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Assembly instructions I Operating instructions

E. Diko Charging Station **PCS Duro / PCS Smart**

E-Bike Charging Station BCS Pure / BCS Smart

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About these instructions

Before assembly and operation, carefully read through these instructions and keep them in a safe place. Hand over to the user if the product is sold. It is available in the download area at **www.spelsberg.de**.

The BCS Smart variant also allows monitored and controlled charging for e-bikers and operators of the charging station via optional cloud connection via LAN, WLAN or mobile phone for use with the management portal **https://bcs.spelsberg.com** and the free app **BCS Finder** for Android & iOS. The app also offers a navigation menu that can be used to find registered charging stations.

Explanation of the symbols



Warning

Safety instructions: Non-compliance may result in death or serious injuries.

Escape from danger.



Caution

Safety instructions: Non-compliance may result in minor injuries.

Escape from danger.



Attention

Non-compliance may result in property damage.

► Avoid damage.



Note

Notes on using the device.

Safety instructions

The operating company is responsible for the correct and safe state of the E-Bike charging station at all times, and must check the E-Bike charging station at regular intervals (Page 16).

The manufacturer is not liable for damage caused by incorrect use.

- Assembly and connecting errors
- Damage to the product caused by mechanical influences and incorrect supply voltage
- Modifications to the product without the explicit approval of the manufacturer
- Use for other purposes other than those described in the instructions

General safety



Warning

Danger to life due to electric shock

- ▶ If the charging station has visible damage, do not put it into operation.
- ▶ If the connecting cable of this charging station is damaged, have it replaced by a qualified specialised company in order to avoid hazards.



Warning

Health hazard

- ▶ Do not operate the charging station at outside temperatures below -25 °C or above +40 °C.
- ▶ In case of fire, do not extinguish the cover of the E-Bike charging station.
- ▶ Use extinguishing agent only approved for electronic devices. Do not use water for extinguishing.
- ➤ This device can be used by children from 8 years of age and persons with restricted physical, sensory, or mental capabilities or with lack of experience and knowledge unless they are supervised or have received instructions on the safe use of the device and are aware of the resulting hazards.
- ► Children must not play with the device.
- ▶ Cleaning and user maintenance may not be carried out by children without supervision.

Intended Use

Depending on the version, E-bike charging stations are suitable for direct charging of LEVs (Light Electric Vehicle, e.g. E-Bikes, E-Scooter, Pedelecs) with the following rechargeable batteries:

- Bosch Active Line, Active Line Plus, Cargo Line, Performance Line, Performance Line CX
- Shimano BT-E6000, BT-E6001, BT-E6010, BT-E8010, BT-E8020

Data without guarantee of completeness. Please refer to your LEV manufacturer's details.

Moreover, LEV rechargeable batteries of other manufacturers can also be charged if the respective external charger is connected to a 230 V socket. The maximum charge current per socket is 2.5 A.

The E-Bike charging stations are intended for wall-mounting indoors and protected outdoor areas.

Scope of delivery

Quantity	Description
1	Charging station
6	Cap screws with standard screw head for sealing
1	Set external fixing brackets 10 mm, GEOS ABL-10
1	Set external fixing brackets 40 mm, GEOS ABL-40
1	Cover opening tool 8 mm triangle
1	Screw connection M25, BCS SMART only
1	Stepped nipple M32
1	Operating instructions
1	Operating instructions / assembly instructions

Technical description

The charge current of both protective contact sockets is limited to max. 2.5 A.

The direct connections for the manufacturer-specific rechargeable batteries deliver the supply voltage for the respective LEVs. The cable management for the cable permanenty connected supports the correct use with the lines. The E-Bike charging station is equipped with a special ventilation and venting system. The station monitors the charging processes and indicates this via LEDs.

The charging station switches off the charging point in case of the following ambient conditions:

- Overload
- Temperature too high
- Temperature too low
- Humidity too high
- Sabotage attempts (BCS Smart only)

Control elements and connections

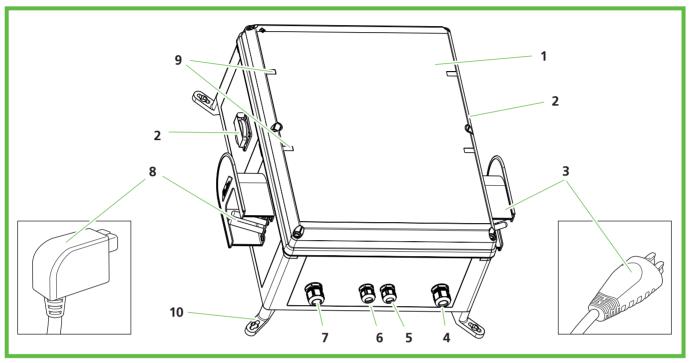


Figure 1: Overall view

Pos. no	Description
1	Housing cover with special head screws (tool enclosed)
2	230 V with child lock (one on each side)
3	System connector, e.g. Bosch or Shimano, depending on the equipment
4	BCS Smart only: supply line for LAN connection
5	Supply line for rechargeable battery-specific system connector
6	Supply line for rechargeable battery-specific system connector
7	Mains connection
8	System connector, e.g. Bosch or Shimano, depending on the equipment
9	LED status display
10	External fixing brackets

Under the housing cover, there are LEDs that display the status of the respective charging point.

LED	Status
Off	Charging point off
Green	Charging point ready or charging process finished
Green/flashing	Charging process running
Red	Fault at charging point

Installation



Caution

Risk of injuries

The user may be injured by damaged components.

- ▶ Do **not** mount the charging station:
 - near to flammable materials.
 - In the potentially explosive areas.
 - in salty or wet surroundings.
 - in the vicinity of aggressive vapours.
 - in surroundings which are exposed to permanent vibrations.

These types of surroundings include, e.g. outdoor areas around petrol stations, chemical factories, waste disposal sites, sewage treatment plants.



Attention

Risk of damage caused by the influence of weather

The charging station can be damaged by the incorrect choice of location.

- ▶ Do not expose the charging station to any heat sources (e.g. sun radiation, heating).
- ▶ Mount the charging station at a location that is protected against rain and splash water (for example, in protected outdoor areas, Abb. 2).

Risk of damage from drilling

Parts of the installation may be damaged by incorrect drilling.

▶ Before carrying out drilling work on the wall / mounting area, make sure that no electric cables or other lines can be damaged by drilling.



Figure 2: Installation in protected outdoor areas

When choosing the assembly location, please observe the following:

- Only mount the charging station vertically (e.g. on the building walls).
- The assembly area must be level and have a sufficient strength.
- The free distance around the charging station must be at least 250 mm. This also applies to the growth of green plants.
- The distance to other charging stations must be at least 1,400 mm.
- The distance to another obstacle must be at least 700 mm.
- The upper edge of the charging station must be located 1,400 to 1,600 mm above the ground.
- During operation, the charging station must always be provided with sufficient lighting. If necessary, install lighting.

The following special tools are required for assembly:

- Screwdriver (for fastening without external fixing brackets with a blade length of at least 175 mm)
- Cover opening tool 8 mm triangle (in the scope of delivery)

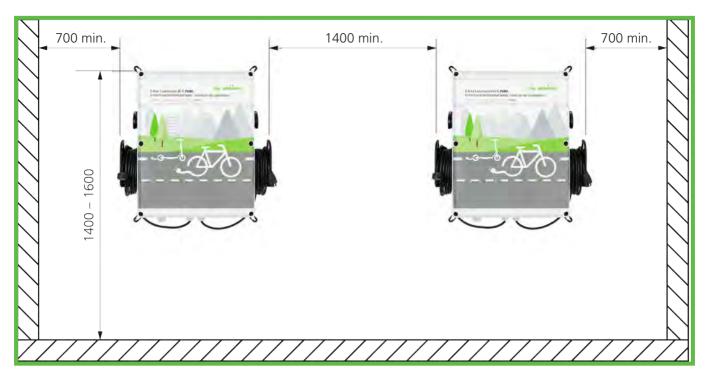
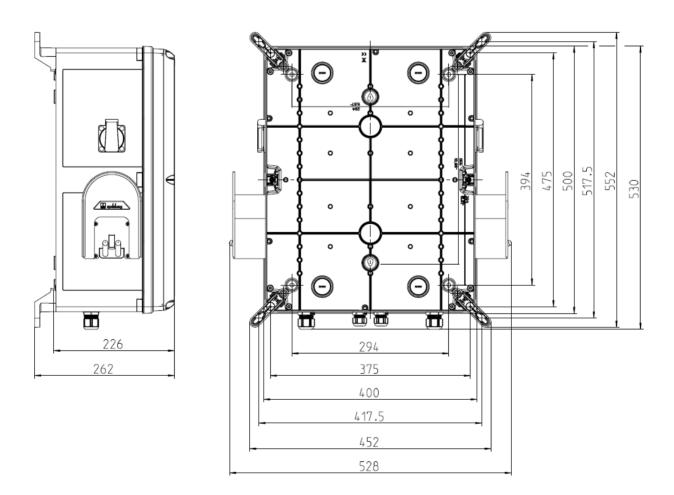


Figure 3: Distances for wall assembly (in mm)

Assembly dimensions in mm



Fastening without external fixing brackets

You need the following for fastening the charging station:

- 4 screws (diameter maximum 6 mm, screw head at least 8.5 mm, maximum 10.5 mm)
- 4 matching dowels

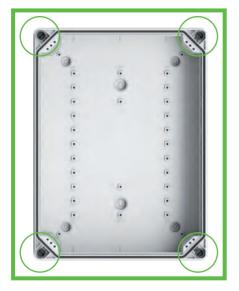


Figure 4: Fixing points

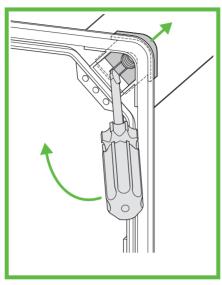


Figure 5: Lever out the threaded insert (corner)

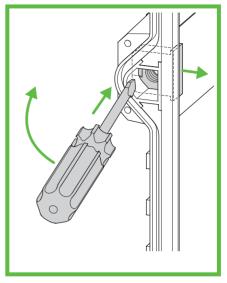


Figure 6: Lever out the threaded insert (side)

- Mark the fixing points (Abb. 4).
- Unscrew the housing cover.
- ▶ Using the screwdriver, lever out the threaded inserts (Abb. 5 and Abb. 6).
- ▶ Drill holes for the fixing points.
- Push the dowel into the holes.

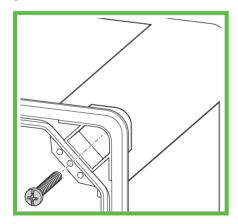


Figure 7: Mount the charging station on the wall

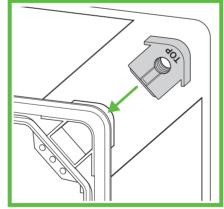


Figure 8: Mount the threaded insert (corner)

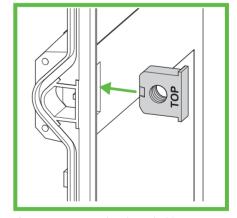


Figure 9: Mount the threaded insert (side)

- > Screw the charging station tight by screwing one screw each through the boreholes (Abb. 7).
- ▶ Mount the threaded inserts (Abb. 8 and Abb. 9). The lettering "TOP" must point to the housing cover.
- Screw on the housing cover of the charging station.

Fastening with external fixing brackets

You need the following for fastening the charging station:

- 4 external fixing brackets ABL-10 (wall distance 10 mm) or ABL-40 (wall distance 40 mm)
- 4 screws for the external fixing brackets (enclosed)
- 4 screws (diameter maximum 6 mm, screw head at least maximum 12 mm)
- 4 matching dowels

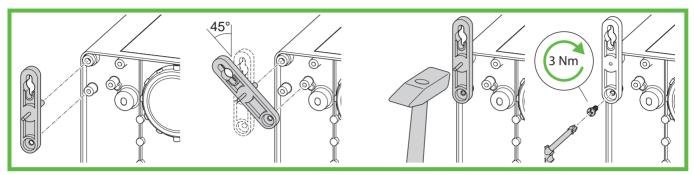


Figure 10: Assembly ABL-10

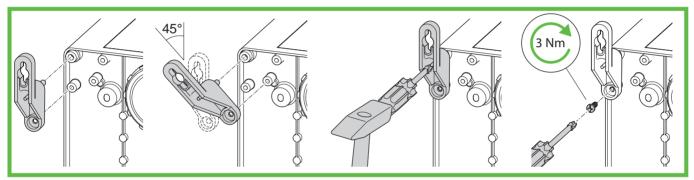


Figure 11: Assembly ABL-40

- Mount the external fixing brackets (Abb. 10 or Abb. 11).
- Mark the fixing points.
- ▶ Drill holes for the fixing points.
- ▶ Push the dowel into the boreholes.

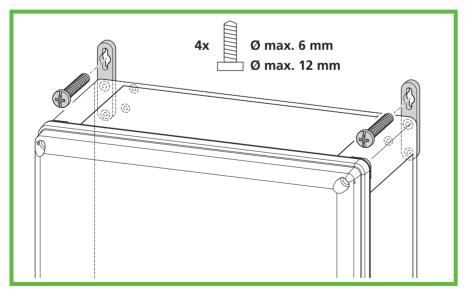


Figure 12: Wall assembly

Screw the charging station tight by screwing one screw each through the boreholes in the external fixing brackets (Abb. 12).

Connecting the charging station electrically



Warning

Danger to life due to electric shock

There is a risk of electric shock caused by mistakes when connecting to the electrical supply lines.

- ► Have the connection to the electric supply line only carried out by a locally approved qualified electrician.
- ▶ Install a suitable residual current circuit breaker (RCD) and a suitable fuse in the supply line.
- ▶ Before carrying out work on electrical components each time, observe the following safety rules:
 - switch off.
 - secure against switching back on.
 - ascertain absence of voltage on all phases.
 - earth and short-circuit.
 - cover or shield off neighbouring energised parts.
- observe the local regulations and laws.
- ▶ Before connecting, make sure that the supply line, connector and connection sockets are clean and dry.
- ▶ Never use the connectors if you have wet hands or your feet are standing in water.
- ▶ When connecting the supply line, ensure that the connecting cable is not damaged.
- ▶ Open the housing cover.

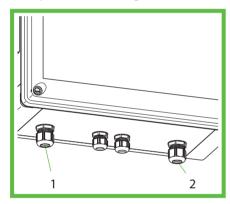


Figure 13: Connections

Figure 14: 230 V connection

- ▶ Guide the electric supply line through the cable gland (Abb. 13, Pos. 1).
- ▶ Tighten the cable gland. Tightening torque: 8 Nm
- ▶ As an alternative, the supply line can also be inserted from the rear side. Open the M32 knock-out on the rear side of the housing and guide the line in to the housing using the M32 stepped nipple enclosed with the accessories. Disassemble the M25 cable gland on the bottom and seal the opening using the sealing plug enclosed with the accessories. Connect the electrical supply line (Abb. 14). The bicycle charging station offers an optional loop option for 3-phase supply lines. There are additional terminals present for applying 3-phases in the connecting area. The station itself may only be operated 1-phase with 230 V.
- ▶ Close all cable glands not used with blind plugs or blind screw connections.
- Screw on the housing cover of the charging station. Tightening torque: 1.2 Nm
- Switch on the supply voltage.

- ▶ Before starting up for the first time, check and note if the protective measures of the system function according to the nationally applicable regulations, amongst others:
- Continuity of the connections of the conductor
- Insulation resistance
- Residual current circuit breaker (RCD)
- Tripping current
- Tripping time

Hand out the test report and the handover report to the company operating the system. A function test has been carried out in the factory and is not necessary on-location.

Starting up the BCS SMART



Starting up may only be carried out by an authorised specialist.

The smart BCS bicycle charging station can be connected with the Spelsberg BCS portal online in order to be able to use all services. In its delivery state, it is already equipped with an LTE access where separate costs may result.

Connection to the Spelsberg back-end can, in addition to LTE, also be carried out via your local wireless LAN or an Ethernet connection as an alternative. The descriptions can be found below.

Steps of the installation of a BCS SMART

- ▶ Installation of the station according to the steps specified in the previous chapter.
- ► Establishing the data connection to BCS PORTAL (connectivity)
- ▶ BCS portal: create user account + organisation
- ▶ BCS portal: add user account station to organisation
- ▶ BCS portal: operate user account station
- ▶ BCS portal: invite other users

Note the registration number on the label inside for step 4

Establishing the data connection to BCS PORTAL (connectivity)

BCS SMART must be connected to the internet and BCS portal to be able to use all functions.

The following options are available for this purpose:

- Connection via Ethernet cable
- Connection via WLAN to an existing router
- Connection via mobile communications

Connection via Ethernet cable

The Ethernet cable must be installed in the station.

- ▶ De-energise the station.
- ▶ Open the housing and take off the cover.
- ▶ Remove the sealing plug of the opening at the bottom of the charging station and guide the Ethernet cable into the housing through the fold-out cable gland from the accessories bag.

- ▶ Guide the Ethernet cable through the screw connection use a suitable cable and observe the torque (screw connection torque 8 Nm).
- ➤ Connect the Ethernet cable to the intended connecting point, see fig. 1 *LAN line connection*. Ensure for a sufficient bending radii when routing the Ethernet cable.
- ▶ Energise the mains voltage at the station, the station is ready for operation after approx. 1 minute.
- Successful connection can be viewed on the BACKEND LED (illuminates green), see figure 2 - Status LED BACKEND.

Note: If an Ethernet cable is inserted, an attempt is always made to connect via Ethernet.

In case the BACKEND LED does not illuminate for some time, check the following requirements:

- ▶ Is the cable connected to the router provided on-site?
- ▶ Do the LEDs illuminate at the port connection there?
- ▶ Does the router have a connection to the internet?
- ▶ If necessary, does the router have any rules for blocking third-party devices? Setup the BCS SMART as approved device.

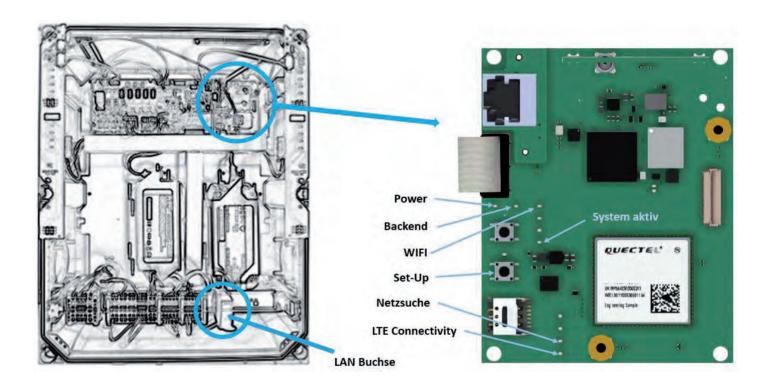


Figure 15: Ethernet line connection

Figure 16: Status LED BACKEND

Connection via WLAN to an existing router

For setting up the WLAN connection to an existing router, you require

- the SSID and access password of the router
- a smartphone or computer with WLAN function and conventional internet browser

Proceed as follows:

- ▶ Open the housing and take off the cover.
- ► Energise the mains voltage at the station, the station is ready for operation after approx. 1 minute. Using an electrically insulated tool or object, briefly press the SETUP button, see figure 16 WLAN SETUP button and LED. The SETUP LED illuminates on the button. Now the charging station opens a separate configuration access via WLAN hotspot.

- ► Using a smartphone or computer, connect to the new WLAN of the charging station. Use the registration data of the registration sticker inside the housing.

 (SSID = BCS / password = bcs2smart).
- ▶ Open the screen **bcs.smart** in the web browser on the smartphone or computer. The configuration screen of the charging station opens.
- ► Enter the access data of the existing WLAN in the input mask. The router can also e selected from the list of routers suggested.
- ➤ Save the configuration.

 The hotspot of the charging station closes after saving the configuration.
- Now the charging station builds up a connection to the existing router.

 Successful connection can be viewed on the BACKEND LED (illuminating), see fig. 16.

The following figures help with describing the states and possible troubleshooting.

Fig. 17 LED states, setting up WLAN



The BCSD Smart is successfully connected to your WLAN and the internet.



The BCSD Smart is successfully connected to your WLAN selected, but cannot access the internet via this.



The BCSD Smart cannot connect to your selected WLAN.



The BCSD Smart cannot connect to your selected WLAN but is, however connected to the internet via LAN or mobile communications.

Note: If WLAN is configured and no Ethernet cable is inserted, the connection attempt is always carried out via WLAN. In case the BACKEND LED (Fig. 2) does not illuminate after a while, check the following requirements:

- ONLY the WLAN LED illuminates and not the BACKEND LED:
 - There is a WLAN connection to the router, but no connection to the BCS server.
 - Check the internet connection of the router or check the internet blocking within the router settings.
- The WLAN LED flashes (Fig.2):
 - Access data to the router are incorrect.
 Repeat the steps for starting up the WLAN on an existing router.
- Neither BACKEND LED nor WLAN LED illuminate or flash:
 - WLAN is not configured and connection via Ethernet or LTE is not possible to the BCS system. Setup one of the connections to the internet described above.

Connection via mobile communications LTE/ 2G

If none of the connection types described above are used / setup, connection is established automatically using mobile communication. Requirement here is a sufficient network coverage at your location.

Successful connection can be viewed on the BACKEND LED (illuminating) (Fig. 2). In case the BACKEND LED does not illuminate for some time, check the following requirements:

- If the BACKEND LED does not illuminate, you do not have any mobile communication connection.
- In this case, setup one of the connections mentioned above.
- After connecting the BCS to your network, screw on the housing cover of the charging station. Tightening torque: 1.2 Nm.

Creating a user account and setting up an organisation on the BCS portal

To be able to use all functions of the BCS SMART, the operating company needs a user account. There, an organisation is allocated to each BCS SMART. In a later step, more users can be added to this organisation and the BCS SMART charging stations connected. Requirement is a computer or tablet with a matching web browser.

Carry out the following steps:

► Call up the following URL to register as a user:

bcs.spelsberg.com/spelsberg/registration

(Note: the e-mail address specified is also the user name for registration at the same time) Fill in the online form and confirm the privacy policy.

- ▶ The system sends you an e-mail to the e-mail address specified.
- ► Confirm the registration link in the e-mail

Note: the link is valid for 48 hours.

Assign your password.

Then you are registered as user. Moreover, an organisation is setup in which the BCS SMART charging stations can be registered in a further step.

▶ Register on the BCS portal with further access data.

Add a station to the organisation

A new charging station can be added to an existing organisation.

To add a charging station, you need:

- A user account in an existing organisation
- The registration ID on the sticker within the charging station

Carry out the following steps to register a BCS SMART charging station to an organisation:

- Login to the BCS portal with the access data
- Change to the view "Charging stations" -> button [+] Charging station
- Enter the data of the BCS SMART charging station and set the position of the charging station by means of geo-coordinates (the first position is determined on the basis of the address of the charging station specified; this can however be changed manually, e.g. the position can be determined via Google Maps and entered in the coordinates manually).
- Then the charging station is visible and ready for operation

Note:

you have the option to deactivate the visibility of the charging station in the *BCS Finder* app. This may be the case if you do not want to provide the charging station for other users.

Operating the station

The station can be operated by any user of the organisation.

The following functions can be controlled via the BCS PORTAL:

- Switch the charging point on / off
- Set the maintenance mode allows the station to be opened without it being switched off
- Set operating times
- Supplement note for app users free text
- Switch the charging station visible / hidden in the app
- View states of the charging points
- View statistics
- View messages of the charging station
- View type of connectivity and reception strengths

Deviations from normal operation are displayed with the BCS Smart in the form of banners in the portal as well as notified to the operating company by e-mail messages.

- Offline
- Maintenance mode
- Exceeding the ambient conditions for temperature / humidity
- Overload
- Sabotage monitoring, the cover has been opened without permission.
 The charging points are switched off. The message is deactivated after the BCS has been closed.

Each user can configure the warning threshold of the messages in their settings for sending per e-mail. Profile → Settings.

invite other users

In the organisation, a user can invite other users with the same rights.

For this purpose, proceed as follows:

- ▶ Login to the BCS PORTAL with your access data
- ► Change to the view "Organisation"
- ► Add a new user by specifying the respective e-mail addresses.

The new user receives an invitation by e-mail.

Note:

the invitation link is valid for 48 hours. Then the organisation is added.

Note:

each user of an organisation has the same rights - can operate the station and add other users.

A user can delete their user account (Profile → Settings).

A user can delete another user from the organisation (Organisation - Delete user).

If the last user of an organisation has been deleted, the organisation is deleted.

Charging stations allocated are then released again. To be able to manage this charging station again using the BCS PORTAL, the charging station must be added to the organisation again.

Cleaning



Attention

Incorrect cleaning agent can damage the charging station.

- ▶ Do not use sharp or hard equipment for cleaning.
- ▶ Clean the charging station and the connector using a sift dry cloth.
- ▶ Disconnect the charging station from the 230 V power supply.
- ▶ Protect the charging station against switching back on.
- Clean charging station with a soft moist cloth.

Maintenance

- ▶ Check the signs for legibility (visual check). Replace illegible signs immediately.
- Check the charging station and its components for damage, wear and their functions at regular intervals.
- Remedy defects such as defective connections, damaged cable and worn or corroded connectors.
- ▶ Before opening the housing cover of the BCS SMART, please switch on the maintenance mode in the BCS Portal in order to deactivate the sabotage warning per e-mail. All functions remain active.

The maintenance mode itself is ended after 4 hours. Otherwise reset the mode in the portal.



Note

To ensure for correct operation, use only original spare parts from Spelsberg (contact data, see last page).

Replacing the microfuse



Warning

Danger to life due to electric shock

When working on the electric components of the bicycle charging station, there is a risk of electric shock.

► Have work on the electrical components carried out only by a locally approved qualified electrician.

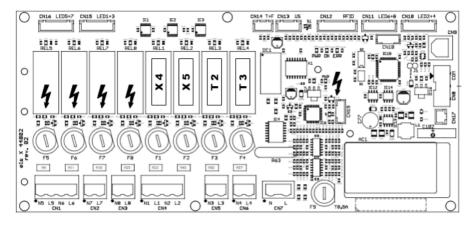


Figure 15: Position of the fuses

- ▶ Identify the fuses on the electric PCB (Fig. 15) using the designations **E1**(Switch cabinet heating optional), **X4** (Charging point top left as viewed from the front),
 - X5 (Charging point top right as viewed from the front),
 - T2 (Charging point bottom left as viewed from the front) and T3
 - (Charging point bottom right as viewed from the front).
- Replace the defective microfuse with a suitable replacement(2.5 A, delay-action, 5x20).
 The fuse holder is unlocked by applying slight pressure and a half a rotation (bayonet catch).
- ▶ Screw on the housing cover of the charging station. Tightening torque: 1.2 Nm
- Switch on the supply voltage.

Troubleshooting



Note

The charging station switches the four charging points off automatically if humidity or the operating temperature in the housing exceeds or falls below the maximum value

as well as if the cover is opened. (Technical data, page 19).

The status LEDs indicate the errors:

Error	Possible cause	Correction
The LED on the 230 V charging point illuminates red.	Short-circuit on the charging point (e.g. caused by a defective charge cable or defective charger).	 Switch off the power to the charging station. Disconnect the charger or consumers from the charging station and vehicle. If necessary, remove any objects that could short-circuit the charging point. Remedy the cause of the fault. If necessary, replace the 2.5 A (delay action) microfuse (siehe Ersetzen der Feinsicherung, Seite <? >).
The LED on the 230 V charging point is permanently off	> 500 W overload detected	 Switch off the power to the charging station. Check the load connected. Remove the overload. Switch the charging station back on.

Error	Possible cause	Correction
The LED on the system-specific charging point illuminates red	Cyclic check of the overload	➤ Remove the overload.
The LED on the system-specific charging point is permanently off	Error on the charging station	 Disconnect the charge cable from the vehicle. Switch off the power to the charging station. Have the error remedied by an authorised qualified electrician.
The LED on the Bosch or Shimano charging point is permanently off	Charging point is defective	 Disconnect the charge cable from the vehicle. Switch off the power to the charging station. Have the error remedied by an authorised qualified electrician.
All LEDs off.	The permissible relative humidity in the device is outside the permissible range > 80%. Independent safety shutdown of the charging station.	 ▶ Wait until the humidity outside reduces. ✓ The charging station switches back on automatically.
	The permissible temperature in the device is outside the permissible range 0 °C to +40 °C. Independent safety shutdown of the charging station.	 ▶ Wait until the temperature is within the permissible operating temperature again. ✓ The charging station switches back on automatically. ▶ If the error should continue to recur, check the ambient conditions. If the device is exposed to strong solar radiation, ensure for shade.
	The central voltage supply of the charging station has been interrupted	Check the pre-connected fuse elements, RC circuit-breaker (RCD).
	The housing cover of the BCS SMART has been opened without activating the maintenance mode in the portal.	Close the housing cover again. Switch on maintenance mode:
BCS SMART is displayed as OFFLINE in the portal	BCS SMART is not connected to the portal	 Check the LED "backend" on the COM module. If this does not illuminate, establish a connection to the internet. (see chapter starting up BCS SMART)
BCS SMART not listed in the portal	BCS SMART is not connected to the portal	➤ Perform a registration. (see chapter starting up BCS SMART)

Warranty

The statutory warranty period applies. If the product is defective, please contact the branch of the manufacturer in your country, or your electrician.

For processing any repairs or warranties, the following documents must be enclosed:

- a copy of the invoice with date of purchase
- a reason for complaint or an error description
- the confirmation number on the type plate (serial / RM number)

Disposal

▶ Where possible, dispose of the packaging material as recycling waste.



Note

▶ When the product is finally taken out of operation, please inform yourself about the applicable disposal guidelines at your next recycling centre or specialist dealer.

Technical data

General technical data

	E-Bike Charging station	
Input voltage	230/400 V AC 50 Hz	
Rated current	10 – 16 A	
Charge voltage (sockets) 230 V AC 50 Hz		
Charge current (sockets)	2.5 A	
Protection category	IP 54	
Protection class II		
operating temperature	0 to +40 °C	
Ambient temperature	-25 to +40 °C	
Humidity	max. 80%	
Dimensions (W x H x D)	528 x 530 x 226 mm	
Weight 12 kg		

System connector technical data

	Bosch charging connector	Shimano charging connector
Compatible rechargeable batteries	Active Line, Active Line Plus, Cargo Line, Performance Line, Performance Line CX	Shimano BT-E6000, BT-E6001, BT-E6010, BT-E8010, BT-E8020
Charging voltage	36 V DC	40 V DC / 42 V DC
Charging current	4.0 A	4.4 A / 4.0 A







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We reserve the right to make changes in line with technical progress.