

2KW HF/PFC On-board Charger (Lithium Battery Charger)

I Product Summary & Application Scopes

The charger is applicable for various lithium batteries like LiFePO4, LiMn2O4 etc., It features light weight, small volume, stable performance, high efficiency and reliable security etc., It can be switched automatically between the floating and balancing charging and also has the protection functions of reverse connection, output short-circuit and overload and so on.

The charger is widely used for battery-charging cycles in electric vehicles such as electric forklift, golf cars, electric trucks, electric tour bus, electric yacht, cleaning machines, or Uninterruptible Power Supply (UPS), solar energy, wind power dynamo and electric communication system on the railway etc.

II Lithium Battery Charger Models

Lithium Battery Charger	Vout Max	Iout Max
TCCH-H66-35	66V	35A
TCCH-H82.6-30	82.6V	30A
TCCH-H96.2-25	96.2V	25A
TCCH-H112-21	112V	21A
TCCH-H130-18	130V	18A
TCCH-H144.7-16	144.7V	16A
TCCH-H168-15	168V	15A
TCCH-H192-12	192V	12A
TCCH-H208-11	208V	11A
TCCH-H233.3-10	233.3V	10A
TCCH-H243-09	243V	9A
TCCH-H258-09	258V	9A
TCCH-H289.5-08	289.5V	8A
TCCH-H337-7A2	337V	7.2A
TCCH-H389-06	389V	6A
TCCH-H417-5A5	417V	5.5A

Note: Model of the Lithium battery charger will be marked in response to the actual maximum voltage for the Lithium battery pack.

III Technical Target

AC Input Voltage Range	AC85V~AC265V
AC Input Frequency	45~65 Hz
AC Power Factor	≥0.98
Full Load Efficiency	≥93%
Mechanical Shock & Vibration Resistance Level	Conformance to SAEJ1378 Standard
Environmental Enclosure	IP46
Operating Temperature	-40°C ~+55°C (-104°F ~+131°F)
Storage Temperature	-40°C ~+100°C (-104°F ~+212°F)
Charging Control	Via CAN bus or ENABLE

IV Protection Features

1. Thermal Self-Protection: When the internal temperature of the charger exceeds 75°C, the charging current will reduce automatically. If it exceeds 85°C, the charger will shutdown protectively. When the internal temperature drops, it will resume charging automatically.
2. Short-circuit Protection: When the charger encounters unexpected short-circuit, it will automatically stop to output. When fault removes, the charger will re-start in 10 seconds.
3. Reverse Connection Protection: When the battery is polarity reversed, the charger will cut off the connection between the internal circuit and the battery, and refuses to start. It can avoid any destroy.
4. Input Low-voltage & Over-voltage Protection: When the AC input Voltage is lower than 85V or higher than 265V, the charger will shutdown protectively and automatically resume working with the voltage is normal again.

▼ Appearance Labels

Please check carefully the labels on the casing of the charger before using in order to completing the transaction check the label on the charger before using, it can provide some help for you to understand the performance and the specification of the charger.

i. Bar Code Label:

Attaches on the output terminal of the charger. For example, SN10071001

1007: Production batch number.

1001: Bar code number.

48-25: Hardware model

HD VER 1.6: Version number from the manufacturer

ii. Model Label : take the model TCCH-H58V4-25A for example



SN10071001
48-25
HD VER 1.6

INDUSTRIAL		58.4Vmax
BATTERY		
CHARGER		
Input: 100~240VAC 50/60Hz		14 / 8.1A
Output:	48V $\underline{\underline{=}}$ 25A@220VAC 48V $\underline{\underline{=}}$ 24.5A@115VAC	
Battery:	LiFePO4 16 cells	
Model:	TCCH-H58V4-25A	
Environmental Enclosure: IP46		

a) Input 100~240VAC 50/60Hz 14/8.1A: The rated input current is 14A at 115VAC and 8.1A at 220VAC;

b) Output 48V $\underline{\underline{=}}$ 25A@220VAC 48V $\underline{\underline{=}}$ 24.5A@115VAC: The maximum current is 25A at input 220VAC, and 24.5A at input 115VAC.

c) Will add "-CAN" after the model if the charger controlled by CAN module. E.g. "TCCH-H58V4-25A-CAN".

iii. LED Label

It is the important symbol to evaluate whether the charger works normally.

Red-Green flash (one second interval)	Battery Disconnected
Red flash (three seconds interval)	Repair Battery
Red flash (one second interval)	<80% Charge Indicator
Yellow flash (one second interval)	>80% Charge Indicator
Green flash (one second interval)	100% Charge Indicator



VI Common Faults & Solutions

In case of the charging fails, please examine all the outside lines carefully to make sure that they are connected correctly. If circuits failure have been excluded, you can check the failure code of charging LED and handle it according to the following table.

LED Flashing Sequence (One Cycle)		Indication
1	R G _ _ _ _ _	Wrong Battery
2	R G R _ _ _ _	Overcharged
3	R G R G _ _ _	Battery Overheated
4	R G R G R _ _	Incorrect AC Input Voltage
5	R G R G R G _ _	External Thermal Sensor Fault
6	R G R G R G R _	Communication Interface Fault
7	G R _ _ _ _ _	Charger Overheated
8	G R G _ _ _ _	Charger Relay Fault
9	G R G R _ _ _	Charger Itself Fault

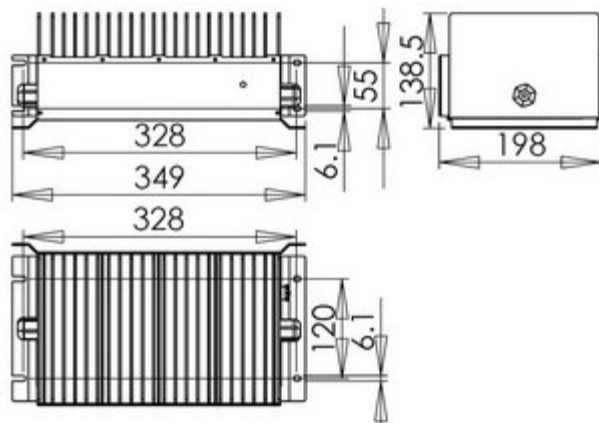
Note:

1. R—red G—green
2. "_" denotes one second pause
3. Above LED flashing sequence is one cycle; the LED will flash repeatedly if the fault has not been removed.

Solutions

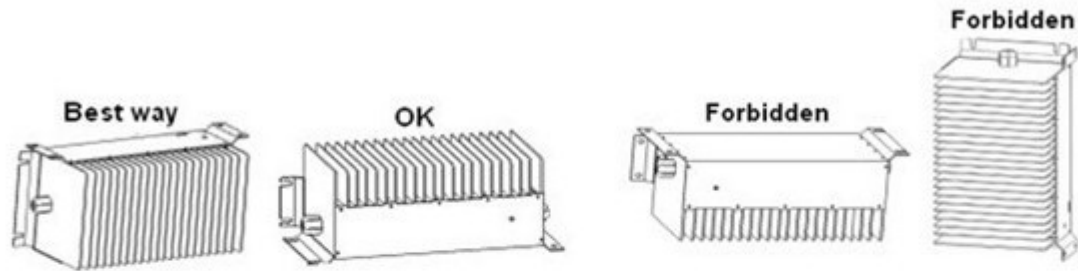
- ▲ **Wrong Battery:** Verify the battery voltage range matching with charger or inspect the battery for damage.
- ▲ **Overcharged:** Confirm the battery capacity and the selected curve are matched or if the battery is defective.
- ▲ **Battery Overheated:** Check the temperature at the external thermal sensor. If overheated, the charger will start the battery protection.
- ▲ **Incorrect AC Input Voltage:** Check that the AC input voltage is in accordance with the requirement.
- ▲ **External Thermal Sensor Fault:** Ensure connect the thermal sensor correctly.
- ▲ **Communication Interface Fault:** Make sure the communication have been correctly connected or if it is damaged.
- ▲ **Charger Overheated:** Check if the ambient temperature is too high or the ventilation is smooth.
- ▲ **Charger Relay Fault:** Repair.
- ▲ **Charger Itself failure:** Repair.

VII Installation Dimension (mm)



Installation & Safety Instructions

1. The most satisfactory is installed vertically and keep radiator in vertical position. Leave 10cm above around the radiator ensure the airflow. Never make the radiator face down, otherwise it easily leads to too high temperature inside and affect the charging process.



2. Ensure all vents are not obstructed to prevent overheating. Don't put the battery charger near any heat source. Please keep enough space to assure ventilation and the cable socket access easily.
3. Ensure alternating power supply voltage and current match with the allowable input voltage and current of the charger. Please approach a retailer or local Power Supply Bureau for enquiry.
4. For safety and electromagnetic compatibility, the battery charger is equipped with 3-prong plug and suitable for sockets with grounding.
5. If the AC power line needs to be extended, make sure that it can afford the maximum input current and has the appropriate length.
6. The voltage-drop between the charger and connection wire of the battery should be less than 1% of the battery voltage as possible. Otherwise, it may affect the effect of charging process. Meanwhile, the diameter of the wire should satisfy the output current value.
7. In the process of compensation for the battery voltage, the temperature sensor should be placed the area where has the highest temperature, such as the central region between the two batteries.
8. If the battery is not working properly or damaged, please pull the power connectors and the charger interface from the socket, then contact with suppliers.
9. Please don't disassemble the charger yourself, it may cause electric shock or other injuries.
10. In order to avoid damaging the power cord, don't put any object on the line and place the line where it will not be stepped on. If the cord is frayed or damaged, replace it immediately.