

# Charge Controller CC611/CC612

**Preliminary datasheet**



## Charge Controller CC611/CC612



CC611

### Device features

- Standard OCPP Implementation
- Full OCPP Remote functionality
- Binary OCPP implementation with bandwidth optimization and NAT network compatibility
- Smart Grid enabled using standard OCPP functionality
- Local and remote configuration
- Compatible with all electric vehicles on the market
- Optional display support
- Automatic resets

### Product description

The Bender charge controller CC611 is the main component of a charging point and is designed for use in wall boxes, street light charging points and common charging stations. For electric vehicles, the charge controller controls the charging outlet socket. It enables a setup that is in accordance with current standards, such as IEC 62196, IEC 61851-1 and IEC 61851-22.

The CC611 is characterized by its compact design and size (114.5 mm x 22.5 mm x 99 mm) that in turn enables intelligent, small and cost effective charging points. To enable the charge controller to communicate, a backend system together with a well-known and trusted communication protocol is required. Given that most backend providers strictly adhere to the OCPP communication protocol, the CC611 is OCPP 1.5 complaint and compatible with all electric vehicles on the market. Integration tests with the charge controller have already been performed with backend software providers, such as Vattenfall, Bosch, NTT, DRIIVZ. The CC611 can be operated as an “always on” system that is always connected to a mobile network. The controller supports 2.5G Edge and 3G UMTS mobile networks. Connectivity for online operation is established using a SIM card. User interaction is facilitated using an RFID card reader and LEDs. Charging is initiated by either holding a valid RFID card close to the reader or remotely by the backend system via OCPP.

In offline operation, the charge controller can optionally allow charging without authorization or it can authorize users based on RFID and a local white list of authorized RFID cards.

### Functional description

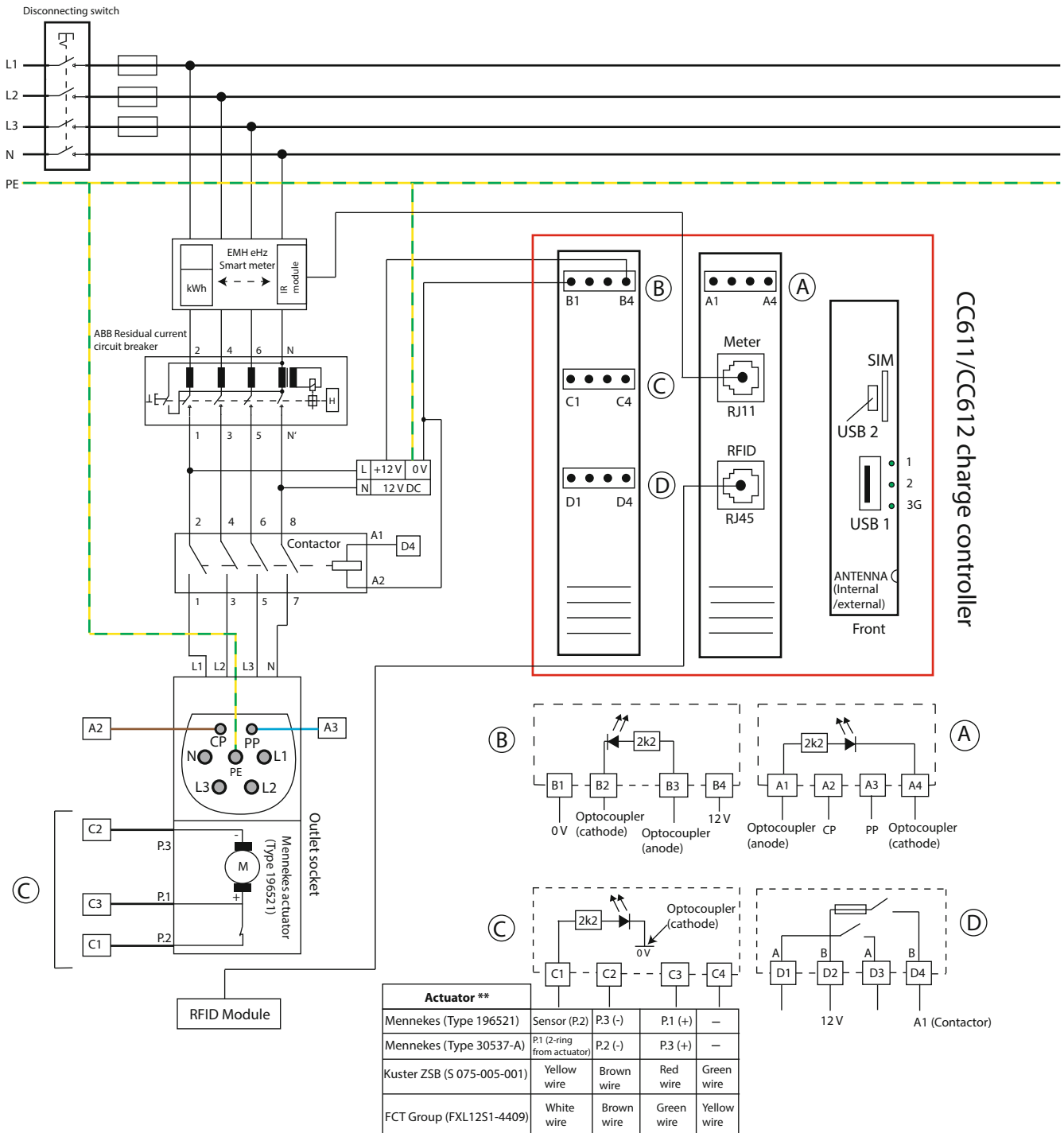
As well as the CC611, a charging point also consists of a smart digital meter (EMH eHZ), a 12 V power supply to operate the CC611, a relay contactor, which is directly connected to a vehicle socket and an RFID reader. When viewed from its correct mounting position on a cap rail, the CC611 has a total of 18 contacts. The control pilot and proximity contacts connect the CC611 to a type 2 outlet socket, enabling the charge controller to communicate with the vehicle and the cable plug. These contacts allow the CC611 to determine whether a cord has been plugged into the socket (proximity) and to inform the vehicle about the amount of power it can draw (refer to ISO/IEC 61851). To ensure that control pilot communication between the vehicle and the charge point is not misinterpreted, the 0 V contact of the charge controller 12 V power supply needs to be at same level as the protective earth (PE) used on the socket. Power flow toward the vehicle is controlled by the contactor (using a signal voltage of up to 30 V), which is itself controlled by the CC611 via a relay in the controller.

The CC611 reads the digital eZH meter readings using an optical reader attached to the charge controller via an RJ11 plug. The optical reader interface is positioned on the back of the meter. The SIM card reader is positioned on the controller front panel, as is the USB interface which is used to configure the charge controller. Optionally it can also be used to apply software updates.

The CC611 facilitates simple user interaction using an RFID reader and a set of LEDs. These are located on a separate PCB, which is attached using a standard RJ45 cable. Optionally an additional display can be attached to this PCB for more detailed user interaction.

In normal operation, the boot-up sequence begins after 12 V is applied to the controller. After boot-up, the system establishes a connection to the backend communication system if configured. When a vehicle is connected to the charge point, the outlet socket automatically locks the inserted plug. Charging is initiated by holding an RFID card (registered with the backend system) close to the RFID card reader. After ensuring the vehicle is connected and ready to charge, the contactor is then switched on to provide power flow. Once charging has completed and the plug on the vehicle side is disconnected by the user, the charge point socket automatically unlocks the plug on the charge point side.

## Wiring diagram



\*\* Different actuators are supported.

## Technical data

Insulation coordination acc. to IEC 60664-1/IEC 60664-3		Environment/EMC	
Rated voltage	12 V	EMC	IEC 61326
Overtoltage category/Pollution degree	III/3	Operating temperature	-25...+75°C
Rated impulse withstand voltage (CC611)	0.5 kV	Climatic class acc. to IEC 60721:	
Application range	≤ 4000 m above sea level	Stationary use (IEC 60721-3-3)	3K5
<b>Supply voltage</b>		Transport (IEC 60721-3-2)	2K3
Nominal supply voltage $U_S$	DC 12 V	Long-term storage (IEC 60271-3-1)	1K4
Operating range of the supply voltage	DC 0.8...1.2 x $U_S$	Classification of mechanical conditions acc. to IEC 60271:	
Power consumption without modem	< 5 VA	Stationary use (IEC 60721-3-3)	3M4 (except condensation and formation of ice)
Power consumption with modem/short-term peak	< 11 VA	Transport (IEC 60721-3-2)	2M3
<b>Measuring range residual current (CC612 only)</b>		Long-term storage (IEC 60271-3-1)	1M3
Rated frequency	0...2000 Hz	<b>Connection</b>	
Measuring range	± 300 mA	Connection type	push-wire terminal
<b>Response values (Only for CC612)</b>		Connection properties:	
Residual current $I_{\Delta n1}$	6 mA	rigid/flexible	0.2...2.5mm <sup>2</sup> (AWG 24...12)
Response tolerance $I_{\Delta n1}$	0...-50 %	flexible without ferrule	0.25...2.5mm <sup>2</sup> (AWG 24...12)
Residual current $I_{\Delta n2}$	30 mA	flexible with ferrule	0.25...2.5mm <sup>2</sup> (AWG 24...12)
<b>Response tolerance <math>I_{\Delta n2}</math> for:</b>		Stripping length	7 mm
$f \leq 1$ kHz	0...-20 %	Opening force	0.5 - 0.6 Nm (4 - 5 lb-in)
$f \leq 1$ kHz	-20...+100 %	Test opening, diameter	2.1 mm
<b>Restart sequence value:</b>		RJ 45	RFID reader
DC 6mA	< 3 mA	RJ 11	meter
AC/DC 30 mA (rms) for $f \leq 1$ kHz	< 12 mA	<b>Other</b>	
AC/DC 30 mA (rms) for $f \leq 1$ kHz	< 22 mA	Operating mode	continuous operation
Operating time $t_{ae1}$ für 1 x $I_{\Delta n1}$	< 600 ms	Degree of protection	IP 30
Operating time $t_{ae2}$ (at DC or > 15 Hz) for:		Degree of protection terminals	IP 20
1 x $I_{\Delta n2}$	< 180 ms	DIN rail mounting	IEC 60715
2 x $I_{\Delta n2}$	< 70 ms		
5 x $I_{\Delta n2}$	< 20 ms		
Inputs/outputs and operation			
LED 1	green		
LED 2	green		
LED 3G	green		
USB 1	Extension interface (Ethernet, WiFi, ...)		
USB 2	Configuration interface		
SIM card	micro SIM		
Control pilot, proximity and optocoupler input (terminal block A)	input/output		
Meter (RJ11 plug)	external		
RFID interface (RJ45 cable)	external		
Power supply and optocoupler input (terminal block B)	input		
Plug lock (terminal block C)	input/output		
Relay K1/K2 (terminal block D)	output		
Switching elements			
Relay K1	charging contactor		
Relay K2	configurable		
Switching elements	2 x 1 N/O contacts		
Operating principle	N/C operation		
Electrical service life	100,000 switching cycles		
Contact data acc. to IEC 60947-5-1:			
Rated operational voltage	30 V		
Rated operational current	1 A		
Minimum contact rating	1 mA at AC/DC ≥ 10 V		

### Ordering information

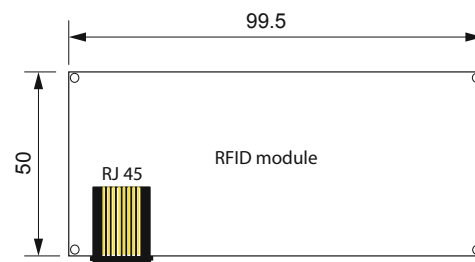
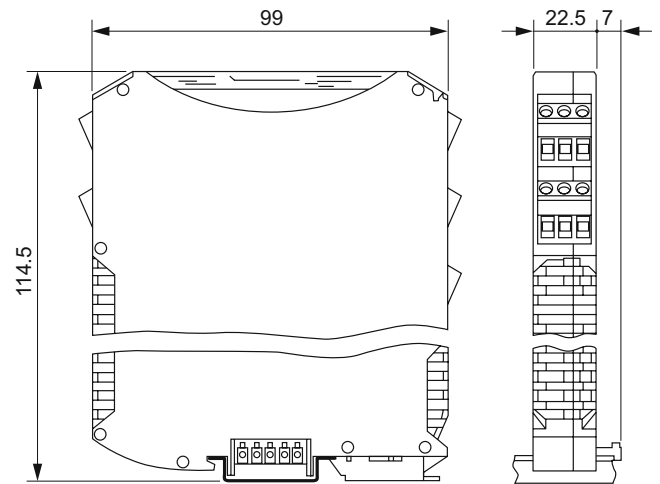
Supply voltage $U_s$	6 mA sensor	Type	Art. No.
DC			
12 V	—	CC611-1P3	B 9406 0000
	■	CC612-1P3	B 9406 0001

### Accessories

Type designation	Art. No.
RJ45 cable for RFID PCB (length 500 mm)	B 9406 0100
RFID PCB	B 9406 0110

### Dimension diagram

Dimensions in mm





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