Amp5

Charging system with ChargePod and ConnectBar

Installation manual

AmpSociety

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Introduction

About the manual

Warning!
Always read and understand all safety instructions and procedures described in this manual before attempting to install, use or perform maintenance on the Amp5.

This manual aims to guide the installer through the mounting and electrical installation of the Amp5 charging system (SmartHub, ChargePod and ConnectBar).

Symbols in the manual

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

Caution!
Indicates a situation which, if not avoided, could lead to property damage or minor to moderate injury.

Keep in mind!
Additional information to take into account.

Warranty

The following requirements must be met for AmpSociety International AB's warranty to apply:

- The installation must be carried out by qualified personnel.
- The installation must be carried out as described in the instructions in this manual.
- Repairs and maintenance of SmartHub and ChargePod must be carried out by AmpSociety International AB or an authorized workshop.
- The seal of the ChargePod must not be broken.

Installation support

For installation and commissioning support, please contact AmpSociety.

- Telephone: +46 101 499 500, open weekdays 8:00–17:00 (except for public holidays)

Safety

Warning!
Electrical installation may only be carried out by a qualified electrician.

Warning!
Ensure that all personnel have read and understood all essential information and have the necessary training to carry out the work.

Warning!
Follow all relevant local, regional and national requirements for installation, repair and maintenance.

Warning!
Stop using the product immediately if it is damaged in any way.

Product overview

Keep in mind!
Charging systems can take different forms. The illustration shows an example.

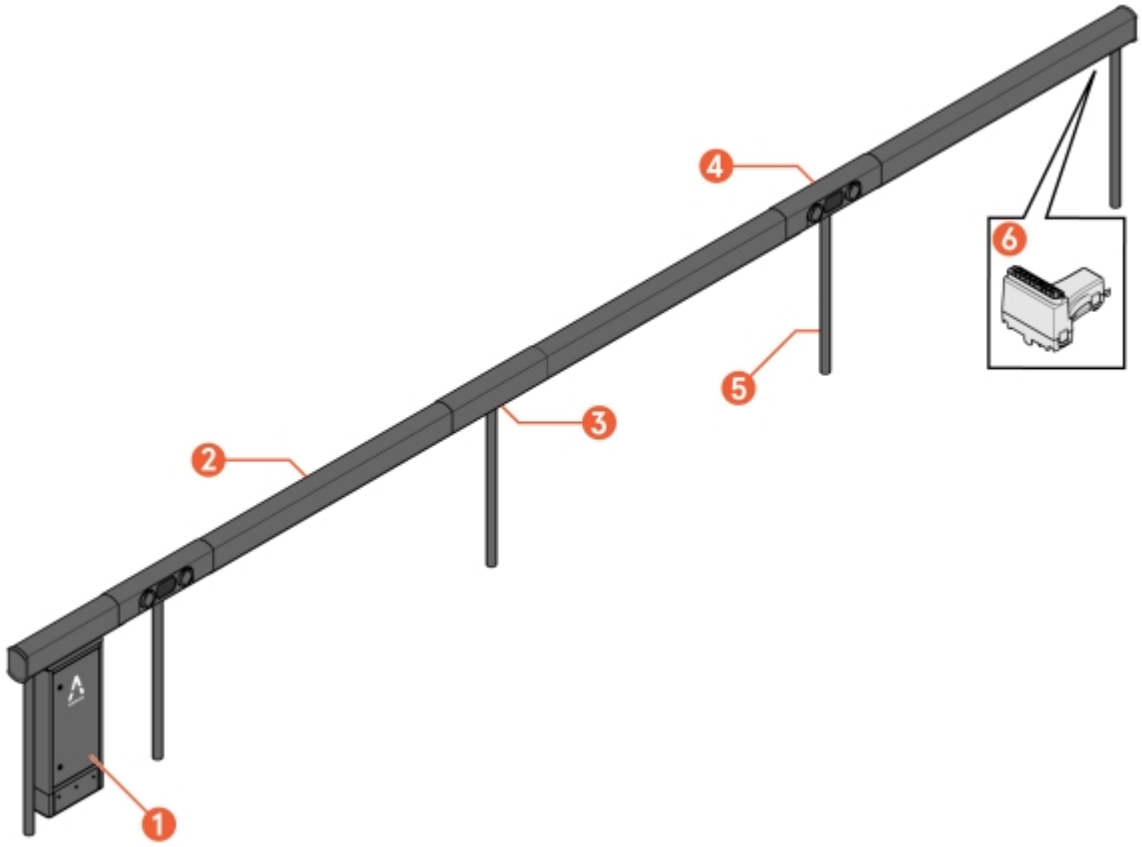

Image 1: Amp5 – overview

1 SmartHub
2 ConnectBar (cable included)
3 Bracket (pre-mounted pole bracket)
4 ChargePod
5 Pole
6 ConnectBar EndModule

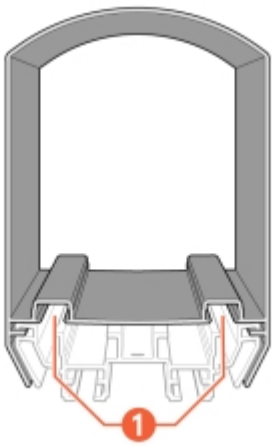

Image 2: ConnectBar – side view

1 LED strip slot

Before installation

1 Ensure that all personnel have read and understood all essential information and have the necessary training to carry out the work.

Caution!
Care must be taken during installation of the Amp5 system to avoid scratching materials and damaging cables on sharp edges.

2 Check against the delivery note that all components have been provided, and that nothing is damaged or incorrect.

Keep in mind!
Amp5 requires no cutting or drilling during installation. The right quantity and size of system components are provided right from the start. Planning documents should have been created using the configuration tool.

3 Make sure that the tools needed for the installation are available.

Keep in mind!
Which tools are needed may vary depending on the conditions on site and in the project. Prepare for the work by reading the entire manual before commencing.

The following are examples of tools that may be needed:

- T25, T30, and T40 bits
- 8 mm socket, length > 40 mm
- 10 mm socket

4 Make sure that all materials needed for the installation are available, in addition to those supplied by AmpSociety.

Keep in mind!
Which materials are needed may vary depending on the conditions on site and in the project. Prepare for the work by reading the entire manual before commencing.

The charging system is constructed with reinforced insulation and does not require protective grounding.

The following are examples of materials that may be needed and are **NOT** are included in the delivery from AmpSociety:

- Ground screw or concrete foundation (Saferoad, 600500 FundSafeR60/500) for pole installation
- Cable protection, cable ladders or other ducting material
- Edge strips for chafe protection
- Cable protection tube
- Pole brackets

Installation

Amp5 can be wall or ground mounted.

SmartHub location

Choose a protected location for SmartHub that minimizes the risk of collision and provides accessibility for servicing.

Keep in mind!
There must be free clearance in front of SmartHub so that the door can be opened.

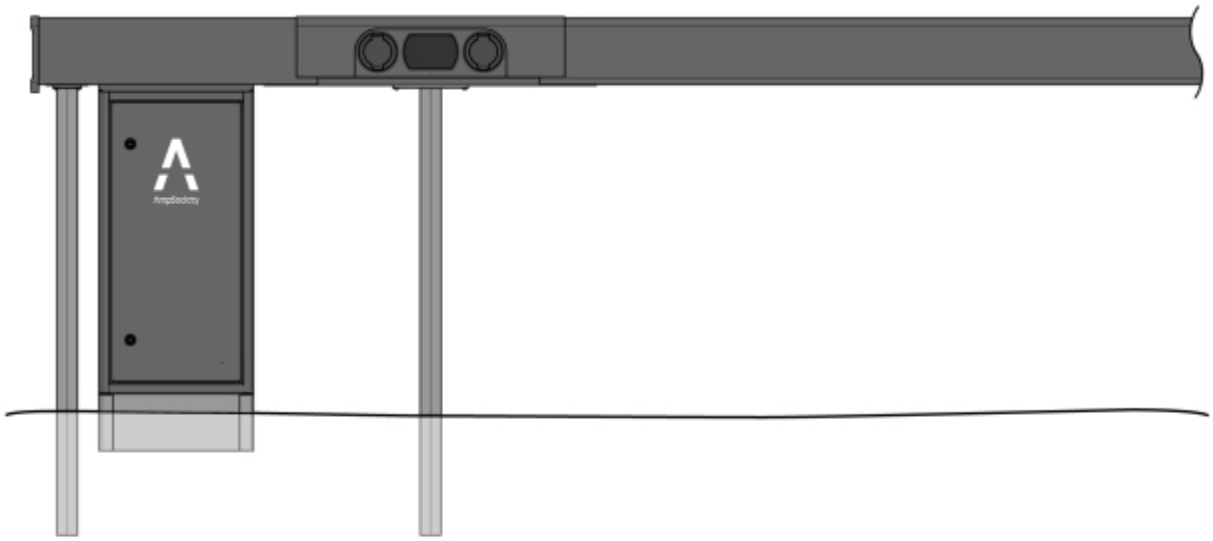

Image 3: Instructions for positioning SmartHub under ConnectBar

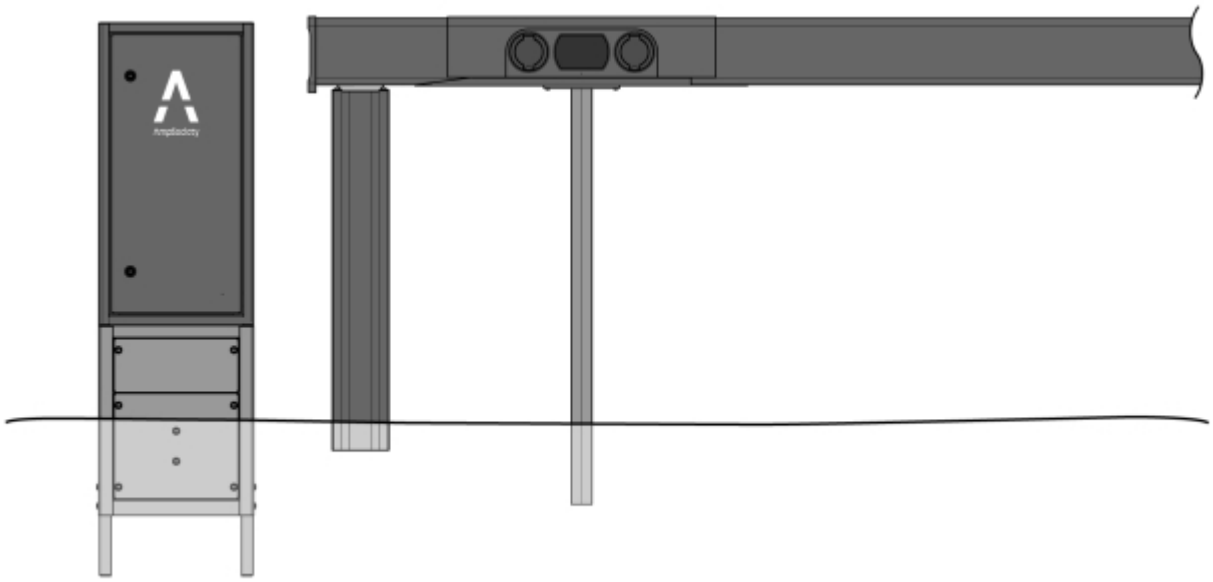

Image 4: Instructions for standalone positioning of SmartHub

Wall mounting of SmartHub

1 Secure the wall brackets to the wall with suitable fasteners (fasteners not included).

2 Attach SmartHub to the wall brackets.

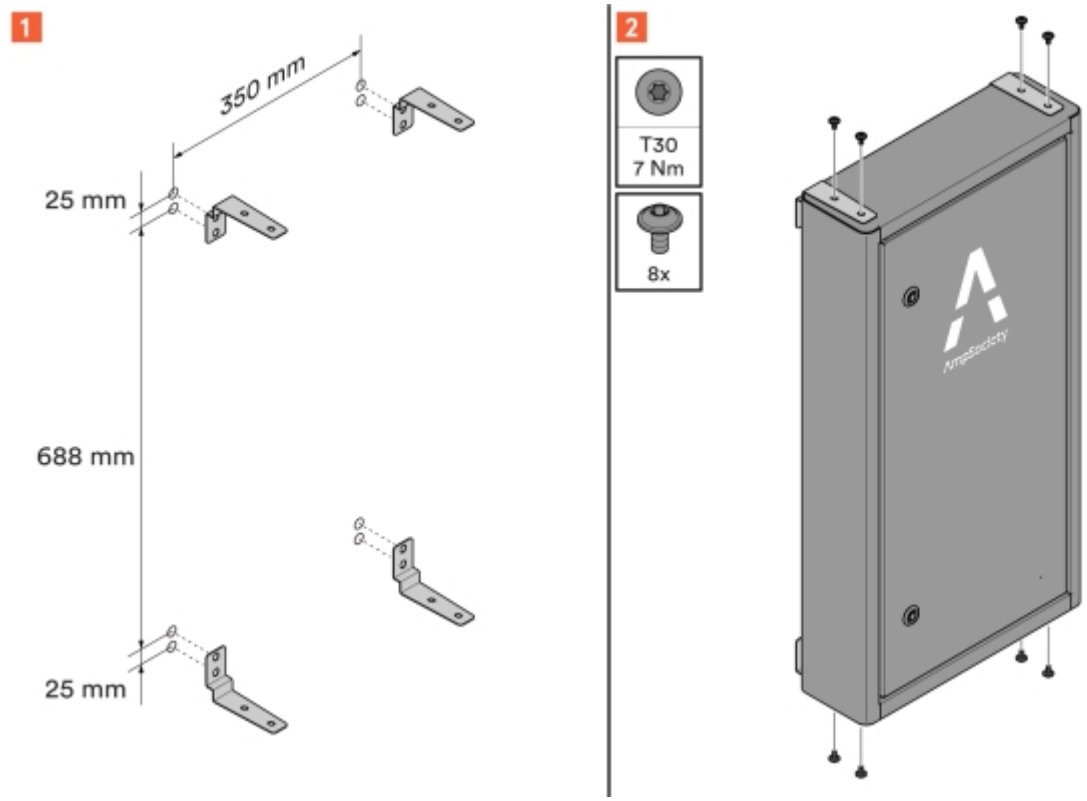

Image 5: Wall brackets on SmartHub

Keep in mind!
When using ConnectCable 3/6 m to connect the SmartHub and WallStart, the cable must be protected from UV light.

Ground mounting of SmartHub

When SmartHub is installed under ConnectBar, cover skirt is used to cover the incoming cables at the bottom of SmartHub.

Keep in mind!
In this case, poles (including attachment) must be installed first. See Section 5.5 "Mounting ChargePod and ConnectBar on poles", **page 16**.

When the standalone SmartHub is mounted on the ground, it must be mounted on a base that has been buried.

1 To install SmartHub under ConnectBar:

1.1 Install the cover skirt on SmartHub.

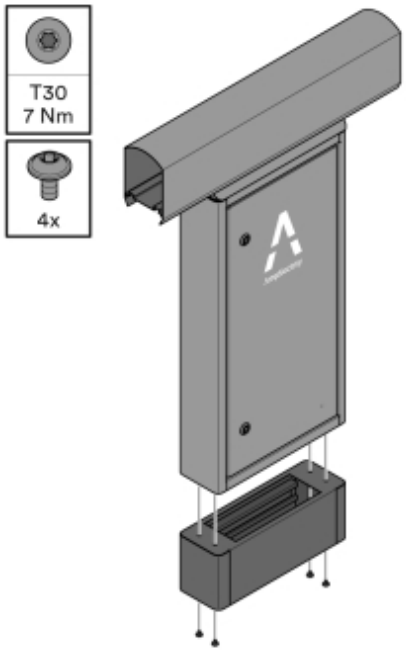

Image 6: Cover skirt installation

1.2 Mount SmartHub at the first pole.

Keep in mind!
The distance between the poles and the tube outlet from the ground must follow the specification in the instructions.

The poles must be the same height so that SmartHub is horizontal along the top edge and any height differences are not transferred to the rest of the installation.

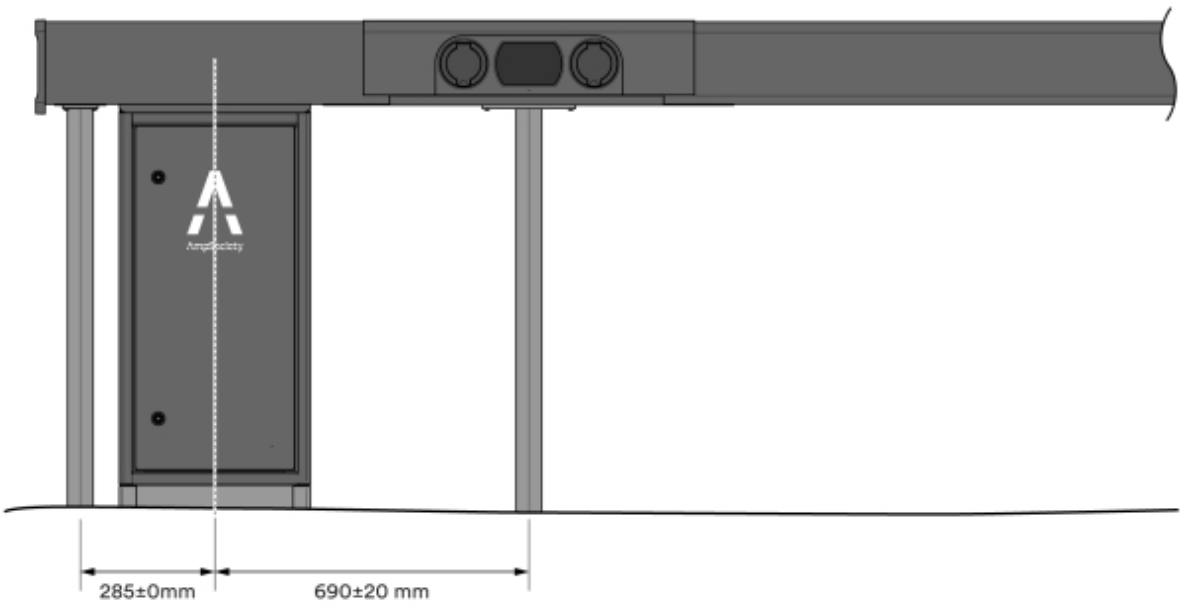

Image 7: Measurement guidelines – one direction

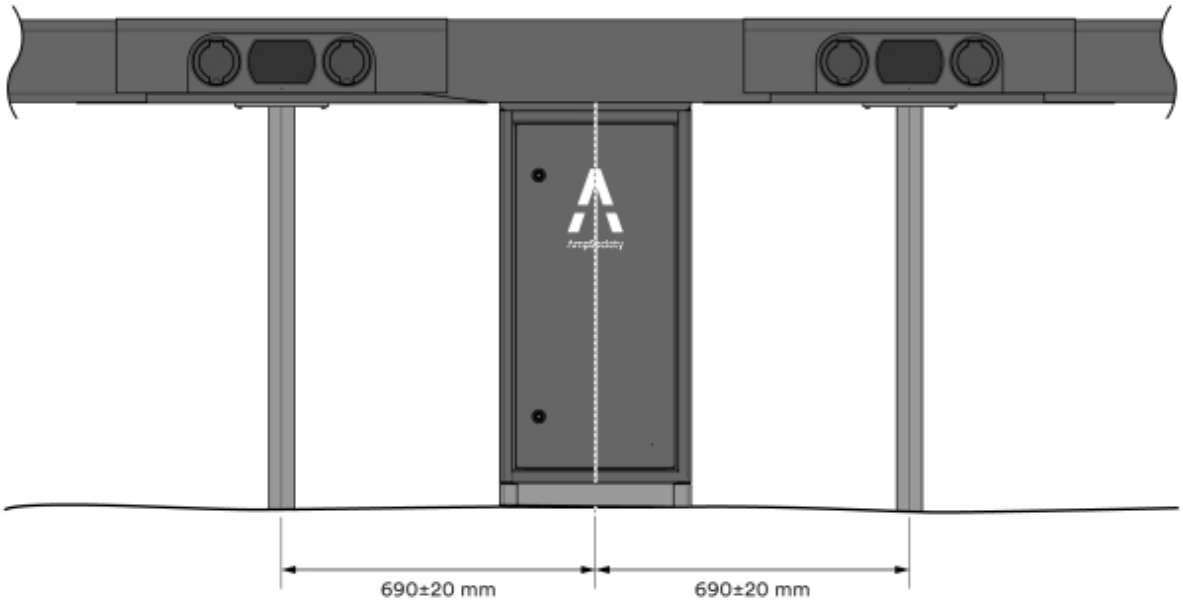

Image 8: Measurement instructions – two directions

2 Ground mounting of standalone SmartHub:

2.1 Install the base according to the instructions in the Base Installation manual. The Base Installation manual is included in the delivery.

- The base has a marking at ground level.
- The base's legs are used when mounting in the ground.
- The base has two hatches, one below ground level and one opening hatch above ground level. Position these in the front, i.e. the same direction that SmartHub will open towards.

2.2 Install SmartHub on the base according to the instructions in the Base Installation manual.

3 Verify that SmartHub is straight.

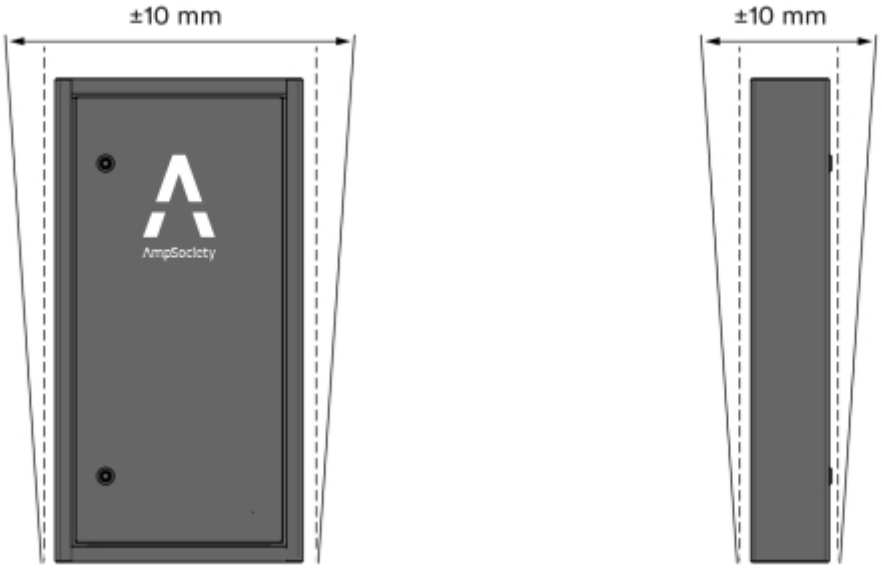

Image 9: Checking straightness

4 Verify that SmartHub is stable.

- When SmartHub is mounted on the base, it should not have any movement forward/backward.

Ranges of ConnectBar lengths available

ConnectBar length A	**Min. parking width**	**Nom. parking width** B	**Max. parking width**
1920 mm	2400 mm	2500 mm	2600 mm
2020 mm	2500 mm	2600 mm	2700 mm
2120 mm	2600 mm	2700 mm	2800 mm

ConnectBar length A	Min. parking width	Nom. parking width B	Max. parking width
2220 mm	2700 mm	2800 mm	2900 mm
2320 mm	2800 mm	2900 mm	3000 mm
2520 mm	3000 mm	3100 mm	3200 mm
3420 mm	3900 mm	4000 mm	4100 mm

ConnectBar length A	Min. parking width	Nom. parking width B	Max. parking width
2020 mm	2300 mm	2600 mm	2700 mm
2320 mm	2600 mm	2900 mm	3000 mm
2520 mm	2800 mm	3100 mm	3200 mm

Mounting ChargePod and ConnectBar on poles

1 Install post foundations (ground screw type or concrete foundation) with a hole diameter of 60 mm.

- Position the foundations along the edge of the parking space, if possible. If ground conditions make this unsuitable, they can be positioned up to 500 mm from the parking space.
- If the parking width is as indicated in Section 5.4 "Ranges of ConnectBar lengths available", **page 14**, the poles must be installed in intersection points (+) of the parking spaces.

Keep in mind!
Use the longest possible ConnectBar in the range to improve its stability.

Caution!
If you do not use ground screws/ground spikes, we recommend concrete foundations of the type Saferoad 60/500 (600500 FundSafeR 60/500).

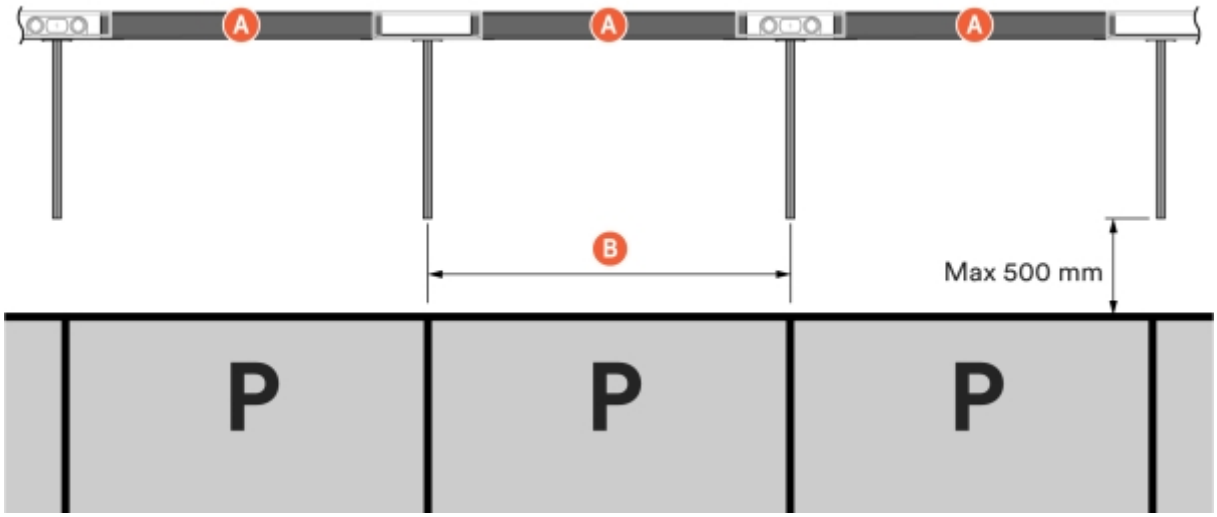

Image 10: Foundation positioning

A ConnectBar length

B Nominal parking width

2 Determine ConnectBar height.

2.1 When SmartHub is mounted under ConnectBar, the maximum pole height at the central charging cabinet is 900 mm, which results in CC socket 996 mm. The minimum pole height without a central charging cabinet is 830 mm, which results in CC socket 926 mm.

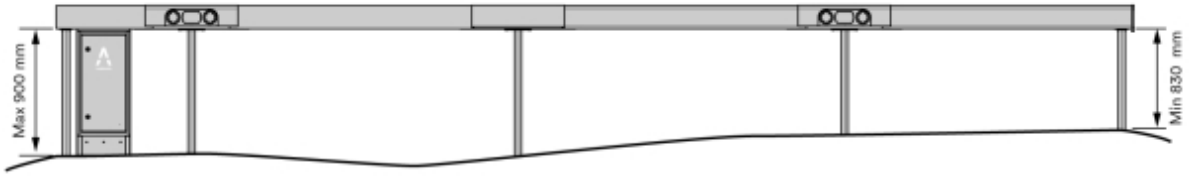

Image 11: ConnectBar height

2.2 When SmartHub is mounted standalone on a base, the maximum pole height at the central charging cabinet is 900 mm, which results in CC socket 996 mm. The minimum pole height without a central charging cabinet is 830 mm, which results in CC socket 926 mm.

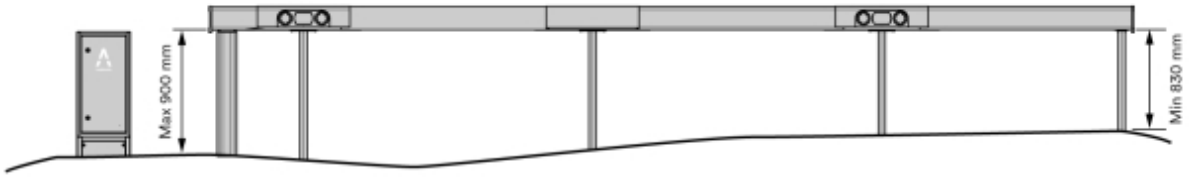

Image 12: ConnectBar height

2.3 If the cover skirt can be buried, it should be buried 10 cm.

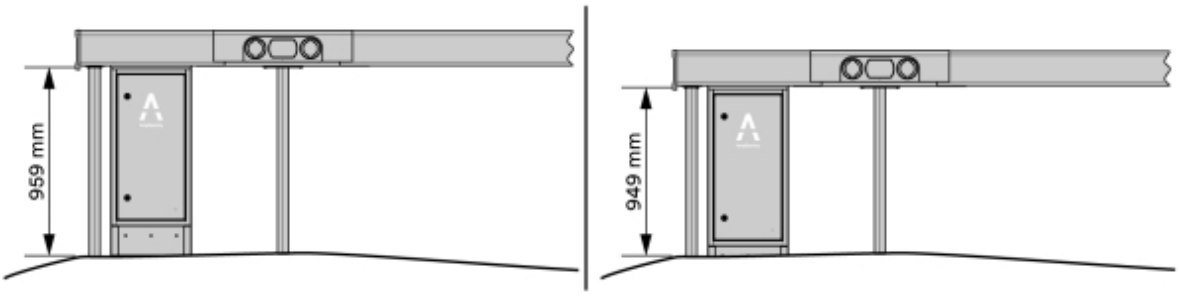

Image 13: ConnectBar height

2.4 When SmartHub is installed standalone on a wall, the maximum height to the bottom edge of wall bracket is 900 mm, which results in CC height 996 mm. The minimum height to the bottom edge of the wall bracket is 800 mm, which results in CC height 896 mm.

3 Cut the poles to the right length using a crosscut saw or band saw. The poles are delivered in lengths of 1450 mm.

Keep in mind!
If ConnectBar is to be installed at a later date, the poles are left uncut and unmounted to facilitate later installation.

- Wash the poles before cutting.
- Cut with a sharp blade.

4 Turn the poles so that the cut ends face downwards in the ground spike/screw/foundation.

5 Measure the poles with post gauge and secure with wedges.

- It is important that the poles reach the bottom of the foundation.
- For extra stability, use setting sand to fill the gap between the pole and the foundation.

6 Check that the poles provide a flat line to mount ConnectBar on. The maximum permissible misalignment per section is 10 mm in total between the ends.

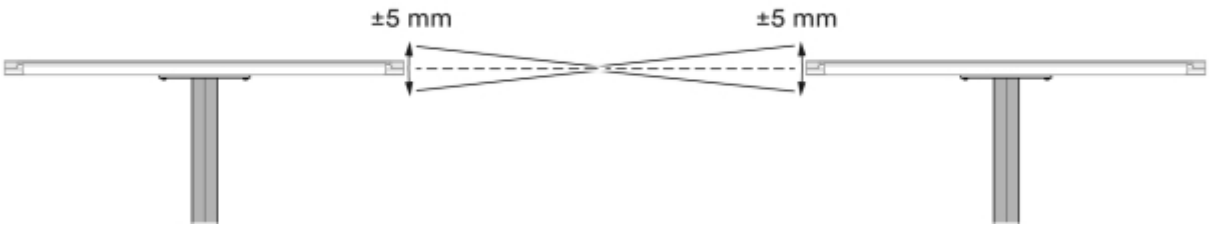

Image 14: Maximum misalignment

7 Check that the poles are straight using a string; adjust if necessary.

- The forward/backward slope may not exceed 20 mm per metre of pole.
- The sideways slope may not exceed 10 mm per metre of pole.
- The combined slope of two adjacent poles shall not exceed 15 mm per metre of pole.

Image 15: Maximum slope – front and back

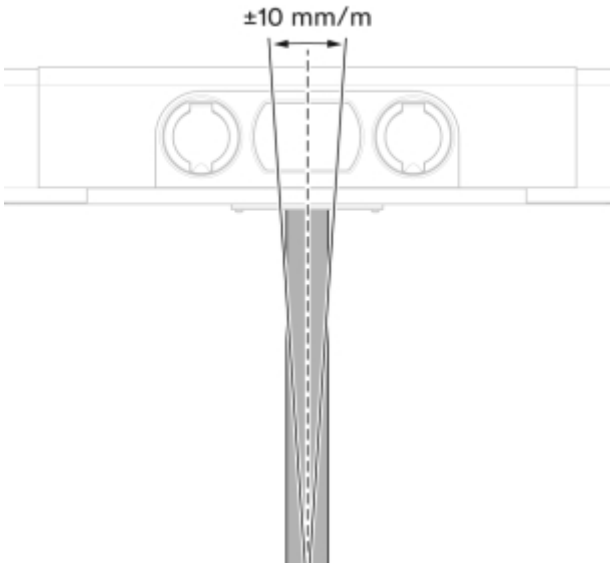

Image 16: Maximum slope – sideways

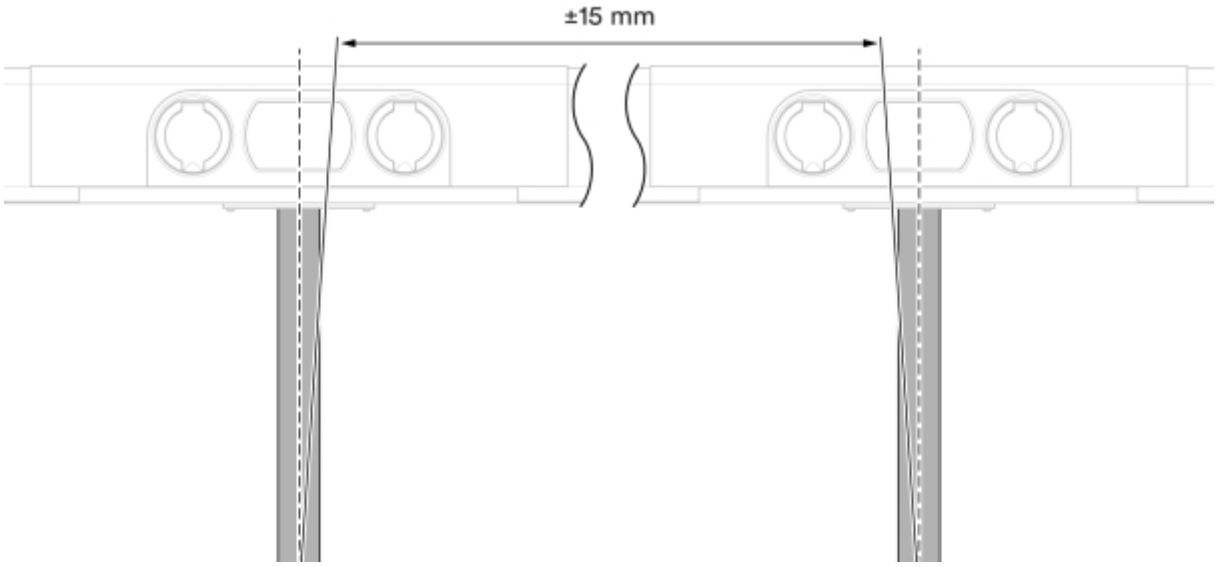

Image 17: Maximum slope – total

8 Check the stability.

- The forward/backward movement should be a maximum of 20 mm per metre of pole.

Image 18: Checking stability

9 Install mounting brackets on each post bracket.

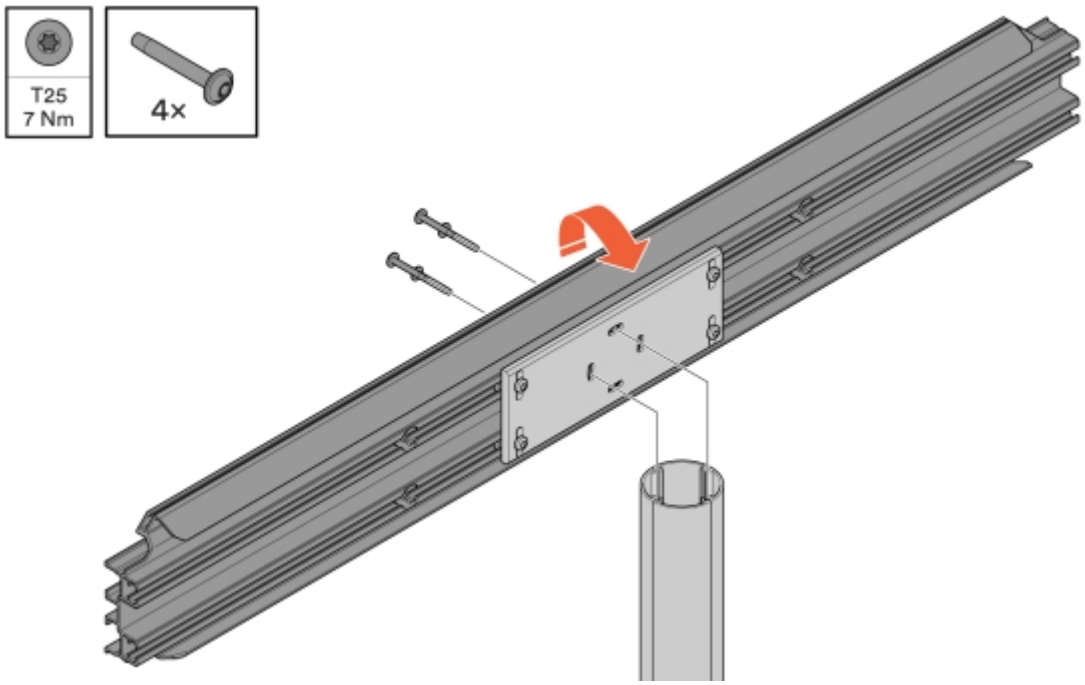

Image 19: Mounting bracket installation

Caution!
Post screws must be tightened with caution to avoid stripping the screws.

10 Align the mounting brackets and then secure the post bracket from below.

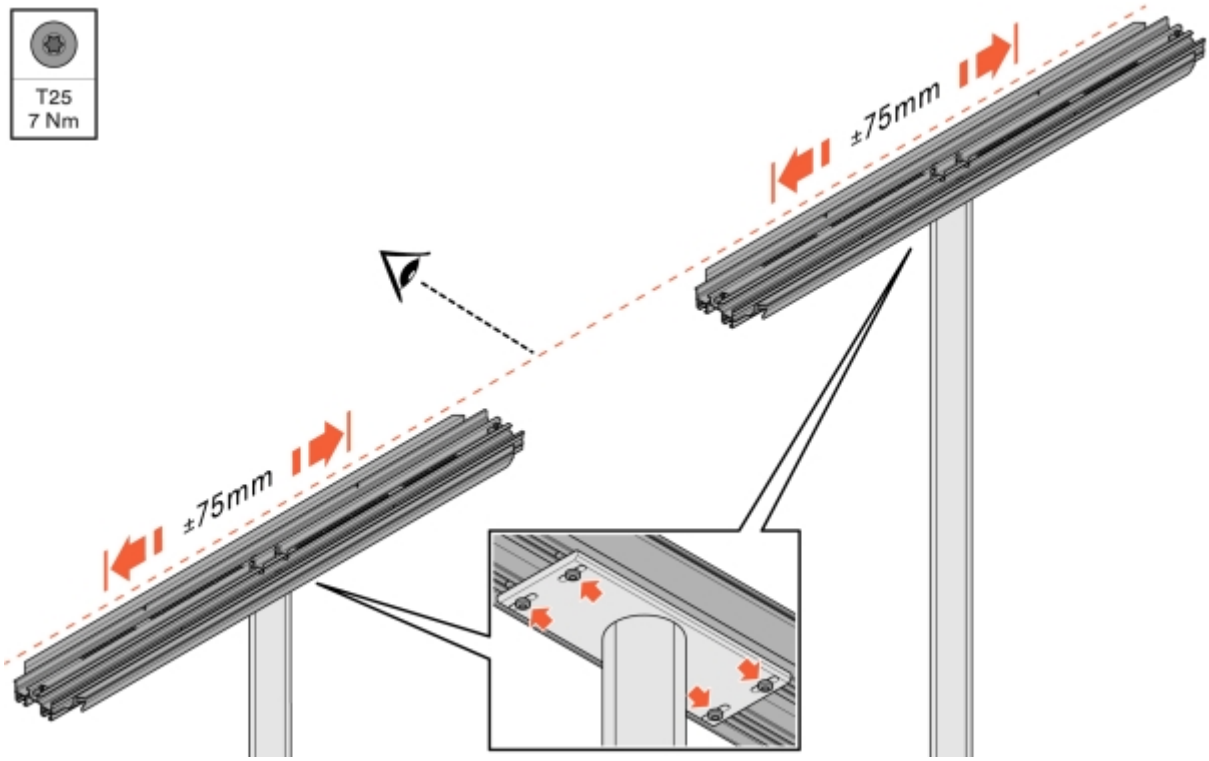

Image 20: Alignment and securing of mounting bracket

11 Install ConnectBar.

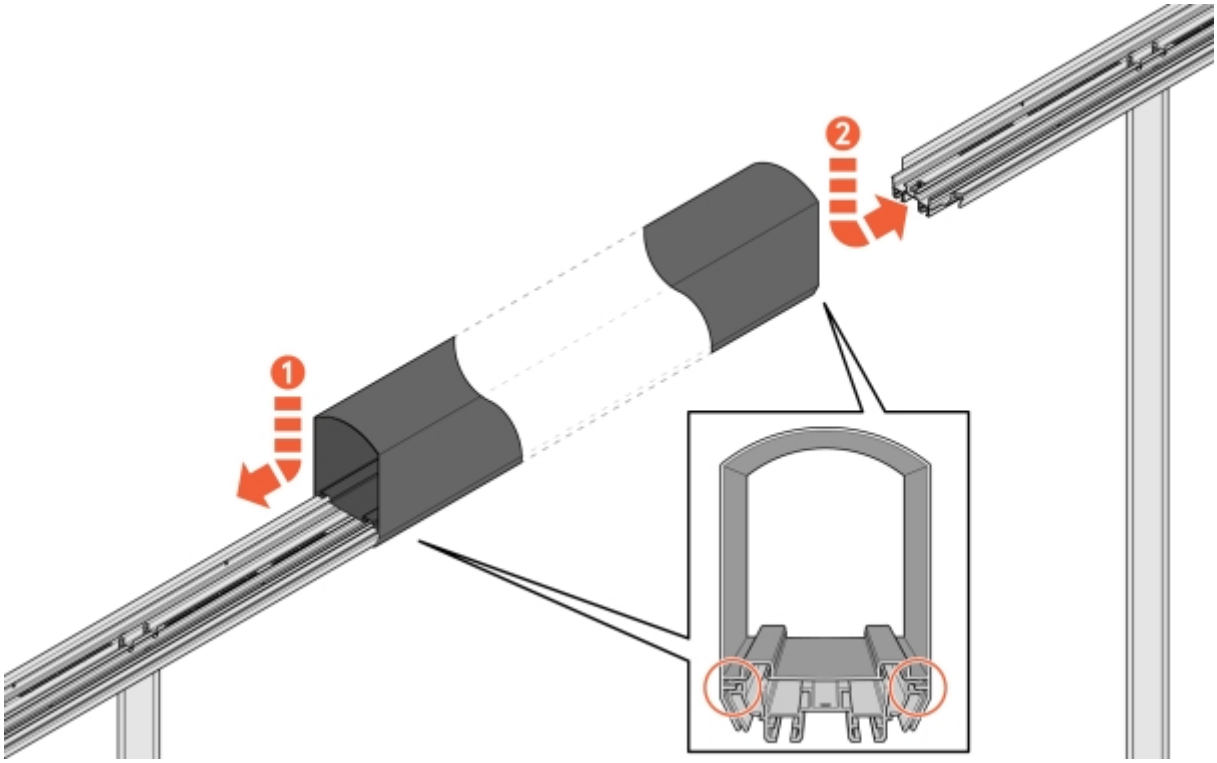

Image 21: ConnectBar installation

12 Check the positioning and make sure that ConnectBar is mounted in the tracks of the mounting bracket.

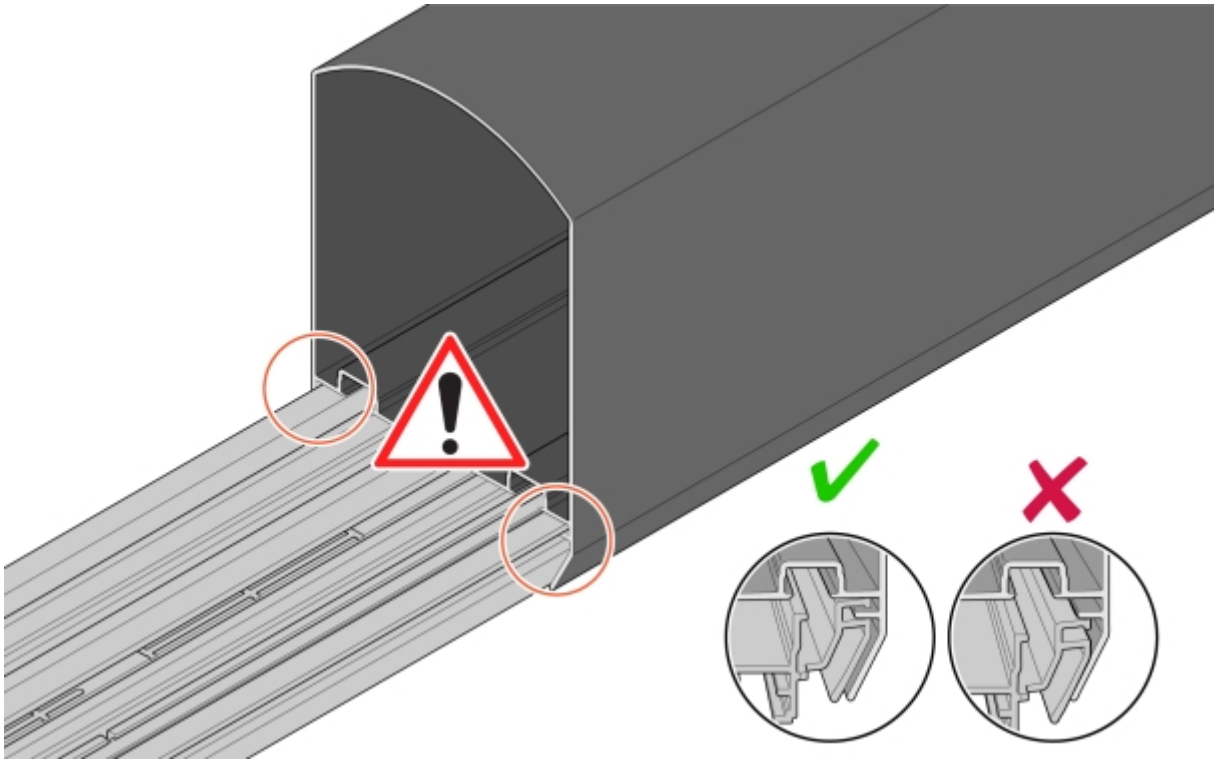

Image 22: Checking positioning and mounting

13 Adjust ConnectBar along the mounting brackets.

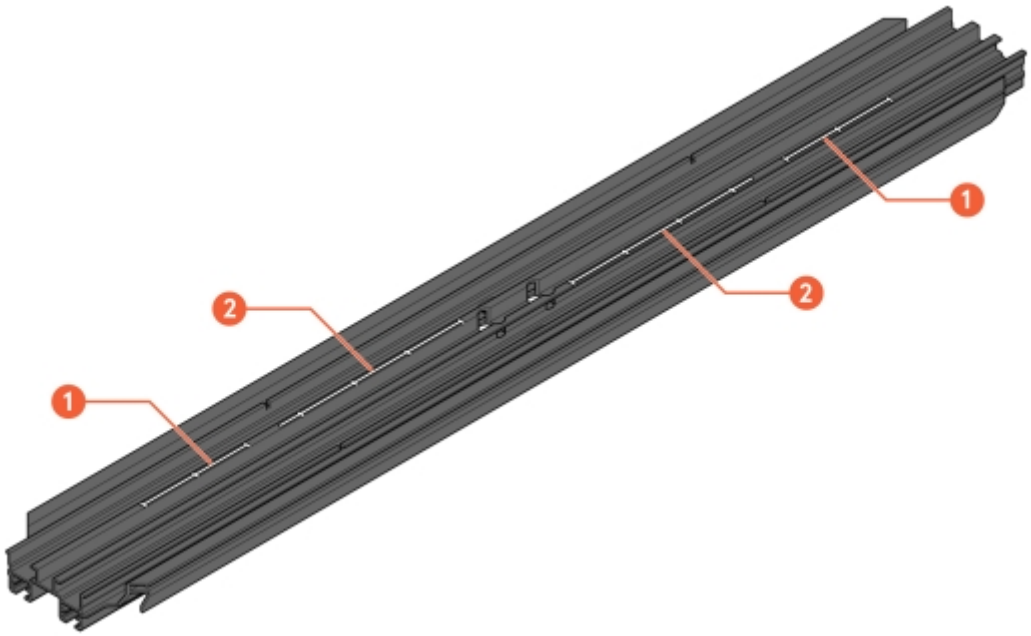

Image 23: Tracks for adjustment

1 Scale for adjustment with ChargePod

2 Scale for adjustment without ChargePod

14 Secure ConnectBar in the mounting bracket.

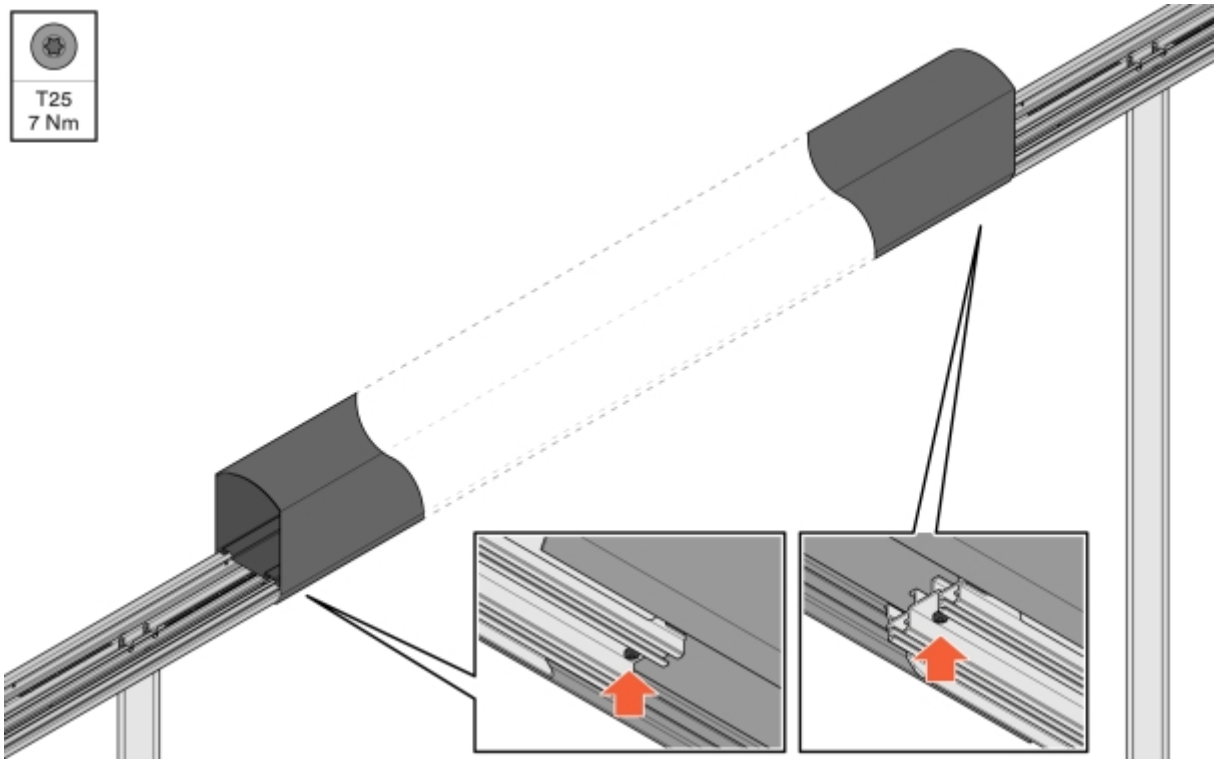

Image 24: Securing ConnectBar

15 Verify that ConnectBar is straight. The maximum permissible misalignment per section is 10 mm in total between the ends.

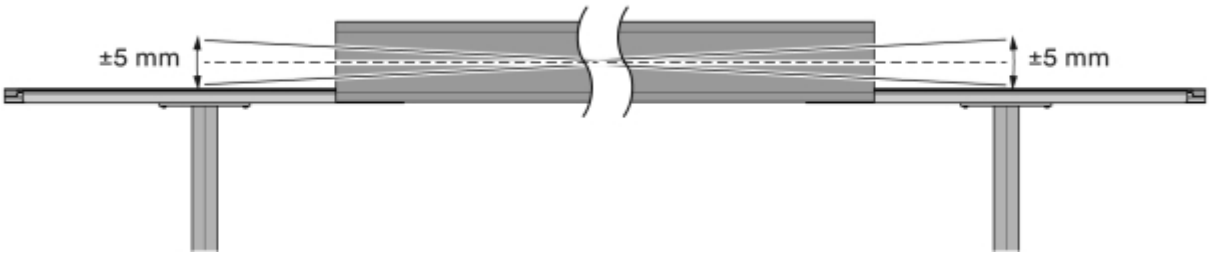

Image 25: Maximum misalignment

16 When installing lighting, route the LED strip through the profile.

Keep in mind!
The LED strip must be turned 90 degrees to fit in the slot on the bracket.

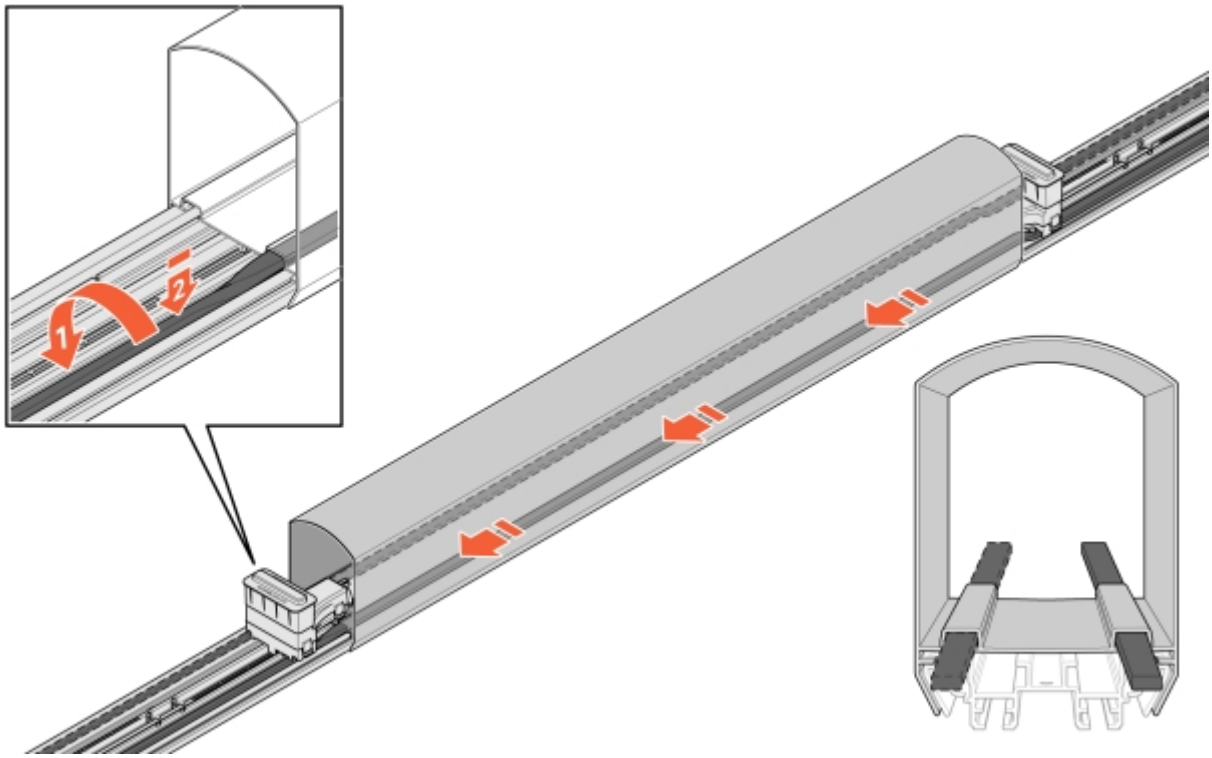

Image 26: LED installation

17 Insert the cable into ConnectBar:

17.1 Insert a connector and attach it to the mounting bracket's mounting holes.

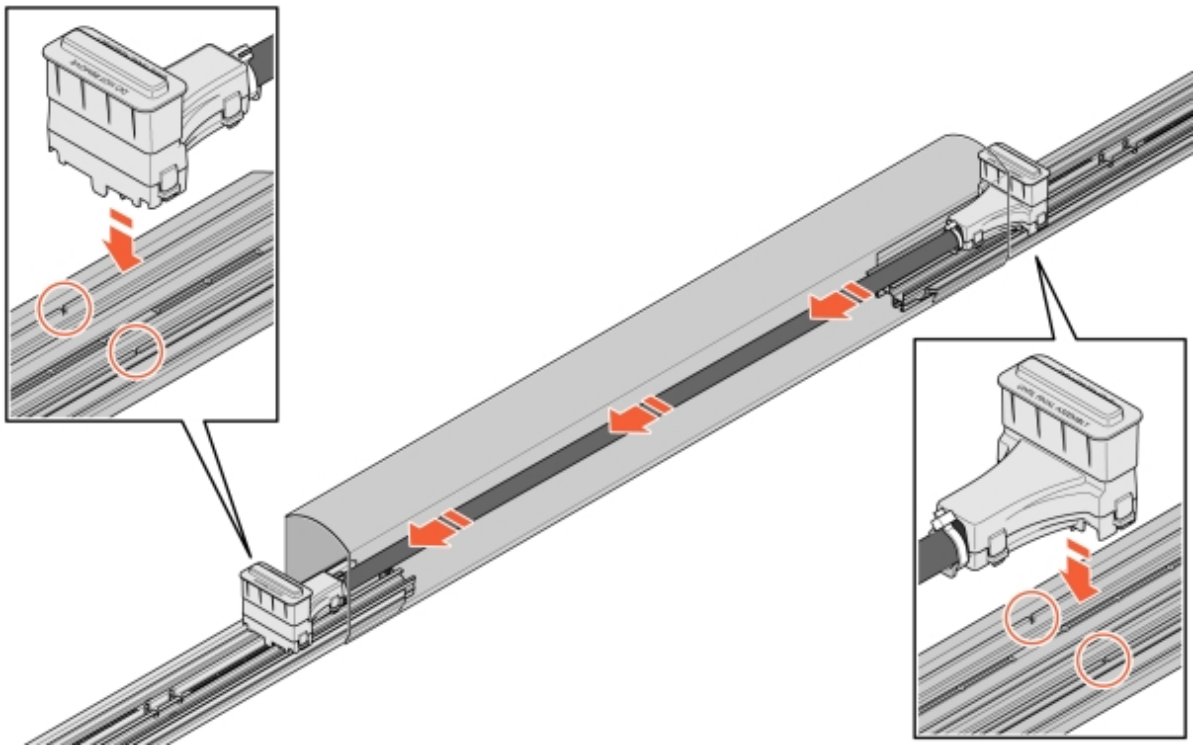

Image 27: Cable in ConnectBar

17.2 If the cable is too long, create one loop of cable and then attach the second connector.

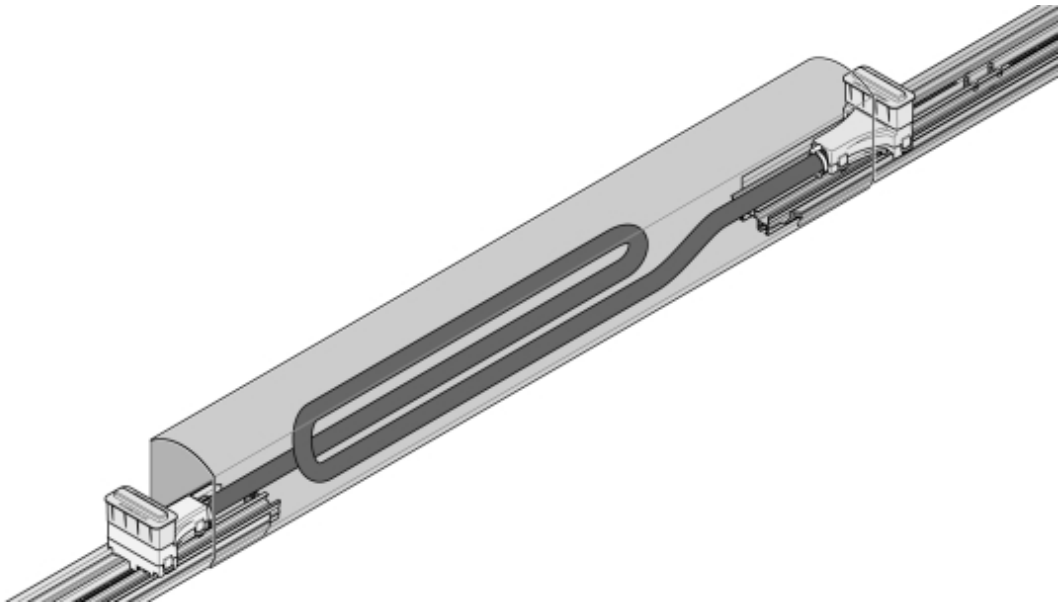

Image 28: Looped cable

18 Remove the protective covers from the connectors, mount ChargePod straight from the top down and secure from underneath.

Keep in mind!
ChargePod is designed for fixed installation and may only be removed or reinstalled for repair or replacement. Avoid inserting and removing ChargePod unnecessarily.

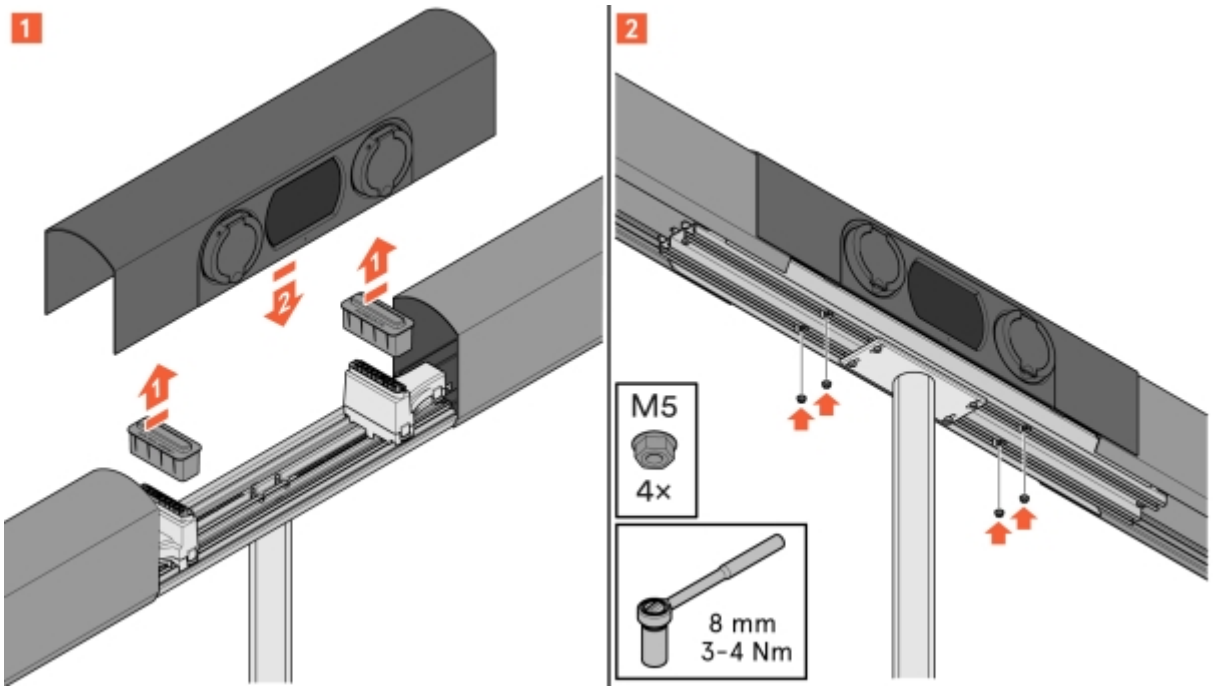

Image 29: ChargePod installation

Install ConnectCover for single-sided power bar

1 Place ConnectCover over the hole.

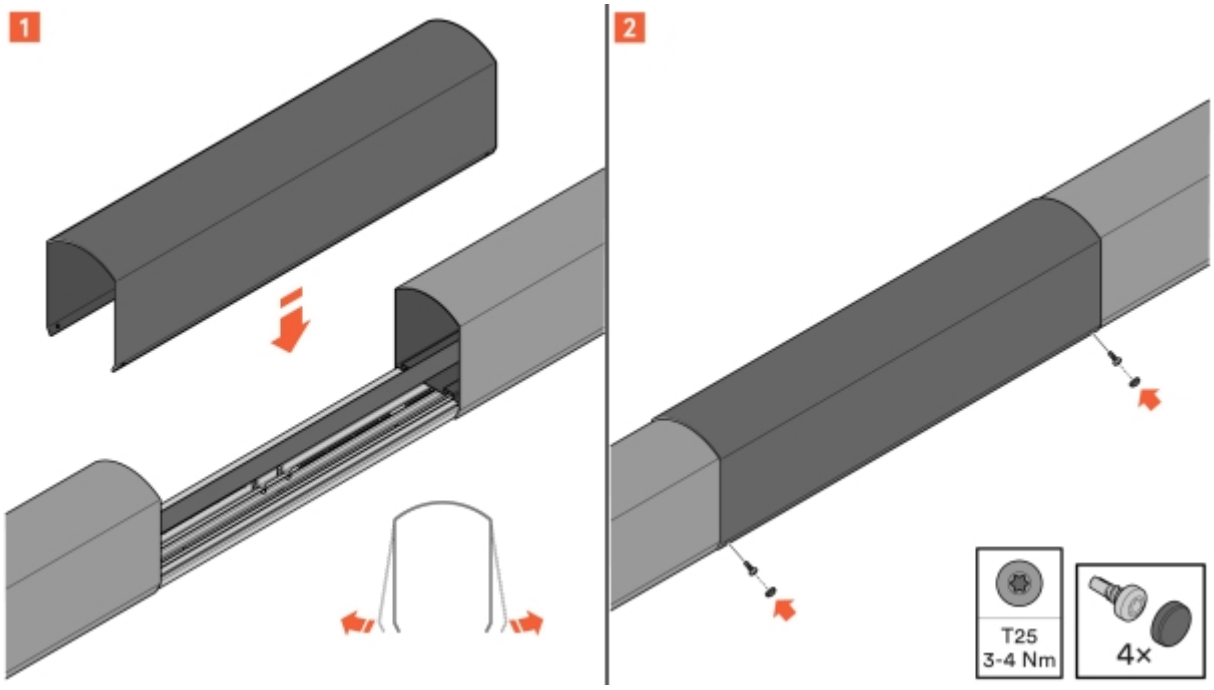

Image 30: ConnectCover installation

2 Screw the ConnectCover into place using the screws provided.

Mounting ChargePod and ConnectBar on wall

1 Determine ConnectBar height. The ideal height to the centre of the charging socket is 1100 mm above ground level.

- Make sure that nothing else has been agreed with the customer.
- If the ground slopes, the maximum height must not exceed CC 1200 mm and the minimum height must not be less than CC 800 mm.

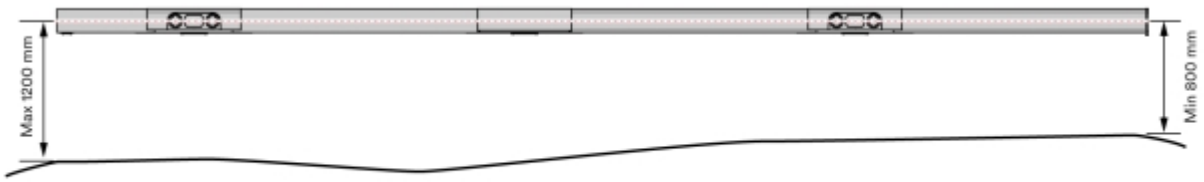

Image 31: ConnectBar height

2 Install wall brackets at the intended ChargePod mounting point.

- The wall brackets are an L-profile screwed to the wall.
- Choose fasteners based on the type of surface.

Check Section 5.4 "Ranges of ConnectBar lengths available", **page 14** for the recommended width between wall brackets.

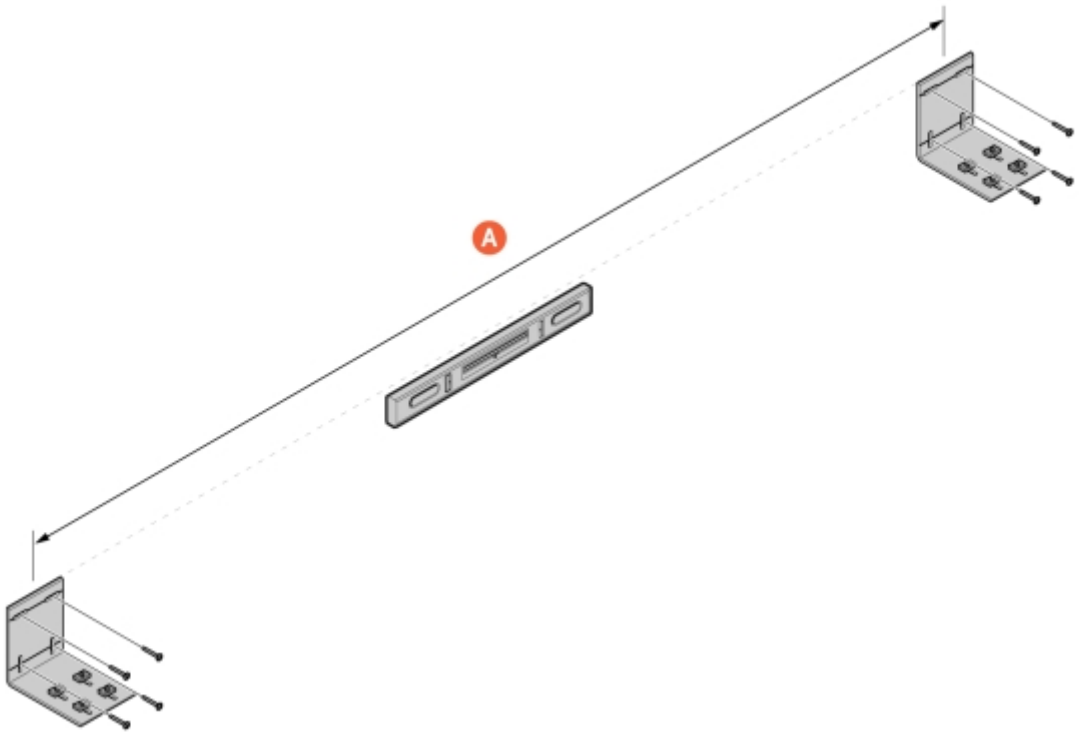

Image 32: Wall bracket installation

A ConnectBar length

3 Install mounting brackets on each wall bracket.

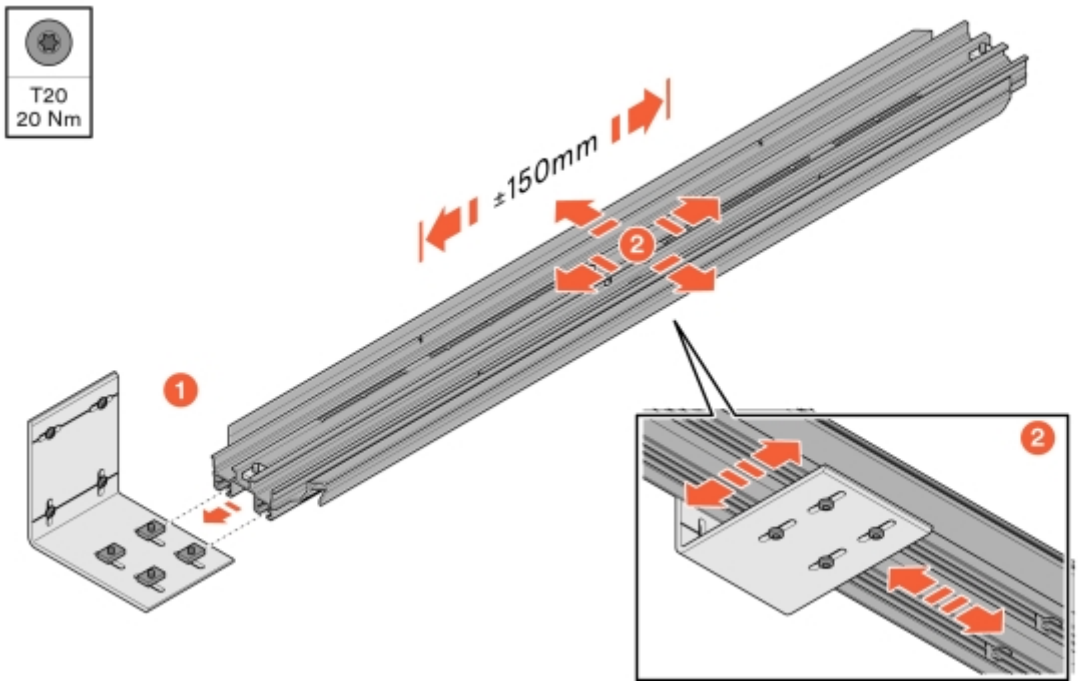

Image 33: Mounting bracket installation

4 Align the mounting brackets and then secure the wall bracket from below.

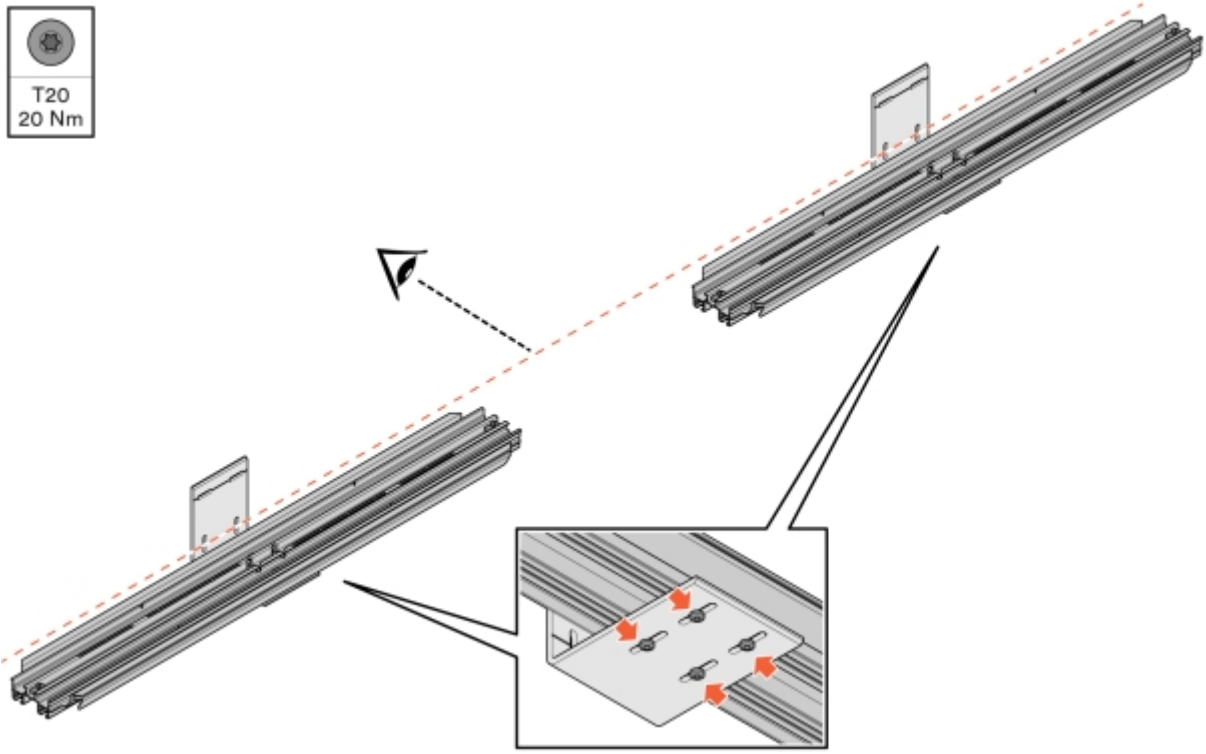

Image 34: Alignment and securing of mounting bracket

5 Install ConnectBar.

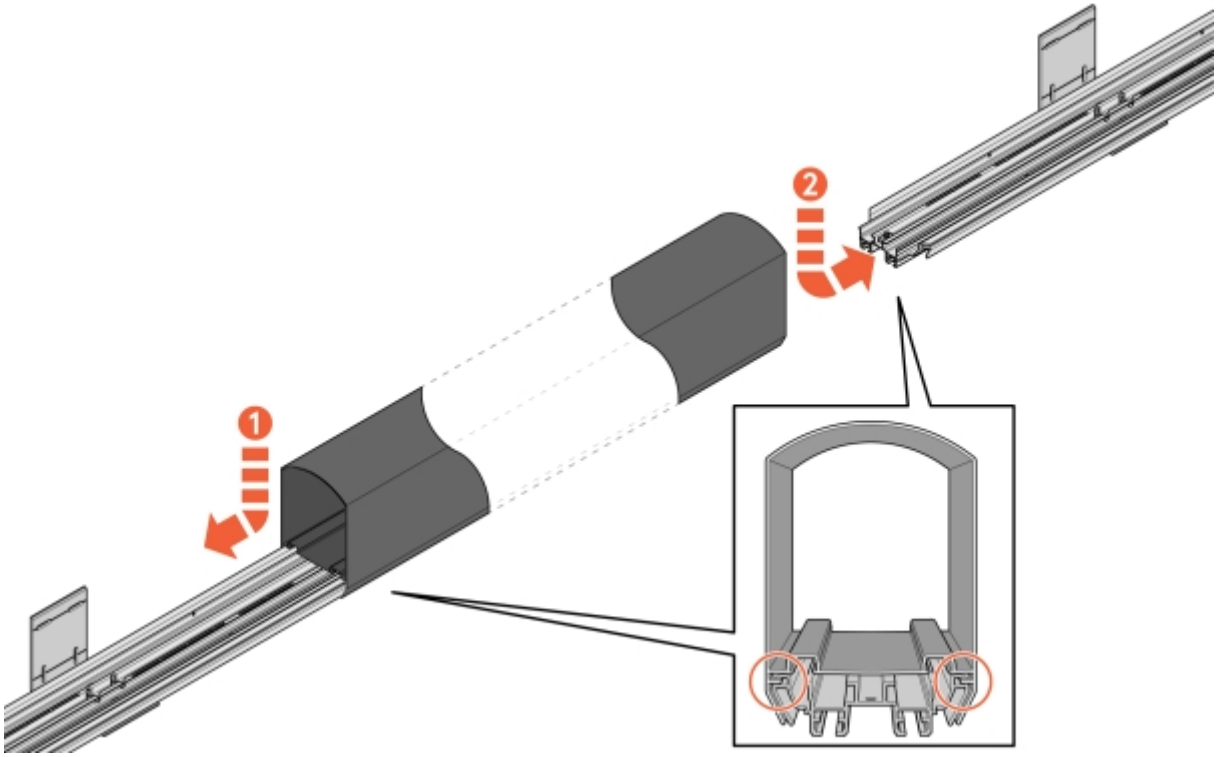

Image 35: Mounting ConnectBar

6 Check the positioning and make sure that ConnectBar is mounted in the tracks of the mounting bracket.

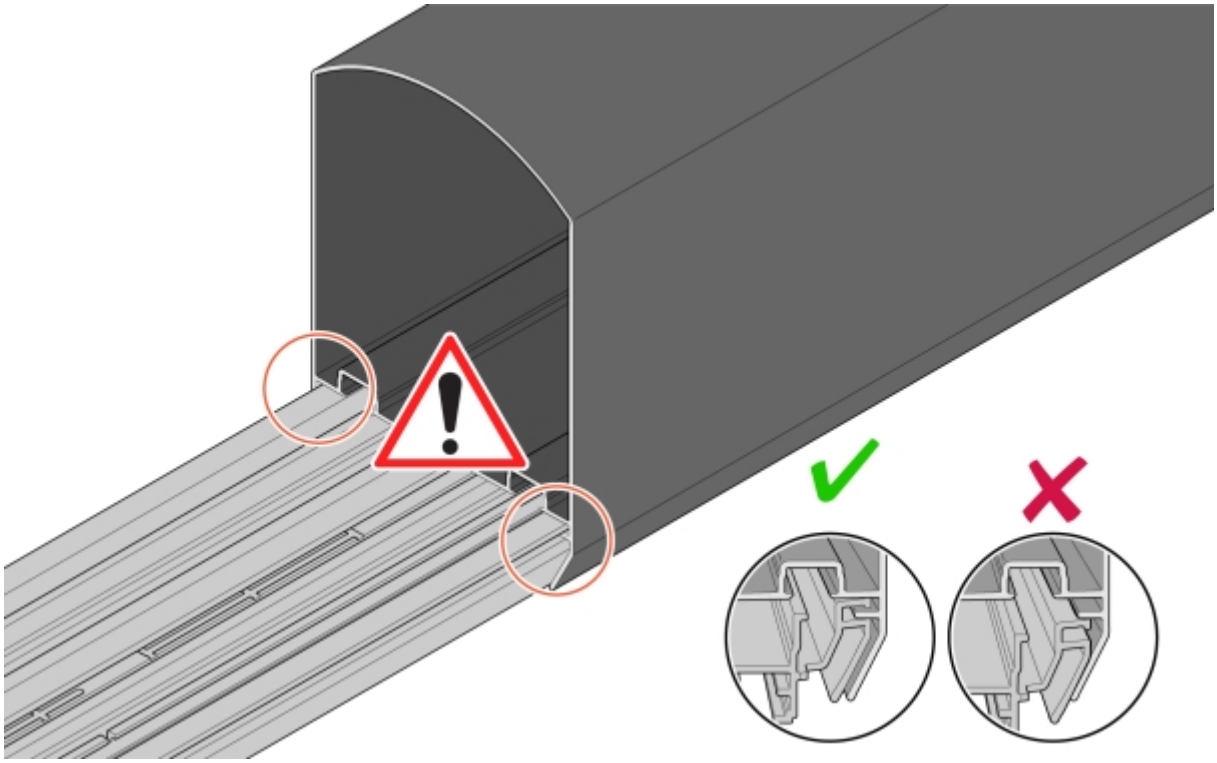

Image 36: Checking positioning and mounting

7 Adjust ConnectBar along the mounting brackets.

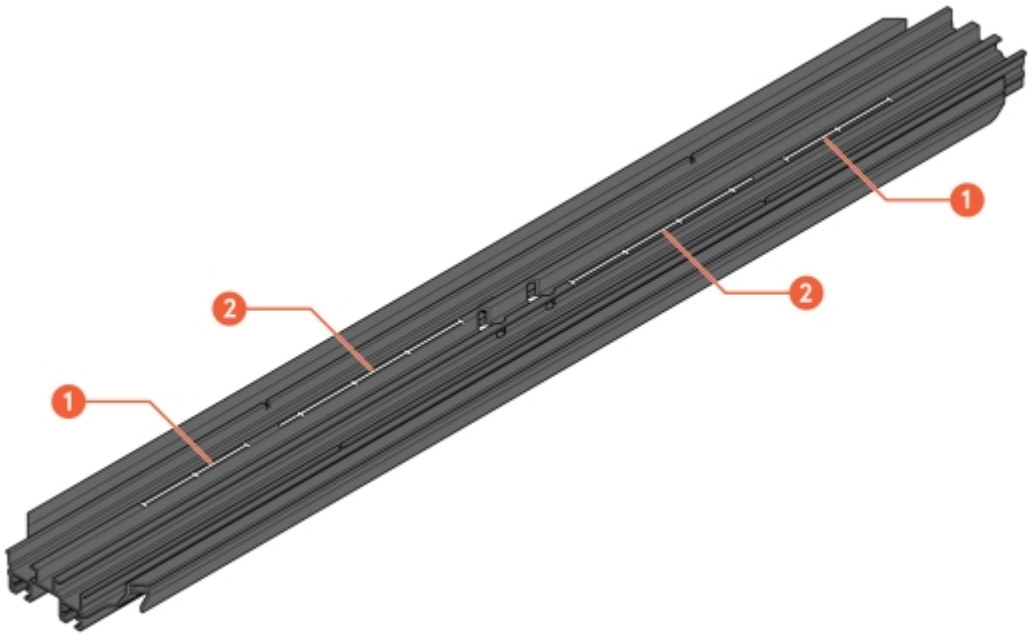

Image 37: Tracks for adjustment

1 Scale for adjustment with ChargePod

2 Scale for adjustment without ChargePod

8 Secure ConnectBar in the mounting bracket.

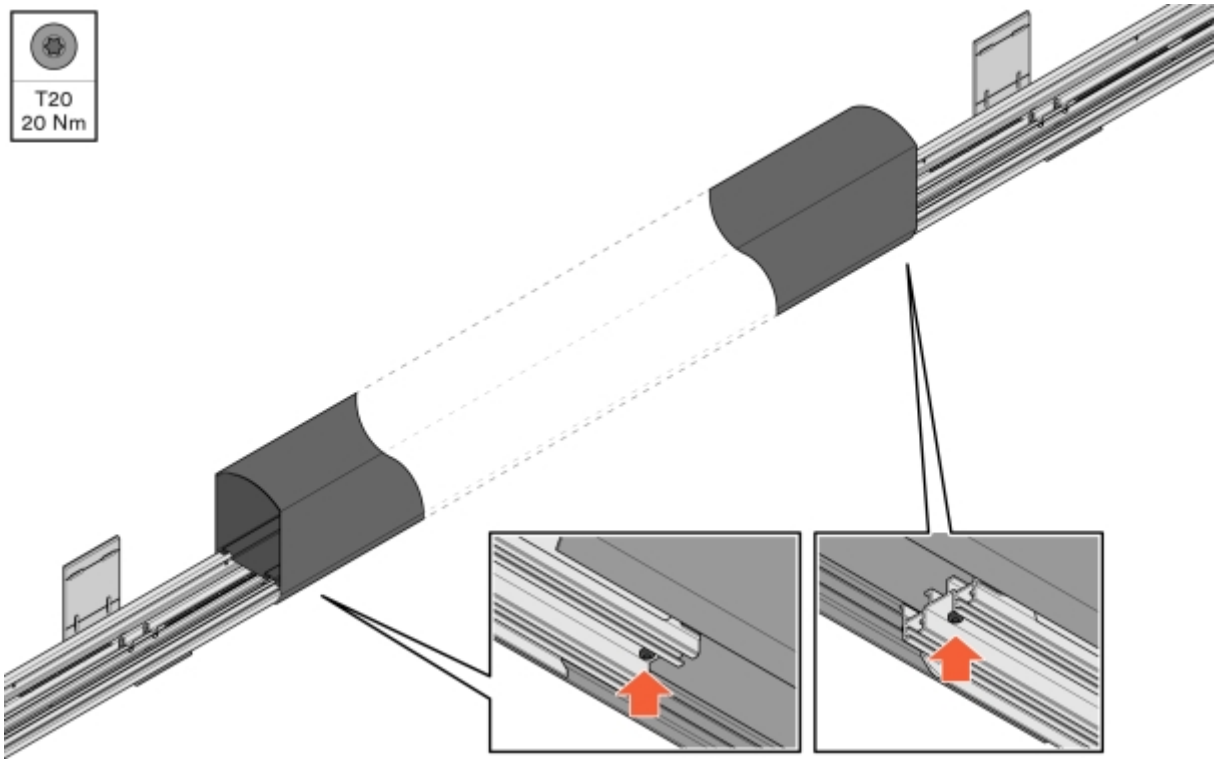

Image 38: Securing ConnectBar

9 Verify that ConnectBar is straight.

- The maximum permissible misalignment per section is 2 mm in total between the ends.

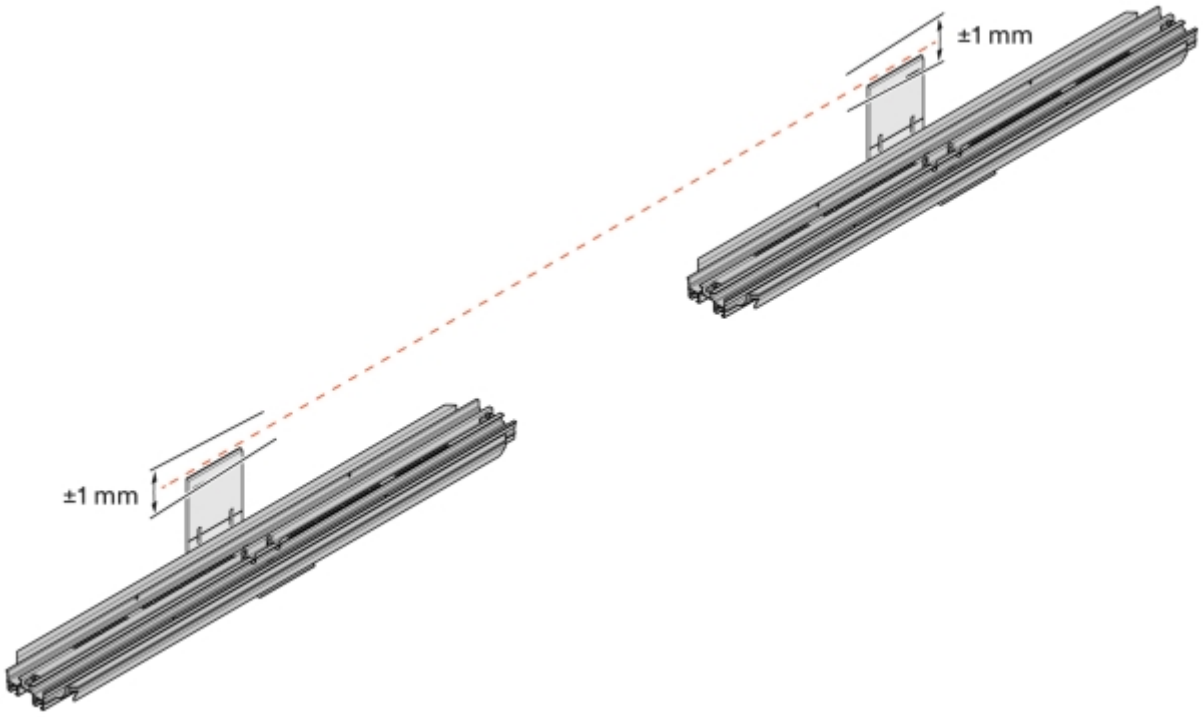

Image 39: Checking straightness

10 When installing lighting, route the LED strip through the profile.

Keep in mind!
The LED strip must be turned 90 degrees to fit in the slot on the bracket.

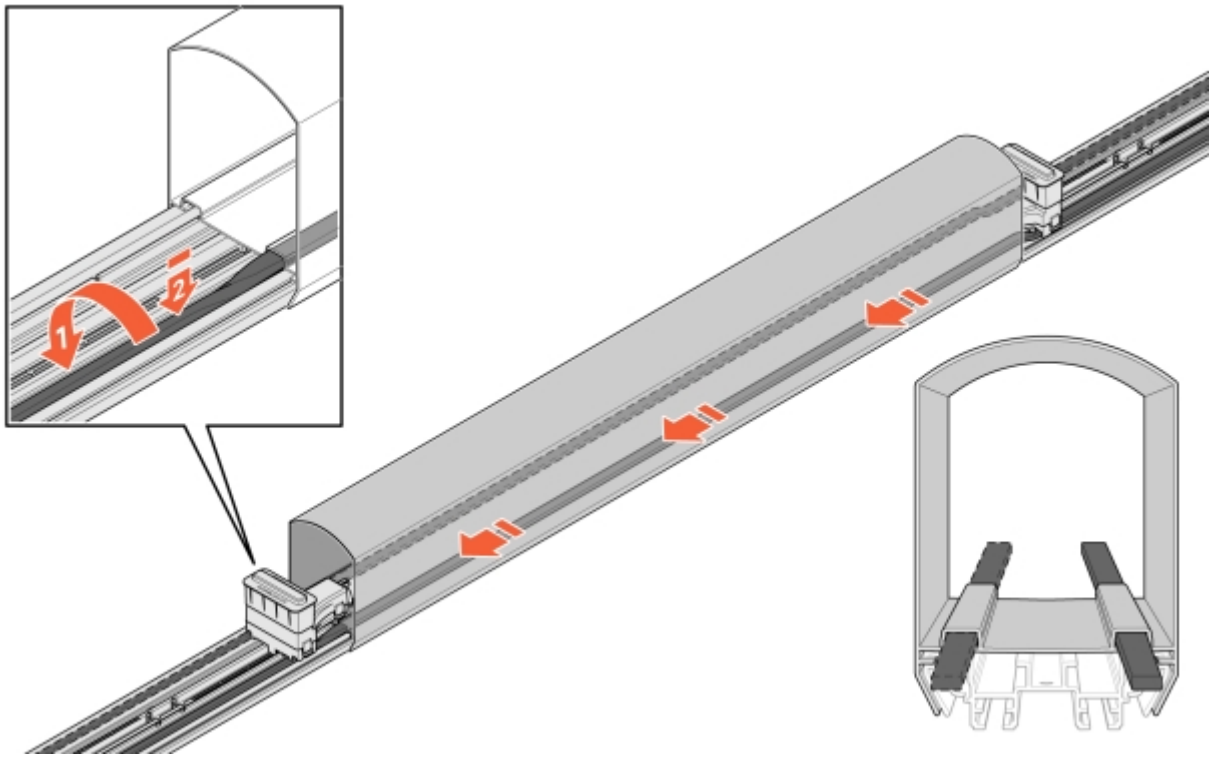

Image 40: LED installation

11 Insert the cable into ConnectBar:

11.1 Insert a connector and attach it to the mounting bracket's mounting holes.

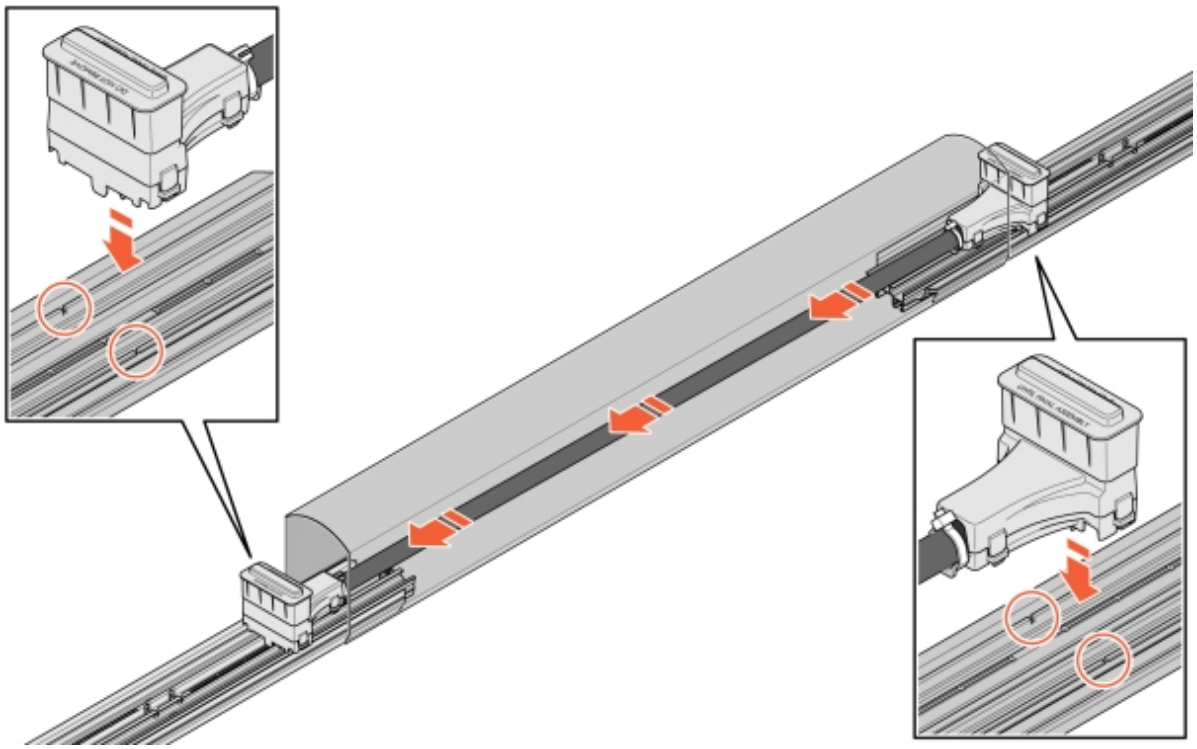

Image 41: Cable in ConnectBar

11.2 If the cable is too long, create one loop of cable and then attach the second connector.

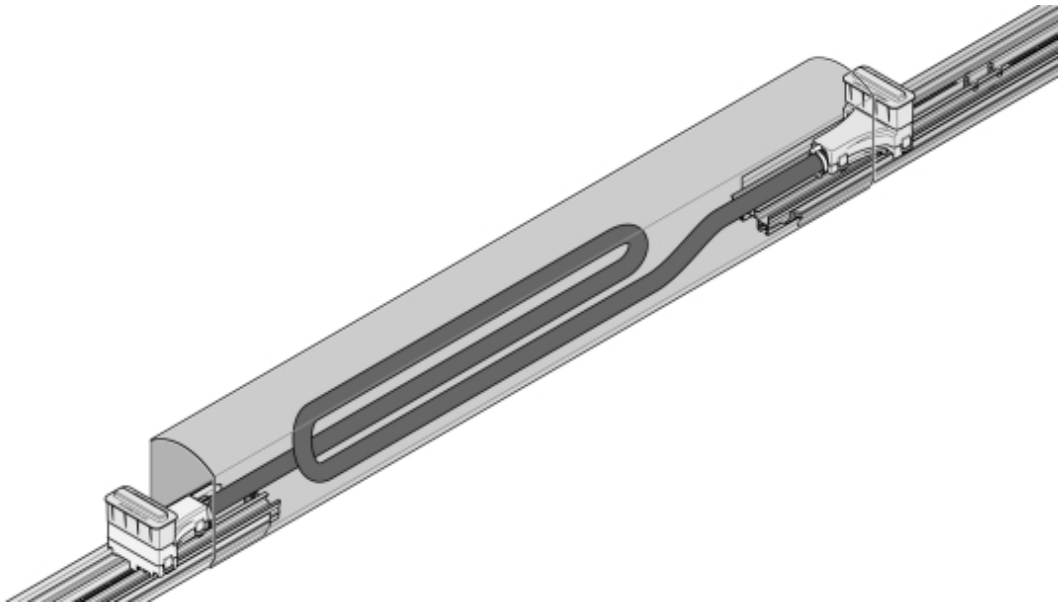

Image 42: Looped cable

12 Remove the protective covers from the connectors, mount ChargePod straight from the top down and secure from underneath.

Keep in mind!
ChargePod is designed for fixed installation and may only be removed or reinstalled for repair or replacement. The connector on ChargePod and ConnectCable is designed for permanent connections and should not be subjected to a high number of switching cycles. ChargePod must be installed perpendicularly and with great care.

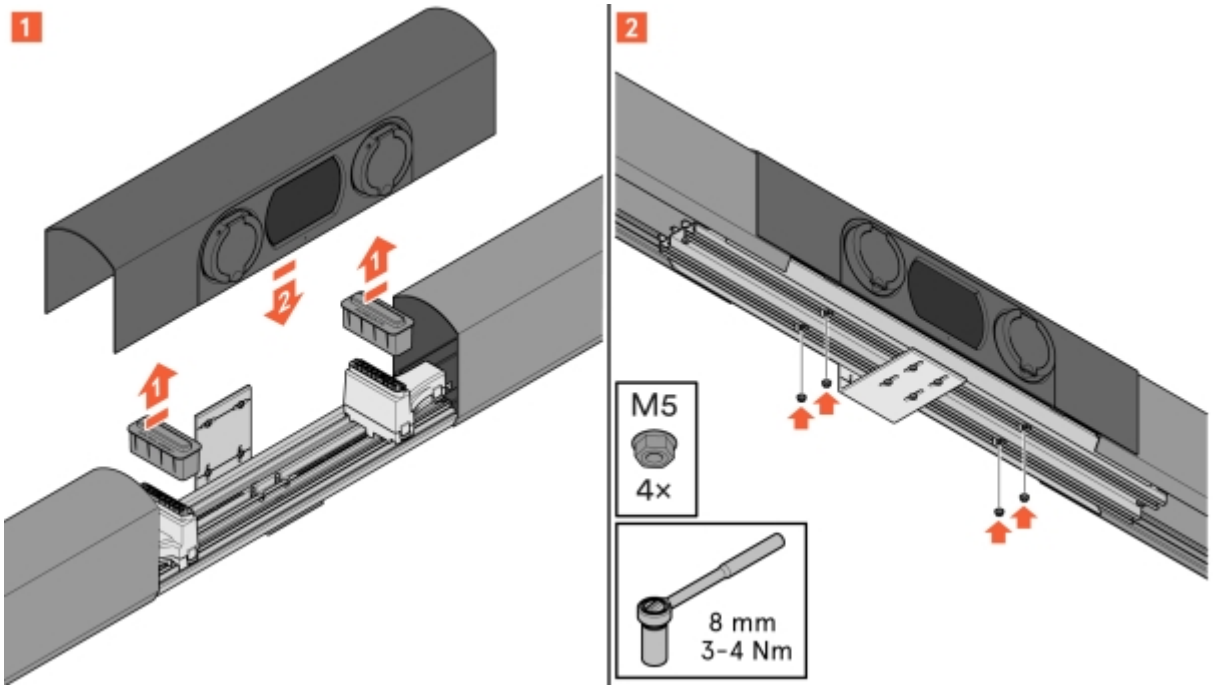

Image 43: ChargePod installation

Install ConnectCover for single-sided power bar

1 Place ConnectCover over the hole.

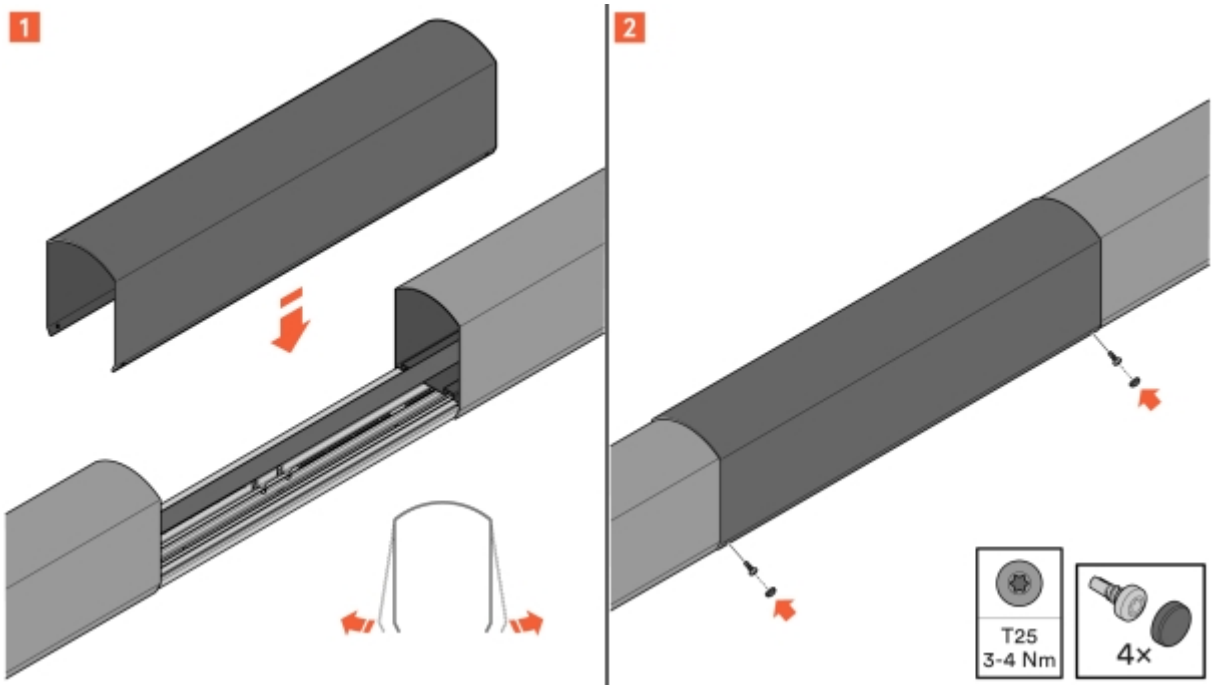

Image 44: ConnectCover installation

2 Screw the ConnectCover into place using the screws provided.

Install WallConnection

Cables

To ensure proper functionality and long-term operation, we recommend the following cables:

- **Power cable:** Aceflex 5G16
- **Data cable:** KAT6 UTP/FTP, black
- **Signal and 24 V cable:** Aceflex 5G1.5

1 Make sure that the ConnectBar is correctly mounted, aligned, and secured.

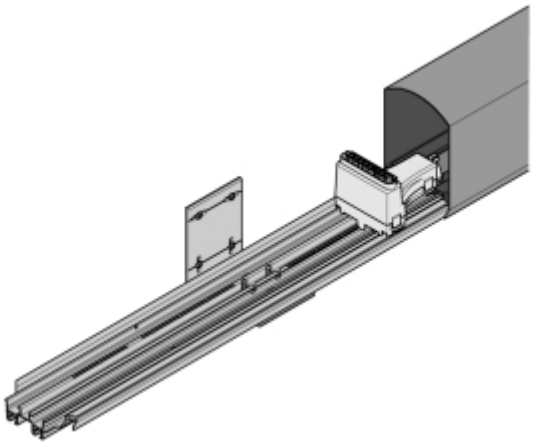

Image 45: Installed ConnectBar

2 Remove the cover from JunctionBox.

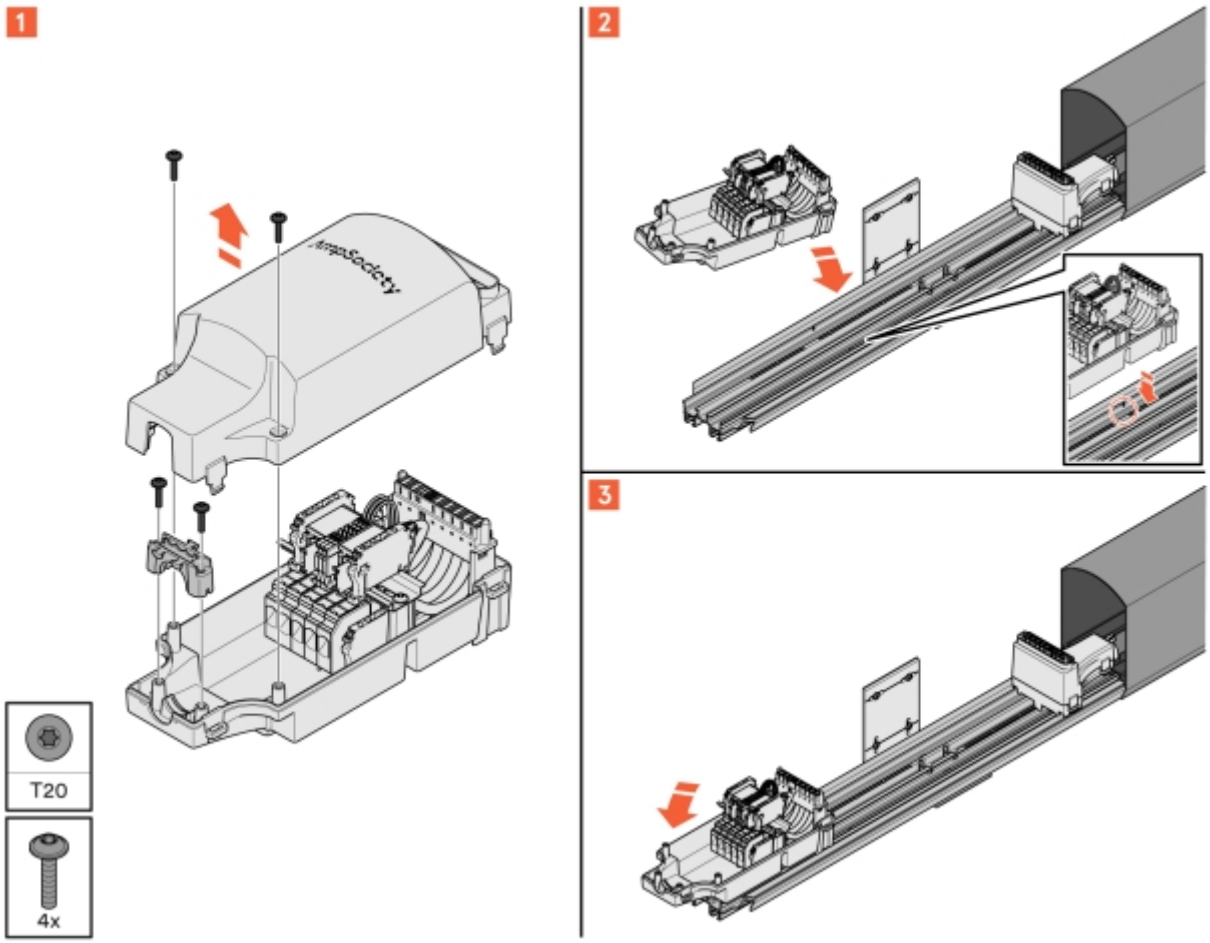

Image 46: JunctionBox installation

3 Snap the bottom part onto the bracket.

4 Install the power cable and secure it with the cable clamp.

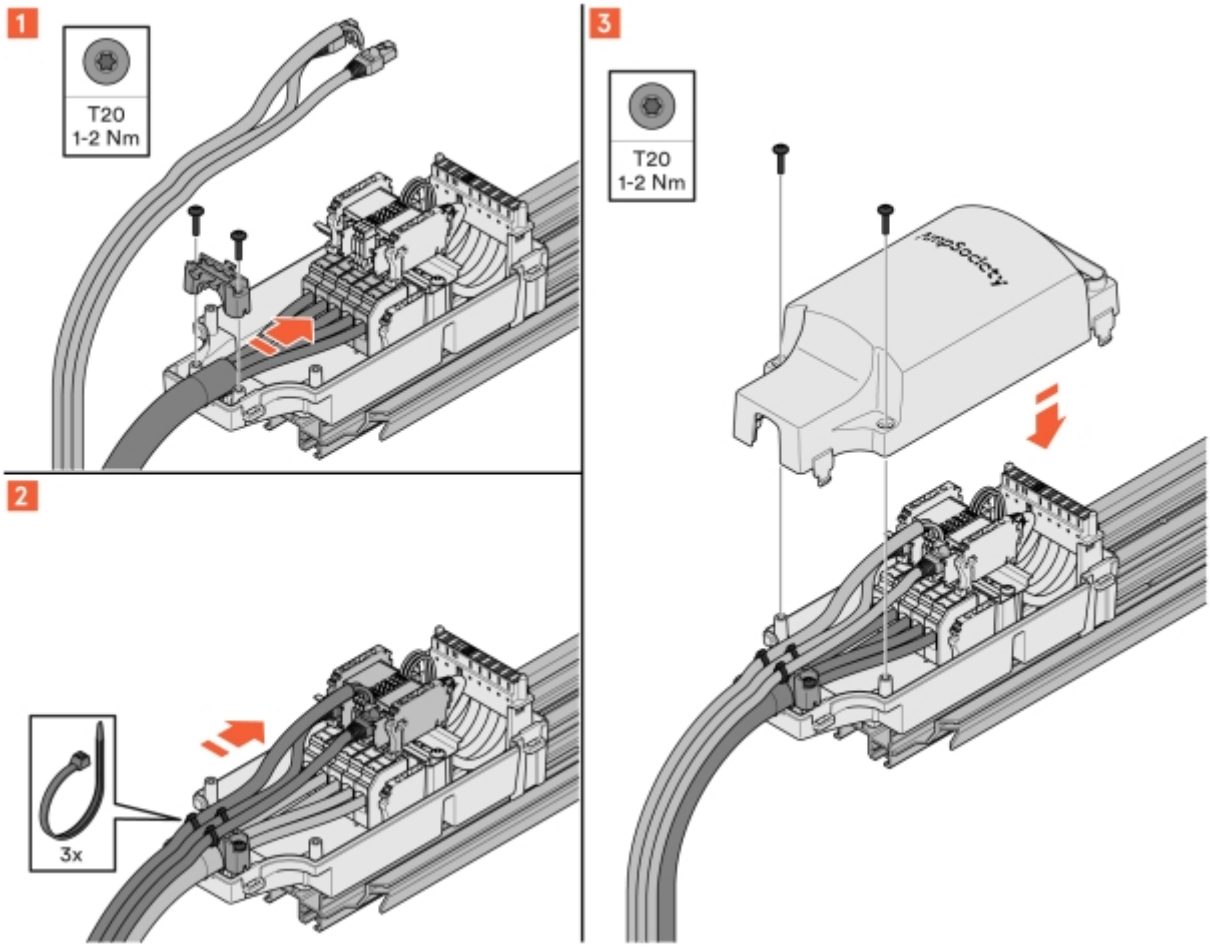

Image 47: Connecting JunctionBox

5 Install the data cables and secure them with three cable ties.

6 Fit the cover and secure it with two screws.

7 Mount CableBar on the mounting bracket.

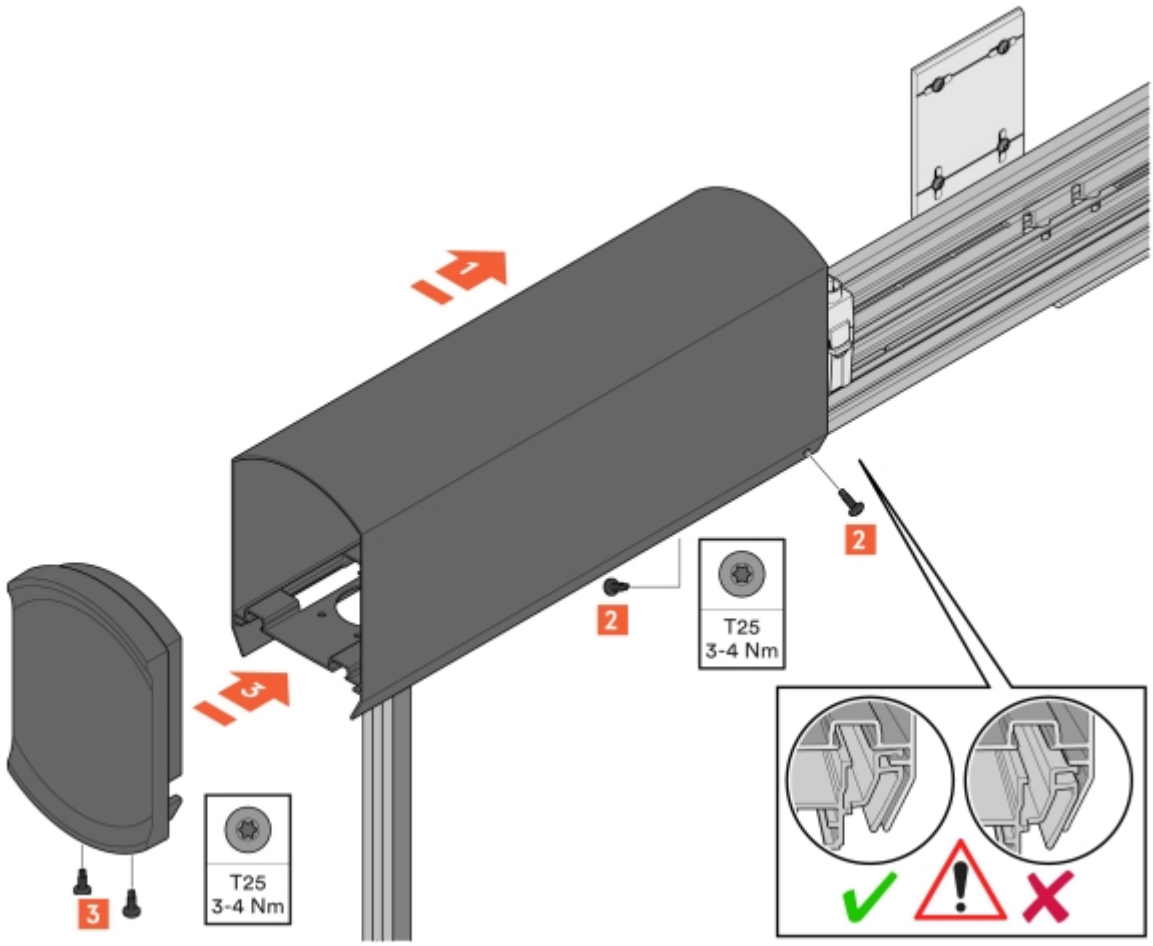

Image 48: CableBar installation

Keep in mind!
When installing CableBar, be careful so as not to damage the cables.

8 Secure CableBar to the bracket with a screw.

9 Position EndCap on CableBar and secure with two screws.

10 Secure all cables and cover with cable protection.

11 Position ChargePod and secure it with four nuts.

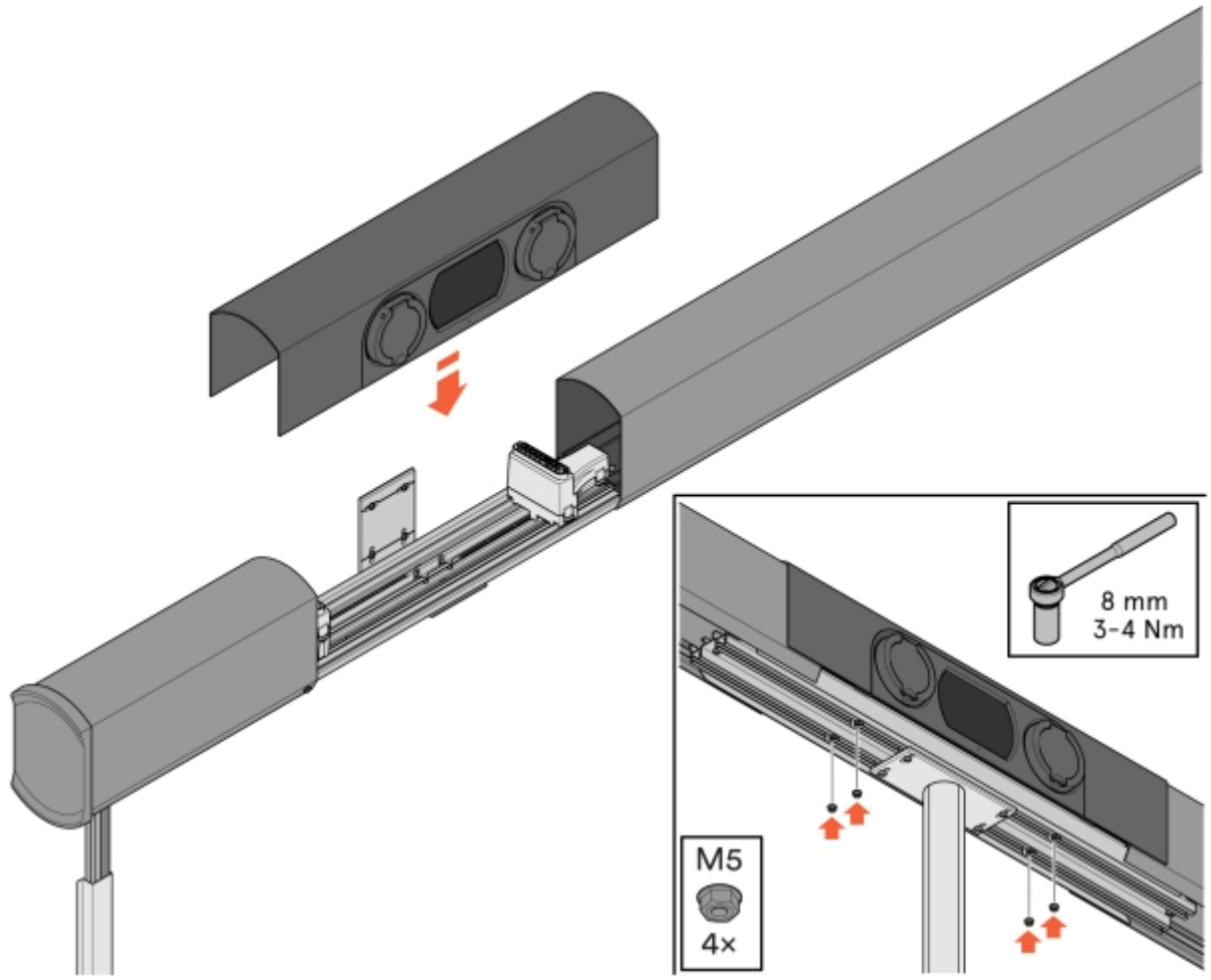

Image 49: ChargePod installation

Caution!
Install ChargePod straight down from above, avoiding tilting ChargePod.

Install GroundConnection

Cables

To ensure proper functionality and long-term operation, we recommend the following cables:

- **Power cable:** Aceflex 5G16
- **Data cable:** KAT6 UTP/FTP, black
- **Signal and 24 V cable:** Aceflex 5G1.5

Keep in mind!
ConnectCable for Amp5 must not be laid in the ground.

1 Cut the pipe profile to the same height as the poles.

2 Check that the pole-mounted cable tray and pipe profile from the ground to the mounting bracket are correctly installed, aligned, and secured.

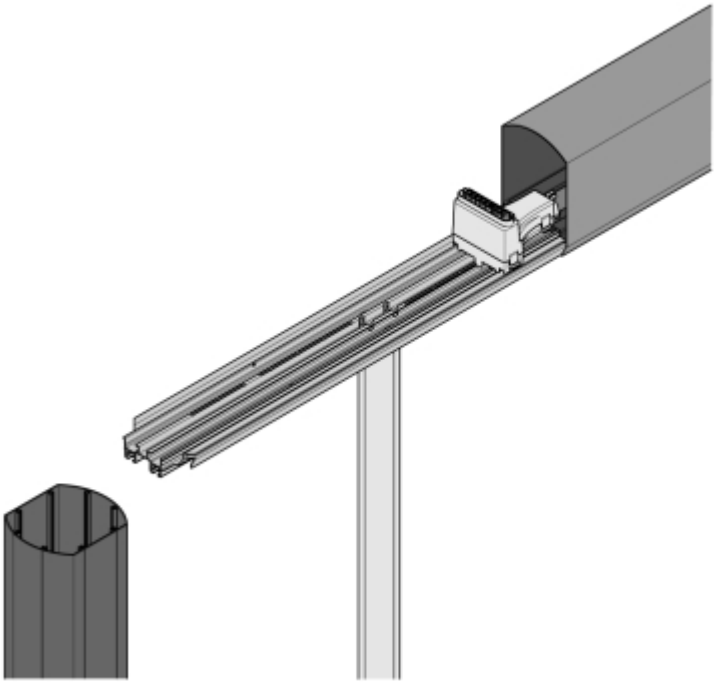

Image 50: Checking positioning and mounting

3 Check that the distance between the pole and the pipe is 585 ± 20 mm.

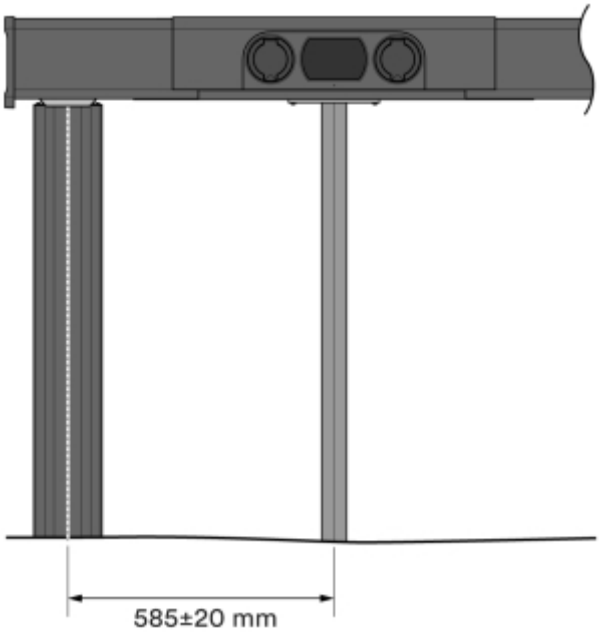

Image 51: Check of distance

4 Connect the power and data cables to their other connection points.

5 Run the power cables and data cables through the adapter.

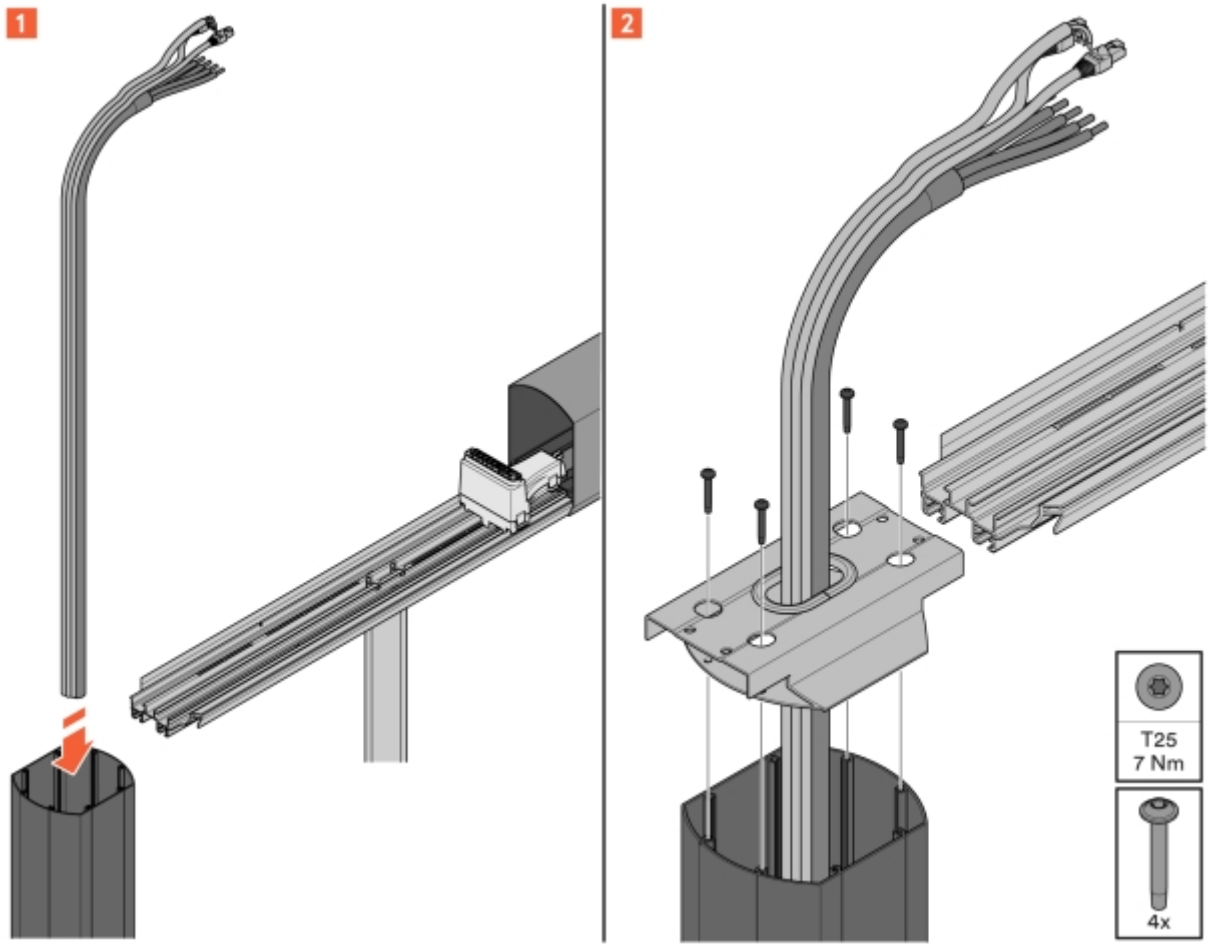

Image 52: Power and data cables

6 Position the adapter on the pipe and secure it with four screws.

7 Remove the cover from JunctionBox.

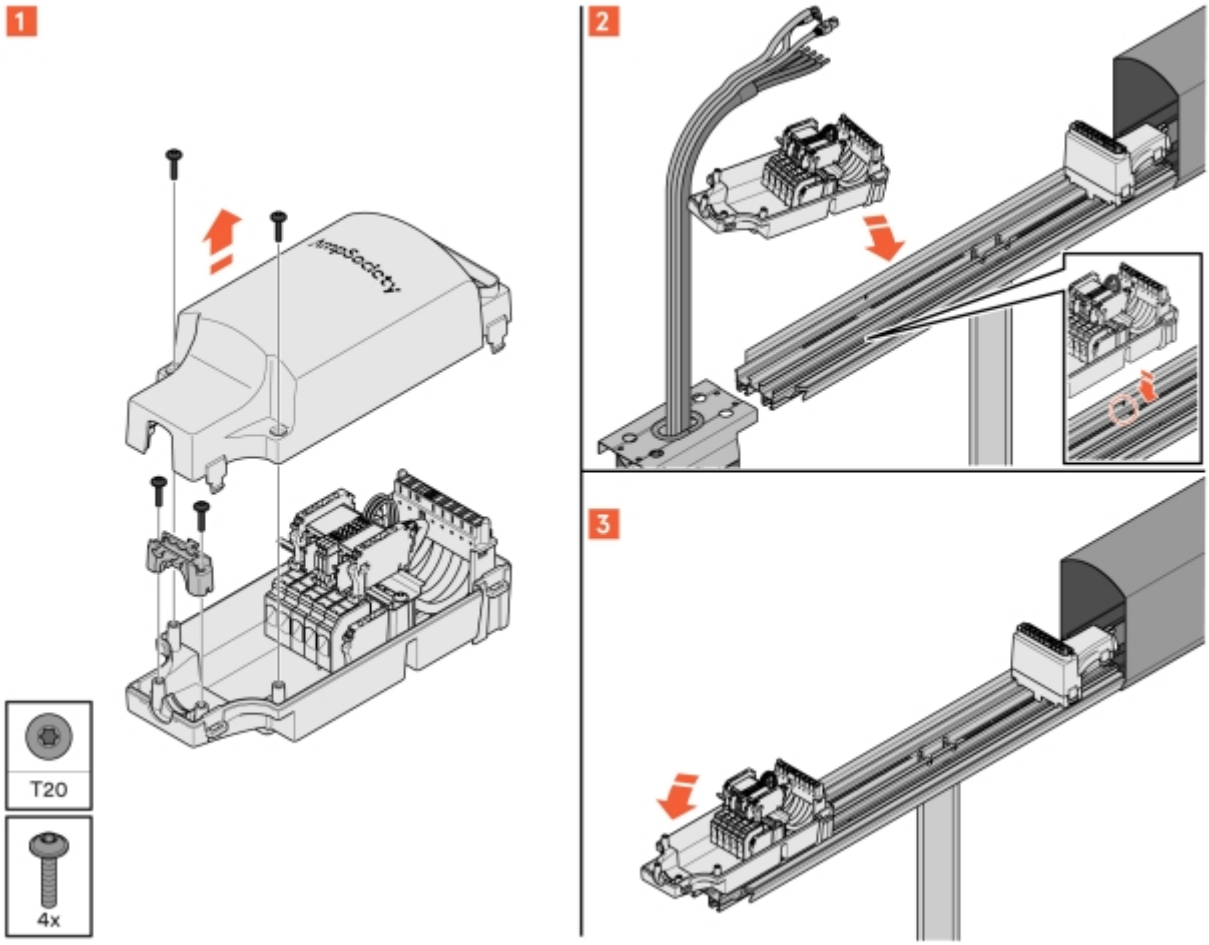

Image 53: JunctionBox installation

8 Snap the bottom part onto the mounting bracket.

9 Secure the lower part to the bracket with two screws.

Keep in mind!
Do not tighten beyond the specified torque to avoid damaging the product.

10 Install the power cable and secure it with the cable clamp.

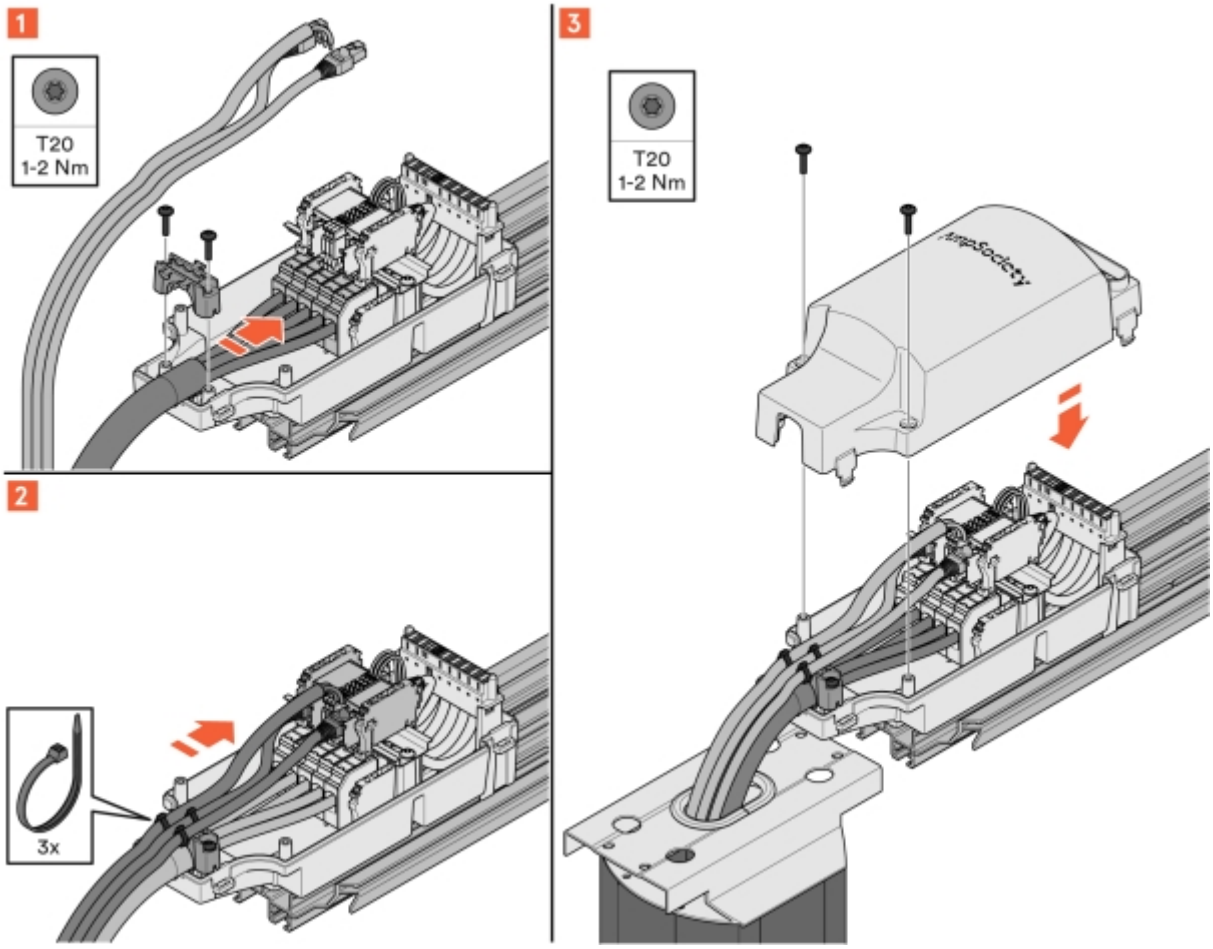

Image 54: Connecting JunctionBox

11 Install the data cables and secure them with three cable ties.

12 Fit the cover and secure it with two screws.

13 Position CableBar on the mounting bracket and secure it with four screws.

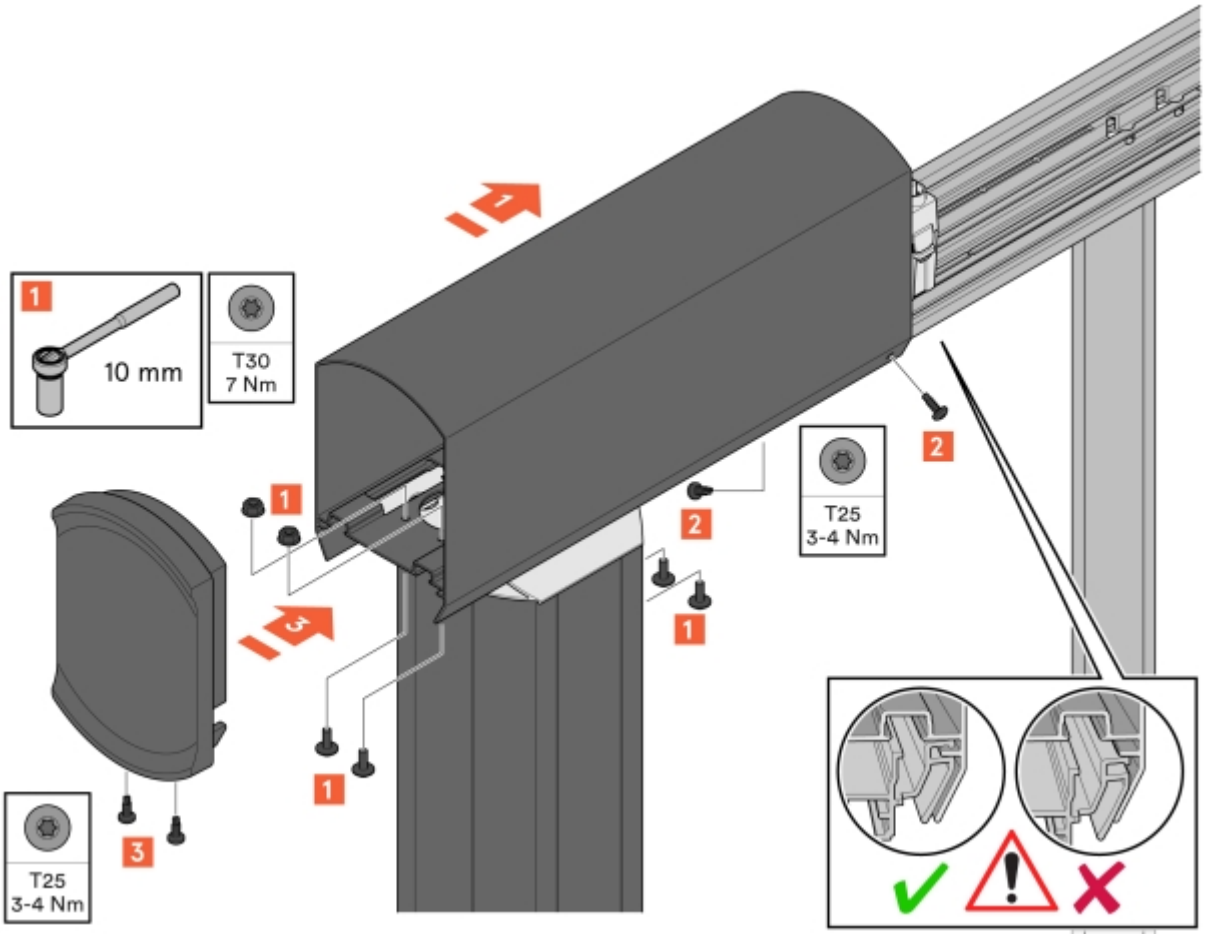

Image 55: CableBar installation

Keep in mind!
When installing CableBar, be careful so as not to damage the cables.

14 Secure CableBar to the bracket with two screws.

15 Position EndCap on CableBar and secure with two screws.

16 Position ChargePod and secure it with 4 nuts.

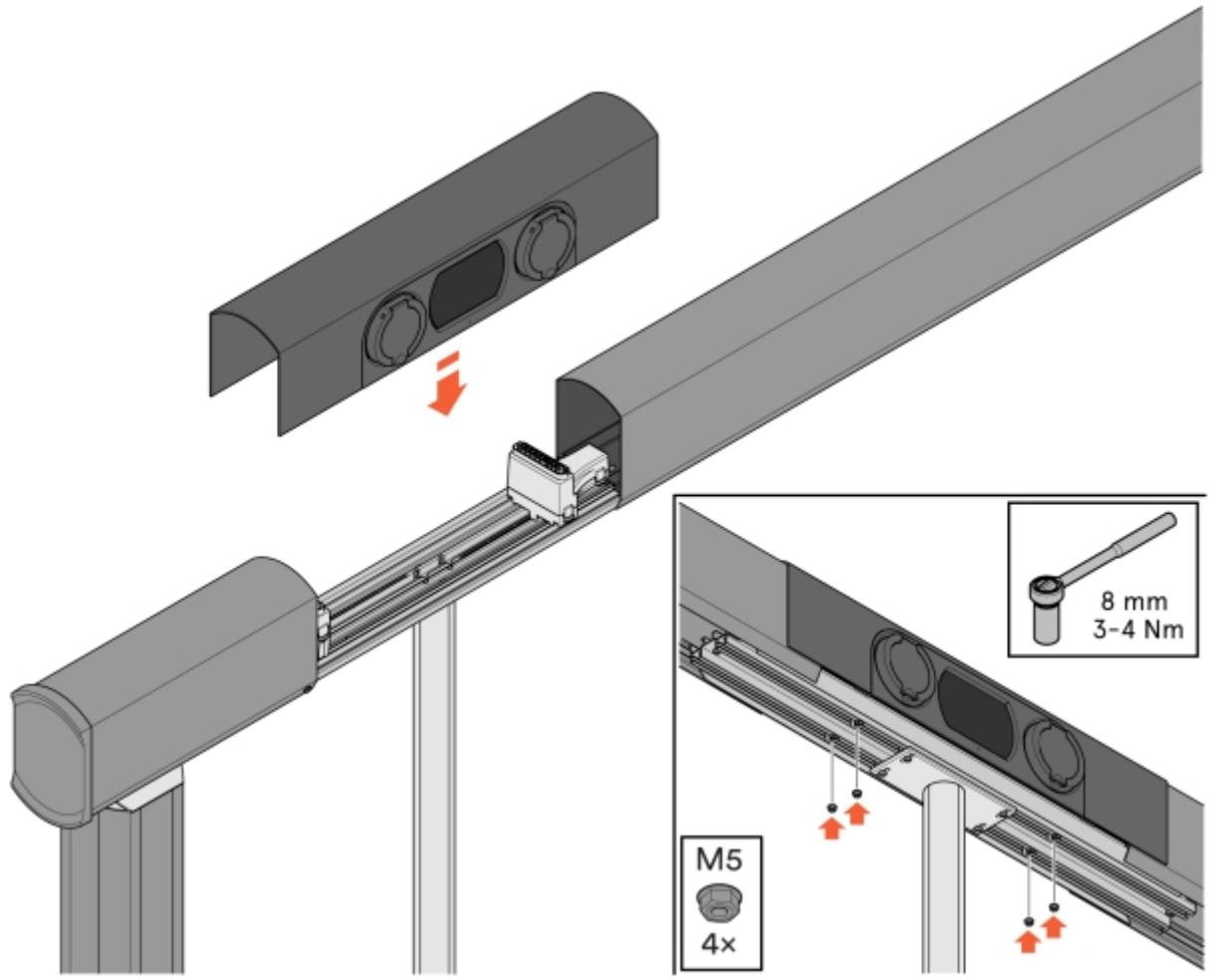

Image 56: ChargePod installation

Caution!
Install ChargePod straight down from above, avoiding tilting ChargePod.

Electrical installation

SmartHub components

SmartHub – Revision 01 (serial no. 01xxxxxx)

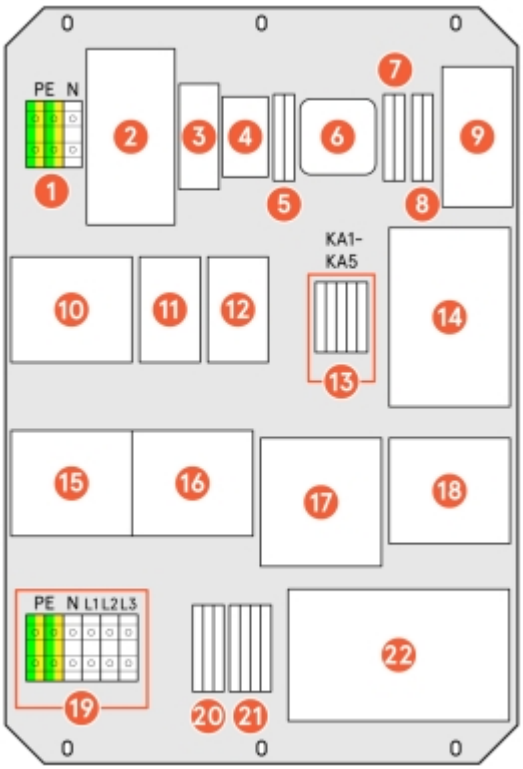

Image 57: SmartHub components – Revision 01

1 Incoming PEN
2 Main connector, 3p
3 Wi-Fi, on/off button
4 Internet indicator, blue or white
5 Output to 230 V LED (L1, N)
6 Accessory: Light control
7 24 V power supply to ChargePod (24 V, Gnd)
8 Continuity in the pilot control circuit (Pilot1, Pilot2)
9 Network switch for ChargePod
10 MCB, power supply current bar
11 MCB, control voltage 230 V
12 RCBO, power supply to LED
13 KA1-5 (description missing in PowerPoint)
14 Power supply 24 V, 240 W
15 Surge protection
16 Main circuit breaker and input current
17 Battery module
18 Place for router
19 Terminal block for outgoing cables (for SmartHub StandAlone only)
20 Load balancing input RS-485
21 Fire alarm input (24 V, Gnd, Alarm-, Alarm+)
22 Central computer

SmartHub – Revision 00 (serial no. 00xxxxxx)

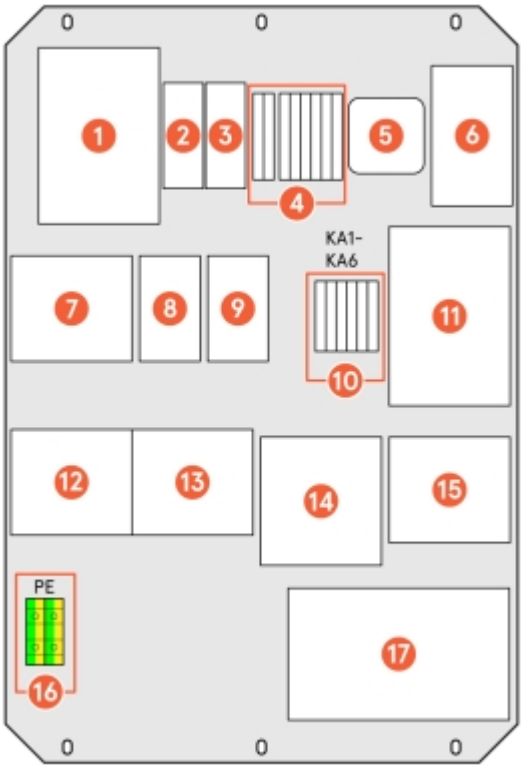

Image 58: SmartHub components – Revision 00

1 Main contactor, output power
2 Wi-Fi button
3 Internet indicator
4 24 V disconnection/pilot connection
5 Plejd for LED strip
6 Switch for ChargePod communication
7 Main fuse
8 Fuse for 24 V (auxiliary)
9 Fuse for LED strip
10 Auxiliary contactors
11 Power supply unit for 24 V
12 Terminal block
13 Surge protection
14 UPS
15 Place for router
16 Incoming PEN
17 Central computer

Connect SmartHub

1 Install screw connection for main cable (max. 35 mm^2, 100 A).

2 Connect the N-L1-L2-L3 wires to QD1 on the main switch.

3 Connect the ground wire (PE) to the ground terminal.

Connect the network from ChargePod to SmartHub

1 Scenario 1: SmartHub with one ConnectCable

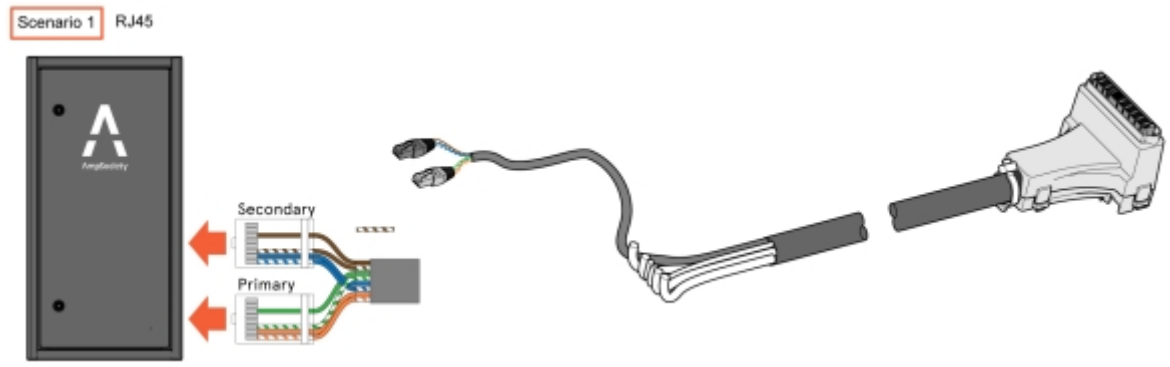

Image 59: Connection between SmartHub and one ConnectCable

2 Scenario 2: SmartHub with 2x ConnectCable

Image 60: Connection between SmartHub and 2x ConnectCable

3 Scenario 3: SmartHub with one WallConnection or one GroundConnection

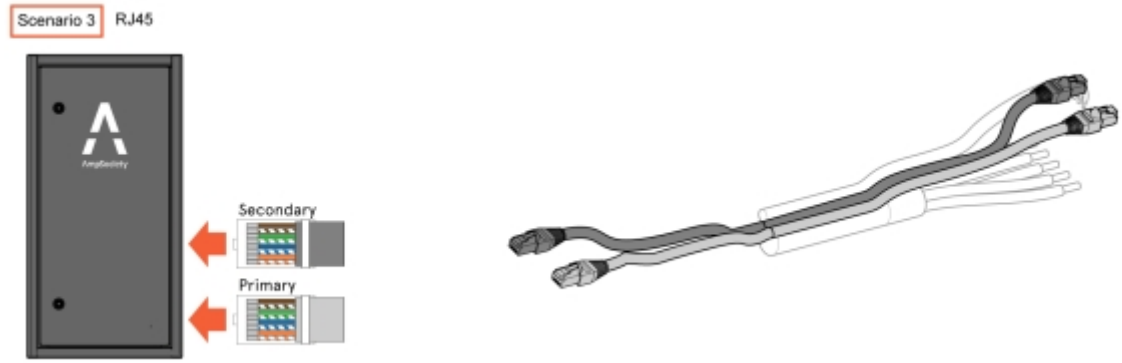

Image 61: Connection between SmartHub and one WallConnection or one GroundConnection

4 Scenario 4: SmartHub with 2x WallConnection or 2x GroundConnection

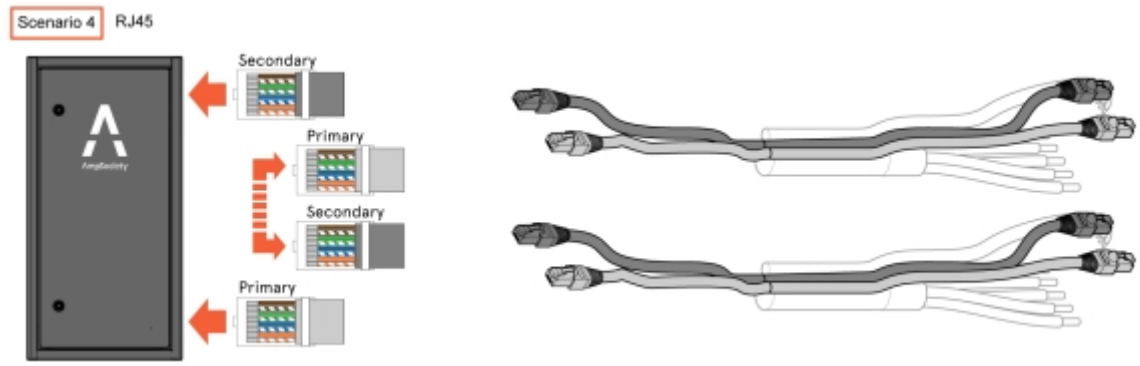

Image 62: Connection between SmartHub and 2x WallConnection or 2x GroundConnection

Connect Router AmpSociety (part no. 5000207, option for Amp5)

1 Install the router using the supplied DIN bracket in position 18 in the SmartHub.

2 Connect the prepared 4-pin power cable.

3 Connect the prepared antenna cables to the router.

Keep in mind!
Make that the cable labelled "Mobile" is connected to the "Main antenna mobile" port on the router.

4 Connect the prepared network cable from the Amp5 Central Computer to the LAN port on the router.

5 If a wired network is to be used, connect it to the port labelled WAN on the router.

Connect external stop

1 Connect cable (E-Stop/fire alarm) to terminal block 404, 405, and 406.

Keep in mind!
See connection instructions in the central drawing.

Lighting connection (optional)

1 Install the lighting relay, Plejd controller or similar in SmartHub and connect according to its single-line diagram. Drawing included with SmartHub.

2 Configure according to the client's wishes.

3 If no other programming information is given, select the Astro function.

4 Attach the Plejd sticker or equivalent sticker with code to the inside of the door on SmartHub.

5 Connect the lighting to the prepared terminal block.

Commissioning

Start-up

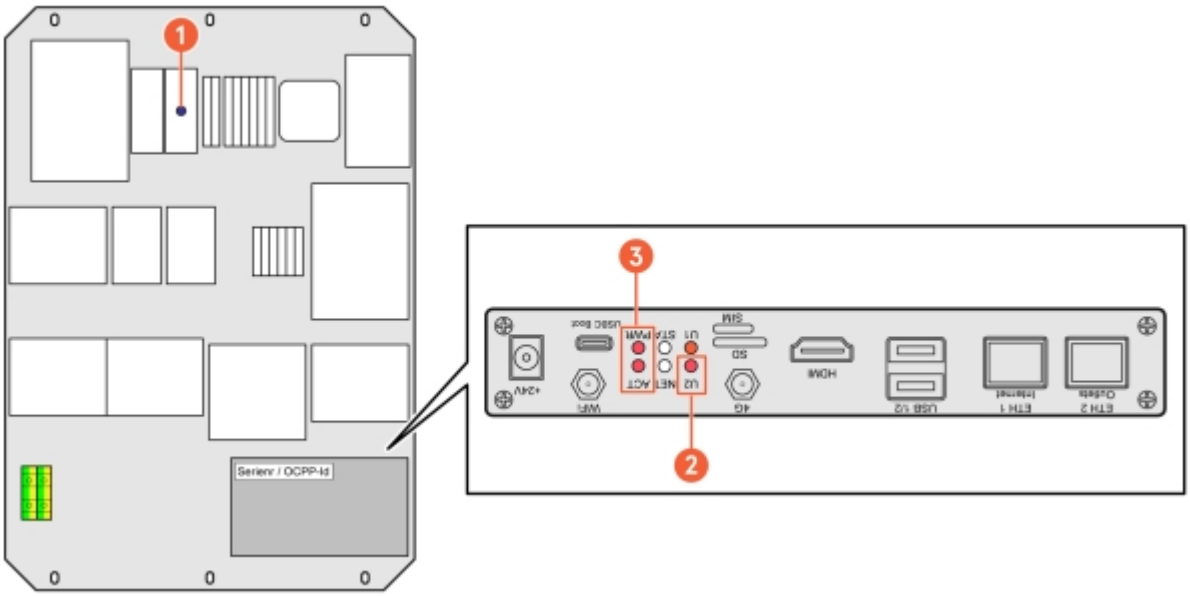

Image 63: SmartHub components

1 Internet indicator
2 Wi-Fi status
3 Central computer and software running indicator

Start by checking the following lights:

- White LED for internet (skip if CPO is not being selected)
- LED indicator for central computer
- U1: Software indicator (should flash 0.5 s on, 1.5 s off)
- U2: Wi-Fi indicator

Connect to SmartHub via Wi-Fi (primary) or Ethernet (backup)

1 Connect to SmartHub via Wi-Fi:

1.1 If Wi-Fi is not enabled, enable Wi-Fi by pressing the Wi-Fi button in SmartHub; see **Image 57**.

Keep in mind!
When Wi-Fi is enabled, a QR code appears on the screen.

1.2 Check the Wi-Fi status via the LED indicator (as illustrated above).

Keep in mind!
Wi-Fi deactivates automatically after 60 minutes.

1.3 Connect to the Wi-Fi hotspot with your computer or phone using one of the following options:

- Scan the QR code displayed on the screen in ChargePod.
- Search for wireless networks on your device.

  SSID: SERIAL NO (the serial number of SmartHub can be found on the central computer; see **Image 57**.)

  Password: "privet-morgen-helot-heap-axon"

2 Connect to SmartHub via Ethernet:

Keep in mind!
This is an alternative method that can be used if it is not possible to connect to a Wi-Fi hotspot.

2.1 Connect an Ethernet cable or USB-to-Ethernet adapter to the LAN port of the Teltonika router.

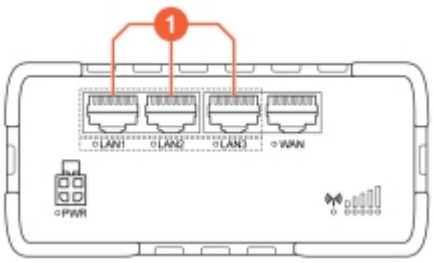

Image 64: Teltonika router

1 LAN ports

Keep in mind!
The Ethernet cable must only be connected in Teltonika. The network switch at position 06 is only for ChargePod communication.

Managing settings in the web interface

1 Go to one of the following URLs:

- http://192.168.4.1
- http://serienr/

Keep in mind!
When reception is poor, some phones use their own 4G connection instead of Wi-Fi, which means you cannot access the central computer via Wi-Fi. Turn off mobile data on your phone to avoid this problem.

2 Select **Log in**.

3 Select one of the following options for the setup process:

- **Guided setup**: Guided and automatic configuration of all settings
- **Manual setup**: Manual configuration of all settings

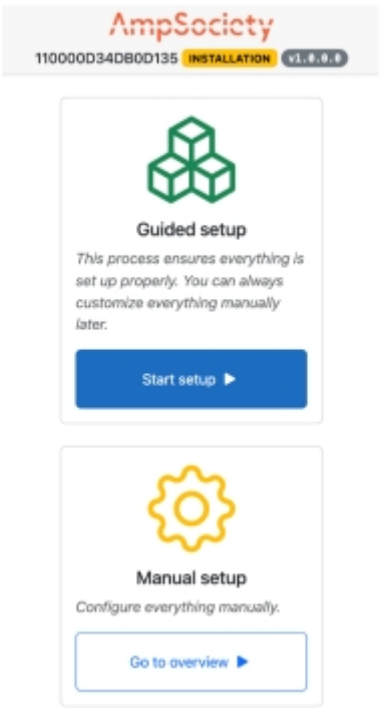

Image 65: Start page

4 For **Guided setup**:

4.1 Select **Start setup**.

4.2 In the step for **Connectors**, check that there are as many rows for serial numbers under **Module** as there are ChargePods (see Section 7.1 "What is ConnectorID?", **page 55** for more information).

Select **Next** to confirm and go to the next step.

4.3 In the step for **OCPP**, enter the OCPP server URL manually if you want to connect to another operator and select **Next**.

4.4 In the step for **Complete**, check the settings and select **Finish** to confirm.

5 For **Manual setup**:

5.1 Select **Go to overview**.

5.2 Assign ConnectorIDs:

(see Section 7.1 "What is ConnectorID?", **page 55** for more information)

- From **Overview** in the top left menu, select **Map Connectors on the Service page**.
- Select **Auto-number connector IDs**.
  SmartHub now assigns ChargePod ConnectorIDs.
- Select **Save changes** to save the assignment.
- Disable **Service mode** to exit.

5.3 Make settings for OCPP:

- Go to **Settings** in the left menu.
- Enter the OCPP address in the **Server URL** field.
- The OCPP identity is 12 characters as standard and is already entered under Settings and is marked on the front of the central computer.
- Go to **Overview** in the left-hand menu and make you have an internet connection and contact with your operator's OCPP server.

What is ConnectorID?

INFO
ConnectorID is a sequential number series starting from 1 per SmartHub. The order of the ConnectorID has no physical meaning for the function. The ConnectorID is then linked to the socket number.

Electronic testing

Insulation testing

Use max. 370 V. On most measuring instruments, this is insulation testing 250 V (not 500 V or 1 kV).

To perform insulation testing via ConnectBar, the measurement must be taken on the top of the main contactor.

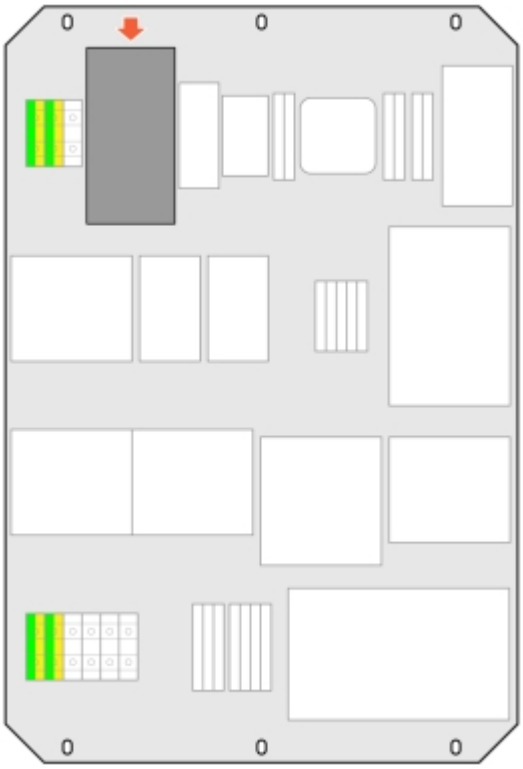

Image 66: Main contactor

Keep in mind!
Insulation testing at 500–1000 V does not damage the components, but may cause the surge protector to connect the voltage to ground (0 MΩ).

Z-line test

- Fuse type: NV (blade fuse)
- Fuse I: 35 A (overload protection, nominal load 32 A)
- Fuse t: 1 s (tripping time)
- Isc factor: 0.66

RCD test

Perform an RCD (Residual Current Device) test on each socket with an auto sequence for type B residual current circuit breakers.

1 Put SmartHub into service mode.

2 Connect the EVSE adapter to the socket.

3 Set the socket to position C.

4 Start the auto sequence on the test instrument for type B residual current circuit breakers.

5 Check that the residual current circuit breaker trips – this can be seen on the instrument display.

6 Reset the switch by moving it to position A and then back to position C in quick succession.

7 Repeat steps 4–6 until the auto sequence is complete.

8 Repeat the entire test for all sockets.

Care

Cleaning the charging system

Use a damp cloth to clean the charging system components (ConnectBar, SmartHub, displays).

Visual inspection

- Make sure that the entire power bar system is securely fastened and that no part of the power bar is loose.
- Check the Type 2 connector on ChargePod to ensure there is no damage to the contact surfaces.
- Make sure that the cover on the Type 2 connector closes properly using the spring mechanism.

Check the residual current circuit breaker

The following check must be performed twice a year.

1 Start charging with EVSE adapter or car.

2 Hold a magnet close to the T mark below the display.

3 When the power is interrupted, a ground fault should appear on the display.

4 Remove the EVSE adapter or charging cable from the socket to reset the residual current circuit breaker.

5 Repeat steps 1–4 for each ChargePod.

Troubleshooting

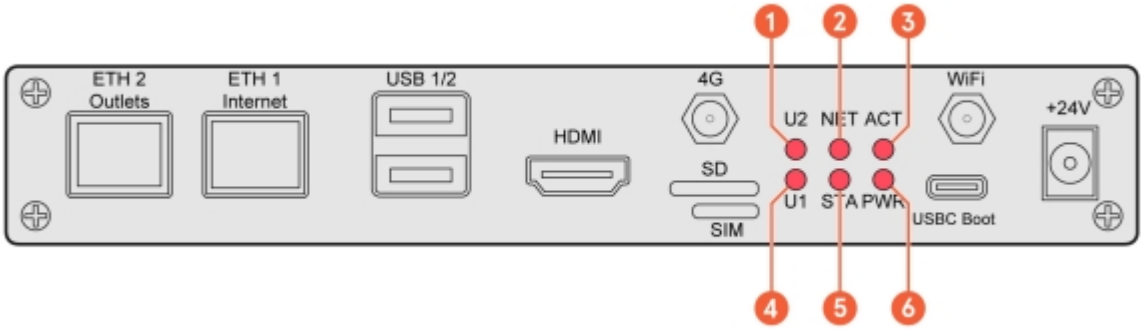

Image 67: Status LEDs

1 U2 (User2, lights up when Wi-Fi for service mode is activated)
2 NET (GSM module, indicates red with coverage)
3 ACT (RaPi4 eMMC access LED)
4 U1 (User1, Heartbeat Agent)
5 STA (Supply voltage to the GSM module)
6 PWR (RaPi4 POWER LED)

Error codes

Error codes

No.	Name	Description	Action	Note
0	None	No error		
1	NetworkConfigurationError			
2	ComponentError			
8	EnergyMeterCommunicationError			
15	FuseEnergyMeterCommunicationError	The load balancing electricity meter is not communicating	If BUS loop (RS485) is used, check the connections, especially A/B	If it is not visible, it is offline
16	LowVoltage	Low voltage in ChargePod	Measure incoming voltage to SmartHub, measure voltage in outlets	Charging is disabled due to low voltage, missing phase, poor contact in the connections, or a faulty relay in ChargePod
18	DiodeError	Communication error between car and socket	Make sure that GND on the 24 V loop is in contact with true ground	Ground fault in CP communication to the car
19	InvalidPp	Cable fault on the charging cable		Fault in customer's charging cable

No.	Name	Description	Action	Note
20	InvalidCp	Signal communication between car and socket not working properly	Measure the rise time of the CP signal with an oscilloscope	The rise time on the curve must be within the standard values; some cars have a lower tolerance level than others.
21	LockMissing	No motor lock communication	Replace ChargePod with a new one	It is not possible to see the lock moving when attempting to operate it
22	StationOffline	One or more charging centres are offline within the same station (same network)	Check the internet connection and try connecting to the router	
23	StationUnresponsive	Something is wrong with the charging station	Contact Technical Support	
25	FirmwareUpdateInProgress	Updates are performed by the central computer or NodeBoard	Wait until the update is complete	
26	FirmwareUpdateFailure			
30	EVCommunicationError			
31	Other			
32	RCD fault	The residual current circuit breaker (ground fault detection) has tripped	Disconnect all charging cables from ChargePod to reset the ground fault circuit	No voltage in the socket
33	MainFusePhaseLowVoltage			
35	FuseTripped	35 A fuse in ChargePod has tripped	Disconnect all charging cables from ChargePod to reset the ground fault circuit	More power has been drawn, either briefly (short circuit) or for a long period (overload)
36	DisobedientLoad	Car has consumed more power than permitted	Contact Technical Support	
37	SafetyRelayError			
38	ChargingRelayError			
95	BarContinuity			
99	EmergencyStop			

Load balancing

Carlo Gavassi EM210

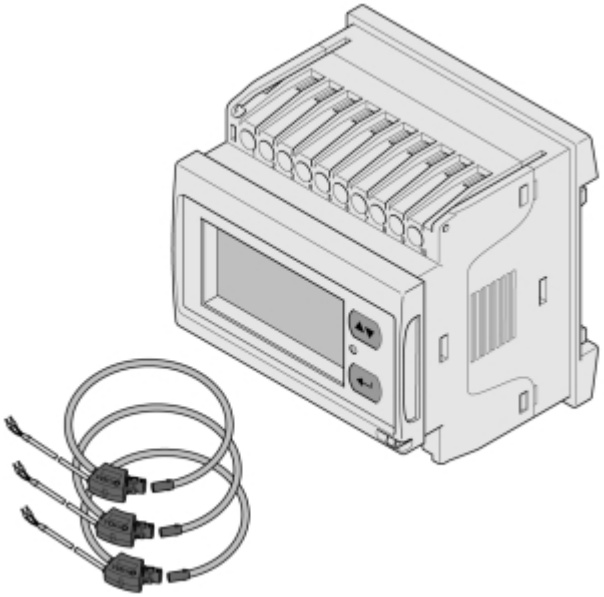

Image 68: Energy meter and current transformers for Carlo Gavassi EM210

Product type	Model	Details
Energy meter	CarloGavazzi EM210 (MV5), EM21072DMV53XOSX	E number: 0921001
Current transformer	ROG 0.33 V	Available in various diameters, all sizes can handle 20–4000 A

Keep in mind!
Be sure to install the current transformers so that the current is measured in the correct direction, marked with an arrow.

Connect the EM210 energy meter

1 Inputs 1–6 on the energy meter are used for connecting current transformers.

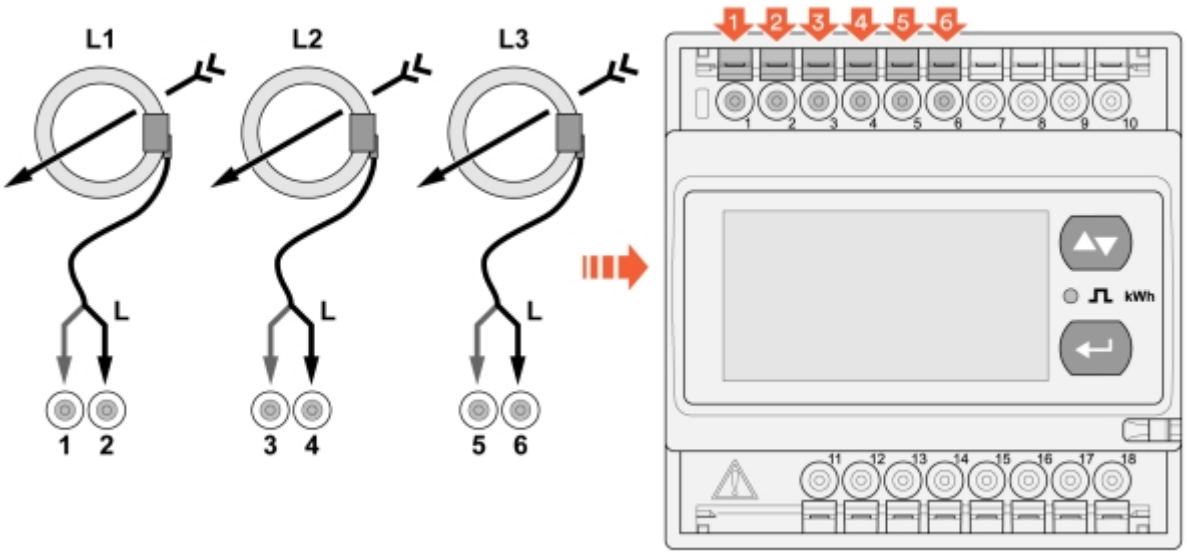

Image 69: Inputs 1–6 on the energy meter

2 Inputs 7–10 on the energy meter are used for connecting supply voltage (3-phase 230 V).

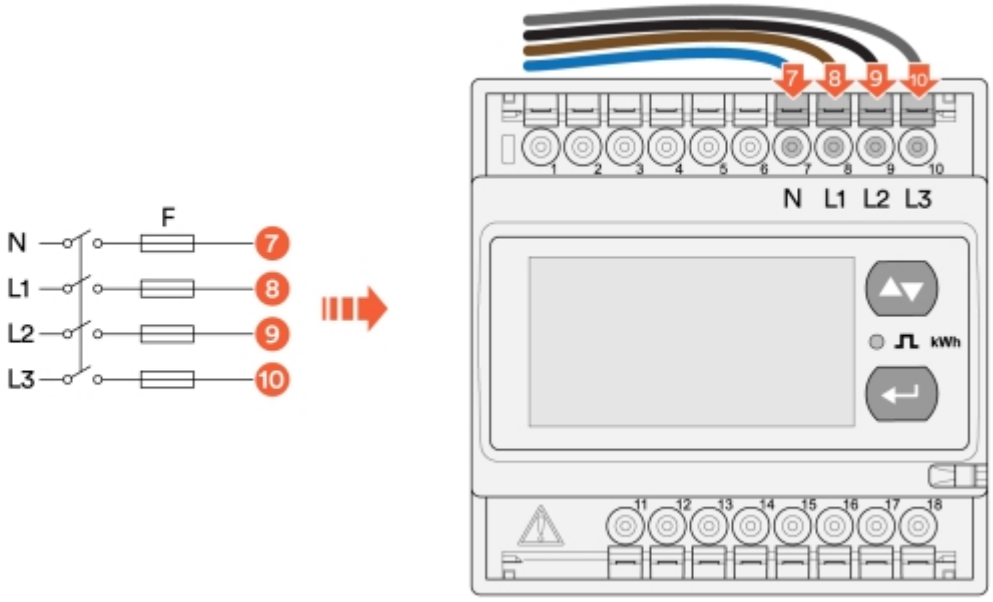

Image 70: Inputs 7–10 on the energy meter

3 Inputs 15–18 on the energy meter are used for connection with RS485 (BUS).

- B- on input 16 with input 18.

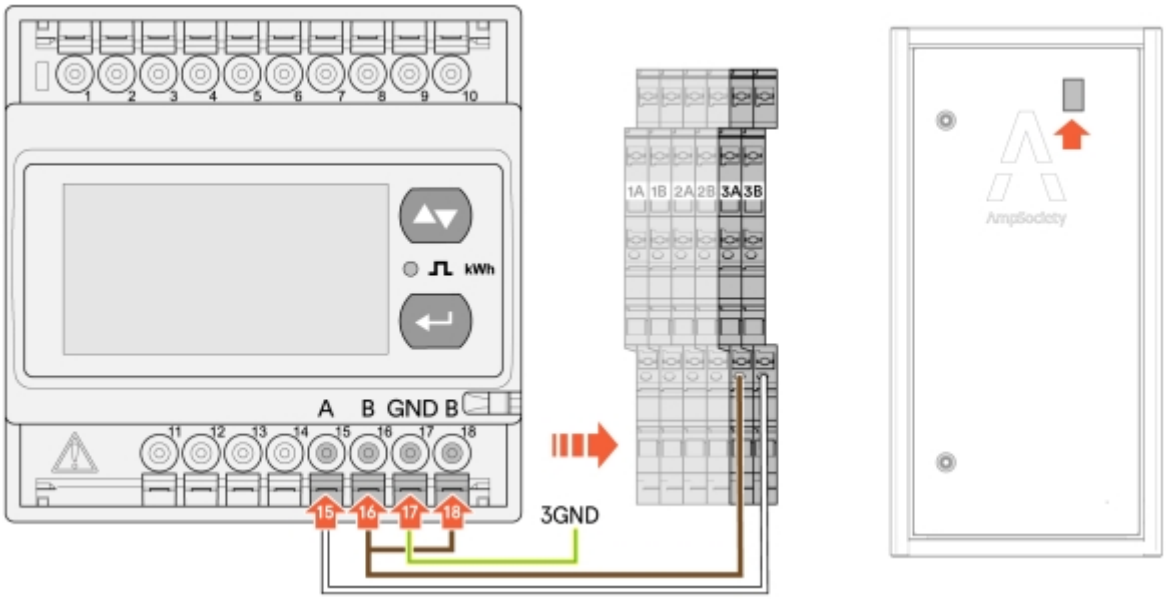

Image 71: Inputs 15–18 on the energy meter

Configure EM210

1 Energise EM210.

2 Press and hold ↵ for more than 3 seconds.

3 Enter password: 0

- If necessary, use ▲▼ to enter the password.

4 Press and hold ↵ for more than 3 seconds.

5 Scroll with ▲▼ to find the right setting.

Programming example for Carlo Gavassi EM210

For other product solutions, please contact AmpSociety (Section 1.4 "Installation support", **page 5**).

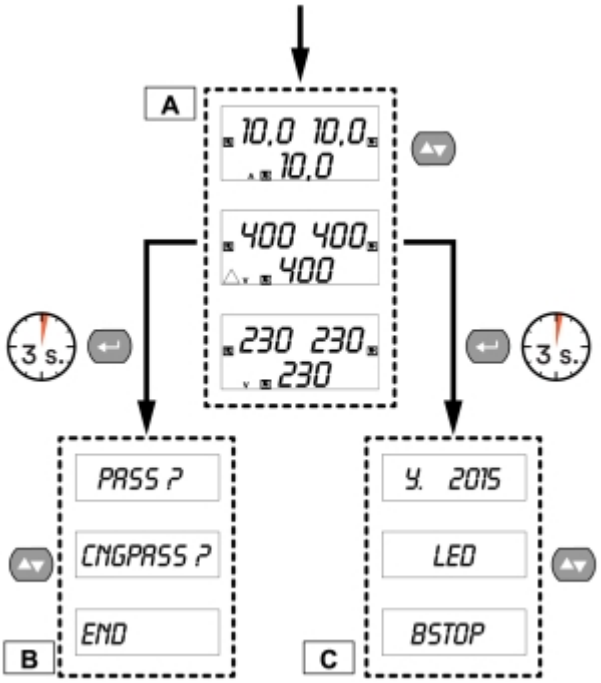

Image 72: Navigation in EM210

Menu selection EM210

Below are some menu options that are relevant for the installation of dynamic load balancing with the EM210 energy meter.

Keep in mind!
For complete information about the energy meter and its menu, see the product's own manual.

Menu selection	Explanation	Use value
PASS	Enter password	0
Add	Series address	X*
SEnSOr	Select which current sensor is used	roG
Ct Prin	Nominal primary current of the current sensor	1.00k

*The energy meters have unique serial addresses. Program and enter the selected address in the web interface under **Fuses**.

Schneider iEM3555

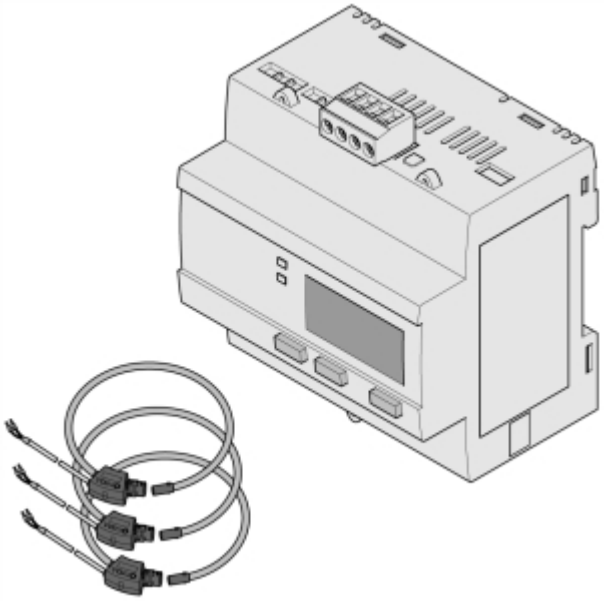

Image 73: Energy meter and current transformer for Schneider iEM3555

Product type	Model	Details
Energy meter	Schneider iEM3555	E number: 0900240
Current transformer	ROG CT 100 mV	Available in various diameters, all sizes can handle 20–4000 A

Keep in mind!
Be sure to install the current transformers so that the current is measured in the correct direction, marked with an arrow.

Connect the iEM3555 energy meter

1 The inputs (L1) S1 S2 (L2) S1 S2 (L3) S1 S2 on the energy meter are used for connecting current transformers. S1 is white and S2 is black.

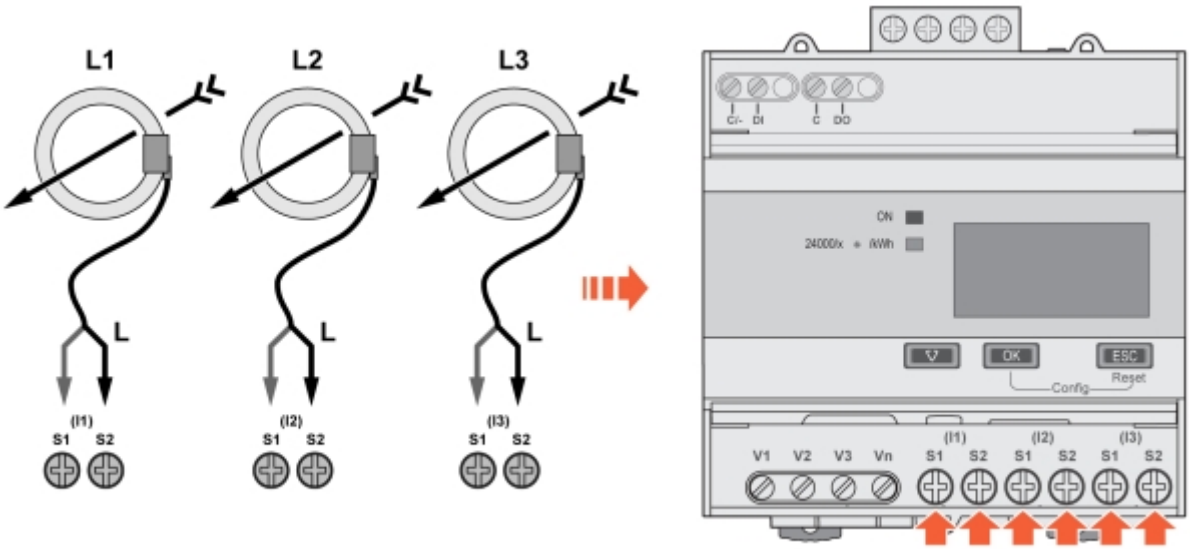

Image 74: Inputs for current transformer

2 The inputs V1, V2, V3, and Vn on the energy meter are used for connecting supply voltage (3-phase 230 V).

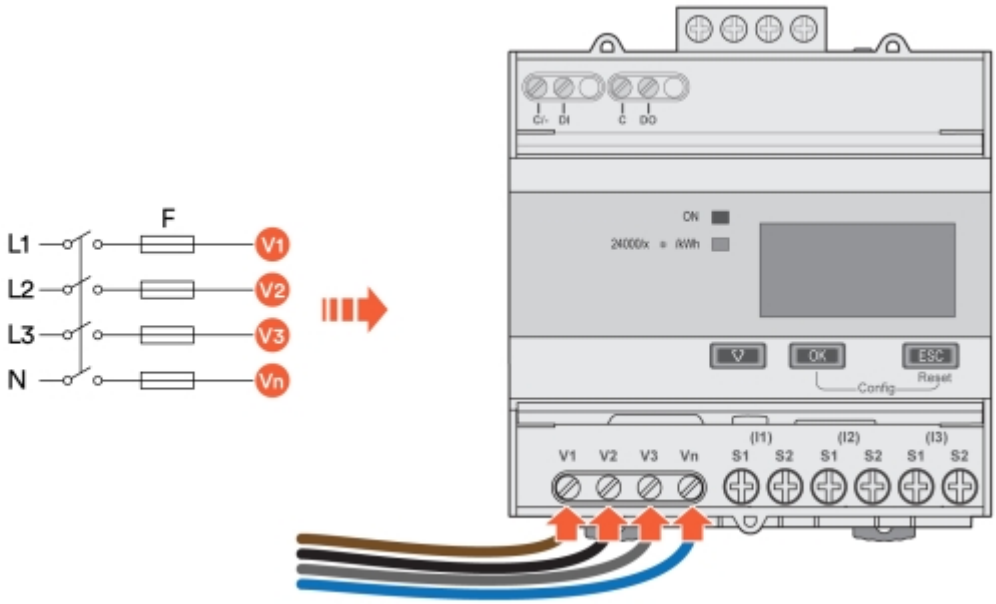

Image 75: Inputs for voltage

3 Input grounding, D0/- and D1/+ on the energy meter, is used for connection with RS485 (BUS).

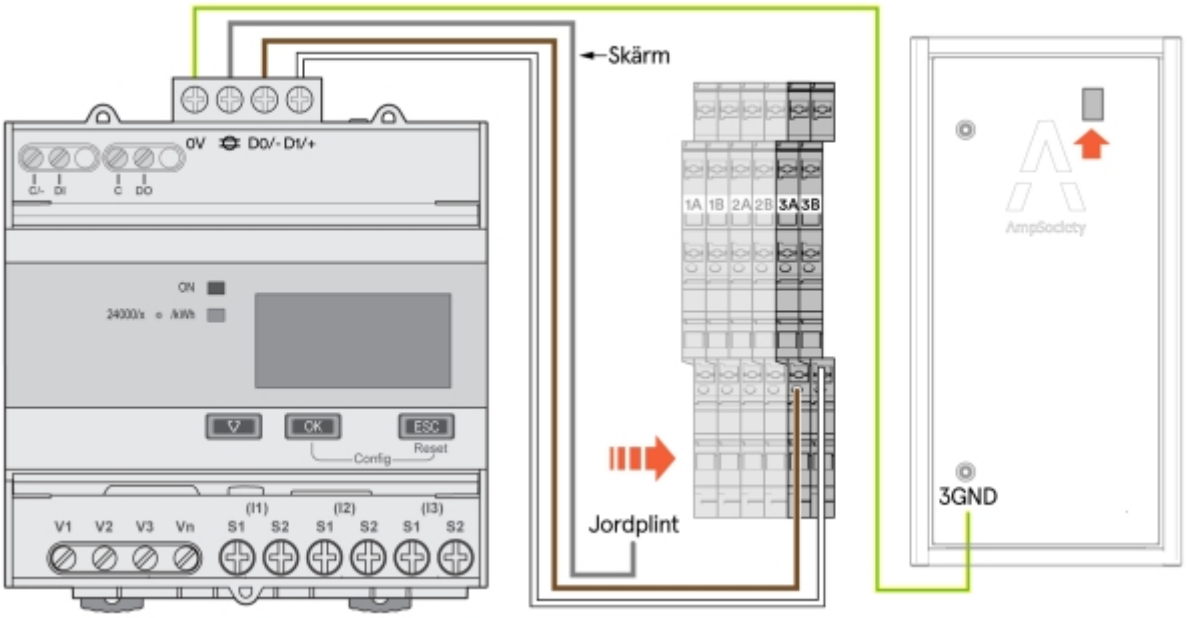

Image 76: Inputs for RS485

Configure iEM3555 for load balancing

1 After completing installation, power up iEM3555.

2 You will be asked "Date & Time Set?". Press **ESC**. Time and date will be set later.

3 Press and hold **OK** and **ESC** for more than 2 seconds to start configuration.

4 Select Password 0010 by pressing **OK V OK OK OK**.

5 You will be asked "Wiring Change?". Select **OK**.

6 Browse through the suggestions with **V**. When it says "3PH4W," press **OK**.

7 For Wiring\VT, scroll between suggestions with **V**. When it says "Direct-NoVT," press **OK**.

8 For Wiring\CT, scroll between suggestions with **V**. When it says "3CTs on I1,I2,I3," press **OK**.

9 You will be asked "CT & VT Ratio Change?". Press **V** to skip.

10 You will be asked "Frequency Change? 50Hz". Press **V** to skip.

11 You will be asked "Date Change?". Select **OK**.

12 Set the date by changing it with **V** and confirming with **OK**.

13 You will be asked "Date Save Settings?". Select **OK**.

14 You will be asked "Time Change?". Select **OK**.

15 Set the time by changing it with **V** and confirming with **OK**.

16 You will be asked "Time Save Settings?". Select **OK**.

17 You will be asked "Multi Tariffs Change? Disable". Press **V** to skip.

18 You will be asked "Overload Alarms Change? Disable". Press **V** to skip.

19 You will be asked "Digital Output Change? Disable". Press **V** to skip.

20 You will be asked "Digital Input Change? Input Status". Press **V** to skip.

21 You will be asked "Demand Change?". Press **V** to skip.

22 You will be asked "Communication Change?". Select **OK**.

23 For "..\Slave Address", scroll up and select address 004 with **V**. Confirm with **OK**.

24 For "..\Baud Rate", scroll and select 9600 with **V**. Confirm with **OK**.

25 For "..\Parity", scroll and select NONE with **V**. Confirm with **OK**.

26 You will be asked "Communication Save Settings?". Select **OK**.

27 You will be asked "COM.Protection Change? Enable". Press **V** to skip.

28 You will be asked "Contrast Change?". Press **V** to skip.

29 You will be asked "Password Change?". Press **V** to skip.

30 You will be asked "Reset Config Reset to Default?". Press **V** to skip.

31 You will be asked "Exit Config Confirm?". Select **OK** to exit configuration.

32 To check voltage and current, press **V** until "V & I More?" appears in the display.

33 Select OK.

34 Scroll with **V** to see the different values.

Menu options iEM3555

Below are some menu options that are relevant for the installation of dynamic load balancing with the iEM3555 energy meter.

Keep in mind!
For complete information about the energy meter and its menu, see the product's own manual.

Menu selection	Explanation	Use value
PASS	Enter password	0010
Slave address	Series address	X*
Baud Rate	Communication speed RS485	9600
Parity	Parity bit/error detection	None

*The energy meters have unique serial addresses. Program and enter the selected address in the web interface under **Fuses**.

Load balancing over the internet

Amp5 supports load balancing via the internet through smart charging profiles in accordance with the Open Charge Point Protocol (OCPP) standard.

Technical data

Amp5 product specification

Electrical specifications and charging functions	
Maximum number of charging sockets	54 per SmartHub
Maximum number of simultaneous charging sessions	30 per SmartHub
Max incoming current	63 A
Max simultaneous charging power	44 kW
Maximum charging power per charging socket	22 kW (3-phase), 7.4 kW (1-phase)
Main fuse	63 A, B characteristics
Nominal insulation voltage (Ui)	400 V
Nominal peak current	32 A per socket
Short-circuit capacity	0.5 kA
Rated impulse voltage (Uimp)	4 kV
Reference voltage, energy meter	230 V
Min current, energy meter	250 mA
Reference current, energy meter	5 A
Max current, energy meter	32 A
Current measurement	MID certification ready in H1 2026
Charging socket	Type 2, IEC 61851
Permitted adapter	Type 2 to Schuko
Ventilated charging	Requests for ventilated charging will not be accepted
Lockable charging sockets	Yes
Safety	
Residual current circuit breaker	Type B per socket (IEC60947, class 1)
Grounding system	TN-C / TN-S
Measures to protect against electric shock	Class 1
Overload protection in ChargePod	1 second time delay according to IEC60947-2, 32 A
Type of grounding	TN-C / TN-S
Mechanical strength	According to IEC 61439-7
Load balancing	
Static load balancing against fixed value	Yes
Dynamic load balancing	Yes, via internet or locally with Modbus TCP / RS-485
Communication	
Communication protocol	OCPP 1.6J / OCPP 2.0.1 / ISO15118-20 ready
Network connection (option)	Teltonika RUT 901 with 4G SIM card and LAN. Wi-Fi hotspot (for configuration only)
RF technology	GSM, GPRS, EDGE, UMTS/HSPA+, LTE
RFID type	ISO/IEC 14443 Type A, 13.56 MHz Mifare

Data and network interfaces	USB-C, 2×LAN, Bluetooth, Service Wi-Fi, and RFID in accordance with EN 18031
Potential-free emergency stop input	Yes
Certification	
EMC classification	Environment B
Degree of contamination	2
IP rating	IP54
IK rating	IK10
Environment	
Operating temperature	-30°C to +45°C, air temperature
Temperature range, not in operation	-30°C to +65°C, condensation free
Suitable installation environment	B, indoors and outdoors
Installation	Stationary installation on wall or ground
Use and access	Available to all users without restrictions
Materials and mechanics	
Material	Aluminium, at least 75% recycled aluminium (post-consumer scrap)
Colour	Black (RAL 9011), powder coated
Weight	SmartHub: 18 kg ChargePod: 5.5 kg ConnectBar: 10.5 kg ConnectBar: 6 kg ConnectBarDouble: 6 kg WallBracketSet: 2 kg
Lock	Stockholm lock, lock bolt with key
Features	
Display	TFT 480 × 272 px, 160 × 131 x 71 mm (H × D × W)
Customisable display content	Logo, QR code, prices, etc.
Test button for residual current circuit breaker	Yes
User interaction	Via QR code, RFID, NFC
Battery	
Battery backup (UPS)	Capacitor

Ground anchorage

Make	Stabil Entreprenad
Type	SGN pipe screw
Supplier part number	3002
Surface treatment	Galvanised
Length	865 mm
Outer diameter	67 mm

Inner diameter	64 mm
Warranty	25 years from supplier
Standards	Material ISO 630 FE 360A
	Product EN 1090
	Galvanisation EN 1461
	Manufacturing process ISO 9001:2015
	Installation process ISO 9001:2015
Alternative ground screws, ground spikes and ground foundations can be used where the substrate requires such. See the following examples.	
Make	Fiedler System AB
Type	Ground spike
Supplier part number	40100
Surface treatment	Galvanised sheet C3/C5
Length	720 mm
Outer diameter	95 mm
Inner diameter	66–76 mm
Warranty	Normal life expectancy 95 years

Charging without compromise

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