

FEATURES

- ❖ PV charge & low voltage disconnect - waterproof
- ❖ Micro-controller for digital accuracy and reliability
- ❖ Fully automatic operation on 12V or 24V DC systems
- ❖ Will handle up to 15 Amps @ 28V DC from PV panels and battery loads up to 15 Amps
- ❖ Built-in low voltage disconnect, max load 15 Amps continuous, 12 Amps on normally closed
- ❖ Built-in temperature compensation for PV charging
- ❖ LED indication of Solar charge & load control
- ❖ Selectable operation for sealed/flooded batteries
- ❖ Pulse action reduces battery sulfation

APPLICATIONS

- ❖ Photo Voltaic charge controller with LVD for: telecommunications, instrumentation and other automatic disconnect systems.

OPERATION

The PVLVD-15 Charge controller monitors both the battery and PV panel voltage to determine: 12V or 24V DC mode of operation, if PV panels have sufficient voltage for charge, and if the battery bank requires charging. When charging the PVLVD-15 cycles the charge relay every 4 minutes to re-verify open circuit PV charge voltage to avoid discharging the batteries through the PV panels when low light conditions occur. The charge re-connection time is varied by the micro-processor to optimally reduce the charge rate for nearly or fully charged batteries. The PVLVD-15 internal temperature compensation adjusts the charge threshold voltages for optimum charge of the battery bank based on temperatures between 0°C to 45°C. Refer to the following lead acid chart:

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 (the PVLVD-15 is mounted in the back of a solar panel) On @ 12.7V DC, Off @ 14.2V DC.

With the jumper wire between the relays intact, the load relay will immediately energize after the initialization sequence. It will only drop out when the battery voltage drops below 11V or 22V. Use the N.O. (orange) wire to power the load.

Clipping the jumper between the relays causes the PVLVD-15 to switch into normally closed (N.C.) mode, powering the load through the purple (N.C.) wire. The load relay will energize, opening the N.C. contact and disconnecting the load when the battery voltage drops below 11V (22V). The load relay will stay energized until the battery voltage drops to less than 6.0V at which point the contact will again close. Anytime the low voltage disconnect function is activated the batteries must charge back to 12.0V (22V) to re-energize the load, in either the (N.C.) or (N.O.) mode.

**SPECIFICATIONS**

SIZE/WEIGHT:	2.0"w x 3.3"l x 1.25"h, 8 ounces
ENCLOSURE:	Epoxy potted in PVC plastic
MOUNTING:	Two 1/2" # 8 screws
POWER:	8 to 30 V DC from storage battery
LOAD CAPACITY:	15 Amps @ 28V DC (NO contact) 12 Amps @ 28V DC (NC contact)
FUSE REQUIRED:	BUSS 20 Amps AGC or AGX series
FLOODED BATTERY PV CHARGE:	On @ 12.7V DC, Off @ 14.2V DC
SEALED BATTERY PV CHARGE:	*Blue Jumper Clipped* On @ 12.4V DC, Off @ 13.9V DC @ Room Temperature 20-25°C
TEMPERATURE COMPENSATION:	0.040V/°C @ 12V
CURRENT DRAW:	Continuous - ≤7mA During charge with NC load - ≤ 20mA During charge and LVD - ≤ 35mA
LED INDICATION:	Red Charging Mode Green Load Relay 'on'
MINIMUMS:	8V DC from Battery PV Charge Current - 80mA Open PV - 16V DC (12V)
TEMPERATURE:	-30 to 75°C
RELAY LIFE:	100 million mechanical operations Double 12V Values for 24V Operation

ORDERING INFORMATION

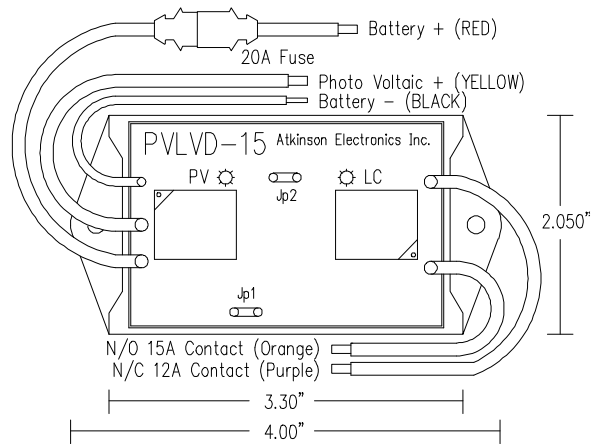
PVLVD-15 - Photo-Voltaic Controller with Low Voltage Disconnect (rated for 15 Amps @ 28V DC)

15 AMP, 12/24V PV CHARGE LOW VOLTAGE DISCONNECT CONTROLLER PVLVD-15

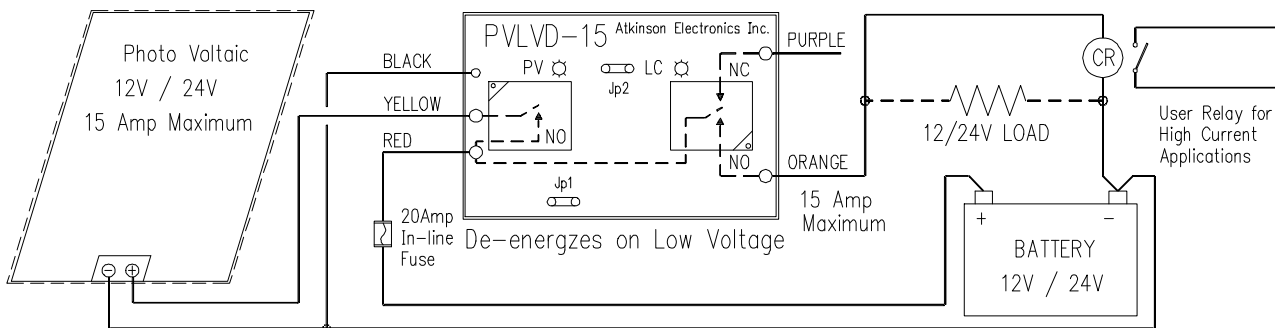
INSTALLATION AND STARTUP INSTRUCTIONS

1. Select either Application 1 or 2. For # 2 clip the orange jumper for N.C. mode.
2. Connect the PVLVD-15 negative black wire along with PV panel and load negative wires to the negative battery post. Also connect the orange or purple wire to the load. Now connect the red and yellow wires, to power up the PVLVD-15.
3. Verify the initial battery voltage is greater than 11V or 22V.
4. Twelve seconds after power up, the charge relay (red LED) will click 10 times for N.O. mode and 11 times for N.C. mode.
5. If the open circuit PV voltage is above 16V (32V) then the PV charge relay will energize, charging the battery, if the battery voltage is below the "turn on" threshold. Every 4 minutes the PV relay will drop-out momentarily to test for the presence of adequate PV charge sunlight.
6. Mount the PVLVD-15 securely with screws. Waterproof the electrical connections and jumper #2 if cut with silicone or grease.

PHYSICAL CONFIGURATION

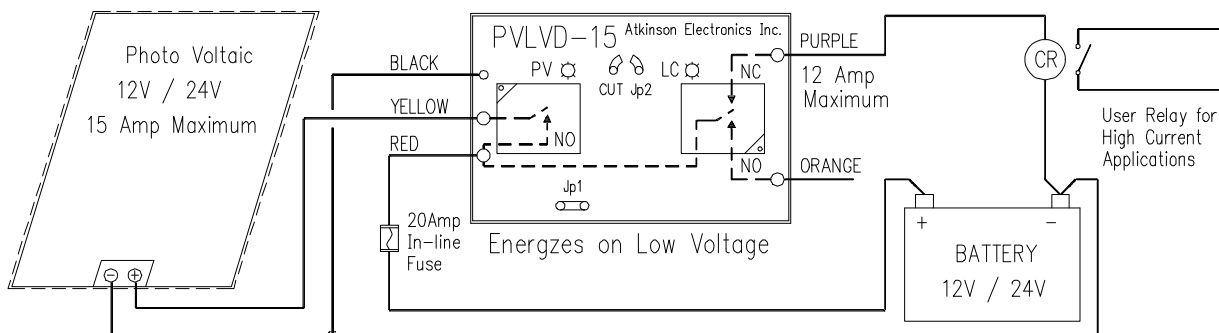


APPLICATION 1 - DROP-OUT ON LOW VOLTAGE - NORMALLY POWERED APPLICATION (N.O.) MODE



This application (orange jumper intact) is commonly used in solar powered telemetry or remote measurement sites. It may also be used for small RV or cabin lighting systems to prevent low battery voltage damage to sensitive appliance electronics. The normally open (N.O.) load relay contact, (when the PVLVD-15 module is unpowered), orange wire is used to power electronics or other less than 15amp loads. The load relay will pull in powering the load from the battery when the module is powered up. If the battery voltage drops below 11.0v (22.0v) for more than 5 minutes the load relay will drop out, disconnecting power to the load. The load relay will not reconnect until the solar or other source has charged the battery to above 12.0v (24.0v). The PV charge cycle will operate normally whether or not the load relay has dropped out.

APPLICATION 2 - ENERGIZE ON LOW VOLTAGE - NORMALLY CLOSED APPLICATION (N.C.) MODE



This application (orange jumper cut) is commonly used for larger loads such as inverters or lighting systems that exceed 15 amps. A user supplied heavy current relay is controlled by the normally closed (N.C) load relay contact (purple wire). The load relay energizes when the battery voltage drops below 11.0v (22.0v) for 5 minutes. The purple wire energizes the user relay which disconnects the load via the normally closed contact. The load relay will not drop out until the battery is charged above 12.0v (22.0v) by the solar or another source. The PV charge cycle will operate normally whether or not the load relay is energized.