

## Problems & Troubleshooting:

Symptom	Troubleshooting
Sunlight on panel but PV charge LED(1) not on.	Check solar panel output and cable connections are correct and secure.
The PV charge LED(1) flashes fast.	System overvoltage protection is working. Open circuit in the battery. Check battery cable connections. Charging circuit damaged.
Load state LED(3) is on but No output.	Load open circuit. Check cables and connections and any other load switches.
Load state LED(3) is on and flashing fast. No output.	Check output for short circuit or over-load. Remove the load and switch output ON, Controller will resume after 30 seconds.
Load state LED(3) is on and flashing slowly. No output.	Overload has occurred. Remove sufficient load and switch output ON. Controller will resume in 30 seconds.
System state LED(2) flashing RED with No output.	Battery is over discharged and load disconnected. The load will be reconnected when battery charged again.

## Specifications:

Type	SDRC-10	SDRC-15	SDRC-20
Rated charge current	10A	15A	20A
Rated load current	10A	15A	20A
Work voltage	□ 12; □ 24V;		
Over load, short circuit protection	1.25 rated load current 60sec, 1.5 rated loads current 5sec, over load protection action. ≥3 Rated load current short circuit protection action.		
Self-consumption current	≤ 6 mA		
Charge circuit voltage drop	≤ 0.26V		
Load circuit voltage drop	≤ 0.15V		
Over voltage protection	17V; ×2/24V		
Work temperature	Industry stage: -35℃ to +55℃; Commercial stage -5℃ to +50℃		
Boost charge voltage	14.6V; ×2/24V; (keep 10min)(only used when overdischarging)		
Direct charge voltage	14.4V; ×2/24V; (keep 10min)		
Float charge voltage	13.6V; ×2/24V;		
charge return voltage	13.2v; ×2/24V;		
Temperature compensation	-5mv/℃/2v(Boost charge, Direct charge, Float charge, charge return voltage);		
Lower voltage indicate	12.0V; ×2/24V;		
Over discharge voltage	11.1V (no load) - modified voltage by discharge rate of battery; ×2/24V;		
Over discharge return voltage	12.6 V; ×2/24V		
Control mode	PWM charge mode; modified discharge voltage by the discharge rate		

## SOLAR POWER CONTROLLER(SDRC)

### USER MANUAL

### Characteristics:

**Control:** Micro Controller Unit utilizing dedicated software and SCM for precise control.

**Charging mode:** Pulse Width Modulated control, allows for high efficiency boost, recovery and float charging. Temperature compensation ensures that these parameters are adjusted for maximum battery condition and hence, prolonged battery life.

**High accuracy discharging control:** Over-discharging control voltage modified by the battery discharging rate curve.

**Circuit Protection:** protection against overload, short circuit and reverse connection, Built in Transient Voltage Suppression protects against lightning. Reverse current leakage through PVpanel is blocked. Batteries are prevented from over-charging or discharging.

**LED indication on system condition:** Indicating LED's, monitor battery charging levels as well as battery state. LED monitoring of load conditions such as over load and short circuit as well as load on/off, are also provided.

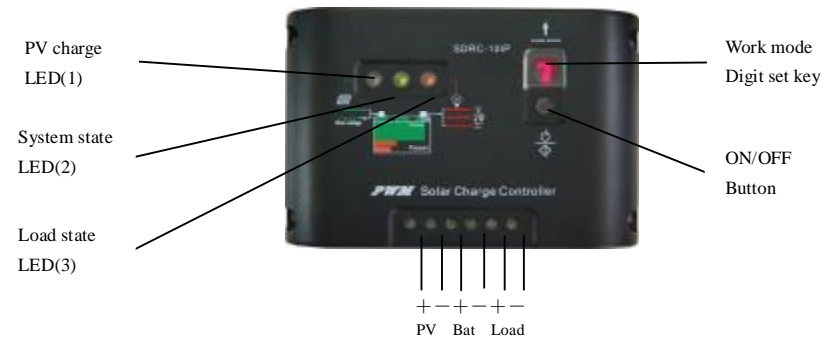
**Design standard:** Operating temperature range from -35 to +50 deg C.

**No adjustable hardware part:** Controller accuracy, stability and reliability is assured by the use of flash memory for all control parameters and set-points.

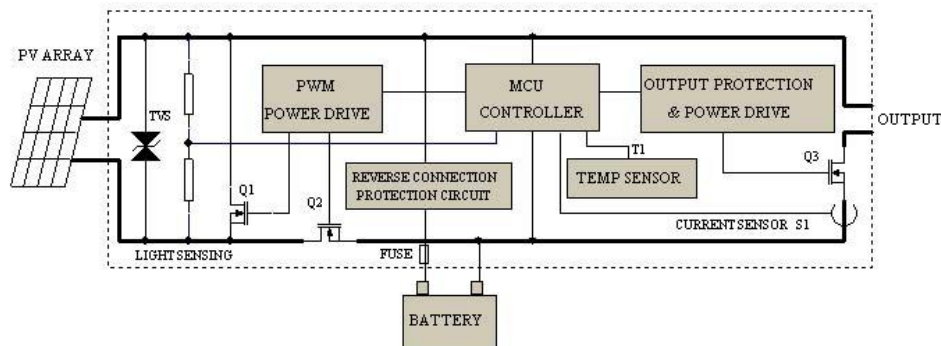
**Operation and Design:** easy to operate, robust in design.

**Output modes:** Direct current output mode

### Controller Panel Indications



## System main circuit diagram



## Installation:

**IMPORTANT:** Connect Battery FIRST

**a. Mount** the controller in a suitable place.

Controller dimensions : 140 ×90.5(mm)

Distance between installing holes:

:133.5×70(mm)

**b. Wire size** for Max. Current: 4A /sq.mm.

Keep wiring lengths to a minimum to reduce voltage drop.

**c. Connect battery wires** to the controller first.

Ensure correct polarity of terminals.

The controller has reverse polarity protection.

Connect wires in order indicated

Battery first. Terminal 3 and 4.

Solar panel. Terminal 1 and 2.

Load. Terminal 5 and 6.

**d. Connect the solar panel** to the controller terminals and expose to sunlight.

The charging LED will illuminate, indicating that the connection is correct and battery is charging.

**e. Connect the load** to the controller.

**Charge & over-voltage indication:** The charge LED lights up green If the system is properly connected. The Pulse Width Mode charging is applied first. An over-discharged battery will cause a boost charge for the first 10 minutes, then settles back to direct charge for another 10 minutes. Lastly, a float charge is set, to maximise battery performance and life.

**Battery state:** When the battery voltage is in normal condition, the State LED is continuous green, but changes to a slow green flash when battery is fully charged. When the battery voltage is lower it will



show yellow. When the voltage goes down continuously to over discharge, the System State LED will change to red, and the output to the load is turned off, whilst the battery charging continues.

When the battery voltage recovers to the over-discharge return voltage, the system returns to normal operation.

**Load indication:** The Load LED lights when the load is switched ON.

If the load current exceeds the rating by 1.25 times for 60 seconds or 1.5 times for 5 seconds the Red Trouble LED will flash slowly indicating overload, and the controller will disconnect the Load.

If the output is short circuit, the Trouble LED will flash quickly and the controller will disconnect the output. Check the load, connections and cables for shorts. If OK, press the load re-connect button. Normal function will resume in 30 seconds if fault has been cleared.

## Work mode setting:

**Mode Setup:** (battery must be connected.) To enter this mode, press and hold the on/off button ( 5 seconds) until the number on the LED screen begins to flash. Each press of the button, will increment the displayed number from 0 up to 9, After through 0., the decimal point will stay lit. ie.

Ten minutes after darkness falls, the output switches on and remains on for the duration of the delay selected. 1 to 15 hour delays can be selected, in increments of 1 hours.

Successful selection is set after 5 seconds when the digit stops flashing. Repeat process if required.

**Light ON+ Light OFF control mode:** The load will start working when it gets dark until it gets bright or to the end of a setting time. There will be a 10 mins delay before turning on the load in order to make sure if it really gets dark.

**Light ON + set time delay OFF mode:** the start process same with above. Load will be off after the setting time. Setting time can be seen in time setting table.

**Normal mode:** The controller can also work without delayed switching .The load is switched on and off manually as required.

**Test mode:** This bypasses the 10 minute delay turn on.

**Light+Time modes:** The number displayed on the LED is from 0 to 9 and from 0. to 7., Direct output mode. Ten minutes after darkness falls, the output switches on and remains on for the duration of the delay selected. 1 to 15 hour delays can be selected, in increments of 1 hours.

## Time setting:

Work mode	LED	Work mode	LED	Work mode	LED
Light ON+ Light OFF	0	Light ON + 6 Hours delay OFF	6	Light ON + 12 Hours delay OFF	2.
Light ON + 1 Hour delay OFF	1	Light ON + 7 Hours delay OFF	7	Light ON + 13 Hours delay OFF	3.
Light ON + 2 Hours delay OFF	2	Light ON + 8 Hours delay OFF	8	Light ON + 14 Hours delay OFF	4.
Light ON + 3 Hours delay OFF	3	Light ON + 9 Hours delay OFF	9	Light ON + 15 Hours delay OFF	5.
Light ON + 4 Hours delay OFF	4	Light ON + 10 Hours delay OFF	0.	Normal control	6.
Light ON + 5 Hours delay OFF	5	Light ON + 11 Hours delay OFF	1.	Test(No delay)	7.