

Charge Amps **Amp Guard**



Installation Manual

English

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Respect the environment! Do not dispose of with household waste! This product contains electrical or electronic components. When this product reaches its end of life, take it to a collection point designated by your local authority for separate recycling.



In conformity with the relevant EU directives and UK legislation.

Failure to follow and carry out the directions, instructions and safety precautions in this Installation Manual will invalidate the warranty and subsequently release Charge Amps AB from any and all liability claims in connection with any injuries/damage or incidents that result from said failure either directly or indirectly.

Charge Amps AB does not give any warranties as to the accuracy or completeness of this document and shall have no liability for the consequences of using such information. Charge Amps AB reserves the right to make changes to information published in this document without notice. Visit www.chargeamps.com for the latest document releases.

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1 Safety

WARNING! Read all instructions before installation!

- Improper use may result in personal injury.
- The product must only be installed by a qualified electrician in accordance with this Installation Manual.
- National installation requirements and restrictions apply.
- Inspect the product for visible damage before use.
- Never attempt to repair or use the product if it is damaged.
- 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.
- Charge Amps Amp Guard is a power monitor. Only use the product for its intended use

2 Technical data

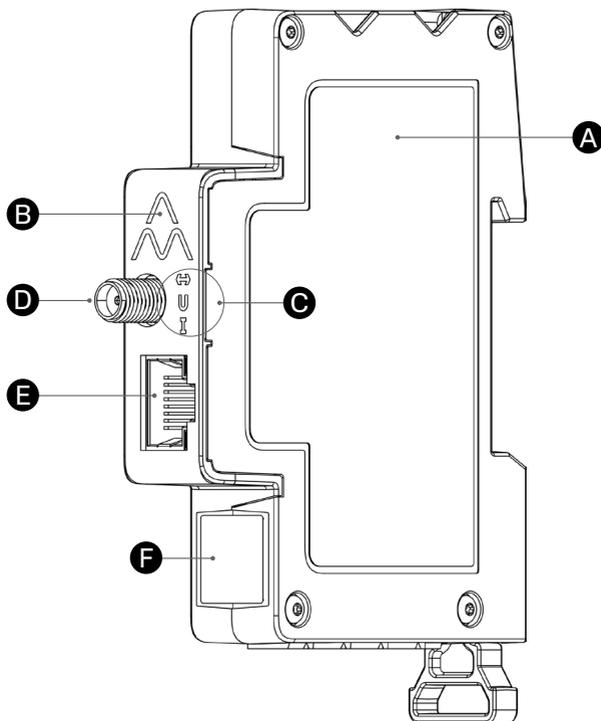
Measuring range (current)	± 0-63 A
Measuring range (voltage)	85-256 VAC, single to 3-phase, 50 Hz
Network	LAN, Wi-Fi 802.11b/g/n 2.4 GHz Freq. range: 2400-2500 MHz Max power output: 20 dBm
Power supply	Rated voltage: 12 VDC 0.5 A, provided by the supplied 230 VAC (+/-15%) 50 Hz power supply
Installation	DIN rail mounting in a cabinet: 1M for Charge Amps Amp Guard 1M for the power supply
Dimensions (W x D x H)	Charge Amps Amp Guard: 17.5 x 73* x 100 mm Power supply: 17.5 x 58 x 90 mm *86 mm with Wi-Fi antenna (measured from DIN rail).
Current sensor cable length Must not be tampered with to maintain measurement accuracy.	80 cm
Maximum cable diameter for current sensors	10 mm
Current sensors' rated secondary current	30(36) mA
PMD classification	PMD-x, I and U, SD, Kx
Safety rating	CAT III 300 V

Climatic conditions	Operating temperature: -35°C to +55°C Relative humidity: 0 - 90% Altitude: 0 - 2000 m Pollution Degree: 2 Ingress protection: IP2X Indoor meter: Yes
Energy consumption	1.3 kWh/1000h

Function characteristics according to IEC 61557-12

Function symbols	Function performance class	Measuring range	Other complementary characteristics
I	2	± 0-63 A	
V	2	85-256 VAC	

3 Product overview



A Charge Amps Amp Guard

B Reset button (at the top of Charge Amps logo)

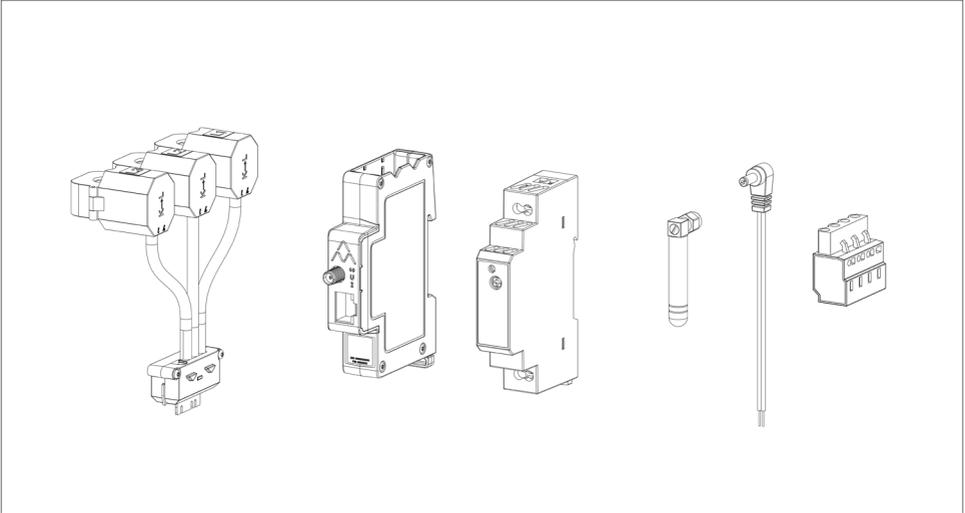
C Status indicators

D Wi-Fi antenna connector

E LAN/RJ45 port

F Serial number & PIN code information

3.1 Package contents



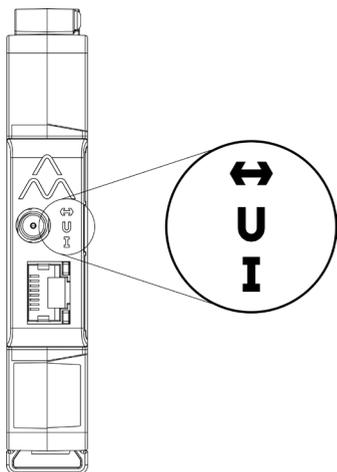
Included in the package:

- Monitoring module with current clamps
- Charge Amps Amp Guard
- 12 VDC power supply for powering Charge Amps Amp Guard
- Wi-Fi antenna
- 12 V power cable
- Terminal block for voltage measurement

Additional contents:

- Quick Guide

3.2 Status indicators



Charge Amps logotype:

- Lights On – Power On
- Lights Off – Power Off



Communication status:

- Green light – Connected to cloud
- Blue light – Connected to network
- No light – No network connection



Voltage measurement status:

- Green light – Ok
- Red light – Error, incorrect phase order
- No light – Voltage measurement not connected



Current measurement status:

- Green light – Ok
- Red light – Error, incorrect phase order
- No light – Current measurement not connected

4 Before installation

4.1 Recommended tools

- Smart phone, tablet or computer on Wi-Fi network
- Flat head screwdriver, max width 3 mm
- Multimeter, wire stripper
- Phase sequence tester

4.2 Internet access

N.B: For a more secure network connection, network connection via LAN is preferred.

In order to transmit data to the load balancing function which communicates with the charging station(s), Charge Amps Amp Guard must be connected to the internet. A connection via either Wi-Fi or LAN is possible for Charge Amps Amp Guard.

4.2.1 Wi-Fi connection

A Wi-Fi network connection with the following specifications is possible for Charge Amps Amp Guard:

- Type: 802.11b/g/n
- Range: 2.4 GHz
- Wi-Fi signal strength: -80dBm or better (-30dBm equals very good signal, -90dBm equals very poor signal).
- The network needs to have DHCP enabled to ensure an IP address is automatically assigned to the Charge Amps Amp Guard.

4.2.2 LAN connection

LAN network connection with the following specifications is possible for Charge Amps Amp Guard:

- A network cable, at least Cat6.
- Normally, no firewall changes are necessary.
- The network needs to have DHCP enabled to ensure an IP address is automatically assigned to the Charge Amps Amp Guard.

5 Installation

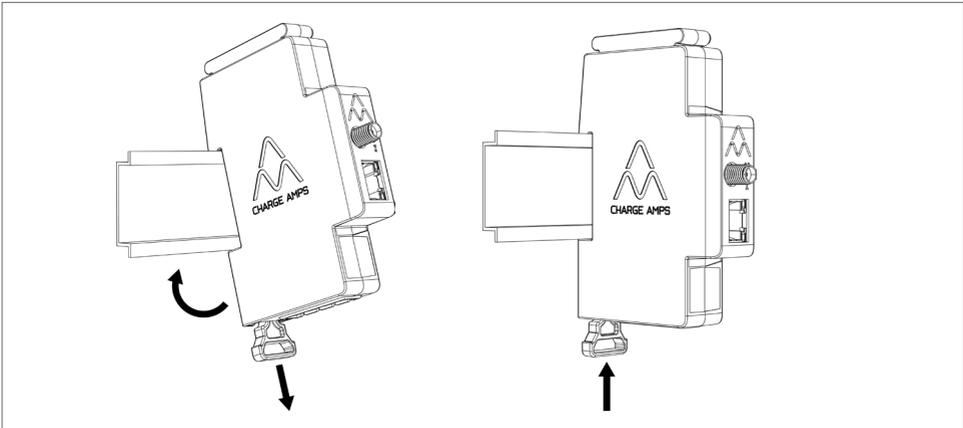
To monitor all power usage, install Charge Amps Amp Guard directly downstream the building's main circuit breaker panel.

N.B: For single phase installations, L2 and L3 shall not be used.

5.1 Mount Charge Amps Amp Guard

Before starting the mounting of Charge Amps Amp Guard, remember that an additional slot will be needed on the DIN-rail for mounting of the power supply.

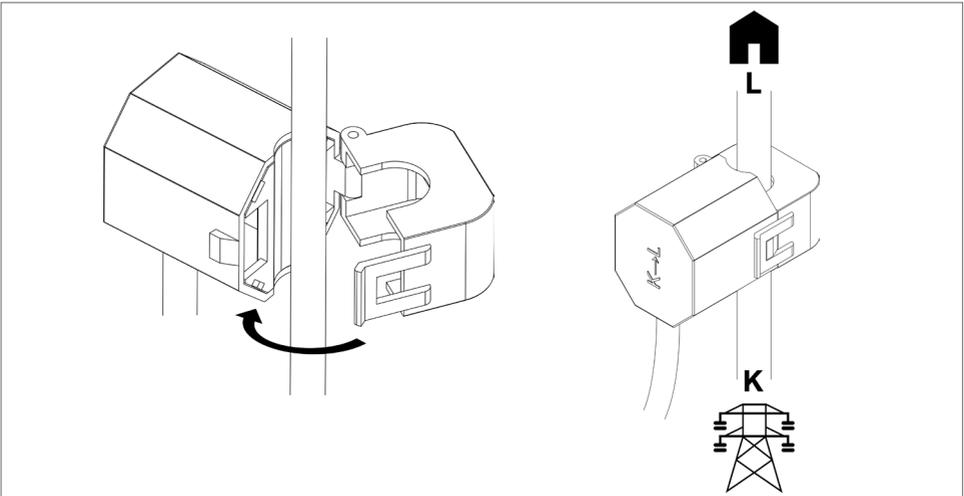
1. Place the Charge Amps Amp Guard onto the DIN-rail.



5.2 Connect the current sensors

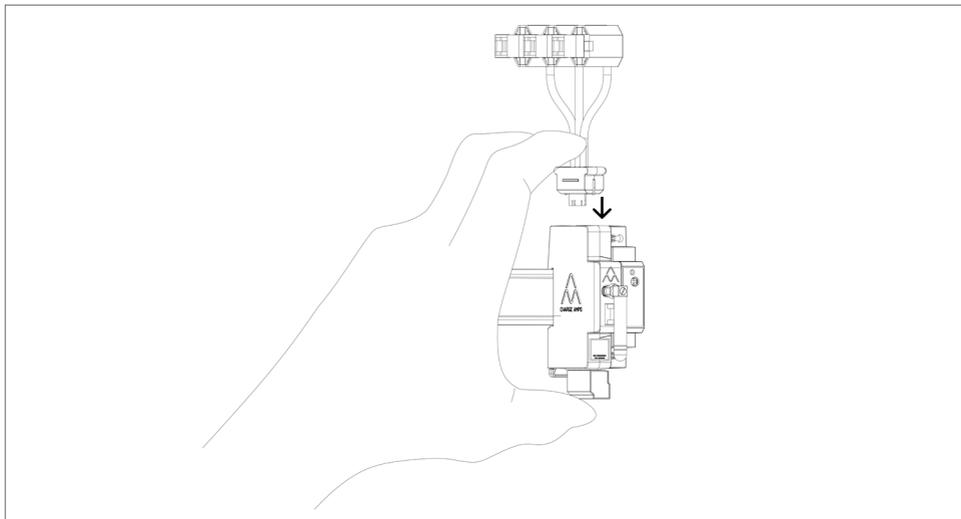
Charge Amps Amp Guard comes with three current sensors, one for each phase.

1. Clamp the current sensor around the incoming phase. The current sensors must be:
 - Connected to the correct phase.
 - Properly positioned around the main power cables.
 - Mounted in the direction of current flow, as indicated by the arrow on the current sensor which is illustrated in the picture below.



2. Connect the sensor cartridge to the top of the Charge Amps Amp Guard.

N.B: To secure proper contact, hold a hand under the Charge Amps Amp Guard when connecting the sensor cartridge.



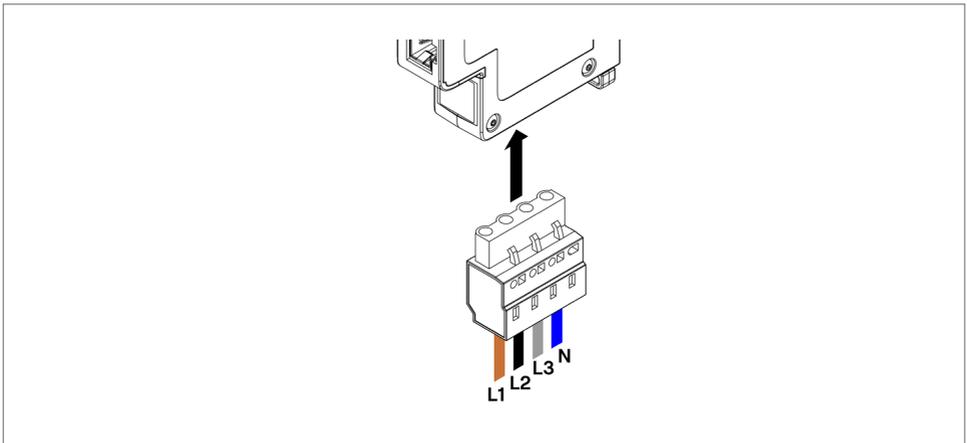
5.3 Connect the terminal block for voltage measurement

If power generating equipment, such as solar panels or wind turbines etc, is installed, connection of the terminal block for voltage measurement is required on all phases.

If no power generating equipment is installed, connection of the terminal block for voltage measurement is recommended on one phase to ensure optimal performance of Charge Amps Amp Guard.

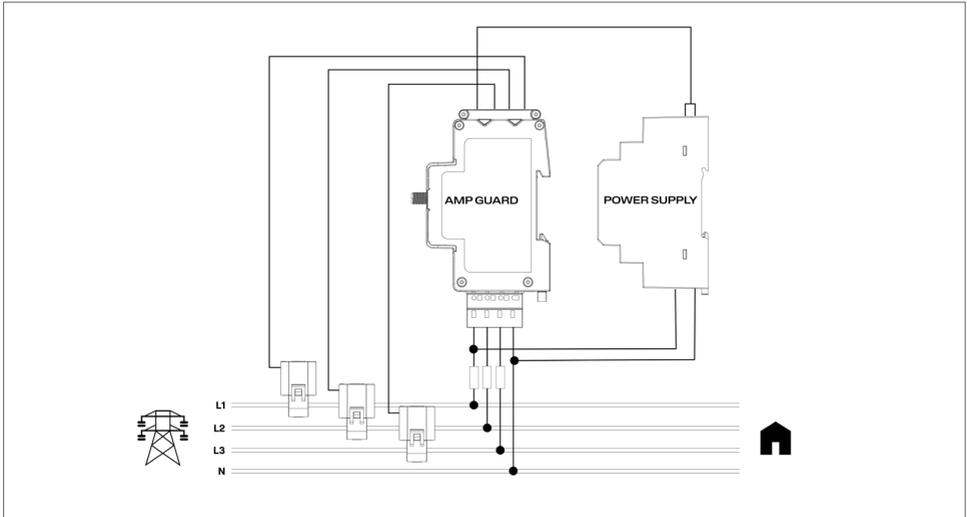
IMPORTANT! Each phase (L1, L2, L3) must always be protected by a circuit breaker and connected to the correct terminal connector for the voltage measurement to function correctly.

1. Turn the power off at the main circuit breaker panel.
2. Connect the terminal block to the bottom of the Charge Amps Amp Guard.

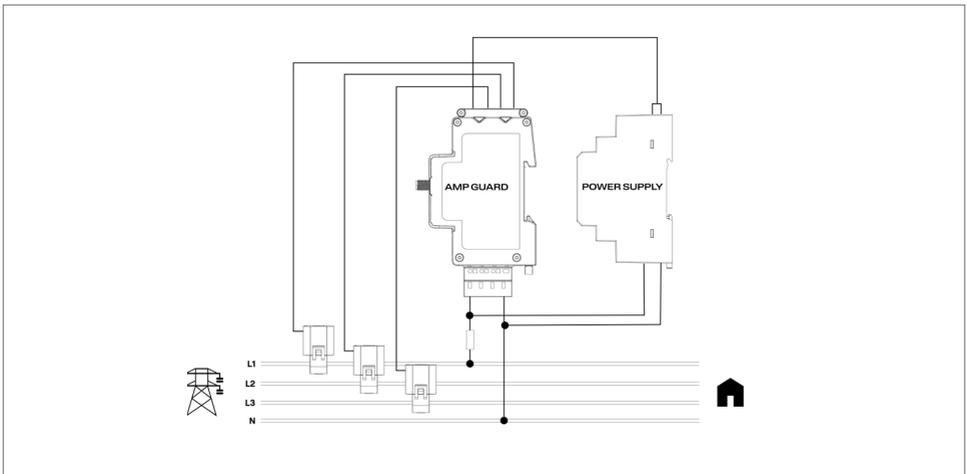


3. Connect phases and neutral to the supplied terminal block according to the wiring diagram that best suits your installation scenario:

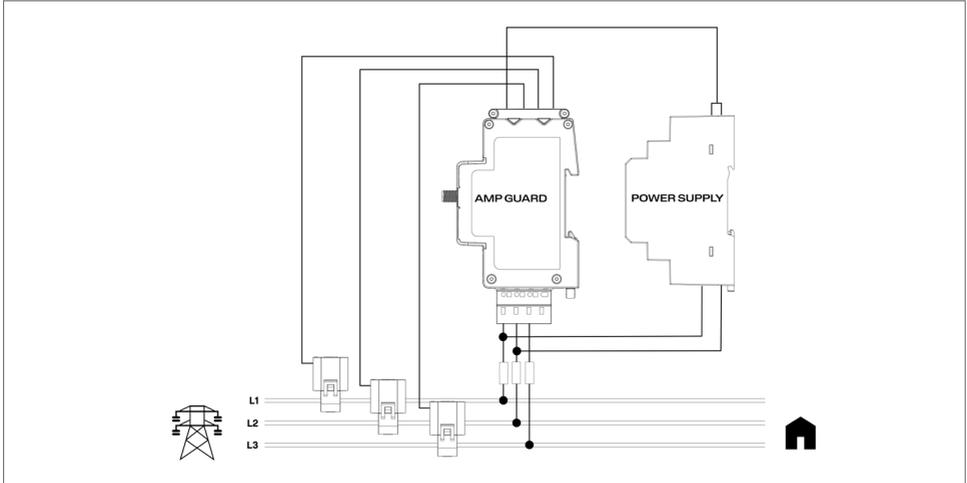
- Wiring diagram - installation with power-generating equipment: connect all phases to the terminal block for voltage measurement.



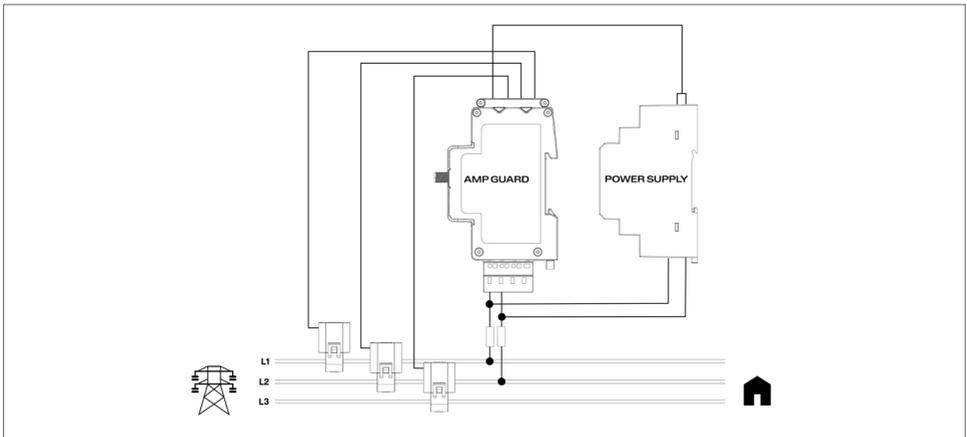
- Wiring diagram - installation without power-generating equipment: connect one of the phases to the terminal block for voltage measurement.



- Wiring diagram - IT network* with power generating equipment: connect all phases to the terminal block for voltage measurement.



- Wiring diagram - IT network* without power generating equipment: connect L1 and L2 to the terminal block for voltage measurement.



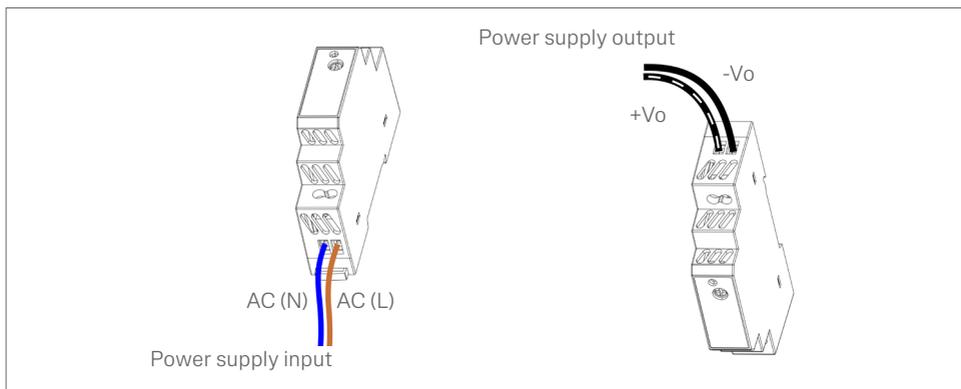
*The IT-network type must be configured in the local management interface, see chapter “6.3.2 Electrical settings”.

5.4 Mount and connect the power supply

The power supply is pre-configured to supply 12 V to Charge Amps Amp Guard. If needed, the voltage level can be adjusted by using the adjustment screw on the front of the power supply.

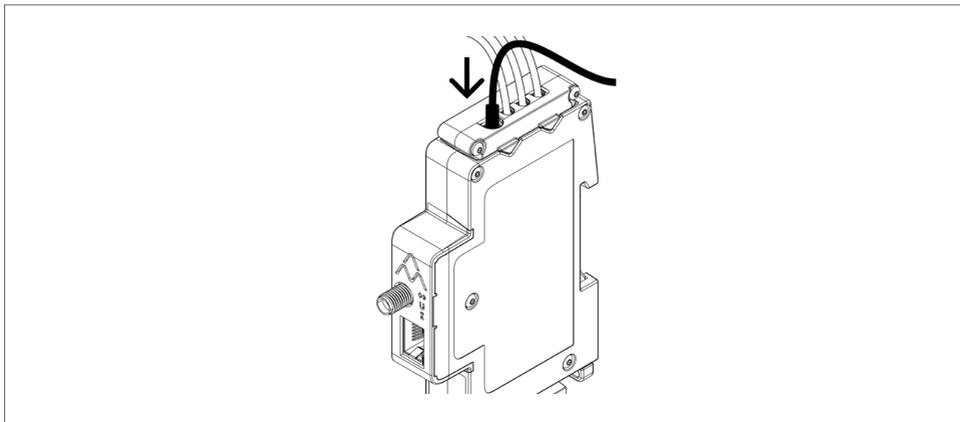
1. Connect the power supply to the mains and insert the supplied 12V power cable to the power supply according to the picture below.

IMPORTANT! Note the marking on the power supply! The cable marked with the white lines shall go into +Vo!



2. Mount the power supply onto the DIN-rail.
3. Connect the 12V power cable to the sensor cartridge.

IMPORTANT! Be careful not to overpress the 12V power cable when connecting it to the sensor cartridge!



4. Turn the power on at the main circuit breaker panel.

5.5 Install internet connection

5.5.1 Wi-Fi connection

For Wi-Fi connection, the included Wi-Fi antenna shall be used. Depending on the type of cabinet, an external Wi-Fi antenna may be needed. If using an external antenna, it must be of non-grounded type.

1. Mount the Wi-Fi antenna, it shall point downwards so it doesn't block the reset button on the top of the Charge Amps logo.

N.B: Only rotate the nut, not the Wi-Fi antenna itself and be careful not to tighten the nut too tight.

5.5.2 LAN connection

If connecting Charge Amps Amp Guard via LAN, connect the network cable to the LAN/RJ45 port.

N.B: The cable must be Cat6.

6 Configuration

N.B: Always register in Charge Amps Partner Portal before you start the configuration of Charge Amps Amp Guard .

When the electrical installation is completed, Charge Amps Amp Guard needs to be configured. Before starting the configuration process, make sure you have access to:

- The serial number for Charge Amps Amp Guard (can be found on the front label or the Quick Guide).
- The PIN code for Charge Amps Amp Guard (an 8-digit code that can be found on the front label or the Quick Guide).

6.1 Create a Charge Amps Partner account

The Charge Amps Partner account is needed when you configure the load balancing functionality in Charge Amps Cloud. If you're an existing user, use your login credentials. If you're a new user, 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 Connect to internet via Charge Amps Amp Guard Wi-Fi access point

Before configuring the load balancing functionality in Charge Amps Cloud, Charge Amps Amp Guard needs to be connected to the internet.

Once the power is switched on, Charge Amps Amp Guard will provide a Wi-Fi access point which is available for 10 minutes. Connect to the Wi-Fi access point by using a smartphone, tablet or computer:

1. Set to flight mode and disable other Wi-Fi access points to avoid conflicting networks.
2. Enter following information:
 - SSID: "AG_*****" (where "*****" equals the last 7 digits of the serial number).
 - Wi-Fi passord: the PIN code for Charge Amps Amp Guard.
3. When connected to the Wi-Fi hotspot, open a page in the web browser and type: "192.168.251.1" in the adress field.
4. Enter the PIN code for Charge Amps Amp Guard.
5. Click Login to access the Local management interface.
6. Continue to chapter 6.3 "Configuration in the Local management interface".

6.3 Connect to internet via LAN

1. Make sure Charge Amps Amp Guard is connected to the local network via an ethernet cable in the LAN/RJ45 port.
2. Log in to the facility router to find the IP address assigned to Charge Amps Amp Guard).
3. Using a smart phone or tablet, open a page in the web browser and enter the IP address assigned to Charge Amps Amp Guard in the address field.
4. Enter the PIN code for Charge Amps Amp Guard.
5. Click Login to access the Local management interface.
6. Continue to chapter 6.3 “Configuration in the Local management interface”.

6.4 Configuration in the Local management interface

In the Local management interface, the electrical settings of the installation and the facility Wi-Fi network settings can be configured.

6.4.1 Facility Wi-Fi network configuration

The Charge Amps Load Balancing functionality is operated from Charge Amps Cloud, and Charge Amps Amp Guard needs to connect to the facility’s network, either via LAN or Wi-Fi, in order to function properly.

1. In the Local management interface, navigate to the “Wi-Fi” tab.
2. Enter the log in details (SSID & Wi-Fi password) of the facility network.
3. Click “Update”. Charge Amps Amp Guard will now connect to the facility Wi-Fi network.

4. You will now automatically be thrown out of the Wi-Fi network. Sign in to the Wi-Fi hotspot again to re-connect to the network.
5. Make sure the communication status symbol () lights up green. This should take about a minute.

6.4.2 Electrical settings

To function properly, the electrical settings for Charge Amps Amp Guard must be configured in the Local management interface. Information about main fuses and network type must be set.

1. In the Local management interface, navigate to the "Installation" tab.
2. Adjust the current limit, supply network type and other details according to your installation scenario. (The supply voltage and current mapping settings can be used to fix installation issues and will normally remain unchanged).
3. Click "Update" to save.

6.5 Verify Charge Amps Amp Guard configuration

After configuration, the installation, configuration and performance of Charge Amps Amp Guard needs to be verified:

1. Make sure that the status indicators on the Charge Amps Amp Guard indicate proper operation:
 - The communication indicator (**↔**) shall light up green.
 - The current indicator (**I**) shall light up green.

N.B: In some situations, the current indicator may turn red when the current is below 2A since the phase angle can't be properly detected.

- If the terminal block for voltage measurement is connected, the voltage indicator (**U**) shall light up green.
2. Select the "Status" tab.
 3. Check that the measurements on the Status tab looks correct.

6.6 Configure Charge Amps Load balancing functionality

Once the internet connection is established and the electrical settings are configured, Charge Amps Amp Guard will be connected to Charge Amps Cloud and the load balancing functionality can be configured in the 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>

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

7 Cloud connectivity

Charge Amps App

Please download our app for complete control, to adjust settings and enable smart charging and scheduling.



Charge Amps Cloud

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



User Portal →

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



Partner Portal →

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

Full product information

Visit www.chargeamps.com for Charge Amps Amp Guard Installation Manual, Charge Amps Amp Guard Quick Guide and other product documentation.



Product information →

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

8 Maintenance and operation

8.1 Reboot Charge Amps Amp Guard

N.B: Always consult Charge Amps Support before performing this action. See www.chargeamps.com/support.

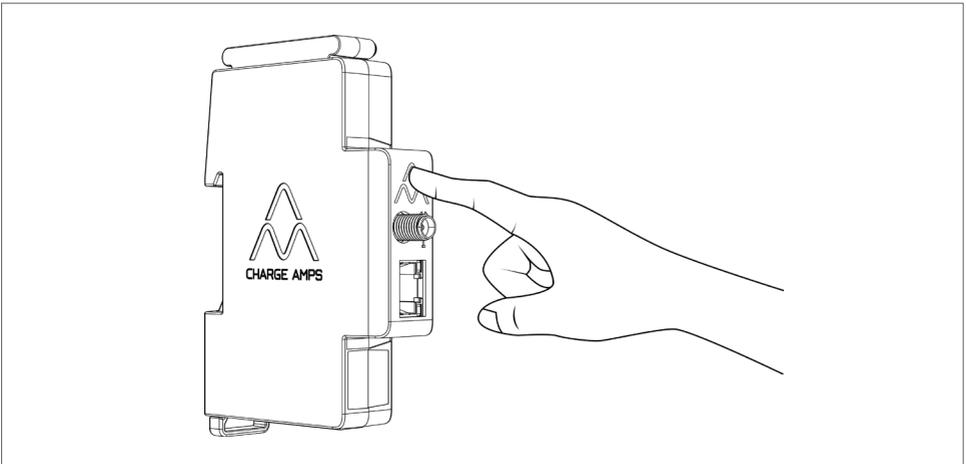
In the Local management interface, there is a “System” tab, where the Charge Amps Amp Guard can be rebooted or restored to factory settings if needed:

1. Log in to the Local management interface (depending on your internet connection, see chapter 6.2 or 6.3 for details on how to access the Local management interface).
2. Navigate to the “System” tab.
3. Click “Reboot” or “Factory Reset” depending on what action you want to perform.

8.2 Reset Charge Amps Amp Guard

Charge Amps Amp Guard can be restarted using the reset button. Data stored in the Charge Amps Cloud will not be affected.

1. Gently press the reset button at the top of the Charge Amps logo.
2. When the reset has been initiated, all lights will turn off for a short period of time and then turned on again.



9 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 to check whether your questions are answered here.

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.

10 Warranty

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

www.chargeamps.com

Charge Amps AB (publ)
Frösundaleden 2B, 8th floor
SE-169 75 Solna, Sweden

Charge Amps UK Ltd
3 More London Riverside, 4th Floor
London SE1 2AQ, United Kingdom