Charge Amps **Amp Guard**

Installation Manual

English

CHARGE AMPS

chargeamps.com

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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.

Approved in accordance 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.

The manufacturer makes no warrant as to the accuracy or completeness of this document and shall have no liability for the consequences of using such information. The manufacturer reserves the right to make changes to information published in this document without notice.
Visit www.chargeamps.com for the latest document releases.

1 Safety

⚠ WARNING! Read all instructions before use

- 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 Charge Amps Amp Guard 1M 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
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

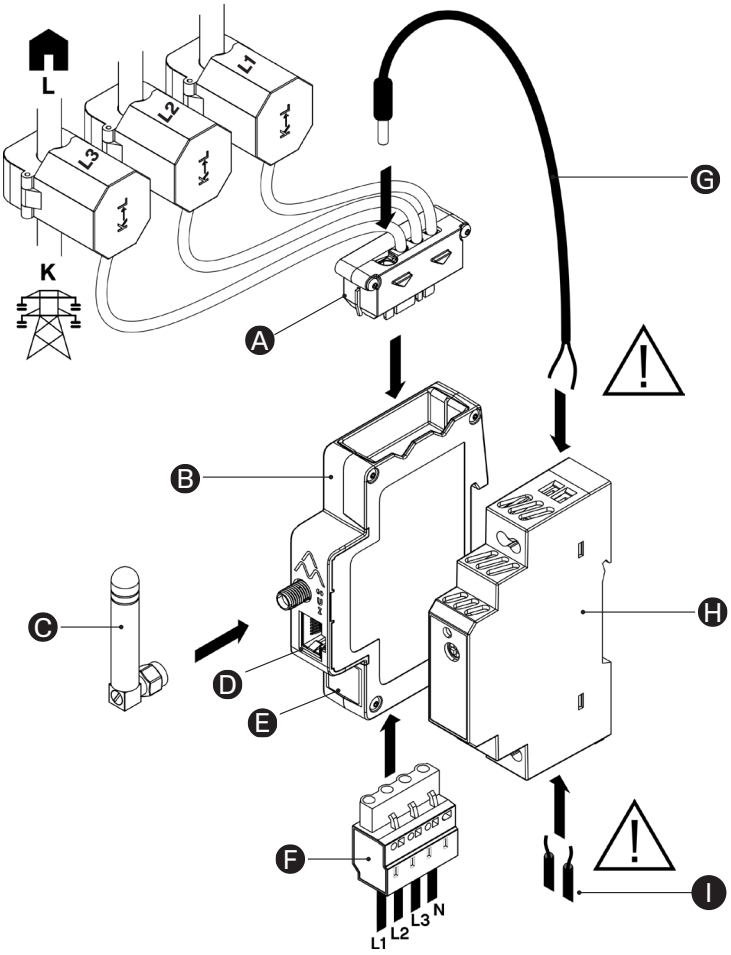
Function characteristics according to IEC 61557-12

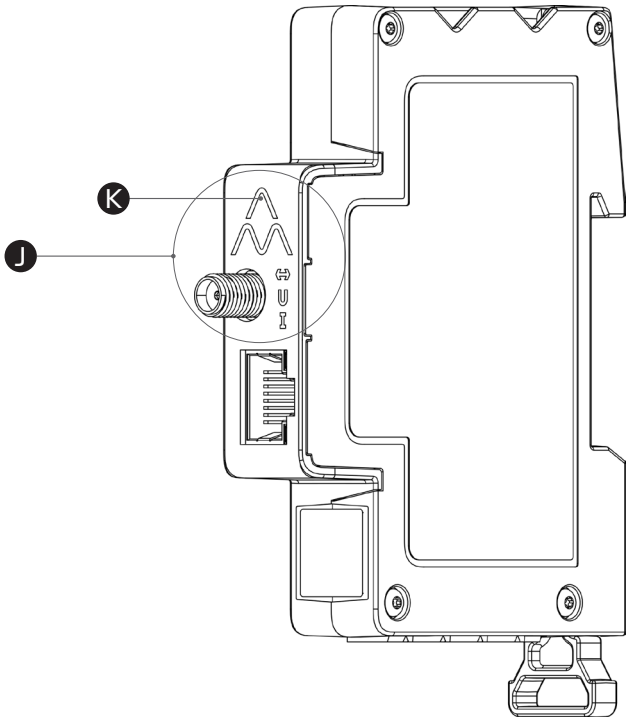
Function symbols	Function performance class	Measuring range	Other complementary characteristics
I	2	± 0-63 A	
V	2	85-256 VAC	

3 Product overview

3.1 Parts

⚠ **WARNING!** Note the marking on the power supply.



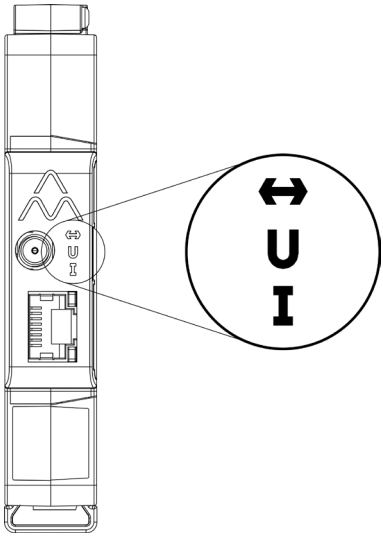


- A Monitoring module with current sensors
- B Charge Amps Amp Guard
- C Wi-Fi antenna
- D LAN port
- E Serial number and PIN
- F Terminal block for voltage measurement
- G 12 V power cable
- H 12 VDC power supply
- I Power supply AC input
- J Status indicators
- K Reset button (at the top of Charge Amps logo)

3.2 Package contents

- Charge Amps Amp Guard
- 12 VDC power supply, which powers the Charge Amps Amp Guard
- Monitoring module, consisting of a sensor cartridge and three connected current sensors including cables
- Terminal block for voltage measurement
- Wi-Fi antenna
- 12V power cable
- Quick Guide Installation

3.3 Status indicators

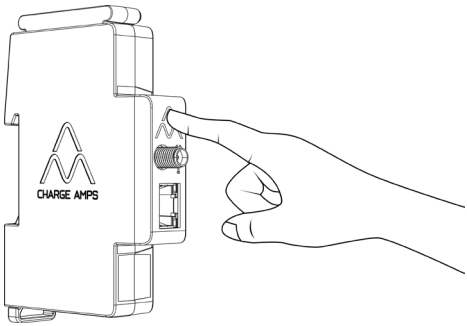


	Communication status: Green light – Connected to cloud Blue light – Connected to network No light – No network connection
	Voltage measurement status: Green light – Ok Red light – Error, incorrect phase order No light – Voltage measurement not connected
	Current measurement status: Green light – Ok Red light – Error, incorrect phase order No light – Current measurement not connected
	Charge Amps logotype: Lights On – Power On Lights Off – Power Off

3.4 Reset

If necessary, the 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. All lights will turn off briefly once the reset has been initiated.



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

IMPORTANT!

The Charge Amps Amp Guard must be connected to the internet to transmit data to the load balancing function which communicates with the charging station(s).

The customer must therefore provide an internet connection via a network cable (LAN) or Wi-Fi (802.11b/g/n 2.4 GHz).

- LAN connection, if available, is preferred for a more secure connection to the internet. The network cable must be at least Cat6.
- Normally, no firewall changes are necessary.
- Wi-Fi signal strength needs to be -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.

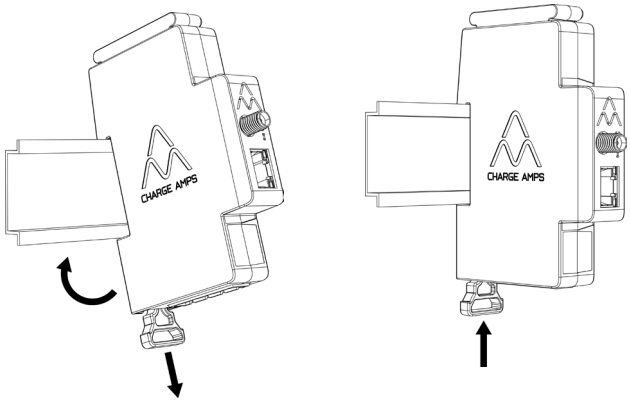
5 Installation

Install the Charge Amps Amp Guard directly downstream of the building's main circuit breaker panel to monitor all power usage. For single-phase installations, L2 and L3 shall not be used.

5.1 Mount Charge Amps Amp Guard

1. Pull the DIN-rail lock downwards and twist the Charge Amps Amp Guard onto the DIN-rail.
2. Secure in place by pushing the DIN-rail lock back in place.

Please note that an additional slot will be needed for the power supply.



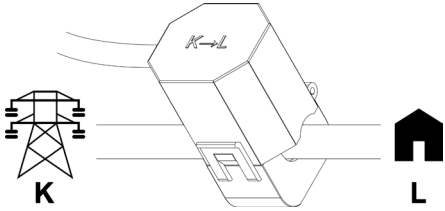
5.2 Connect the current sensors

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

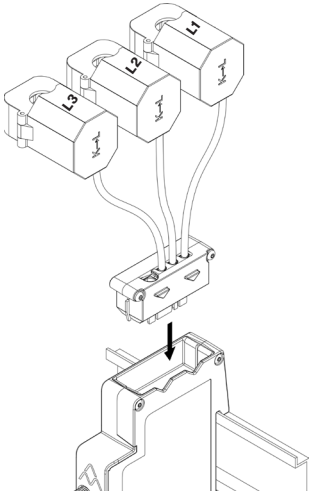
1. Clamp the current sensor around the incoming phase.
   The mounting direction is marked on the current sensor.
   The arrow must point in the current direction.

IMPORTANT!

The current sensors must be connected to the correct phase and properly positioned around the main power cables according to the direction indicators on the clamps.



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



5.3 Connect voltage measurement

For installations with power-generating equipment
Solar panels, wind power, or plans to introduce such equipment require the voltage measurement to be connected.

For installations without power-generating equipment
Connection of the voltage measurement is optional.
Do not remove the terminal block in the bottom of the Charge Amps Amp Guard as it may be needed if voltage measurement is connected in the future.

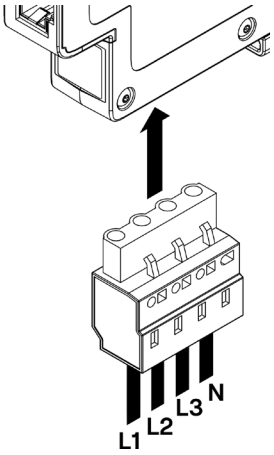
IT grid networks
IT grid is used in parts of Norway, Belgium and Albania.
In IT grid installations, L2 must be connected to both L2 and N.
The network type must also be configured, see chapter Electrical Settings.

IMPORTANT!

Each phase must be connected to the correct terminal connector for voltage measurement to function correctly. L1, L2 and L3 must be protected by circuit breakers in the normal way.

1. Turn the power off at the main circuit breaker panel.
2. Connect phases and neutral to the supplied terminal block.

3. Connect the terminal block to the bottom of the Charge Amps Amp Guard.



5.4 Mount and connect the power supply

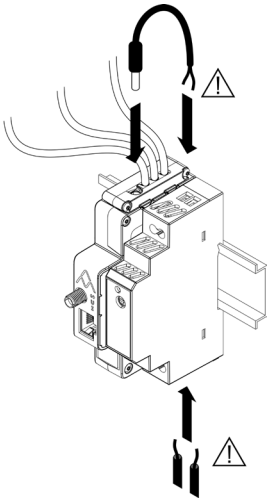
The power supply provides 12V to the Charge Amps Amp Guard.

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

1. Connect the power supply to the mains (L, N) according to the labels on the power supply, i.e. N to AC(N) (left side) and L1 to AC(L) (right side).
2. Insert the supplied 12V power cable into the power supply according to the label on the power supply, i.e. marked cable to +Vo (left side) and black cable to -Vo (right side).
3. Mount the power supply onto the DIN-rail.
4. Connect the 12V power cable to the sensor cartridge.

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

⚠ **WARNING!** Note the marking on the power supply.



5.5 Connect the Wi-Fi antenna

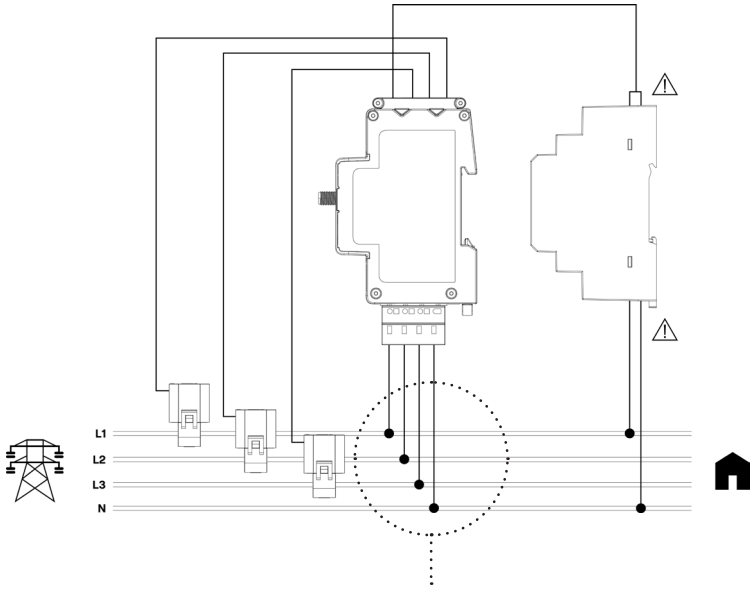
1. Mount the supplied Wi-Fi antenna to the Charge Amps Amp Guard.
2. NB: Depending on the type of cabinet, an external Wi-Fi antenna may be needed. The external antenna must be of non-grounded type.

5.6 Connect the LAN cable

If applicable, connect the network cable to the LAN port.
The cable must be Cat6.

5.7 Overview of the electrical installation

⚠ **WARNING!** Note the marking on the power supply.



Optional, see chapter Connect voltage measurement.

6 Configuration

Once the electrical installation has been completed, Charge Amps Amp Guard needs to be properly configured.

6.1 Connect to the Charge Amps Amp Guard Wi-Fi hotspot

IMPORTANT!

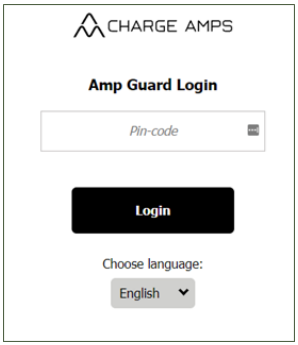
Only 2.4GHz Wi-Fi is supported.
The Wi-Fi hotspot is only active for 10 minutes after power up.
To restart Charge Amps Amp Guard, see chapter Reset.

1. Connect to the Charge Amps Amp Guard Wi-Fi hotspot using a smartphone, tablet or a computer. To avoid conflicting Wi-Fi, set to airplane mode, turn on Wi-Fi, then connect to the hotspot.
2. The network name, i.e. the SSID, is AG_******* (* = The last 7 digits/letter of the Charge Amps Amp Guard's serial number). The serial number can be found on the front label of the Charge Amps Amp Guard (the one with a QR-code) and on the front page of the Quick Guide.

   Enter the Charge Amps Amp Guard PIN as the Wi-Fi password to sign in to the Wi-Fi hotspot.

   The PIN is an 8-digit code that can be found on the Charge Amps Amp Guard front label and on the front page of the Quick Guide.

3. When connected to the Wi-Fi hotspot, open a web browser and type in 192.168.251.1 as the URL.

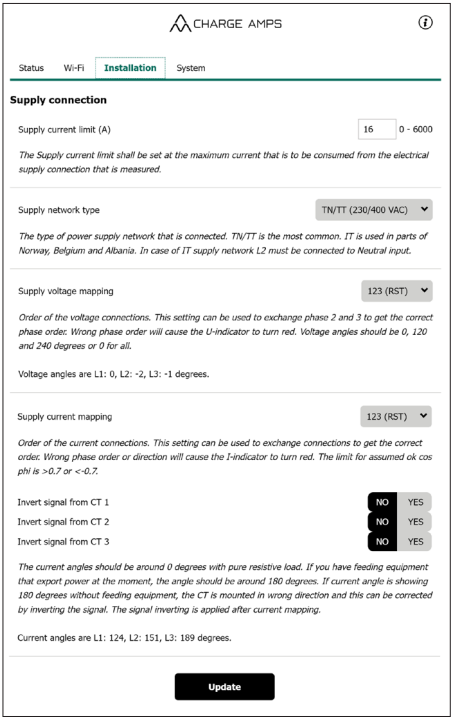


4. Enter the Charge Amps Amp Guard PIN to sign in.
5. Click Login.

6.2 Electrical settings

Charge Amps Amp Guard must be configured with the correct information about main fuses and network type in order to work correctly and effectively.
The supply voltage and current mapping settings can be used to fix installation issues and will normally remain unchanged.

1. Select the Installation tab.
2. Adjust the settings if needed.

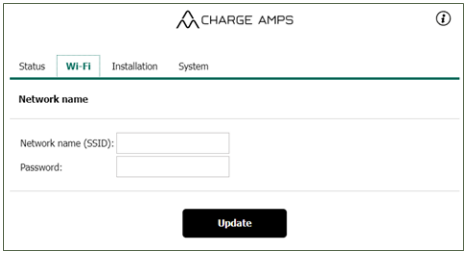


3. Click Update to save.

6.3 Wi-Fi configuration

Charge Amps Amp Guard needs access to the customer/facility network in order to connect to the Charge Amps Cloud Load balancing function using LAN or Wi-Fi.
The login details must be configured if Wi-Fi is to be used.

1. Select the Wi-Fi tab.



2. Enter the customer/facility Wi-Fi network's login details.
3. Click Update.
   Charge Amps Amp Guard will connect to the customer/facility Wi-Fi network.
4. Sign in to the Wi-Fi hotspot again.
5. Make sure the communication status symbol ↔ lights up green (within about a minute).

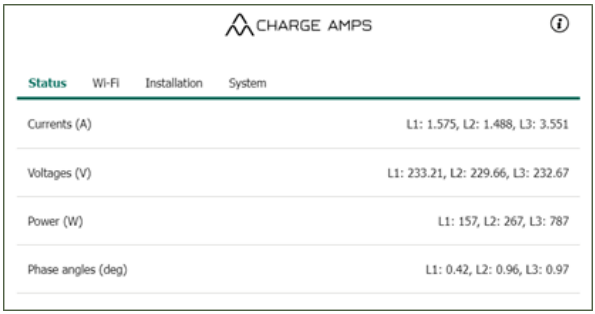
6.4 Verify Charge Amps Amp Guard configuration

After configuration, verify that the Charge Amps Amp Guard installation and configuration are performing correctly.

1. Make sure that the status indicators on the Charge Amps Amp Guard indicate proper operation. The communication and current indicators should all light up green. The voltage indicator lights up green if the voltage measurement is connected.

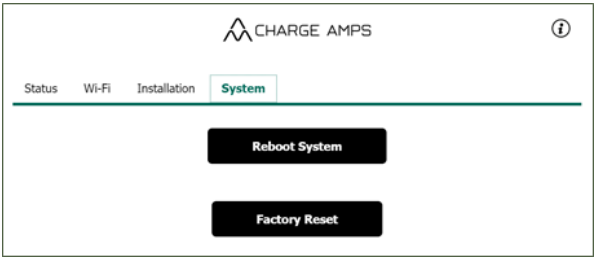
Note: The current indicator may turn red in some situations when current is below 2A as phase angles cannot be properly detected.

2. Select the Status tab.



3. Check that the measurements on the Status tab look correct.

There is also a System tab where the Charge Amps Amp Guard can be rebooted or restored to factory settings, if needed.



6.5 Cloud configuration

Charge Amps Amp Guard needs to be configured in the Charge Amps Cloud to set up the Charge Amps load balancing function.

Sign in to the Charge Amps Cloud Partner Portal and use the Installation Wizard for setup and configuration.

Charge Amps **app**

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

GET IT ON Google Play

Download on the App Store

Charge Amps **Cloud**

User Portal →

https://my.charge.space/

Partner Portal →

https://my.charge.space/partner

Full product information

Product information →

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

If you have any questions that have not been answered by this installation manual, please contact the supplier, see chargeamps.com/support.

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