COMPUTRONIC CONTROLS
by *ENOVATION* CONTROLS

SM135 12/24
Automatic switch mode battery charger

Features

- High rate duty float charging, 4.5A

- Selectable DC output for 12V or 24V nominal, lead acid or NiCd batteries.

- Low ripple, switch mode output for both sealed or vented batteries

- Fully automatic charge regulation

- Boost mode

- Charge fail alarm output

- Universal 95 to 277 VAC power supply
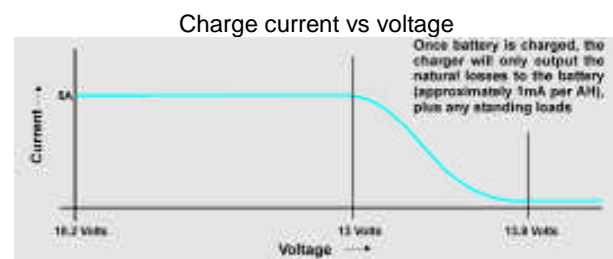
- Open-frame circuit board, DIN-rail mounted

The SM135 is a highly efficient performance charger, designed for continuous float charging and standby battery applications. Switch mode technology gives major advances in power supply and battery charger design: compact and lightweight construction, improved efficiency and low heat dissipation, wide supply voltage tolerance and low output ripple. The result is fast, accurate charging, for optimum battery life and reliability.

The wide input voltage range, from 95-277VAC, allows the charger to be used with all common single phase power supplies without adjustment. The very smooth DC output (<1% ripple) makes the SM135 suited for charging sealed VRLA, AGM and Gel batteries, as well as standard vented lead acid and NiCd cells.

The charger uses an open-frame circuit board construction with DIN rail clips, for mounting in an enclosed control panel.

Normal operation

In charge recovery mode, the SM135 gives a constant current output, maximizing the charge recovery rate. As battery voltage approaches the charger's 'knee point' (13 Volts for 12 Volt LA – see graph right), the charger reverts to float charge mode, ramping down output current to maintain optimal cell voltage (without overcharge), while supporting additional battery loads up to the rated maximum current.

Charge current vs voltage

The SM135 can be configured for one of four different charge output voltage settings: circuit board pin header links allow selection of 12V or 24V nominal output voltages, and lead acid or NiCd battery types – see Calibration section.

Boost mode

Boost mode gives an increase in output charge voltage, e.g. for periodic equalizing of charge across cells. To activate boost mode, link the BST terminal to battery negative/ground, ideally using a time relay to limit the boost time period. The boost voltage level is dependent on the selected nominal voltage and battery type – see Calibration section. For each configuration, boost voltage may fine-adjusted if required using one of four potentiometers.

Charge fail output

A charge fail output provides for remote signalling of charger and battery fault conditions.

The output is a solid state transistor rated 200mA, suitable for driving a relay coil, indicating LED (with resistor) or lamp, or control panel annunciator. The output is active (+DC) in normal operation, except momentarily (approx 150milliSec every 2 minutes) when the SM135 switches off the DC output to check battery voltage. The output de-activates during fault conditions, e.g. during AC supply input failure, or if measured battery voltage falls below 66% of nominal.

Output Enable/Inhibit

The SM135 charge output may be remotely enabled or disabled, should this be required for the application. Connect the EN terminal to battery positive to enable the DC charge output, or make EN open-circuit to disable. The charge output also de-activates automatically if measured battery voltage falls below a set level (normally 62% of nominal voltage, adjustable via R42).

Warranty: a two year limited warranty on materials and workmanship is given with this product, details available on request.

Specifications

Power supply
Operating voltage: 95 to 277 V AC
Operating frequency: 47 – 440 Hz.

DC Charge Output
Nominal DC output: 4.5A, switchable 12 or 24V, lead acid or NiCd
Float/boost voltage: see 'output calibration' table
Output ripple: <1%
Line regulation: <1%
Load regulation: <1%

Charge Fail Output
Output type:
  solid-state transistor, active high (+DC), 200mA max.,
  deactivated during fault conditions.

Physical
Operating temperature: –10 to +55°C / 14 to +131°F
Dimensions: see Dimensions section
Weight: 0.5 kg / 1.1 lb
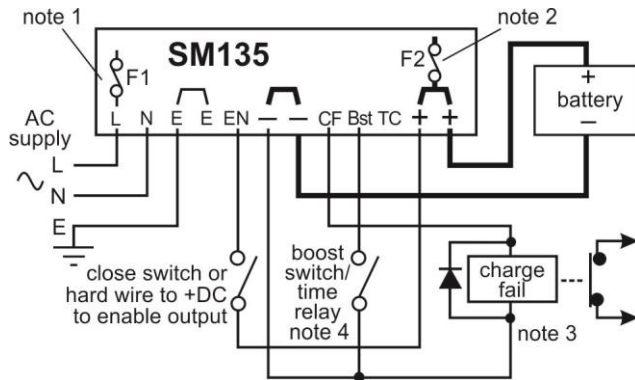**Electromagnetic compatibility:** EN50081-2, EN50082-2

Output Calibration

Standard battery types		float volts (V DC)	boost volts (V DC)
12V	Lead acid (6 cells)	13.7	14.5
	NiCd (10 cells)	14.2	14.7
24V	Lead acid (12 cells)	27.2	28.2
	NiCd (20 cells)	28.4	29.4

Standard units are supplied with calibration set for 12V lead acid.
Calibration may be selected using one of four pairs of circuit board
pin header links:

Position 4
24V (20 Cell) NiCd

Position 3
24V Lead Acid
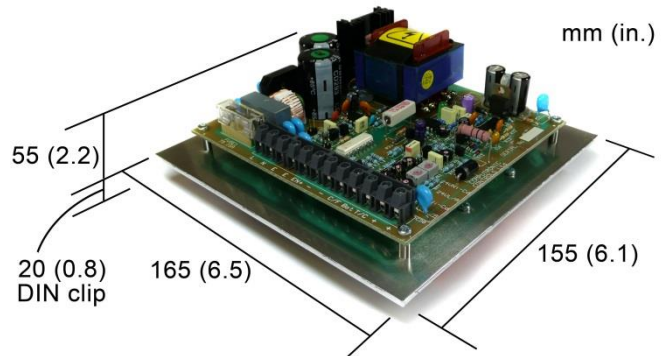
Position 2
12V (10 Cell) NiCd

Position 1
12V Lead Acid

Electrical connection

Notes:
1) F1, AC supply fuse, 5A (anti-surge)
2) F2, MOSFET protection fuse, 5A (quick-blow)
3) Charge Fail output shown driving an alarm relay, maximum coil
   rating 200mA, contacts shown in de-energised (fault) state
4) For boost mode, link the Bst terminal to battery negative, ideally
   via time relay contacts to automatically limit boost time.
5) 2 x Gnd/Earth terminals are internally connected to charger
   chassis. Charger DC output is isolated from chassis/ground.

Dimensions

mm (in.)

55 (2.2)

20 (0.8)
DIN clip

165 (6.5)

155 (6.1)

How to order

Stock code	Model	Description
42.70.4500	SM1351224CD	SM135 battery charger, 4.5A, selectable 12 or 24V output

Note: the above is supplied with DC output set for 12V lead-acid. For other battery types, see calibration above.