VMAXTANKS™

8-STAGE AUTOMATIC

BATTERY CHARGER & MAINTAINER

MCU CONTROLLED & HIGH FREQUENCY SWITCHMODE

P/No. BC8S1205A、BC8S1207A、BC8S1210A、BC8S1212A
BC8S1215A、BC8S1220A、BC8S2405A、BC8S2410A

Instruction Manual

Please read user manual carefully before use.

CE

1. WARNING

- Explosive gases may escape from the battery during charging. Prevent flames and sparks. Provide adequate ventilation.
- Before charging, read the instructions.
- For indoor use. Do not expose to rain.
- For charging 12v agm gel and sla batteries.
- Disconnect the 110V/220-240V AC mains supply before making or breaking the connections to the battery.
- The battery charger must be plugged into an earthed socket-outlet.
- Connection to supply mains is to be in accordance with National wiring rules.
- Do not attempt to charge non-rechargeable batteries.
- Never charge a frozen battery.
- If the AC cord is damaged do not attempt to use. It must be replaced or repaired by a qualified person.
- Corrosive substances may escape from the battery during charging and damage delicate surfaces. Store and charge in a suitable area.
- Ensure all vehicle accessories including lights, heaters, appliances etc are turned off prior to charging.
- This appliance 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.

2. FEATURES

8-STAGE AUTOMATIC CHARGING

This is a fully automatic battery charger with 8 charge stages.

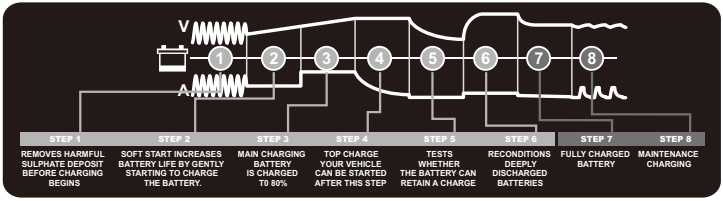
Automatic charging protects your battery from being overcharged. So you can leave the charger connected to the battery indefinitely.

8-stage charging is a very comprehensive and accurate charging process that gives your battery longer life and better performance compared to using traditional chargers.

8-stage chargers are suitable for most battery types including WET, MF, Calcium, AGM, and GEL batteries. They may also help restore drained and sulphated batteries.

The 8 stages are:
Desulphation ; Soft Start; Bulk; Absorption; Analyse; Recondition; Float. And Pulse.

The 8-stages are:Desulphation ; Soft Start; Bulk; Absorption; Analyse; Recondition; Float and Puls



	GEL	AGM	WET	CALCIUM	LIMIT
1 DESULPHATION	11V/22V	11V/22V	11V/22V	11V/22V	Max 8h
2 SOFT START	Half the rated until 12.5V/25V	Half the rated until 12.5V/25V	Half the rated until 12.5V/25V	Half the rated until 12.5V/25V	Max 8h
3 BULK	100% Current until 14.1V/28.2V	100% Current until 14.4V/28.8V	100% Current until 14.7V/29.4V	100% Current until 14.7V/29.4V	Max 24h
4 ABSORPTION	Constant 14.1V/28.2V until current drops to15%	Constant 14.4V/28.8V until current drops to15%	Constant 14.7V/29.4V until current drops to15%	Constant 14.7V/29.4V until current drops to15%	30 minutes
5 ANALYSE	Checks if voltage drops to 13.2V/26.4V	Checks if voltage drops to 13.2V/26.4V	Checks if voltage drops to 13.2V/26.4V	Checks if voltage drops to 13.2V/26.4V	90Sec
6 RECONDITION	Constant current (15%) limited to 14.1V/28.2V	Constant current (15%) limited to 14.4V/28.8V	Constant current (15%) limited to 16V/32V	Constant current (15%) limited to 16V/32V	30 min or 4h de pending on battery voltage (Calcium model must enter Recondition stage)
7 FLOAT	13.7V/27.4V 100% Current	13.7 V/27.4V 100% Current	13.7V/27.4V 100% Current	13.7V/27.4V 100% Current	10 days Charge cycle restarts if voltage drops*
8 PULSE	During 12.6V-14.1V/25.2V-28.2V , the current control at 100%~20%	During 12.6V-14.4V/25.2V-28.8V , the current control at 100%~20%	During 12.6V-14.7V/25.2V-29.4V , the current control at 100%~20%	During 12.6V-14.7V/25.2V-29.4V , the current control at 100%~20%	Charge cycle restarts if voltage drops

Desulphation

The Desulphation stage may break down sulphation that occurs in batteries that have been left flat for extended periods of time, returning them back to full charge. Sulphation occurs when lead-sulphate hardens and clogs up the battery cells.

Soft Start

A preliminary charge processes that gently introduces power to the battery. This protects the battery and increases battery life.

Bulk (Constant Current)

Charging with maximum current until approximately 80% battery capacity. Bulk mode for the charging cycle. The start phase continues until the battery's terminal voltage has risen above the set limit, at which point the charger switches to bulk charging. If the terminal voltage has not passed the voltage limit within the time limit, the charger switches to fault mode (Step 3 lamp solid) and discontinues the charging. If so, the battery is faulty or its capacity is too large.

Absorption (Constant Voltage)

Charging with declining current to maximize up to 100% battery capacity.

Analyse

An automatic battery test is conducted immediately after the absorption stage. The test monitors the voltage for 90 seconds to determine if the charge was successful.

- 12V charger If the voltage is below 13.2 volts (fail), the charger will initiate the Recondition stage.
- 12V charger If the voltage is above 13.2 volts (pass), the charger will proceed to the final stage: Float.
- 24V charger If the voltage is below 26.4 volts (fail), the charger will initiate the Recondition stage.

Recondition

Choose the Recond program to add the Recond step to the charging process. During the Recond step voltage increases to create controlled gasing in the battery. Gasing mixes the battery acid and gives back energy to the battery.

This recondition stage can recover batteries from a deeply discharged state increasing performance and battery life.

RECOND - This mode is used to recover deep discharged flooded batteries where you could expect a stratified acid (high acid weight in the bottom, low on top). Check with battery manufacturer when in doubt.

Use this mode with care, because the high voltage will cause some water loss. 16V/32V is normally no problem for electronics in 12V/24V system. Consult your supplier when in doubt. Life of light bulbs will be reduced at higher voltage. Try to disconnect light from the battery during this phase. Maximum effect and minimum risk for electronics is achieved by charging a disconnected battery.

Float

The Float stage maintains the battery at 100% charge without overcharging or damaging the battery. This means the charger can be left connected to the battery indefinitely.

Pulse

Maintaining the battery at 95-100% capacity. The charger monitors the battery voltage and gives a pulse when necessary to keep the battery fully charged. The battery charger has an 8-step fully automatic charging cycle. The cycle is repeated infinitely. If the terminal voltage drops below a lower limit, the charger automatically goes back to the beginning of the charging curve.

3. SWITCHMODE TECHNOLOGY

Using the latest technology in battery chargers, switch mode chargers convert 110V/220-240V AC power to 12V/24V DC power using electronic components unlike traditional battery chargers that rely on heavy transformers. This allows the charger to be light weight and compact without sacrificing on performance.

4. PROTECTIVE FEATURES

POLARITY PROTECTION

Prevents the output leads from sparking due to accidental reverse connection or short circuit, making the charger safer to use around batteries.

OUTPUT SHORT PROTECTION

Short circuit connection of the clips: Check clips are not touching each other OR Check the clips are correctly connected to the battery.

NON BATTERY LINK PROTECTION

If battery charger connects with non battery load, it will go into protection state.

DISCONNECT PROTECTION

The charger has entered the energy save mode. This happens if the charger isn't connected to the battery in 2 minutes.

OVER VOLTAGE PROTECTION

The 12V charger will automatically protection if the voltage is higher than 17.5V.
The 24V charger will automatically protection if the voltage is higher than 35V.

OVER TEMPERATURE PROTECTION

Internal temperature is above 65ºC +/-5 ºC

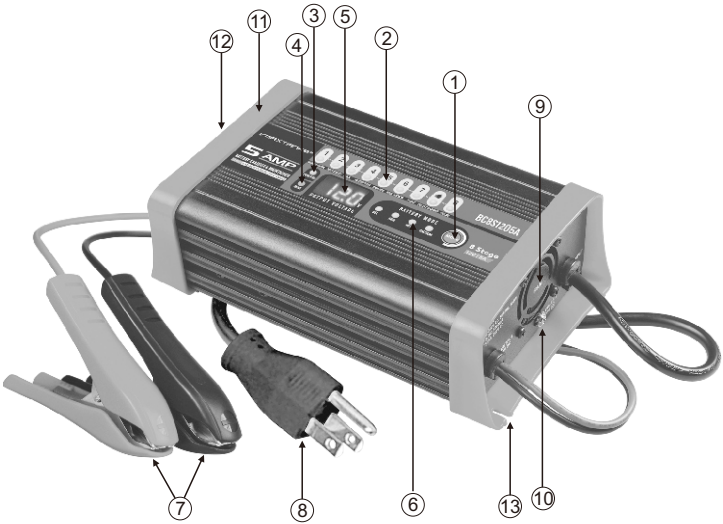
COOLING FAN

The charger is fitted with a thermostatically controlled fan to cool onboard electronics and maintain charging performance. The cooling fan will engage automatically when there is a high load on the battery or there is sufficient heat build up.

5. PRODUCT OVERVIEW

The 8-stage automatic charging consists of the following components:

1.Mode button
2.Stage lamp status display indicates power, charging and fully charged.
3.Power lamp
4.Fault lamp
5.Output voltage meter
6.Battery mode lamp
7.DC leads.
8.Power Cord
9.Thermostatically controlled cooling fan.
10.Ground terminal
11.Mounting flange.
12.Ventilation hole
13.3.5mm mounting hole.



6. CHARGE STATUS INDICATOR

The CHARGING and STAGE LAMP will illuminate and flash in various patterns to indicate the different stages of charging. See below for flash / steady patterns.

		Power on lamp	Stage lamp	Fault lamp	LED display
Power Off		—	—	—	—
Power On		☼	—	—	0.0
Stage	1. Desulphation	☼	☆/☼	—	Out volt
	2. Soft Start	☼	☆/☼	—	
	3. Bulk	☼	☆/☼	—	
	4. Absorption	☼	☆/☼	—	
	5. Analyse	☼	☆/☼	—	
	6. Recondition	☼	☆/☼	—	
	7. Float	☼	☆/☼	—	
	8. Pulse	☼	☆/☼	—	
Non Battery Link Protection		☼	—	—	0.0
Output Short Protection		☼	—	—	
Output Polarity Reverse Protection		☼	—	—	
Disconnect Protection		☆	—	—	
Over Voltage Protection		☼	—	☼	- U -
Is seriously sulphated		☼	☆ (Step 1 Lamp)	☼	Battery volt
Not accept charge		☼	☆ (Step 2 Lamp)	☼	
Faulty Battery		☼	☆ (Step 3 Lamp)	☼	
Battery Charge Fully		☼	☼ (Fully Lamp)	—	
Thermal Protection		☼	—	☆	- t -

Note: ☼: SOLID ☆: FLASH — : EXTINGUISH

STAGE LAMP: illuminates and flashes when 8-stage charging process.
STAGE LAMP: illuminates solid when fully charged.

POWER ON LAMP

If the power lamp is lit with a:
1. STEADY LIGHT
The mains cable is connected to the wall socket.
2. FLASHING LIGHT
The charger has entered the energy save mode. This happens if the charger isn′ t connected to the battery in 2 minutes.

FAULT LAMP STEADY LIGHT

If the fault lamp is lit solid , check the following:
Has charging been interrupted in STEP 1, 2 or 3.
Restart the charger by pressing the MODE-button. If charging is still being I nterrupted, the battery.
STEP 1: ...is seriosly sulphated and may need to be replaced.
STEP 2: ...can not accept charge and may need to be replaced.
STEP 3: ... battery is faulty and may need to be replaced. (Bulk charging has timed out and stopped after 24 hours.)

FAULT LAMP FLASHING LIGHT

Charger's internal temperature is higher than 65ºC +/-5 ºC

7. SPECIFICATIONS

P/No.	BC8S1205A	BC8S1207A	BC8S1210A
Charger Type	8-Stage automatic		
Input Voltage	☐ 220-240V～, 50/60Hz ☐ 110V～, 60Hz		
Input Power	154W	215W	307W
Output Voltage	12V DC	12V DC	12V DC
Output Current	5A	7A	10A
Minimum Start Voltage	2V	2V	2V
Back Drain	4mA	4mA	4mA
Current Fuse Rating	250VAC, T3.15A	250VAC, T3.15A	250VAC, T3.15A
CHARGE CONTROL			
Desulphation	Pulse charge up to 11V		
Soft Start	Half the rated set current up to 12.5V		
Bulk	5A up to 14.1V (GEL) 14.4(AGM) 14.7V(WET) 14.7V(CALCIUM)	7A up to 14.1V (GEL) 14.4(AGM) 14.7V(WET) 14.7V(CALCIUM)	10A up to 14.1V (GEL) 14.4(AGM) 14.7V(WET) 14.7V(CALCIUM)
Absorption	Constant voltage until current drops to 0.75A	Constant voltage until current drops to 1.05A	Constant voltage until current drops to 1.5A
Analyse	Monitors voltage for 90 seconds		
Recondition	Constant current (0.75A) for 30 min or 4 hours limited to: 14.1V (GEL) 14.4(AGM) 16V(WET) 16V(CALCIUM)	Constant current (1.05A) for 30 min or 4 hours limited to: 14.1V (GEL) 14.4(AGM) 16V(WET) 16V(CALCIUM)	Constant current (1.5A) for 30 min or 4 hours limited to: 14.1V (GEL) 14.4(AGM) 16V(WET) 16V(CALCIUM)
Float	13.7V also with pulse feature		
Pulse	12.6V- 14.1V,5-2A (GEL) 12.6V- 14.4V,5-2A (AGM) 12.6V- 14.7V,5-2A (WET) 12.6V- 14.7V,5-2A (CALCIUM)	12.6V- 14.1V,7-2A (GEL) 12.6V- 14.4V,7-2A (AGM) 12.6V- 14.7V,7-2A (WET) 12.6V- 14.7V,7-2A (CALCIUM)	12.6V- 14.1V,10-2A (GEL) 12.6V- 14.4V,10-2A (AGM) 12.6V- 14.7V,10-2A (WET) 12.6V- 14.7V,10-2A (CALCIUM)
Efficiency	App.85%		
Thermal Protect	65 °C +/-5 °C		
Cooling Fan	Automatic temperature controlled		
Ambient Temperature	-20°C to +50°C , output power is reduced automatically at high temperatures		
Over Voltage Protection	The 12V charger will automatically protection if the voltage is higher than 17.5V.		
Deep Cycle	20-75Ah	28-105Ah	40-150Ah
Types of Batteries	Most types of lead acid batteries including WET, MF, Calcium, AGM, and GEL		
Dimension (L×W×H)	197x116x62mm	197x116x62mm	197x116x62mm
Weight	1.05Kg	1.05Kg	1.1Kg

*** Specifications are subjected to change without prior notice.**

8. SPECIFICATIONS

P/No.	BC8S1212A	BC8S1215A	BC8S1220A
Charger Type	8-Stage automatic		
Input Voltage	☐ 220-240V～, 50/60Hz ☐ 110V～, 60Hz		
Input Power	332W	415W	554W
Output Voltage	12V DC	12V DC	12V DC
Output Current	12A	15A	20A
Minimum Start Voltage	2V	2V	2V
Back Drain	4mA	4mA	4mA
Current Fuse Rating	250VAC, T3.15A	250VAC, T3.15A	250VAC, T5A
CHARGE CONTROL			
Desulphation	Pulse charge up to 11V		
Soft Start	Half the rated set current up to 12.5V		
Bulk	12A up to 14.1V (GEL) 14.4(AGM) 14.7V(WET) 14.7V(CALCIUM)	15A up to 14.1V (GEL) 14.4(AGM) 14.7V(WET) 14.7V(CALCIUM)	20A up to 14.1V (GEL) 14.4(AGM) 14.7V(WET) 14.7V(CALCIUM)
Absorption	Constant voltage until current drops to 1.8A	Constant voltage until current drops to 2.25A	Constant voltage until current drops to 3A
Analyse	Monitors voltage for 90 seconds		
Recondition	Constant current (1.8A) for 30 min or 4 hours limited to: 14.1V (GEL) 14.4(AGM) 16V(WET) 16V(CALCIUM)	Constant current (2.25A) for 30 min or 4 hours limited to: 14.1V (GEL) 14.4(AGM) 16V(WET) 16V(CALCIUM)	Constant current (3A) for 30 min or 4 hours limited to: 14.1V (GEL) 14.4(AGM) 16V(WET) 16V(CALCIUM)
Float	13.7V also with pulse feature		
Pulse	12.6V- 14.1V,12-2A (GEL) 12.6V- 14.4V,12-2A (AGM) 12.6V- 14.7V,12-2A (WET) 12.6V- 14.7V,12-2A (CALCIUM)	12.6V- 14.1V,15-2A (GEL) 12.6V- 14.4V,15-2A (AGM) 12.6V- 14.7V,15-2A (WET) 12.6V- 14.7V,15-2A (CALCIUM)	12.6V- 14.1V,20-2A (GEL) 12.6V- 14.4V,20-2A (AGM) 12.6V- 14.7V,20-2A (WET) 12.6V- 14.7V,20-2A (CALCIUM)
Efficiency	App.85%		
Thermal Protect	65 ºC +/-5 ºC		
Cooling Fan	Automatic temperature controlled		
Ambient Temperature	-20ºC to +50ºC , output power is reduced automatically at high temperatures		
Over Voltage Protection	The 12V charger will automatically protection if the voltage is higher than 17.5V.		
Deep Cycle	48-180Ah	60-225Ah	80-400Ah
Types of Batteries	Most types of lead acid batteries including WET, MF, Calcium, AGM, and GEL		
Dimension (L×W×H)	197x116x62mm	217x116x62mm	217x116x62mm
Weight	1.1Kg	1.28Kg	1.28Kg

*** Specifications are subjected to change without prior notice.**

9. SPECIFICATIONS

P/No.	BC8S2405A	BC8S2410A
Charger Type	8-Stage automatic	
Input Voltage	☐ 220-240V~, 50/60Hz	☐ 110V~, 60Hz
Input Power	296W	547W
Output Voltage	24V DC	24V DC
Output Current	5A	10A
Minimum Start Voltage	4V	4V
Back Drain	8mA	8mA
Current Fuse Rating	250VAC, T3.15A	250VAC, T5A
CHARGE CONTROL		
Desulphation	Pulse charge up to 22V	
Soft Start	Half the rated set current up to 25V	
Bulk	5A up to 28.2V (GEL) 28.8(AGM) 29.4V(WET) 29.4V(CALCIUM)	10A up to 28.2V (GEL) 28.8(AGM) 29.4V(WET) 29.4V(CALCIUM)
Absorption	Constant voltage until current drops to 0.75A	Constant voltage until current drops to 1.5A
Analyse	Monitors voltage for 90 seconds	
Recondition	Constant current (0.75A) for 30 min or 4 hours limited to: 28.2V (GEL) 28.8(AGM) 32V(WET) 32V(CALCIUM)	Constant current (1.5A) for 30 min or 4 hours limited to: 28.2V (GEL) 28.8(AGM) 32V(WET) 32V(CALCIUM)
Float	27.4V also with pulse feature	
Pulse	25.2V- 28.2V,5-2A (GEL) 25.2V- 28.8V,5-2A (AGM) 25.2V- 29.4V,5-2A (WET) 25.2V- 29.4V,5-2A (CALCIUM)	25.2V- 28.2V,10-2A (GEL) 25.2V- 28.8V,10-2A (AGM) 25.2V- 29.4V,10-2A (WET) 25.2V- 29.4V,10-2A (CALCIUM)
Efficiency	App.85%	
Thermal Protect	65 ºC +/-5 ºC	
Cooling Fan	Automatic temperature controlled	
Ambient Temperature	-20ºC to +50ºC , output power is reduced automatically at high temperatures	
Over Voltage Protection	The 24V charger will automatically protection if the voltage is higher than 35V.	
BATTERY RANGE		
Deep Cycle	20-75Ah	40-150Ah
Types of Batteries	Most types of lead acid batteries including WET, MF, Calcium, AGM, and GEL	
Dimension (L×W×H)	197x110x62mm	217x116x62mm
Weight	1.1Kg	1.28Kg

*** Specifications are subjected to change without prior notice.**

10. CHARGING INSTRUCTIONS

1. Settings are made by pressing the MODE-button. After about two seconds the charger activates the selected program. The selected program will be restarted next time the charger is connected.
2. To turn off the charger by pressing and holding the MODE-button for 3 seconds.
3. To restart the charger by pressing and holding the MODE-button for 3 seconds.

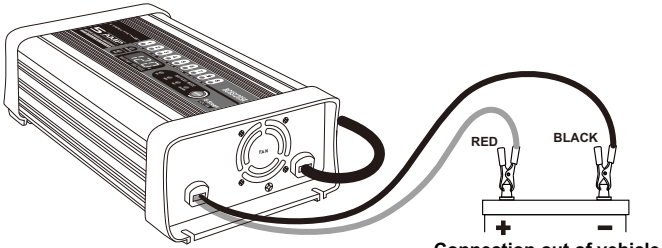
STEP 1 – CHECK THE ELECTROLYTE LEVEL

Prior to charging the battery, remove the vent caps and check the electrolyte level (not required on sealed & maintenance free batteries). The electrolyte should be 6mm (1/4”) above the battery’s plates. If low, top up with distilled water to the correct level and refit the vent caps.

STEP 2A – CONNECTION OUT OF THE VEHICLE

Connect the RED lead (battery clip) from the charger to the Positive (+) battery post.

Connect the BLACK lead (battery clip) from the charger to the Negative (-) battery post.



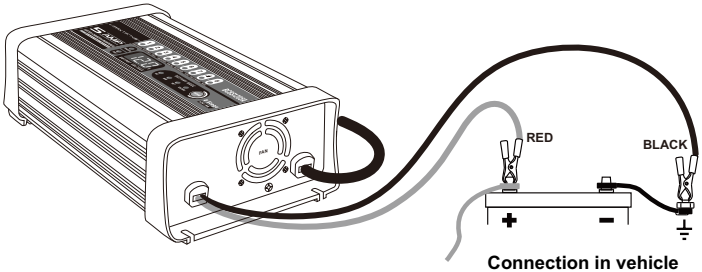
Connection out of vehicle

STEP 2B – CONNECTION IN VEHICLE

Determine if the vehicle is Positively (+) or Negatively (-) earthed. Negatively earthed vehicles have a cable (usually black) from the Negative battery terminal to the vehicle’s chassis.

11. Negatively earthed (most vehicles)

Connect the RED lead (battery clip) from the charger to the Positive (+) battery terminal.
Connect the BLACK lead (battery clip) from the charger to the vehicle's chassis away from the fuel line or moving parts.

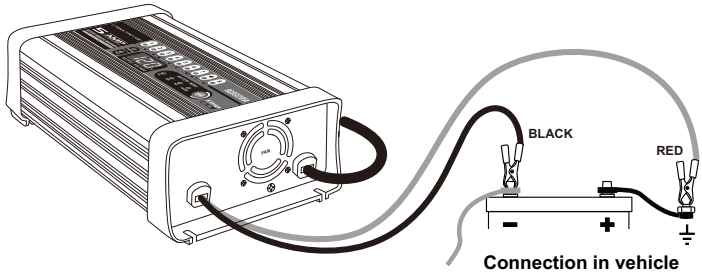


Connection in vehicle (negatively earthed)

12. Positively earthed

Connect the BLACK lead (battery clip) from the charger to the Negative (-) battery terminal.

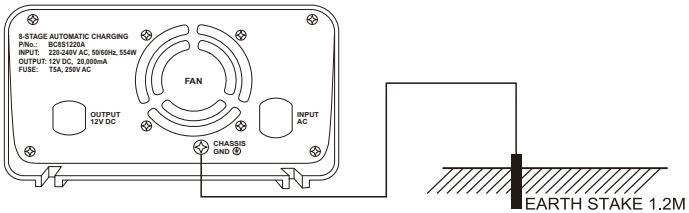
Connect the RED lead (battery clip) from the charger to the vehicle's chassis away from the fuel line or moving parts.



Connection in vehicle (positively earthed)

13. CHASSIS EARTHING

The chassis earthing lug should be connected to an earting point which will be depending on where the battery charger is installed. In a vehicle, connect the chassis ground lug to the chassis of the vehicle. In a boat, connect to the boat's grounding systems. In a fixed location, connect to earth.



STEP 3 CONNECT TO 110V/220-240V AC MAINS POWER

Connect the battery charger to the 110V/220-240V AC mains powered socket and turn on the mains power.

STEP 4 CHARGING

During the charge process, the CHARGING and STAGE LAMP will flash various patterns. This is normal and indicates the various charge stages. Refer to "How can I know what stage the battery charger is in" in the FAQ section, page 18.
When the STAGE LAMP remains on, this is known as the float stage and the charger can be left connected to the battery without over charging.
If the POWER ON LAMP is flashing, there is fault; refer to "Fault Codes" explanation on page 17 of this manual.

STEP 5 DISCONNECTION

Ensure the 110V/220-240V AC mains switch is turned off and the charger is disconnected from the 110V/220-240V AC mains power.

Battery out of vehicle

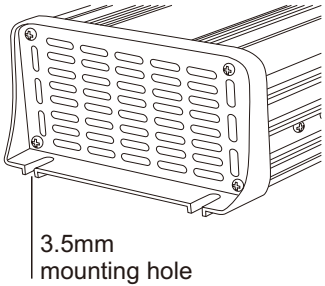
Remove the BLACK lead (battery clip) from the battery.
Remove the RED lead (battery clip) from battery.

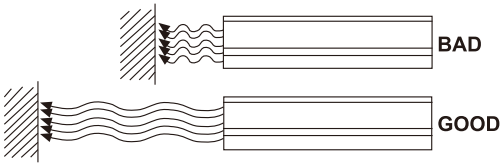
Battery in vehicle

Remove the chassis connection.
Remove the battery terminal connection.

14. MOUNTING INSTRUCTIONS

8-stage chargers are designed for indoor, out of weather use only. Ensure that both charger and battery are in a well-ventilated space during charging.
The battery charger end plates include a mounting flange for easy mounting.
If permanently fixed the charger should be mounted to a suitable horizontal or vertical panel, with at least 10cm clearance from the end plates to provide adequate ventilation for the cooling fan.





15. PERMANENT WIRING TO BATTERY

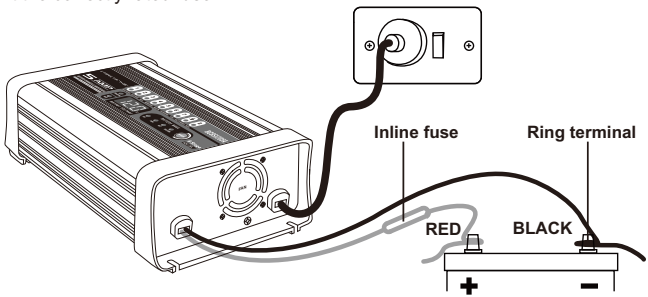
It is possible to hard wire the DC charging leads to the battery for permanent installations.

You will need 2 x ring terminals, an inline fuse holder and a fuse with a rating equal to or more than twice of the chargers output. (See below)

4A = 8 Amp fuse 5A = 10 Amp fuse 7A = 15 Amp fuse 10A = 20 Amp fuse
12A = 25 Amp fuse 15A = 30 Amp fuse 20A = 40 Amp fuse

Connection:

1. Cut off the supplied battery clips; ensure you leave sufficient cable to reach the battery terminals. (DO NOT extend the battery charger DC cables, as the added voltage drop will cause incorrect charging).
2. Fit a ring terminal to the BLACK Negative (-) wire.
3. Connect the inline fuse to the RED Positive (+) wire.
4. Connect a ring terminal to the other end of the inline fuse.
5. Connect the RED lead (with inline fuse and ring terminal) to the Positive (+) battery post.
6. Connect the BLACK lead (with ring terminal) to the Negative (-) battery post.
7. Fit the correctly rated fuse.



If the charger is used in a Permanent / Hard Wired application and the vehicle will not be used for some time, it is best to leave the charger connected to mains power (turned 'On') so that it can maintain the battery fully charged.

Ensure any modification to the 110V/220-240V AC mains lead is carried out by a qualified person and that connection to supply mains is in accordance with National wiring rules.

16. ADJUSTABLE CHARGE RATES: 12 VOLT BATTERY

CHARGE RATE	BATTERY SIZE (12V)	
	Battery size (Ah)	Charger time (hours)
5Amp	20-75	4-15
7Amp	28-105	4-15
10Amp	40-150	4-15
12Amp	48-180	4-15
15Amp	60-225	4-15
20Amp	80-400	4-15

17. ADJUSTABLE CHARGE RATES: 24 VOLT BATTERY

CHARGE RATE	BATTERY SIZE (24V)	
	Battery size (Ah)	Charger time (hours)
5Amp	20-75	4-15
10Amp	40-150	4-15

18. FAULT CODES

There are error codes that may be displayed. These will be displayed in the following way:

Error Code	Power on lamp	Stage lamp	Fault lamp	Cause	Remedy
Polarity Reverse / Output Short	¤	–	–	Short circuit or reverse connection of the clips	Check clips are not touching each other OR Check the clips are correctly connected to the battery.
Non Battery Link	☆	–	–	Non battery link	Please choose the right battery type for connection.
Faulty Battery	¤	☆ **(Step 3 lamp)**	¤	Bulk charging has timed out and stopped after 24 hours.	Battery is faulty and may need to be replaced.
Over Voltage	¤	–	¤	The 12V battery voltage is above 17.5V. The 24V battery voltage is above 35V.	Disconnect the charger and check the battery voltage. This charger is suitable for 12V or 24V Batteries only.
Over Temperature	¤	–	☆	Internal temperature is above 65°C +/-5 °C	Turn off charger and allow to cool.

FREQUENTLY ASKED QUESTIONS

Q. How do I know if the battery is charged?

A. The charger's FULLY STAGE LAMP will illuminate (solid). Alternatively use a Battery. Hydrometer A reading of 1.250 or more in each cell indicates a fully charged battery.

Q. I have connected the charger properly but the 'STAGE LAMP' does not come on?

A. In some cases batteries can be flattened to the point where they have very little or no voltage. This can occur if a small amount of power is used for a long time, for example a map reading light is left on for a week or more. 8-Stage chargers are designed to charge from as little as 12V charger 2.0 Volts and 24V charger 4.0 Volts If the voltage is lower than 2.0 Volts and 4.0 Volts use a pair of booster cables to connect between two batteries to provide more than 2.0 Volts and 4.0 Volts to the battery being charged. The charger can then start to charge the battery and the booster cables can be removed.

Q. Can I use the charger as a power supply?

A. 8-Stage chargers are designed to only supply power to the battery clips when they are connected correctly to a battery. This is to prevent sparks during connection to the battery or if connected incorrectly by mistake. This safety feature prevents the charger from being used as a 'Power Supply'. No Voltage will be present at the clips until connected to the battery.

Q. How can I know what stage the battery charger is in?

A. Below are the conditions that are displayed by the LAMP for each of the charge stages.

	① Desulphation	② Soft Start	③ Bulk	④ Absorption	⑤ Analyse	⑥ Recondition	⑦ Float	⑧ Pulse
Step Finish	¤	¤	¤	¤	¤	¤	¤	¤

CAUTION

ALWAYS PLACE THE BATTERY CHARGER IN AN ENVIRONMENT WHICH IS:

A. WELL VENTILATED.
B. NOT EXPOSED TO DIRECT SUNLIGHT OR HEAT SOURCE.
C. OUT OF REACH FROM CHILDREN.
D. AWAY FROM WATER / MOISTURE, OIL OR GREASE.
E. AWAY FROM ANY FLAMMABLE SUBSTANCE.
F. SECURE NO RISK OF FALLING.

SAFETY

◆The charger is designed for charging 12V/24V lead-acid batteries. Do not use the charger for any other purpose.

◆Check the charger cables prior to use. Ensure that no cracks have occurred in the cables or in the bend protection. A charger with damaged cables must not be used. A damage cable must be replaced by a professional representative.

◆Never charge a damaged battery.

◆Never charge a frozen battery.

◆Never place the charger on top of the battery when charging.

◆Always provide for proper ventilation during charging.

◆Avoid covering the charger.

◆A battery being charged could emit explosive gasses. Prevent sparks close to the battery. When batteries are reaching the end of their lifecycle internal sparks may occur.

◆All batteries fail sooner or later. A battery that fails during charging is normally taken care of by the charger's advanced control, but some rare errors in the battery could still exist. Don't leave any battery during charging unattended for a longer period of time.

◆Ensure that the cabling does not jam or comes into contact with hot surfaces or sharp edges.

◆Battery acid is corrosive. Rinse immediately with water if acid comes into contact with skin or eyes, seek immediate medical advice.

◆Batteries consume water during use and charging. For batteries where water can be added, the water level should be checked regularly. If the water level is low add distilled water.

◆This appliance is not designed for use by young children or people who cannot read or understand the manual unless they are under the supervision of a responsible person to ensure that they can use the battery charger safely. Store and use the battery charger out of the reach of children, and ensure that children cannot play with the charger.

◆Connection to the mains supply must be in accordance with the national regulations for electrical installations.