



User Manual for EVC Series Charger

1. Overview

The EVC series chargers are suitable for charging lithium ion battery packs such as those used in electric vehicle applications. The EVC series chargers are designed to work seamlessly with Elite Power Solutions' Energy Management System through the CAN interface. Standard safety features include protection against a short circuit on the charger output, reverse polarity, over charging, over temperature, etc.



2. Technical Parameters

2.1 Specifications

- Model: EVCXXKYYY (XX: Output Power, YYY: Number of cells)
- Efficiency: $\geq 88\%$
- Input voltage: 110V/220V AC
- Input voltage range: AC 95 ~ 130V / AC 195 ~ 242V
- Frequency: 40 ~ 60Hz
- Communication: CAN
- Vibration: SAEJ1378
- Water resistance: IP31
- Power factor: ≥ 0.75

2.1 Operating Environment

- Altitude: ≤ 2000 Meters
- Temperature: $-30^{\circ}\text{C} \sim 55^{\circ}\text{C}$
- Installation Stress: \leq level 5
- Humidity: 5% ~ 70% RH – Non Condensing, keep away from exposure to moisture
- Storage environment: $-30^{\circ}\text{C} \sim 60^{\circ}\text{C}$ – Keep away from combustible materials

3. Charging Status and Alarm Status Indication

3.1 Alarm Indication

- Reverse polarity or over voltage: Red light blinking, 20% light on
- Charger over heating: Red light blinking, 20%-40% lights on
- Ambient temperature too high: Red light blinking, 40%-60% lights on
- Charging time out: Red light blinking, 60%-80% lights on
- BMS alarm/charging interruptions: Red light blinking, 80%-100% lights on

3.2 Charging Status Indication

- Shutdown status: Six lights blinking
- Charging stage: Percent light indicating pack voltage vs. max charging voltage
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- Battery presence not detected: Red light blinking, 20% light on
- Charging complete: All green lights on

4. Functions

4.1 Output short circuit protection.

4.2 Over-temperature protection:

Temperature less than 83°C – Full charging power

Temperature is 85°C to 95°C – Power reduced to 50%

Temperature is greater than 95°C – No output

4.3 Input AC voltage: charger automatically detects and adjusts to input AC voltage either 110V or 220V.

4.4 Reverse polarity protection: charger will not turn on if the battery pack is connected backwards (or less than 5V).

4.5 A switch on the charger marked “Override” is used to select either external or internal controlled charging control.

Override Off – Use with EMS system, either CAN or digital input

Override On – Charger program based on pack voltage only (recommended for testing purposes only, do not use for normal charging)

4.6 When external control is selected and a CAN signal is used if any cell reaches the recharge set point (default 3.7V) the charger will automatically enter the final recharge cycles.

4.7 Recharge cycles. When the EMS detects any cell has reached the recharge set point (default 3.7V) or above, the charger reduces the charge current to zero amps for five minutes to allow the EMS to balance the battery pack. The charge will resume after five minutes at half the previous charge current and will again charge until it receives a signal from the EMS that a cell has reached the recharge set point. These recharge cycles continue until the charging current reaches the minimum charging current to complete the charging process.

4.8 Digital alarm input:

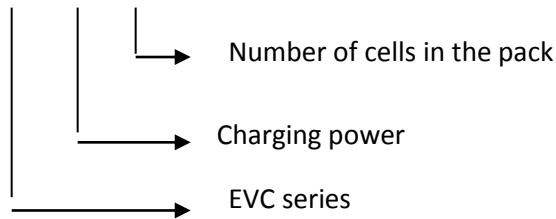
0.0V – 2.0V: Charging paused

2.5V – 12.0V: Enable charging or resume charging

4.9 When both CAN and the digital control signals are available the charger is controlled by the CAN communication signal.

5. Model

Example : EVC6K 108





Model	Model	Max Output Voltage (DC)	Max Output Current (w/ 110/220V inputs)	Dimensions
	EVC6K108	384V	3A/12A	395*235*170mm
	EVC6K44	158 V	6.7A/14.5A	360*220* 75mm
	EVC6K56	190V	3A/12A	395*235*170mm
Label	MODEL: EVC	Charger series		
	INPUT:AC110/220V	Supports 110V AC and 220V AC inputs		
	DATA:NO1103019	Manufacture date: March 2011; Serial number: 019		

6. Cautions

- Make sure charger voltage output matches to the number of cells in the battery pack.
- Make sure positive output of the chargers is connected to a positive connection to the battery pack, and the negative output of the charger is connected to a negative connection of the battery pack.
- After a complete charge, disconnect the power source from the charger and then disconnect the connection between the charger and the battery pack.
- A BMS system must be used during the charging process either through CAN communication or through the digital alarm input to prevent over-charging.

- Connections

Connectors	Definition	Details
	Charger output connector	+: Connect to a positive connection to the battery pack - : Connect to a negative connection to the battery pack
	Communication Connector	Red Wire: Digital Control Positive Black Wire: Digital Control Negative Yellow wire: CANL Blue wire: CANH Brown wire (green): CANG

7. Troubleshooting

- The charger must be installed in a cool well-ventilated area which is free of dust
- If the charger is not charging unplug the charger from the AC line and battery pack, then check for poor connections, short circuits, over heating conditions as well as alarm status from the Energy Management System.
- If charger does not display any LED's when plugged in and charging does not occur the fuse may be blow. Unplug the charger from the battery pack and AC line and check the fuse by unscrewing the cap with a #2 Philips screw driver. If the fuse is blown replace with an equivalent size fuse of the same voltage and amperage rating.
- If the charger finishes charging too early make sure that the connection from the charge to the battery pack is good and does not have high resistance.