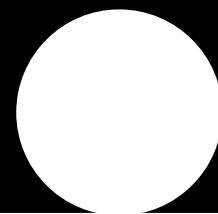


SC3/20

Specialty Concepts MARK III/20

PHOTOVOLTAIC CHARGE CONTROLLER



DESCRIPTION

The Specialty Concepts Mark III/20 (SC3/20) is a top of the line, flush mount, battery charge controller with digital system monitoring. The SC3/20 is available for 12 volt systems with charging current up to 20 amps, and provides efficient charging while protecting the batteries from damage due to overcharging. This controller is designed for use in mobile or stationary photovoltaic energy systems, with complete system monitoring of battery voltage, solar charging current, charge set-point calibration, and an additional external shunt monitoring channel. Charge status lights, a blocking diode and a front panel fuse are included.

FEATURES

CHARGE REGULATION

- 20 amp charge current, 12 volt
- Switching shunt, pulse charging

DESIGN FEATURES

- 100% solid-state
- Designed for rugged mobile use
- Over-current protection - battery fuse
- Reverse leakage protection - blocking diode
- Reverse polarity protection
- Lightning protection
- Input noise suppression
- Low power consumption

MONITORING

- Digital monitoring of:
 - a) System battery voltage
 - b) Solar charge current
 - c) Charge set-point calibration
 - d) External shunt current
- "LOW BATTERY" light
- "SOLAR CHARGING" light
- "BATTERY CHARGED" light

MOUNTING

- Flush mount
- Knock-out box available for wall mounting (4x7 BOX accessory)

OPERATION

SWITCHING

REGULATION - The SC3/20 will allow maximum array current to flow into the battery through a blocking diode, lighting the "SOLAR CHARGING" light (LED), until the battery voltage reaches the charge termination set-point.

At this point, a shunt transistor will turn on, shorting out the solar array, turning off the "SOLAR CHARGING" LED, lighting the "BATTERY CHARGED" light and halting any further battery charging.

When the battery voltage drops to the charge resumption set-point, the shunt transistor will turn off, charging will resume and the lights will reverse. The result is that when battery capacity is low, charging will be continuous. As the battery charges up, current will pass into the battery for shorter and shorter periods, until at full charge, it will pulse current into the battery to achieve and maintain full charge.

OPTIONS DESCRIPTION

A - Temperature Compensation :

Temperature compensation is generally recommended for sealed batteries or where batteries are expected to experience temperature variations of more than $\pm 10^\circ$ from 25°C during periods of charging. A small temperature sensor on a 10 foot lead monitors battery temperature and adjusts the charging thresholds according to battery temperature. The rate of compensation is $-5\text{mv}/^\circ\text{C}$ per battery cell from 25°C .

E - Low Voltage Disconnect (LVD) / Generator Start :

The SC3/20 can be provided with an auxiliary relay. This relay can be used to protect the battery from low-voltage damage by disconnecting loads or by signaling a standby generator to start or stop battery charging. The relay is rated for 10 amps. This option provides the common, the normally open and the



normally closed voltage free contacts of the relay. The relay consumes 30 ma when activated and is activated at $11.5 \pm .3$ volts and deactivated at $13.0 \pm .3$ volts.

ACCESSORIES

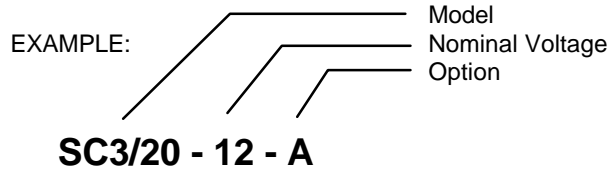
4X7 BOX - Knock-out box used for wall mounting.

SPECIALTY CONCEPTS MARK III/20

PARAMETERS	UNITS	VALUE
Nominal Voltage	(Volts)	12
Short Circuit Current, Continuous	(Amps)	20
Short Circuit Current, Max (60 seconds)	(Amps)	26
Load Current, Continuous (1)(3)	(Amps)	10
Load Current, Max (60 seconds) (1)(3)(5)	(Amps)	13
Array Voltage, Max Voc	(Volts)	26
Operating Voltage @ Battery, Minimum		
Charge Control	(Volts)	0
Load Disconnect (1)	(Volts)	8.5
Quiescent Current	(Milliamps)	15
Current Consumption, Charging, Typ.	(Milliamps)	25
Current Consumption,		
Load Disconnected, Typ. (1)(4)	(Milliamps)	40
Voltage Drop, Array to Battery, Typ.	(Volts)	.40
Voltage Drop, Battery to Load, Typ. (1)	(Volts) @ 10 amps	.06
Charge Termination, Factory Set	(Volts)	14.3 ± .2
Charge Termination, Adjustable Range (6)	(Volts)	13.8 to 14.9
Charge Resumption, Factory Set (7)	(Volts)	13.0 ± .3
Low Battery Warning Light, On	(Volts)	11.7 ± .3
Load Disconnect (LVD) (1)	(Volts)	11.5 ± .2
Load Reconnect (1)	(Volts)	13.0 ± .3
Meter Accuracy, DC current (int. shunt)		2 %
Meter Accuracy, DC current (ext. shunt)		1 %
Meter Accuracy, DC voltage		1 %
Operating Temp. Range	(°C)	0 to 50
Storage Temp. Range	(°C)	-20 to 70
Temperature Comp. Coef. (from 25°C) (2)	(Volts/°C)	-.03

Notes: (1) Low-voltage Load Disconnect Option
 (2) Temperature Compensation Option
 (3) Non-inductive.
 (4) LVD relay energized, red L.E.D. on, typical value.
 (5) Carry only, Non-switching
 (6) Set-points can be adjusted beyond this range but are not recommended
 (7) The charge termination / reconnect span is fixed. Reconnect set-point changes during charge termination set-point adjustment.

PART NUMBERING KEY



MODEL	NOMINAL VOLTAGE	OPTIONS
SC3/20	12	A - Temperature Compensation E - Low Voltage Disconnect (LVD)/ Generator Start

DIMENSIONS In Inches (cm)

4x7 BOX (ACCESSORY)

ACCESSORIES

4x7 BOX

Specifications and product availability subject to change without notice.

Shipping weight: **SC3/20 - 1 lbs. (.5 Kg.)** **SC3/20 unit depth: 2.25 (5.7).** **4x7 BOX depth: 2.25 (5.7)**
 4X7 BOX - 1.25 lbs. (.6 Kgs.) **SC3/20 with 4x7 BOX depth: 2.55 (6.35)**

SPECIALTY CONCEPTS, INC.