

# CC611 EV charge controller

Charge controller for electric vehicle charging stations,  
wall boxes and street light charging points

**Preliminary datasheet**



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CC611

### Device features

- Standard OCPP Implementation
- Full OCPP Remote functionality
- Binary OCPP implementation with band-width 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

### Product description

The charge controller 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 charge controller is OCPP 1.5 complaint and compatible with all electric vehicles currently on the market. Integration tests with the backend implementations of providers such as Vattenfall, Bosch, NTT and DRIIVZ have been successfully carried out. The charge controller 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 requires a SIM card (which is not included in delivery). User interaction is facilitated using an RFID module, which consists of 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

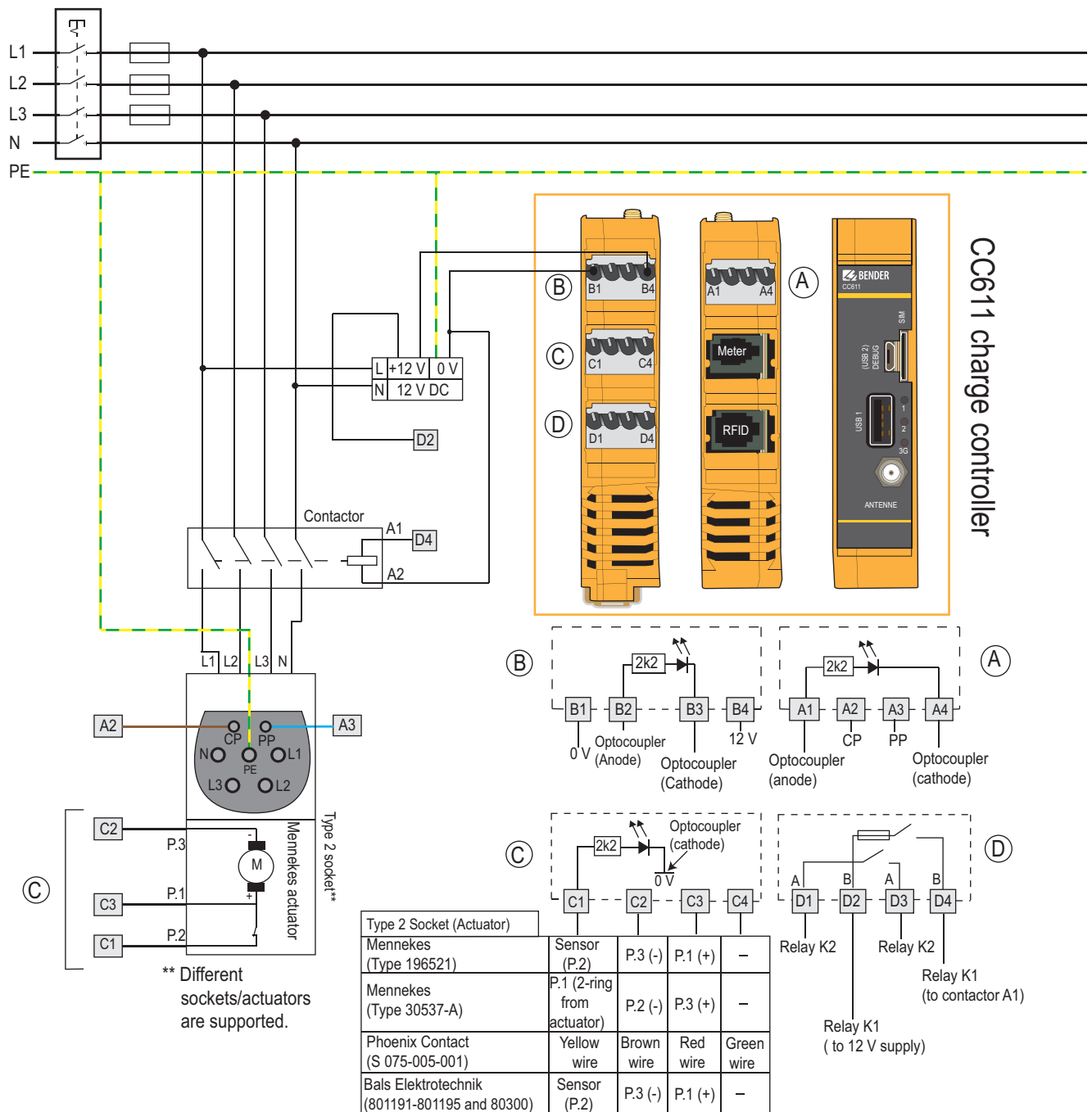
As well as the CC611, a charging point also consists of a smart digital meter (EMH eHZ), a 12 V power supply to operate the CC611, a relay contactor, which is directly connected to a vehicle socket and an RFID reader. When viewed from its correct mounting position on a cap rail, the CC611 has a total 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



## Technical data

<b>Insulation coordination acc. to IEC 60664-1/IEC 60664-3</b>		<b>Environment/EMC</b>	
Rated voltage	12 V	EMC	IEC 61326
Overtoltage category/Pollution degree	III/3	Operating temperature	-25...+75°C
Rated impulse withstand voltage	500 V	Climatic class acc. to IEC 60721:	
Application range	≤ 2000 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 11.4 ... 12.6 V	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)	2M2
<b>Inputs/outputs and operation</b>		Long-term storage (IEC 60271-3-1)	1M3
LED 1	green	<b>Connection</b>	
LED 2	green	Connection type	Screw terminal
LED 3G	green	Connection properties:	
USB host	Extension interface (Ethernet, WiFi, ...)	rigid	0.2...2.5mm <sup>2</sup> (AWG 24-14)
USB device	Configuration interface	flexible without ferrule	0.2...2.5mm <sup>2</sup> (AWG 24-14)
SIM card	micro SIM	flexible with ferrule	0.2...1.5mm <sup>2</sup> (AWG 24-16)
Control pilot, proximity and optocoupler input (terminal block A)	input/output	Stripping length	7 mm
Meter (RJ11 plug)	external	Opening force	0.5-0.6 Nm (4 -5 lb-in)
RFID interface (RJ45 cable)	external	Test opening, diameter	2.1 mm
Power supply and optocoupler input (terminal block B)	input	RJ 45	RFID reader
Plug lock (terminal block C)	input/output	RJ 11	optical meter interface
Relay K1/K2 (terminal block D)	output	<b>Other</b>	
<b>Switching elements</b>		Operating mode	continuous operation
Alarm relay K1	charging contactor	Degree of protection	IP 30
Alarm relay K2	configurable	Degree of protection terminals	IP 20
Switching elements	2 x 1 N/O contacts	DIN rail mounting	IEC 60715
Operating principle	N/C operation		
Electrical service life	10,000 switching cycles		
<b>Contact data acc. to IEC 60947-5-1:</b>			
Rated operational voltage	30 V		
Rated operational current	1 A		
Minimum contact rating	1 mA at AC/DC ≥ 10 V		

**Ordering information**

Supply voltage $U_s$	Type	Art. No.
DC		
12 V	CC611-1P3	B 9406 0000

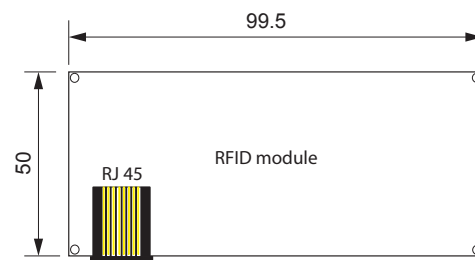
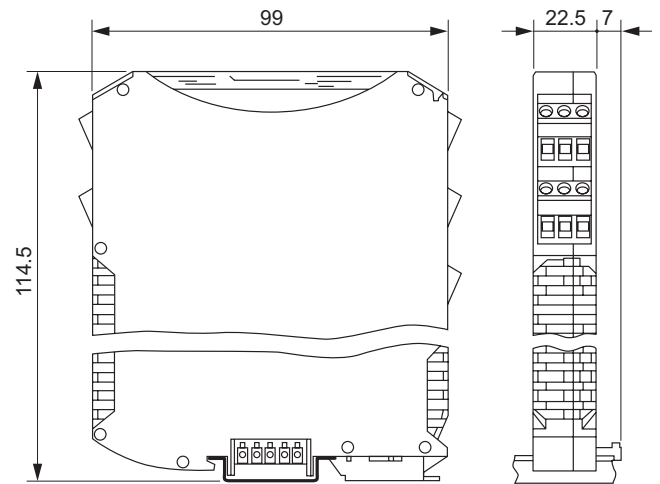
which includes the RFID module, RJ45 cable (length 500 mm) for the RFID module and connector plugs

**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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