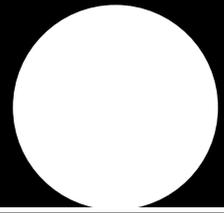


SCS

Specialty Concepts System

PHOTOVOLTAIC CHARGE CONTROLLER



The new SPECIALTY CONCEPTS SYSTEM (SCS) incorporates into a single control cubicle all of the control, monitoring, protection and interconnection elements necessary for use in photovoltaic energy systems. The SCS is available in 12, 24, 36 and 48 volt units with a charge current of 50 or 90 amps.

The Specialty Concepts CHARGER control circuit is the heart of the system and provides charge regulation and load management. Circuit breakers protect the array, load and battery circuits. Digital metering mounted within the control cubicle supplies information about all system operating characteristics. The SCS is normally supplied in an indoor wall mount enclosure, but with the optional NEMA 4X enclosure it is designed to withstand severe tropical environments. Electrical connections are made to the terminal block. AWG terminal size is 4 for the 50 amp and 1/0 for the 90 amp controllers.

FEATURES

CHARGE REGULATION

- 50 or 90 amp charge current
- 12, 24, 36 or 48 volt
- Two-step, series charging (12,24v)
- Single step, series charging (36,48v)
- Adjustable charging set-points
- Remote temperature compensation

LOW-VOLTAGE LOAD DISCONNECT

- 30 amp LVD, 12 volt
- 20 amp LVD, 24 volt
- 15 amp LVD, 36 and 48 volt
- Adjustable disconnect set-points
- Manual over-ride switch

DESIGN FEATURES

- High and low voltage alarm relays
- Over-current protection - load battery and array circuit breakers
- Mercury displacement relays
- Conformal coated circuit boards
- Reverse polarity protection
- Lightning protection
- Input noise suppression
- Remote battery voltage sense
- Sealed outdoor enclosure optional

MONITORING

- Charging light
- Load disconnected light
- Digital readout: battery voltage, array & load current, alarm set-pts.



SCS with optional Outdoor Enclosure

OPERATION (12,24 volt units)

Note: The operation of the 36 or 48 volt unit is identical with the exception that no float circuit is included.

CHARGE REGULATION -

The SCS features two charging steps to effectively charge the batteries and protect them from overcharge damage. The SCS monitors the battery and array voltage, using a relay to control the charging.

STEP 1-FULL CHARGE: At sunrise, the rising array voltage will energize the charging relay and initiate a full charge mode, as indicated by the "CHARGE MODE" light. All available current from the array will pass through to the batteries and raise the battery voltage until the battery reaches the full charge termination threshold.

STEP 2-FLOAT CHARGE: When the battery reaches the full charge

threshold, full charge mode ends and the "CHARGE MODE" light goes out. The SCS then charges at a reduced rate. As the battery approaches the float voltage, the current will taper off, eventually reaching the battery's maintenance current.

LOW VOLTAGE DISCONNECT -

The low-voltage disconnect (LVD) of the SCS prevents damage from deep-discharge of the batteries by automatically disconnecting the loads. The disconnect threshold is load current compensated, and has a time delay to prevent false disconnects. When disconnect occurs, the load relay is energized and opens, and the "LOAD DISCONNECT" light will indicate that the loads have been disconnected. Normal charging will continue. At the reconnect threshold the loads will automatically be reconnected and the light will go off. The LVD function has a reset/disable switch and user adjustable set-points.

SPECIALTY CONCEPTS SYSTEM

PARAMETERS	UNITS	NOMINAL VOLTAGES			
		12 v	24 v	36 v	48 v
Charge Current, Continuous (1)	(Amps)	50,90	50,90	50,90	50,90
Charge Current, Max (60 seconds)	(Amps)	130%	130%	130%	130%
Load Current, Continuous (2)	(Amps)	30	20	15	15
Load Current, Max (60 seconds) (3)	(Amps)	39	26	20	20
Array Voltage, Max Voc	(Volts)	22	44	66	88
Operating Voltage @ Battery, Minimum	(Volts)	8.5	17.0	25.5	34.0
Quiescent Current (4)	(Milliamps)	15	15	15	15
Current Consumption, Charging (5)	(Milliamps)	160	160	80	80
Current Consumption, Load Disconnected (6)	(Milliamps)	140	100	70	70
Current Consumption, Metering, Typ.	(Milliamps)	160	160	160	160
Voltage Drop, Typ. (Array to Battery)	(Volts)	.15	.15	.15	.15
Voltage Drop, Typ. (Battery to Load)	(Volts)	.40	.40	.40	.40
Full Charge Termination (7)	(Volts)	14.8 ± .2	29.6 ± .4	44.4 ± .6	59.2 ± .8
Full Charge Resumption	(Volts)	12.8 ± .2	25.6 ± .4	38.4 ± .6	51.2 ± .8
Load Disconnect (8)	(Volts)	11.5 ± .2	23.0 ± .4	34.5 ± .6	46.0 ± .8
Load Disconnect Adjustment Range	(Volts)	11.0 to 12.0	22.0 to 24.0	33.0 to 36.0	44.0 to 48.0
Load Reconnect	(Volts)	13.0 ± .3	26.0 ± .6	39.0 ± .9	52.0 ± 1.2
Float Voltage	(Volts)	14.1 ± .2	28.2 ± .4	NA	NA
Float Current, Max	(Amps)	3	1	NA	NA
High Voltage Alarm	(Volts)	15.5 ± .1	31.0 ± .2	46.5 ± .3	62.0 ± .4
Low Voltage Alarm	(Volts)	11.5 ± .1	23.0 ± .2	34.5 ± .3	46.0 ± .4
Temp. Compensation coef.(from 25°C)	(Volts/°C)	-.03	-.06	-.09	-.12
Operating Temp. Range	(°C)	0 to 50	0 to 50	0 to 50	0 to 50
Storage Temp. Range	(°C)	-55 to 85	-55 to 85	-55 to 85	-55 to 85

Notes:

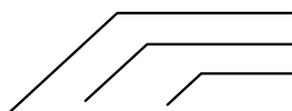
- (1) specify voltage and current
- (2) Non-inductive.
- (3) Carry only, Non-switching
- (4) Both relays unenergized, L.E.D.s and meters off, typ. value.
- (5) Charge relay energized, red L.E.D. on, typical value.
- (6) LVD relay energized, red L.E.D. on, typical value.
- (7) Set-point adjustable. Refer to table.
- (8) Decreases by 10 mv for every amp of load current

FULL CHARGE TERMINATION SET-POINTS

Control Voltage	SWITCH POSITIONS			
	A	B	C	D
12	15.3	14.8	14.3	13.8
24	30.6	29.6	28.6	27.6
36	45.9	44.4	42.9	41.4
48	61.2	59.2	57.2	55.2

PART NUMBERING KEY

EXAMPLE:



Model
Nom. Volt/amp
Options

SCS - 12/50 - U

MODEL	NOM. VOLT/AMP	OPTIONS
SCS	12 / 50	H - Generator start
	24 / 90	M - Outdoor enclosure with clear door (NEMA 4X)
	36	U - Mercury displacement relays
	48	W - Positive ground (load)

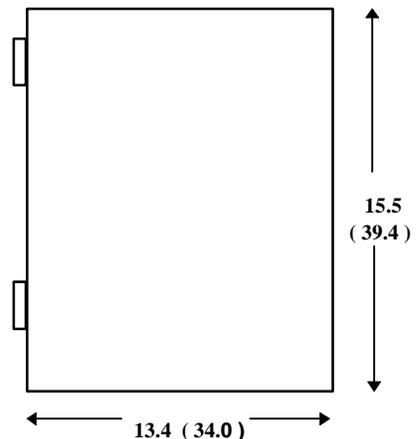
NOTE:

Specifications and product availability subject to change without notice.

DIMENSIONS

In Inches (cm)

ENCLOSURE (NEMA 4X)



Depth: 6.0 Inch (15.2 cm)
Shipping weight: 30 lb. (13.5 Kgs.)

SPECIALTY CONCEPTS, INC.