

# BATTERY LINK

By **HAIGH**

## Pro Series

MICROPROCESSOR CONTROLLED

# BATTERY CHARGER

WITH MULTI-STAGE CHARGING SYSTEM

### INSTRUCTION MANUAL

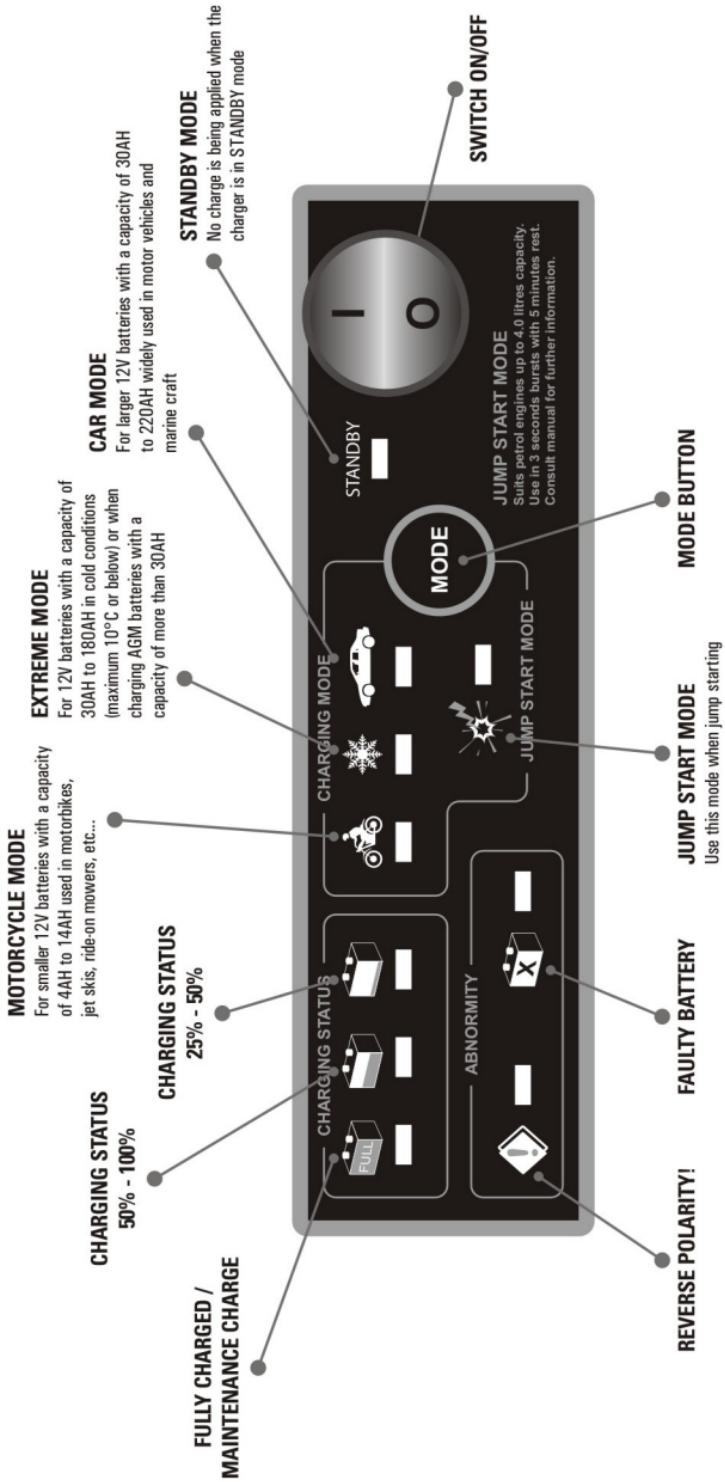


SAA APPROVAL No. SGSEA/080551

Part No. MCU1000

**IT IS ESSENTIAL YOU READ THE ENTIRE CONTENTS OF THIS MANUAL BEFORE USING THIS PRODUCT. FAILURE TO DO SO COULD RESULT IN INJURY, PROPERTY DAMAGE OR PRODUCT FAILURE.**

**KEEP THIS MANUAL FOR FUTURE REFERENCE**



## **INTRODUCTION**

The MCU1000 charger is designed for charging single 12 volt lead acid (starting) batteries widely used in motor vehicles, motorbikes and marine craft. It will also charge deep cycle batteries used to power ride-on mowers, jet skis, golf buggies, etc. The batteries are often referred to as WET CELL, GEL or AGM with capacities ranging from 12V/4Ah to 12V/220Ah (or up to 1000CCA). The charger will NOT fully charge calcium-calcium batteries. The charger can also be used as a handy jump starter with 8.5 volt DC 35A output current and suitable for most petrol engines with a maximum capacity of 4.0 litres.

**NOT TO BE USED ON NON-RECHARGEABLE BATTERIES.**

In all applications you must NOT connect the charger to mains power until battery connection has been completed. Prior to disconnecting the charger from a battery, you must FIRST turn off mains power supply at power point.

## **WHAT DOES MCU STAND FOR?**

MCU stands for (MICRO CONTROL UNIT) meaning there are different stages of the charging process:

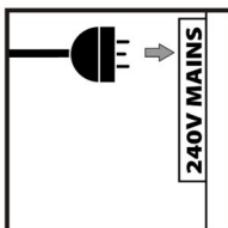
1. Pulsing Charging
2. Bulk Charging
3. Float Charging
4. Maintenance Charging

These different stages enable the battery to be recharged to almost 100% capacity. The charger can remain connected to the battery indefinitely without any damage being caused to the charger or battery.

## **CHARGING INSTRUCTIONS**

Please read this manual carefully prior to operation.

Make sure that the 240V power outlet you will be using for the charger is in the OFF position before inserting the power cord.



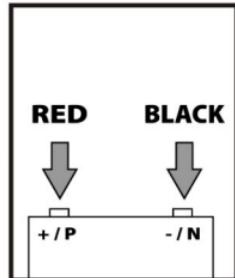
Before connecting the charger to the battery we strongly recommended that battery is removed from the vehicle and charged in a well ventilated location. For more information please see the 'CAUTION' section of this manual



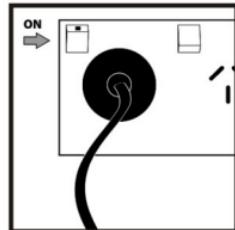
# BATTERY CONNECTION INSTRUCTIONS

When connecting the charger to the battery:

- Ensure the battery posts are clean and free of corrosion.
- Connect the charger clamps or terminals to the battery in the following order:  
RED to the positive post of the battery (marked P or +) and  
BLACK to the negative post of the battery (marked N or -)
- It is important to ensure that either battery clamps or terminals make solid contact with each terminal post.



Once this is completed switch on both the mains power supply as well as the switch button of the device to activate the charger and the "STANDBY" LED should light up. At this point NO charge is being delivered to the battery. To begin charging the correct MODE must be selected as follows.

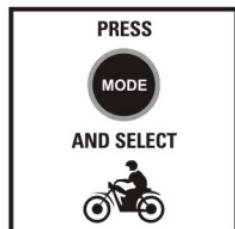


## SELECTING CHARGING MODES

### SMALLER BATTERIES: NORMAL CONDITIONS

For 12V batteries with a capacity of 4AH to 14AH widely used in motorbikes you must select the MOTORCYCLE MODE by pressing the MODE button.

*For more information regarding the different modes, see page 5-6*



### EXTREME CONDITIONS

For 12V batteries with a capacity of 30AH to 180AH in cold conditions (maximum 10°C or below) or when charging AGM batteries with a capacity of more than 30AH, you must select the EXTREME MODE by pressing the MODE button.

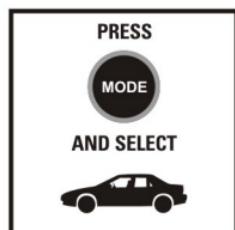
*For more information regarding the different modes, see page 5-6*



### LARGER BATTERIES: NORMAL CONDITIONS

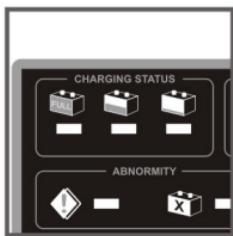
For 12V batteries with a capacity of 30AH to 220AH widely used in motor vehicles and marine craft you must select the CAR MODE by pressing the MODE button.

*For more information regarding the different modes, see page 5-6*



Once the correct mode has been selected the battery will begin the charging process. You can monitor the batteries progress by the charge indicators located on the top left hand corner of the control panel.

When the battery is fully charged the "FULLY CHARGED" LED will light up. From this point on the battery will be receiving a maintenance charge.



## RESCUING A DEAD BATTERY

When initially connected to a battery, the charger detects the voltage of the battery automatically and then changes to pulse charging mode if the voltage is within the range of from  $7.5V \pm 0.5V$  to  $10.5V \pm 0.5V$ . This pulse charging won't stop until the battery voltage rises to  $10.5V \pm 0.5V$ . Once  $10.5V \pm 0.5V$  is reached, the charger changes to the normal charging mode selected. The battery will then charge normally. Pulse charging will rescue many "FLAT" batteries (over 7.5 volts) and allow the battery to accept a normal charge.

**Note:** If a battery does not recover after a period of time on charge it may be FAULTY and therefore can no longer accept a charge. In these cases the charger will remain in the "STANDBY" mode to indicate that the battery may be FAULTY. We suggest you have the battery checked by an automotive battery reseller or auto electrician. The REVERSE POLARITY symbol indicates only if the charger has been connected incorrectly (reverse connection). Automotive batteries have an average life of 3 years in Australian conditions.

## UNDERSTANDING MODES

### STANDBY

When connected to the mains power supply, the charger will reset itself automatically and stay in "STANDBY" mode if no charging mode is selected. If during the charging process there is a loss or disconnection of mains power supply, the charger will automatically revert to "STANDBY" mode when mains power supplied is restored. No charge is provided in "STANDBY" mode.

### MOTORCYCLE MODE (14.4V / 1A)



This mode is designed for charging smaller 12V batteries with a capacity of 4AH to 14AH widely used in motorbikes. Once the 4AH TO 14AH CHARGING MODE has been selected, the charging indicator will illuminate, indicating that charging has commenced at  $1A \pm 10\%$  current. The charging indicator will remain illuminated until the battery is charged up to  $14.4V \pm 0.1V$ . When the battery is fully charged, the fully charged indicator will illuminate. If the charger is left connected to the battery while still connected to 240V mains power, a nominal charge (maintenance charge) is provided.

**EXTREME  
MODE  
(14.7V / 10A)**



This mode is designed for charging 12V batteries with a capacity of 30AH to 180AH in cold conditions (maximum 10°C or below) or when charging AGM batteries with a capacity of more than 30AH. Once the EXTREME CONDITIONS MODE has been selected, the charging indicator will illuminate, indicating that charging has commenced at  $10A \pm 10\%$  current. The charging indicator will remain illuminated until the battery is charged up to  $14.7V \pm 0.1V$ . When the battery is fully charged, the fully charged indicator will illuminate. If the charger is left connected to the battery while still connected to 240V mains power, a nominal charge (maintenance charge) is provided.

**CAR  
MODE  
(14.4V / 10A)**



This mode is designed for charging larger 12V batteries with a capacity of 30AH to 220AH widely used in motor vehicles and marine craft. Once the 30AH TO 220AH CHARGING MODE has been selected, the charging indicator will illuminate, indicating that charging has commenced at  $10A \pm 10\%$  current. The charging indicator will remain illuminated until the battery is charged up to  $14.4V \pm 0.1V$ . When the battery is fully charged, the fully charged indicator will illuminate. If the charger is left connected to the battery while still connected to 240V mains power, a nominal charge (maintenance charge) is provided.

**JUMP  
START  
MODE  
(8.5V / 35A)**



The JUMP START mode should only be selected when the battery requires some assistance in starting a vehicle. The charger can supply up to 35 amps of current but only for 3 seconds at a time otherwise damage may be caused to the charger. Switch on both the mains power supply as well as the switch button of the device to activate the charger and the "STANDBY" LED should light up. You must select the JUMP START MODE by pressing the MODE button. Once illuminated the charger is now ready to jump starting. Follow all precautions as if charging a battery in a vehicle, except that the selected switch is placed in the start position. Make the final connection and immediately crank the engine for a period of 3 seconds making sure you allow for a 5 minutes interval between attempts. Once the engine have fired, disconnect the chassis connection first and then the other connection. If the engine fails to start, turnover remove the battery and place it on charge or take it to your nearest automotive battery reseller or automotive electrician for testing.

***WARNING: In JUMP START MODE, DO NOT use the unit for more than 3 seconds without a 5 minutes rest period between sessions.***

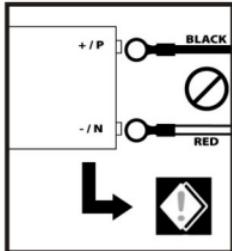
## **CHARGER PROTECTION FUNCTIONS**

To ensure safe operation, the charger has inbuilt protection against incorrect connection, short circuiting and overheating. An electronic switch prevents the unit from charging immediately when a battery is connected. A charging mode needs to be selected to commence charging. This reduces the likelihood of producing a spark when the battery is connected to the charger.



If the leads are connected incorrectly (e.g. Positive on Negative) the Reverse Polarity Protection will cut-in automatically and the REVERSE POLARITY LED will illuminate and the battery charger will switch off.

If the charger becomes too hot during the charging process, it will reduce the power output automatically to prevent causing damage to itself.



## **FAULTY BATTERY OR REVERSE POLARITY CONNECTION**

If a battery does not recover after a period of time on charge it may be FAULTY and therefore can no longer accept a charge. In these cases the charger will remain in the "STANDBY" mode and the FAULTY BATTERY LED will illuminate to indicate that the battery may be FAULTY. We suggest you have the battery checked by an automotive battery reseller or auto electrician. The REVERSE POLARITY feature (Indicator with sound alarm) indicates only if the charger has been connected incorrectly (reverse connection). Automotive batteries have an average life of 3 years in Australian conditions.

## **SHIFTING BETWEEN THE FOUR MODES**

Pressing down on the "MODE" button changes and allows selection of the correct charging mode:

"STANDBY" > "EXTREME MODE" > "CAR MODE" > "MOTORCYCLE MODE" > "JUMP START MODE"

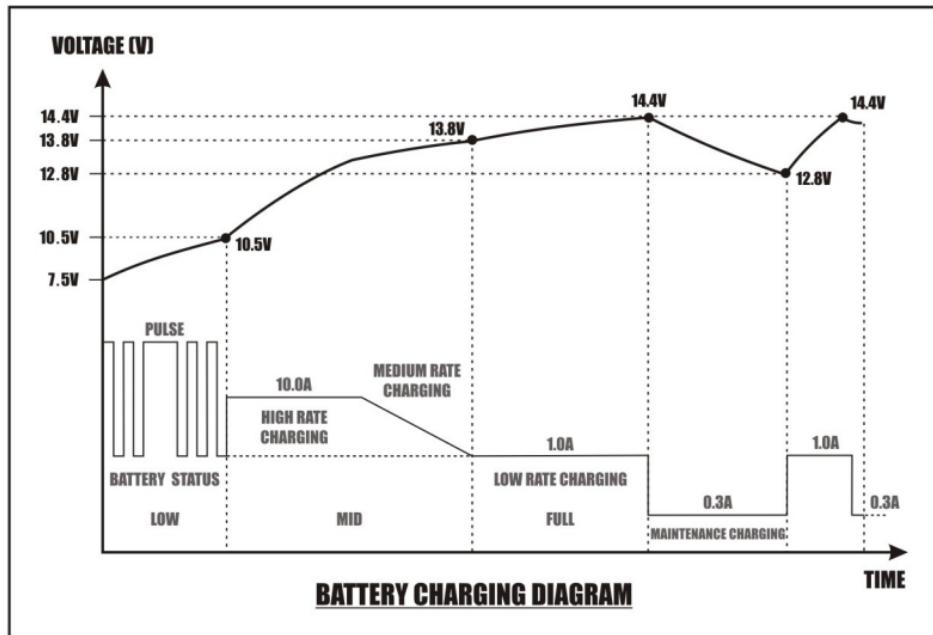
## **LOSS OF MAINS POWER SUPPLY**

If during the charging process there is a loss or disconnection of mains power supply, the charger will automatically revert to "STANDBY" mode when power is restored. A charging mode needs to be selected before charging commences. No charge is provided in "STANDBY" mode.

# BULK CHARGING TIMES

For approximate 80% charge. Times may vary depending on conditions.

12V LEAD ACID BATTERY		
BATTERY SIZE (AH)	CCA RATING	TIME (HR)
80	600	9.5
120	750	14
180	800	20
220	1000	25



## **SPECIFICATIONS**

<b>Input:</b>	<b>240V AC 50Hz 300W</b>
<b>Output Voltage:</b>	<b>Nominal: 12V</b>
<b>Charging Voltage:</b>	<b>7.5V ± 0.25V</b>
<b>Jump Start:</b>	<b>8.5V ± 0.5V / 35A / 3 Seconds / 5 Minutes Rest</b>
<b>Charging Current:</b>	<b>12V DC === 10A ± 10% / 1A ± 10%</b>
<b>Cut Off Voltage:</b>	<b>14.4V ± 0.1V or 14.7V ± 0.1V</b>
<b>Temperatures:</b>	<b>Storage Temperature: -20°C to 50°C Operation Temperature: 0°C to 40°C</b>
<b>Type of Charger:</b>	<b>Five Step, Fully Automatic with Maintenance Charging</b>
<b>Type of Batteries:</b>	<b>12V Lead-Acid Batteries (WET, MF, AGM and GEL)</b>
<b>Battery Capacity:</b>	<b>4-220Ah (1000CCA)</b>

## **FAULT FINDING**

- PROBLEM:** The plug of the battery charger is inserted into 240V AC mains power supply, battery clamps or terminals have been connected to the battery but no charging occurs.  
**POSSIBLE FAULT:** Charger not connected to battery.  
Check terminal connection.  
Battery is not 12V.  
Battery is below 7.5V.
- PROBLEM:** No spark when charging clamps or terminals touch together.  
**ANSWER:** The charger features an inbuilt safety device to prevent sparking if clamps or terminals accidentally touch.
- PROBLEM:** Multimeter will not provide a reading between charging clamps prior to connection to battery.  
**ANSWER:** The charger will only operate when connected to a 12V battery with more than 7.5V. A multimeter voltage reading will only be provided when the charger is connected to the battery.

## **! CAUTION !**

- This battery charger is designed for **INDOOR USE ONLY** - DO NOT expose to rain.
- **WARNING:** In **JUMP START MODE**, DO NOT use the unit for more than 3 seconds without a 5 minutes rest period between sessions.
- **ALWAYS** disconnect the charger from the mains supply before connecting to or disconnecting from the battery.
- **WARNING: EXPLOSIVE GASES** - Prevent flames and sparks. Provide adequate ventilation during charging.
- **DO NOT** charge a battery near flammable materials, naked flames, gas pilot lights or gas hot water systems.
- This charger is specially designed for charging one single 12V Lead Acid Battery at a time. **DO NOT** use this charger for charging **NON-RECHARGEABLE** batteries.
- **DO NOT** leave the charger connected to the battery when the charger is **NOT** connected to mains power supply.
- If the battery is found to be too hot or is leaking fluid during the charging process, immediately stop operation. Fluid from the battery is **ACIDIC** and can cause burns and corrosion.
- It is strongly **RECOMMENDED** that batteries (in motor vehicles) be removed before charging. If this is **NOT** practical please make sure that the battery terminal **NOT** connected to the chassis is connected to the charger first. The other connection is to be made to the chassis, clear of any battery cables and fuel lines. The charger can now be connected to the mains power supply.
- After charging battery in automotive vehicle, disconnect the battery charger from mains power supply. Then remove the chassis connection and then the initial battery connection.
- The **ACID/FLUID** within a battery is a highly corrosive and poisonous. It can produce flammable and toxic gases when recharged and will explode if ignited. When working with batteries, always wear eye protection, remove jewellery and ensure the area is well ventilated. If spilt - it will cause severe burning to eyes, skin, clothing, damage paintwork and corrode many metals. Ensure that 240V AC power is disconnected from any appliance in the vicinity of the spill and immediately wash any area that has been affected with water.
- **DO NOT** allow battery acid to mix with salt water. This will produce chlorine gas which may be deadly.
- This charger is **NOT** intended for use by young children or infirm persons unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely.
- Young children should be supervised to ensure that they **DO NOT** play with the appliance.