



Solar Control Centre

Sollatek SCC

A state of the art, microprocessor controlled solar charge controller for professional medium and large-scale solar powered systems.



Sollatek[™]
solar systems

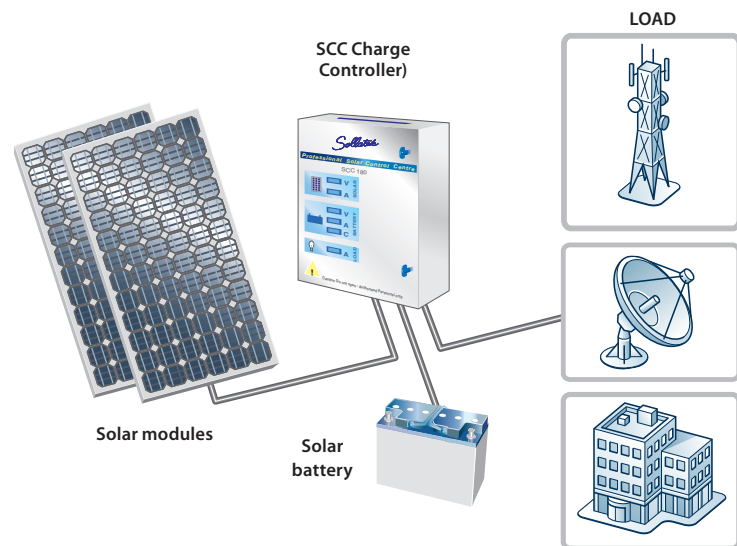
Solar Control Centre (SCC)

Introduction

The SCC is the product of over twenty years experience in the field of solar power. It combines optimal battery charging characteristics with flexible load allocation options, and numerous displays and alarms.

The battery charging current is widely variable in smooth steps from very low level trickle charge to high current rapid charge for deeply discharged batteries. This ensures maximum possible battery life with little or no electrolyte gassing. The outputs to the loads may be switched according to two independent criteria. If the battery charge level becomes extremely low, the loads may be shed in a pre-determined order, maintaining supply to critical loads for the maximum period. Loads can also be turned on and off according to built in timers.

There are a number of alarms which give indications of various important parameters such as overvoltage and overload. There are user-controlled settings such as load on/off timers and high voltage disconnect level. The unit is suitable for use with many different battery types. The type in use may be selected to enable the SCC to utilise optimum charge/discharge characteristics for the particular battery. These amongst many other features make the Sollatek SCC the most advanced solar controller available in the world today.



Features

- Microprocessor controlled
- Very low current consumption
- Proprietary solid state switching without MOSFETS
- Reverse solar current blocking without diodes
- Multistage charging to attain optimum battery charging capacity
- Load prioritisation through load shedding
- LCD displays: solar V, I, battery V, I, temp, load I
- Many LED indicators (8 solar O/P, 8 load O/P, 7 segment status, 11 alarms, and others)
- Eleven alarm relays and LEDs to indicate many conditions such as low voltage disconnect, battery full, system status, warning and faults etc.
- Buzzer to indicate warning: On 1 second, off for 30 seconds. Buzzer to indicate fault: on 1 second, off for 5 seconds.
- Five easily settable timers with dusk-dawn, 1-10 hour timer and auto run
- Fully field settable voltage limits: HVD, LVD, HVR, LVR
- RS232 interface (optional)
- Circuit breakers on the load and solar side (optional)
- Extensive spike protection through transorbs and MOVs
- Rugged wall mount metal enclosure
- Four-wire temperature compensation



Indications

There are six separate LCD displays indicating all of the critical parameters of the system. These are mounted on the SCC door and are as follows:

- ① **Solar Voltage** The measured voltage of the solar array
- ② **Solar Current** The measured total current flowing from the solar array
- ③ **Battery Voltage** The measured voltage of the battery
- ④ **Battery Current** The measured total current flowing in or out of the battery
- ⑤ **Battery temperature** The temperature measured close to the battery
- ⑥ **Load Current** The total measured current flowing to the load/s

In addition, there are LED indicators within the cabinet to indicate:

- Solar module status
- Load module status
- SCC status (i.e. error codes – 7 segment)

Load Control

Load current control is effected using the same type of switching module as is employed for charge control. Up to eight loads may be controlled; each rated at up to 30 Amps. Higher currents may be accommodated by paralleling.

Where multiple loads are supplied, these can be allocated a priority to enable them to be sequentially disconnected in the event of low battery voltage, allowing the main load to continue functioning as long as possible.

Loads can be switched on and off automatically by using the five built in timers.

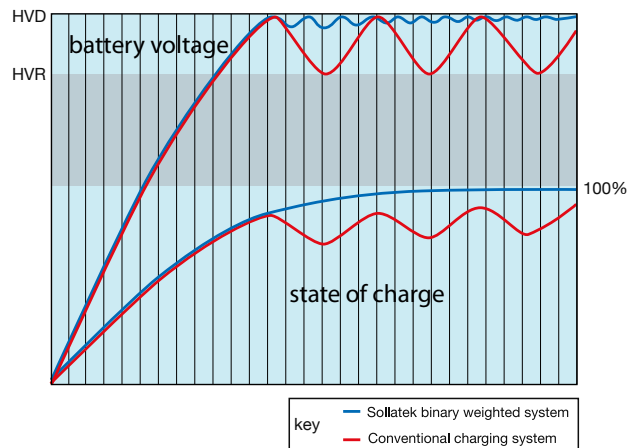
Alarms

There are eleven relays on the PCB, each with an associated LED to indicate battery state and various other information requiring attention. The relays can be used to set remote alarms. An internal buzzer will also sound to indicate an alarm condition.

User controls

The following user controls are provided:

- Mains on/off
- Maintenance/auto mode (to enable testing of the SCC)
- Reset button
- Alarm mute
- Indicator pause button (to facilitate reading of system status LEDs)
- LVD break button (to force load connection under certain low battery conditions)
- Solar channel test switches
- Load channel test switches



Binary weighted vs conventional charging system

Charging Principle

There are two possible factory preset configurations for charge control. These are binary weighted and unweighted charge control, both using switching modules to control battery charge current.

Unweighted charging gives the maximum possible charge current for a given number of switching modules. The number of charge levels is restricted to the number of switching modules fitted. This system gives better charge control accuracy than most commercially available controllers.

For maximum battery charge control, a binary weighted charging system is adopted. Control is achieved using a binary switching technique whereby the incoming solar current is passed through up to eight solar switching modules/module groups, each of which can be turned on or off independently by the microcontroller.

Number of module channels	Max number of charge levels/steps	Resolution as % of total array
1	1	100
2	3	33
3	7	14
4	15	6.7
5	31	3.2
6	63	1.6
7	127	0.8
8	255	0.4

Binary weighted battery charging characteristics

Battery voltage and charge current are closely controlled, minimising shock to the batteries and preventing formation of debris on the plates.

SCC Specifications

Nominal system voltage	12V, 24V or 48V
Operating voltage range	10 to 100V
Maximum charge current	90A - 960A in 30A steps
Maximum load current	90A - 960A in 30A steps
Maximum output power	46kW
Technology	Proprietary solid state switching
Over-charge control	Yes
Over-discharge control	Yes
Reverse polarity protection	Yes
Temperature Compensation	Yes (3mV/°C above 20°C)
Internal blocking diode	Not required (saving energy)
Multi-tier charge	Yes (Up to 255 levels)
Alarms (volt free relay contacts)	LVD, Batt Low, Batt Good, Batt Full, Overvoltage, Genset Start, High Temp, Fault, Loads Off, Aux, Buzzer
Indicators	8 off module enable LEDs, 8 off load enable LEDs 7 segment error code display
Controls	Solar switching module test switch (test/off/auto) Load switching module test switch (test/off/auto)
LCD Instrumentation	Array voltage, Array current, Battery voltage, Battery current, Battery temperature, Load current
Current drain	Due to use of solid state devices, the quiescent current consumption of the system is < 100mA (48V unit)
Efficiency at full system power	>99%
Efficiency at 20% full system power	>99%
Input protection	Spikes, surges, lightning, over- voltage and excessive array current
Output protection	Spikes, surges, lightning, over- voltage and excessive load current
Temperature range	-25 to +70°C
Humidity	Up to 100% non condensing
Weight	35kg (180A unit)
Dimensions	800 x 600 x 300mm (180A unit)

Note: This specification includes all options

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