



## Simplified Charge Controller TR-LSXS





## Warning and Caution Safety Information\*

*\*This is not an all-inclusive list.*

- Use common sense and act responsibly, electric motor controllers, motors lithium battery systems and other kit components are extremely powerful and could cause death, dismemberment or other serious injury if misused or not safely handled!
- Wear protective or safety equipment such as safety shoes, safety glasses and gloves when working with Electric Vehicle Equipment. And remove all metal jewelry and metal objects from hands, wrist, fingers, etc. before working on any electric system.
- Use Insulated tools only in proximity to connection points that have any voltage potential to prevent shorts if the tool is accidentally dropped onto the terminals/connections.
- Use caution when operating any of the components. If you are not sure what you are doing, or do not feel comfortable with the situation, find a knowledgeable person to advise you.
- Make certain all components are disconnected from any power source before servicing. If any doubt exists of the voltage that might exist, measure with proper metering devices that are in good functional condition and rated for the voltages that could exist.
- Verify and re-verify proper wiring connections.



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## 1.0 Product description

Charge (pole) Communication module according to IEC 62196 standard (simplified mode 3 protocol) for placement in a vehicle using the simplified charging protocol.

This module has multiple functions:

- Establish communication with a standard charging station using the CP and PP communication pin in the IEC 62196 (mennekers) or J1772 charging plug/charging cable.
- Detection when the charging plug is placed in the vehicle (required for the European R100 inspection). This will activate a potential free relay that can be used to block the vehicle from driving.

Additionally, all 3 charging modes are enabled, and both the typical and simple pilot circuits are implemented. Special attention has been given to power consumption in the control design. The power consumption in standby mode, when no charging cable is connected to the vehicle, is zero.

After connecting the 12 VDC power supply to the module it is in active state. When it detects a resistance between PP and Ground the module will give the communication signals back at the CP wire to the charging plug and EV charging station so it will start charging with the simplified charge protocol – this procedure is called the handshake protocol.

## 2.0 Specifications

<b>Type</b>	TR-LSXS
<b>Communication</b>	PWM signal simulation to EV charger
<b>Standard</b>	IEC 62196 (simplified mode 3 protocol)
<b>Power supply voltage</b>	8-16 VDC standard
<b>Current</b>	0 mA (no charging cable plugged in) 24 mA (charging cable plugged in)
<b>Load capacity of Interlock contact</b>	1 A at 30 V
<b>Temperature range</b>	-20 to 70 °C
<b>Dimensions</b>	96 x 40 x 20 mm
<b>Cross-section of connection wires</b>	max. 1.5 mm <sup>2</sup>
<b>Protection class</b>	IP20



### 3.0 Pinout

The connection is made via push-in terminal connectors with a maximum diameter of 0,5 mm<sup>2</sup>.

Pin	Signal	Description
NO	Interlock (normally open)	-
COM	Interlock (common)	-
NC	Interlock (normally closed)	-
CP	CP	Charging Plug CP (control pilot)
PP	PP	Charging Plug PP (proximity pilot)
GND	Chassis ground	Chassis or Charging Plug PE
12V	+12V	Supply

#### Signal Explanation:

Interlock: Indicates that a charging cable is plugged in. This can be used in the vehicle to prevent driving away. The internal relay contacts can handle a maximum of 1A at 30V.

The interlock signal is also indicated by a green LED on the board.

