

**FEATURES & APPLICATIONS**

- ❖ Light-switch size, module displays 6 battery functions: Battery voltage, Solar charge current, Accumulated solar amp - hours, Percent battery charge remaining, wind charge current, Accumulated wind amp-hours.
- ❖ Surface, cutout, or electrical box mounting
- ❖ Connects w/RJ-45 jack network cable to remote mounted charge controller or shunt adaptor
- ❖ Operates on 12V to 72V DC battery systems
- ❖ Back-lit LCD for reading in dim locations

**DESCRIPTION & OPERATION**

The PVWDM Photo Voltaic & Wind Display Module serves as a remote digital readout for the PVWSM wind & solar shunt module. The PVWSM contains 40 Amp internal wind and solar current shunts, RJ-45 communication jack and associated internal wiring to provide power and signals to the PVWDM. A standard computer network patch cable which plugs into the RJ-45 jack on the back of the PVWDM and the PVWSM. If the wrong configuration network cable such as the crossover type is used then the cable "error" LED on the back of the PVWDM will light indicating the wrong type of cable has been used and that the proper cable is needed for the display to work properly.

The PVWDM's normal display indication setting is battery voltage. The select button allows the user to turn on the displays backlight, advance to the next display setting, reset the solar and battery amp hour accumulators, lock display on current setting, or activate scroll mode (see User Instructions). The PVWDM will automatically switch back to the battery voltage display setting after 4 minutes unless the display setting lock is activated. The backlight will come on for 15 seconds any time the select button is pushed and will stay on continuously in scroll mode.

If a low battery voltage condition occurs, the display will automatically switch back to the battery voltage setting (if not already there) and blink the display reading and LED. If the user accesses other display settings while in this condition, they will be displayed for 5 seconds then switch back to battery voltage setting until the low battery voltage problem is corrected. Any accumulated values may be meaningless if the battery voltage remains below 11V as this is the minimum voltage for the PVWDM to operate properly. The PVWDM display will continue to accumulate amp-hours, they just won't be displayed without reverting back to the flashing battery voltage after 5 seconds. The battery voltage signal tells the PVWDM module what battery system voltage it is: 12V, 24V or 48V.

**ORDERING INFORMATION**

PVWDM - Photo Voltaic & Wind Display Module six display functions standard.



**SPECIFICATIONS**

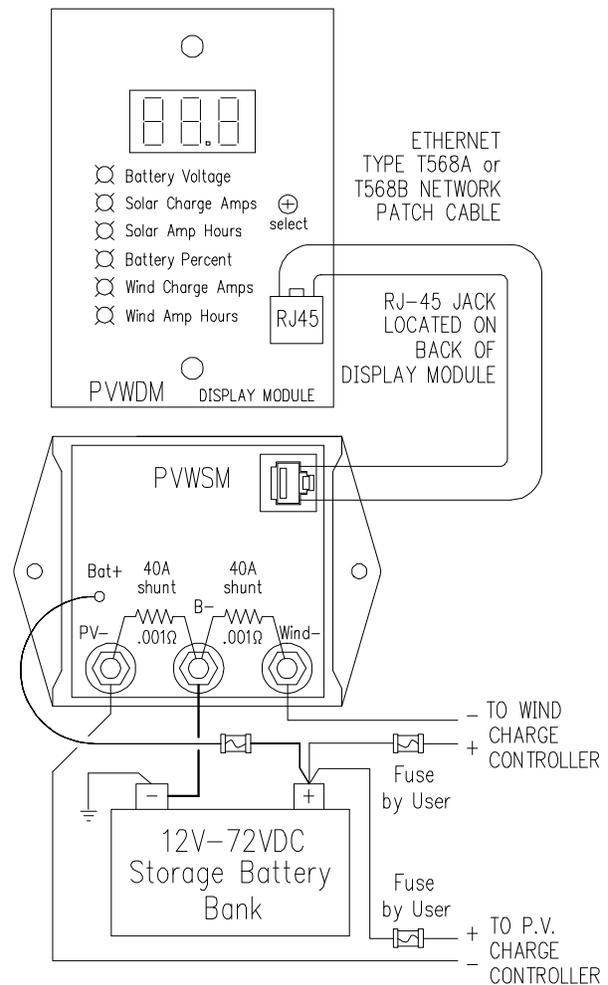
SIZE/WEIGHT:	2.75 x 4.5 x .75 inches, 3 ounces
MOUNTING:	Single - gang electric box or surface mount with cutout
POWER:	12 to 72V DC from PVWSM or 12 to 48V with PVDAM adaptor
CURRENT DRAW:	15 mA normal mode 35 mA with backlight on
CONNECTION:	RJ-45 jack to T568A or T568B network patch cable
CONTROL:	Single select/reset button
DISPLAY:	3 digit LCD to 999 or with decimal .35 inch character height
VOLTAGE:	Displays 0 to 100V DC
CURRENT DISPLAY:	0 to 100 Solar Charge Amps 0 to 100 Wind Charge Amps
BATTERY PERCENT DISPLAY:	While charging reads over 100% 12.8V = 100%, 10.8V = 0%, 12V syst. 25.6V = 100%, 21.6V = 0%, 24V syst. 51.2V = 100%, 43.2V = 0%, 48V syst.
LOW BATTERY VOLTAGE:	Detects @ 11.2V, 22.4V & 44.8V for 12V, 24V & 48V systems
AMP-HOURS:	Displays 0 TO 999 accumulated
TEMPERATURE:	0 to 50° C

**USER INSTRUCTIONS**

1. The power and signals to the PVWDM display are supplied through the CAT-5 network patch cable connecting the PVWDM to a PVWSM shunt/power supply module.
2. The PVWDM will normally revert back to the battery voltage display after approximately 4 minutes in any other reading.
3. "Select" button operation:
  - a. "Tapping" or pressing the "select" button activates the backlight for 30 seconds.
  - b. Pressing for 1/2 to 1 second then releasing the button advances to the next reading.
  - c. From the battery voltage display only pressing and holding the button will advance the display automatically through each of the readings.
    - 1) If the button is released before returning to the battery voltage display, the reading will remain in that position until the display times out (4 minutes).
    - 2) If the button is held through all readings then released at the battery voltage display, the PVWDM will enter the scroll mode, advancing to the next reading every 3 seconds, indefinitely.
    - 3) "Tapping" the button exits the scroll mode.
    - 4) A low battery voltage condition will also exit the scroll mode.
  - d. Display lock mode is available for Solar Charge Amps, Battery Percentage and Wind Charge Amps.
    - 1) To lock display from timing out and reverting to battery voltage, advance display to desired position then press and hold the button until the display flashes (approximately 3 seconds).
    - 2) Release button when the display stops flashing, it will remain indefinitely in that reading.
    - 3) "Tapping" the button while the display is flashing prevents entering the lock mode.
    - 4) Advancing to the next reading (see par. 3b) cancels the lock mode.
    - 5) Low battery voltage also cancels the lock mode.
  - e. Resetting the Accumulated Amp hour readings to zero is available for both Solar and Wind Load Amp-hours.
    - 1) Pressing and holding the button for approximately 6 seconds will reset the display value. The display starts flashing after 3 seconds, the reading goes to zero after 6 seconds and the display stops flashing.
    - 2) Releasing the button while the display is flashing cancels the reset. The display will stop flashing and retain its current value after several seconds.
    - 3) Note: There is no display lock for the accumulation displays. They will revert to battery voltage after approximately 4 minutes.

4. Low battery voltage will cancel any user selections. The user can advance to any reading, but it will automatically return to the flashing low battery voltage display after 5 seconds.
5. The PVWDM is factory set to display all 6 readings. If a Wind generator is not installed, the dealer may deactivate displaying Wind Charge Amps and Accumulated Wind Amps. The PVWDM will then scroll through only the first 4 readings.

**PVWDM HOOKUP DIAGRAM**



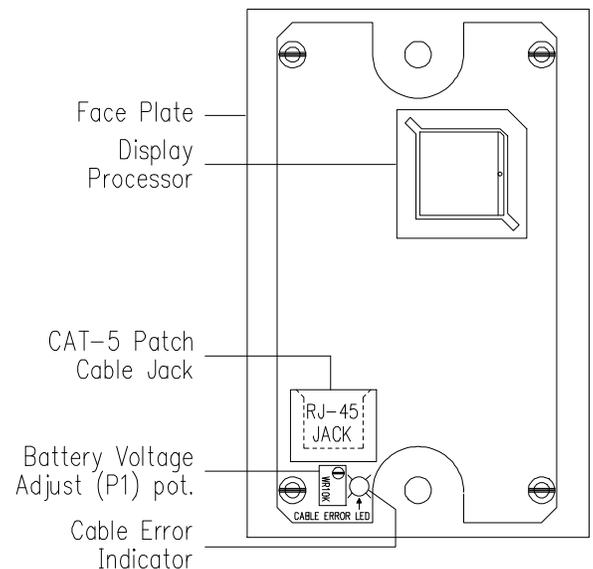
**INSTALLATION INSTRUCTIONS**

1. Complete the installation and test the operation of the PVCM40D charge control module.
2. Before mounting the PVDM6, plug in the network cable to the PVCM40D charge controller and verify that all the readings work properly. Calibrate the battery voltage reading by first measuring the battery voltage with an accurate digital voltmeter. Adjust the PVDM6 battery voltage reading to match by adjusting the (P1) potentiometer (1/4 to one turn maximum), next to the RJ-45 jack, on the back of the PVDM6 module. Unplug the network cable on both ends. (See diagram to the right.)
3. Determine the mounting method to be used, surface-cutout or single gang electrical box.
4. For surface-cutout mounting, place the template over the desired mounting location and mark through the template the two mounting screw locations. Drill two pilot holes into the cabinet or mounting surface at the marked locations. Use a power drill to drive screws into the mounting surface before mounting the display module. Back out the screws, cut-out the template leaving the mounting screw tabs and attach the template with the screws to the mounting surface. Draw around the template on the mounting surface marking through the template around the mounting screw tabs. Carefully cut out the marked area using a saber saw or router leaving the mounting screw tabs.
5. Plug the network cable into the RJ-45 jack, after pulling it through the cutout hole. Insert the screws through the front of the module and into the holes and tighten by hand with a screwdriver. **USING A POWER DRILL TO DRIVE IN THE SCREWS THROUGH THE PVDM6 MODULE WILL VOID THE WARRANTY BY DAMAGING THE PVDM6 MODULE!!!!**
6. For single gang electrical box mounting, mount the box securely and install conduit (at least 3/4 in. EMT) as desired. Route or pull the display end of the network cable into the electrical box being careful not to damage the RJ-45 plug. Plug the network cable into the back of the PVDM6 module and mount the module with 6-32 screws into the tabs of the single gang box. Hand tighten the screws to avoid damaging the PVDM6 module.
7. Now plug the charge controller end of the network cable into its RJ-45 jack and verify that the display is working properly. Use grease or silicone to cover the controller side of the network cable plug to avoid corrosion.
8. For Battery Load Shunt installation, install the shunt in the positive power leg of the battery bank. Make sure that the shunt size matches the PVDM6 display requirement of 500 Amp/50 millivolt. Now connect at least #18 AWG wire between the spade connectors on the charge controller and the shunt terminals. Verify that the shunt signal wires are connected to the correct terminals otherwise reverse the wires for a proper current reading.

**DEALER CONFIGURATION**

To configure the PVDM6 to display only 4 of the 6 or back to 6 display readouts, perform the following steps:

1. Advance display to Battery Load Percentage.
2. Hold select button for 15 seconds, the PVDM6 will switch from its present to the other mode. If the PVDM6 module is now in "6 reading display" the first and sixth LED's will flash for 3 seconds. If the PVDM6 module is now in "4 reading display" the first and fourth LED's will flash for 3 seconds.
3. If you wish to change modes repeat step 2. This mode setting will remain until changed. Loss of power or low battery will not change this setting.
4. This display change function is not available on PVDM4 displays.

**BATTERY ADJUST POT. AND JACK LOCATIONS**

The Battery voltage calibration potentiometer is located in the lower left hand corner of the PVDM6 below the RJ-45 jack, along with a cable error LED.