CC-PPL User's Manual 36V

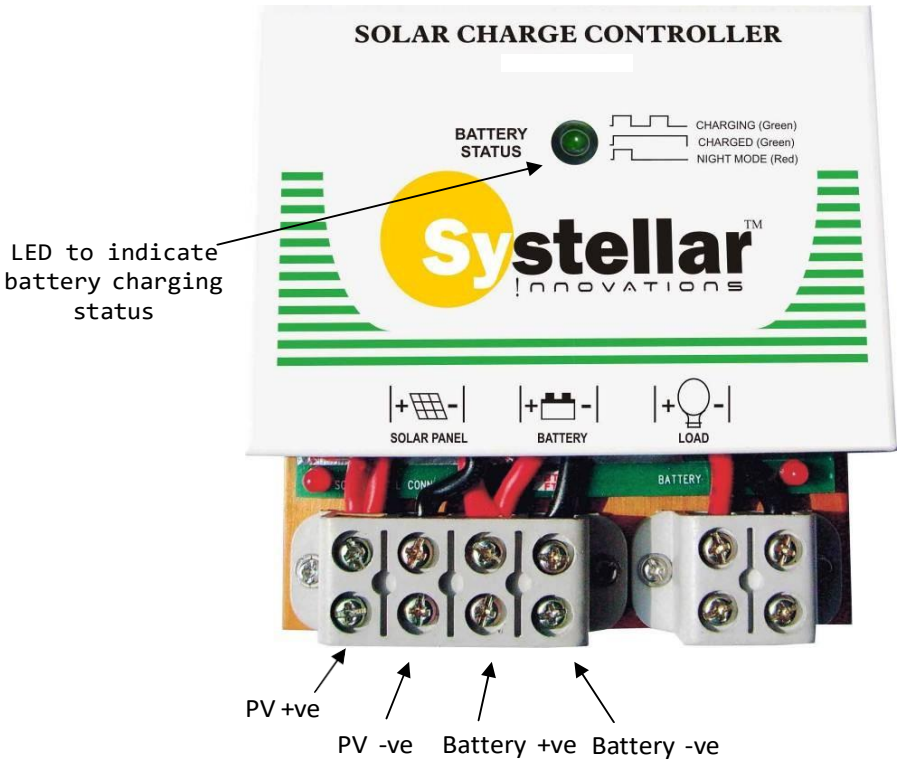
Models available: 36V 20A & 36V 40A

Introduction

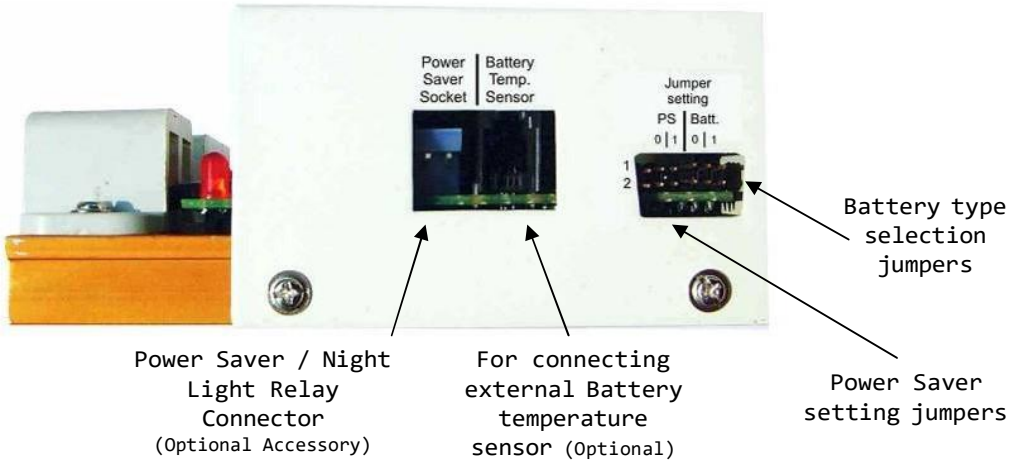
Congratulations! You are the proud owner of one of the best PWM charge controllers available in India. Please read this manual carefully before installing and operating the charge controller.

This product works with on 36V battery bank and can handle maximum 20 Amps or 40 Amps charging current.

Product description



Side View



The following battery types can be selected using jumper settings:

1. SMF (Sealed Maintenance Free)

2. Flooded – Flat plate

3. Flooded – Tubular

A four stage battery charging algorithm best suited for the selected battery type is implemented which can charge battery with precise current and voltage levels to achieve fast battery charging yet ensuring long battery life. They provide the following advanced features:

1. Power Saver relay drive: This feature along with an optional Power saver relay box provides a means to cut off mains supply to the inverter during the day when the battery is fully charged. This helps in saving electricity coming from the electricity board. The mains supply is reconnected 2 hours before sunset or when battery voltage becomes less than a programmable voltage in the range of 33.6 to 35.4 Volts. This voltage can be set using two jumpers on side.

2. D.C. Load output: This function has been disabled in 36V model

3. Temperature sensor input: This feature along with an optional temperature sensor probe adjusts battery charging voltages based on the temperature of the battery. This ensures optimum battery charging and longer battery life.

Installing the Charge Controller

1. Install the Charge Controller indoors near the battery bank at chest height. This will make it easy to make connections and make any changes in the jumper settings.

2. For 20A model, connect the battery bank to charge controller using 4 mm^2 copper cables. For 40A model, connect the battery bank using 8 mm^2 copper cables. Keep cable length around 2 Meters. Voltage drop in the cable has been adjusted in the software with these cable dimensions. Observe correct polarity while connecting wires from battery and Solar panel. If the wrong polarity is connected, the Battery connection fault LED will start glowing. Correct the polarity before proceeding further.

4. As soon as the battery cables are connected, the Charge Controller will start working and its Red/green LED indicator will start glowing / blinking.

5. Check open circuit voltage of the solar panels. For optimum results, open circuit voltage of the solar panels should be matched with the battery bank voltage. For 36V battery bank, use three 30 or 36 cell solar panel (Voc = 19V or 21V) in series. You can connect parallel Solar panel strings to this.

For 36V CC-PPL, maximum solar panel voltage should be less than 65 volts. This means that maximum three 12V solar panels (V_{oc} 19 – 21V) can be connected in series. Any number of such series strings may be connected in parallel to increase the power of the solar panels.

6. Connect solar panel to the charge controller in correct polarity. Once connections are made, if it is day time, the battery charging will start after about 15 seconds.

LED indicator:

CC-PPL has a bi-color (Red / green LED) which gives a variety of indications about the functioning of CC-PPL.

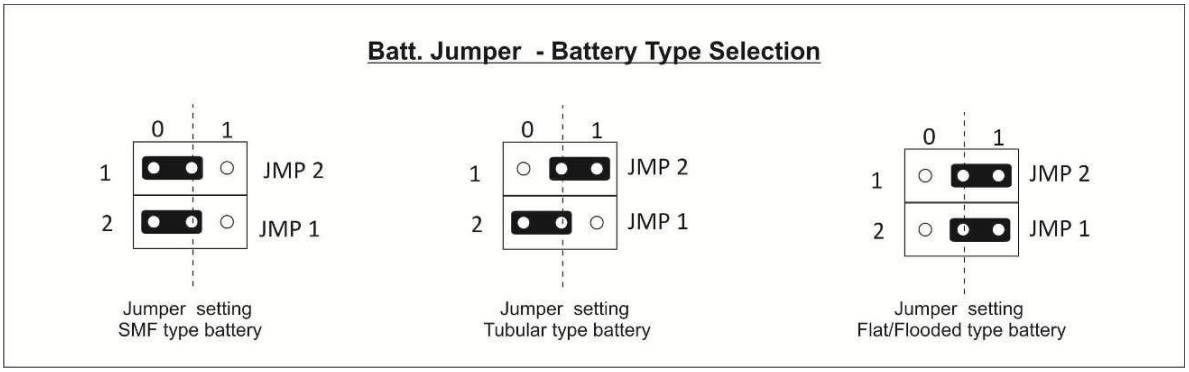
Condition	Indication
1. System un-calibrated (system fault)	Red: 30 blinks 100 msec On, 100 msec Off
2. Battery discharged	Red: Three 50 msec blinks at 2 seconds interval
3. Load shutoff due to Low Battery voltage or Load current exceeding 40 Amp	Red: Two 50 msec blinks at 2 seconds interval
4. Battery voltage too high (system fault)	Red: Solid On (Unlikely fault)
5. Dusk / dawn verification	Green: Two 50 msec blinks at 2 seconds interval
6. Battery fully charged	Green: Solid On
7. During DAY, Charging current < 1 Amp	Green: One 50 msec blink at 2 seconds interval
8. During DAY, Charging current > 1 Amp	Green: 500 msec On, 500 msec Off
9. During NIGHT	Red: One 50 msec blink s at 2 seconds interval

Note that the above is prioritized list of indications i.e. when a higher priority indication is there, any lower priority indication will not be given during that period.

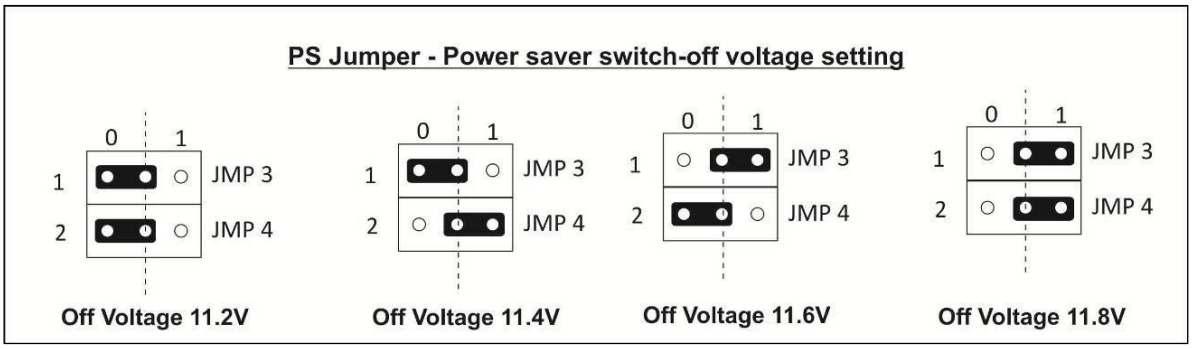
Setting programmable parameters using jumpers

There are two sets of 2 jumpers each on the right side of the CC-PPL. Their settings are as under:

1. Battery type selection (Jmp1 and Jmp2)



2. Power saver turn off voltage setting (Jmp3 and Jmp4)



For 36V system multiply above voltages by 3 to get actual voltages

Optional Accessories

1. Battery Temperature sensor

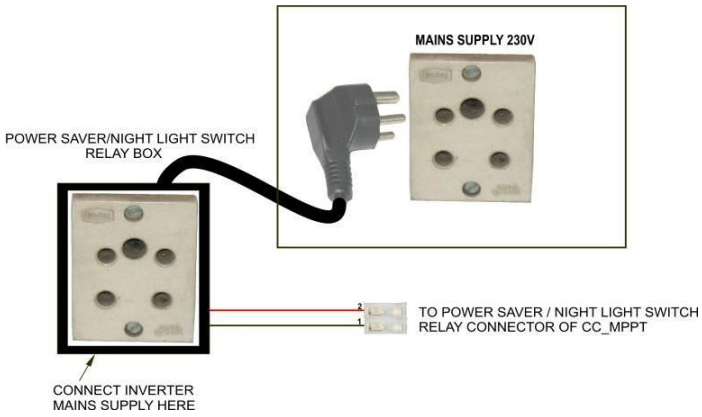
External Battery Temperature Sensor

Battery temperature sensor is supplied as an optional accessory. Paste the temperature sensor on the battery side using adhesive tape. Insert the 4 pin RJ11 connector at the end of the temperature sensor cable in the socket provided on the right side of the charge controller.

Note that if temperature sensor is not inserted in the connector in CC_PPL, the battery charging voltages suitable at 25 deg C are used automatically.

2. Power Saver accessory:

Power Saver Accessory



Power Saver Connection Diagram

Connect the plug of power saver box in Mains power socket. Connect inverter mains cord to the socket provided on the Power saver box. Connect the 2 pin PV connector to the Power saver socket on the right side of the charge controller.

Now when it is day and the battery voltage is more than 13.5 V / 27 V, the relay will turn on. This will cut-off the mains supply to the inverter and thus save electricity. Note that in this condition, the load connected from the inverter will be driven by the battery while the battery is being charged by the solar panels.

Technical specifications

	CC-PPL-36-20 / 36-40
Maximum charging current	20Amps or 40 Amp
Technology	Zero voltage drop Pulse Width Modulation
Battery bank voltage (Auto select)	36 V
Maximum solar panel voltage:	70 Volts
PWM duty cycle range	0 – 100%
Idle current from battery (typical)	10 ma typical
Battery deep discharge protection load shut-down voltage	32.4 V

Note: For product enhancement, product parameters can be changed without notice

Company Contact details:

Systellar Innovations
Shankar Chowk, Delhi Road, Meerut – 250002 | Ph: 0121-4342043
Email: info@systellar.in | www.systellar.co.in
File: PN7004_CC_PPL_36V_users_manual.docx