

## SM2 250, SM2 250A

### Automatic switch mode battery chargers



#### Features

- High rate duty float charging:  
17A@12V, 9A@24V, 4.5A@48V
- Fully automatic charge regulation
- <1% output ripple:  
suitable for sealed VRLA cells
- SM2 250: manual boost  
SM2 250A: 3 stage charge with AutoBoost
- Charge fail relay output
- Open-frame circuit board with DIN-rail clips

The SM2 250 and SM2 250A are highly efficient, high performance battery chargers. Switch mode power supply technology provides a light and compact design, smoother DC outputs, higher power efficiency and less heat dissipation. The very low (<1%) ripple DC output makes the SM2 250 series suitable for sealed SLA/VRLA AGM or Gel batteries as well as standard vented lead acid or NiCd cells. The wide input supply voltage range, from 95 to 277 VAC, allows use with all common single phase voltages without adjustment.

SM2 250(A) chargers are configured for fast, accurate charging and optimum battery life and reliability. When battery voltage is below a preset level, the chargers typically deliver a full output current to ensure maximum rate charge recovery. Once the battery reaches full charge, the charger switches to float mode, keeping the battery at peak condition while supplying any additional standing load current up to the rated maximum. Manual boost (SM2 250) or Autoboot (SM2 250A) provide for increased output voltages, equalizing cell charge for improved battery performance and lifetime.

#### Charge Operation, model SM2 250

Model SM2 250 provides automatic constant current and float charging with a manual (operator controlled) boost mode. If the measured battery voltage is below a factory set knee-point (13V for 12V lead acid calibrations), the SM2 250 delivers a maximum-rate constant current, ensuring rapid charge recovery. When battery voltage rises above the knee-point, the charger reverts to float mode.

Manual boost mode is activated (de-activated) by linking (breaking) two circuit board terminals, e.g. using an operator controlled panel switch and/or timer relay contacts. (An external time relay should be set to allow sufficient time for cell charge equalization, but time-limited to reduce the risk of over-charging, gassing and overheat.)

#### Charge Operation, model SM2 250A

Model SM 250A includes a 3-stage charge regime with AutoBoost. Upon connection to a battery that draws in excess of approx. 30% of the chargers maximum current, the charger begins its "bulk" charge state, supplying maximum current to the battery. This continues until the battery reaches the bulk voltage, when the output current starts to fall. When the charge current falls to below 10% of the maximum-rated bulk current, the float stage begins.

AutoBoost mode activates automatically when high current draw is detected (>30% of charger's maximum rated bulk current). De-activation (return to float mode) occurs when output current falls to below 10% of the maximum rating. (For applications where standing battery loads are above 10% of rated current, use model SM2 250 or Sentinel series chargers, or consult your Computronic representative.)

#### Alarm output

All models include a Charge Fail alarm relay with connections to SPDT contacts. The relay de-energises during fault conditions, e.g. AC mains failure, charger DC output failure or when battery volts is higher than output calibration.

#### Installation and connection

SM2 250(A) chargers use an open-frame, exposed circuit-board design with metal base/heatsink and DIN rail clips, for mounting inside an existing control panel or enclosure. Electrical connection of AC power, DC charge output, alarm relay and manual boost control is through circuit-board mounted screw terminals.

**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 – 400 Hz.

### DC Charge Output

Nominal DC output: 12V/17A, 24V/9A or 48V/4.5A  
Float/boost voltage: see 'output calibration' table  
Output ripple: <1%  
Line regulation: <1%  
Load regulation: <1%

### Charge Fail Output

Relay type:  
volt-free SPDT contacts, relay de-energised on fault  
Contact rating: 1A @ 30VDC (resistive load)

### Physical

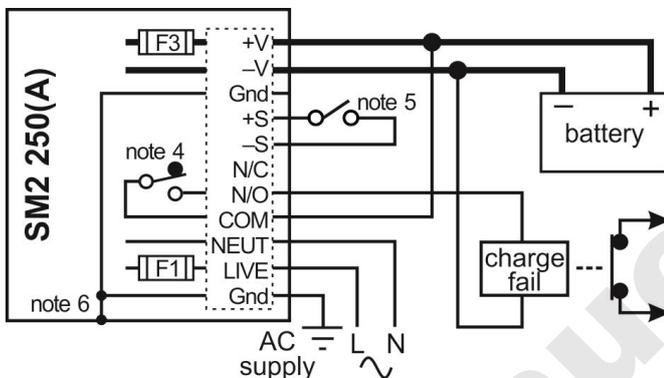
Operating temperature: -10 to +55°C / 14 to +131°F  
Dimensions: see Dimensions section  
Weights: see Dimensions section  
Electromagnetic compatibility:  
2004/108/EC (EN 61000-6-2, EN 61000-6-4)

## Output Calibration

Standard battery types		float volts (V DC)	boost volts (V DC)
12V	Vented lead acid (6 cells)	13.5	14.1
	Calcium-Calcium (6 cells)	13.8	15.6
	Lead acid antimony (6 cells)	13.5	14.7
	VRLA, AGM (6 cells)	13.5	14.4
	VRLA, Gel (6 cells)	13.5	13.8
	NiCd (10 cells)	14.1	14.5
24V	Vented Lead acid (12 cells)	27.0	28.2
	Calcium-Calcium (12 cells)	27.6	31.2
	Lead acid antimony (12 cells)	27.0	29.4
	VRLA, AGM (12 cells)	27.0	28.8
	VRLA, Gel (12 cells)	27.0	27.6
	NiCd (18 cells)	25.6	26.1
	NiCd (20 cells)	28.2	29.0

For 48V models, double the 24V equivalent calibrations above.

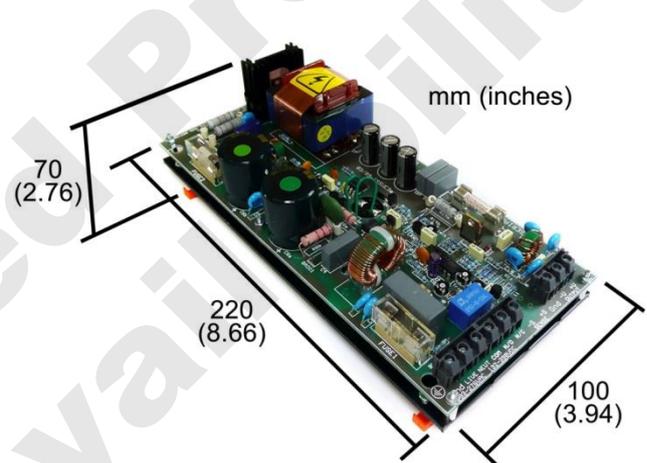
## Electrical connection



### Notes:

- 1) F1, AC supply fuse, 5A (anti-surge)
- 2) F2, MOSFET protection fuse, 5A (quick-blow)
- 3) F3, DC output fuse (quick-blow), rating by DC output model:  
20A (12V/17A units), 13A (24V/9A units) or 7A (48V/4.5A units)
- 4) Charge Fail relay shown in de-energised (fault) state
- 5) SM2 250 only. Link terminals for manual boost mode, ideally using time relay contacts to limit boost time.
- 6) 2 x Gnd terminals are internally connected to charger chassis.  
Charger DC output is isolated from chassis/ground.

## Dimensions



## How to order

Stock code	Model	Description
42.70.4030	SM22501217CDLA	SM2 250 charger, 12V / 17A, manual boost, charge fail output
42.70.4005	SM22502409CDLA	SM2 250 charger, 24V / 9A, manual boost, charge fail output
42.70.4080	SM22504804.5CDLA	SM2 250 charger, 48V / 4.5A, manual boost, charge fail output
42.70.4034	SM2250A1217CDLA	SM2 250A charger, 12V / 17A, 3-stage + AutoBoost, charge fail output
42.70.4009	SM2250A2409CDLA	SM2 250A charger, 24V / 9A, 3-stage + AutoBoost, charge fail output
42.70.4084	SM2250A4804.5CDLA	SM2 250A charger, 48V / 4.5A, 3-stage + AutoBoost, charge fail output

Note: all part numbers above are supplied with output calibrated for vented lead-acid cells. For other battery types, please contact our sales office.

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