

Charge Amps Dawn



Installation Manual

English

Table of content

1	Safety	5
2	Technical data	6
3	Product overview	9
3.1	Package contents	10
3.2	Charge Amps Installation Kit	12
4	Before installation	13
4.1	Recommended tools	13
4.2	Materials provided by installer	14
4.3	Mounting requirements	14
4.4	Electric requirements	15
4.4.1	Short circuit safety - internal MCB installation	16
4.4.2	Short circuit safety - external MCB installation	16
4.4.3	Residual current safety	17
4.5	Internet access	18
4.5.1	Wi-Fi connection	18
4.5.2	LTE-M connection	19
4.5.3	LAN connection	20
5	Installation	21
5.1	Mounting	21
5.2	Connection	23
5.2.1	Cable connection	23
5.2.2	Bottom cable entry	25
5.2.3	Top cable entry	27
5.2.4	Back side cable entry	30

5.3	Install Charge Amps LAN module	33
5.3.1	Mount the LAN module	34
5.3.2	Connect the LAN cable	36
5.4	Reassemble	40
6	Configuration	42
6.1	Create a Charge Amps Partner Account	42
6.2	Configure via Charge Amps Installer App	43
6.3	Configure via Installation Wizard	43
7	Cloud connectivity	44
8	Dismounting	45
9	Maintenance	45
9.1	Regular maintenance	45
9.2	Preventative maintenance	46
10	Product support and service	46
11	Warranty	46



Respect the environment! Must not be discarded with household waste! This product contains electrical or electronic components. Leave the product for separate collection and proper treatment at a designated location e.g. the local authority's recycling station.



In conformity with the relevant EU directives and UK legislation.

Neglecting to follow and carry out the directions, instructions and safety precautions in this Installation Manual implies that any warranty provisions will be cancelled and that Charge Amps AB can reject any and all claims for compensation in connection with any injuries/damage or incidents – direct or indirect – that are a result of such negligence.

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1 Safety

WARNING: Read all instructions before installation!

- The product must only be installed by a qualified electrician in accordance with the Installation Manual.
- Make sure to switch the power off at the main switch before installation or service.
- For this product, automatic reclosing of protective devices are not allowed.
- Improper use and negligence to follow the instructions of this Installation Manual may create a risk of personal injury.
- National installation requirements and restrictions apply.
- Only use this product for charging compatible electric vehicles.
- Inspect the product for visible damage before use.
- Never attempt to repair or use the product if it is damaged.
- Make sure that the product is in good condition and that all cables are properly seated before use.
- Do not immerse the product in water, subject it to physical abuse or insert foreign objects in any part of the product.
- Never attempt to disassemble the product in any way other than what is described in the Installation Manual.
- Make sure no flammable, explosive, corrosive or combustible materials, chemicals, or fumes are nearby the mounting position.
- Make sure that all terminal screws are securely fastened before reattaching the charger unit.
- To avoid muscle strain or back injury, use lifting aids and proper lifting techniques.

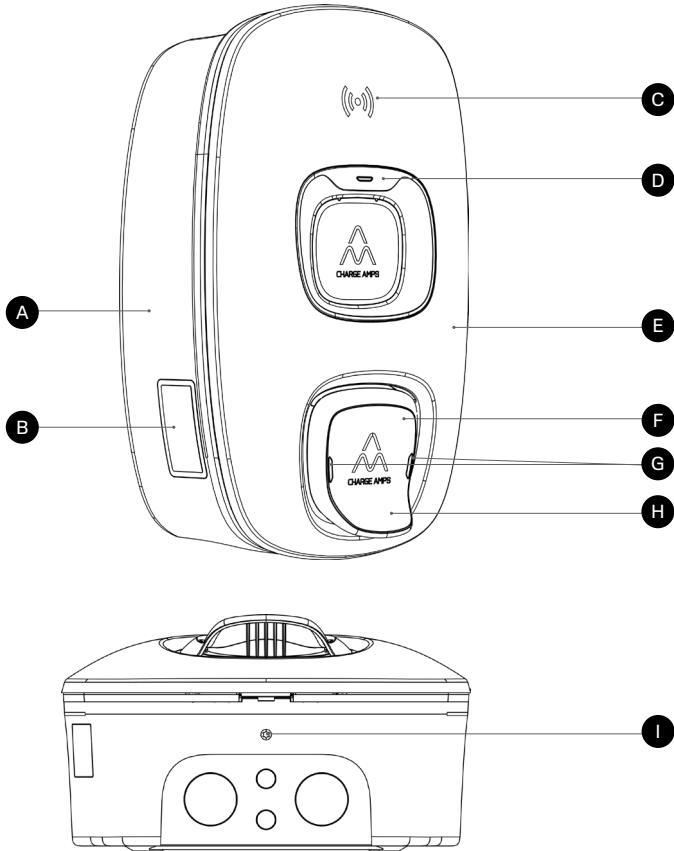
2 Technical data

Charging mode	Mode 3
EV power supply identifier	
Metering	MID certified active electrical energy meter
Socket	Type 2, 22 kW
Rated voltage (U_n)	230/400 V
Rated insulation voltage (U_i)	250/400 V
Rated impulse withstand voltage (U_{imp})	4 kV
Rated frequency (f_n)	50 Hz
Rated current (I_n)	32 A
Rated diversity factor (RDF)	1 (can be lowered if used together with a load balancing functionality)
Rated peak withstand current (I_{pk})	3 kA, 20 kA ² s
Rated short-time withstand current (I_{cw})	192 A for 2 s
Residual current safety	Built in RCD Type-B complying with IEC 60947-2. AC: 30mA, DC: 6mA
Short circuit safety	External MCB is required* * See chapter 4.4.1 and 4.4.2 for specific requirements.
Protection against electric shock	Class I
Types of earthing system	TN, TT, IT
Overvoltage category	III
Pollution degree	3

Electromagnetic compatibility	Environment B
Operating temperature	-35°C to +45°C
Altitude	0 m to 2000 m
IP code	IP54
IK code	IK10
Mechanical resistance	High
Dimensions (W x D x H)	250 x 145 x 380 mm
Weight	3.5 kg
Characteristics of power supply and output	AC EV supply equipment connected to AC supply network, permanently connected
External design and method of mounting	Enclosed wall-mounted surface type: - Surface mounted on walls - Stationary ground and floor mounted installation with accessory Charge Amps Pole Mount
Type of construction	Fixed parts
Intended use and location type	By ordinary persons, indoor and outdoor installation with non-restricted access
Incoming power cable, outer dimensions	13 – 25 mm
Incoming power cable, conductor dimensions	Installing from top or bottom: 16 mm ² Installing from back: 10 mm ²
RFID	Type: ISO/IEC 14443 Typ A 13.56 MHz Mifare Range: 13.553 – 13.567 MHz Max output: 24 dBm

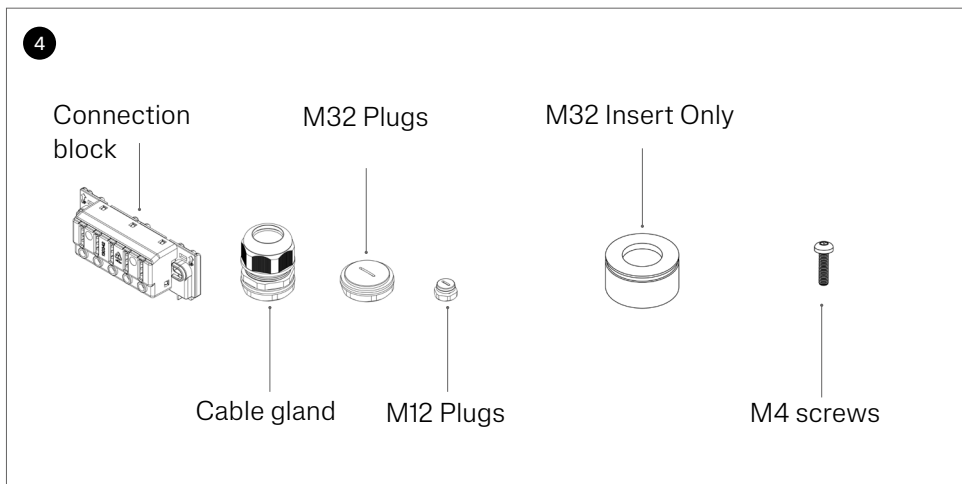
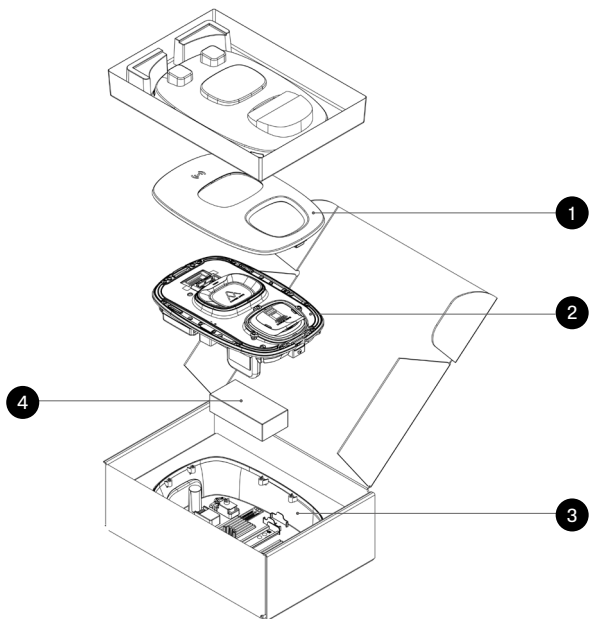
Bluetooth	Type: Class 2 Version: v4.2 Range: 2400 – 2500 MHz Max output: 4 dBm
Wi-Fi	Type: 802.11 b/g/n Range: 2400 – 2500 MHz Max output: 17.5/14/12.5 dBm@802.11 b/g/n
LAN* (Ethernet 10Base-T/100Base-TX) <small>*some models only</small>	Cat5e & RJ45 (max. 30 mm)
Communication protocol	OCPP 1.6J
Cellular networks communication	Type: LTE-M, eMTC Supported LTE-M bands: B3, B8 and B20. Range: 699 – 960 / 1710 – 2155 MHz Max output: 28 dBm @LTE-M SIM card: built-in

3 Product overview



- A** Back plate
- B** MID display
- C** RFID reader
- D** RFID light
- E** Front cover
- F** EV socket
- G** Socket lights
- H** EV socket lid
- I** Front cover lock screw

3.1 Package contents



- 1 Front cover
- 2 Charging unit
- 3 Back plate
- 4 Accessories:
 - 1x Connection block
 - 2x Cable glands
 - 2x M32 plugs
 - 2x M12 plugs
 - 2x M32 insert only
 - 10x M4 screws

Additional contents:

- 1x RFID tag
- Quick Guide User
- Welcome letter

3.2 Charge Amps Installation Kit

In installations where the MCB is placed inside of Charge Amps Dawn, a specific terminal block and MCB must be used.

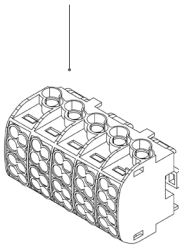
The terminal block and MCB can be purchased as a set in the Charge Amps Installation Kit, or bought separately. The specifications for the terminal block and MCB are stated below and any deviation from these specifications will imply waiving of the warranty for Charge Amps Dawn.

N.B: The Charge Amps Installation Kit is sold separately and is not included in the Package contents for Charge Amps Dawn.

1 x Terminal block

Weidmüller:
WPD 2X25/2X16
1XGN/3XGY/1XBL

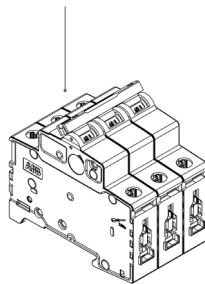
Article nr:
1562140000



1 x MCB

ABB:
S203-C32

Article nr:
2CDS253001R0324



4 Before installation

4.1 Recommended tools

- Screwdriver Torx T20 + T25
- Screwdriver Torx T10 and a flat screwdriver (NOTE: only needed for field installation of a LAN module for a LAN connected Charge Amps Dawn).
- Screwdriver PH (or flat)
- Step drill (ø12 mm for LAN cable and ø32 mm for power cable) (NOTE: only applicable for top cable entry holes)
- Drill
- Multimeter
- Laser/spirit level
- Wire stripper for cabling
- Mobile phone, tablet or computer
- Wi-Fi analyzer app to ensure sufficient Wi-Fi strength at the installation location
- Cellular network analyzer app.
- RJ45 crimping tool

4.2 Materials provided by installer

- 4 x M5 x 30 mm or longer flat head stainless screws type A2 or A4 with associated washers type A2 or A4 with a maximum outer diameter of 20 mm and plugs (if required) suitable for mounting of Charge Amps Dawn
- Installation cable, according to the charging capability of the product.
- STP LAN cable Cat5, or better (only applicable when connecting Charge Amps Dawn to the internet via LAN connection).
- RJ45 plug, max. 30 mm (only applicable when connecting Charge Amps Dawn to the internet via LAN connection).

4.3 Mounting requirements

- If possible, do not mount the Charge Amps Dawn in direct sunlight.
- Make sure the wall can support a weight of 3.5 kg and the tractive force from the inserted cabling.
- Do not install Charge Amps Dawn in confined spaces.
- Use screws and plugs (if required) suitable for the wall material.
- Charge Amps Dawn must be mounted upright.
- Recommended mounting height 900 – 1450 mm, measured from the ground to the bottom of Charge Amps Dawn.

4.4 Electric requirements

N.B: Local regulations might add additional requirements for the electrical installation.

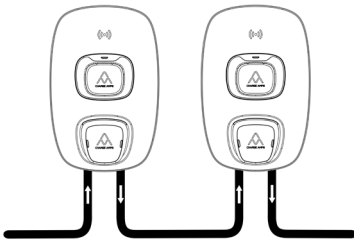
- Charge Amps Dawn must be earthed through permanent electrical installation.
- Only insert the electrical cable through the specified cable entry.
- If installing one Charge Amps Dawn, follow instructions for Single installation.

Single installation



- If daisy chaining several Charge Amps Dawn, follow instructions for Daisy chain installation.

Daisy chain installation



4.4.1 Short circuit safety - internal MCB installation

N.B: Local regulations for the electrical installation should always be followed!

IMPORTANT! Any deviation from the specifications stated below will imply waiving of the warranty for Charge Amps Dawn!

When an MCB is installed internally, inside of Charge Amps Dawn, an MCB with following specifications is required:

- ABB: S203-C32
Article nr: 2CDS253001R0324

This MCB can be purchased as a part included in the Charge Amps Installation Kit (described in chapter 3.2), or bought separately.

Instructions for how to reset the MCB when it is placed inside of Charge Amps Dawn can be found in Charge Amps Dawn User Manual.

4.4.2 Short circuit safety - external MCB installation

N.B: Local regulations for the electrical installation should always be followed!

When an MCB is installed externally, outside of Charge Amps Dawn, an MCB with following specifications is required:

- Up to 32 A MCB, curve B or C, with Energy Limiting Class 3.

4.4.3 Residual current safety

N.B: Local regulations for the electrical installation should always be followed!

Charge Amps Dawn has a built-in RCD functionality:

- Built-in RCD Type-B complying with IEC 60947-2.
AC: 30mA, DC: 6mA.

Instructions for how to test and reset the built-in RCD can be found in Charge Amps Dawn User Manual.

For some markets, an upstream RCD is required in the electrical installation. If an upstream RCD is required, it is recommended to be selected as follows:

- If selectivity in relation to the built-in RCD in Charge Amps Dawn is required: RCD Type A Type S, 100mA or 300mA.
- If selectivity in relation to the built-in RCD in Charge Amps Dawn is not required: RCD Type A, 30mA.

4.5 Internet access

N.B: If both Wi-Fi, LTE-M and LAN connection is configured, the chosen connection will be prioritized in following order: LAN, Wi-Fi, LTE-M.

Both Wi-Fi, LTE-M and LAN connection (some models only) is available for Charge Amps Dawn. When choosing the type of internet connection, consider following:

- Charge Amps Dawn IEEE 802.1b/g/n Wi-Fi has a maximal speed of ~65 Mbps during ideal conditions
- Charge Amps Dawn LTE-M CAT-M1 eMTC support up to ~500 kbps
- Charge Amps Dawn with LAN connection provides a speed of up to 100 Mbps.

The speed effects the download time of diagnostics from Charge Amps Dawn and and upload time of firmware to Charge Amps Dawn, but also the latency of the traffic as a faster link has lower latency when transmitting traffic.

4.5.1 Wi-Fi connection

IMPORTANT! Small adjustments of the location of Charge Amps Dawn might have significant effect on the Wi-Fi signal.

Wi-Fi connection is available and the placement of Charge Amps Dawn is key to solid Wi-Fi connectivity. Before installing Charge Amps Dawn:

1. Give the network a pre-test with a Wi-Fi analyzer app to measure the network strength to measure the Receive Signal Strength Indicator (RSSI). Sufficient network signal strength:
 - RSSI: Should be better than -65 dBm.

2. As the Wi-Fi communication utilize an open and non-regulated radio frequency band, which is shared with other Wi-Fi networks and radio technologies, this might affect the experienced quality of the communication. If you can't find a good connection for Charge Amps Dawn, you might need to use a Wi-Fi extender to extend the range, or use LAN connection.

4.5.2 LTE-M connection

IMPORTANT! Small adjustments of the location of Charge Amps Dawn might have significant effect on the LTE-M signal.

LTE-M, i.e. enhanced machine-type communication (eMTC) low power wide area (LPWA), connection is available and requires public land mobile network (PLMN) coverage with reliable signal strength and quality. The first time the Charge Amps Dawn attach to the PLMN it will require some additional time (up to ten minutes) due to the LTE-M network attachment procedure. After this, the Charge Amps Dawn will attach and connect to the network based on cached PLMN information. Before installing Charge Amps Dawn:

1. Give the network a pre-test with a LTE-M Network analyzer app to measure the LTE-M signal strength. Try to find an app that measures Reference Signal Received Power (RSRP), Reference Signal Received Quality (RSRQ) and Signal to Interference + Noise Ratio (SINR) values. Sufficient network signal strength:
 - RSRP: should be better than -100 dBm and preferably better than -90 dBm. The closer to -100 dBm, the poorer the quality, speed and reliability be.

- RSRQ: should be better than -17 dB and preferably better than -15 dB. The closer to -17 dB, the poorer the quality, speed and reliability will be.
- SINR: should be better than 3 dB and preferably better than 13 dB. The closer to 3 dB, the poorer the quality, speed and reliability will be.

N.B: Mobile operator networks may change and interference and noise disturbance might be added over time. If the signal strength or quality parameters are close to the limit, the performance will drop drastically (3dB is equal to the double ratio or power level). Small differences in location and environment might impact the measurement results, e.g. radio signals are blocked by objects, reflecting of objects, or objects disturbing the signal. Make the measurement as close to the real installation as possible, e.g. with the garage door closed.

2. If you can't find a good location for Charge Amps Dawn, you might need to use Wi-Fi or LAN connectivity.

4.5.3 LAN connection

It is possible to connect Charge Amps Dawn via LAN connection, which is the most reliable option for internet connectivity.

Following is required:

- A Cat5e cable (or better).
- RJ45 connector of maximum 30 mm length.

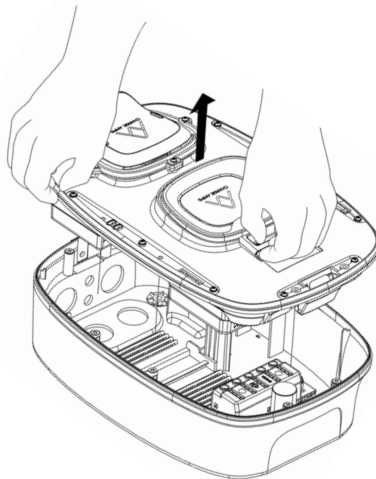
5 Installation

IMPORTANT! If installing Charge Amps Dawn with an internal MCB, make sure to follow the specifications stated in Chapter 3.2 and 4.4.1. Any deviation from these specifications will imply waiving of the warranty for Charge Amps Dawn!

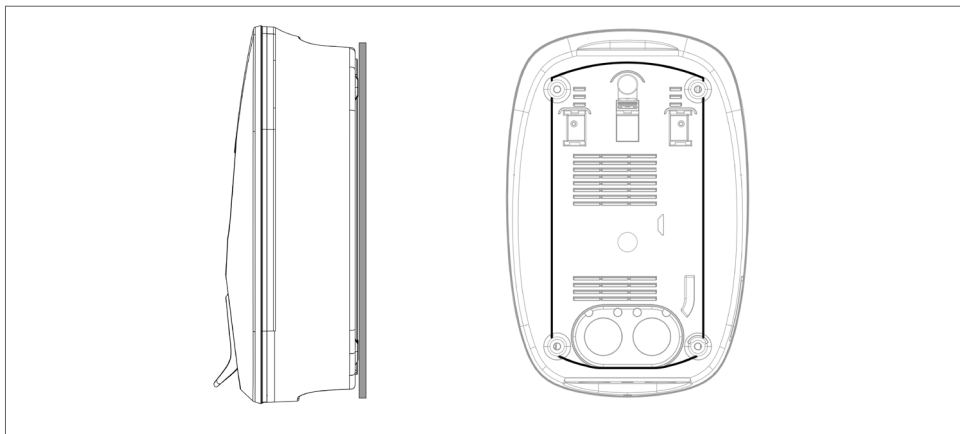
5.1 Mounting

N.B: Make sure to place front cover and charging unit in a place where they will not be damaged.

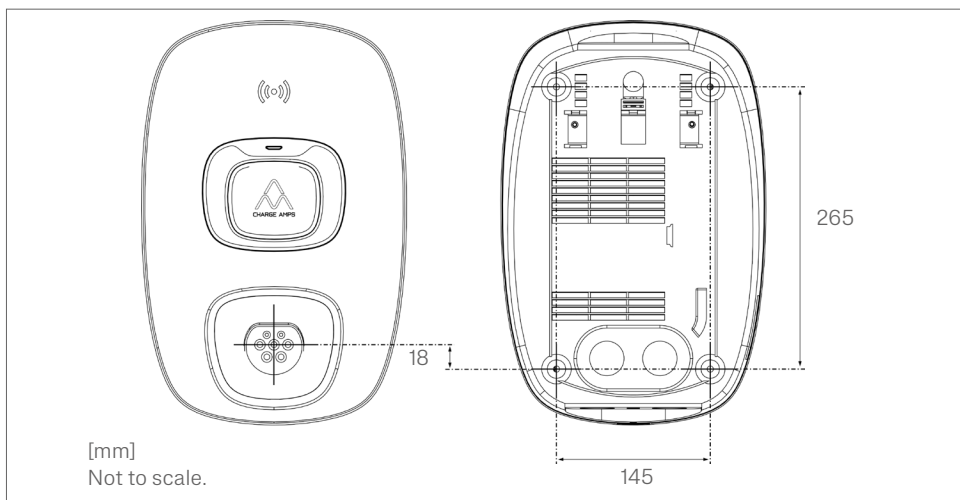
1. Unpack Charge Amps Dawn and make sure that Charge Amps Dawn is in good condition.
2. Lift the charging unit from the backplate. Note: no need to loosen any screws!



3. Make sure the mounting surface is flat. Max. deviation for the four mounting holes is 3 mm. No other part of the surface should be in contact with the charger. The surface must also cover the area within the rim on the back side of the Charge Amps Down.



4. Mark the mounting holes on the wall.



5. Mount the Back plate to the wall.

5.2 Connection

WARNING! Make sure that the power is turned off at the main switch and that the feed cable is isolated!

N.B: Installation shall only be performed by a qualified electrician.

5.2.1 Cable connection

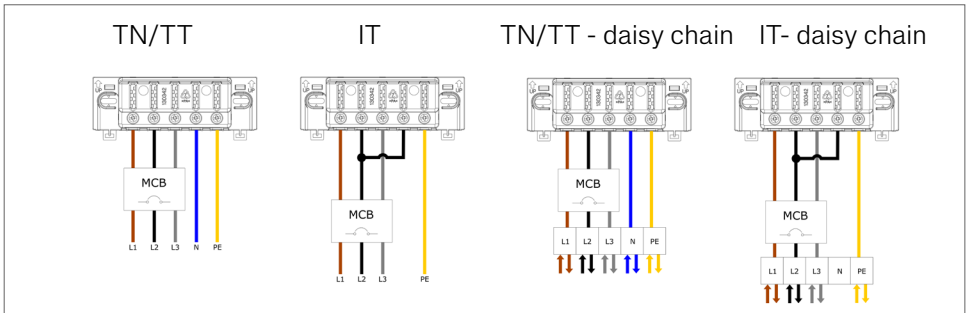
N.B: Local regulations for the electrical installation should always be followed!

There are three options for cable entry, via the bottom, top or back side. Only insert the electrical cable through the specified cable entries.

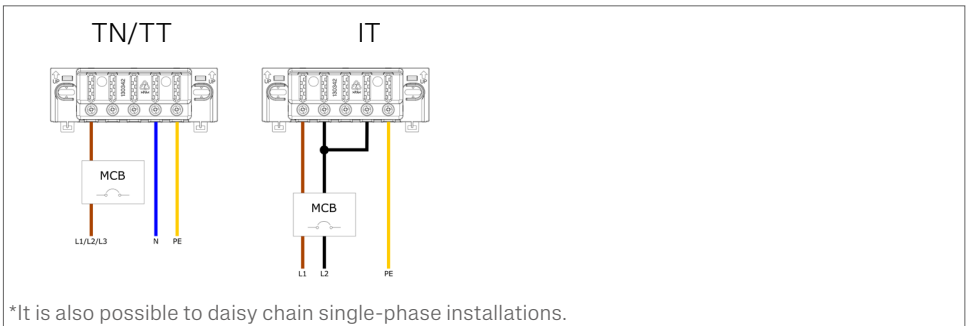
1. Pull the power cable through the cable entry.
2. Strip approximately 20 mm off the end of the conductors.

3. Connect the conductors (below illustrations gives an example of how to connect the conductors. If local regulations, e.g. TN/TT networks, stipulates that the three phases as well as neutral shall be cut, then apply what is stated in section 4.4.2):

Example of three phase connection:

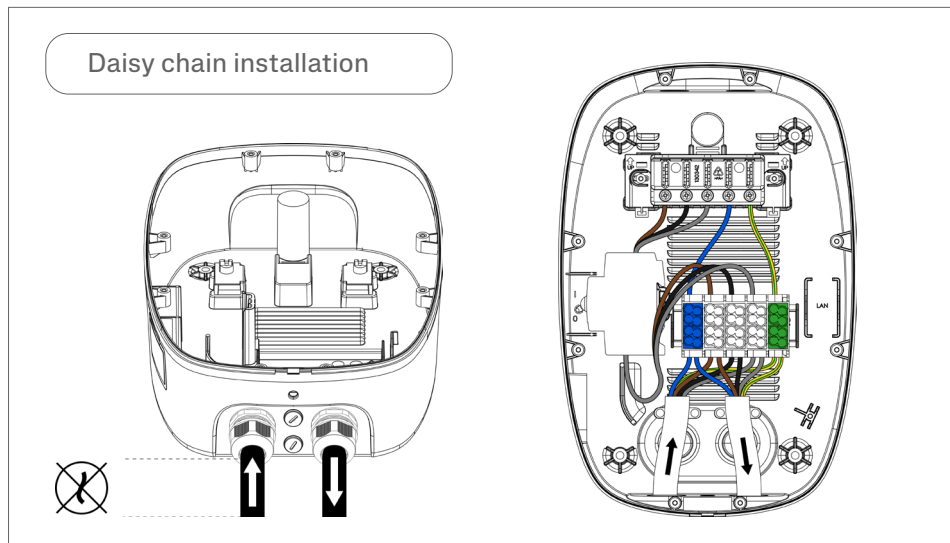
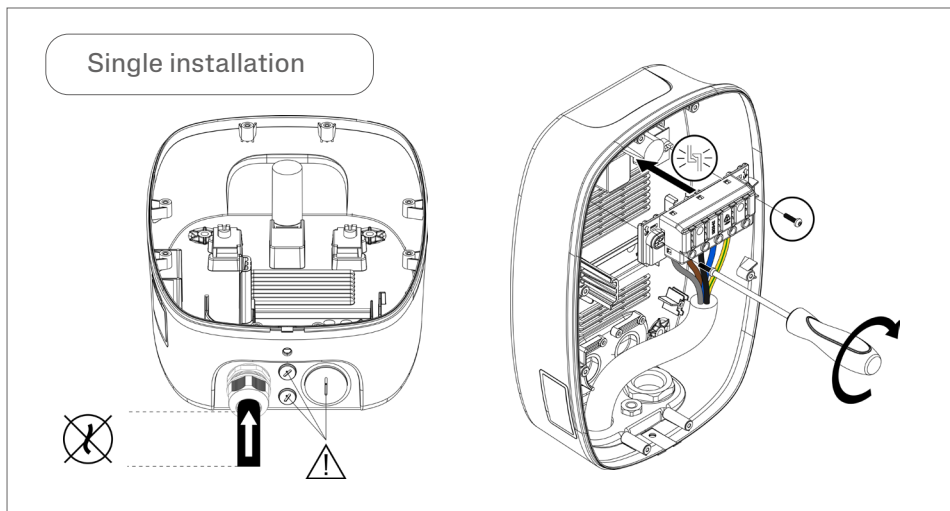


Example of single phase connection*:

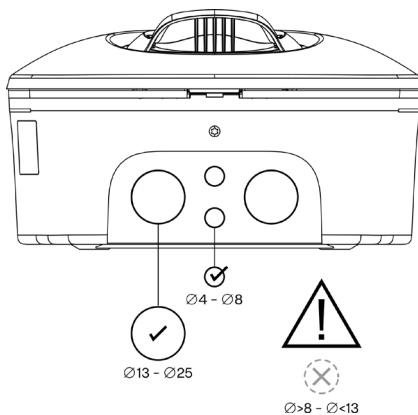


5.2.2 Bottom cable entry

1. Insert and connect the cables.

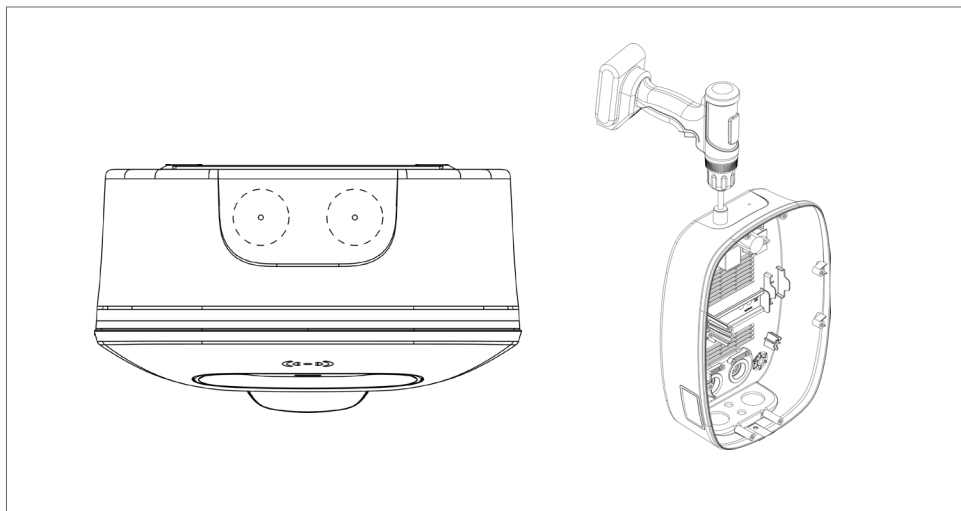


N.B: Make sure the cables are straight after the cable gland to avoid strain on the cable glands and plastic parts.
Important! Make sure to cover non used cable entries with suitable plugs found in the Accessories kit.



5.2.3 Top cable entry

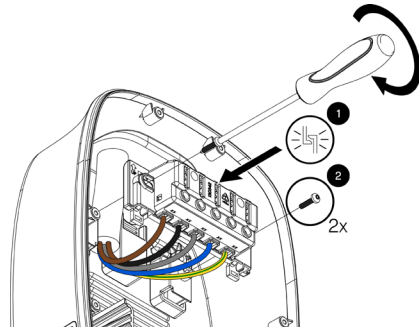
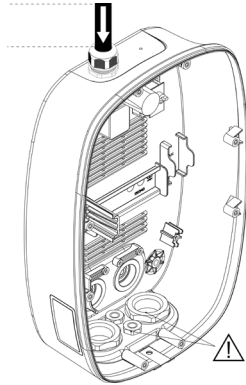
1. Drill hole(s) according to the markings on the top using a step drill (Power cable: $\varnothing 32$ mm).



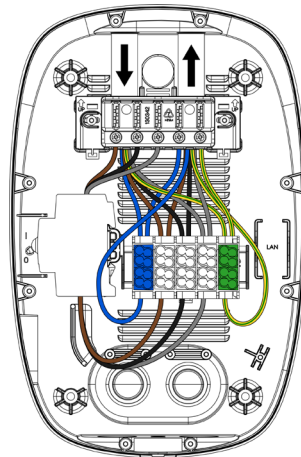
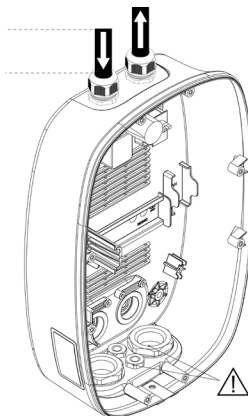
2. Insert and connect the cables.

N.B: Make sure the cables are straight after the cable gland to avoid strain on the cable glands and plastic parts.

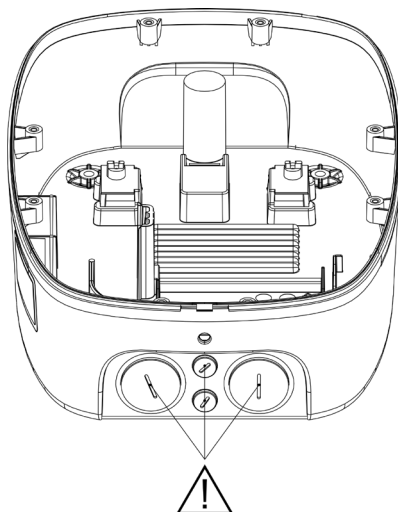
Single installation



Daisy chain installation

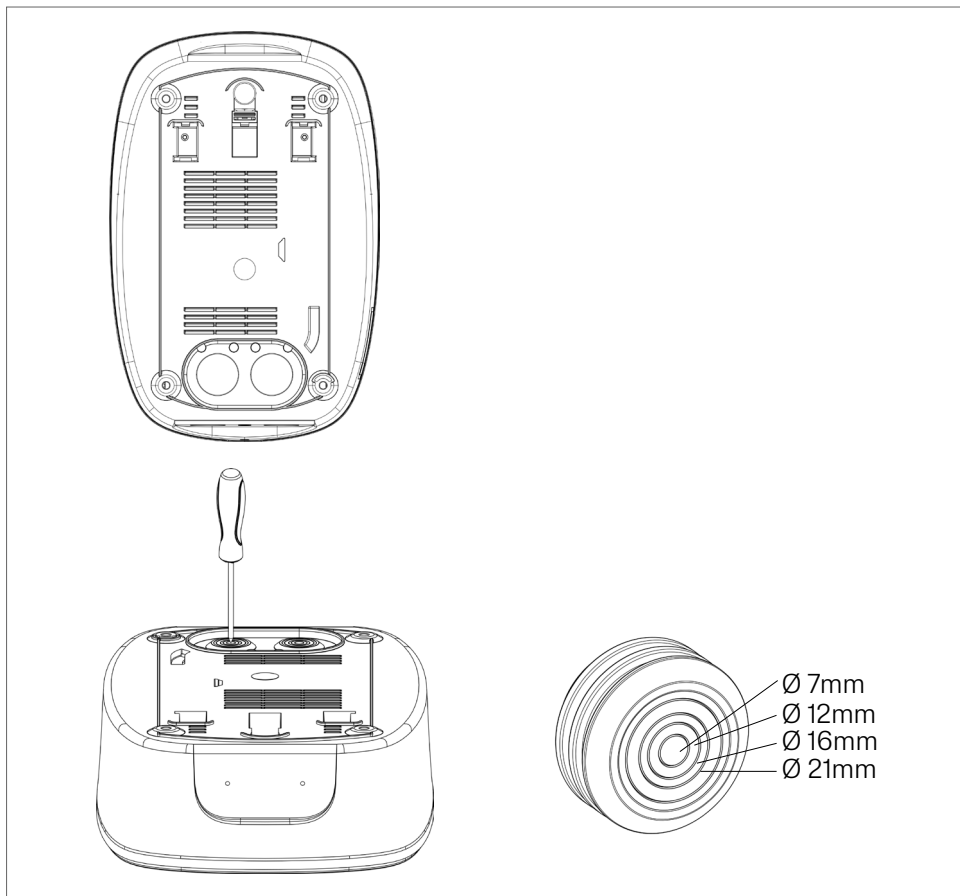


Important! Make sure to cover non used cable entries with suitable plugs found in the Accessories kit.



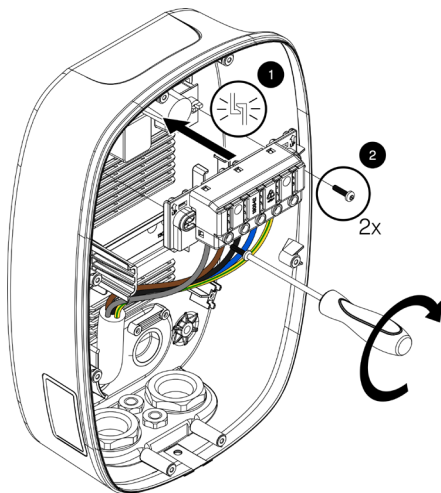
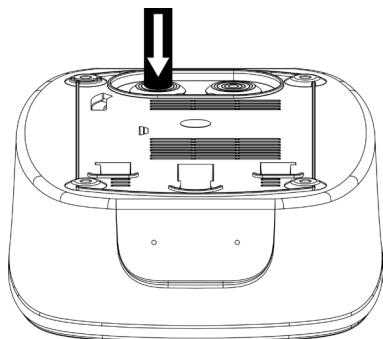
5.2.4 Back side cable entry

1. Make appropriate sized holes in the membrane using a suitable tool.

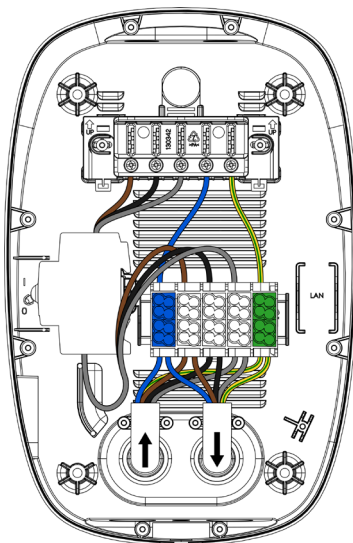
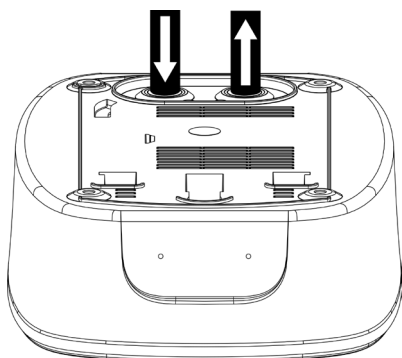


2. Insert and connect the cables.

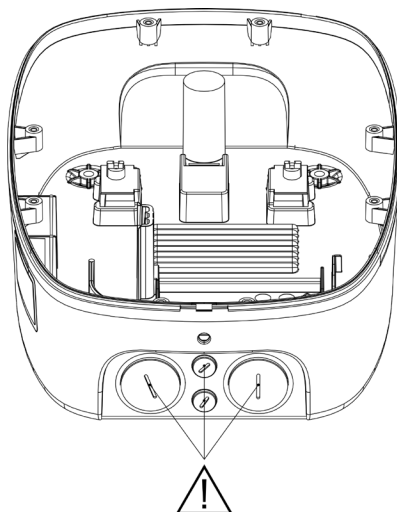
Single installation



Daisy chain installation



Important! Make sure to cover non used cable entries with suitable plugs found in the Accessories kit.



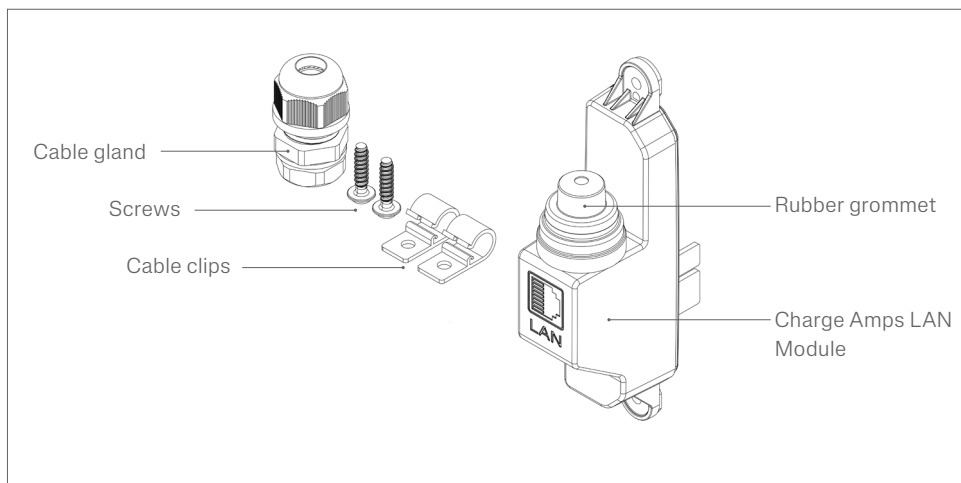
5.3 Install Charge Amps LAN module

When the Charge Amps LAN module is purchased separately, it needs to be mounted in Charge Amps Dawn before connecting the LAN cable.

If the LAN module is already mounted, proceed to chapter "5.3.2 Connect the LAN cable". There's three options for LAN cable entry, via the bottom, top and back side of Charge Amps Dawn.

IMPORTANT! It's only possible to daisy chain the power supply of Charge Amps Dawn with LAN connection from the bottom side of Charge Amps Dawn.

Following is included in the Charge Amps LAN module package:

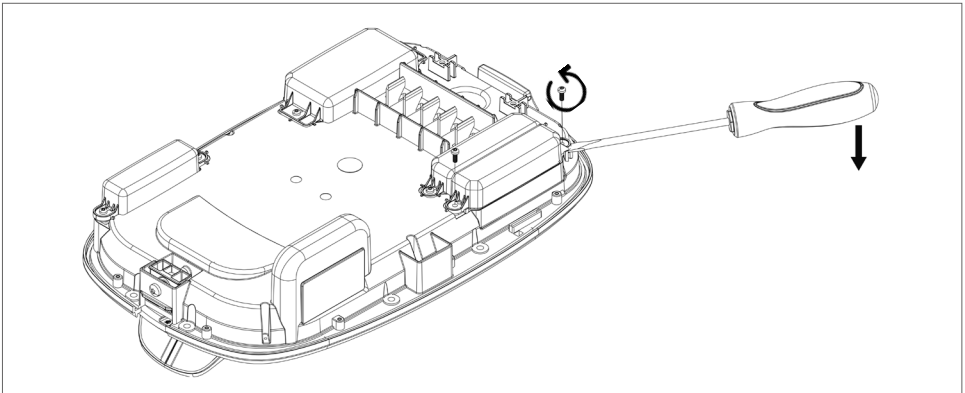


5.3.1 Mount the LAN module

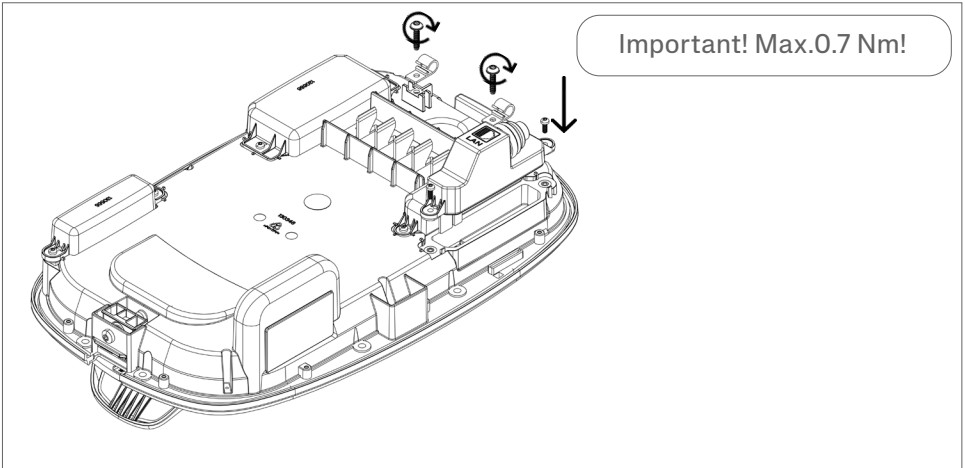
N.B: Mounting of the LAN module is only applicable for models where the LAN module is purchased separately from Charge Amps Dawn. If the LAN module is already mounted, continue to bullet chapter "5.3.2 Connect the LAN cable".

1. Before mounting the LAN module, unscrew the screws of the module cover using a Torx T10 screwdriver, and use a flat screwdriver at the short end of the cover to carefully remove the module cover.

N.B: Keep the screws and do NOT try to remove the module cover from the long sides of the cover as it might damage the seal surfaces!



2. Mount the LAN module and screw it in place. Attach the cable clips using the screws included in the packaging.



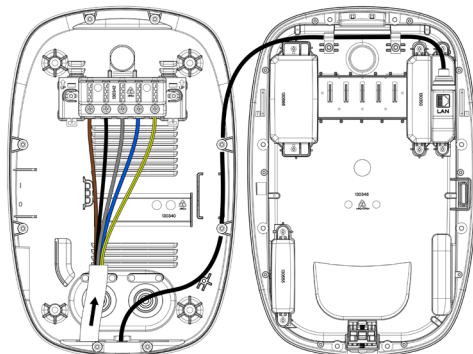
5.3.2 Connect the LAN cable

1. Thread the LAN cable through your designated cable entry:

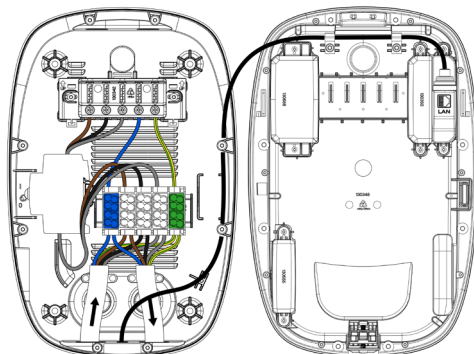
IMPORTANT! It is not possible to daisy chain the power supply for Charge Amps Down if pulling the LAN cable from the top or back side of Charge Amps Down.

Bottom side LAN cable entry:

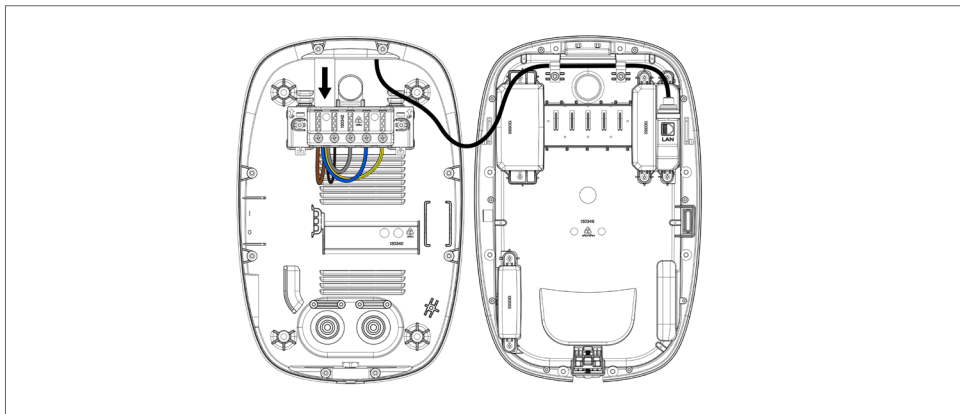
Single installation



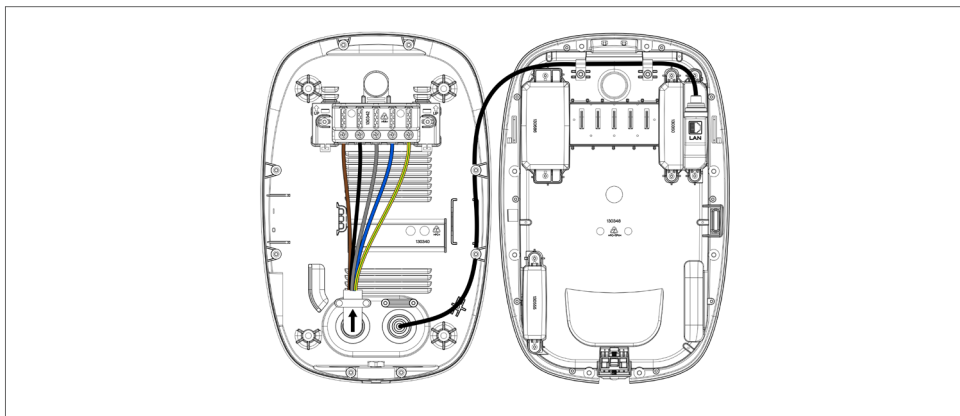
Daisy chain installation



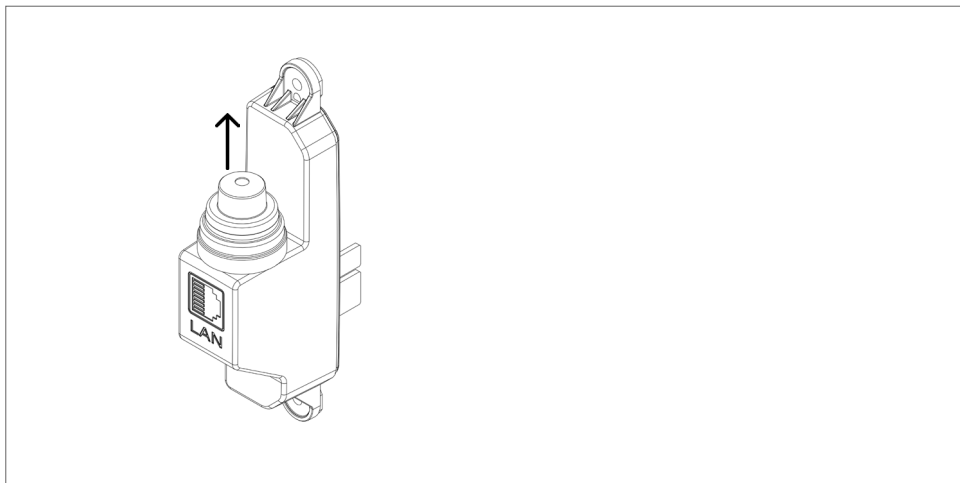
Top LAN cable entry:



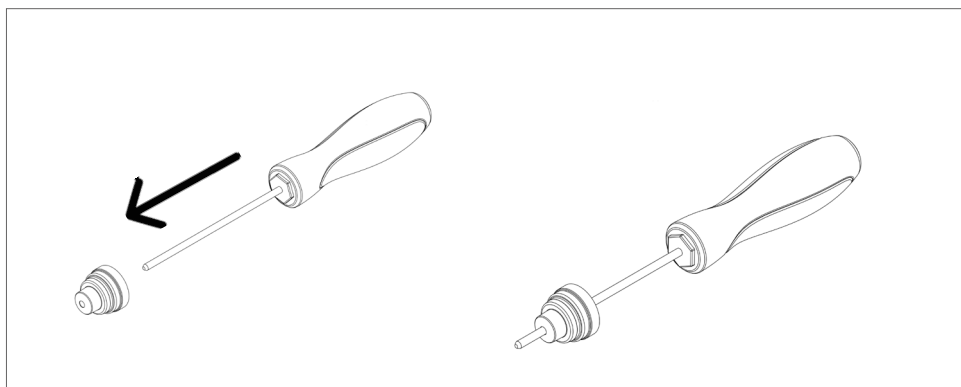
Back side LAN cable entry:



2. Remove the rubber grommet from the LAN module.

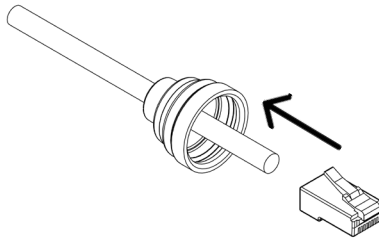


3. Make a hole in the rubber grommet using a screwdriver or similar.

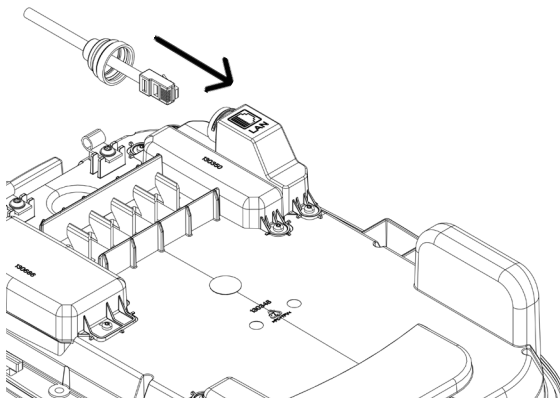


4. Pull the rubber grommet over the LAN cable and mount the RJ45 plug to the LAN cable.

N.B: Make sure the rubber grommet is pointing in the right direction according to the picture below. If the rubber grommet is not installed properly, the IP54 classification will be voided.

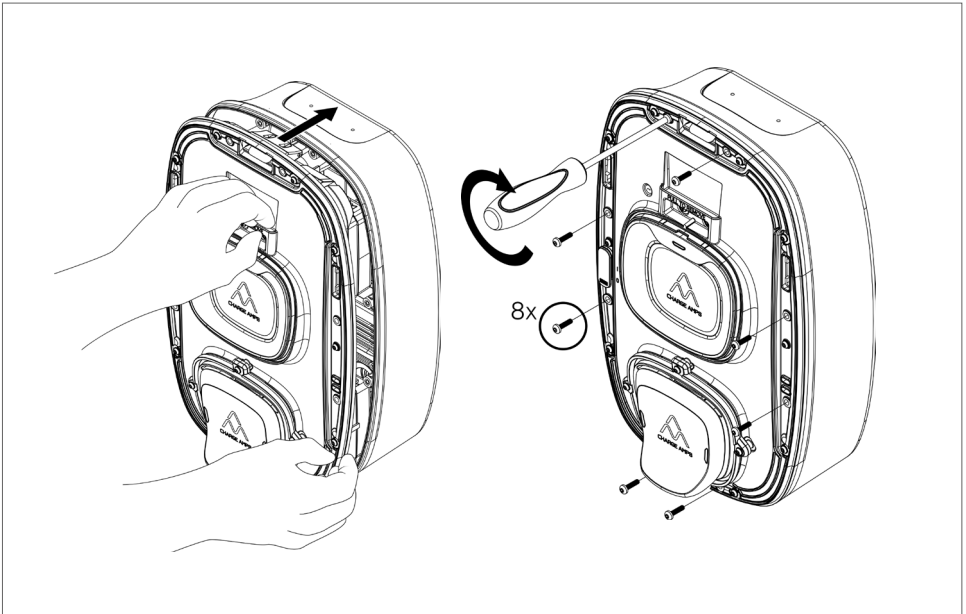


5. Secure the LAN cable in the cable clips and make sure the LAN cable is seated properly to avoid squeezing.
6. Connect the LAN cable to the LAN module and proceed to chapter 5.4 to reassemble Charge Amps Dawn.

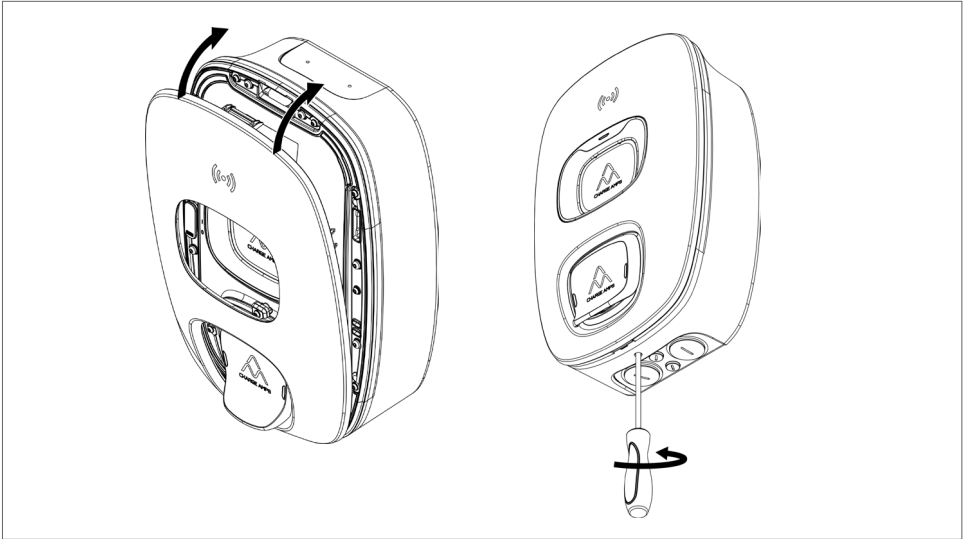


5.4 Reassemble

1. Insert the charger unit back on to the back plate and secure in place by tightening the 8 screws. **IMPORTANT:** If using LAN connection, make sure to not squeeze the LAN cable.
2. **IMPORTANT:** Remove the peel off label located on the lid of the charging socket and save for configuration.



3. Insert the front cover bottom flange and rotate the cover in place. Secure in place by tightening the front cover lock screw using Torx 25.



N.B: The front cover lock screw should not be removed. Use a max. torque of 2 Nm when tightening the screw

4. Turn the power on at the main switch.
5. Make sure the RFID light and socket lights are on.

6 Configuration

N.B: Always register in Charge Amps Partner Portal to configure Charge Amps Dawn.

There's two ways to configure Charge Amps Dawn, via the Charge Amps Installer App or via the Installation Wizard in Charge Amps Cloud. Before starting the configuration, make sure to create a Partner Account in Charge Amps Partner Portal.

6.1 Create a Charge Amps Partner Account

Use your login credentials or create a new account.

1. Create a User Account at Charge Amps Cloud
<https://my.charge.space/>
2. Visit our Help Center at:
www.chargeamps.com/support
3. Once you reached the Help Center, navigate to the inquiry form from the top menu and fill in the form.
4. You will receive an email with instructions for how to proceed and Charge Amps will notify you when your Partner Account has been created.

6.2 Configure via Charge Amps Installer App

The Bluetooth interface is available 20 minutes after boot-up. If no connection is established within 20 minutes, a restart of Charge Amps Dawn is required to re-activate the Bluetooth interface.

1. Open the app and press the button for configuration on the front page
2. Select the Charge Amps Dawn you wish to configure and enter the PIN code. (The PIN code can be found on the peel off label located on the lid of the charging socket).
3. Follow the instructions given in the Installer App to enter details about the installation and to configure the connectivity for Charge Amps Dawn.

N.B: To configure Load balancing and other functionality, go to Charge Amps Partner Portal

6.3 Configure via Installation Wizard

To use the Installation Wizard in Charge Amps Cloud, Charge Amps Dawn must be connected to the internet and Charge Amps Cloud. By default, Charge Amps Dawn will use LTE-M to connect to the mobile network and automatically connect to Charge Amps Cloud.

1. Login to Charge Amps Partner Portal, start the Installation Wizard and follow the steps in the Installation Wizard:
<https://my.charge.space/partner>

NOTE: Always use the backplate serial number when adding a Charge Amps Dawn!

If any question is not answered in this Installation manual, please contact the supplier, see www.chargeamps.com/support.

7 Cloud connectivity

Charge Amps Installer App and Charge Amps Cloud are available for Charge Amps Dawn connected to Charge Amps as the cloud provider.

Charge Amps Installer App

Please download Charge Amps Installer App, available in App store and in Google Play.



Charge Amps Cloud

Please create an account in the Charge Amps Cloud to configure, control and manage your charger via our web interface.



My charge space →

<https://my.charge.space/>

Full product information

Visit www.chargeamps.com for Charge Amps Dawn Installation Manual, Charge Amps Dawn User Manual and other product documentation.



Product information →

<https://www.chargeamps.com/product/charge-amps-dawn/>

8 Dismounting

N.B: Dismounting shall only be performed by a qualified electrician.

The power supply to the charger must be isolated before dismounting starts.

1. Turn the power off at the main switch.
2. Use this installation manual and follow the steps in reverse to dismount Charge Amps Dawn in the correct order.

9 Maintenance

9.1 Regular maintenance

N.B: Never spray water or any other liquid directly on to the product.

- Visually check that the EV socket-outlet is free from damage.
- The outside of the product must be regularly wiped with a clean, dry cloth to remove dirt and dust.
- Do not use detergent to clean any of the product's components.

9.2 Preventative maintenance

N.B: Preventative maintenance should be performed by a qualified electrician once or twice each year to check that Charge Amps Dawn is in good condition.

- Remove the front cover and charging unit and make a visual check of the cable connections.
- Test the internal RCD (twice a year). See the instructions for how to test and reset the internal RCD in Charge Amps Daw User Manual.

10 Product support and service

If you have any questions or problems with the product, support is always available. To find answers to your questions most quickly: Read through the Installation Manual or User Manual to check whether your questions are answered there.

If your question is not answered, please:

1. Contact your supplier or cloud provider.
2. If you need service or repair, start by contacting the supplier from whom you purchased the product.
3. For additional information, visit our Help Center at: www.chargeamps.com/support.

11 Warranty

Warranty terms may differ from market to market. Contact your supplier regarding the warranty terms.

www.chargeamps.com

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