HI-EFFICIENCY BATTERY CHARGER



BC-5A-M

12/24V AUTOSELECT

5.0 AMPERES

170-300 VAC

FEATURES

- ***Very high efficiency, up to 91.6% (see charts)***
- ***Wide operating voltage range (170-300VAC)***
- ***Reverse battery connection protected***
- ***LED status indicator***
- ***Low power consumption at no-load mode***
- ***Green mode operation***
- ***Output short circuit and overload protection***
- ***High temperature protection***
- ***2 stage charging for continuous connection***
- ***Rectifier fail output***
- ***Analog 0-5V current measuring output***
- ***Wide operating temperature range***
- ***Low output ripple & noise***
- ***Low line and load regulations***
- ***Small dimensions***
- ***Low weight***

- Only for installation within other equipment by professional installers.
- Cannot be operated as a stand alone product.

DESCRIPTION

BC-5A-M series are state of the art battery chargers featuring very high efficiency and low cost in a compact metallic casing.

Chargers are designed to withstand high levels of disturbances found in the harsh automotive environment.

Chargers are practically impossible to destroy, having overload, short circuit, high temperature and reverse battery protections. The overload protection is current limiting type, not hiccup. Hiccup protected chargers will turn-off in case of overload and will be incapable of charging an empty battery with their rated current. In case of a short circuit or overload condition, the BC-5A-M charger does not shut-off, and delivers simply the rated current, allowing a full-speed charge of an empty battery.

In case of overheating, the charger will automatically reduce its output current and continue normal operation.

Chargers offer automatic battery voltage detection. Thus, the same module operates at 12V or 24V without the need of a manual selection, removing human errors.

BC-5A-M chargers have 170-300V input voltage range, enabling the use in most countries with nominal voltages ranging from 220VAC to 277VAC. The nominal output is fully available at all 170-300VAC range without derating.

Chargers offer green mode of operation. The green mode consists on reducing the operating frequency when the load decreases. Thus, chargers reduce their losses helping protection of the environment. At very small loads, they enter into a burst mode to reduce the consumption further.

Chargers feature very low power consumption at no-load mode, helping again the protection of the environment.

The peak efficiency of chargers exceeds 91.5%, resulting in lower long-term operational costs. As an example, compared to a 24V/5A charger of 85% efficiency, with 30% average load and 20 years of operational life, BC-5A-M will consume 600 kW-hour less electrical energy. This leads approximately to 60 USD less energy expense per charger.

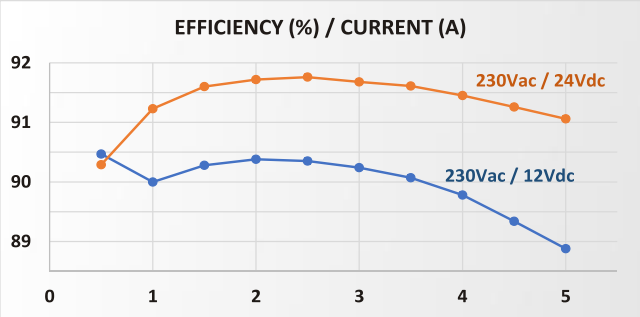
The rectifier fail output is capable of driving a relay or transmitting the operational status to a control module which will give an alarm in case of failure.

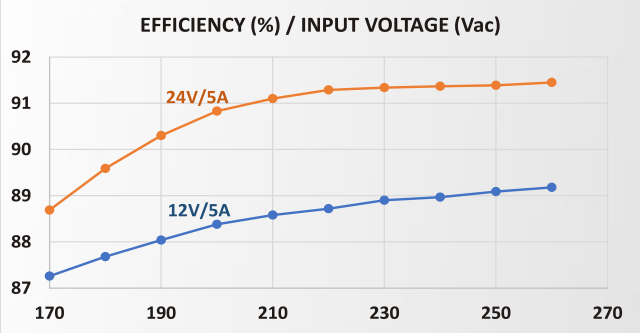
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EFFICIENCY CHARTS

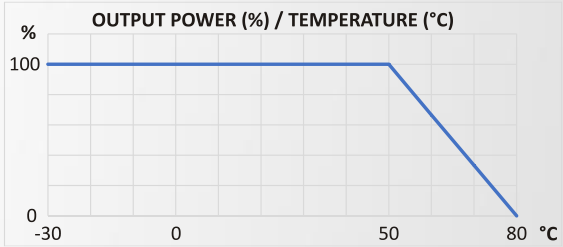




AUTOMATIC POWER DERATING

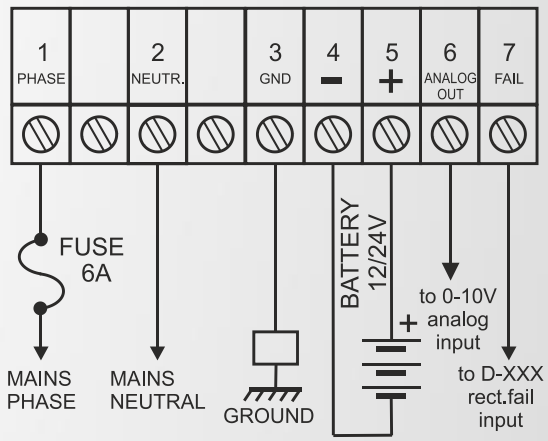
The charger is capable of delivering its full power continuously from -30°C (-22°F) to +50°C (122°F).

Above 50°C, below derating curve is automatically applied.



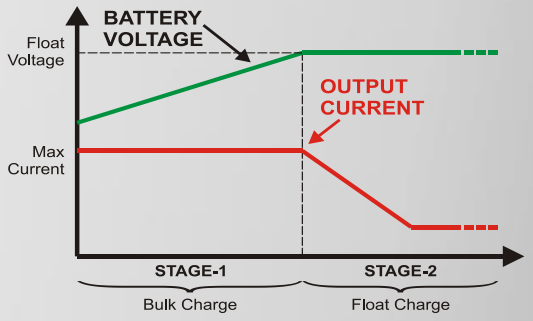
Thus if the charger is forced to operate in an environment above +50°C, it will simply reduce its output power to the corresponding value in the above chart and continue normal operation.

CONNECTION DIAGRAM



2-STAGE CHARGING

If the battery voltage is below the nominal voltage (Vo) then the unit is in the bulk charge stage and it delivers continuously its nominal output current (Io). Thus, the missing charge in the battery will be completed quickly. When the battery voltage reaches the float level, the unit switches to float charge mode where the output voltage is constant (Vo), providing maximum battery life without overcharging or gassing.



TECHNICAL SPECIFICATIONS

Technology: Switchmode, flyback 65 kHz
Output voltage (Vo): autoselect, 13.50 or 27.00 VDC
Output current (Io): 5.0 ADC (continuous)
Input voltage range: 170-300 VAC (220-277V nominal)
Input current: 2.1 ARMS max. (@170 VAC)
Input frequency range: 45-68 Hz
Cooling: natural convection
Maximum input power: < 160 Watts
Peak Efficiency: > 91.5% (230VAC, 24VDC)
Output power: 135 Watts max continuous,
No load power: < 0.3W @ 230VAC/24VDC
< 0.15W @ 230VAC/12VDC
Output ripple: < 0.5% of Vo (peak-to-peak)
Output noise: < 40mV RMS
Load regulation: < 0.5% of Vo
Line regulation: < 0.01% of Vo
Warm-up voltage: < 0.5% of Vo
Overshoot: < 3% of Vo (@100% to 0% load change)
Current consumption from battery: < 10mA
Overload protection: limits output current to 5A
Short circuit protection: limits output current to 5A
Short circuit duration: unlimited
High temp. protection: limits internal temp. to 85°C
Rectifier fail output: negative pulling protected semiconductor output, rated 1Amp@30VDC
Analog output: 1.0V/A
Isolation:
Input-output: 3300 VAC
Input-ground: 1650 VAC
Output-ground: 1650 VAC
Operating temperature range: -30 ºC to +80 ºC
Storage temp. range: -40 ºC to +80 ºC
Max relative humidity: 95% (non condensing)
Dimensions: 106mm(W) x 115mm(H) x 57mm(D)
Weight (approx): 260 grams
Electrical connections: two part connector, 2.5 mm^2

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