

# MB-3625

## 5 Stage Intelligent Battery Charger

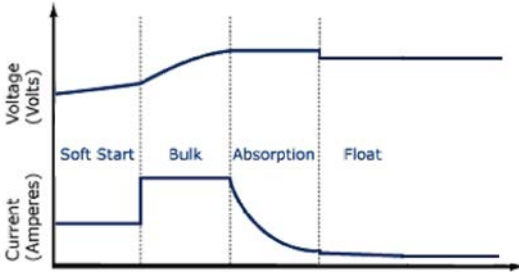
12V, 10A - Suitable for SLA, Gel, AGM batteries



## User Manual

## Features

- Charges with 12 V, 10/6/2 A DC (15/9/3 A RMS)
- Self-identifying multi-stage characteristic charging curve



**Soft Start** tests the battery condition. Severely discharged batteries need the soft start step. The charging starts with a reduced current until the voltage reaches 10V.

**Bulk** is the main step where most of the charge is returned (60-80%). The charger delivers maximum current until the terminal voltage has risen to the set level of 14,2V for Normal battery selection and 14.0V for Gel battery selection.

**Absorption** completes the charge up to virtually 100% at a constant voltage. The current tapers off after the current reached the minimum level.

**Float** is maintenance charge at constant voltage, keeping the batteries at 100% charge. Normal charging mode is time-limited (max 10 days) while Supply mode goes on indefinite without damaging the battery.

## SPECIAL FEATURES

### **Temperature Control Fan**

To protect the charger from overheating, a fan is included for heat dispensation. Also to increase the life span of the fan, a sensor will control the on off of the fan, where the fan will not use when the HFC is not in a hot condition.

### **Temperature Compensation**

A sensor will automatically adjust the charging voltage if the

temperature deviates between – 20°C to +50°C. At a high temperature environment the unit lowered the output voltage and at a freezing condition, the unit will adjust a higher output voltage.

### **Voltage compensation:**

Because of some voltage drop in the cables, the actual voltage at the clamps of the battery can be lower than the charger output voltage. A special circuitry inside the unit will monitor the true input voltage to the battery and adjust the output voltage of the unit accordingly. This will maximize the charging efficiency.

### **Buzzer Warning**

A built in buzzer will help to warn the user when connect the clamps to the battery wrongly.

### **Display**

- Reverse Polarity - Reverse Polarity Connection to Battery Pole.
- Battery Fault – Faulty Battery Indicator.
- Charging – While Battery is Charging.
- Full Charge – When Battery is Fully Charged and in Maintenance Mode.
- 3 X 7 Segment LEDs Display for Charging Current, Battery Voltage, & Charging %.

### **Cable Management**

The casing is designed with a AC and DC cable storage compartment. This will help to avoid cable damage and subsequently any possible danger to user.

### **PROTECTION**

- Full protection against sparks
- Short circuit protection
- Voltage compensation
- Overheating protection
- Polarity reversal protection

## **IMPORTANT SAFETY INSTRUCTIONS**

### **Gases**

When the NORMAL/LEAD ACID battery is being charged you may notice bubbling in the fluid caused by the release of gas. As the gas is flammable no naked lights should be used around the battery.

During charging the battery, the charging must be placed at a well ventilated area. Because of the risk of explosive gas, only connect, and disconnect, the battery leads when the mains supply is disconnected.

### **Types of Batteries**

This charger is only suitable for the specified batteries and should not be used to recharge non-rechargeable, NICAD or any other type of battery.

### **Point of Notes**

When not in use, the battery charger must be kept at a dry area to avoid moisture.

Keep away from any liquid, rain or snow at all times.

This battery charger is not designed as a caravan lead acid battery charger or power supply.

This battery charger is not designed for installation on to the vehicle as a fixture.

### **Danger**

Avoid getting ELECTROLYTE on your skin or clothes. It is acidic and can cause burns. If this occurs you shall rinse the affected area with water immediately.

Never charge a frozen battery. If battery fluid (electrolyte) becomes frozen, bring battery into a warm area to allow battery to thaw before you begin charging. Never set a battery on top of charger or vice versa.

Do not touch the battery clamps together when the charger is on.

Never operate charger if it has received a hard blow, been

dropped, or otherwise damaged. Take it to a qualified professional for inspection and repair.

Be sure to position the charger power cord to prevent it from being stepped on, tripped over, or damaged.

Never pull out the plug by the cord when unplugging the charger. Pulling on the cord may cause damage to the cord or the plug.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

### **PRE-CHARGE CHECKLIST**

If the battery needs to be removed from the vehicle before charging, always remove the grounded terminal from the battery first, also ensure that all accessories in the vehicle are tuned off to prevent arcing.

Ensure that the surrounding area is well ventilated to allow dispersal of toxic fumes or gases.

Ensure the battery terminals are clean. If the battery has a removable vent cap, top up each battery cell with distilled water to the level recommended by the battery manufacturer, do not overfill.

If the battery does not have caps, refer to the manufacturer's instructions regarding charging and charging rates.

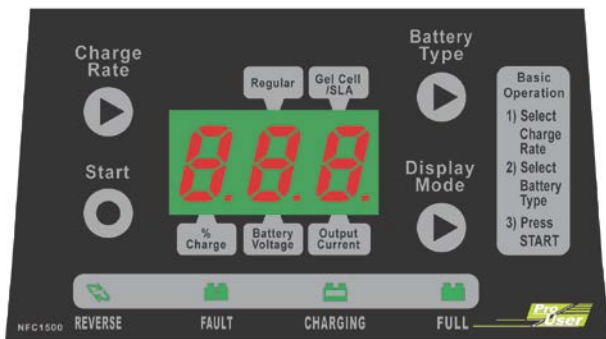
### **OPERATING INSTRUCTIONS**

#### **Connection**

1. Connect the DC Clamps to the battery poles in the following order:
2. Connect the positive charging lead (RED) to the positive terminal pole of the battery (marked P or +).
3. Connect the negative lead (BLACK) to the negative pole of the battery (marked N or -).

4. It is important to ensure that both DC Clamps are making good contact with their respective terminal poles.

## Control Panel



1. **Charge Rate Button** sets the charge rate to one of the following:

**2A DC Slow** - Intended for charging small batteries such as those commonly used in garden tractors, snow mobiles and motorcycles. The 2A rate is not intended to be used as a trickle charger for larger batteries.

**6A DC Normal** - Use for charging automotive batteries, marine batteries, and deep cycle batteries at a normal rate.

**10A DC Fast** - Use for charging automotive batteries, marine batteries, and deep cycle batteries at a fast rate.



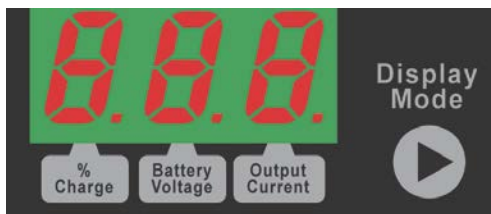
2. **Battery Selection Button** sets the type of battery to be charged to one of the following:



**GEL CELL / SLA** – All type of “gel cell” & “SLA” type battery.

**Regular** – All type of “lead acid” battery, sealed or non-seal.

3. **Mode Display** sets and shows one of the following reading:



**Output current** – This shows the selected charging current.

**Battery voltage** –This shows the voltage of the battery in DC.

**Charging %** –This shows an estimate percent of charge.

With the exception of gel cell and calcium batteries, all other battery types may or may not have vent caps. Vent caps are located on top of the battery and provide a means to add distilled water when needed.

**Batteries should be marked with their type. If charging a battery that is not marked, check the manual of the item that uses the battery. If the battery type is unknown, use the “Gel Cell / SLA” setting.**

### **Charging**

Insert the AC plug into the mains supply (220-240 Volts AC only).

The battery charger is now in the stand-by mode with the default choice of

**Battery** - “Gel Cell / SLA”

**Current** – “2A DC Slow”

If the **Start Charging Button** is now pressed, the charger will immediately go into the 2A DC, Gel Cell battery charging mode.

For alternative selection, please follow the following steps:

**Step1** – Press the **Charge Rate Button** to pick the battery type for charging.

**Step 2** – Press the **Battery Selection Button** to pick the charging power.

**Step 3** – Press the **Start Charging Button** to start the charging process.

## LED INDICATORS

On the front panel there are also 4 LED indicators for the following function:



1. **Reverse Polarity** – The DC Clamps have been connected at the wrong pole on the battery. Simply disconnect and reconnect the DC clamps at the correct pole, restart the charging process.
2. **Battery Fault** – When this is light, this mean the battery can be broken. If the battery fault display persists after resetting the charger, the battery may be faulty. Please consult a nearby battery service centre.
3. **Charging** –This shows the battery is in charging process.
4. **Full Charge** – This shows the battery is fully charged and the battery charger is in maintenance mode.



## **COMPLETION OF CHARGING**

When the battery “**Full Charge**” LED comes on, this mean the battery is fully charged. The battery charger will now goes into maintenance mode. No attention is required until the battery is required for use again.

If the AC plug is pulled off from the mains supply, the battery charger will turn off. The charging mode and status will be recorded in the charger’s memory for 15min. Afterward it will reset to standby mode. This feature will avoid any power failure, and once power comes back the charger will resume the charging process at the previous mode.

If the DC clamps were pulled off from the battery while the AC plug is still connected to the mains supply, the charger will automatically switch back to the standby mode. **Try to avoid disconnecting the DC clamps while the AC socket is still intact to power.**

## **CHARGING TIME**

The table below is a guide to the typical charge time for varies size of 12V/6cells battery:

<b>Battery Size</b>	<b>Charging Time</b>
20Ah	3 hours
30Ah	4 hours
44Ah	5 hours
55Ah	6 hours
75Ah	8 hours
96Ah	10 hours
120Ah	13 hours

## **TROUBLE SHOOTING**

Trouble often can be corrected by the user. Please read this chart for possible solutions to common problems.

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>SOLUTION</b>
The battery is connected and the charger is on, but it isn't charging.	The charger is not in charging mode.	Press <b>MODE DISPLAY</b> button until Battery % or Voltage reading comes on.
Indicator lights are lit in an erratic manner not explained in the manual.	A button may have been pressed when the charger was plugged in. The charger may be defective.	Make sure nothing is touching the control panel, then unplug the unit and plug it in again. Return to place of purchase for replacement.
The green <b>FULL CHARGE</b> LED turns on a few minutes after connecting to the battery.	The battery may be fully charged or recently charged, leaving the battery voltage high enough to appear to be fully charged.	If the battery is in a vehicle, turn the headlights on for a few minutes to reduce the battery voltage and try charging again. Also try a lower <b>CHARGE RATE</b> selection.
The charger was unplugged from the wall but the display is still on.	The battery is supplying the power to the display.	Disconnect the battery.

## **MAINTENANCE AND CARE**

- Clean the clamps each time you are finished charging. Wipe off any battery fluid that may have come in contact with the clamps to prevent corrosion.
- Coil the input and output cords neatly when storing the charger. This will help prevent accidental damage to the cords and charger.
- Occasional cleaning of the case of the charger with a soft cloth will keep the finish shiny and help prevent corrosion.
- Store the battery charger in a clean and dry location.

### **Error Codes & Solutions:**

Problem	Error Codes	Solutions
Battery failed, probably open cell battery	Display "0.0"	Battery has problem. Replace with a new battery and try again.
Battery failed, probably too low voltage battery	Display "<5.0"	Battery has problem. Replace with a new battery and try again.
Battery failed, probably wrong type battery	Display "6.0"	Check the battery voltage is for 12V system.
Battery failed, probably voltage too high	Display "24"	Check the battery voltage is for 12V system.
Short circuit protect	Display "S O"	Make sure the Red and Black clamps cannot be connected together.