

SBM-16 String Box Monitor

SBM-16 the String Monitoring box is designed to monitor DC current of Solar PV strings using non-contact Hall Effect Sensors or DC shunt Resistors.

Solar panels generate DC current, which flows through strings into a combiner box. String monitoring box SBM-16 measures the current flowing through individual strings in the combiner box to check that the solar array is operating at its peak capacity, before they are combined into one DC output. Using this technology one can detect instantaneously any issues affecting the photovoltaic array and therefore the energy yield by the PV modules

The SBM-16 can monitor 12 strings and 4 Auxiliary Sensors like Temperature, Transducers. The unit has built-in $\pm 15V$ Excitation voltage for Hall sensors and the Aux. Channels are individually programmable for RTD, Thermocouples, mV and Volt. SBM-16 has fast scan time of less than one Second for precise monitoring.

The SBM-16 String monitoring box has upto two RS485 serial ports with Modbus RTU protocol and windows based software to configure and monitor the device, front panel DIP switches help set the device ID and discrete LEDs provide diagnostics and status.

String monitoring module is installed in String Combiner Box to monitor DC current of Solar PV strings

Features

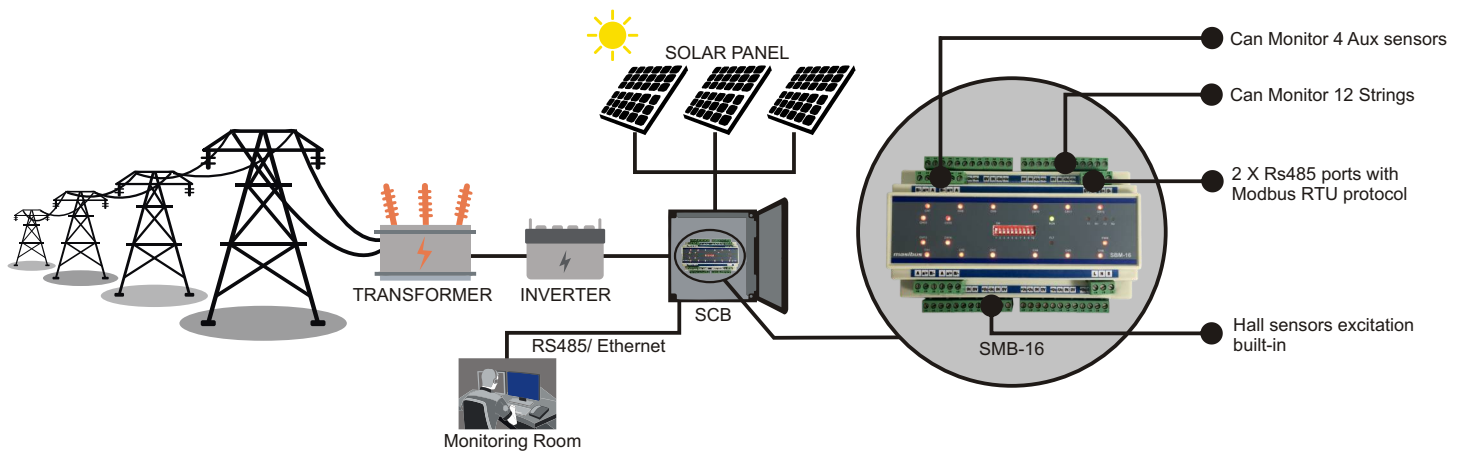
- DC monitoring of PV strings
- Can Monitor 12 Strings and 4 Aux sensors
- Can accept Hall sensors or DC shunts
- Can measure temperature
- Built-in Hall sensors excitation
- Front LED display for status & fault diagnostics
- Upto 2 X RS-485 ports with Modbus RTU protocol
- Windows configuration and monitoring software
- Scan time of less than one second
- DIN rail mount

Applications

- Precise monitoring and detection of string failures
- Monitoring of PV cell power generation
- DC current monitoring of Solar PV strings
- Operations and Maintenance tool
- String monitoring for Photovoltaic (PV) systems
- Monitor key panel performance and production parameters
- DC module for Smart combiner box manufacturers

TECHNICAL SPECIFICATIONS

Input		Power supply	
Analog Input		Voltage	85-265VAC, 50/60 Hz, Optional: 18-36VDC
No. of channels	12 channels from Hall Sensors based CT or DC shunts* (Factory set)	Power Consumption	12VA (Max) [85-265V AC]
Range	0-5V (Hall sensors), 0-75mV (DC shunt), upto 1000VDC**	Isolation (Withstanding voltage)	
Excitation Supply	±15V@ 15mA/channel for Hall sensors	Between primary terminals* and secondary terminals**: At least 1500 V AC for 1 minute	
Aux. Sensors	4 channels universal (RTD, Thermocouples, mV and Volts)	Between primary terminals* and grounding terminal: At least 1500 V AC for 1 minute	
Accuracy	0.1% FS#	Between grounding terminal and secondary terminals**: At least 1500 V AC for 1 minute	
Scan rate	< 1 Sec	Between secondary terminals**: At least 500 V AC for 1 minute	
ADC Resolution	17 bits	* Primary terminals indicate power terminals and relay output terminals.	
Sampling Rate	Voltage/Current: 50mSec/Channels RTD: 100mSec/Channels	** Secondary terminals indicate I/O signal and Communication O/P.	
Sensor Burnout current	0.4uA	Insulation resistance: 20MΩ or more @ 500 V DC between power terminals and grounding terminal	
RTD excitation current	250uA (Approx)		
NMRR	> 40dB		
CMRR	> 120dB		
Temp-co	< 100ppm/°C		
Input Impedance	> 1MΩ		
Max Voltage	20VDC		
Connector Type	Plug-In connector.		
Isolation		Physical	
Between Aux supply, Input and Com. Ports	1500V rms	Size (in mm)	60 (H) X 90 (W) X 160 (D)
Indications and Switch		Weight	400 gms
Status LEDs	Power, Run, Fault, Transmit/Receive, Individual Channel status	Mounting	Din-Rail
Switch	DIP for Modbus Slave ID setting	Material	ABS plastic
Communication Output		Environmental	
RS485 Serial port		Operating Temperature	0 to 55 °C
Interface	2 Wire, EIA RS485	Storage temperature	-10 to 70 °C
Protocol	Modbus-RTU	Humidity	20 to 95 %RH non-condensing
No. of Ports	Upto 2 nos (Standard: 1 no)		
Recommended cable	Shielded, Twisted Pair		
Baud Rate	9600 or 19200 BPS		



* DC Shunt and Hall Sensor based CT shall be mounted externally in string combiner box

Accuracy mentioned is without DC shunt or Hall Sensor based CT

** With external attenuator circuit (Contact factory)

Ordering Code

Model	Input Type		Aux Input		Power Supply		Communication	
SBM-16	H	Hall Effect DC CT	N	None	U1	85-265 VAC	1X	1 x RS485
	D	DC Shunt	A	4 ch Aux sensors	U2	18-36 VDC	2X	2 x RS485