

PV String Monitor

1500V string monitoring solution

Overview

The PV String Monitor is an ultra-high precision, galvanically isolated voltage and current measurement device with filtering and sampling characteristics that are optimized specifically for PV string measurements.

Features

- 1500V/18A measurement range
- +/- .1% full scale over operating temperature range
- Power supply 24 VDC
- RS485 Modbus interface up to 115.2kbps
- Galvanically isolated power and communication
- Analog filtering to remove unwanted inverter noise
- Digital filter irradiance sensor time constant matching
- Minimally invasive measurement techniques compatible with all inverters

Product Description

The PV string monitor is a non-invasive solution for measuring the voltage, current, and power of an isolated PV string. It uses high quality components and vetted design practices to implement a multi-functional power measurement unit into a small, cost-effective package.

The unit provides full galvanic isolation between the communication block and the measurement block, enabling the device to be connected to an ungrounded energized PV string and a grounded datalogger. This design utilizes low capacitance isolation to prevent nuisance arc fault tripping of inverters.

The PV string monitor features a minimally invasive measurement technique, which allows for inline installation with any commercially available inverter without impacting maximum power point tracking (MPPT). The PV string monitor is also compatible with inverters that perform periodic I-V sweeps.

Applications

- Compare bifacial and monofacial reference strings
- Monitor field performance and module degradation
- Identify sensor soiling



Specifications

GENERAL	
Voltage input	24 VDC (21.6 min – 26.4 max)
Power consumption	<1W @24 VDC
Supported protocol	Modbus RTU
Connectors	PV – MC4 compatible Power & data – screw terminals (14 – 26 AWG)
PV INPUT	
Measurement voltage range	0 – 1500 VDC
Measurement current range	0 – 18.2 ADC
Voltage uncertainty	± 0.5 V, +/- .1% full-scale, -40°C - 85°C
Current uncertainty	± 5 mA, +/- .1% full-scale, -40°C - 85°C
Resolution	12-bit
Effective sampling rate	4 samples/second
PV INPUT SAFETY	
Maximum operating voltage	2500 VDC
Maximum operating current	20 ADC
Isolation voltage	1500 VDC – 8000 V surge
COMMS INPUT SAFETY	
Overvoltage protection	30 V
Reverse input polarity protection	Yes
Bus I/O protection	± 6000 V(ESD)
ENVIRONMENT	
Operating humidity	5% – 95 % RH
Operating temperature	-40°C – 85 °C
ENCLOSURE	
Polyester enclosure with door gasket, hinges, and lockable hasp	
Dimensions	8.5”L x 6.7”W x 5”H



POWERING RENEWABLE INNOVATION