

Energy Monitor

EM-1

Energy Monitor is a great tool to monitor the status of the renewable energy sources to the load. The voltage, current, power and energy are monitored. The resistance of the Load is also displayed. It is a great tool for comparing the performances of a wind turbine or a renewable energy system under different operating conditions.



While most Power Meters are designed for AC power line application, the EM-1 is designed to meet the needs of evaluating renewable energy system applications.

The energy displayed is the **Energy** delivered to the load immediately after the Energy Monitor is powered ON. The powered ON time duration is also displayed. The **Power** displayed is the average power delivered to the Load.

A unique feature to display the instantaneous rotating speed of the wind turbine in **RPM** (rotation per minute) is implemented. A **resistance** of value smaller than 200 Ohm should be connected to the "Load" terminal for the RPM function to operate normally. When the RPM speed is too low to be detected accurately, "0.0.0.0." will be displayed. This RPM function is specially designed for our WindLab, WindCharge and WindPitch 3-Phase wind turbines.

This meter can be used for the **Maximum Power Point Tracking (MPPT)**. By adjusting the value of the Load resistance when the Power is displayed, we can observe a peak power at an optimum resistance value. The maximum power from the source can then be extracted. The resistance of the connected Load can be displayed.

You can press the "**Function**" button to select the Data to be displayed in the following order: Voltage -> Current -> Power -> Energy -> Rotation Speed -> Time (MM:SS) -> Time (HH:MM) -> Resistance -> Voltage again. The LEDs on the right side show the function and unit that the 4 digits are displaying.

You may also select the “**Scan**” Mode to display Voltage -> Current -> Power -> Energy -> Rotation Speed -> Voltage again so that you can read them sequentially every 0.5 second.

The “**Auto-OFF**” mode turns OFF the LED display after 5 minutes to reduce the power consumption while the Energy Monitor continues to record the energy delivered to the Load. The “Scan” LED blinks to indicate this “Auto-OFF” mode.

The “Ohm” LED blinks to indicate the **Battery** level is **low**. You should replace the old batteries with new ones when it blinks.

The Resistance displayed by EM-1 is calculated by dividing the Voltage with the Current flowing through the internal Current Sense Resistor. Sufficient Voltage has to be applied to the Input terminals to get enough current for calculation..

When the polarity of the power is reversed, the “**Reverse Polarity**” LED is lit. You should reverse the polarity of the input connections.

The Energy Monitor samples the voltage and current data 2000 times per second. The power and energy data are calculated and then averaged. All data are displayed as average data.

This Energy Monitor is great for evaluating wind turbines and Solar Panels.

Max. Display Voltage	: 50.00 V DC
Max. Display Current	: 500 mA DC
Max. Display Power	: 25W DC
Max. Display Energy	: 9999 KJ
Max. Display Resistance	: 9999 Ohm
Max. Display Rotating Speed	: 3300 RPM
Time Display	: HH:MM / MM:SS
Display	: 4 Digit LED
Reverse Polarity LED Indication	: Reverse LED ON
Low Battery LED Indication	: “Resistance” LED Blinking
Power Requirement	: Battery, 6V (AAA type * 4 Pcs)