



CHARGE AMPS

**Amp Guard v.4.7**

**Installation Guide**

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## Overview

The Amp Guard is a device for measuring current in the power distribution box for use in a load balanced Charge-Amps installation. When power consumption from the power supply approach pre-set levels, the Amp Guard automatically reduces the power available for charging. When Amp Guard is used together with power generating equipment, such as solar cells, the Amp Guard acts as a fully-fledged bidirectional Smart Meter.

## Technical Specification

Measurement Range (Current)	0-100 A (Home), 0-400 A (Public)
Measurement Range (Voltage)	Future feature
Network	LAN, Wi-Fi
Power	Integrated power supply from the voltage measuring path via stable terminals
Installation	DIN (6 modules) or stand-alone
Dimensions (mm)	108 x 97 x 57

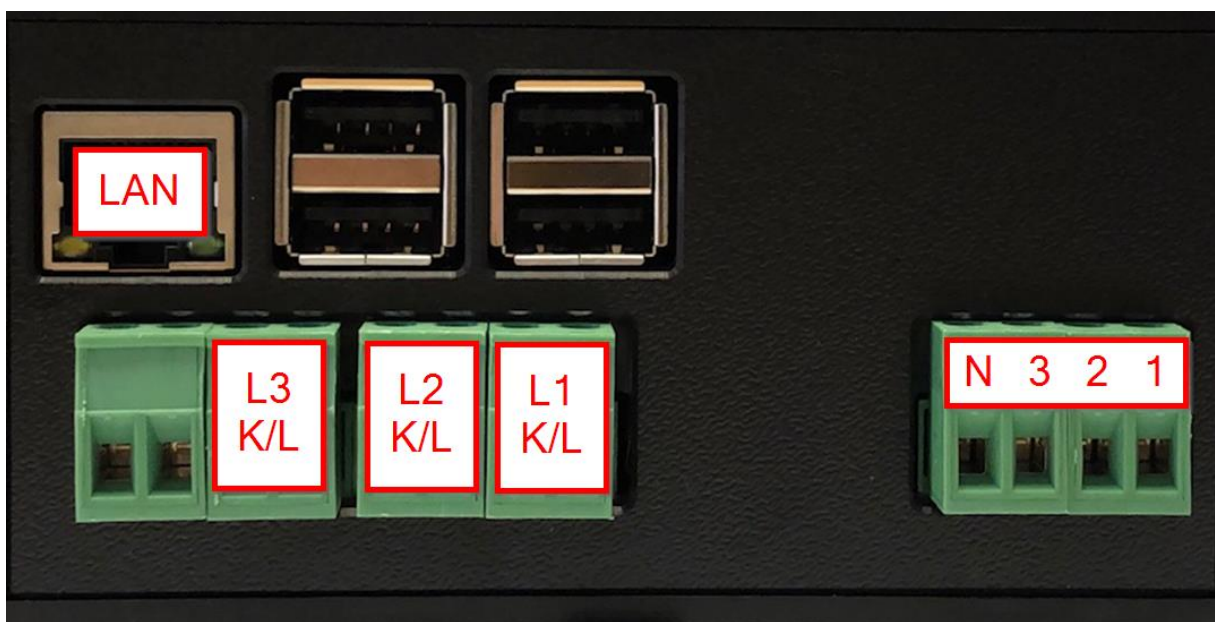
## Installation Instructions

The Amp Guard must be connected to the internet in order to deliver data to the load balancer feature. Preferably use LAN port for internet connection, Wi-Fi connection is also possible. Normally, no firewall settings need to be modified.

As soon as the Amp Guard is powered up and connected to the internet, it will start delivering data.

## Electrical Installation

Connect the Amp Guard accordingly:



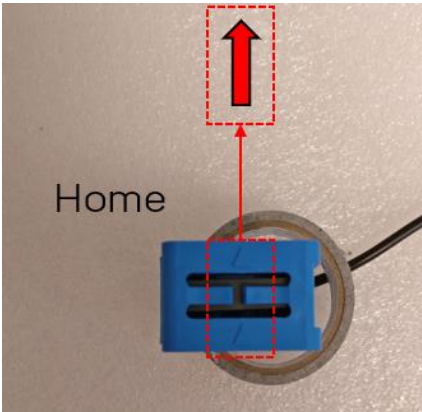
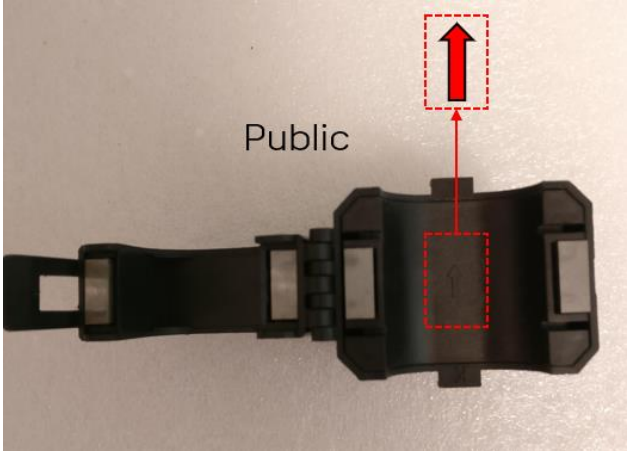
**Current sensors:** The Amp Guard has 4 inputs for current measurement, L1, L2, L3 and N (not used), and three inputs for voltage measurement allowing measurements on all three phases. Clamp the current sensors around incoming power at the distribution box – one for each phase.

Sensor cables are White(K) / Red(L) (for 0-100 A Home version)

Sensor cables are Black(K) / Red(L) (for 0-400 A Public version)

**Voltage:** In order to power up the device, connect all 3-phases and the natural-leader to the connector on the right side of the device marked with N321 (right side in pic)

NOTE: It is *very* important that the sensors are attached to the correct phase and that the sensors are positioned according to the current direction when consuming power. See arrows which shows current direction for Amp Guard Public and Home below:



To complete the electrical installation, the installer must configure the load balancer in the Cloud Configuration, see below.

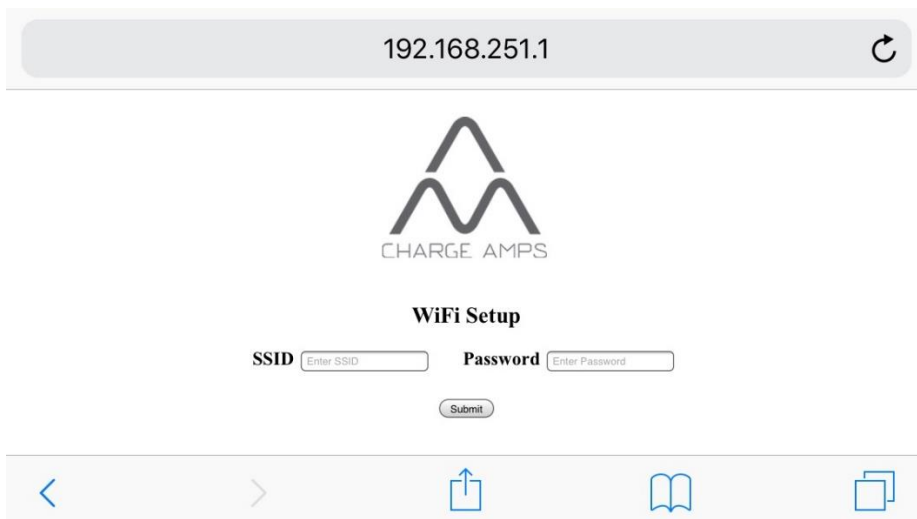
## LAN Installation

Connect a network cable to the LAN port.

(The network should have DHCP enabled for automatic IP-address assigned)

## Wi-Fi Installation

1. Before you begin make sure you have the SSID/password for the intended Wi-Fi network to use
2. Go to cellphone settings > Wi-Fi and choose the WIFI network Amp Guard\_\*\*\*\*\* (\* = Specific to Amp Guards serial number)
3. Connect with the password specific for your Amp Guard.
4. From a web browser enter the following address: <http://192.168.251.1>
5. Enter SSID and Password in the form on the configuration page and press submit.



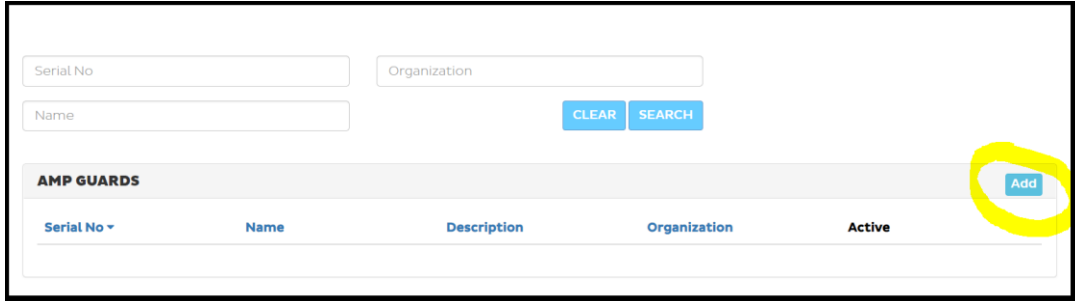
The screenshot shows a mobile browser interface for the Charge Amps WiFi Setup page. At the top, a grey address bar contains the IP address "192.168.251.1" and a refresh icon. Below the address bar is the Charge Amps logo, which consists of a stylized 'A' shape above the text "CHARGE AMPS". Underneath the logo is the heading "WiFi Setup". There are two input fields: "SSID" with a placeholder "Enter SSID" and "Password" with a placeholder "Enter Password". A "Submit" button is located below the input fields. At the bottom of the screen, there is a navigation bar with icons for back, forward, home, search, and tabs.

## Cloud Configuration

The Amp Guard must be set up correctly to be used with a load balanced group. This is done using My Charge Space (as Partner). This should be done by the electrical installer.

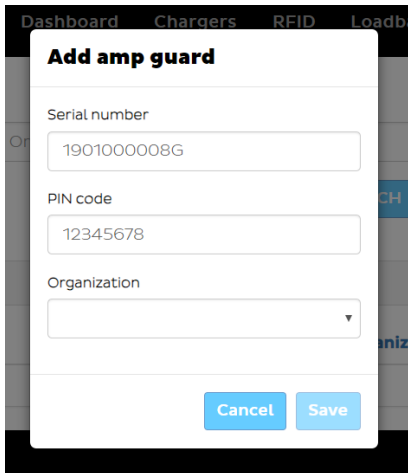
### Import Amp Guard

1. Log in as a partner at <http://my.charge.space/partner>.
2. Select “Amp Guard” in the menu and press “Add”:



The screenshot shows a web interface for managing Amp Guards. At the top, there are three input fields: 'Serial No', 'Organization', and 'Name'. To the right of the 'Name' field are two buttons: 'CLEAR' and 'SEARCH'. Below these fields is a table header for 'AMP GUARDS' with columns: 'Serial No', 'Name', 'Description', 'Organization', and 'Active'. A blue 'Add' button is located in the top right corner of the table area, circled in yellow.

3. Enter serial number, password and the organization where the Amp Guard should reside.



The screenshot shows a modal form titled 'Add amp guard'. It contains three input fields: 'Serial number' with the value '1901000008G', 'PIN code' with the value '12345678', and 'Organization' which is a dropdown menu. At the bottom of the form are two buttons: 'Cancel' and 'Save'.

4. Press “Search” to find the newly imported Amp Guard.
5. Press the Serial number to go to the details page.
6. Press “Activate” to enable the Amp Guard.

### Add Amp Guard to a load balanced charger group

1. Log in as a partner at <http://my.charge.space/partner>.
2. Select “Loadbalancer” in the menu and create a new group or select an existing one.
3. Edit the group (the load balancer group needs to be deactivated to do this).
4. Select the newly imported Amp Guard and enter correct values for the installation. (see information below).

### NEW LOADBALANCER GROUP

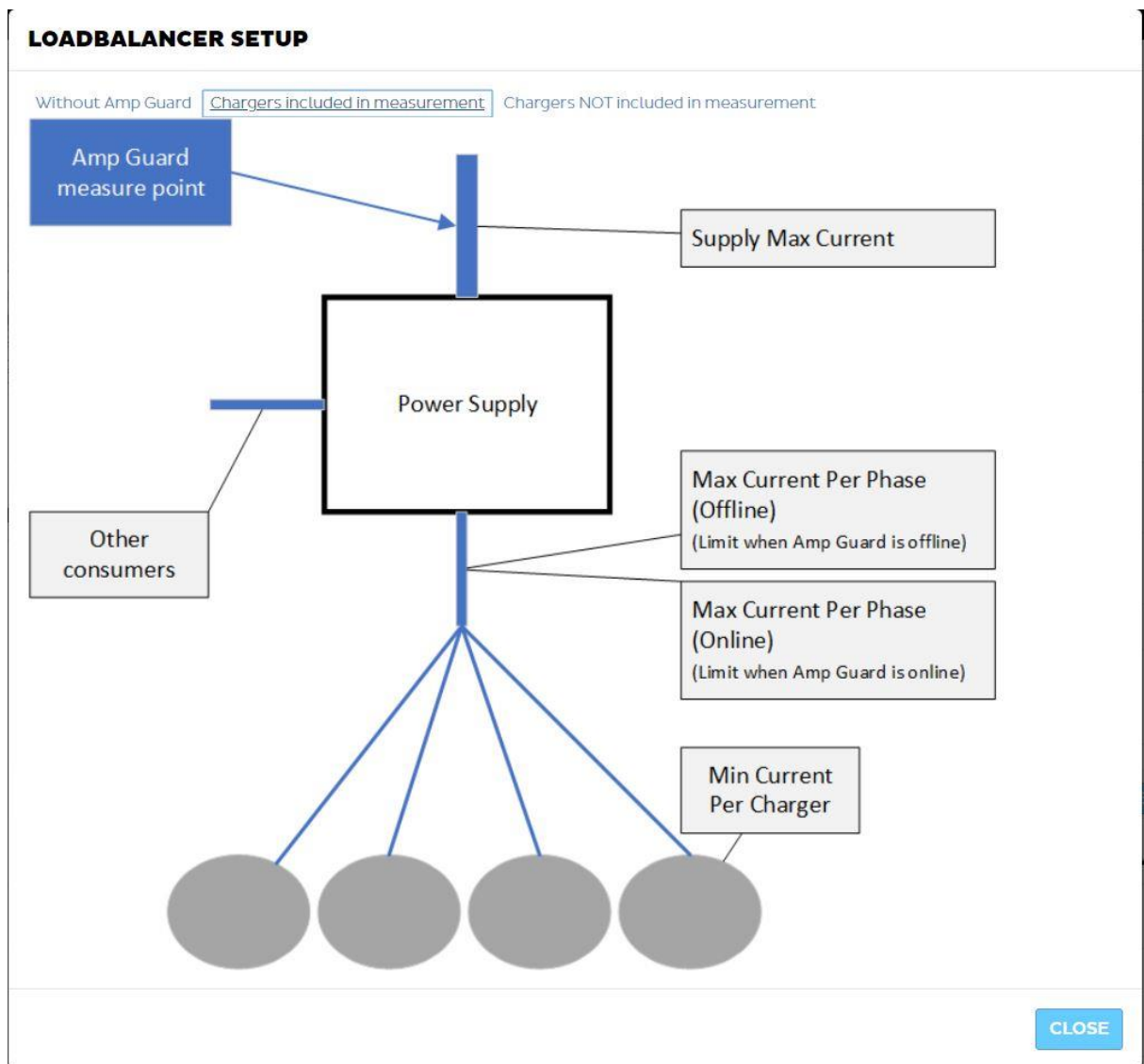
Name	<input type="text"/>	Phases	<input type="text"/>
Organisation	<input type="text" value="Select"/>	Max Current Per Phase	<input type="text"/>
Description	<input type="text"/>	Min Current Per Charger	<input type="text"/>
Socket (Schuko) Enabled	<input type="checkbox"/>	Supply Max Current (Amp Guard)	<input type="text"/>
Chargers included in measurements	<input type="checkbox"/>	Amp Guard	<input type="text" value="Select"/>
Loadbalancer Type	<input type="text" value="Select"/>		

5. Press Save and enable the load balancing group.

#### Max Current Per Phase settings

With an Amp Guard installed, a higher total current per phase is allowed, since the load balancer will automatically reduce the charging power if necessary. However, there is always a risk that the Amp Guard stops sending data (network problems, power turned off etc.). In that case, the load balancer does not use the maximum current the system can handle, since there can be other applications that are active.

Example:



A distribution box that is dimensioned for 25 A is used. In the system, there are other application that are expected to use up to 15 A. A suggested setting would be the following:

Max Current Per Phase (Standalone): 10 A (allowing for the other applications to be active)

Max Current Per Phase (Amp Guard): 25 A (when other applications usage can be measured, the Amp Guard can compensate for it)

### Customer Instructions

The customer must complete the Amp Guard installation by setting up the internet connection to the intended network. See previous chapters.