

# Smartmeter



# **Configuration manual**





# **Contact data**

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# Note

To prevent confusion between the different models of the eCB1, be sure to check the model specification on the package.

# General information about eCB1 Meaning of LED status

### Status-LED

- Permanent green
- Slowly flashing in green
- Quickly flashing in green
- Glowing or flashing in red or orange

### **Network-LED**

- Off
- Permanent green
- Green flashing

### **Bus-LED**

- Off
- Green
- Orange
- Red

- The eCB1 is ready.
- The device is starting.
- A firmware update is running.
- An error occurred.
- no connection connection active Network activity



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- Device is not configured.
- connection is okay.
- No device detected.
- BUS error

# **Reset function**

You can reset the ecB1 to network settings or simply restart the device by pressing the reset button. The time period of pressure applied is important.

### **Reset to factory settings**

With a pointy object, press the Reset button for 4 to 10 seconds.

### **Restart the eCB1**

To restart, use a pointy object to press the Reset-button for 1 second to 3 seconds.

The installation and configuration of the described devices should be executed in the stated order.



# Setup of direct LAN connection to the eCB1

Step 1: Install eCB1 (if included externally) and/or connect it to the power supply.

**Step 2**: Integrate the eCB1 in your network, a PC or a laptop with help of a LAN cable (see image).



**Please Note**: Please make sure that only one unfigured eCB1 is connected to your network in order to avoid name collisions.

- 1. Start your browser.
- 2. Type in the following URL "http://ecb1.local" (see image below).



#### 1. The user interface of the eCB1 opens.



### Should the interface not open, please verify the following things:

### 1. The name resolution does not work.

Please open the interface via the actual IP-adress of the eCB1. **"(http://<IP>/)**"

Open the desktop of your router and read the IP address of the eCB1 (see manual of your router).

If you have Windows XP/7/8: Install Apple Bonjour®. You can find the download link on <u>www.apple.com</u>. Then try to enter the URL again.

**Please note:** Apple Bonjour® is also included in Apple iTunes®. Alternatively, contact the network administrator.

### 2. The Status LED is not glowing.

If the Status LED of the eCB1 does not glow, it means that the Smartmeter is not provided with any power.

Please make sure that at least one of the phase conductors L1 and the neutral conductor N are connected to the eCB1.

### 3. Th<u>e Status-LE</u>D glows or blinks in red.

If the Status LED glows or blinks in red, an error has occurred. Please **restart** the eCB1 by pressing the Reset-button with a pointy object **for about 1-3 seconds**.

### 4. The Network-LED is not glowing

The network cable is not properly/correctly connected to the network port if the network-LED does not glow. Please make sure that you have inserted both ends of the cable properly and correctly.

### 5. eCB1 could not be found in the network

This means that eCB1 is not located in the same local network. Please connect the eCB1 with the same Router/Switch as the one of your PC's/laptop's.

# If that doesn't solve your problem, please reset the eCB1 to its factory settings by pressing the **Reset-button** with a pointy object for about 4 seconds to 10 seconds.



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## Connecting the eCB1 and the cP $\mu$ 1 via BUS

**Image 1**: shows the BUS-clamps of the cPµ1. **Image 2**: shows the BUS-clamps of the eCB1.

(Please note the green marks in Image 1)



Image 1 cPµ1 charging station



Image 2 ecB1 and Bus terminal

These have to be connected as follows:

plug the **brown wire** (second slot on the eCB1) in **clamp 1** (shown in Image 1). plug the **black wire** (third slot on the eCB1) in **clamp 2**. Last step you plug the **blue wire** (first slot on the eCB1) in **clamp 3**.



# **Configuration of eCB1 LR MP+ (metering point)**

## **Opening the Webinterface**

Access the Webinterface of the eCB1 MP+ (metering point at the house connection) by entering its IP address in your webbrowser.

Prior to that, it has to be integrated into the network of the house. Then through the interface of the router, you can find the IP address of all eCB1, including this one.

If therer is no other configured eCB1 in your Network you can contact the eCB1 MP+ with <u>http://ecb1.local</u> for first configuration.

If the Domane Name System should not work you can find the IP adress through the Webinterface of your router.

The following page should open up:



Please click "proceed" to get to the following section:

### Language

Here you can set:

- language
- the country in which you are installing the charging station
- the time zone

Welcome!	Language
Language	English
Date/Time	Country
Network	Germany
building service head	Europe/Berlin *
Charge connector 1	
Charge connector 2	back proceed
Finish setup	



### Date and time

Welcome!	date and time	
Language	date	
Date/Time	31.05.2019	
Network	time 15:33:26	
building service head	sot time	
Charge connector 1	Set unie	
Charge connector 2	time server	
Finish setup	NTP server 1 0.openwrt.pool.ntp.org	
	NTP server 2	
	1.openwrt.pool.ntp.org	
	automatic synchronise at boot	
	set time by ntp	
	back proceed	

Click "proceed" to get to the following screen:

Here you can set the time and date manually or automatically.

### Manual setting

Click on the **Date button** and choose the current date. Then continue with the **Time button** to enter the current time.

Please separate the hours, minutes and seconds with colons.

To complete the settings, press "set time" and the settings will be saved.

### Automatic setting

In this case "Date" and "Time" do not need any entries.

There are pre-set internet pages in section "NTP Server 1" and "NTP Server 2". These will connect you automatically with a time server.

Click on "**Set time by ntp**" to save your settings. If you want to connect with a different, or your own time server, please enter the internet address manually.

By clicking "**automatic synchronise at boot**", the time will be synchronised automatically after every outage (power, network, etc.).



### **Network settings**

After completion of the time and date settings, click on "Continue" to get to the next section.



Choose "DHCP" as protocol.

Your DHCP Server (e.g Router) will do further settings automatically and fill the remaining blank spaces.

There are no other settings to be made in the section except giving a hostname.

If you choose "static" as protocol, please contact your network administrator in order to fill the remaining forms according to your network.



Select a distinct **hostname**. Usually the device responds to the given hostname, meaning the URL will change to >givenname<.local instead. Upon delivery the hostname given is "**ecb1.local**".



### Internal

In this section you will determine the function of the eCB1, which in this case, is to be the metering point at the **house connection**.

Therefore choose "building service head" as device funktion as well.

The button "measurement via current transformer" must only be activated when there is a measuring transformer needed/installed. Press on the button to activate (orange) and deactivate (grey). Usually (by German law) a measuring transformer is required when the house connection exceeds 63A.

To prevent confusion between both, the **eCP1 MP+** and **eCP1 PV** you can choose a name for the device.

Infos Einstellungen	Firmware-Update	Grundeinstellungen
Infos Einstellungen Language Date/Time Network Internal Charge connector 1	Firmware-Update	Grundeinstellungen

### **Charge connector**

Since the eCB1 MP+ is solely for metering, there is no charging point to define. Choose "no EVCC".

Welcome! Language	peripherie/devices	
Date/Time	electric vehicle device type / vendor	
Network	charge No EVCC * controller	
Internal		
Charge connector 1	back proceed	
Finish setup		



# Setup finish

After completion of the initial setup, the device restarts to implement/save all the settings. Restarting process can take up to five minutes.

Welcome!	finish Setup!	!
Language	Now your device configuration is in the making and services will get restarted	
Date/Time		
Network	back	setup finish
building service head		
Charge connector 1		
Charge connector 2		

Should no interface appear after five minutes, please refresh the page or enter the IP-address again.

eC81 reboot in progress...

The setup finish ends the configuration process of the eCB1 LR MP+ and you can now go on with the configuration of a second eCB1.



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**ECO-Charging Mode** = ensures minimum charge (see page 16) through a PV-System and/or with power from the power supply net if needed. Purchase of energy from power supply net is only the case if AI-Mode is deactivated.

**AI-Mode** = Only available if ECO-Charge Mode is activated (Button will be marked in orange). In AI-Mode the charging process will automatically start in case of surplus PV-power or turn off when there is too little PV-power. For this, section "Eco Min-Max Ampere" in the later configuration is the most important setting.

**Fast-Charging Mode** = A charging process with maximum capacity of the charging station is started.

**Manual-Charging Mode** = In this charging mode, you can set the charging power manually.

**Start Charging process =** Press this button to start the charging process.

**Stop Charging process**= Press this button to stop the charging process.

**Current charging graph=** Shows the current power output at the house connection as well as single power graphs of the charger connection.



# Configuration of eCB1 LR PV (PV load control)

Open the Webinterface:

Welcome!	welcome!
Language	Welcome to setup of eCB1 PV!
Date/Time	
Network	
building service head	proceed
Charge connector 1	
Charge connector 2	
Finish setup	

### Click on **"Proceed"** to get to the following selection:

Welcome!	Language		
Language	English	<b>.</b>	
Date/Time	Country	-	
Network	Germany	Ť	
building service head	Europe/Berlin	*	
Charge connector 1			
Charge connector 2	back	proceed	
Finish setup			

Here you can set

- the language,
- the country in which you are installing the charging station and
- the time zone.



# Date and time



Click on "Proceed" to get the following screen:

Here you can set the time and date manually or automatically.

### Manual setting

Click on the **Date button** and choose the current date. Then continue with the **Time button** to enter the current time.

Please separate the hours, minutes and seconds with colons. To complete the settings, press "Set time" and the settings will be saved.

### Automatic setting

In this case "Date" and "Time" do not need any entries.

There are pre-set internet pages in section "NTP Server 1" and "NTP Server 2". These will connect you automatically with a time server.

Click on "**Set time by ntp**" to save your settings. If you want to connect with a different, or your own time server, please enter the internet address manually.

By clicking "**automatic synchronise at boot**", the time will be synchronised automatically after every interruption (power, network etc.).



# Network settings

After you have completed the time and date settings, click on "Continue" to get to the next section.

Welcome!	Protocol	
Language	dhcp	
Date/Time	IP address	
Network	192.168.88.1	
building service head	255.255.0.0	
Charge connector 1	Default gateway	
Charge connector 2		
rintale antone	DNS server 1	
Finish setup		
	DNS server 2	
	Hostname	
	eCB1	
	back proceed	

Choose "DHCP" as protocol.

Your DHCP Server (e.g Router) will do further settings automatically and fill the remaining blank spaces.

There are no other settings to be made in the section except giving a hostname.

If you choose "static" as protocol, please contact your network administrator in order to fill the remaining forms according to your network.

Welcome!	Protocol
Language	static
Date/Time	IP address
Network	192.168.88.1
building service head	Subnet mask
Charge connector 1	Default gateway
Charge connector 2	192.168.1.254
	DNS server 1
Finish setup	192.168.1.254
	DNS server 2
	Hostname
	ecb1
	back proceed

Select a distinct **hostname**. Usually the device responds to the given hostname, meaning the URL will change to >givenname<.local instead. Upon delivery the hostname given is "ecb1.local".



# House connection

Welcome!	peripherie/devices	
Language	building service head	
Date/Time		device type / vendor
Network		name
building service head	measuring	Fronius Smartmeter
Charge connector 1	point	serial
Charge connector 2		72812056
		IP address
Finish setup		127.0.0.1
	back	proceed

Please click on "proceed" to get to the following section:

### **Options device type/manufacturer**

Choose the energy meter that is installed at the house connection as metering point.

**Please note**: In this screenshot a Fronius Smartmeter has been installed in combination with the solar system prior to the configuration and thus the Fronius Smartmeter was selected.

eCB1 internal	an eCB1-LR PV is installed at the house connection
another eCB1	an eCB1-LR MP+ is installed at the house connection
B-control Energy Manager	a B-Control Energy Manager (EM 100, EM 210, EM 300) is installed at the house connection
SMA Energy Meter	a SMA Energy Meter or a Home Manager 2.0 is installed at the house connection
Fronius Measuring point	a Fronius Smartmeter is installed which can be read via the Fronius Inverter.
Kostal Measuring point	a Kostal Smartmeter is installed at the house connection
Janitza UMG Netzanalyser	a Janitza UMG network analyser is installed at the house connection



KLEFR 6934 Meter	a KLEFR Energy Meter is installed at the house connection
PHOENIX CONTACT	a Phoenix Contact measuring point is installed at the
Measuring pointt	house
Passive push updated	via http Post (via API gateway) updated measuring
Measuring point	point
No measuring point	There is no measuring point installed

**Please note:** If you choose "No measuring point" because no smartmeter is installed, in that case no charging with surplus solar energy can be performed and limiting the house connection is also not possible.

Click "**Proceed**" to get into the next section.



# **Charging point**

Welcome!	peripherie/devices	
Language	Charge connector 1	
Date/Time		device type / vendor
Network		eCB1 (internal)
Let Provide Let 1		name
building service head	measuring	Charging Socket LEFT
Charge connector 1	point	serial
Charge connector 2		
Finish setup		measurement via current
	electric vehicle charge controller	device type / vendor PHOENIX CONTACT EVCC * name evcc1 busid 1
	back	proceed

Choose a device that is integrated/built-in your charging station Options device type/manufacturer

eCB1 (internal)	an eCB1 PV is built in the charging
	station $\rightarrow$ for PV-load control
KLEFR Energy Meter	KLEFR Energy Meter is installed as
	measuring point in the charging station
Phoenix Contact Measuring point	Phoenix Contact measuring point is built
	in the charging station

### Serial

The system fills the serial number of the measuring point automatically after completion of the set up.

### EVCC

In this section you can choose between various Charge Controllers. The system usually per-determines the correct EVCC. Should that not be the case, please choose

"PHOENIX CONTACT EVCC Modbus RTU".

	device type / vendor PHOENIX CONTACT EVCC *	
electric vehicle charge	No EVCC ABL SURSUM EVCC	
controller	PHOENIX CONTACT EVCC Ethernet PHOENIX CONTACT EVCC Modbus-RTU PHOENIX CONTACT SCIUIZO DVCC Modbus-RTU	



For "Bus ID" give number 1 for charging connector 1 and "Bus ID 2" for charging connector 2, if available in your variant. If not, leave blank and continue by pressing "proceed".

#### measurement via current transformer:

Only activate "measurement via current transformer" when a current transformer is installed. This usually is only the case when the house connection exceeds 63 A



If an **eCB1 LR MP+** has already been installed and this setting has already been chosen for the first device during the earlier described configuration process (see page 8), it is not necessary to activate it again.



# Setup finish

After completion of the initial setup, the device restarts to implement/save all the settings. Restarting process can take up to five minutes. Should no interface appear after five minutes, please refresh the page.



After restarting, the following page should appear automatically:

Language         Date/Time       Language         Date/Time       English         Network       Country         building service head       Germany         Charge connector 1       Time zone         Charge connector 2       Ferlin	Info Settings Fi	rmware-Update base settings
Network     Country       building service head     Germany       Charge connector 1     Europe/Berlin       Charge connector 2     Time zone	Language Date/Time	Language English
Charge connector 1 Europe/Berlin * Charge connector 2 apply and reboot	Network building service head	Country Germany Time zone
apply and reboot	Charge connector 1 Charge connector 2	Europe/Berlin *
	apply and reboot	

Here you <u>can</u> adjust settings in section "base settings". These settings are those from the intial set up.



# **Firmware-Update**

Info Settings Firmware-Update base settings			
Firmware-File			
File: Durchsuchen Keine Datei ausgewählt.			
Update			
devices base settings	delete		
charge records	delete		
network settings	reset to factory defaults		
all settings and records	reset to factory defaults		

In section "**Firmware-Update**", you can update the firmware. We recommend an update only case of malfunction with either the hardware of the software. Please contact the support department of eCharge Hardy Barth GmbH in order to issue a firmware update if needed.

Via e-mail: support@echarge.de

# Important settings for operation

In order to guarantee the best operation possible according to your own infrastructure, several important settings are required in this section.

Those are saved automatically and are active immediately.

Control Data Charge-Log Configuration
Info Settings Firmware-Update base settings
building service head 63 A
Scaling Max-Value Power-Chart 22 kW
Scaling Time Span Power-Chart one and a half minutes
Scaling Max-Value Amp-Charts 🛛 🗨 16 A 🔜 😨 32 A
Eco-Min-Max Ampere 6 - 32 Ampere
RefValue Eco-Mode 0 Watt
Logmode • Off • Chargings • • Charge-Graph
Access for HTTP Authentification Username
Password
Password Confirmation
Арріу



### 1) House connection

Choose the maximum value of your house connection.

If your house connection exceeds 63 A, the installation of a transducer is obligatory. Please contact professional staff for further information regarding the transducer.

### 2) Scaling Max.-Value Power-Chart 22 kW

Settings here only impact the diagram on the first page.

Choose the value according to the maximum charging capacity of your Electric Vehicle. Set the value by dragging the controller to the left or to the right.

### 3) Eco-Min-Max-Ampere 6-32 Amperes

These settings depend on your EV. There are vehicles that require minimum charging power of 8 or 10 A (or higher).

Should the **ECO-Charging Mode** be activated and the surplus power (= solar produced energy – energy consumption at house connection) be lower than the required minimum charging power, the car will continue charging. It will get the remaining power needed (to fill up the balance until the required minimum charging power) from the grid.

### 4) Ref. Value ECO-Modus 0 Watt

Settings in this section determine how much energy is allowed to be drawn from the grid to charge your Electric Vehicle. If value "0 Watt" is set, no additional purchasing from the grid is allowed.

Should there be a solar battery, there could be interference in charging your car, e.g. power supply from grid and/or power supply from solar battery. In order to avoid that, setting the value of "500 W" is the most suitable.

5) Logmode	
Off	No visualization of each charging process.
Chargings:	Tabular visualization of each charging process.
Charge-Graph:	Tabular visualization, including graphic charts of each charging
	process.

### 6) HTPP Authentication

You can set an username and a password to protect your system from unauthorized access and changes. Please make sure to note down the username or password in order to be able to access the system later on.

base settings

### Requirements for the setup:

**Username:** 3 – 30 letters **Password:** 8 – 255 letters

### Deleting username and password

- 1. Open the webinterface and log in
- 2. Go to Configuration > Settings
- 3. Delete the username and the password

72812056

00:D0:93:2E:88:BE

192.168.88.1

192.168.1.254

V1.30 PV

0.56

OS Component 78000001

Subnetmask 255.255.0.0

Firmware-Update

4. Press Apply.

Info

eCB1

Serial Firmware

Type OS Version

MAC-LAN

Gateway

IP-Address

### Changing username and password

- 1. Open the webinterface and log in
- 2. Delete current username and password
- 3. Set a new username and a new password
- 4. Press Apply.

# EVCC Bus-Id 1 EVCC Firmware

In section "info" all information of the eCB1-PV and network settings are summarized.

# Summary of settings

Settings





# Charge log

In this section all charging processes are listed.

Please note: In this example, the ecb1 was newly configured and there has been no charging process so far.

Control Data Charge-Log Configuration	
Charge connector State	
Charging Socket LEFTNo current charging	
Show 10 * entries from: 06.05.2019 • to: 05.06.2019 • UID:	
Id $\circ$ Charge connector $\circ$ Start $\circ$ Counterstart $\circ$ Stop $\circ$ Counterstop (kWh) $\circ$ Duration $\circ$ Energy $\circ$ Graph UID $\circ$	
No data available in table	
Copy Excel CSV PDF Print Column visibility Restore visibility	
Showing 0 to 0 of 0 entries	Previous Next

Сору	Copy single charging processes
Excel	Exports the charging processes into Excel
CSV	Exports the charging processes into CSV
PDF	Exports the charging processes into PDF
Print	Prints directly
Column visibility	Hide single columns
Restore visibility	Restore visibilty settings

Charge connector	State
Charging Socket LEFT	No current charging

Additionally you can find the current state of all your charging points.

When charging instead of "No current charging", the state will change to "charging since 1 Minute, 0,8 kWh"

### Visualization of graphic table in tabular form (This is an example with solar battery, Fronius OhmPilot, a cPµ1T13.8 Wallbox)

Control	Data	Charge-L	og Conf	iguration	
House conn	ection Ener	av	-846.9 W		
	Cou	nter [	7886.17 kWh		
	L1		9.88 A		
	L2		11.04 A		
	L3		9.01 A		
Battery	Nam	ne fr	onius-hybrid		
	Cha	rge State	11.5 %		
	Stat	e	sustaining(6)		
	Pov	<i>i</i> er	0.0 W		
OhmPilot Power		<i>i</i> er	0.0 W		
cPµ1T13.8	B Ener	-g <b>y</b>	-5.5 W		
	Cou	nter 2	2050.51 kWh		
	L1		0.03 A		
	L2		0.00 A		
	L3		0.00 A		
evcc	Stat	e	17		
	PWI	M	0		

The section "Data" lists up the values from the graph. (PV-System, Solarbattery, cPµ1T12.8, Fronius Ohm Pilot)



Explanation					
House connection	Energy	846,9 W is drawn from the grid			
	Counter L1, L2, L3	7886,17 kWh was drawn in total current flow in the individual phases			
Battery	disc Hyb	The charge state of the battery, charging and. harging is shown. Only possible in combination with the Fronius rid-Series.			
Ohmpilot	Only Ohmpilot	The power consumption is displayed. possible in combination with the Fronius			
cPµ1T13.8	Counter	Energy: power consumption of 5,5 W the cPµ1 drew 2050,51 W in total current flow in the individual phases			
EVCC	L1, L2, L0	internal data			