

# SMART BATTERY CHARGER



## SBC-2410-M

**24V / 10.0 AMPERES**

**4 STAGES**

**90-305 VAC**

### DESCRIPTION

SBC-2410-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 SBC-2410-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.

SBC chargers have universal input voltage range, enabling the use in all countries with nominal voltages ranging from 110VAC to 277VAC. The nominal output is fully available at all 90-305VAC 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 92.5%, resulting in lower long-term operational costs. As an example, compared to a 24V/10A charger of 85% efficiency, with 30% average load and 20 years of operational life, SBC-2410-M will consume 1350 kW-hour less electrical energy. This means approximately to 135 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.

### FEATURES

- Very high efficiency, up to 92.5% (see charts)
- Wide operating voltage range (90-305VAC)
- Reverse battery connection protected
- LED status indicator
- Low power consumption at zero-load
- Green mode operation
- Output short circuit and overload protection
- High temperature protection
- Up to 4 stage charging with smart control
- Easy to use, DIP switch selections
- Battery life extending regenerative charging
- Two, three or four stage charging selections
- Supports lead-acid, Li-Ion and Ni-Cd batteries
- 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



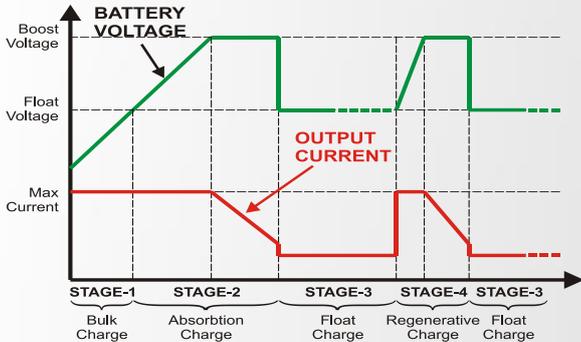
**CE EAC RoHS**

**DATAKOM**

## SMART CHARGING

The smart charging algorithm uses a 4-stage system allowing the SBC-2410-M to charge batteries better than traditional 2-stage chargers. A higher charge level is achieved by maintaining the highest possible charging voltage at battery terminals and resuming to the float charge voltage when the battery is fully charged.

The regenerative charging algorithm extends battery life insuring 100% charge with the lowest float voltage.



### DIP Switch Settings:

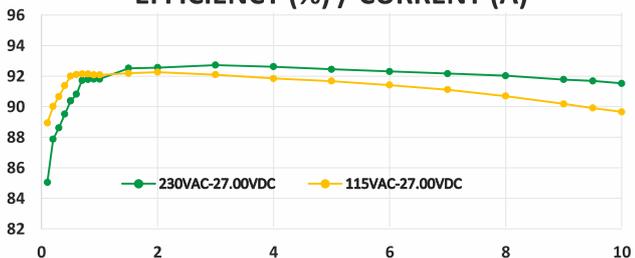
**S1:** activate regenerative charge (5 min every 6 hours)

**S2:S3:** absorption charge duration (2 hours, 1 hour, 30 min, no absorption)

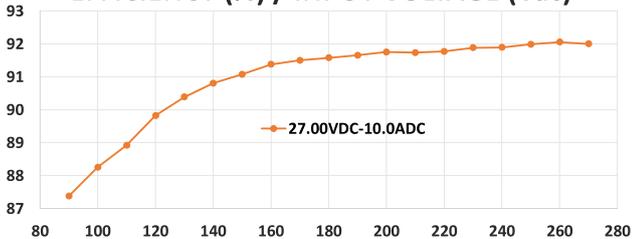
S4	S5	BATT. TYPE	FLOAT	ABSORPTION
ON	ON	Li-Ion	26.4	27.4
OFF	ON	Ni-Cd	28.0	29.0
ON	OFF	Ld-Ac	27.6	28.6
OFF	OFF	Ld-Ac	27.0	28.0

## EFFICIENCY CHARTS

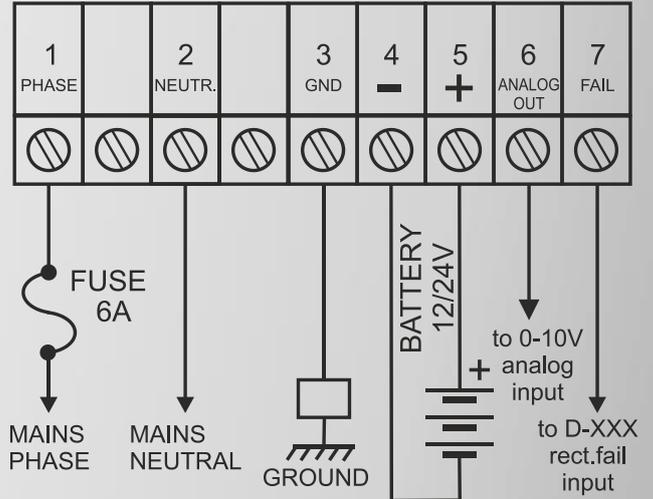
EFFICIENCY (%) / CURRENT (A)



EFFICIENCY (%) / INPUT VOLTAGE (Vac)



## CONNECTION DIAGRAM



## TECHNICAL SPECIFICATIONS

**Technology:** Switchmode, flyback 65 kHz

**Output voltage (Vo):** see DIP switch settings

**Output current (Io):** 10 ADC max.(continuous)

**Input voltage range:** 90-305 VAC (110-277V nominal)

**Input current:** 8.0 ARMS max. (@90VAC)

**Input frequency range:** 45-68 Hz

**Cooling:** natural convection

**Maximum input power:** < 320 Watts

**Peak Efficiency:** > 92.5% (230VAC)

**Output power:** 290 Watts max continuous,

**No load power:** < 0.45W @ 230VAC (< 0.4W @ 115VAC)

**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:** < 18mA

**Overload protection:** limits output current to 10A

**Short circuit protection:** limits output current to 10A

**Short circuit duration:** unlimited

**High temp. protection:** limits internal temp. to 85°C

**Rectifier fail output:** negative pulling protected semiconductor, rated 1Amp@30VDC

**Analog output:** 0.5V/A

**Isolation:**

Input-output: >3300 VAC

Input-ground: >1650 VAC

Output-ground: >1650 VAC

**Operating temperature range:** -30 °C to +70 °C

**Storage temp. range:** -40 °C to +80 °C

**Max relative humidity:** 95% (non condensing)

**Dimensions:** 106mm(W) x 115mm(H) x 57mm(D)

**Weight (approx):** 320 grams

**Protection degree (EN60529):** IP20

**Electrical connections:** two part connector, 2.5 mm<sup>2</sup>

