

## **TR8212 – 14.0v 20A LiFePO4 Battery Charger**

### **Specification Sheet**

Product Name	14v - 20A (LiFePO4 Ultra Fast Charger)
Model Spec	14.0v 20A LiFePO4 Charger - 4S IFR 14V/20A
File Revision	A0

#### Amendment Records

Revision	Description	Issued Date
A0	New release	2014-8-12

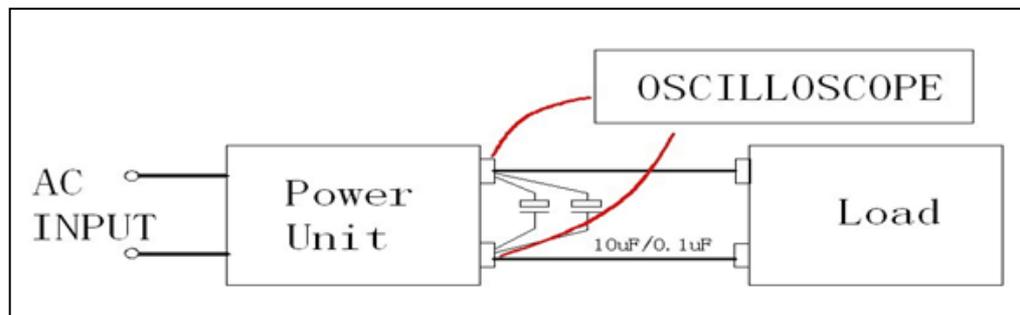
## 1 ELECTRICAL CHARACTERISTICS

### 1.1 Input features

- 1.1.1 Rated Input Voltage: 100-240V AC, Input Voltage Range: 90-264V AC
- 1.1.2 Input Current: 4A r.m.s. max. @ 90V AC full load
- 1.1.3 Rated Input Frequency: 50Hz/60Hz
- 1.1.4 Input Frequency range : 47~63Hz
- 1.1.5 In-Rush Current: <130A @ 220V AC full load
- 1.1.6 Standby power consumption: <3.5W @ 120V AC
- 1.1.7 Power factor: 220V AC  $\geq$  96% full load

### 1.2 Output features

- 1.2.1 Output Voltage no load: 14V $\pm$ 0.1 @ 230V AC
- 1.2.2 Max output current: 20A
- 1.2.3 Ripple and Noise:  $\leq$ 300mV p-p @ 230V AC full load, Ambient temp.25°C.  
Differential ripple and noise output measured using an oscilloscope with 20MHz bandwidth. A 10uF electrolytic capacitor and a 0.1uF ceramic capacitor were parallel with output load as shown:



- 1.2.4 Efficiency: >80 % min. @ 220V AC full load  
This is measured at the DC cord output terminals after the unit has reached maximum temperature.
- 1.2.5 Turn-on delay time: <5S @ 100V AC full load  
AC power is turned on until 90% rated output voltage is reached.
- 1.2.6 In the event of mains power failure whilst charging, the maximum current flowing from the battery into the charger: <5mA

### 1.3 Protection function

- 1.3.1 Over-current Protection: 19-21A @ 100~240V AC
- 1.3.2 Over-voltage Protection: >15V (typical)  
The power supply shuts down all output when the output voltage reaches its over-voltage protection trigger point.

- 1.3.3 Reverse connection: The battery charger is protected against reverse connection.
- 1.3.4 Short circuit protection: The battery charger is protected against short circuit connection.

## 1.4 The reference standard and EMC standard

- 1.4.1 The reference standard: UL60950 EN60950 TUV-GS\_  
EMI: FCC, CISPR22, EN55022 CLASSB, VCCI CLASS B
- 1.4.2 Dielectric strength  
Primary to secondary: 4250V DC/3000V AC 60S Cut off current 5mA/10mA
- 1.4.3 Insulation resistance  
Primary to secondary:  $\geq 100M\Omega$  Apply DC 500V  
After storing in 40°C temperature and 90% humidity for 6 hours, the insulation of primary to secondary is more than 20M ohm.

## 1.5 Temperature rise

At an environment temperature of  $25\pm 2^{\circ}\text{C}$ , with 100% of load for 4 hours, the central section of surface of the unit:  $T_{\text{max}} \leq 60^{\circ}\text{C}$ .

## 1.6 Special instructions:

- 1.6.1 Thermal protection: Red light on continuously whilst not charging: charger internal temperature sensor (NTC) short or open
- 1.6.2 Cell over voltage: Red light on continuously if battery is  $>15\text{ V}$
- 1.6.3 Cell under voltage: Red light on continuously if, when charging for ten minutes, the battery voltage has not reached  $>12\text{V}$  (Battery is faulty or wrong type)
- 1.6.4 Red light flashing: no battery or low battery voltage (0 to 6v); Output short; Battery polarity reversed.

## 1.7 Charge features

- 1.7.1 Intelligent charger
  - At 0 - 6V: 2A constant charge current - battery connected - red light flashes
  - At 6 - 12V: 5A constant charge current, green light flashes (If the battery voltage is under 12V after 10 minutes, the charger will shut down and the red light will be on continuously).
  - At 12 - 13.8V: 20A constant charge current - green light flashes.
  - At 13.8 - 14V: 14V constant charge voltage - green light flashes.
  - Shut down when charge current  $\leq 2\text{A}$  (battery is full) - green light on continuously
  - Recharge - After the battery is full and is left connected to the charger, the charger will start the re-charge process when it detects the battery voltage is  $\leq 13\text{V}$ .
- 1.7.2 Reduced charger current process - if the charger fan becomes faulty and shuts down or the environmental conditions are too harsh, the charger automatically reduces the current after the charger shell surface reaches higher temperatures:
  - The charger output reduces to 15A when charger shell surface temperature rises

to 60°C.

- The charger output reduces to 10A when the charger shell surface temperature rises to 65°C.
- The charger shuts down when charger shell surface temperature rises to 67°C - no charge - red light on continuously.
- The charger resumes normal operation when the temperature drops back down to 55°C.

## 2 ENVIRONMENTAL REQUIREMENT

### 2.1 Storage environment

2.1.1 Storage temperature: -20 to +70 °C

2.1.2 Storage humidity: 5 to 95 %

The power supply shall be capable of withstanding the above environmental conditions for extended periods of time, without sustaining electrical and/or mechanical damage and subsequent operational deficiencies.

### 2.2 Operating environment

2.2.1 Operating temperature: 0 to +40°C

2.2.2 Relative humidity: 10 to 90 %

The power supply shall be capable of operating continuously in any mode without performance deterioration in the above environmental condition.

## 3 RELIABILITY AND QUALITY CONTROL GUARANTEE

### 3.1 Burn-in

3.1.1 Burn-in Ambient temperature: +40 °C

3.1.2 Burn-in Time: 8 hr. AC source 100V AC 60Hz, 80-100% loading (CV).

### 3.2 Drop Test

Charger dropped from 3 ft.(1000mm) height, one time on each side onto a concrete floor at least 64 mm thick and covered with a 3.2 mm thick board. There was no problem with appearance or structure.

### 3.3 Vibration and Shock

The power supply has been designed to withstand normal transportation vibration per MIL-STD-810D method 514 and procedures X, as it is fixed in the base assembly and packed for shipping.

## 3.4 **MTBF**

Mean Time Between Failures: 1.5 year. @ 25°C

## 4. **WARNING**

- 4.1 Whilst charging, the case of the charger may become hot. Keep away from combustible materials and do not touch the case.
- 4.2 Please to use and store the battery charger as per the temperature and humidity guidelines outlined in section 2.1.