

A large green geometric shape, resembling a stylized 'Z' or a series of parallel lines, is positioned on the left side of the page, extending from the top to the bottom.

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

**KEBA<sup>®</sup>**

Automation by innovation.

## General notes for this manual

At various points in this manual you will see notes and precautionary warnings regarding possible hazards. The symbols used have the following meanings:



---

### DANGER!

- Indicates that death or serious bodily injury will occur if appropriate precautionary measures are not taken.
- 



---

### WARNING!

- Indicates that death or serious bodily injury can occur if appropriate precautionary measures are not taken.
- 



---

### CAUTION!

- Indicates that damage to property or minor physical injury can occur if appropriate precautionary measures are not taken.
- 

---

### ATTENTION

- Indicates that damage to property can occur if appropriate precautionary measures are not taken.
- 



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

---

### Note

*Notes on use of equipment and useful practical tips are identified by the “Note” symbol. They do not contain any information that draws attention to potentially dangerous or harmful functions.*

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- ▶ This arrow marks **working steps** that you are to perform.

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KEBA AG, Postfach 111, Gewerbepark Urfahr, A-4041 Linz



This product is UL certified (E350546). It complies with the required UL and CSA standards for North America and Canada.



This product meets the requirements of the ROHS Directive (RL 2002/95/EC). The corresponding Declaration of Conformity is located at KEBA AG.

### FCC INFORMATION

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

#### CAUTION:

Changes or modifications not expressly approved by the party responsible for compliance could avoid the user's authority to operate the equipment.

#### NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### CANADA

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

For devices with optional BPL modem:

Complies with IC: ICES – 006; en conformité avec IC: NMB - 006 du Canada.

### Revision history

| Modification from / to | Date   | modified Pages | Description    |
|------------------------|--------|----------------|----------------|
| V1.00                  | 221012 | -              | Manual created |

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# 1 Important information

## 1.1 Safety instructions



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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 who are fully responsible for the compliance with existing standards and installation regulations.
- Please observe that an additional overvoltage protection of vehicles can be required.
- 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 (IN/OUT) from Class 2 voltage sources!

- **Before** commissioning, check all screw and terminal connections for firm seating!
  - The connector panel cover may never be left open unattended. Mount the connector panel cover if you leave the charging station.
  - Use of the charging station with open cable insertion openings is prohibited.
  - 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 line circuit breaker of the building installation (panel) serves as mains disconnecter.
  - Observe the instructions given for selecting the location and the constructional requirements!  
If the specifications for the location are not observed, this can result in death, serious physical injury or equipment damage if the corresponding precautionary measures are not met!
-



---

**WARNING!**

- Pull the charging cable only at the plug and not at the cable out of the connector.
- Ensure that the charging cable is not mechanically damaged (bent, pinched or run over) and the connection area does not come into contact with heat sources, dirt or water.



---

**5 safety rules:**

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

---

**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.



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**Information for technicians who are permitted to open the device:**

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

Before handling components, make sure you perform an electrical discharge by touching a metallic, grounded object!

---

## 1.2 Intended use

KeContact P20-U 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 followed precisely 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. A connection of other loads (e.g. electric tools) is not permitted!

## 1.3 About this manual

### This manual is valid for devices of the type

- KeContact P20-U

### Use of this manual

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

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

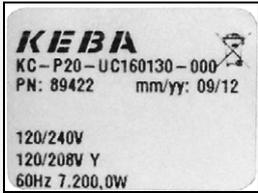
Please refer to the "KeContact P20-U User manual" for information and instructions about operating the device.

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<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

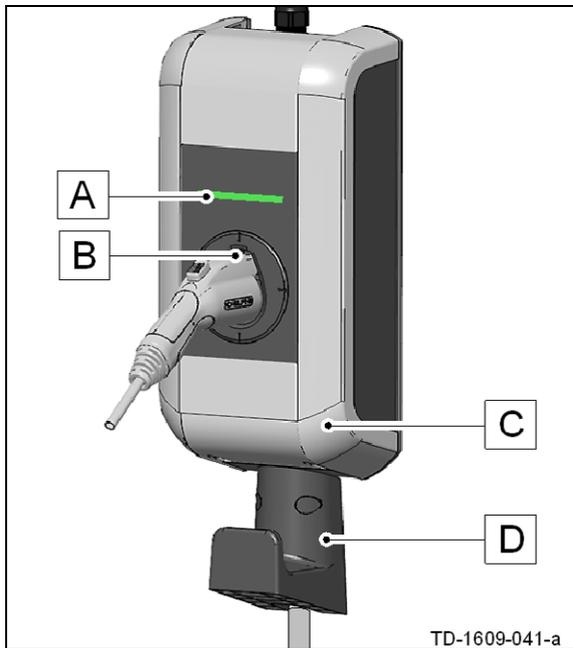
#### Example KC-P20-UC160130-000

| Type plate  | Product family | - | Product type | Type / Version | - |
|---|----------------|---|--------------|----------------|---|
| see top of the device   | KC             | - | P            | 20             | - |
|  | KeContact      |   | ChargePoint  | Type           |   |

| Design versions                                       |                |            |                    |   |   |            |
|---|----------------|------------|--------------------|---|---|------------|
| Basic versions  | Cable / Socket |            |                    |   | Electronics   | Electrics  |
| U   | C              | 1          | 6                  | 0 1   | 3   | 0          |
| E...Europe (IEC61851)<br>J...Japan<br>U...UL (UL2594) | C...Cable      | 1...Type 1 | 5...15A<br>6...30A | 00...no cable<br>01...4m straight<br>99...4m spiraled | 0...Basic<br>1...Basic+Multitaring/Energy meter [MR/EM]<br>2...Basic+MR/EM+Ethernet Connection [ETH]<br>3...Basic+MR/EM+ETH+Powerline [BPL] | 0...Relays |

| - | Options           |       |   | - | Optional Customer code 4-digit |
|---|-------------------|-------|---|---|--------------------------------|
|   | Buttons           |       | Authentication                                  |   |                                |
|   | Left              | Right |   |   |                                |
| - | 0                 | 0     | 0   | - | xxxx                           |
|   | 0...not populated |       | 0...not populated<br>R...RFID<br>K...Key switch |   |                                |

## 2 Overview



Charging station (application example)

### Base model with charging cable (type 1)

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

### Additional optional features

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

## 3 Installation guidelines

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### ATTENTION

- Use only high quality shielded cables for the Ethernet connections "ETH" (see also chapter "Ethernet1 connection "ETH").
- 

### 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 must 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 constructed in order to withstand the mechanical forces.
- Do not mount the charging station at locations where falling objects (e.g. hung ladders or automobile tires) could damage the device.
- Position the bottom of the charging station at a comfortable height and at least 460 mm (18 inches) above the ground. Ensure that the status LED on the front can clearly be seen by anyone who will be operating the device.
- The device may not be exposed to direct spray water (by e.g. neighboring manual car-wash facility, high-pressure cleaner, garden hose).
- If possible, the device should be mounted protected from direct rainfall, in order to avoid e.g. icing, damage because of hail or similar.
- If possible, the charging station should be mounted protected from direct sunlight, in order to avoid the reduction of the charging current or the interruption of the charging procedure due too high temperatures of the components inside the charging station.
- For not weatherproof mounting (e.g. in a parking lot outside), the charging current setting is changed to 16A, if the temperature is inadmissible exceeded. Subsequently, the charging process can also be switched off.

**For information about environmental conditions, please refer to the "Technical Data" chapter.**

**Observe the national electric code and regulations.**

## 3.2 Specifications for the electrical connection

### Power supply line / components:

The power supply line must be connected permanent to an existing house installation and correspond to the nationally applicable legal conditions. A socket outlet is not allowed to connect the charging station. However, in all cases the following safety measures must be installed:

- Branch circuit protection max. 40 A

### Dimensioning of the power supply line:

The charging station is set to 10 amps in the delivery state.

If a connection with more than 10 A is possible, an adjustment to a higher nominal current must be performed using DIP switches (see chapter “DIP switch settings”).

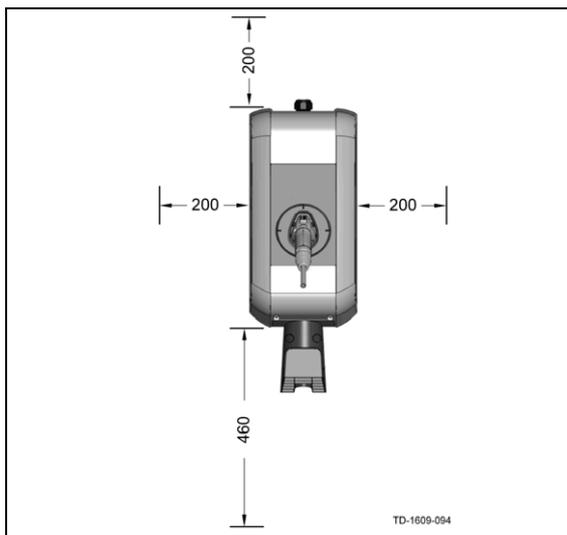
When dimensioning the power supply line also observe the increased environmental temperatures inside the connection panel of the charging station (see “Supply terminals temperature rating”)! Under certain circumstances, this can lead to an increase of the cable cross-section and to the adaptation of the temperature resistance of the power supply line.

The dimensioning of the cable must be checked by a qualified electrician for each house installation since reduction factors due to the type of installation, line length, environmental conditions and material properties of the cable can have an influence on the cable selection.

### Mains disconnector:

The charging station does not have its own power switch. The line circuit breaker in the panel serves as mains disconnector.

## 3.3 Space requirements



Space requirements – dimensions in millimeters

### **Space requirements**

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

## 4 Installation

### Scope of supply (standard)

|   |         |
|---|---------|
| Charging station                                | 1 piece |
| Cable hanger (for versions with charging cable) | 1 piece |
| Installation manual (for the specialist)        | 1 piece |
| User manual (for the end customer)              | 1 piece |
| Drilling template                               | 1 piece |

### Installation requirements

- Before beginning the installation, the installation guidelines must be observed.
- Contact person on-site (for access to the mains disconnecter in the electrical distribution panel board).
- The electrical connection (power supply line) must be prepared.

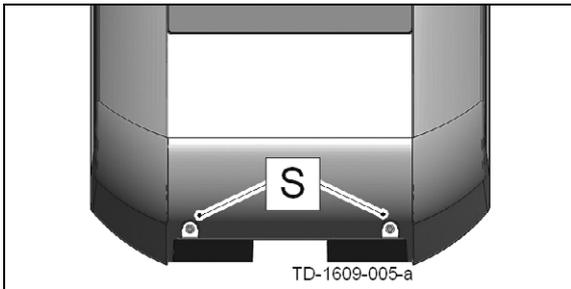
### Tool list

The following tools are required for the installation:

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

## 4.1 Preparing the housing

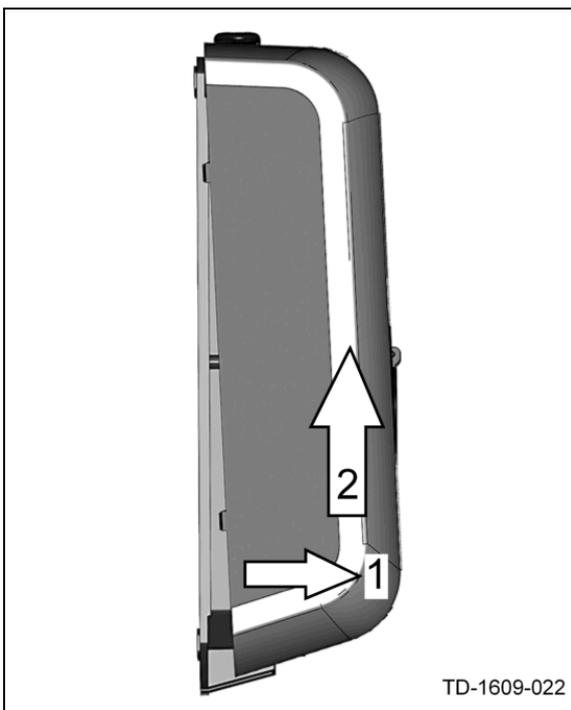
### 4.1.1 Removing the housing cover



Mounting screws

#### Mounting screws

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

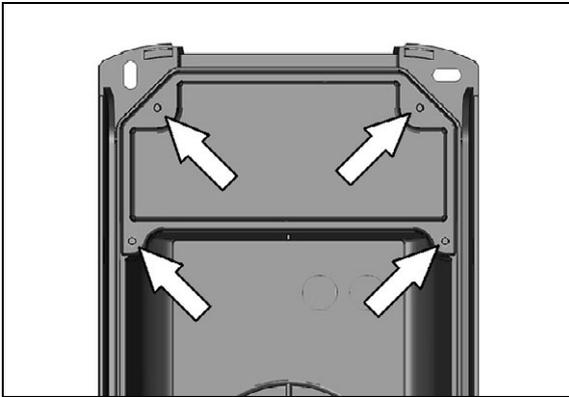


Removing the housing cover

#### Removing the housing cover

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

### 4.1.2 Removing/mounting the connector panel cover

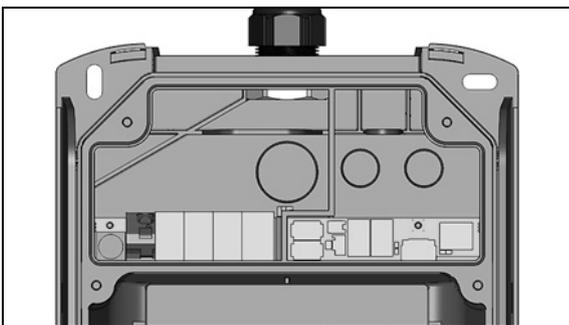


Removing the connector panel cover

#### Removing the connector panel cover

- ▶ Unscrew the four screws that mount the connector panel cover and remove the connector panel cover.

#### Information for reassembly



Connector panel cover removed

#### Mounting the connector panel cover

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

## 4.2 Preparing the cable insertion

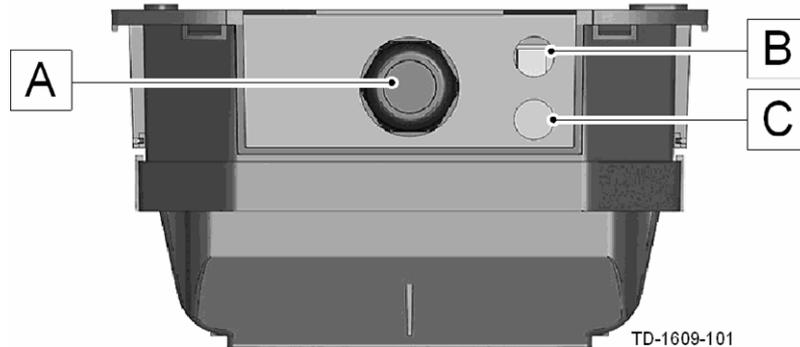
There are three possibilities available for the cable insertion:

- Cable insertion from above (conduit wiring; indoor/outdoor)
- Cable insertion from behind (e.g. NM-B wiring; indoor)
- Cable insertion with floor-mounted column (outdoor)

#### Preparations

- ▶ Remove the connector panel cover (see Chapter "Removing/mounting the connector panel cover").
- ▶ **Populate the charging station with the required cable glands, conduit fittings or seals (if an open cable insertion opening is not used or cable insertion from behind is performed). Use of the charging station with open cable insertion openings is prohibited.**

#### 4.2.1 Cable insertion from above (indoor/outdoor)



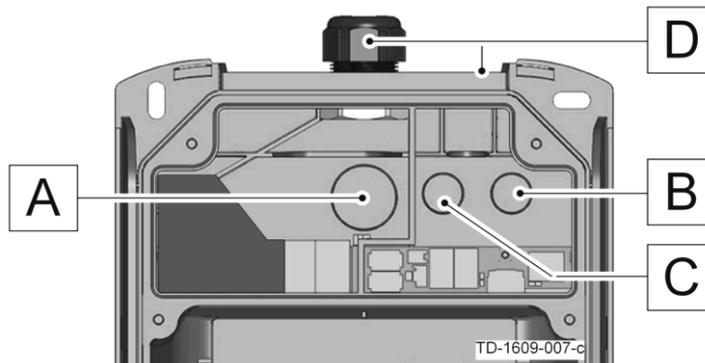
Cable insertion openings - top view

**[A]**...Conduit fitting M32  
(for power supply line)

**[B]**...Cable gland M16 (for control line/Ethernet)  
or liquid tight conduit fitting

**[C]**...Cable gland M16 (for control line/Ethernet)  
or liquid tight conduit fitting

#### 4.2.2 Cable insertion from behind (indoor)



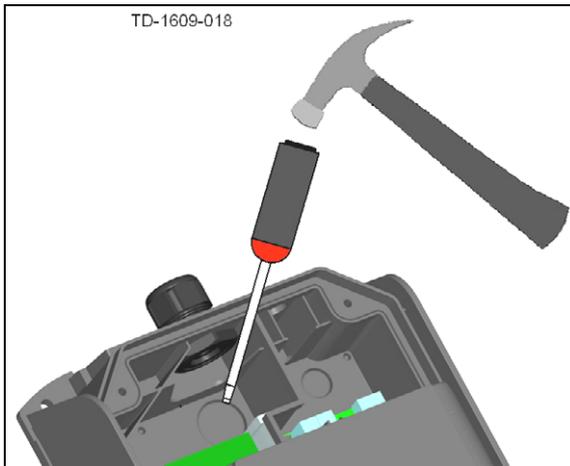
Cable insertion openings - front view

**[A]**... Knock out M32 (power supply line)

**[B]**... Knock out M16 (for control line/Ethernet)

**[C]**... Knock out M16 (for control line/Ethernet)

**[D]**... M32/M16 conduit fittings to close openings

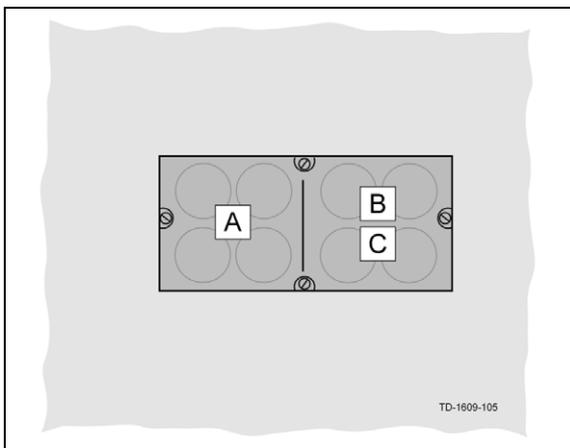


Knock outs

### Breaking out the cable insertion openings

The marked positions for the required cable feedthroughs on the rear of the housing must be broken out.

- ▶ Place the housing on on a stable support pad and use a hammer and flathead screwdriver to carefully break out the required cable insertion openings.
- ▶ All unused cable insertion openings at the top must be sealed with conduit fittings.



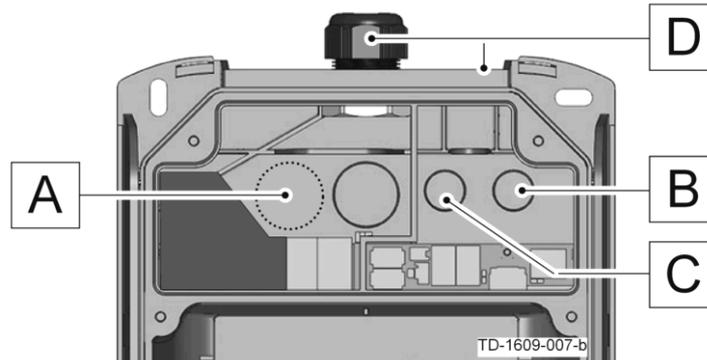
Cable outlet box (example)

### Cable outlet box

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

- [A]... power supply line
- [B]... control line
- [C]... Ethernet

### 4.2.3 Cable insertion with floor-mounted column (outdoor)



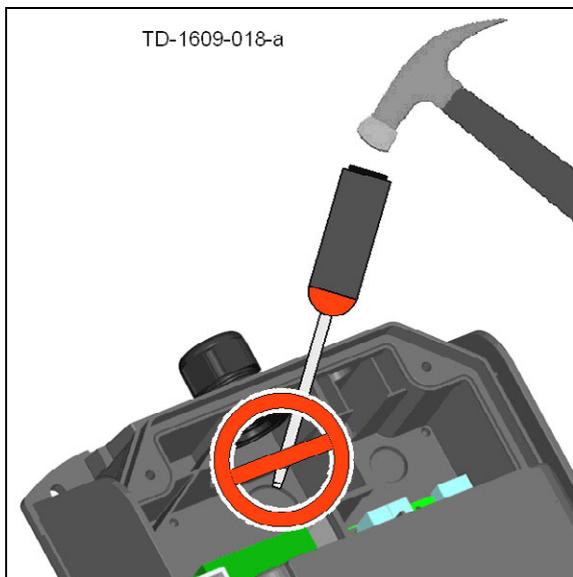
Cable insertion openings - front view

[A]...Drill hole with conduit fitting  
(for power supply line)

[B]...Feedthrough M16 with conduit fitting  
(for control line/Ethernet)

[C]...Feedthrough M16 with conduit fitting  
(for control line/Ethernet)

[D]...M32/M16 Liquid tight conduit fittings



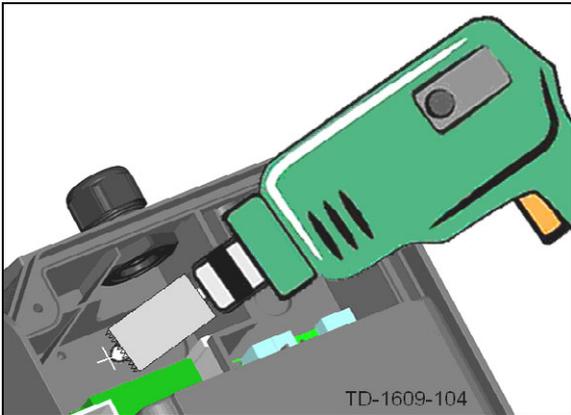
Breaking out the cable insertion openings

#### Breaking out the cable insertion openings

The marked positions for the required cable feedthroughs on the rear of the housing must be broken out (only M16 knock outs).

- ▶ Place the housing on on a stable support pad and use a hammer and flathead screwdriver to carefully break out the required cable insertion openings.

**Do not break out the marked M32 cable insertion opening. If needed, a hole must be drilled that fits to the used cable conduit.**

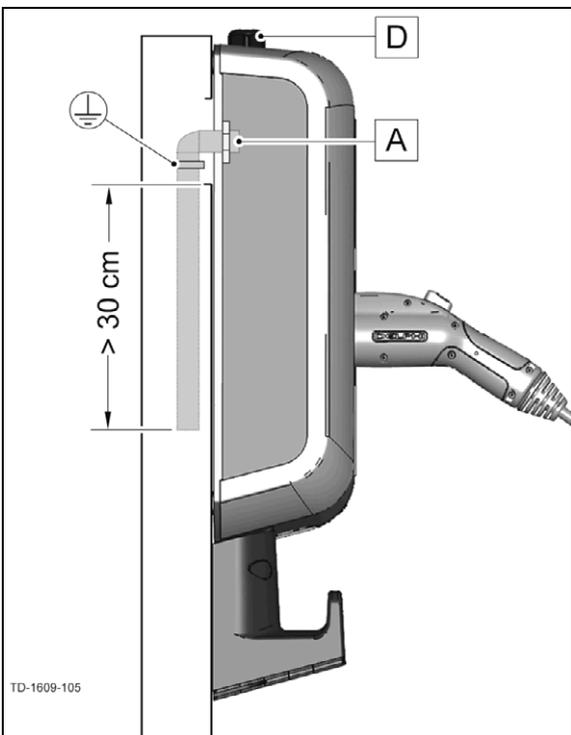


Drilling the cable opening

**Drilling the cable insertion opening for the power supply line**

- ▶ Drill a hole into the housing that fits to the used cable conduit for the power supply line. The position is beside the marked M32 cable insertion opening.

**The drill hole and the M32 knock out must not touch each other.**



Charging station on floor-mounted column

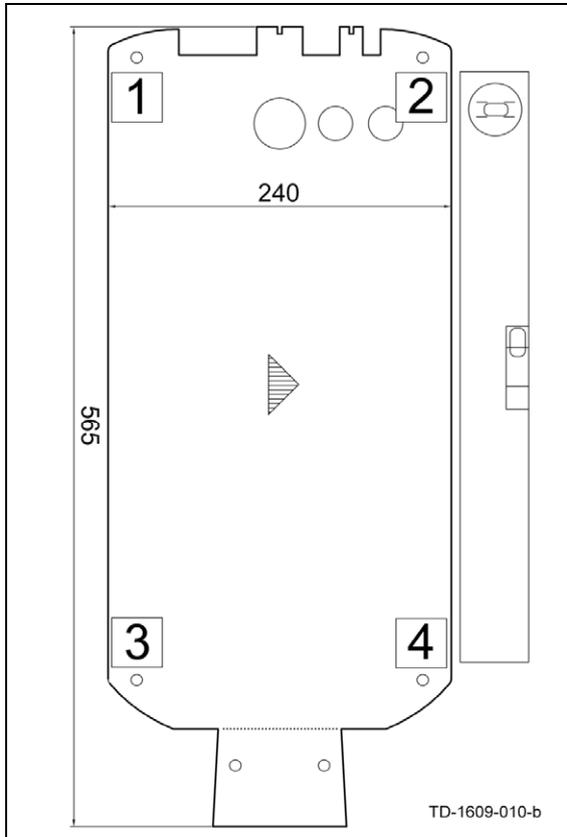
**Cable insertion openings**

- ▶ All cable insertion openings at the rear side must be equipped with a cable conduit **[A]** as shown on the picture.
- ▶ All cable openings **[D]** at the top must be closed with liquid tight conduit fittings.

**Ground connection**

In case of metal conduits, a ground connection is required aswell as the floor-mounted column.

### 4.3 Mounting the charging station



Marking the holes

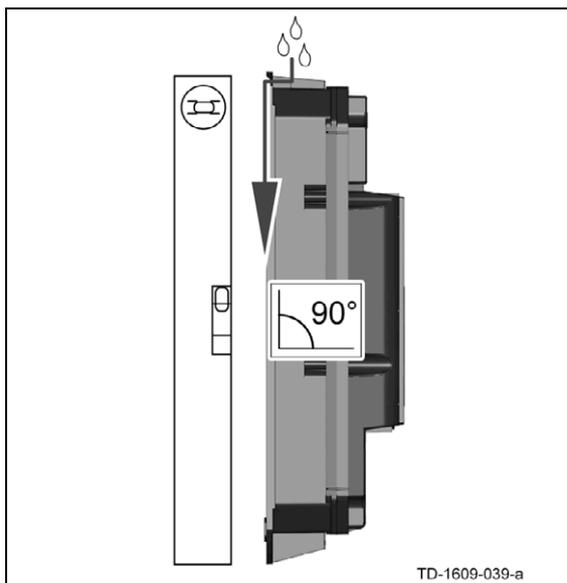
**A proper mounting is absolutely necessary and lies outside of the scope of responsibility of KEBA AG.**

#### 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.

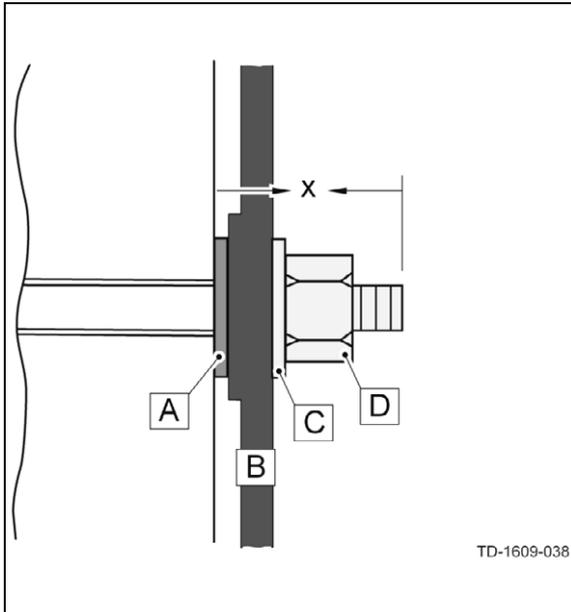


Water drainage

#### 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!).

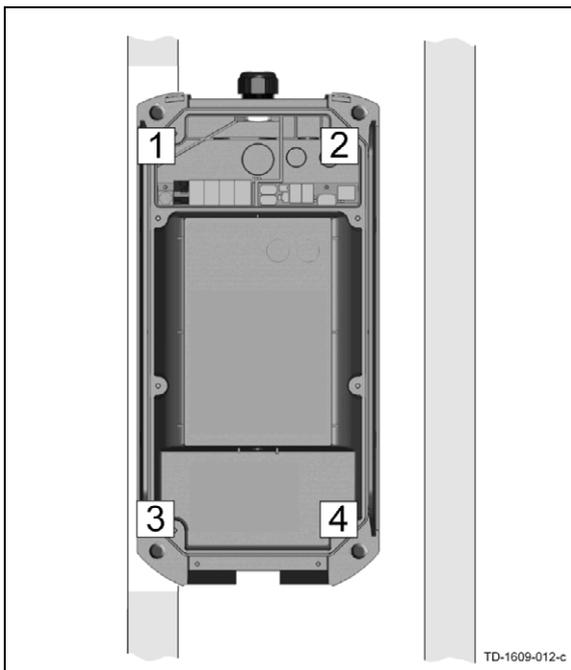


Schematic diagram

**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 on hollow walls

**Installation on hollow walls**

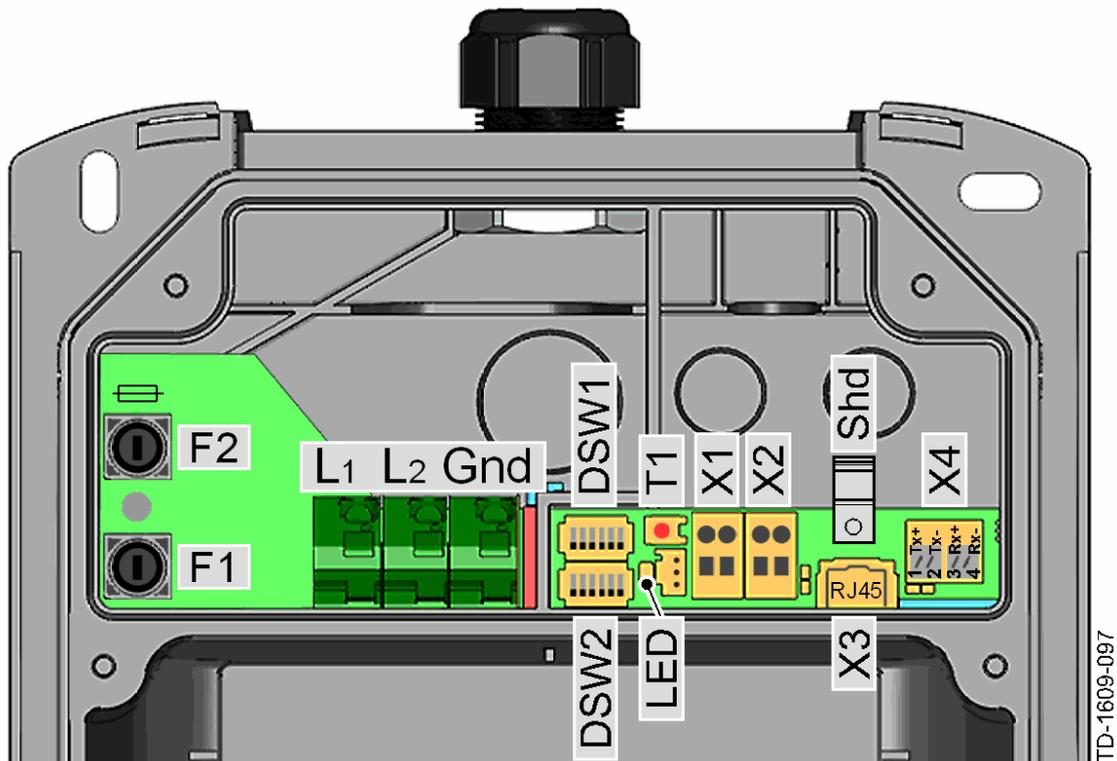
For installation on hollow walls, at least two mounting screws must be secured to a support element of the wall (see figure).

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.

## 4.4 Electrical connection

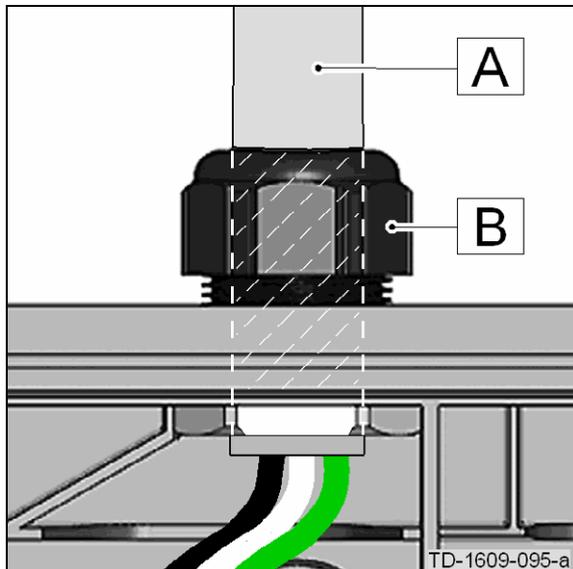
### 4.4.1 Connection overview with opened connector panel cover



Connection overview

|   |   |
|---|---|
| [L1]... Connector for Phase conductor 1       | [T1]... Service button                              |
| [L2]... Connector for Phase conductor 2       | [LED]... Status LED (internal)                      |
| [Gnd]... Connector for earth ground conductor | [X1]... Enable input "IN"                           |
| [F1]... Fuse holder for L1                    | [X2]... Switch contact output "OUT"                 |
| [F2]... Fuse holder for L2                    | [X3]... Ethernet2 connection (debug)                |
| [DSW1]... DIP switch configuration            | [X4]... Ethernet1 connection (LSA+ terminals)       |
| [DSW2]... DIP switch addressing               | [Shd]... Shield connection for Ethernet1 connection |

#### 4.4.2 Connecting the power supply line

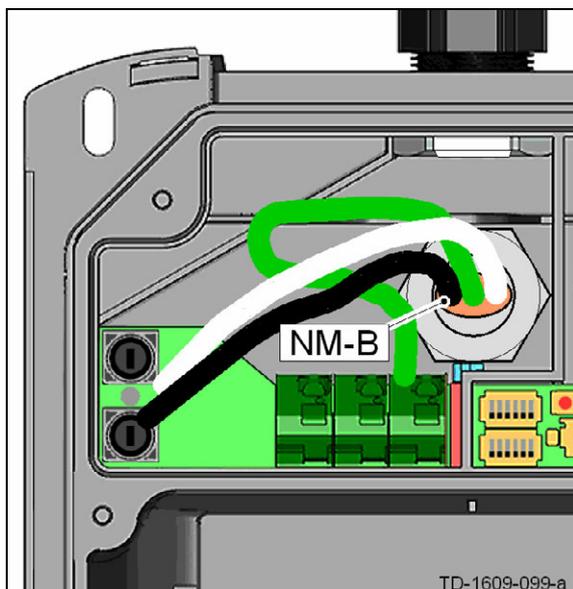


Running the power supply line

##### Running the power supply line (conduit wiring)

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

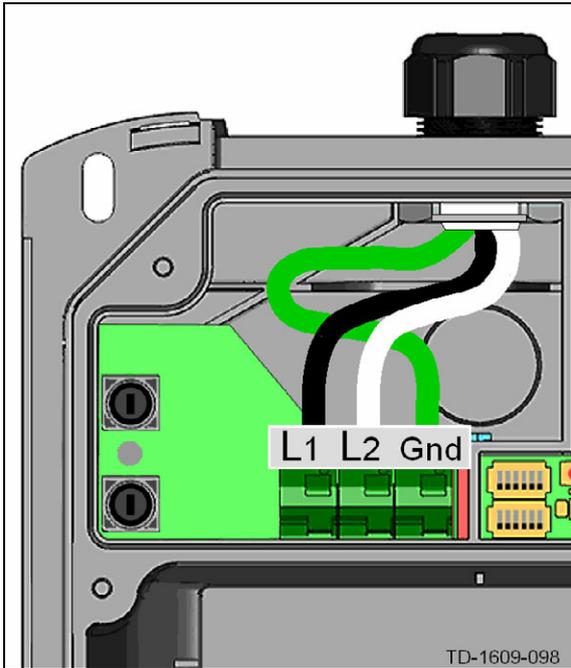
[A]...Conduit  
[B]...Cable gland



Running the power supply line

##### Running the power supply line (e.g. NM-B wiring)

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



Connecting the power supply line (example)

### Connecting the power supply line

- ▶ Shorten the connection wires to the appropriate length; these should be kept as short as possible.

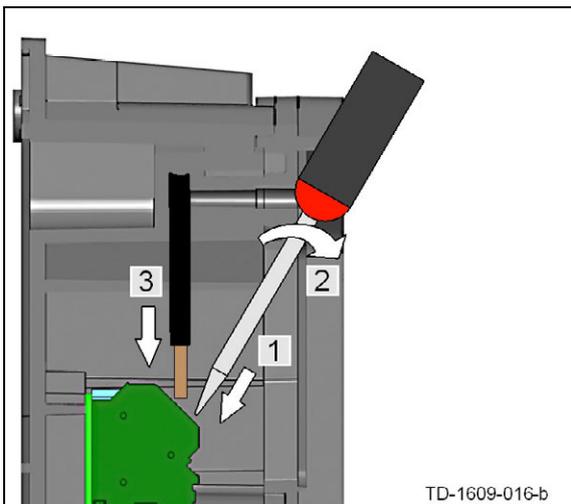
The ground conductor must be longer than the remaining conductors!

- ▶ Strip approx. 12 mm from the connection wires.

Wire end sleeves are recommended for finely stranded wires.

- ▶ Perform the connection of the power supply line [L1], [L2] and [Gnd].

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



Supply terminals

### Supply terminals

The supply terminals are designed as spring-type terminals.

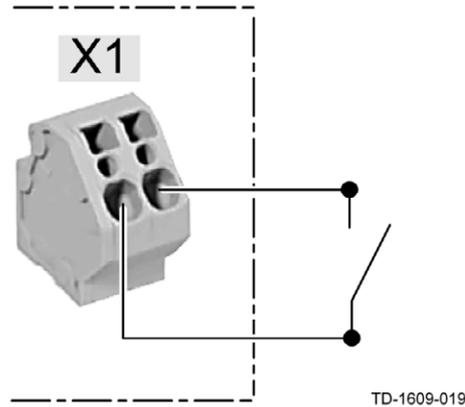
#### Terminal data:

- inflexible (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/plastic sleeve
  - 0.25 – 10 / 0.25 – 10 mm<sup>2</sup>
- Stripping length: 12 mm
- Flathead screwdriver: 5.5 mm

### 4.4.3 Enable input "IN"

The enable input 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:

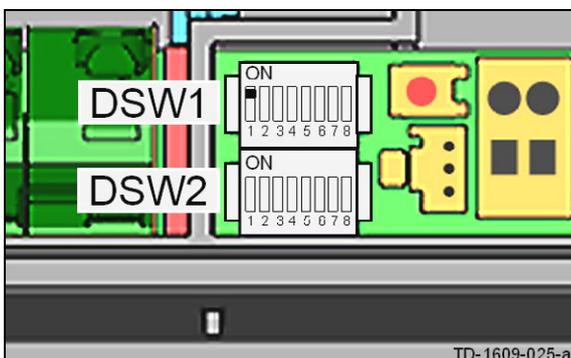


Logical function:

| Enable contact | State of the charging station |
|----------------|-------------------------------|
| open           | LOCKED                        |
| closed         | READY FOR OPERATION           |

Connection:

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



DIP switch setting

#### DIP switch setting

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

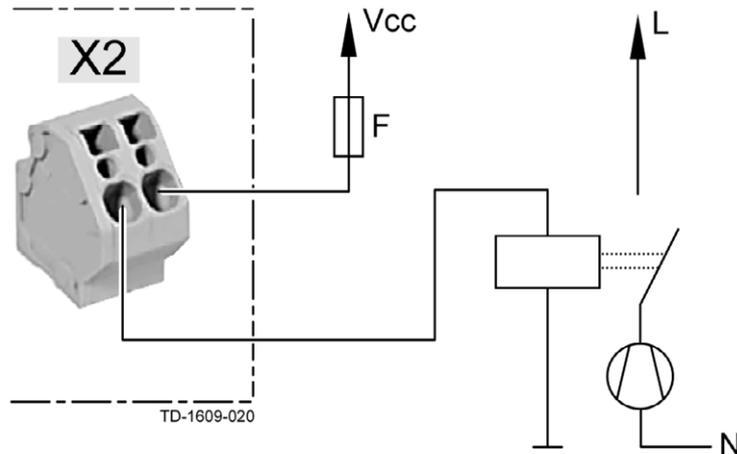
Use enable input:

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

#### 4.4.4 Switch contact "OUT"

The switch contact is a potential-free relay contact and can be used for activating a fan in the garage. This can be necessary with some vehicles. Please consider building requirements and car requirements. If a fan has to be used, the corresponding DIP switch settings must be selected.

Circuit diagram:

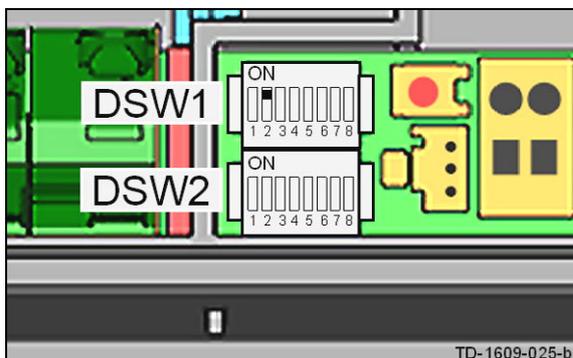


Electrical data:

- Class 2 circuit  $V_{cc} < 30V_{AC}$
- Fuse  $F = 0.5A$  slow-blow

Connection:

- ▶ Connect the wires to the switch contact "OUT" (please refer to the "Terminals [X1/X2]" chapter for details about the terminal).



DIP switch setting

#### DIP switch setting

The use of the switch contact (e.g. for the fan specification) must be activated by a DIP switch setting.

Use the switch output:

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

### 4.4.5 Terminals (X1/X2)



terminal

#### Terminals

The terminals for the enable input "IN" [X1] and the switch contact "OUT" [X2] are designed as spring-type terminals. Only Class 2 circuit connections are allowed.

#### Terminal data:

- Cross-section (min.-max): 0.08 – 4 mm<sup>2</sup>
- AWG (min.-max): 28 – 12
- Stripping length: 8 mm
- Flathead screwdriver: 3,0 mm

### 4.4.6 Ethernet1 connection "ETH" (optional)

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 standards used, the contacts are wired according to **TIA-568A/B** for 100BaseT:

| 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:

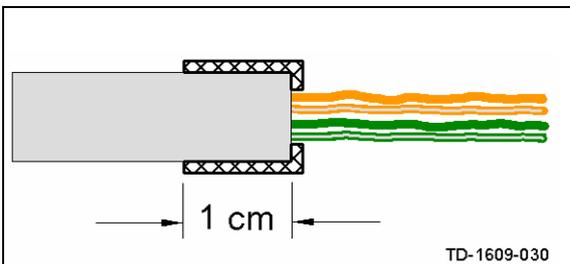
| Category                              | Wire diameter                       | Insulation diameter |
|---------------------------------------|-------------------------------------|---------------------|
| Inflexible cable<br>Cat 5e / Cat6 STP | 0.36 mm (AWG 27)                    | 0.7 – 0.75 mm       |
|                                       | 0.4 – 0,64 mm<br>(AWG 26 – AWG 22)  | 0.7 – 1,4 mm        |
| Cat 6 STP                             | 0.51 – 0,81 mm<br>(AWG 24 – AWG 20) | 1.0 – 1,4 mm        |
| Flexible cable<br>Cat 5e / Cat 6 STP  | 7 x 0.2 mm<br>(AWG 24)              | 1.1 – 1,4 mm        |



LSA+® insertion tool

**LSA+® insertion tool**

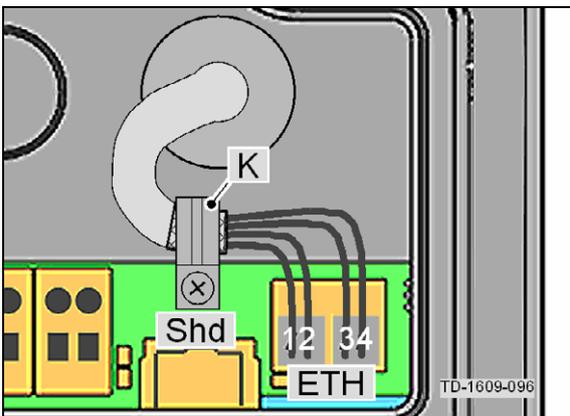
Original KRONE insertion tool with solder-free and stripping-free connection of the wires and simultaneous trimming of the residual lengths.



Preparing the connection cable

**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.

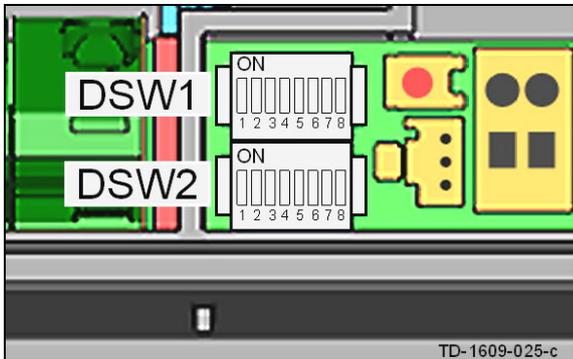


Connecting the cable

**Connecting the cable**

- ▶ Secure the connection cable at the point of the wrapped shielded braiding in the cable clamp **[K]**.  
The cable clamp must be screwed onto the shield point **[Shd]** of the circuit board.
- ▶ Clamp the wires to the terminal block **[ETH]** using the insertion tool.

### 4.5 DIP switch settings



DIP switches

#### DIP switches

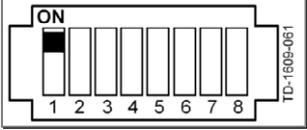
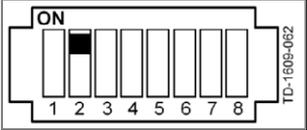
The DIP switches are used for the addressing and configuring the charging station and are located under the connector panel cover.

[DSW1]...configuration (upper DIP switch)

[DSW2]...addressing (lower DIP switch)

| SETTING THE MAXIMUM EVSE CURRENT CAPACITY (DSW1) (*1) |      |      |      |        |
|---|------|------|------|--------|
| Current   | D1.6 | D1.7 | D1.8 | Figure |
| 10A   | OFF  | OFF  | OFF  |        |
| 13A   | ON   | OFF  | OFF  |        |
| 16A   | OFF  | ON   | OFF  |        |
| 20A   | ON   | ON   | OFF  |        |
| 25A   | OFF  | OFF  | ON   |        |
| 30A   | ON   | OFF  | ON   |        |

(\*1) Preadjusted maximum current value for the EV charger (control pilot duty cycle).

| INPUT/OUTPUT (DSW1) / ONLY FOR STANDARD MODE    |            |        |  |
|---|------------|--------|--|
| Function  | DIP switch |        | Figure   |
| External enable input "IN" is used              | D1.1       | ON=yes |  |
| Switch output "OUT" is used (fan specification) | D1.2       | ON=yes |  |

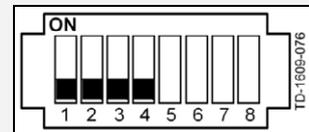
### STANDARD MODE (DSW2)

#### Standard-setting: (DSW2.1 to 2.4=OFF):

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

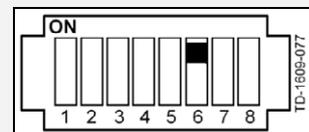
The charging station attempts to obtain an IP address via DHCP server, if needed.

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



#### Static IP address (DSW2.6=ON):

The charging station has the static IP address: **[192.168.25.11]**



### LOAD MANAGEMENT MODE / ADDRESSING (DSW2)

The charging procedure in **LOAD MANAGEMENT** mode is controlled by a higher-ranking load management system.

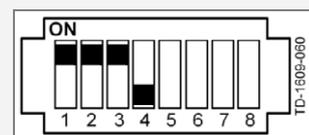
Since multiple charging stations are located in a network; an addressing of the charging stations is necessary.

The addressing is done via the DIP switches **DSW2.1** to **DSW2.4**.

The 4-bit addressing results in 15 possible Ethernet addresses **[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)

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



Example for address "17":

DSW2.1 = ON (Value=1)  
 DSW2.2 = ON (Value=2)  
 DSW2.3 = ON (Value=4)  
 DSW2.4 = OFF (Value=0)

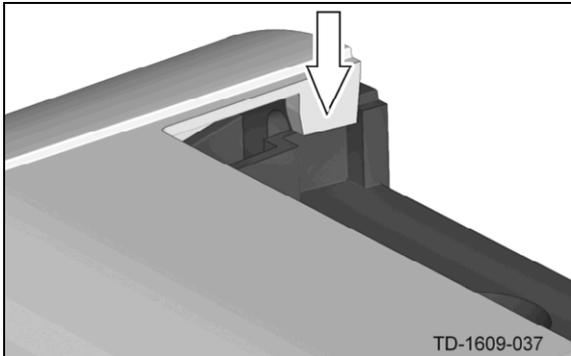
Address=  $10 + 1 + 2 + 4 + 0 = 17$

## 4.6 Commissioning

### General commissioning process

1. Remove all residual installation and connection materials from the connector panel area.
2. Before commissioning, check all screw and terminal connections for firm seating!
3. Check whether all unused cable glands are properly sealed with blind plugs or dummy screw fittings.
4. Close the connector panel cover to the charging station.
5. Mount the housing cover (see the " Mounting the housing cover" chapter).
6. Switch on the voltage of the power supply line. After 15 to 20 seconds, the status LED must flash green slowly. The device performs a self test every time it is switched on.

### 4.6.1 Mounting the housing cover

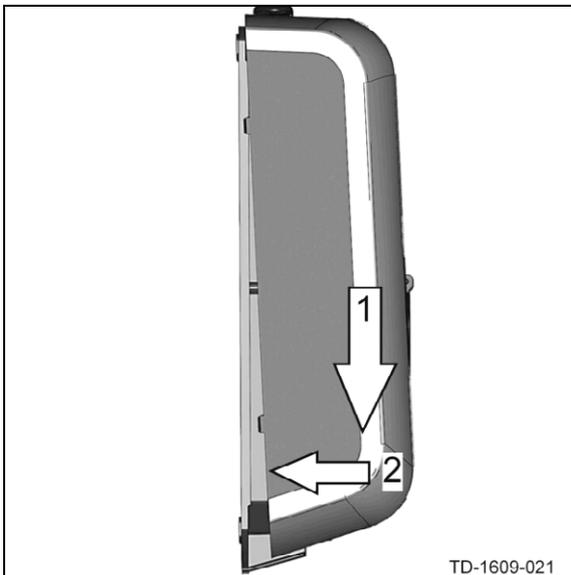


Fitting the housing cover

#### 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

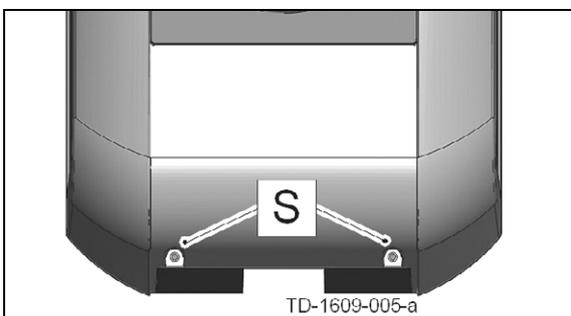
#### Mounting the housing cover

- ▶ 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.



Mounting screws

#### Mounting screws

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

## 5 Technical instructions

### 5.1 Configure the communication with the EV BPL->Ethernet (optional)

To allow the access of the vehicle to the home network or internet, the power line communication between vehicle and charging station must be configured on both sides with the equal password (NMK „Network Membership Key“).

The default password is „*emobility*“. It is recommended to change this password.

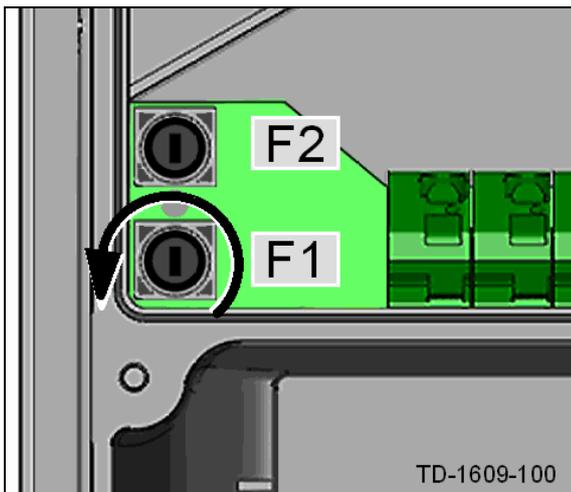
The required software ("EV Communication Assistant") including the instructions how to configure the charging station, you can find in the download area under [www.kecontact.com](http://www.kecontact.com).

Further details how to configure your vehicle, please see the manufacturer’s manual of your vehicle.

### 5.2 Replacing the fuses

The following fuse must be used:

| Description | Current / Voltage | Type   | Dimensions     |
|-------------|-------------------|--|----------------|
| F1 + F2     | 3.15 A / 250 V    | Slow-blow with high breaking capacity (>1500A) (T) (H) | 5 x 20 mm fuse |



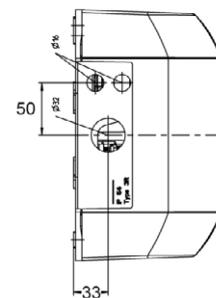
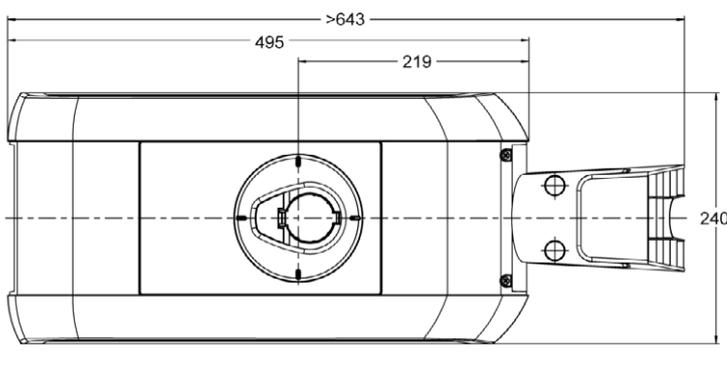
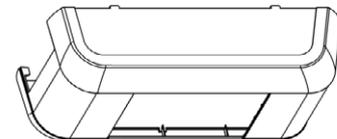
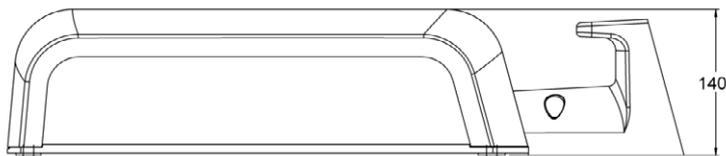
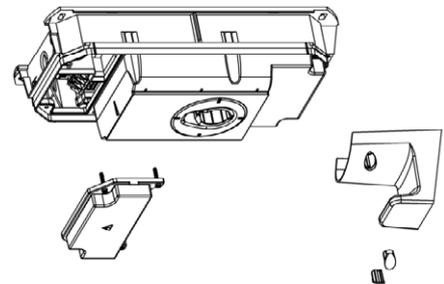
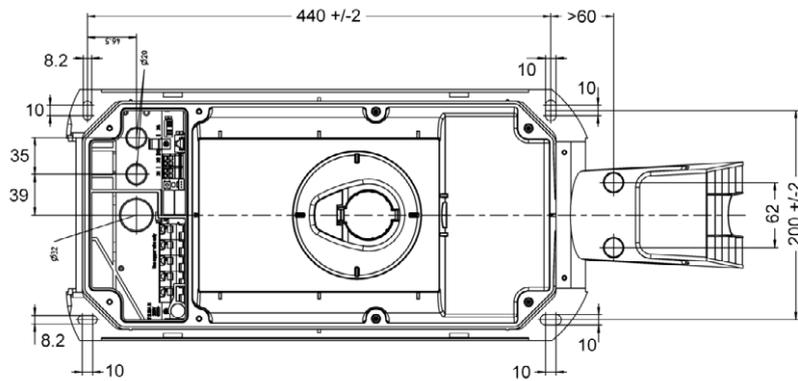
Opening a fuse holder

#### Replacing a fuse

- ▶ Switch off the power supply line of the charging station completely.
- ▶ Remove the connector panel cover.
- ▶ 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.

### 5.3 Dimensions

TD-1609-108



Dimensions in millimeters

## 5.4 Technical data

| <b>Electrical data</b>   |   |
|--|---|
| Cable feed:  | Conduit wiring or NM-B wiring   |
| Mains connection cross-section:                                      | Minimum cross-section<br>- 3 x AWG 10   |
| Mains supply terminals:  | Connection line:<br>- AWG (min.-max): 24 – 6  |
| Supply terminals temperature rating:                                 | 105°C   |
| Potential-free switch output OUT:                                    | Class 2 circuit voltage <math><30V_{AC}</math> 50/60Hz<br>External fuse 0.5AT required<br>Connection line:<br>- AWG (min.-max): 28 – 12 |
| Nominal current<br>(configurable connection values):                 | 10A, 13A, 16A, 20A, 25A or 30A<br>Single phase 3 wire   |
| Mains voltage:   | 120/240V<br>120/208V Y  |
| Line frequency:  | 60Hz  |
| Overvoltage category:  | III according to UL 840   |
| Branch circuit protection:   | Max. 40A  |
| CCID 20:   | $I_{\Delta N}=20mA$ according to UL 2231  |
| Cable version:   | Type 1 cable: 30A / 240 $V_{AC}$<br>according to SAE-J1772  |
| Type of equipment:   | AC Level 2<br>permanent connection  |
| Type rating (UL 50):<br>IP protection rating for device (IEC 60529): | Type 3R<br>IP54   |
| <b>Mechanical data</b>   |   |
| Dimensions (W x H x D):  | 240 x 643 x 140 mm (without charging plug)  |
| Weight:  | approx. 6.5 kg  |

| <b>Environmental conditions</b>  |  |
|----------------------------------|--|
| Operating temperature at 30A:    | -30°C to +50°C<br>without direct sunlight  |
| Temperature behavior:            | In each case of the specified operating temperature range, the device supplies the charging current continuously available.<br><br>To increase the charging availability, the charging current setting is changed to 16A, if the temperature is inadmissible exceeded. Subsequently, the charging process can also be switched off.<br><br>After cooling, the charging current setting is increased again.<br><br>This is not a safety feature, this is only an operational feature. Environmental operating temperature has to be obtained. |
| Storage temperature range:       | -25°C to +80°C   |
| Speed of temperature change:     | max. 0.5°C /min  |
| Permitted relative air humidity: | 5% to 95% non-condensing   |
| Altitude:                        | max. 2000 m above sea level  |

## 5.5 Standards and regulations

### National regulations (USA)

|                       |                                   |
|-----------------------|-----------------------------------|
| FCC Title 47, Part 15 | Digital Device Class B            |
| NEC Article 625       | Electric vehicle charging systems |

### National regulations (Canada)

|                     |                            |
|---------------------|----------------------------|
| CSA C22.2 No. 107.1 | General Use Power Supplies |
| ICES-003            | Class B                    |

### Approved standards

|           |   |
|-----------|---|
| UL 2594   | Electric vehicle supply equipment   |
| UL 2231-1 | Personnel protection systems for electric vehicle (EV)<br>Supply circuits: General requirements   |
| UL 2231-2 | Personnel protection systems for electric vehicle (EV)<br>Supply circuits: Particular requirements for protection devices for use in charging systems |
| UL 991    | Tests for Safety-related controls employing solid-state devices   |
| UL 1998   | Software in programmable components   |
| UL 61010  | Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements   |

