

## Installation Instructions - For Service Persons Only

# Model No: 3A\_LITHIUM

### Product Description:

The device is a 12VDC Power-supply unit designed to charge 12VDC LITHIUM batteries with a max Amp Hour rating of 10A/H.

### Features:

- Microprocessor Controlled charging output.
- Low battery switch off at 10VDC +/-5%.
- Over Voltage protection on battery charging above 15VDC +/-5%
- Resettable Fuse protection on DC output.
- Fuse protection on AC input.
- 50mA Quiescent current on power failure.
- ABS **UL94** HB flame resistant plastic enclosure.

### Technical Specifications:

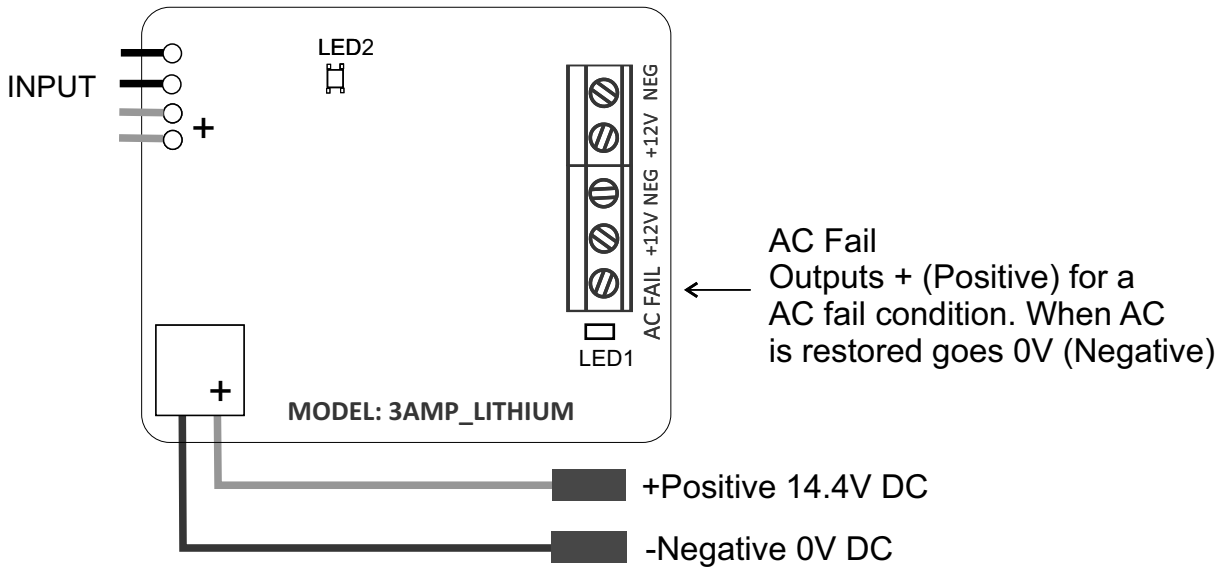
Model:	3A_LITHIUM
Housing colour and material:	White ABS
Input Voltage range:	110V - 240VAC 50Hz 0.5A
Output Voltage range setable:	12VDC - 15VDC ---
Charge Current:	2A @ 14.4VDC
Operating Temperature:	-3°C to 49°C
Dimension (lxbxh)	200 x 180 x 80mm
Gross weight:	0.805Kg

### Warranty

This product is sold subject to our standard warranty conditions and is warrantied against defects in workmanship for a period of 2 years.

**Customer Support line:**  
**+2711 462 5101 E-mail: [technical@sherlotronics.co.za](mailto:technical@sherlotronics.co.za)**

## Top Controller Board

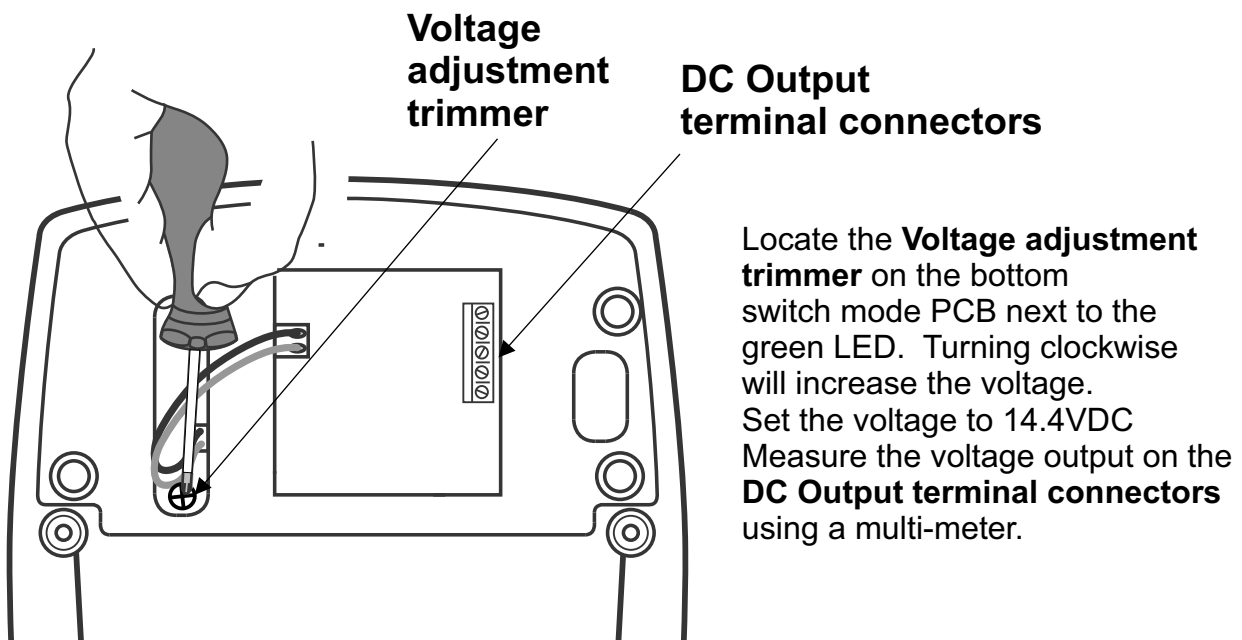


### Note:

Before connecting the Lithium battery, plug the unit into mains. Using a voltage meter measure Volts across the Red (+) and Black (-) battery wires to check that the charge voltage is between 13.8V-14.6V D.C. The recommended battery charge voltage is +/-14.4VDC

Disconnect Mains power before wiring up the equipment to the unit.

The unit will create slight internal heat on all components including its battery. Ensure that the unit has adequate ventilation when selecting the installation location.

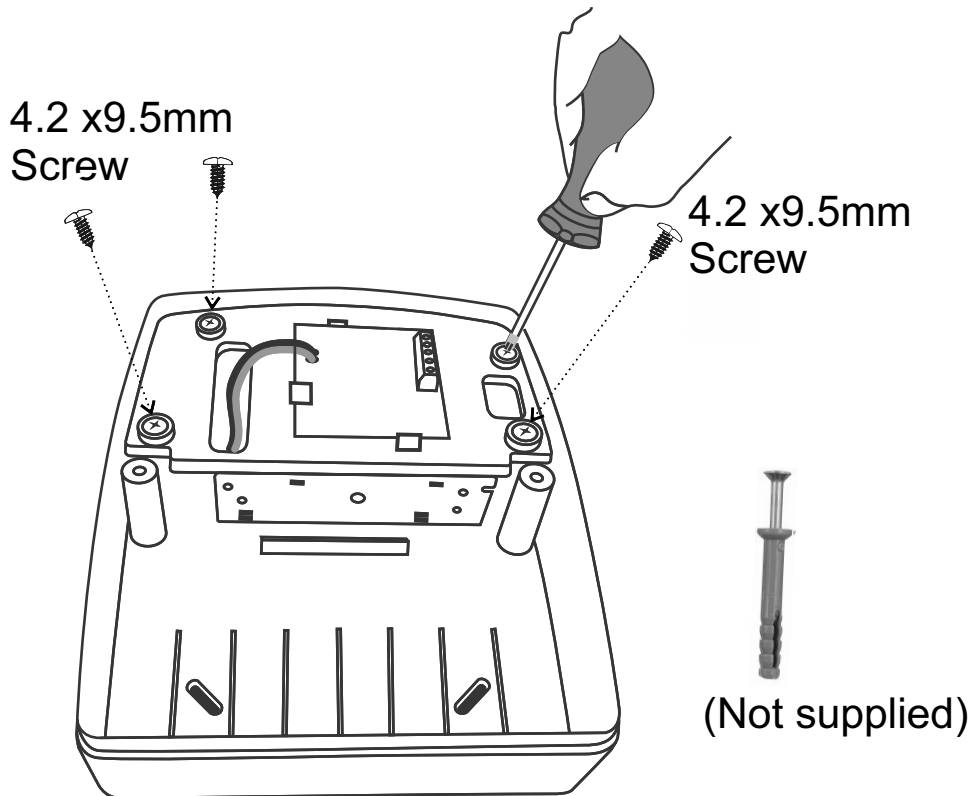


# Securing the plastic plate

The unit is supplied with a packet of screws.

The “Plastic plate” is not screwed down so that it is easy to open up the unit to run cables out of the box or to access the mains leads or the DC input wires.

Please use the Qty 4:- Self tapper screws that are provided to screw the plastic plate securely to the “Plastic base” Only do this once you have run the cables out of the bottom of the plastic base and mounted the unit onto a secure wall using three (3) x M6 x 42 Nail in anchor or similar.



## LED1 INDICATION

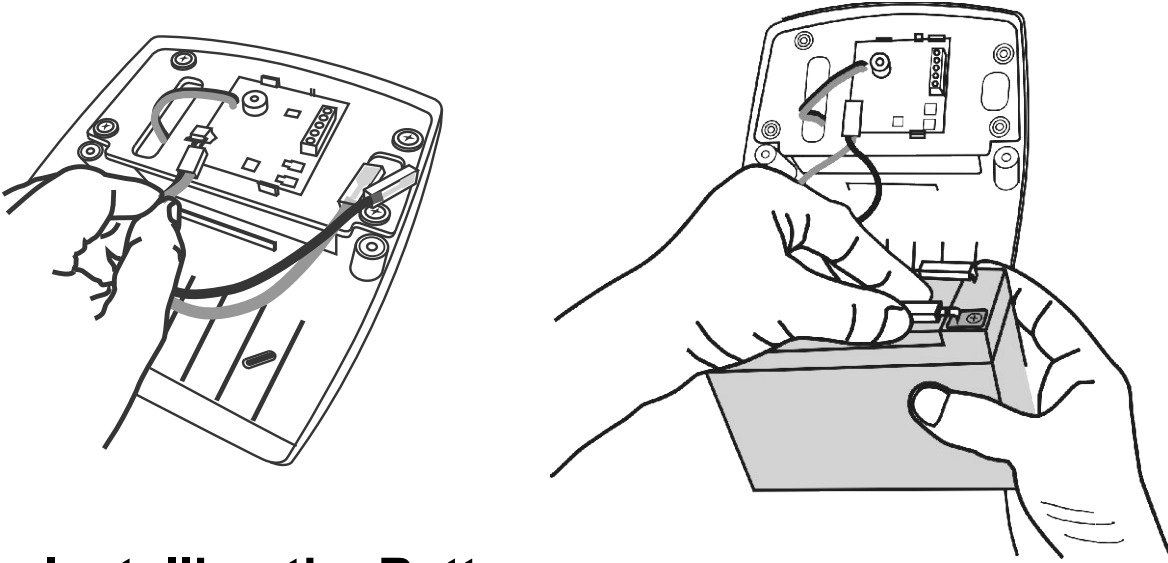
RED	Power failure condition.
OFF	Power failure condition. The battery Voltage reached under 10V & so the unit switched off.

## LED2 INDICATION

GREEN	Power is on & the unit is charging the battery
ORANGE	Power failure condition. The battery Voltage is above 12V
RED	Power failure condition. The battery Voltage is below 11.6V and is almost depleted
RED FLASHING	Over Voltage protection. Input is above 15VDC. The Charger is turned off to protect the battery.
OFF	Power failure condition. The battery Voltage reached under 10V & so the unit switched off.

## Battery Lead plug

You can easily unplug the red/black battery leads if you wish to install or remove a battery from the unit. The Plug can only fit in one direction. Negative (Black wire) is the first wire from the left side.



## Installing the Battery

With the AC power off, plug the Negative (Black) & Positive (red) wires to the battery and then insert the battery into the battery compartment.



The device is intended to **ONLY** Charge 12VDC Lithium batteries with a max capacity ampere hour rating of 10A/H. A bigger battery may result in the Power supply not operating correctly.

THE SOCKET OUTLET SHOULD BE INSTALLED NEAR THE EQUIPMENT AND SHALL BE EASILY ACCESSIBLE

## Approvals:

This product is approved for use in residential, commercial and light Industrial environment and complies with the essential protection requirements of the R&TTE Directive 1999/EC on the approximation of the laws of the member states.

Pending Certifications:

EN 55022:2010

EN 55024:2010

EN 6100-3-2:2006+A1:2009 + A2:2009

EN 6100-3-3:2008

EN 62368-1: 2014+A11:2017

IEC 623681-1:2014 (second edition)



## Charging current and charging time explanation on a 12.8V 7AH or 89 Watt Battery

The information below is used as a general rule of thumb and will vary between battery manufacturer, temperature and DC input voltage. Considering that a battery charger is set to an optimal output of 14,4VDC this explanation will be a good way to understand how long a Lithium battery will take to charge fully. It is recommended to not charge a battery with more than 0.5C of the Amp Hour (AH) rating of a lithium battery. This example will be calculated on a 0.1C or 10% of the battery amp hour rating.

First of all, we will calculate charging current for 7Ah battery. As we know that **charging current in this example is 10% of the Ah rating of battery.**

Therefore,

$$\text{Charging current for 7Ah Battery} = 7 \text{ Ah} \times (10 \div 100) = 0.7 \text{ Amperes.}$$

But due to some losses, we may use **1 Amperes** for batteries charging purpose instead of 0.7 Amps.

### Battery Charging Time:

Suppose we took **1Amp** for our example to charge the battery then,

$$\text{Charging time for 7Ah battery} = 7 \div 1 = 7\text{Hrs.}$$

But this was an ideal case...

Practically, it has been noted that **40% of losses** occurs in case of lithium battery charging.

$$\text{Then } 7 \times (40 \div 100) = 2.8 \text{ ..... (7Ah} \times 40\% \text{ of losses)}$$

$$\text{Therefore, } 7 + 2.8 = 9.8 \text{ Ah ( 9.8 Ah Losses)}$$

$$\text{Now Charging Time of battery} = \text{Ah (including losses)} \div \text{Charging Current}$$

Putting the values;

$$9.8 \div 1 = 9.8 \text{ or } 9.8 \text{ hrs. ( in real case } 10 \text{ Hrs)}$$

Therefore, a **7Ah battery** would take approx. **10 Hours** to fully charge in case of the required **1A** charging current.

In South Africa we ideally need to charge the 7AH battery with a 0.3C which we can then work around a 2Amps charge current thus halving the charging time to around 5 Hours.