

BATTERY LINK

By HAIGH

Pro Series

MICROPROCESSOR CONTROLLED

BATTERY CHARGER

WITH MULTI-STAGE CHARGING SYSTEM

INSTRUCTION MANUAL



SAA APPROVAL No. Q070550

Part No. MCU036

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 MCU036 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/1.2Ah to 12V/120Ah (or up to 750CCA). The charger will NOT fully charge calcium-calcium batteries. The charger is NOT to be used as a power supply or for any other application other than charging and maintaining single 12 volt lead acid batteries. **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.

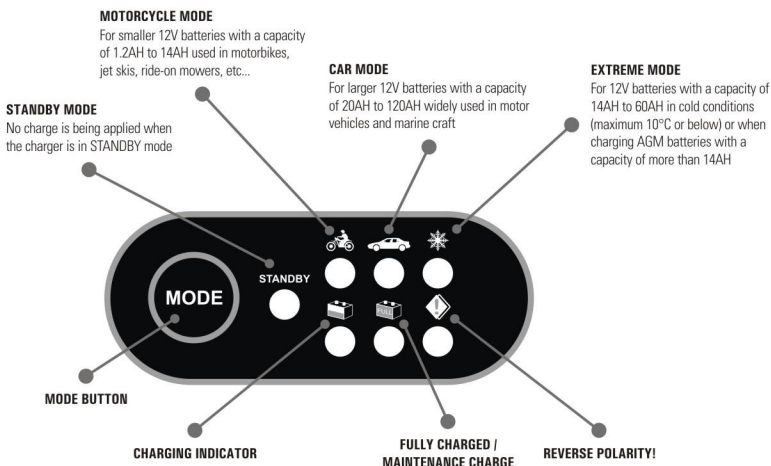
WHAT DOES MCU STAND FOR?

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

1. Diagnosis & Recovery
2. Two Stage Bulk Charging
3. Absorption Charging
4. Float Charging
5. 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.

CONTROL PANEL

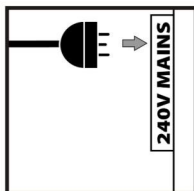


CHARGING INSTRUCTIONS

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.

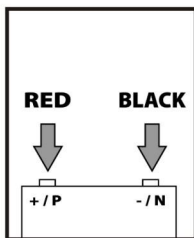
Before connecting the charger to the battery we strongly recommend that battery is removed from the vehicle and charged in a well ventilated location. For more information please see the 'CAUTION' section of this manual



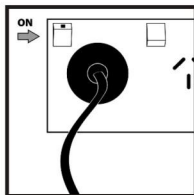
BATTERY CONNECTION INSTRUCTIONS

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 the mains power supply 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.

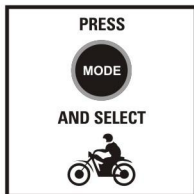


SELECTING CHARGING MODES

SMALLER BATTERIES: NORMAL CONDITIONS

For 12V batteries with a capacity of 1.2AH to 14AH widely used in motorbikes you must select the **MOTORCYCLE MODE** by pressing the **MODE** button.

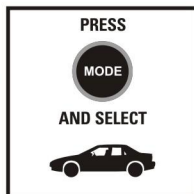
For more information regarding the different modes, see page 5



LARGER BATTERIES: NORMAL CONDITIONS

For 12V batteries with a capacity of 20AH to 120AH 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



EXTREME CONDITIONS

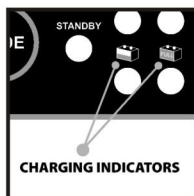
For 12V batteries with a capacity of 14AH to 60AH in cold conditions (maximum 10°C or below) or when charging AGM batteries with a capacity of more than 14AH, you must select the **EXTREME MODE** by pressing the **MODE** button.

For more information regarding the different modes, see page 5



Once the correct mode has been selected the battery will begin the charging process. You can tell that the battery is charging when the charging indicator is illuminated.

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 / 0.8A)



This mode is designed for charging smaller 12V batteries with a capacity of 1.2AH to 14AH widely used in motorbikes. Once the 1.2AH TO 14AH CHARGING MODE has been selected, the charging indicator will illuminate, indicating that charging has commenced at $0.8A \pm 10\%$ 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.

CAR MODE (14.4V / 3.6A)



This mode is designed for charging larger 12V batteries with a capacity of 20AH to 120AH widely used in motor vehicles and marine craft. Once the 20AH TO 120AH CHARGING MODE has been selected, the charging indicator will illuminate, indicating that charging has commenced at $3.6A \pm 10\%$ 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 / 3.6A)



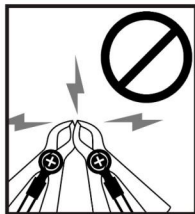
This mode is designed for charging 12V batteries with a capacity of 14AH to 60AH in cold conditions (maximum $10^{\circ}C$ or below) or when charging AGM batteries with a capacity of more than 14AH. Once the EXTREME CONDITIONS MODE has been selected, the charging indicator will illuminate, indicating that charging has commenced at $3.6A \pm 10\%$ 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.

CHARGER PROTECTION FUNCTIONS

To ensure safe operation, the charger has inbuilt protection against incorrect connection, short circuiting and overheating. The charger monitors the connection process and prevents "SPARKING" from occurring.

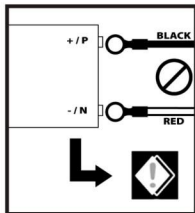
The charger casing is graded "IP65" - Unit sealed protecting against dust and low pressure jets of water from all directions (*Special conditions).

**240V plug and lead are not to be exposed to weather.*



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 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.

SHIFTING BETWEEN THE THREE MODES

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

"STANDBY" > "MOTORCYCLE MODE" > "CAR MODE" > "EXTREME 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.

SPECIFICATIONS

Input Voltage AC	220-240V, 50/60Hz	Efficiency	75%
Output Voltage	Nominal: 12V	Charging Voltage	14.4V \pm 0.25V or 14.7V \pm 0.25V
Input Current	0.6A RMS max	Charging Current	3.6A \pm 10% or 0.8A \pm 10%
Housing Protection	IP65 (Unit sealed against dust and low pressure jets of water)		
Ambient Temperature	-20°C to 50°C, Reduced output power at higher temperature		
Type of Charger	Five step, fully automatic, switch mode with maintenance charging		
Type of Batteries	12V Lead-acid batteries (WET, MF, AGM and GEL) *Will not fully charge Calcium Calcium batteries		
Battery Capacity	1.2-120Ah	Ripple	Max 150mV
Dimensions(LxWxH)	172x62x42mm	Back Current Drain	1mA
Weight	0.486kg	Noise Level	50dB (Tested from a distance of 50CM)

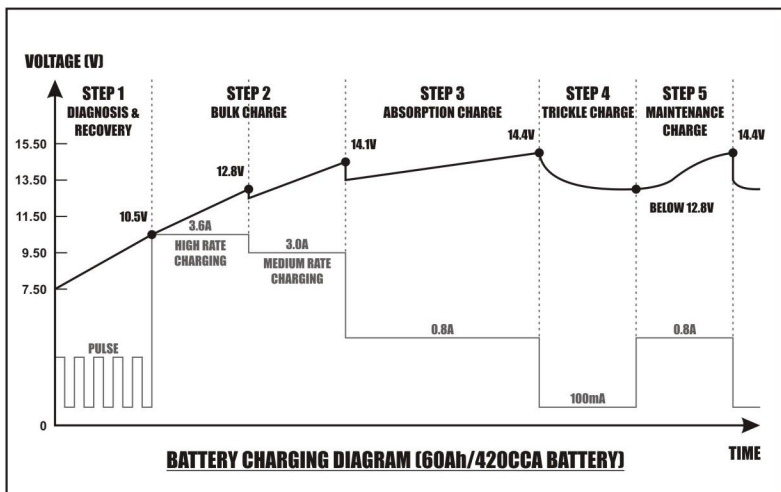
FAULT FINDING

- PROBLEM:** "STANDBY" indicator illuminates but the "MODE" button won't allow you to cycle through the different charging mode.

POSSIBLE FAULT: Charger not connected to battery.
Check terminal connection.
Battery is not 12V.
Battery is below than 7.5V (refer to RESCUING A DEAD BATTERY section).
- PROBLEM:** No spark when charging clamps touch together.

ANSWER: Charger features an inbuilt safety device to prevent sparking if clamps or terminals accidentally touch together.
- 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 !

- **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.
- The casing of this charger is graded IP65. (Sealed against dust and low pressure jets of water). **NOTE:** The 240V plug and lead are not to be exposed to weather.

