and IEC 60364-5-52) and comply with the nationally applicable installation standards and regulations.**

## 3.2 Specifications for the electrical connection

### 3.2.1 General

The charging station is set to 10 amps in the delivery state. Set the maximum current using the DIP switches to match the installed circuit line breaker (see Chapter "4.6 DIP switch settings").

The power supply line must be hardwired to an existing house installation and correspond to the nationally applicable legal conditions.

#### Selection of the fault-current circuit breaker (FI):

- Every charging station must be connected via its own FI. No other circuits may be connected to this FI.
- Ground fault circuit interrupters of at least type A.  
If the vehicles to be charged are not known (e.g. semi-public area), measures must be met for protection where direct fault currents (>6mA) occur. This can be realized, for example, through the use of an FI type specifically intended for electric vehicles or with a FI type B. The vehicle manufacturer specifications must also be observed.
- The nominal current  $I_N$  must be selected to match the circuit breaker and fuse.

#### Dimensioning of the circuit line breaker:

When dimensioning the circuit line breaker also observe the increased environmental temperatures inside the switch cabinet! Under certain circumstances, this can make a reduction of the charging current specification necessary in order to increase the system availability.

- Determine the nominal current according to the type plate specification in coordination with the desired charging capacity (DIP switch settings for charging current specification) and the power supply line.

#### Dimensioning of the power supply line:

When dimensioning the power supply line also observe the possible reduction factors and the increased environmental temperatures in the interior connection area of the charging station (see temperature rating of the supply terminals)! Under certain circumstances, this can lead to an increase of the cable cross-section and to the adaptation of the temperature resistance of the power supply line.

#### Mains disconnecter:

The charging station does not have its own power switch. The FI circuit breaker and the line circuit breaker of the power supply line serve as mains disconnecter.

### 3.2.2 Differing requirements for compliance with "Z.E.-Ready®" (Renault)

- For the case where the internal switching element (contactor) is no longer able to open, an additional switch-off capability must be realized. This can be realized with the switch contact output X2 (for details, see Chapter "4.5.4 Switch contact output [X2] (excluding e-series)").
- No 13A charging cables may be used.
- For 3-phase connection of the KeContact P20, at least a fault-current circuit breaker (FI) type A with DC fault current detection (>6mA) or a fault-current circuit breaker (FI) type B must be used.
- Renault recommends selecting the fault-current circuit breaker according to the following table:

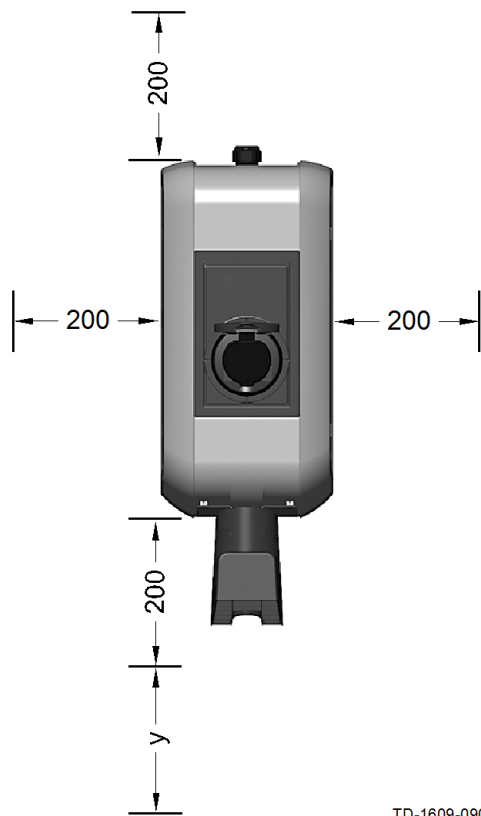
Charging current specification (DIP switch setting)	Circuit line breaker	Characteristic	
		1-phase	3-phase
10A		not allowed!	
13A		not allowed!	
16A	20A	C	D
20A	25A	C	D
25A	32A	C	D
32A	32A	B	C

The nominal current of the selected circuit line breaker may never exceed the specifications on the type plate. If the current specification and nominal current of the circuit line breaker are equal, the temperature in the switch cabinet must be specifically observed (thermal derating of the circuit line breaker).

### Mains supply requirements

- In TT and TN networks, the grounding resistance of the system must be less than 150 Ohm.
- In IT or TT networks with a grounding resistance greater than 150 Ohm, an isolating transformer must be installed before the EVSE (Electric Vehicle Supply Equipment) installation. The isolating transformer must then be integrated into a TN grounding system, applicable for the above-stated criteria.
- Power supplies with IT grounding systems are forbidden.
- In TT and TN networks, the voltage at the N line to PE may not be higher than 10 V.
- An excessive fraction of harmonic waves can cause termination of the charging procedure. The public mains power supply should fulfill the standards IEC 61000-2-1, IEC 61000-2-2, EN 50160 § 4.2.4 and § 4.2.5 to prevent this problem. The maximum permitted limit of harmonic waves can vary in dependence on the mains network impedance.

### 3.3 Space requirements



#### Space requirement...

For device versions with optional cable hanger, **additional** free area **y** for the charging cable to be used is to be accounted for.

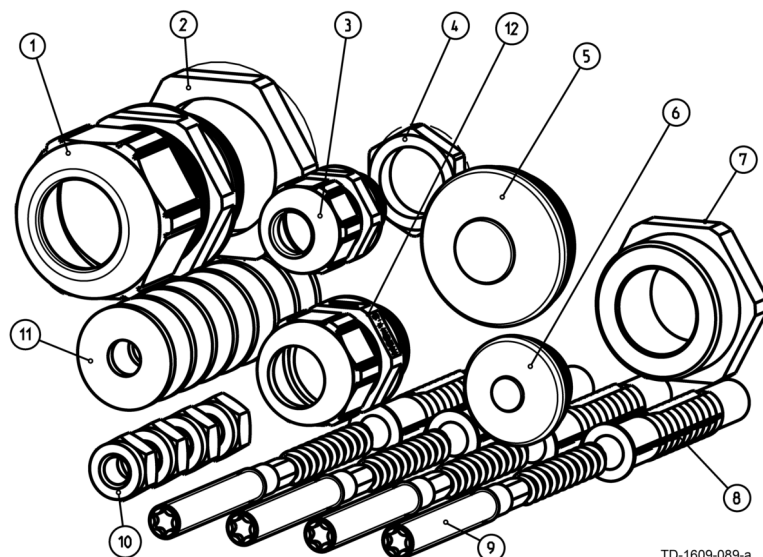
If several charging stations are installed adjacent to each other, a distance of at least 200 mm between charging stations must be complied with.

Dimensions in millimeters

## 4 Installation

Scope of delivery	e-series	Others
Charging station	1 pieces	1 pieces
Cable hanger (for versions with charging cable)	1 pieces	1 pieces
Installation manual (for the specialist)	1 pieces	1 pieces
User manual (for the end customer)	1 pieces	1 pieces
Drilling template	1 pieces	1 pieces
Keys for cylinder lock (optional)	-	3 ST
RFID card (optional)	-	1 pieces
<b>[1] Cable gland M32x1.5, black (clamping area 10–21mm)</b>		
	1 pieces	1 pieces
<b>[2] Locknut M32x1.5 black</b>		
	1 pieces	1 pieces
<b>[3] Cable gland M16x1.5 black (clamping area 4–10mm)</b>		
	-	1 pieces
<b>[4] Locknut M16x1.5 black</b>		
	-	1 pieces
<b>[5] Double-membrane seals M32 black (clamping area 14–21mm)</b>		
	1 pieces	1 pieces
<b>[6] Double-membrane seals M20 black (clamping area 7–12mm)</b>		
	-	1 pieces
<b>[7] Reduction insert M32/M20 grey</b>		
	-	1 pieces
<b>[12] Cable gland M20 grey</b>		
		1 pieces
<b>Mounting set for wall insulation:</b>		
<b>[8] Anchors for M8; Fischer UXR-8</b>		
	-	4 pieces
<b>[9] Hangar bolts M8x100</b>		
	-	4 pieces
<b>[10] Nut ISO 10511 - M8</b>		
	-	4 pieces
<b>[11] Washer ISO 7089 - 8.4</b>		
	-	8 pieces

### Supplied installation materials



TD-1609-089-a



### 4.1 Installation requirements

- Before beginning the installation, the installation guidelines must be observed.
- Contact person on-site (for access to the mains disconnect in the electrical distribution panel board).
- The electrical connection (power supply line) must be prepared.
- Acclimatization  
For a temperature difference of more than 15°C between transport and installation site, the charging station should be allowed to acclimate unopened for at least two hours.

Opening the charging station immediately can cause water to form inside and lead to damage when the device is switched on. Under certain circumstances, this damage may not occur until a later point after the installation.

In the ideal case, the charging station should be stored at the installation side for several hours prior to installing. If this is not possible, the charging station should not be stored outside with cold temperatures (< 5°C) overnight or stored in a vehicle.

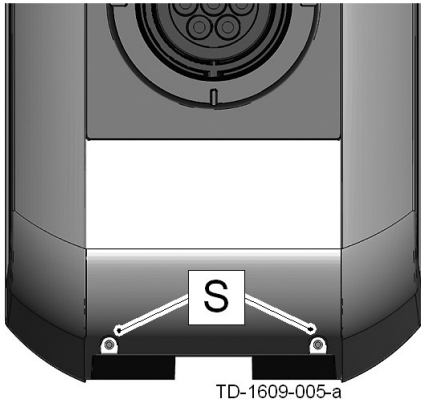
#### Tool list for KC-P20

The following tools are required for the installation:

- Flathead screwdriver for supply terminals (blade width 5.5 mm)
- Flathead screwdriver for terminals X1/X2 (blade width 3.0 mm)
- Phillips head screwdriver PH2
- Mounting tools for cable screw connections M16 (width across flats 20 mm) and M32 (width across flats 36 mm)
- LSA+ insertion tool (optional)

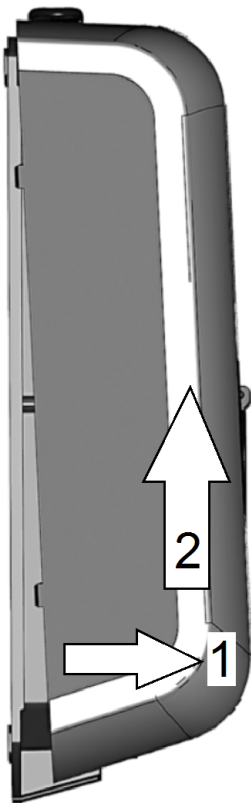
## 4.2 Preparing the housing

### 4.2.1 Removing the housing cover



#### Cover screws...

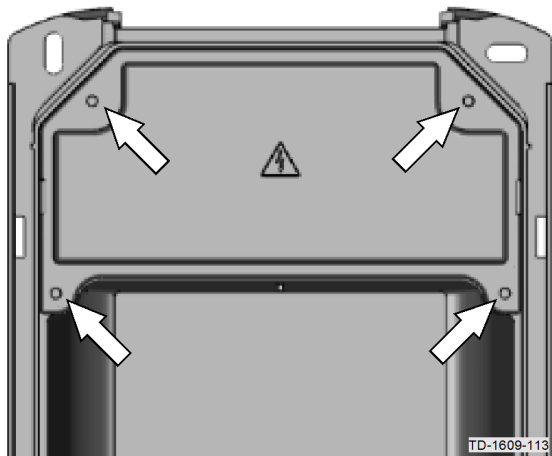
- ▶ Unscrew the two cover screws **[S]** on the bottom side of the housing cover.



#### Removing the housing cover...

- ▶ (1) Pull the housing cover down slightly.
- ▶ (2) Slide the housing cover up slightly to unhinge it.

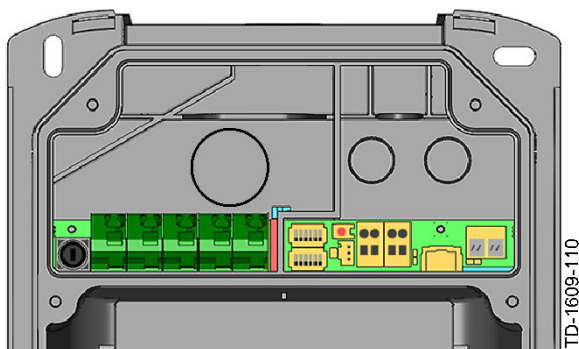
## 4.2.2 Removing the connector panel cover



### Removing the connector panel cover...

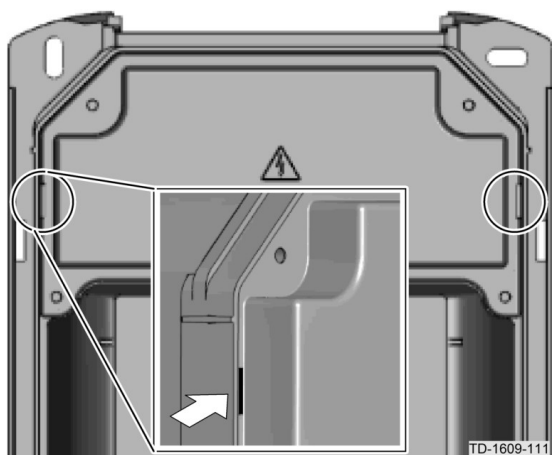
- ▶ Unscrew the four screws that mount the connector panel cover and remove the connector panel cover.
- ▶ Take the silica bag out of the terminal panel and dispose of it properly.

## Information for subsequent assembling



### Mounting the connector panel cover...

- ▶ Insert the connector panel cover again.
- ▶ Mount the connector panel cover again using the four screws.



### Enclosure marking...

- ▶ Tighten the 4 screws until the enclosure marking on the connector panel cover is flush with the enclosure.
- ▶ The connector panel cover must seal the enclosure properly.

Self-tapping screws require more force (min. 2.5 Nm to max. 5 Nm).

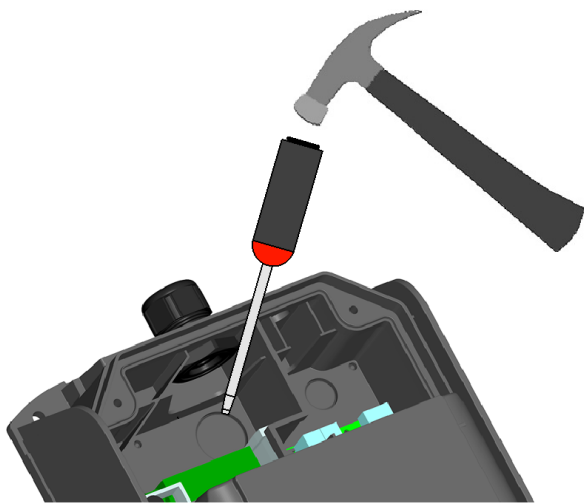
## 4.3 Preparing the cable insertion

There are two possibilities available for the cable insertion:

- Cable insertion from above (surface cable routing)
- Cable insertion from below (flush-type cable routing)

### Preparations

- ▶ Remove the connector panel cover (see Chapter "4.2.2 Removing the connector panel cover").
- ▶ Fit the charging station with the required cable glands or dummy screw fittings (if an open cable insertion opening is no longer used).

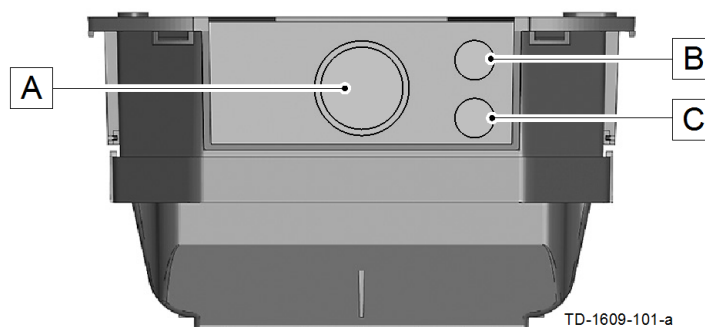


TD-1609-018

### Breaking out the cable insertion openings...

- ▶ Place the housing on a stable support pad and use a hammer and flathead screwdriver to carefully break out the required cable insertion openings.
- ▶ Then insert the corresponding feedthroughs (cable gland or double-membrane seals)

### 4.3.1 Cable insertion from above - surface cable routing



TD-1609-101-a

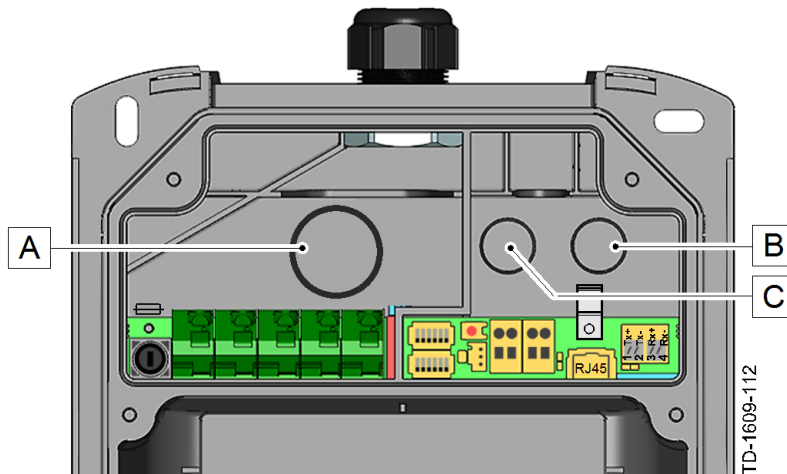
**A** ... Cable gland M32 (power supply line)

**B** ... Cable gland M16 (for control line/Ethernet)

**C** ... Cable gland M16 (for control line/Ethernet)

| ...

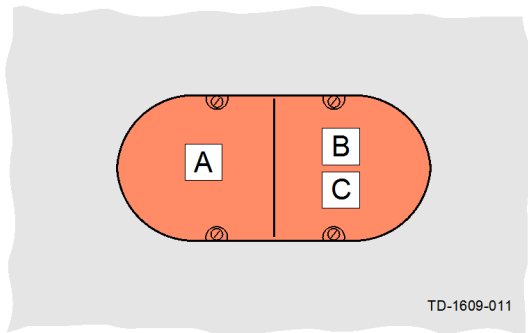
4.3.2 Cable insertion from behind - flush-mounted cable routing



<b>A</b> ... Feedthrough/double-membrane seals M32 (power supply line)	<b>B</b> ... Feedthrough/double-membrane seals M20 (for control line/Ethernet)
<b>C</b> ... Feedthrough/double-membrane seals M20 (for control line/Ethernet)	...



*Make sure that the connection cable is inserted through the center of the double-membrane seal to ensure seal tightness.*



**Cable outlet - flush-mounted box...**

A double flush-mounted box with separating divider for secure separation can be provided for the cable insertion.

**[A]**... Power supply line

**[B]**... Control line

**[C]**... Ethernet

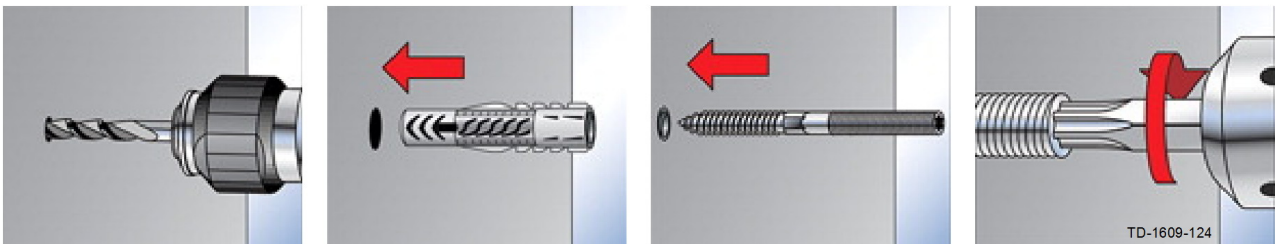
## 4.4 Mounting the charging station

### Installation materials

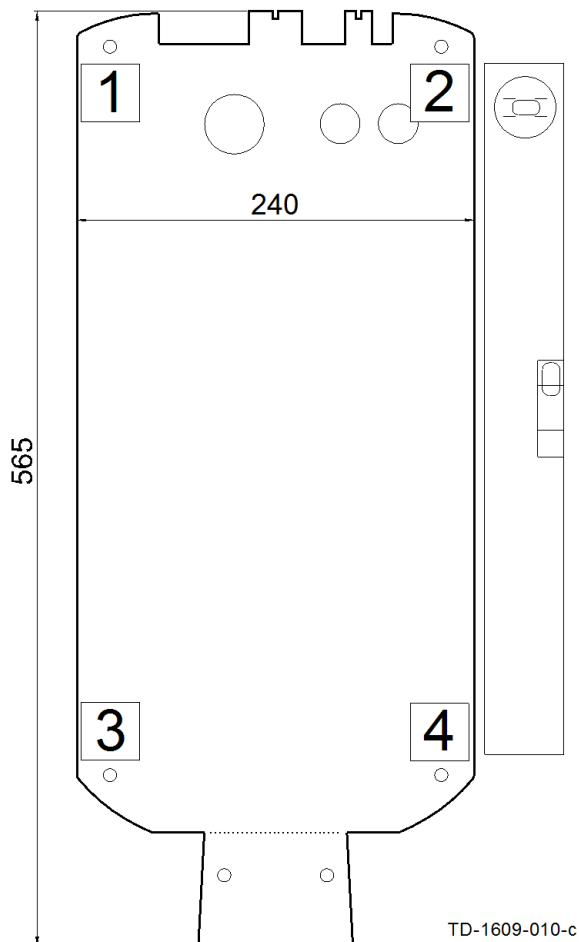
The included installation material (excluding e-series) is suitable for cement, brick and wood (without anchors). For other surfaces, a suitable method of installation must be selected.

Depending on the device model or for special materials, the installation materials must be provided by the customer. A proper installation is absolutely necessary and lies outside of the scope of responsibility of the KEBA AG.

Please also observe the following manufacturer instructions:



Instructions for placing anchors and bolts. Source: Fischer

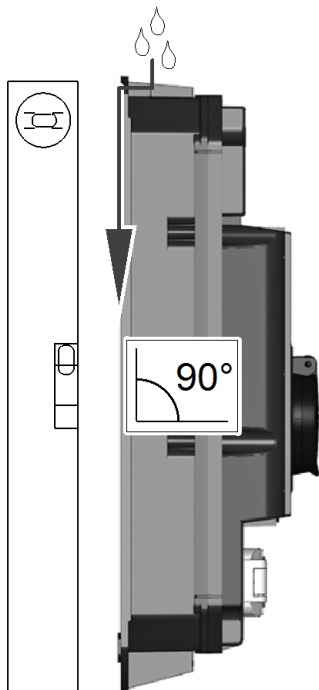


### Marking the holes...

- ▶ Mark the four holes [1] to [4] using the supplied drilling template and a spirit level.
- ▶ Drill the four mounting holes.

### Information about the drilling template:

- The drilling template shows the outer contour of the charging station.
- The four main mounting holes are aligned centered to the slotted holes on the device.
- The three holes in the upper right show the area for the cable insertions and help to be able to align the mounting position of the device to the cables.
- The two notches on the top side are used for aligning the device to the connection lines.
- In the lower part, the holes for the optional cable hanger can be drilled appropriate to the device. This part can be separated if the cable hanger is not mounted or is to be mounted at a different location.

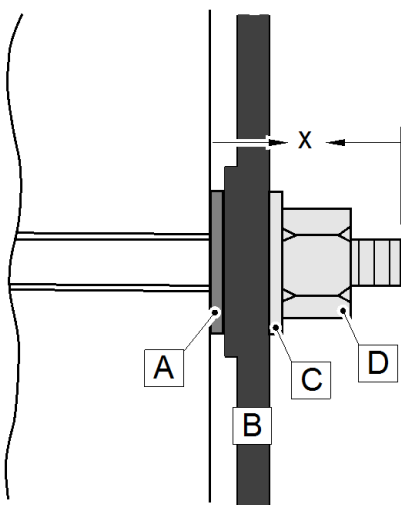


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### Water drainage...

The water drainage from the top side to the rear side of the charging station must be ensured. Therefore, observe the following:

- Only a vertical installation of the charging station is permitted.
- The charging station must be mounted at an angle of 90° (no inclination is permitted!).



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### Mounting the charging station...

- ▶ Turn the hanger bolts into the anchors until the thread still protrudes approx. 2 cm ('x').
- ▶ Use the shims [A] to compensate for any unevenness and to ensure a water drainage behind the device.
- ▶ Position and mount the charging station using the supplied washers and nuts.

[A]...Shim

[B]...Charging station housing

[C]...Washer

[D]...Nut

## Installation



TD-1609-012-c

### Installation on hollow walls...

For installation on hollow walls, **at least 2** mounting screws must be secured to a support element of the wall (see figure).

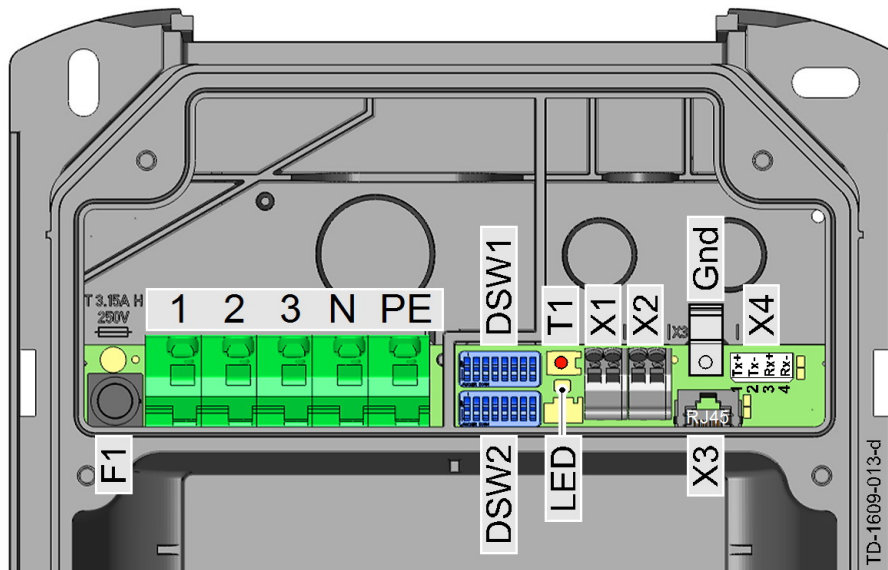
Special hollow-wall anchors must be used for the other mounting screws.

When installing on hollow walls you must ensure that the bearing strength of the construction is sufficient.



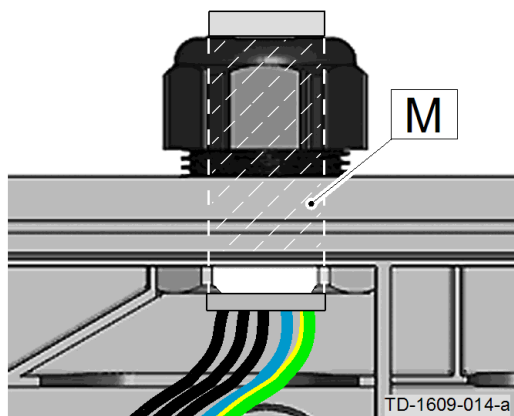
## 4.5 Electrical connection

### 4.5.1 Connection overview with opened connector panel cover



<b>1</b> ... Mains connection phase conductor 1	<b>T1</b> ... Service button
<b>2</b> ... Mains connection phase conductor 2	<b>LED</b> ... Status LED (internal)
<b>3</b> ... Mains connection phase conductor 3	<b>X1</b> ... Enable input
<b>N</b> ... Mains connection N wire	<b>X2</b> ... Switch contact output
<b>PE</b> ... Mains connection PE wire	<b>X3</b> ... Ethernet2 connection (debug)
<b>F1</b> ... Fuse holder	<b>X4</b> ... Ethernet1 connection (LSA+ terminals)
<b>DSW1</b> ... DIP switch configuration	<b>Gnd</b> ... Ground for Ethernet connection terminals
<b>DSW2</b> ... DIP switch addressing	...

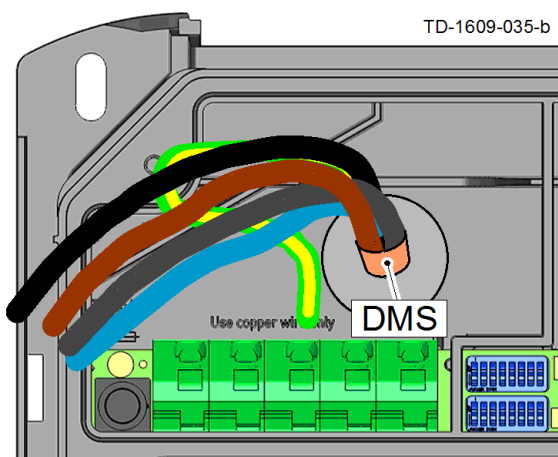
## 4.5.2 Connecting the power supply line



### Running the power supply line (surface cable routing)...

- ▶ Run the supply line from **ABOVE** as shown in the figure.

[M]... Cable sheathing



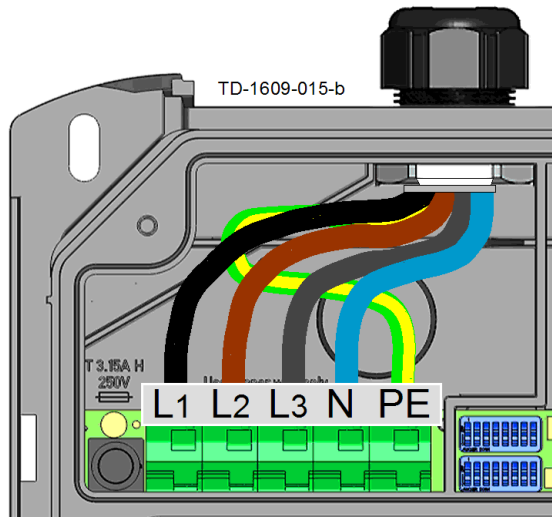
### Running the power supply line (flush-type cable routing)...

- ▶ The power supply cable must be run as shown through the feedthrough/double-membrane seal [DMS].

Make sure that the double-membrane seal fits cleanly against the cable sheathing.

### Please observe:

- Use of a suitable cable sheathing diameter of the supply line or increase of the cable sheathing diameter by means of suitable seal adapter (see list "Scope of supply" for details about the terminal range).
- Feed the supply line (feed line from above) resp. double-membrane seals (feed line from behind) sufficiently into the cable gland. The cable sheathing must be visible in the connection area.
- The installation pipe or cable conduit with the feed line may not be screwed together in the cable gland (feed line from above) or run through the double-membrane seals (feed line from behind).
- The feed line must be run straight through the cable gland (feed line from above) resp. the double-membrane seals (feed line from behind), in compliance with the bending radii (approx. cable diameter times 10).
- The cable gland resp. double-membrane seals must be installed properly and screwed together sufficiently.



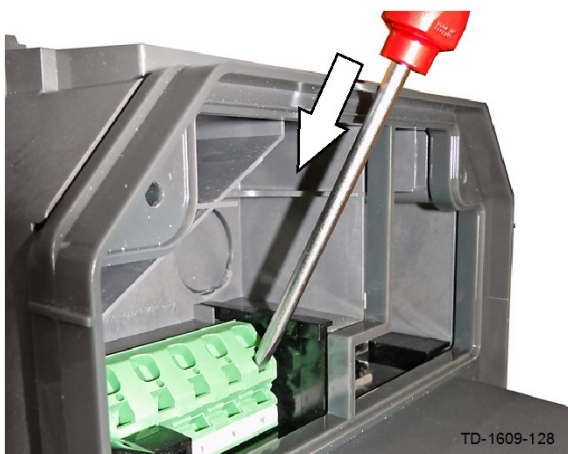
### Connecting the power supply line...

- ▶ Shorten the connection wires to the appropriate length; these should be kept as short as possible. The PE conductor must be longer than the remaining conductors!
- ▶ Strip approx. 12 mm from the connection wires. Core-end sleeves are recommended for fine stranded wires.
- ▶ Perform the connection of the power supply line [L1], [L2], [L3], [N] and [PE].

Observe which phase conductor you connect to terminal [L1] if several charging stations are installed in a network (DIP switch settings for load management).

### 1-phase connection...

It is also possible to connect the charging station with only 1-phase; the terminals [L1], [N] and [PE] are to be used for this.



### Supply terminals...

The supply terminals are designed as spring-type terminals.

- ▶ Insert the flathead screwdriver (5.5 mm) into the power supply terminal as shown in the figure.

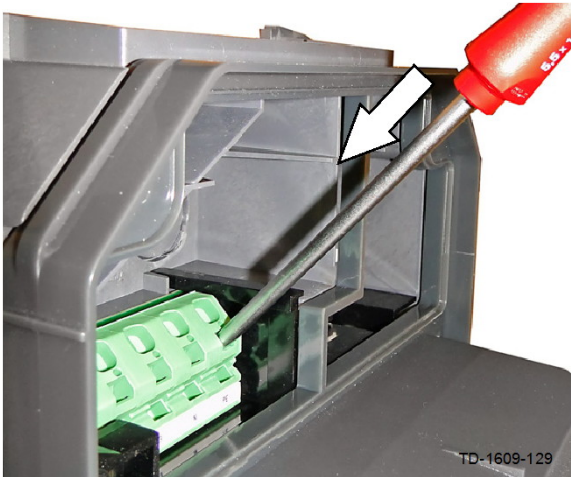
#### Terminal data:

- Fixed (min.-max): 0.2 – 16 mm<sup>2</sup>
- Flexible (min.-max): 0.2 – 16 mm<sup>2</sup>
- AWG (min.-max): 24 – 6
- Flexible (min.-max) with wire end sleeve:  
Without/with plastic sleeve  
0.25 – 10 / 0.25 – 10 mm<sup>2</sup>
- Insulation stripping length: 12 mm
- Flathead screwdriver 5.5 mm

## ATTENTION

Risk of breaking the terminal!

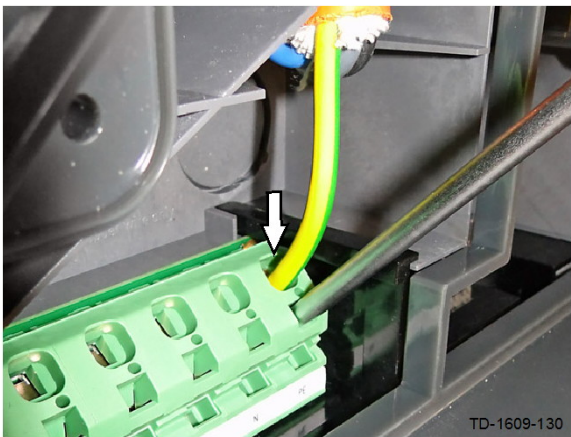
- Do not press the screwdriver up, down or to the side!



### Opening the power supply terminal...

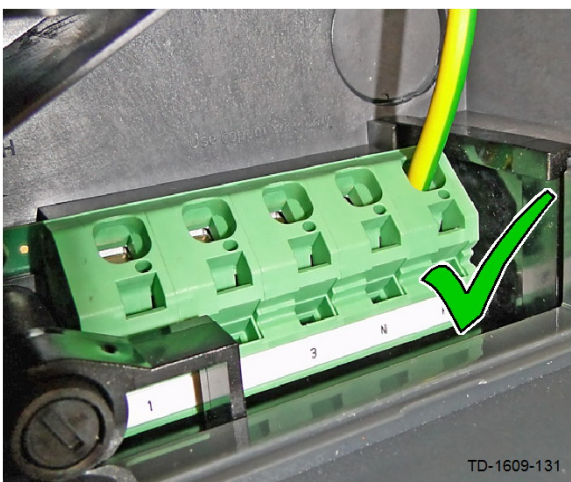
- ▶ Using moderate force, press the screwdriver straightly into the terminal until the contact opens completely.

The angle of the screwdriver changes while pressing in the terminal.



### Connecting wires...

- ▶ Insert the stripped connection wire into the power supply terminal.



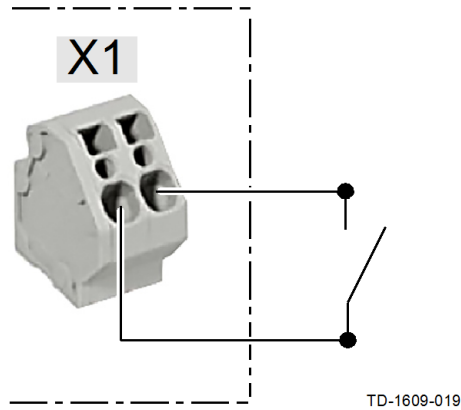
### Closing the power supply terminal...

- ▶ Pull the screwdriver out of the terminal completely in order to close the contact.
- ▶ Check that the connection wire is tight.
- ▶ Connect the other connection wires in the same way.

### 4.5.3 Enable input [X1] (excluding e-series)

The enable input is equipped for use with a potential-free contact. Using the enable input, it is possible to control the charging station using external components (e.g. external key switches, ripple control receiver of the energy supplier, house control, time switches, combination lock, photovoltaic system etc.).

Circuit diagram:



Electrical requirements:

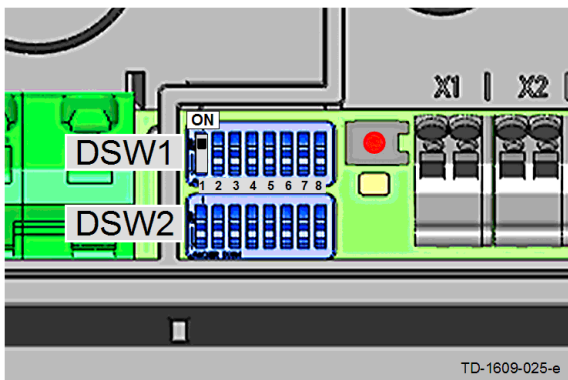
Outside of the device, a secure isolation to dangerous voltages must be ensured for this control line.

Logical function:

Enable contact	State of the charging station
open	BLOCKED
closed	READY FOR OPERATION

Connection:

- ▶ Connect the wires to the enable input (please refer to the "4.5.5 Terminals [X1/X2] (excluding e-series)" chapter for details about the terminal).



#### DIP switch setting...

The use of the enable input must be activated by a DIP switch setting.

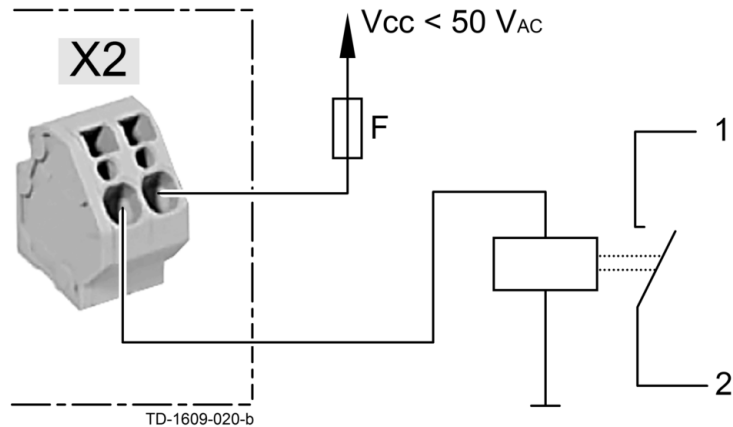
Use enable input:

- "Yes": DSW1.1 = ON
- "No": DSW1.1 = OFF (Default)

#### 4.5.4 Switch contact output [X2] (excluding e-series)

The switch contact output (signal contact) is a potential-free relay contact and signals a fault for the internal contactor. If the output is used, the corresponding DIP switch setting must be selected.

Circuit diagram:

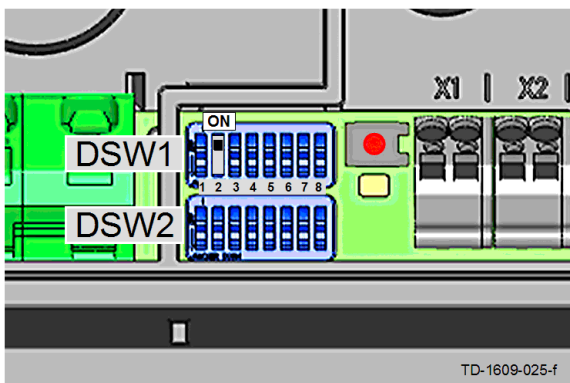


Electrical requirements:

- Safety extra-low voltage  $V_{CC} < 50V_{AC}$
- $F \leq 0.5A$  current-limiting protective equipment

Connection:

- ▶ Connect the wires to the switch contact output (please refer to the chapter "4.5.5 Terminals [X1/X2] (excluding e-series)").



#### DIP switch setting...

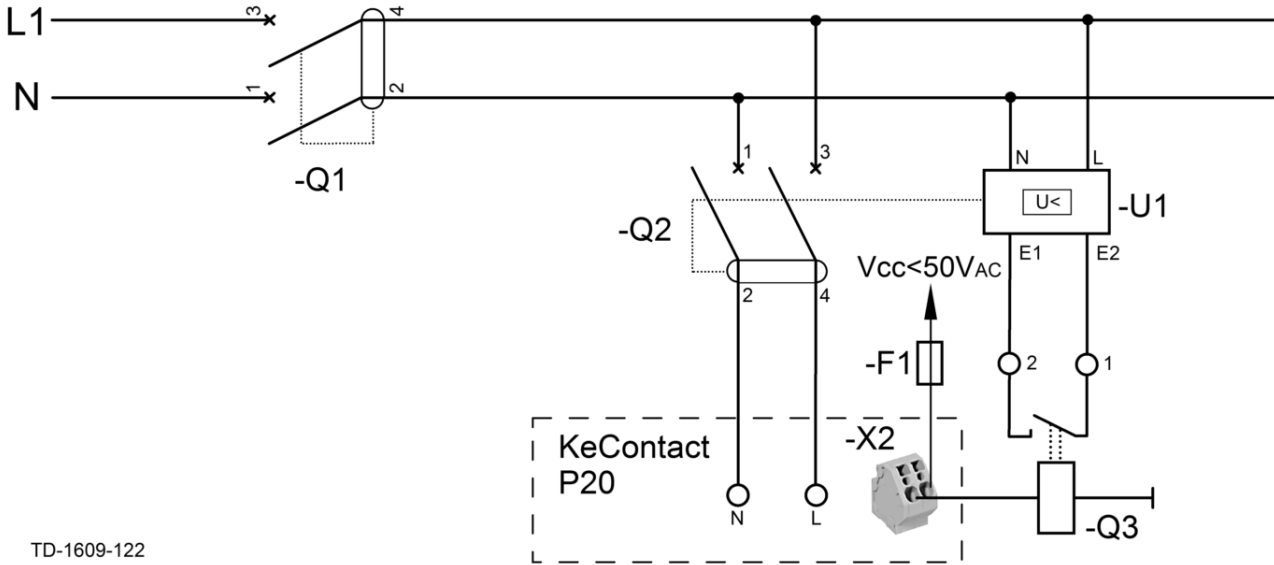
The use of the switch contact output must be activated by a DIP switch setting.

Use switch contact output:

- "Yes": **DSW1.2 = ON**
- "No": DSW1.2 = OFF (Default)

**Example (supplement to the circuit diagram):**

The switch contact can be used to switch off the KeContact P20 (disconnect the current) by means of an overriding disconnect solution.



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<b>-Q1</b> ... Main switch	<b>-Q2</b> ... Line circuit breaker + FI circuit breaker
<b>-Q3</b> ... Contactor/Relay	<b>-F1</b> ... Current-limiting equipment
<b>-U1</b> ... Undervoltage trigger	<b>-X2</b> ... Switch contact output

**4.5.5 Terminals [X1/X2] (excluding e-series)**



**Terminals...**

The terminals for the enable input [X1] and the switch contact output [X2] are designed as spring-type terminals.

*Terminal data:*

- Cross section (min.-max): 0.08 – 4 mm<sup>2</sup>
- AWG (min.-max): 28 – 12
- Insulation stripping length: 8 mm
- Flathead screwdriver 3.0 mm



### 4.5.6 Ethernet1 connection [ETH] (optional)



**WARNING!**

**Danger from compensation currents on shielding!**









Compensation currents flowing through shielding in extended systems can lead to damage to the interfaces and hazards when working on the data lines.

- Any measures (such as connecting to a shared distribution board, expanding a TN-S network, etc.) should be discussed with the person responsible for building services.

The Ethernet1 is designed as terminal block in LSA+® technology. A hardwired communication can be realized using the Ethernet1 connection (e.g. for smart home integration or fleet solutions).

### Color coding

According to the cabling standards used in the building, the contacts are wired according to **TIA-568A/B** for 100BaseT as follows:

Pin	-568A Pair	-568B Pair	-568A Color	-568B Color
1 (Tx+)	3	2	 white/green stripe	 white/orange stripe
2 (Tx-)	3	2	 green/white stripe or green	 orange/white stripe or orange
3 (Rx+)	2	3	 white/orange stripe	 white/green stripe
4 (Rx-)	2	3	 orange/white stripe or orange	 green/white stripe or green

*Terminal data:*

Category	Wire diameter	Insulation diameter
Inflexible cable Cat 5e / Cat6 STP	0.36 mm (AWG 27)	0.7 – 0.75 mm
	0.4 – 0.64 mm (AWG 26 – AWG 22)	0.7 – 1.4 mm
Cat 6 STP	0.51 – 0.81 mm (AWG 24 – AWG 20)	1.0 – 1,4 mm
Flexible cable Cat 5e / Cat 6 STP	7 x 0.2 mm (AWG 24)	1.1 – 1.4 mm

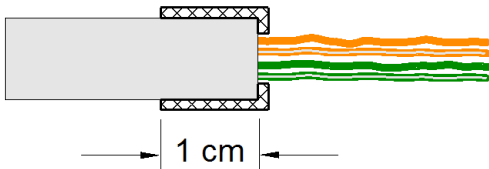


## Installation



### LSA+® insertion tool

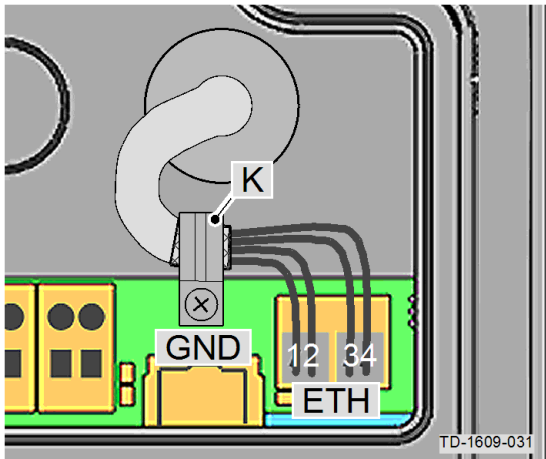
Original KRONE insertion tool with solder-free and stripping-free connection of the wires and simultaneous trimming of the residual lengths.



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### Preparing the connection cable...

- ▶ Strip the connection cable approximately 6 cm.
- ▶ Fold back approx. 1 cm of shielded braiding completely and wrap it with conductive adhesive textile tape.



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### Connecting the cable...

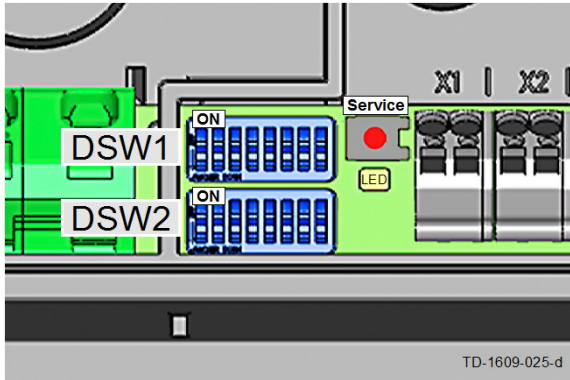
- ▶ Fix the connecting cable at the point of the wrap-around shielding braid in the cable clamp **[K]**.

The cable clamp must be screwed onto the ground point **[GND]** of the circuit board.

- ▶ Clamp the wires to the terminal block **[ETH]** using the insertion tool.

## 4.6 DIP switch settings

Changes to the DIP switch settings only become effective after a restart of the charging station! To do this, press the **[service button]** for 1 second or switch the power supply voltage off/on.

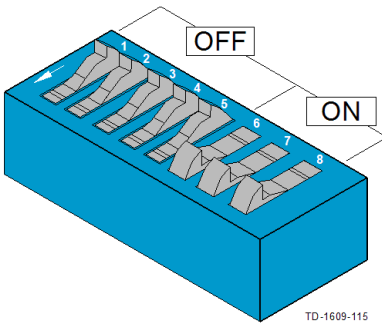


### DIP switches...

The DIP switches are used for the addressing and configuring the charging station and are located under the connector panel cover.

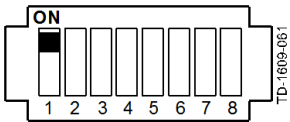
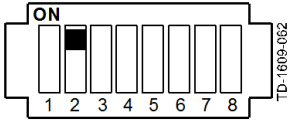
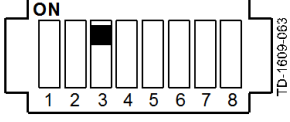
**[DSW1]**...Configuration (DIP switch up)

**[DSW2]**...Addressing (DIP switch down)



### DIP switch example setting...

For better explanation, the figure shows the position of the DIP switches for the states ON and OFF.

CONTROL FUNCTIONS OF THE CHARGING STATION			
Function	DIP switch		Figure
External enable input [X1] is used (for details, see Chapter "4.5.3 Enable input [X1] (excluding e-series)").	D1.1	ON= yes	
Switch contact output [X2] is used (for details, see Chapter "4.5.4 Switch contact output [X2] (excluding e-series)").	D1.2	ON= yes	
Activate SmartHome Interface via UDP (for details see "UDP Programmers Guide")	D1.3	ON= yes	

## Installation



Only one maximum value can be set with the following DIP switches which is smaller or equal to the operating current according to the type plate:

SETTING THE AMPERAGE (DSW1) (*1)				
Current	DIP-Switch			Figure
	D1.6	D1.7	D1.8	
10A	OFF	OFF	OFF	
13A	ON	OFF	OFF	
16A	OFF	ON	OFF	
20A	ON	ON	OFF	
25A	OFF	OFF	ON	
32A	ON	OFF	ON	

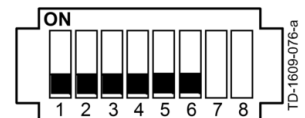
(\*1) Preset maximum charging current value for the vehicle (Control Pilot Duty Cycle).

### OBTAIN IP ADDRESS VIA DHCP (NO ADDRESSING) DSW2.1 to DSW2.4=OFF / DSW2.5=OFF / DSW2.6=OFF

The charging procedure in **STANDARD** mode is carried out automatically by the charging station without higher-ranking control system.

The charging station attempts to obtain an IP address via **DHCP** server, if needed.

This also corresponds to the basic settings for charging stations with out network connection.



**USE FIXED IP ADDRESS  
DSW2.1 to DSW2.4 / DSW2.5=OFF / DSW2.6=ON**

Since multiple charging stations are located in a network; an addressing of the charging stations is necessary.

Addressing is done using the DIP switches **DSW2.1 to DSW2.4**.

The settable Ethernet addresses start at **10 + DIP switch setting**.

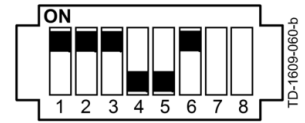
With the 4-bit addressing, the addresses 11 to 26 can be used [**192.168-.25.xx**].

DSW2.1 = Address bit  $2^0$  (value=1)

DSW2.2 = Address bit  $2^1$  (value=2)

DSW2.3 = Address bit  $2^2$  (value=4)

DSW2.4 = Address bit  $2^3$  (value=8)



Example for address "17":

DSW2.1 = ON (Value=1)

DSW2.2 = ON (Value=2)

DSW2.3 = ON (Value=4)

DSW2.4 = OFF (Value=0)

Address= 10 + 1 + 2 + 4 + 0 = 17

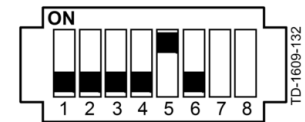
**CONNECTION TO HIGHER-RANKING COMMUNICATION MODULE  
DSW2.1 to DSW2.4=OFF / DSW2.5=ON / DSW2.6=OFF**

Activate communication hub mode.

**D2.5**

**ON= yes**

Required for the connection with e.g. the KeContact C10 Communication Hub for OCPP Connection (for details, see "KeContact C10 Communication Hub Installation Manual").

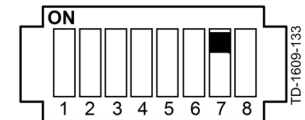


**PLC MODEM (DSW2.7)**

Deactivate PLC modem

**D2.7**

**ON= yes**

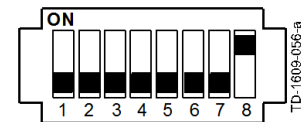


**COMMISSIONING MODE (DSW2.8)**

Activating the commissioning mode (for details, see Chapter "4.7.1 Commissioning mode/self test").

**D2.8**

**ON= yes**



**Set D2.1 to D2.7 to OFF!**

### 4.7 Commissioning

#### General commissioning process

- 1) Remove all residual installation and connection materials from the connection area.
- 2) Before commissioning, check all screw and terminal connections for tightness!
- 3) Check whether all unused cable screw connections are properly sealed with blind plugs or dummy screw fittings.
- 4) Ensure that the voltage of the power supply line is switched on. The status LED should start to slowly flash green after 15-20 seconds.

The device performs a self test every time it is switched on.

- 5) Perform the specified initial tests according to the locally applicable regulations and laws (see Chapter "[4.7.1 Commissioning mode/self test](#)").
- 6) Close the connector panel cover to the charging station.
- 7) Mount the housing cover (see Chapter "[4.7.3 Mounting the housing cover](#)").

#### 4.7.1 Commissioning mode/self test

The charging station can be placed into a commissioning mode for supporting the initial system test. During this, a self test of the device is performed (interlocking, contactor activation, current measurement, etc.) and the result is displayed.

After successful test without connected vehicle, the contactor is switched for limited time in order to facilitate the initial tests. A normal charging procedure is not possible in commissioning mode. The interlocking of the connector socket is activated to prevent a cable from being plugged in.

A switching on of the charging station in commissioning mode via the power supply line leads to a fault for safety reasons (white-red-red-red) in order to prevent an unintended activation.

#### Activating the commissioning mode

- ▶ Set the DIP switch **DSW2.8** to **ON** (see "[4.6 DIP switch settings](#)").
- ▶ Perform a reset of the charging station. To do this, press the **[service button]** for **1 second**. The commissioning mode is now activated and signaled by the orange status LED.
- ▶ You now have the option for approximately 5 min. to contact with standard test probes using the measuring device ( e.g. Astaco® test probes from BEHA) and to perform the necessary tests (see Chapter "[4.7-.2 Safety checks](#)").  
After 5 min. have elapsed, the contactor is deactivated in the charging station is shut down.

#### Deactivating commissioning mode

- ▶ Set the DIP switch **DSW2.8** to **OFF** again.
- ▶ Perform a reset of the charging station. To do this, press the **[service button]** for **1 second** or switch the power supply off/on.  
The charging station starts up again in normal mode and is ready for operation.

### 4.7.2 Safety checks

Before the initial use, check the effectiveness of the safety measure(s) of the system according to the nationally applicable regulations (e.g.: ÖVE/ÖNORM E8001-6-61, DIN VDE 0100-600:2008-06 "Checks,...")!

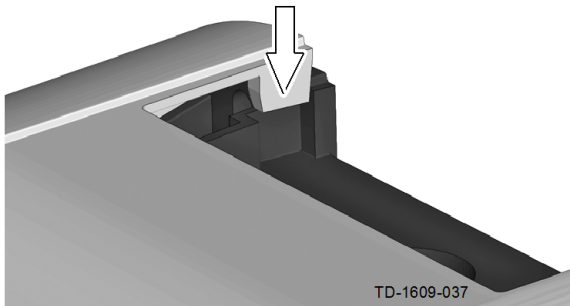
Electrical systems or devices must be checked by the installer of the system or device before their initial operation. This also applies for the expansion or modification of existing systems or electrical devices.

However, it is essential that all conditions for the safety measures are observed.

*Moreover, the following points are to be taken into account:*

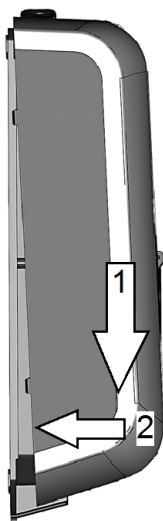
- ▶ The checks (continuity of the connections of the protective conductor, insulation resistance, RCD (FI) triggering current, triggering time,...) are to be performed for the expanded or modified part.
- ▶ The measurement devices must comply with the national regulations! (e.g.: DIN EN 60557 (VDE 0413) "Electrical safety in low voltage distribution systems up to AC 1000V and DC 1500V").
- ▶ The measurement results are to be documented. A test report is to be created and saved before the check.

### 4.7.3 Mounting the housing cover



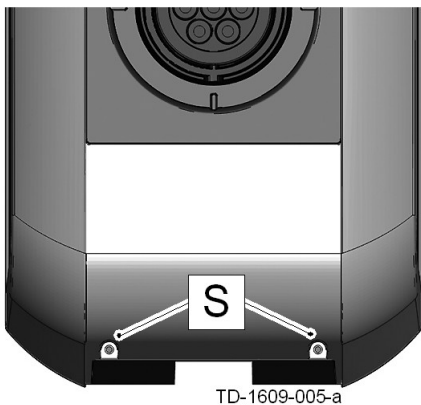
#### Fitting the housing cover...

- ▶ Fit the housing cover at the top and push the cover downwards slightly.
- ▶ Make sure that the housing cover is seated correctly at the top in the housing guides.



#### Mounting the housing cover...

- ▶ Then fold the housing cover to the rear. The housing cover must glide into the guides without considerable resistance.
- ▶ Make sure that the housing cover is seated correctly on all sides in the housing guide. Only a minimum, even gap may be present.



#### Cover screws...

- ▶ Secure the housing cover at the bottom using the two mounting screws[S].

## 5 Additional technical instructions

### 5.1 Programming RFID user cards (optional)

#### Programming the RFID master card



The authorization by an RFID master card is necessary for the programming. The programming mode can be activated and deactivated using the RFID master card.

The first RFID card that is detected by the charging station will automatically be stored as the master card.

- ▶ Hold the RFID master card to be programmed in front of the RFID sensor and wait for the signal tone. The RFID master card is now programmed. Keep this card in a safe place.

#### Programming RFID user cards

- ▶ Hold the RFID master card in front of the RFID sensor and wait for the signal tone.
- ▶ Hold the new RFID user card in front of the RFID sensor within 5 seconds and wait for the signal tone.
- ▶ To confirm, hold the RFID master card in front of the RFID sensor again within 5 seconds and wait for the signal tone. The RFID user card is now programmed.

#### Deleting all RFID cards from memory

- ▶ Remove the housing cover and open the connector panel cover of the charging station.
- ▶ Press the **[service button]** for **5 seconds**. All saved RFID cards (including master card) are now deleted.
- ▶ Now start again with the programming of the RFID master card.

#### Deactivating the RFID function

- ▶ Remove the housing cover and open the connector panel cover of the charging station.
- ▶ Press the **[service button]** for **5 seconds**. All saved RFID cards (including master card) are now deleted.
- ▶ The RFID function is deactivated if no RFID card is held in front of the sensor for the next **60 seconds**. After deactivation, the status display changes from blue to green.



## 5.2 Configuring the communication with the electric vehicle PLC->Ethernet (optional)

To grant the vehicle access to the home network or the Internet, the powerline communication between vehicle and charging station must be configured on both sides using the same password (NMK "Network Membership Key").

The standard password is "**emobility**". We recommend changing this password.

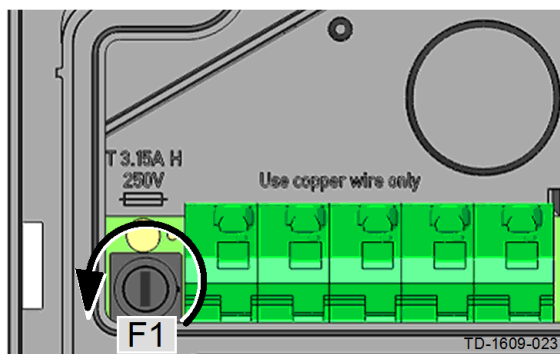
The required software ("EV Communication Assistant") incl. instructions for the configuration of the charging station can be found in the download area at [www.kecontact.com](http://www.kecontact.com).

For details on setting up the vehicle, please refer the manufacturer's instructions for your vehicle.

## 5.3 Replacing the fuse

The following fuse must be used:

Designation	Current / Voltage	Type	Dimensions
F1	3.15 A / 250 V	Slow-blow with high breaking capacity (>1500A) (T) (H)	5 x 20 mm fuse



### Replacing the fuse...

- ▶ Switch off the power supply line of the charging station completely.
- ▶ Remove the connector panel cover.
- ▶ Press a flathead screwdriver into the opening of the fuse holder.
- ▶ Turn the fuse holder counterclockwise until the spring pushes out automatically.
- ▶ Replace the fuse.
- ▶ Push the fuse holder in and retighten in the clockwise direction.

## 5.4 Dimensions

### Version with standard socket (Type 2)

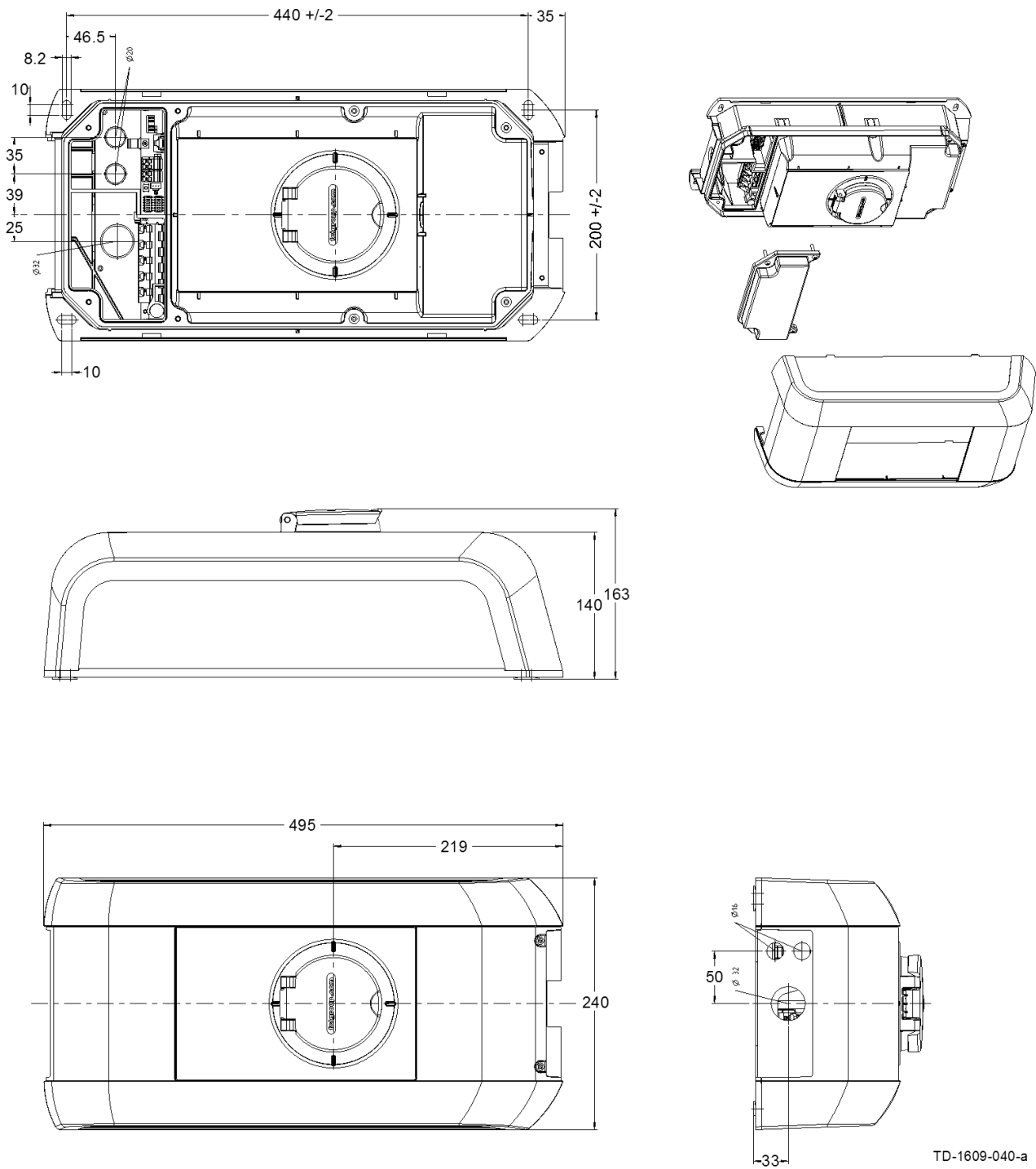


Figure 5-1: Dimensions in millimeters

## 5.5 Technical data

Electrical data	
Cable feed:	Surface cable routing or flush-type cable routing
Connection cross-section:	Minimum cross-section (depending on the cable and the line length): - 5 x 2.5 mm <sup>2</sup> (16A nominal current) - 5 x 6.0 mm <sup>2</sup> (32A nominal current)
Supply terminals:	Connection line: - Fixed (min.-max): 0.2 – 16 mm <sup>2</sup> - Flexible (min.-max): 0.2 – 16 mm <sup>2</sup> - AWG (min.-max): 24 – 6 - flexible (min.-max) with wire end sleeve without/with plastic sleeve: 0.25 – 10 / 0.25 – 10 mm <sup>2</sup>
Supply terminals temperature rating:	105°C
Nominal current (configurable connection values):	10A, 13A, 16A, 20A, 25A or 32A 3-phase or 1-phase
Mains voltage (Europe):	230V 230/400V 3N~ (excluding e-series)
Mains frequency:	50Hz / 60Hz
Surge category:	III according to EN 60664
Rated short-time current resistance:	< 10kA effective value according to EN 61439-1
Fuse protection (in the house installation):	The fuse protection must occur according to the locally valid regulations, dependent on the socket versions / cable versions (see type plate).
Residual current circuit breaker (in the house installation):	FI I <sub>ΔN</sub> =30mA Type A, sensitive to pulsating currents I <sub>N</sub> dimensioned according to the fuse
Socket versions:	Type 2 standard socket 32A / 400 V <sub>AC</sub> according to EN 62196-1 and VDE-AR-E 2623-2-2
Cable versions: (Rating see type plate)	Type 1 cable: up to 32A / 230 V <sub>AC</sub> according to EN 62196-1 and SAE-J1772 Type 2 cable: up to 32A / 400 V <sub>AC</sub> according to EN 62196-1 and VDE-AR-E 2623-2-2
Protection class:	I
IP protection rating for device:	IP54
Protection against mechanical impact:	IK08 (except for cylinder lock)

## Additional technical instructions

Interfaces	
Enable input [X1]:	Enable input for external authorization: Connection line: - Cross section (min.-max): 0.08 – 4 mm <sup>2</sup> - AWG (min.-max): 28 – 12
Potential-free switch contact output [X2]:	Safety extra-low voltage <50V <sub>AC</sub> 50/60Hz External current limiting max. 0.5A Connection line: - Cross section (min.-max): 0.08 – 4 mm <sup>2</sup> - AWG (min.-max): 28 – 12
Ethernet2 connection (debug) [X3]:	RJ45
Ethernet1 connection [X4]:	LSA+ terminals
RFID (optional):	MIFARE cards or tags according to ISO14443
Cylinder lock (optional):	Profile half cylinder according to EN 1303 or DIN 18252 Length A=30mm (31mm)

Mechanical data	
Dimensions (W x H x D):	240 x 495 x 163 mm (e.g. type 2 standard socket)
Weight:	approx. 4.8 kg (depending on device version)

Ambient conditions	
Operating temperature at 16A:	-25°C to +50°C without direct sunlight
Operating temperature at 32A:	-25°C to +40°C without direct sunlight
Temperature behavior:	In each case, for the specified operating temperature ranges, the device provides charging current continuously.  To increase the charging availability, the charging current specification is reduced to 16A if the temperature is exceeded. The charging procedure can also subsequently be switched off.  After cooling down, the charging current specification is increased again.
Storage temperature range:	-25°C to +80°C
Speed of temperature change:	max. 0.5°C /min
Allowable relative humidity:	5 % to 95 % (non condensing)
Altitude:	max. 2000 m above sea level

## 5.6 Standards and regulations

EC Directives	
2004/108/EG	Directive on electromagnetic compatibility
2006/95/EG	Low-voltage Directive

Check of the conformity with the low-voltage directives / electromagnetic compatibility directive	
EN 61851-1	Conductive charging system for electrical vehicles
EN 61851-22	Conductive charging system for electrical vehicles – Part 22: Alternating current charging station for electrical vehicles
EN 61439-1	Low-voltage switch component combinations - Part 1: General determinations
FprEN 61439-7	Low-voltage switch component combinations - Part 7: Switch component combinations for commercial premises, special installations or locations such as marinas, campsites, marketplaces and similar applications as well as charging stations for electrical vehicles

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