FEATURES

- **In-line solar charge controller eliminates the need for blocking diodes eliminating the .6 voltage drop.**
- **Micro-controller for digital accuracy and reliability to prevent over charging.**
- **Fully automatic operation on 12V or 24VDC systems**
- **Built-in temperature compensation when installed in battery case.**
- **LED status indication of solar charge & battery level**
- **Will handle up to 12 Amps @ 28VDC from PV panels**
- **Sealed/ flooded batteries selectable**
- **Pulse action reduces battery sulfation**

DESCRIPTION & OPERATION

The PVCM15 solar charge controller is used to connect solar panels to 12V or 24VDC storage batteries. The PVCM15 determines which mode to operate in, 12V or 24V, by measuring the battery voltage that powers it.

The PVCM15 performs four basic battery charging functions:

- It senses when the battery is fully charged and disconnects the solar charge current to avoid over-charging the battery.
- It resumes charging the battery when the battery voltage has dropped sufficiently to accept additional charge current.
- It checks the availability of the solar charge current, by cycling the relay every 4 minutes. If there is insufficient charge current available, its internal relay will disconnect the battery to prevent discharge through the solar panels at night.
- It also compensates for the battery temperature and adjusts the charge threshold voltages when it is mounted in the battery case.

The temperature compensation work as follows: (lead acid)

below	0°C	on @ 13.3VDC	off @ 15.0VDC
between	0-5°C	on @ 13.3VDC	off @ 14.8VDC
between	5-10°C	on @ 13.1VDC	off @ 14.6VDC
between	10-15°C	on @ 12.9VDC	off @ 14.4VDC
between	15-30°C	on @ 12.7VDC	off @ 14.2VDC
between	30-35°C	on @ 12.7VDC	off @ 14.0VDC
between	35-40°C	on @ 12.6VDC	off @ 13.8VDC
between	40-45°C	on @ 12.6VDC	off @ 13.6VDC

Temperatures > 45°C on @ 12.7VDC, off @ 14.2VDC.

SPECIFICATIONS

Size:	**0.875 x 3.2 x 1.2 inches**
Enclosure:	**Epoxy potted in PVC plastic**
Mounting:	**Double stick tape**
Power:	**6 to 30VDC from storage battery(s)**
Load Capacity:	**15Amps @ 14VDC** **12Amps @ 28VDC** **Minimum is a 10 watt panel** **Maximum is a 250 watt panel**
Vented Battery Thresholds:	**At room temperature 15°C/ 30°C** **On @ 12.7VDC off @ 14.2VDC** **On @ 25.4VDC off @ 28.4VDC** **Accuracy ± 0.1VDC**
Sealed Battery Thresholds:	**Blue jumper clipped** **@ Room Temperature 15-30°C** **On @ 12.4VDC off @ 13.9VDC** **On @ 24.8VDC off @ 27.8VDC** **Accuracy ± 0.1VDC**
Current Draw:	**Continuous - ≤ 6mA** **During charge - ≤ 35mA**
LED Indication:	**Battery voltage**
Red	**Charging Mode**
Green	**Full 12.75VDC or 25.5VDC**
Yellow	**Partial 11.2VDC to 13.3VDC** **Or 22.4VDC to 25.5VDC**
Orange	**Low ≤ 11.2V or 22.4V**
Voltage Drop:	**0.05VDC @ 15Amps**
Minimums:	**Charge current minimum – 80mA** **Open PV Voltage – 16V or 32VDC**
Temperature:	**-30 to 75°C**
Relay Life:	**100 million mechanical operations**

INSTALLATION TIPS

1. Exposed connections should be waterproofed. Grease or silicon will adequately protect connections such as splices.
2. Clip blue jumper wire for sealed batteries.
3. When wiring the solar panel into the battery system, adequate wire size must be used. 12 AWG or larger wire is recommend. If smaller wire is used, the battery may not achieve full charge.
4. Check the battery fluid level as instructed by battery manufacturer.
5. Install the PVCM15 in the battery enclosure for the temperature compensation to work properly.

TROUBLE SHOOTING TIPS FOR PVCM15

Problem: Module doesn't click on and there is sunlight on the PV panels.

Solution: Verify that the battery voltage is less than 12.75V (or 25.5V on a 24VDC system) and that the open PV voltage is greater than 16V or (32V). If both conditions are met, then wait for 4 minute delay period.

Problem: Module clicks every several minutes.

Solution: This is the normal operating sequence.

Problem: Module charges for a few seconds then shuts off for 4 minutes.

Solution: The batteries are fully charged and the charge current was at maximum output. It may also mean that the batteries have a poor connection or a bad cell with high international resistance.

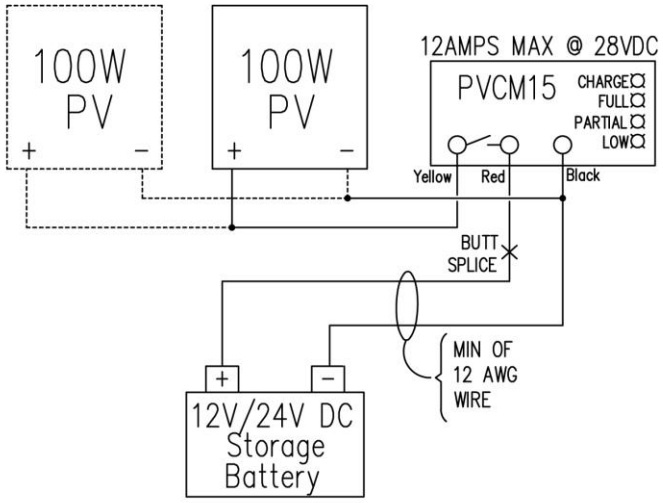
Problem: Module switches on for 1 or 2 minutes and then is off for a much longer period of time.

Solution: This is also normal if the battery is at or nearly fully charged and the PV charge current is at or near maximum.

Problem: The battery load has been left on and the storage battery has discharged below 6VDC. The PV system is not charging when the load is turned off.

Solution: The PVCM15 needs at least 6VDC from the battery to operate properly. Place panel in direct sunlight and jumper the red and yellow wires for a few minutes, bypassing the charge controller allowing the battery voltage to rise to at least 7VDC. Disconnecting the jumper will allow the PVCM15 to charge the battery up to normal levels.

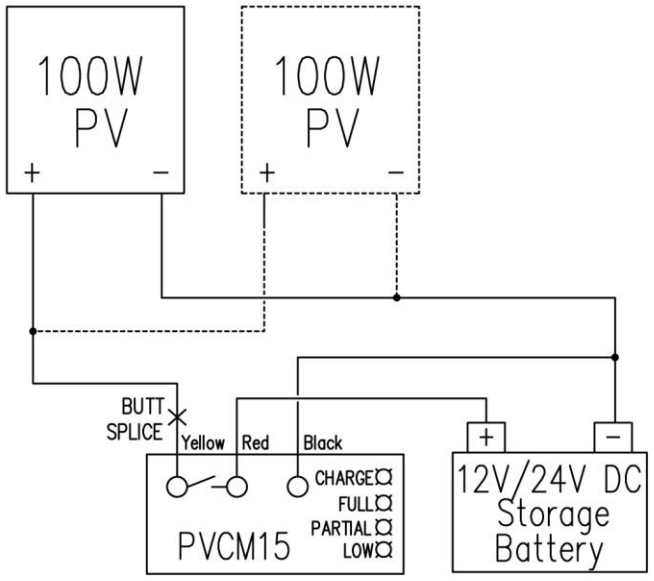
MOUNTING AT SOLAR PANEL



Before mounting the PVCM15 regulator inside the solar panel junction box, clean the surface to which the PVCM15 will be attached. Allow the surface to dry. Remove the backing from the double stick tape and press firmly into box cover.

Note: The temperature compensation function reverts to On @ 12.7VDC off @ 14.2VDC for temps above 45°C.

MOUNTING AT BATTERY LOCATION



Connect the PVCM15's regulator wires to battery terminals and attach regulator to battery cables with a tie-wrap.