BRIERLY TECHNOLOGIES INC.

Elite 1

Model CBHF2

HIGH FREQUENCY ELECTRONIC BATTERY CHARGER

Attention: Carefully read this operating manual before using the battery charger.

OPERATING MANUAL

GENERAL INFORMATION ABOUT THIS CHARGER

- This device is an electronic battery charger with microprocessor control suitable for any lead acid battery type when correctly set.
- Fully automatic charging with electronic setting; protected against overload, short-circuit and reversed polarity.

WARNINGS

- Never disconnect the battery while charging: this could cause sparks.
- Never use the equipment in the rain, in areas used for washing or in damp areas.
- Caution: the gases generated during charging are explosive. Do not smoke in the vicinity of the batteries. When working with cables and electrical equipment, avoid open flames and sparks.
- Before starting to charge, make sure the voltage of the equipment suits the voltage of the battery, that the charging current suits the capacity of the battery and that the selected charging curve (for lead-acid wet batteries or VRLA - i.e. gel or agm - batteries) is correct for the type of battery to be charged. In addition, make sure the rated input voltage of the charger suits the available supply voltage and the system is grounded.
- If necessary, replace the fuse with another of the same type and value as indicated on the rating plate.
- Use battery chargers only in well ventilated areas.
- Pay attention to any remarks of the battery manufacturer.

- **Attention:** Use protective glasses and gloves during battery maintenance. Battery acid causes injuries. In case of contact with battery acid, wash the affected parts with fresh water and consult a doctor if necessary.

CONTROLS (SEE DIAGRAM ON PAGE 4)

1. Three-digit display + symbol (1), to show:
   A = the charging current
   U = the battery voltage
   h = the charging time elapsed
   C = the charging ampere-hours [Ah] absorbed by the battery
   E = the energy in kilowatt hours [KWh] absorbed by the battery
2. `Press for Status"`button for the selection of the display mode (2) noted above: A, U, h, C, E. After about 10 seconds the display returns to a display of the charging current.
3. Red control indicator (3): when it is on, the charging cycle has started.
4. Yellow control indicator (4): when it is on, the final phase of the charging cycle has started.
5. Green control indicator (5): when it is on, the charging cycle has finished.
6. Programmed setting of the charger (6): shown on an adhesive label

OPERATION

- Connect the battery pack, checking the polarity.
- Plug the charger into the AC supply, thus starting the automatic charging cycle. The display will show a sequence of details on the charger's internal programming after first displaying "SPE", it will show the software release installed in the equipment, then the following parameters in sequence:
    - o battery voltage
    - o charging current
    - o charging curve number
    - o the words **"GEL"** or "***Acd***" depending on the charging curve being suitable for sealed (gel or agm) batteries or lead-acid wet batteries.

- **Make sure the type of batteries to be charged (VRLA or lead-acid wet batteries) matches the displayed details ("GEL" or "Acd", respectively). If it doesn't, contact your dealer.**

Next, a test is run on the battery voltage to decide if the charging process should be started or not. If the battery is not connected to the battery charger, the display will show the word **"bat"**. The word will stay on, even if the test is failed (for instance, reversed polarities or incorrect battery connection). If the test is passed,

- the display will show the battery voltage for approximately 5 seconds and the battery will begin to be charged. The charging cycle progress will be shown by red (3), yellow (4) and green (5) LED indicators.
- At the end of the charge, when the green indicator is on, disconnect the AC power supply and disconnect the battery pack. (Some charging profiles have a float stage at the end of charge: in this case the charger can be left connected to the battery pack.)

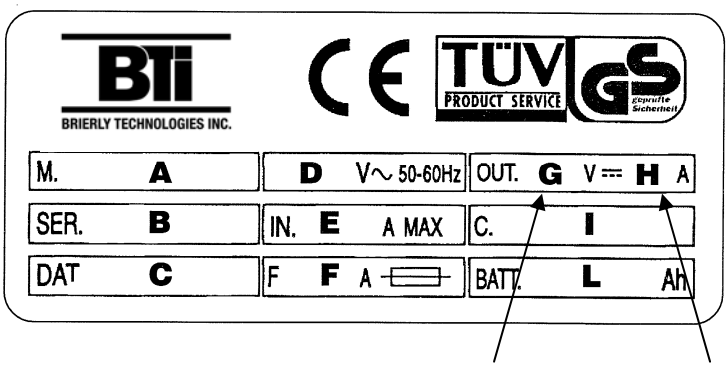
Troubleshooting

PROBLEMS	SOLUTIONS AND CHECKS
The battery charger does not switch on	Check that the plug is connected to the mains supply. Check that the fuse is not blown.
The charging cycle does not start and the message '***bat***' is displayed	Check the connection to the battery and the polarity.
The yellow indicator (4) will not light up even 15 hours from the starting of the charging cycle, and the display shows ***E03***.	Check the battery for possible faulty components.
The message ***E01*** is displayed	This means that the maximum voltage admissible by the battery has been exceeded. The charging is interrupted.
If the battery charger is provided with a safety thermostat (optional) and the message ***E02*** is displayed.	This means that the maximum temperature has been exceeded. The charging is interrupted.
The message ***E03*** is displayed	This means that the maximum time for the charging phase has been exceeded. The charging is interrupted.
The message ***SCt*** is displayed	This means that the total safety timer has interrupted the charging.
The message ***Srt*** is displayed	This signals a possible internal short circuit.

RATING PLATE

The rating label on the side of the unit provides the following details:

- A – model
- B – serial number
- C – date of manufacture
- D – mains voltage
- E – input current
- F – fuse rating
- G – output voltage
- H – output current
- I – charging curve
- L – range of battery sizes possible



NOTE: The rating plate stipulates the initial setting of DC voltage (G) and current (H). The setting of your particular unit may be different. Refer to the programmed setting shown on the front of the charger.

OTHER TECHNICAL DATA

- Storage Temperature Range: - 40 to +50 degrees Celcius
- Relative Humidity Range: 0 – 80%
- Operating Temperature Range: -10 to +45 degrees Celcius

REPAIRS

- Repairs must only be carried out by qualified personel.
- Use only original equipment manufacturers (OEM) parts for repairs.

ELECTRICAL FEATURES

1. System input 115V/240V 50-60Hz
2. Charging parameters insensitive to ±10% system voltage variations.
4. Efficiency > 90%.
5. Output ripple at max load below 150mV.
6. Accuracy of power and voltage measurements 1%.

ELECTROMAGNETIC COMPATIBILITY

The tests of electromagnetic compatibility (*EMC*) on these devices were carried out in compliance with the *CEI EN55014-1+A2(04/98-06/99) and CEI EN 55014-2(10/98) STANDARD norms, with the test instructions and conditions as requested by the norms*.

NORM	*RESULT*
EN 55014-1+A2	*COMPLIANT*
EN 55014-1	*COMPLIANT*
EN 61000– 3-2	*COMPLIANT*
EN 61000– 3-3	*COMPLIANT*
EN 61000– 4-2	*COMPLIANT*
EN 61000– 4-4	*COMPLIANT*
EN 61000– 4-5	*COMPLIANT*
EN 61000– 4-6	*COMPLIANT*
EN 61000– 4-11	*COMPLIANT*

As to the immunity the devices are classified as Category II.

ELECTRICAL APPROVALS

The CBHF2-PFC charger is cULus listed.

FRONT PANEL CONTROLS