



# INTEGRATION MANUAL

## Smart Charge Controller

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VERSION	DATE	DESCRIPTION
1.0	19/08/2022	Initial draft
1.1	27/09/2022	Addition info Alfen and Easee
1.2	26/10/2022	Additional power supply for Easee Equalizer
1.3	18/11/2022	Extra info Easee

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## 1. Introduction

This manual provides the important and necessary information about integrating the Smart Charge Controller with different types of charging stations. The Smart Charge Controller is an electronic device used in conjunction with an EV charging station that supports the Dynamic Load Balancing feature.



Read the manual carefully so that you become familiar with the entire contents of this manual. Follow the instructions in the manual carefully. Always perform the operations in the correct order.

This manual should be kept in a safe, dry and shaded place for future use. If the manual is lost, there is the possibility of requesting a new copy from the supplier.



**CAUTION!** Always check the specifications and installation conditions for the electrical connections in the manual of the supplier of your EV charger and in the integration document of the Smart Charge Controller. In case of doubt, always contact your supplier and Xemex NV.

### 1.1.Target Group

The installation, use of this appliance and any maintenance must be carried out by a qualified technician accordance with specific local standards and safety regulations.

It is important that the qualified technician meets the following requirements:

- Has knowledge of the general and specific rules for safety and the prevention of accidents.
- Has extensive knowledge of the relevant electricity regulations.
- Has the ability to identify risks and avoid possible dangers.
- Received and read these installation and operating instructions

### 1.2.Intended Use

This manual provides supporting information about the integration and specific settings of the Smart Charge Controller and indicated brands and types of charging stations. For information regarding the installation of the charging station, please refer to the manufacturer's manual.

### 1.3.Technical assistance

If technical assistance is required, please contact Xemex NV:

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Metropoolstraat 11a  
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Tel: +32 201 95 95  
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## 1.4.Disclaimer

This document has been thoroughly checked for technical accuracy prior to publication. The document is regularly updated and any changes and corrections are incorporated into future versions. The contents of this document have been compiled purely for information purposes.

Although Xemex NV has made every effort to keep the document as correct and up to date as possible, Xemex NV is in no way liable for any defects and damages arising from the use of information contained in this document. In no event shall Xemex NV be liable for any direct, indirect or special damage or consequential loss arising from any errors or omissions in this manual.

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## 2. Warnings and safety measures

### 2.1.Key: (Meaning of the symbols)

Safety instructions and warnings in this manual are indicated by symbols.

The following symbols are used in this document and/or are displayed on the product:

Symbol	Description
	<b>PLEASE NOTE!</b> Read the manual carefully.
	Do not switch on/ ensure that the device is not switched on during installation.
	<b>PLEASE NOTE!</b> Special information, commands and prohibitions regarding damage prevention. Hazardous/ particularly important information to read carefully.
	<b>WARNING!</b> A warning signifies possible injury to the user or significant material damage to the device if the user does not (carefully) follow the procedures. Risk of electric shock!
	<b>WARNING:</b> earthing / ensure that the system is properly earthed
	Alternating current
	Single-phase alternating current
	Three-phase alternating current

## 2.2.Safety instructions



These safety instructions are intended to ensure safe usage. Failure to follow these instructions in accordance with general safety guidelines concerning electricity may result in risk of electric shock, fire and/or life-threatening injury.

### DANGER - DANGEROUS VOLTAGES



**WARNING** - This installation manual is only intended for qualified personnel. To avoid electric shock, do not perform any work other than that described in this installation manual unless you are qualified to do so.

#### The use of this device is expressly forbidden in the following situations:

- In locations with a gas or dust explosion hazard and in the vicinity of explosive or highly flammable substances.
- If the device is located in or near water.
- If the product or individual components are damaged.
- By children or persons who are not capable of understanding the risks involved in using this device.

#### Xemex NV is not liable in any way for damages and the warranty on the device becomes void in the following situations:

- If the ambient temperature is lower than -10°C or higher than 55°C.
- If the device has been subjected to improper use, installation or maintenance.
- If the device is disassembled, modified or repaired.
- If the instructions are not followed.
- If the device is used in the vicinity of explosive or highly inflammable substances or in or near water; or in the case of normal wear and tear.
- If there is a fault in the distribution network.
- As a result of a force majeure situation or if the damage is caused from outside.



**PLEASE NOTE! Always adhere to the following checklist:**

1. Only qualified personnel or authorised electricians may install the Xemex Smart Charge Controller. Mains voltages above 50VAC may cause personal injury or even death!
2. Follow all applicable local and national electrical and safety regulations.
3. Install the device in an electrical enclosure (panel or junction box) or in an electrical room with limited access.
4. Check that the circuit voltages and currents are within the correct range for the Smart Charge Controller.
5. Use current transformers (CTs) with built-in TVS (= transient voltage suppressor) with a dielectric strength of 3.5KV 50Hz 1min minimum and an operating voltage of 660V. Do not use current output current transformers (ratio) such as 1 amp or 5 amp current transformers: they may irreversibly damage the Smart Charge Controller.
6. Ensure that current transformers are placed behind fuses or circuit breakers.
7. Equipment must be disconnected from DANGEROUS voltages before they are manipulated. Do not carry out any work on the device when it is still live.
8. If a fault or defect is detected, the device must be switched off immediately. To do this, first switch off the mains power and then contact should be made with the supplier.
9. Before switching on the power, check that all wires are securely fastened by pulling on each wire.

10. Do not install the Smart Charge Controller in a location where it may be exposed to temperatures below -10°C or exceeds 55°C, excessive moisture, dust, salt spray or other contaminants. The device requires an environment with a pollution degree (PD) no worse than 2 (normally only non-conductive pollution; occasionally a temporary conductivity caused by condensation should be expected).
11. Do not drill any mounting holes in the device. Instead, snap the module onto a DIN rail.
12. If the Smart Charge Controller is not installed correctly, the safety features may be compromised.

### 2.3.Storage and transport

- The Smart Charge Controller should be stored safely in a dry, ventilated area, not exposed to direct sunlight. The packaging is not weatherproof.
- The Smart Charge Controller should be stored at a temperature between -20°C and 80°C.
- Make sure that the packaged Smart Charge Controller is exposed to minimal vibration during transport. Transport / move the packaging carefully.
- Pay attention to ergonomic conditions such as lifting, bending, reaching, etc. while working on the device.



### 3. Integration Alfen - Eve Single

#### 3.1. Prerequisites

The Alfen installation manual must be observed at all times.

Prerequisites for a properly functioning Modbus TCP/IP Active Load Balancing system:

##### Configuration tool:

- ACE Service Installer (minimum version 2.3.4.97).
- This tool can be found on the downloads page of the Alfen website [link](#).
- To use the ACE Service Installer you must be registered [link](#).

##### Alfen charging station:

- Features activated Modbus TCP/IP Active Load Balancing functionality.
- In the ACE installer application, this can be verified under "License Key".

##### Xemex SCC:

- Installed in accordance with the installation manual.
- Maximum of 1 Xemex Smart Charge Controller connected to a charging station.

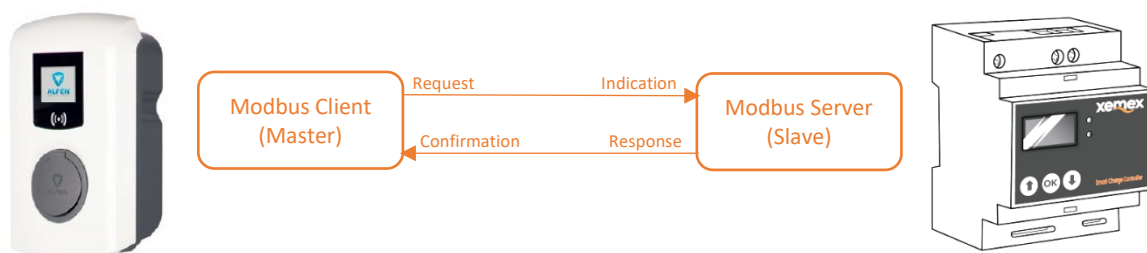
##### Network:

- Charging station in the same local network as the Xemex SCC.
- Xemex SCC and charging station connected via CAT5e UTP/ Ethernet RJ45 cable (minimum), CAT6 for traces longer than 100m
- 10Mbps or 100Mbps network (no power over Ethernet)
- Fixed IP address for the Xemex SCC, provided by the network administrator of the local network. The IP address must meet the requirements of the IPv4 protocol; IPv6 addresses are not supported by the Alfen charging station
- Insight into and access to local network settings for configuration of Xemex SCC and charging station (IPv4 Address, Subnet Mask, Default Gateway)

##### Useful links:

- <https://alfen.com/downloads>
- <https://xemex.eu/solutions/energy-management-solutions/smart-charge-controller-scc/>

#### 3.2. Wiring diagram



### 3.3.Configuration Alfen charging station

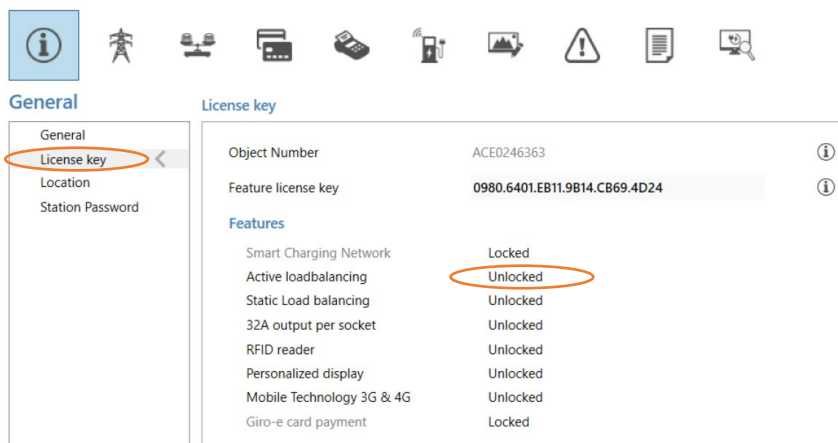
On the flyer provided with the Alfen loader you will find the "id" and the corresponding Default Password. After logging into the ACE Service Installer application, you can connect to the Alfen loader in the tool. Select the loader with the appropriate "id" and log in as Owner and the Default Password of the flyer.

#### Connect to the Alfen drawer station via the ACE Service installer:

On the flyer provided with the Alfen loader, you will find the loader's "id" and its default password. After logging into the ACE Service Installer, you can connect to the Alfen car charger in the tool. Select the loader with the appropriate "id" and log in as Owner and Default Password.

The following settings need to be done in the ACE Service installer application to make a proper connection between the Alfen loader and the Xemex SCC.

#### 3.3.1. General



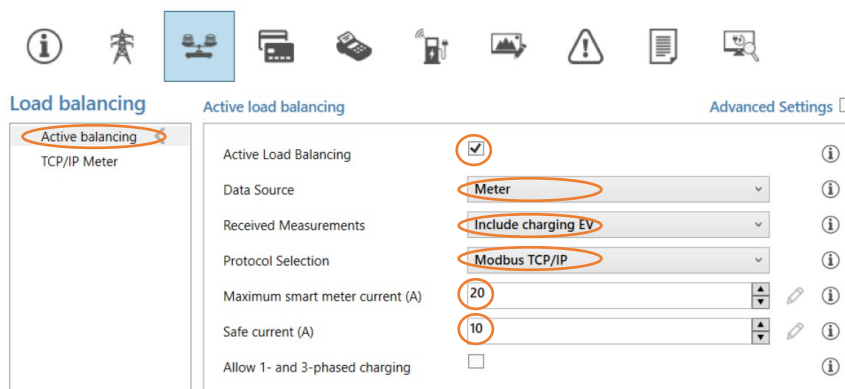
General	
General	
License key	
Location	
Station Password	

License key	
Object Number	ACE0246363
Feature license key	0980.6401.EB11.9B14.CB69.4D24

Features	
Smart Charging Network	Locked
Active loadbalancing	Unlocked
Static Load balancing	Unlocked
32A output per socket	Unlocked
RFID reader	Unlocked
Personalized display	Unlocked
Mobile Technology 3G & 4G	Unlocked
Giro-e card payment	Locked

Active load balancing should be set to "Unlocked". If this is not the case then the license needs to be activated.

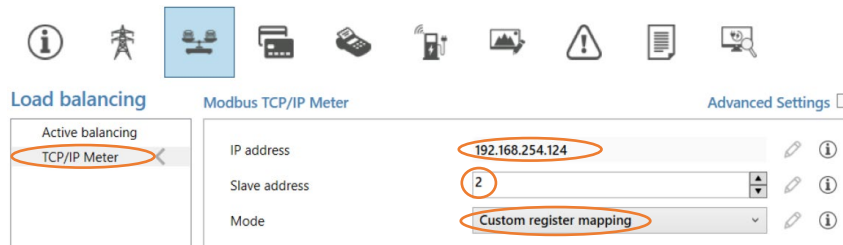
#### 3.3.2. Load balancing



Load balancing	
Active balancing	
TCP/IP Meter	

Active load balancing	
Active Load Balancing	<input checked="" type="checkbox"/>
Data Source	Meter
Received Measurements	Include charging EV
Protocol Selection	Modbus TCP/IP
Maximum smart meter current (A)	20
Safe current (A)	10
Allow 1- and 3-phased charging	<input type="checkbox"/>

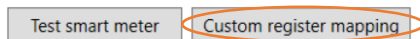
- *Active Load Balancing*: must be checked
- *Data source*: Select meter
- *Received Measurements*: If the current going to the Alfen charger is also measured by the Xemex SCC, select *include charging EV*.
- *Protocol Selection*: Select Modbus TCP/IP.
- *Maximum smart meter current (A)*: the maximum current (A) that the charging station can use to prevent overloading in the installation.
- *Safe current (A)*: the maximum current (A) the charging station is allowed to use if the connection to the Xemex module is lost.



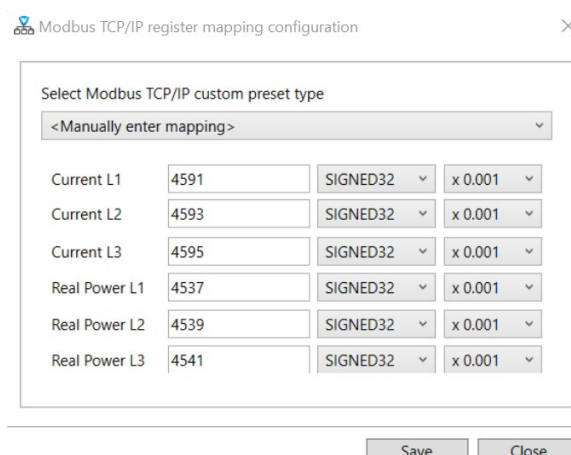
- *IP address*: the IP address of Xemex SCC.
- *Slave address*: the Modbus slave address of the Xemex SCC (freely selectable number).
- *Mode*: Custom register mapping

Save the settings.

The "custom register mapping" button can now be selected after which a new window appears where the mapping of the Modbus can be done.



Here you need to do the below "mapping" manually



Physical Quantity	Register Address	Data Type	Multiplier
Current L1	4591	SIGNED32	x 0.001
Current L2	4593	SIGNED32	x 0.001
Current L3	4595	SIGNED32	x 0.001
Real Power L1	4537	SIGNED32	x 0.001
Real Power L2	4539	SIGNED32	x 0.001
Real Power L3	4541	SIGNED32	x 0.001

Save the settings.

### 3.4. Configuration Xemex Smart Charge Controller

Ensure that the Xemex SCC is installed and configured according to the manual provided with the product.

In *Meter settings*, select the following parameters

Meter emulation: *EMU Professional*

Modbus protocol: *TCP*

Then click on *Update meter settings*

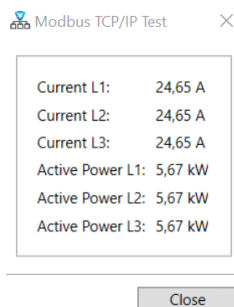
#### SCC-1 Device Commissioning

[Grid settings](#) [Meter settings](#) [Wifi settings](#)

##### Meter settings

Meter emulation	EMU Professional Modbus TCP ▾
Modbus protocol	TCP ▾
IP address	192.168.254.124
TCP port	502
RTU device address	1
RTU baud rate	9600 ▾
RTU parity	none ▾
RTU stop bits	1 ▾
<button>Update meter settings</button>	

Now that everything is configured correctly, by clicking the *Test smart meter* button in the ACE Service Installer application you can see the current readings.



## 4. Integration Easee - Home via Equalizer

### 4.1. Prerequisites

The Easee installation manual should be observed at all times.

Prerequisites for a properly functioning Modbus Active Load Balancing system:

#### Easee Charger / Backplate:

- Installed in accordance with the installation manual (tested with version v301)

#### Easee Equalizer:

- Installed in accordance with the installation manual (tested with version v114)

#### Xemex SCC:

- Installed according to the installation manual
- Maximum of 1 Xemex Smart Charge Controller connected to a charging station.

#### Power supply:

- Separate 24V DC power supply for the Equalizer (does not come standard with an Easee Equalizer)

#### Modbus:

- RJ12 (6P6C) cable from Easee Equalizer to Xemex SCC and power supply
- (see wiring diagram in section 4.2.2)
- The Easee Equalizer connects wirelessly to the Easee Charger / Backplate.

#### Configuration tool:

- Easee Installer app for iOS / Android

#### Useful links:

- <https://easee.com/manuals/>
- <https://xemex.eu/solutions/energy-management-solutions/smart-charge-controller-scc/>

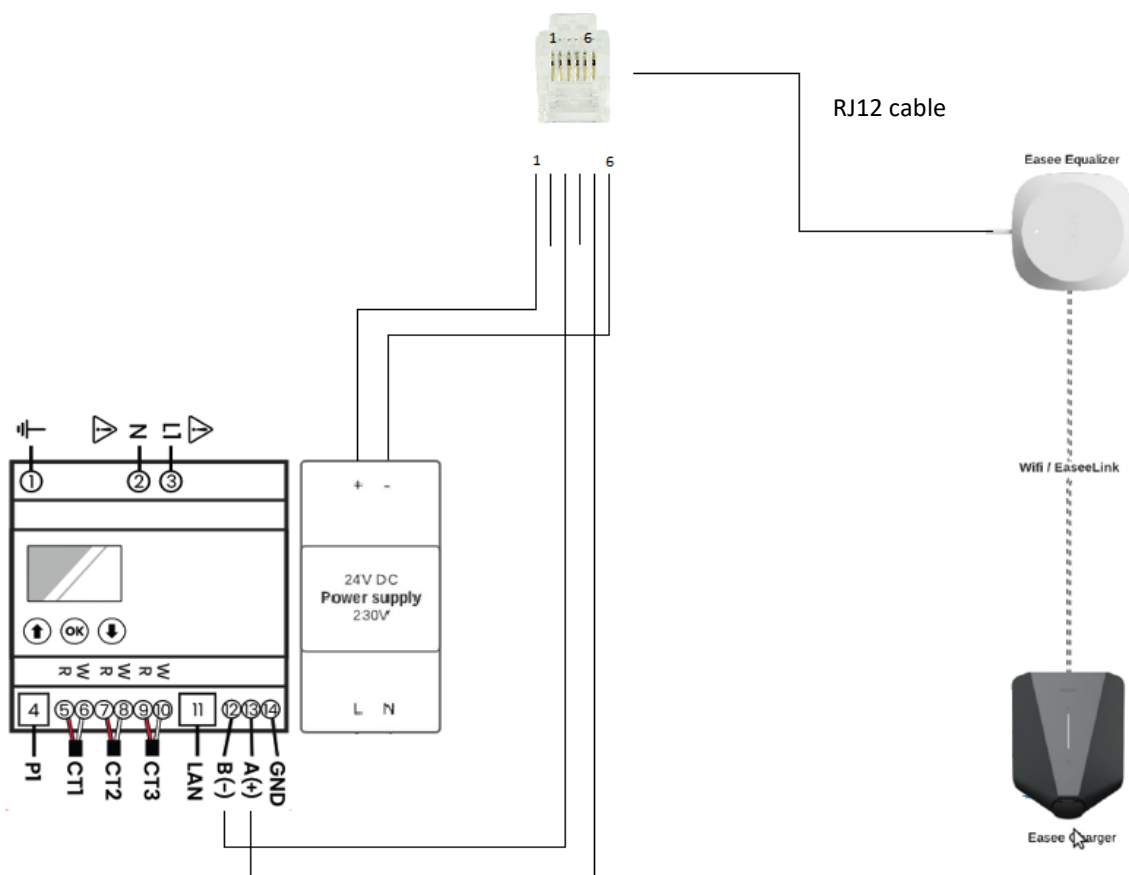
## 4.2. Wiring diagram

### 4.2.1. General



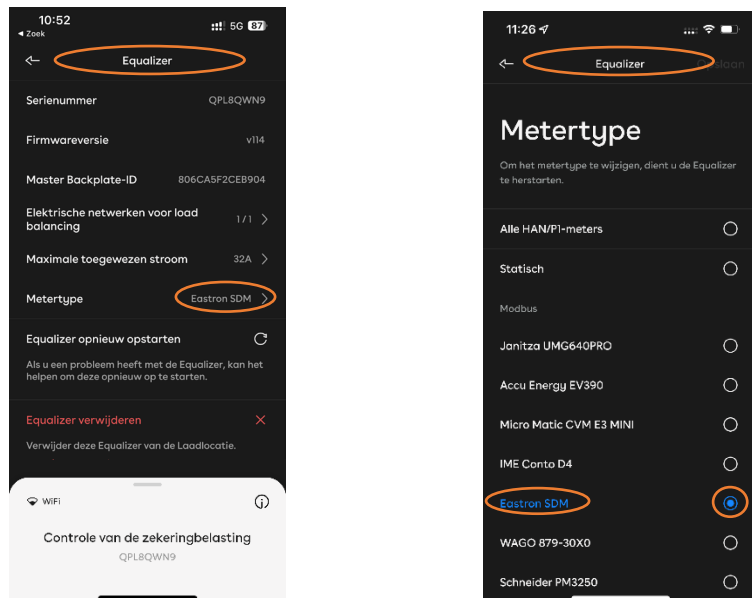
## 4.2.2. Modbus connection Easee Equalizer

P1 Equalizer Pin	P1 Equalizer function
1	Power – 24V
2	NC
3	RS485 - / D0
4	NC
5	RS485 + / D1
6	Ground

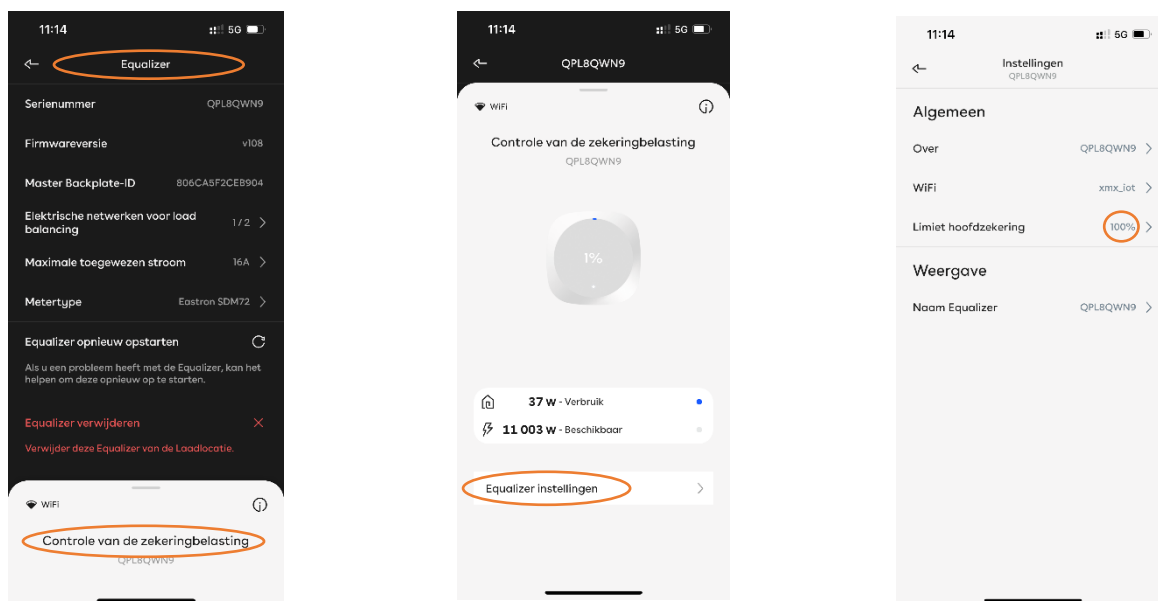


### 4.3. Configuratie Easee charging station

Configure the Easee charger and Equalizer using the *Easee Installer app*.  
When entering the *meter type* in the Equalizer page, choose the *Eastron SDM*.



In the Equalizer settings under *Limit main fuse*, check that it is set to 100%.



Make sure the correct fuse values are configured. The main fuse value from the Equalizer app must match the Max Charge Current of the SCC.



#### 4.4. Configuration Xemex Smart Charge Controller

Ensure that the Xemex SCC is installed and configured according to the manual provided with the product.

In *Meter settings*, select the following parameters

Meter emulation: *Eastron SDM72D-M*

Modbus protocol: *RTU*

Then click on *Update meter settings*

### SCC-1 Device Commissioning

[Grid settings](#)
[Meter settings](#)
[Wifi settings](#)

#### Grid settings

Number of phases

3

Max charge current (A)

32

Min charge current (A)

6

Charger startup time (s)

0

Charger current detection time (s)

90

Grid metering device

CT transformer(s) connected to SCC-1

CT ratio

2000

Update grid settings

### SCC-1 Device Commissioning

[Grid settings](#)
[Meter settings](#)
[Wifi settings](#)

#### Meter settings

Meter emulation

Eastron SDM72D-M

Modbus protocol

RTU

IP address

192.168.254.124

TCP port

502

RTU device address

1

RTU baud rate

9600

RTU parity

none

RTU stop bits

1

Update meter settings

On the *Grid Settings* page, at *Max Charge Current*, enter the same value than was selected in the Easee installer app at *Main Fuse*.



## 5. Warranty

For duration and conditions regarding warranty, we recommend that you contact XEMEX NV. Furthermore, we refer to our General Terms and Conditions of Sale and Delivery which are available on request.

## 6. Contact

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Belgium

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E-mail: [support@xemex.eu](mailto:support@xemex.eu)



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