

### Batteries Types:

12V lead-acid Battery: WET, MF, VRLA, AGM, GEL and Calcium  
Battery capacity: 1.2 - 120Ah, up to 160Ah for maintenance

### Instruction:

- 1) Identify the correct polarity of the battery terminals. The positive battery terminal is typically marked with (+).  
The negative terminal is typically marked with (-).
- 2) Position cords and cables to reduce risk of damage by hood, door or moving parts (including fan blades, belts, and pulleys) or other parts that could cause injury to persons.
- 3) Connect the power supply
- 4) When battery is full, disconnect the power supply and remove the charger from battery.

Generally, charging is fully automatic. These are the charging steps, which should happen entirely automatically.

Steps	Index	Description
Step 1. Diagnosis	Check battery If V > 10.5V then jump to Step 3	Check battery
Step 2. Recovery	2.0 - 10.5V 2.5A CC Pulse, Charging = 1 sec. Stop = 0.5sec. Go to error mode after 8 hours.	Rescue battery
Step 3. Soft Start	Just into Soft Start mode: 1. 0.9A charge at first (min. 3 sec), go to next if Vbat is raised [12V (initial)]/2, go to BULK if > 12V. 2. 2.5A charge (min. 3sec.), go to next if Vbat is raised [12V (initial)]/2, go to BULK if > 12V. 3. Go to error mode after 2 hours.	
Step 4. Bulk	4.0A Constant Current Voltage rise until 14.8V Go to next step after 25hours.	Fast charge battery
Step 5. Absorption	14.8V CV 4.0A max. Cut off current 0.4A. Go to next step after 10 hours.	Slow charge battery
Step 6. Analysis	>12.3V go to next Step <12.3V error 5 minutes	Measure battery voltage after 5mins
Step 7. Float	13.7V CV 4.0A max. Timer = 12 days	Float charge for backup type power
Step 8. Maintenance	1. If voltage drop 12.8V, 2.5A CC 2. Go to Step 7 until voltage rise 14.8V	Maintenance for big capacity battery.

## LED Indication:

Item	Indication	LED Colour
Power On Reset	All LED flash twice during self check.	ON = 0.5S OFF= 0.5S
Power On	No battery connected.	Alternating Red/Green
Charging	Step 1-6	RED steady
Full Charged and Maintenance	Step 7-8	Green steady
Error	Flashing with any of these conditions: 1. Reverse battery connection 2. Charging been interrupted in Step 2 or 3, 6 3. $0.5V < \text{Battery Voltage} < 2.0V$ 4. Battery Voltage $> 16V$	Orange (ON=0.5S, OFF=0.5S)

## Specifications:

Input Voltage:	220-240VAC, 50/60HZ, 1.2A
Output:	2 x 12VDC, 4.0A
Output connectors:	Large Alligator Battery Clips
Stand-By Power:	<2W
Reverse Current:	<5mA
Voltage Tolerance:	$\pm 0.2V$
Current Tolerance:	$\pm 10\%$ for 4.0A $\pm 10\%$ for 2.5A $\pm 15\%$ for 0.9A
Normal Battery Voltage:	2.0-14.8V
Charge Control Type:	CC/CV, Float Charging for Backup Power
Cable Length:	
Mains Power Plug to Unit:	2m
Unit to Battery Clamps:	1.8m
Dimensions:	178(W) x 139(D) x 50(H)mm
Weight:	2kg