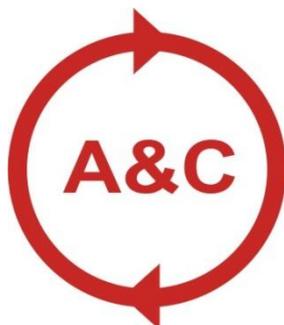


Operation Manual

Battery Charger BC200W 12V



A&C Automação e Controle Ltda.

84, Itápolis st – ZIP: 09615-040
São Bernardo do Campo - Brazil
Tel: (11) 4368-4202 Fax: (11) 4368-5958

e-mail: aec@aecautomacao.com.br

www.aecautomacao.com.br

Installation Safety Information

Before using any electrical appliance is essential to read the instruction manual. Carefully read the safety information before using the charger and always keep the manual near the machine.

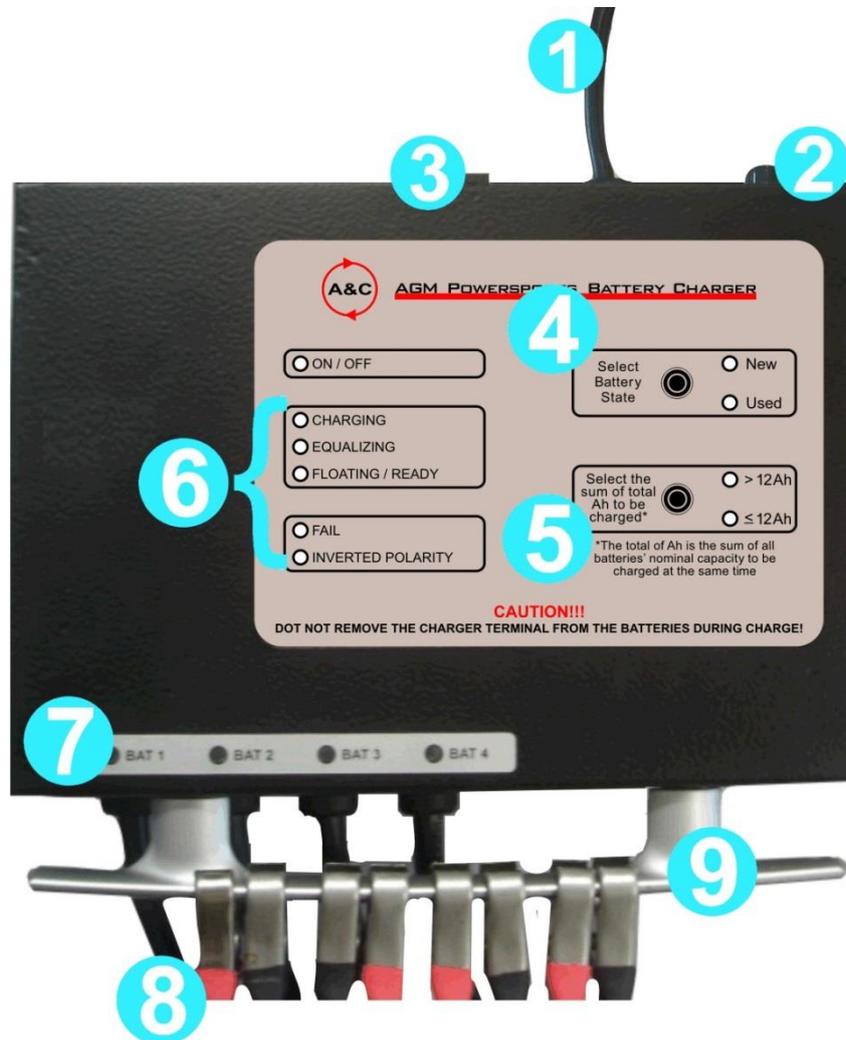
Safety General Care:

- ✓ Use *Personal protective equipment (PPE)* when handling batteries.
- ✓ According to the International Standards for recharging the battery, the procedures must be done in a ventilated area, away from flammable and within the limits of operating temperature, due to the fact that there is an battery emanation of gases, hazardous to health and corrosive potentially explosive during the recharging process.
- ✓ The charger should be installed in place protected from sun and rain, and also, stay as far away from battery charging (limited by the output cables), so that the gases generated by (s) battery (s), not are sucked into the air circulation system of the charger. These gases are corrosive and cause damage to the equipment.

Note: THE WARRANTY WILL NOT BE covered if found DAMAGES by CORROSIVE GASES.

- ✓ The ideal fixation setup is to keep the equipment attached to the wall above the bench of recharge, (apart by the cable length of output cables) through the two fixing points located at the rear of the equipment, equidistant 175mm. The attachment is made with two (02) fixed screws in to the wall with the aid of plastic bushings, with the screw heads must be spaced 10mm from the wall.
- ✓ Make sure that the device will be powered by a grounded power source and within of voltage levels specified in this operation manual. Ungrounded outlets, may cause electrical shock to the operator.
- ✓ Make sure that air inlet and outlet from equipment are not obstructed. Maintain a minimum clearance of 150mm.
- ✓ To ensure a good battery connection. Make sure that the battery terminals are clean and free of rust. The claws of cable terminals (Alligator), dirty or oxidized may cause sparks and operational errors.
- ✓ To load more than one battery, in models in which there is "parallelometer", carefully check the battery polarity. Connecting batteries with reversed polarity may damage the batteries and charger.
- ✓ Very important: During the charging process, do not disconnect the unit from the battery without turning it off, because if you do, the output terminals of the charger disconnected, remain energized no longer detecting the polarity reversed, which can cause severe damage to the batteries, charger unit or operator itself.
- ✓ Never operate, or let over the battery, metal objects or tools that may cause sparks or short circuit.
- ✓ Never use connection elements (AC supply and load), which are not original equipment, as it may cause accidents and defects.

Equipment presentation



1. Power Input 100 ~ 240 VAC
2. Protection Fuse: 3A
3. On / Off Button
4. Selection Button to the type of battery (New / Used)
5. Selection Button for the amount of battery (>12Ah/≤12Ah)
6. LEDs indicators of load status
7. LEDs indicators of connected batteries
8. Output connection cables for the batteries

Índex

| | |
|--|----|
| Who this manual aims:..... | 5 |
| Conventions utilized in this manual: | 5 |
| Technical specifications..... | 7 |
| Load Stage: | 9 |
| Failures | 10 |
| Troubleshooting Guide..... | 13 |
| Introduction..... | 6 |
| Operation | 8 |
| Foreword | 5 |
| Selection: voltage of load | 8 |
| Selection: Current of Charge (>12Ah/≤12Ah):..... | 8 |
| Technical Support:..... | 5 |

Summary:

Reading this summary is to let you familiar with the rest of the manual. Objectively, we propose a way of operating that allows the result sought is that a good battery charge.

Who this manual aims:

The manual is intended for those responsible for the operation of the battery charger BC200W A&C.

Conventions:

The following conventions are used in this Manual:

- ✓ List type items like this, are for information or recommendations aren't sequential;
- ✓ Numbered lists are for information or recommendations sequential or hierarchical;
- ✓ Italic Texts in are used for emphasis.

Technical Support:

If you require any further information or have questions regarding any of the items of this manual, please contact us by Customer Care Center. We will be happy to assist you in English, Spanish and Portuguese.

A&C Automação e Controle Ltda.
Rua Itápolis, 84 - Zip: 09615-040
São Bernardo do Campo – Brazil
Customer Care Center
Tel: (+5511) 4368-4202
Fax: (+5511) 4368-5958
e-mail: sac@aecautomacao.com.br

1. Introduction

The battery charger BC200W A & C is designed to charge AGM batteries, for the majority of current capacities, closely following the load specifications recommended by the battery manufacturer.

Under microprocessor control, the device performs the battery charge in 3 stages, automatically adjusts the parametric controls of voltage, current and time, in appropriate way for each stage, depending on the anticipated schedule made their way programming buttons located on the front panel equipment.

By employing high switching frequency technology, like entire family of battery chargers, BC200W has high performance, allowing for an extremely compact and lightweight device.

An optional named “parallelometer” allow you to load up to four (04) batteries at the same time.

2. Technical Specifications

| INPUT | |
|---------------------------|---|
| MAINS | 100 A 250VAC + Earth |
| FREQUENCY | 50/60Hz |
| EFFICIENCY (tipical) | 85% |
| NOMINAL POWER FACTOR | 0.75 |
| INPUT CURRENT max | 2,5A RMS @ 100VAC |
| INPUT FUSE | 3A / 20mm fast action |
| POWER CORD | 3 x 0,75mm ² / 1,8m / Plug NEMA 2P+T 10A/250VAC |
| OUTPUT | |
| POWER LOAD max | 170W |
| CURRENT LOAD max | 10A |
| BATTERY (IES) VOLTAGE (S) | 12Vdc |
| LOAD EQUALIZATION VOLTAGE | 15V/16V/17V |
| LOAD FLOATING VOLTAGE | 13,8VDC |
| START UP RAMP VOLTAGE | 5 A 14,5VDC |
| OUTPUT POWER CABLES | 1,5mm ² / 1,5 meters |
| CURRENT REGULATION | +/- 0,2A |
| VOLTAGE REGULATION | +/- 0,1V |
| DIMENSION | |
| BOX CONTAINER | 230mm X 220mm X 90mm |
| CHARGE UNIT | 220mm X 160mm X 75mm |
| WEIGHT | 1,8 Kg |
| TEMPERATURE RANGE | -5 to 50°C |
| PROTECTIONS | |
| OUTPUT SHORT CIRCUIT | YES |
| POLARITY INVERSION | YES* |
| OVER TEMPERATURE | YES |
| OVER VOLTAGE | YES |
| START UP RAMP | YES |

* The supervision against battery reverse polarity only work, at start up.

3. Operation

The operation of the battery charger BC200W is simple, the operator follow the steps below:

- a) Connect the battery charger to an outlet 100 ~ 250VAC GROUNDED through the included power cord.
- b) Power on via the power switch.
- c) Select the battery type (New or Used) via the button SELECT LOAD VOLTAGE.
- d) Enter the amount of batteries via the button SELECT MAXIMUM CURRENT ($>12Ah/\leq 12Ah$).
- e) Connect the claws (alligator) to the battery terminals (Red Claw at the positive pole and Black Claw to the negative pole). Immediately the device will scan the connected battery to make sure that it is within the operating parameters and voltage with the correct polarity, and automatically begins charging. If the battery charging voltage is below 5 volts, you will need to connect other batteries in parallel to the unit to start the load after initiation, the batteries in parallel can be drawn.

3.1 Load Voltage Selection

The device is able to adjust the time of load states according to the situation of battery under load (new or used). Then, the device will charge the battery properly, strictly following the criteria of load selected.

For this, simply press the "Select Battery State" to toggle between "New" or "Used". The signalization is made using LEDs.

3.2 Selection: Current of Charge ($>12Ah/\leq 12Ah$)

The equipment has a button for selecting the maximum load according to the amount of battery on charging. I.e: the total of "Ah" is the sum of all batteries nominal capacity to be charged at the same time.

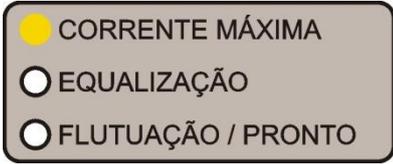
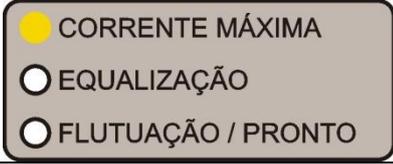
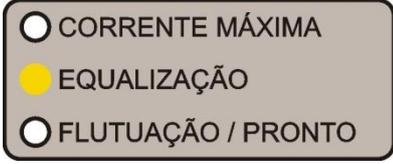
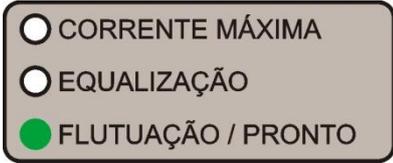
Comments:

- ✓ The selection of voltage and current load factors, for operational safety, must be made with the charger disconnected from the battery. Once started charging is not possible to change the selection. If necessary change the selection already in charge, unplug the appliance, disconnect the battery and start the process again following the steps in item 3.
- ✓ The load parameters (voltage and current) are automatically saved in the device memory so that whenever the power is turned on, will be programmed with the last operation facilitating subsequent operations.

3.3 Loads States:

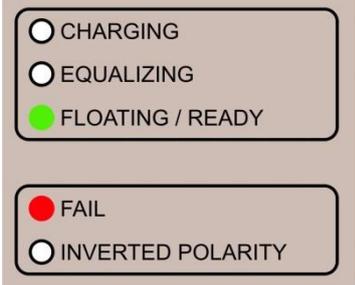
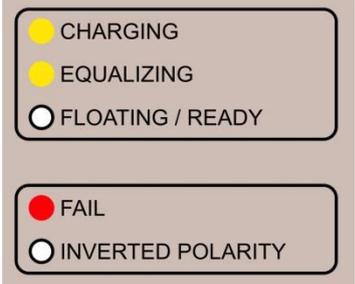
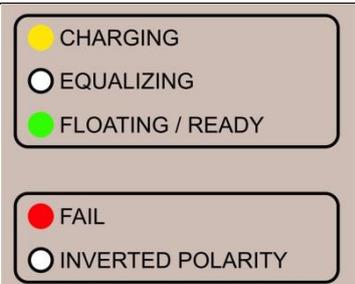
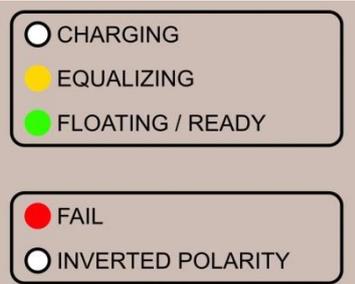
The battery is held in four stages, with indication of progress by LEDs.

Note: The charging time depends on: battery capacity, state of charge and current.

| State | Indication | Description |
|-----------------|---|--|
| Sulfate break |  <p>Note: LEDs blinking.</p> | The device analyzes the battery at the beginning of the load into the possibility of this being sulfated. Case confirm that the battery is sulfated, raise the charge voltage to facilitate the breakdown of sulfate, remaining in this stage until the load current exceeds 0.3A. With no detection of sulfation, the unit will go to the next stage. |
| Maximum Current |  | At this stage, charging is carried out with the maximum current selected. The charger BC200W is capable to reach up to 10 A. |
| Equalization |  | The system enters this load state when the battery voltage reaches the voltage 15V/16V/17V (depending on the battery state of charge (SoC)). At this state, the voltage is kept constant in these levels between 1 hour or 1 hour and a half (depending on the selection of current of charge). After this, the device switches to the floating state. |
| Floating |  | Upon entering the Float state, the battery is approximately 95% of its maximum capacity and can already be used. The float voltage is constant 13.8 V, and aims to keep the battery at full charge. In this State, the battery can remain connected to the charger indefinitely without risk of damage. |

4. Failures

The battery charger has an automatic failures verification device. The faults are reported via “fault LEDs”, and the fault code via LED indicators of the “load state”.

| Failure | Indication | Description |
|--------------------|---|--|
| REVERSE POLARITY | Doesn't have | The device does not allow the start of charging if the battery is connected with poles reversed. To correct the failure and start charging, just inverse the cables, so as to leave the positive pole connected to the red claw and the negative pole to the black claw. |
| OVERVOLTAGE |  | The device continuously checks the output voltage and trips the power stage, so that detects a voltage above the normal operating levels. The abnormal output voltage can be caused by poor contact or battery momentary disconnection during the charging process. |
| CONTROL FAIL |  | The equipment cannot achieve the levels of current at “MAXIMUM CURRENT” or voltage of “EQUALIZATION” or “FLOATING”. May be caused by defect in the power stage, control or even battery defective. |
| POWER FAIL |  | The device does not detect the presence of output current. The cause may be defective power unit stage. |
| SULFATE BREAK FAIL |  | The device indicates this failure when cannot make the sulfate break after 2 hours of load voltage at 18.0 V. The cause may be a battery with an advanced state of sulfation that can no longer be retrieved. |

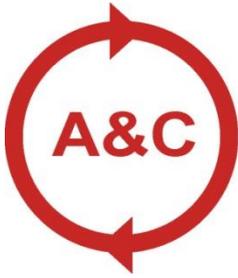
NOTES:

- ✓ When a overvoltage fault is detected, the device checks after few seconds if the battery remains connected and restarts the load at the point where it was interrupted. If the device does not detect the presence of the battery after the failure, the failure indicator LED lights with the same code.
- ✓ To "delete" an indication of failure, is necessary to turn off the equipment through the "ON/OFF" switch for 5 seconds.

5. Troubleshooting Guide

| Problem | Reason | Possible Solution |
|--|--|---|
| LEDs None light up when switching "power on" | <ul style="list-style-type: none"> ✓ Power Fail (100~220V Vac); ✓ VAC power, outside the specified; ✓ Input fuse blown; ✓ Power cord broken or disconnected; | <ul style="list-style-type: none"> ✓ Check if there is power at the plug of AC power (100V ~ 240V) to which the equipment is connected; ✓ Check the input fuse. Warning, if is necessary to change, only use the fuse in conformity of technical specifications; ✓ Check the Power cord integrity (continuity), connect again; |
| The unit does not start charging | <ul style="list-style-type: none"> ✓ Battery badly connected; ✓ Battery Voltage outside of the specifications; ✓ Battery connection inverted; | <ul style="list-style-type: none"> ✓ Verify if the battery terminals are clean and free of rust. ✓ Check the battery voltage and connect a second battery in parallel for load start, if necessary; ✓ Check the battery polarity. |
| The system starts loading, and not leave the maximum current state | <ul style="list-style-type: none"> ✓ Battery cells damaged; ✓ External Loads connected to the charger; | <ul style="list-style-type: none"> ✓ Verify if the battery is damaged; ✓ Disconnect any external load; |

- *If the information contained in this guide is not sufficient to solve the problem, please contact our technical support.*
- *A & C automation and Control Ltda., reserves the right to update this manual at any time.*



A&C Automação e Controle Ltda.

Rua Itápolis, 84 - Vila Vivaldi
São Bernardo do Campo - SP
CEP: 09615040 - Brasil

Fone: (011)4368-4202
Email: sac@aecautomacao.com.br
www.aecautomacao.com.br

Letter to our Customer

Congratulations, you have now a world class appliance to conditioning and recharge batteries.

Your equipment has 01 year warranty in Brazil against manufacturing defects, starting in the billing date.
We certify that your equipment is in normal operation and in perfect conditions.

In case of any operating doubt, manufacturing defect and any other information, please contact us on our Customer Care Center (SAC), which will guide you on procedures with the equipment. In case de malfunctions, any service will be conducted at our head office in São Bernardo do Campo / SP / Brazil , shipping at owner expenses.

Series: _____

Billing Note: _____