



Elite 1

Elite PRO 1

Elite PRO 1 XP

Models

CBHF2 – CBHF2-M – CBHF2-XP

HIGH FREQUENCY ELECTRONIC BATTERY CHARGERS

OPERATING MANUAL

Do not operate the battery charger unless you have read and understood the details of this operating manual.



IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS – This manual contains important safety and operating instructions for battery charger models CBHF2, CBHF2-PFC, CBHF2-M and CBHF2-XP.

Before using the battery charger, read all instructions and cautionary markings on the charger, battery pack, and product powered by the battery.

CAUTION – To reduce risk of injury, charge only the type of batteries indicated on the charger. Other types of batteries may burst causing personal injury and damage.

GENERAL INFORMATION

- This device is an electronic battery charger with microprocessor control.
- Charging process is fully automatic, protected against overload, short-circuit, reversed polarity and overtemperature.
- Steel-cased chargers are intended only for stand alone use, not onboard vehicles. Injection mould case units (plastic) can be mounted onboard vehicles under certain circumstances. All models can be wall mounted.

WARNINGS

- This charger should not be used by persons with a lack of experience and knowledge on electrical systems and battery charging unless they have been trained by and/or supervised by a suitably knowledgeable and experienced person.
- Before starting to charge, make sure the voltage of the charger matches the voltage of the battery, that the charging current suits the capacity of the battery and that the selected charging curve is correct for the type of battery to be charged.
- Make sure the rated input voltage of the charger suits the available supply voltage.
- **Danger:** Risk of electric shock.
- Make sure the AC supply is grounded.

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- Make sure the AC supply cord is in good condition and that it is securely connected to the charger before use.
- Make sure the DC cables and DC connector are good condition before use.
- Do not use the battery charger if there are any signs of physical damage that may have affected the integrity of the case, exposing internal components.
- Never disconnect the battery while charging: this could cause sparks.
- Never use the equipment in the rain, in areas used for washing down equipment or in damp areas.
- Gases generated by some battery types during charging are explosive. Do not smoke in the vicinity of the batteries.
- Do not operate the charger in an explosive environment.
- Do not operate the charger near flammable liquid such as gasoline, oil or other volatile substances.
- Do not use on damaged battery packs.
- Never charge a frozen battery.
- Pay attention to any warnings provided by the battery manufacturer and equipment manufacturer.

HEALTH HAZARD

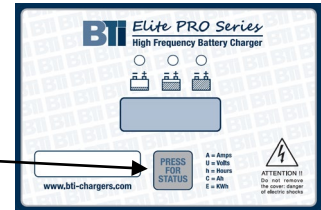
- Use protective glasses and gloves during battery maintenance. A damaged or leaking battery can cause chemical burns on contact.
- In case of contact with battery acid, wash the affected parts with fresh water and seek medical attention.

OPERATION

- **IMPORTANT:** Check that the battery type setting of the charger is suitable for the battery type
- Check the polarity of the battery pack, and connect to the battery charger to the batteries.
- Plug the charger into the AC supply.
- The charger will display the following during start-up:
 - **“bti”**
 - the firmware version number in 3 successive screens, example:
 - **010-**
 - **103-**
 - **000**
 - The nominal voltage setting, example: **24.0U**
 - The current setting, example: **25.0A**
 - The selection of charging curve memory location, example: **014c**
 - An indicator of the battery type setting, example: **AGM**
- The charger will then read the battery pack voltage, example: **25.2U**
- If the battery pack voltage cannot be read, the error **“bat”** will be shown.
- If all is OK, a relay click will be heard, and the output begins with the bulk charging phase, with the **red** led ON.
- When the **red** led is ON and the **yellow** led is ON, the charger is in the second phase.
- When the **yellow** led is ON the charger is in the final phase
- When the **green** led is ON, it indicates the charge is complete. There may still be output to the batteries depending on the charging curve selected.
- Before using the batteries, disconnect the AC power to the charger, then disconnect the charger from the battery pack.
- If errors occur, the charging process will stop and an error code will be shown on the display. See the table of errors on the following page.

CHARGING DATA

- During the charging process, and before turning off the charger, it is possible to see data relating to the charge cycle by sequentially pressing the "Press for Status" pad. This will show, in turn:
 - Current (A)
 - Charge voltage (V)
 - Charging time (Hours)
 - Amp hour capacity returned to the battery (Ah)
 - Power returned to the battery in kilowatt-hours (KWh)



CHARGER WILL NOT TURN ON

- If the charger will not turn on, see troubleshooting below.

Issue	Meaning	Action Required
charger does not turn on	there is no AC input to the charger	check that the charger is plugged in
	there is no power to the control card	check AC power supply
		check the power cord and plug
		call dealer for service to check internal fuse, components and connections
		call dealer for service to check internal components and connections

ERRORS

- In the case of abnormal operation, an error code will be shown on the display.
- Use the table below to determine the meaning and action required to overcome the error.

Operation Errors

Error Code	Meaning	Action Required
CF6	configuration error - incorrect dip switch setting	check dip switch settings
bat	charge reads zero or unacceptable voltage	check all battery connections
		check connection polarity
Srt	possible internal short circuit	check internal DC output fuse (if present)
		check battery voltage level - must be between 0.33 volts/cell and 2.4 volts/cell or the charger will not start
		call dealer for service

Phase Errors

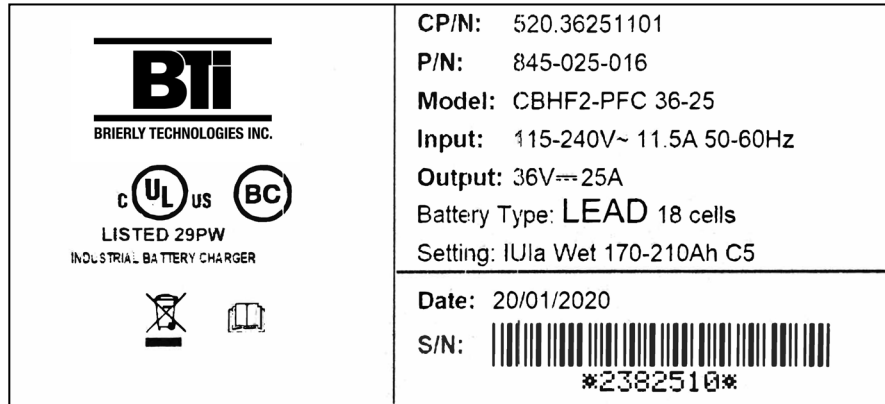
Error Code	Meaning	Action Required
E01	maximum charging voltage exceeded - charge is interrupted	call dealer for service
E02	maximum charger temperature exceeded - charge is interrupted	call dealer for service
E031	phase 1 time limit exceeded	check battery condition for possible shorts
		check max current output of charger
E032	phase 2 time limit exceeded	check that the charger is sized correctly for the battery capacity
		check battery condition for excessive resistance
Sct	global timer error	check max current output of charger
		check that the charger is sized correctly for the battery capacity
		check battery condition
		check current output of charger
		check that the charger is sized correctly for the battery capacity

SERVICE

- Service should only be performed by qualified persons.
- Use only BTI replacement parts or identically rated components when performing repairs.

RATING LABEL

- The rating label shows the **Model** of charger, **Input Voltage** (IN.), DC **Output** voltage and current.
- Note that the output current and/or voltage and battery type setting may have been adjusted on your unit. Refer to the OPERATION details above to confirm the settings.
- If the battery type setting is changed, it is recommended that this is noted on the front label.
- Before changing battery type setting, be sure to check the relevant BTI technical documents that match the serial number range of your charger.
- A sample product rating label is below.



TECHNICAL DATA

- AC Input voltage range: 85-260V AC, 50-60Hz
- Efficiency: > 90%
- Output ripple at max load <150mV.
- Accuracy of power and voltage measurements 1%.
- Thermal protection against overheating.
- Operating temperature: -10°C to +45°C (14°F to 113°F)
- Storage temperature: -40°C to +45°C (-40°F to 113°F)
- Relative humidity range: 0 – 80%

REGULATORY AND COMPLIANCE

- The *Elite 1* and *Elite PRO 1 Series* chargers are UL Listed (cULus):
CAN/CSA-C22.2 No 107.2-01 and UL 1564



- The *Elite 1* and *Elite PRO 1 Series* chargers are CEC Listed.



- The *Elite PRO 1 Global* is cULus Listed, CE compliant, has RCM and INMETRO approvals.



- The *Elite 1* and *Elite PRO 1 Series* chargers do not emit radio frequencies.

V2.0
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