

Effective PV Monitoring requires constant, solid and traceable PV Plant monitoring data in order to determine actual performance and fulfil owner/investor expectations.

Operators are interested to identify errors and losses in a reliable way to trigger appropriate actions for maximizing energy harvest during the total system lifetime.

With the monitoring of PV Module strings, design and production errors will be recognized on the DC side with high resolution down to PV Module level.

Using DC shunts (vs. Hall Effect sensors) the string.bloxx provides current measurements typically 10 times more accurate and not susceptible to temperature variance. This equates to higher accuracy measurements and better understanding of true system performance. In addition, string voltage (up to 1000V) and DC power on every string can be continuously monitored ensuring maximum system productivity.

Continuous measurement of both cabinet and panel temperatures, along with overvoltage monitoring and main switch control greatly improves system diagnostics.

This accurate measurement is inverter independent and gives feedback about losses due to inverter malfunction, soiling, shading, PV Module degradation etc. .

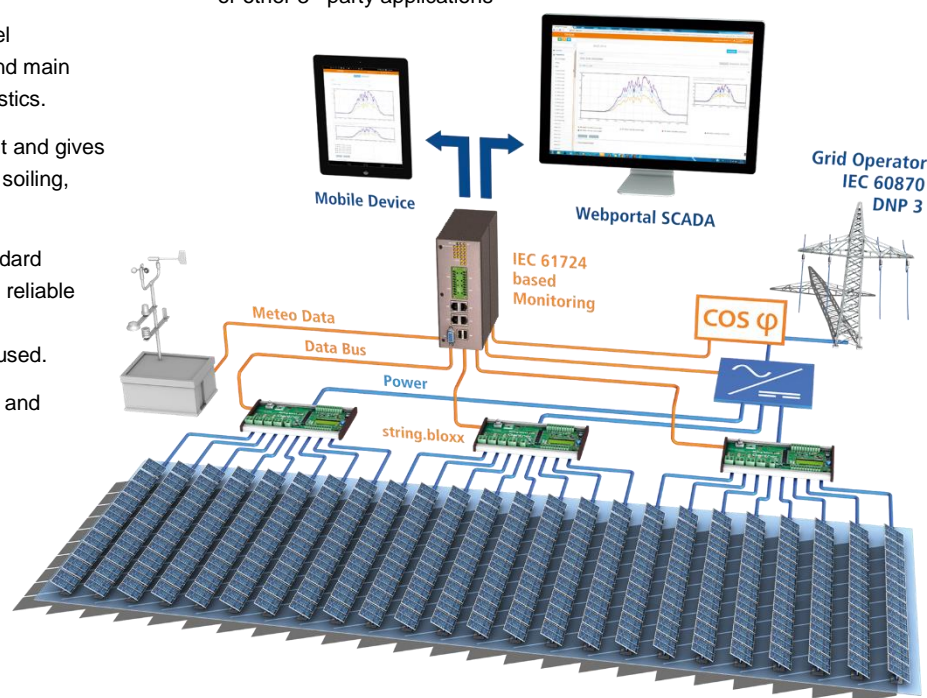
The string.bloxx communication uses industry standard Modbus protocols for easy and fast integration and reliable data exchange with the data logger. For longer communication distances fiber optic technology is used.

The All-In-One Solution improves your Project ROI and offers increased local content.

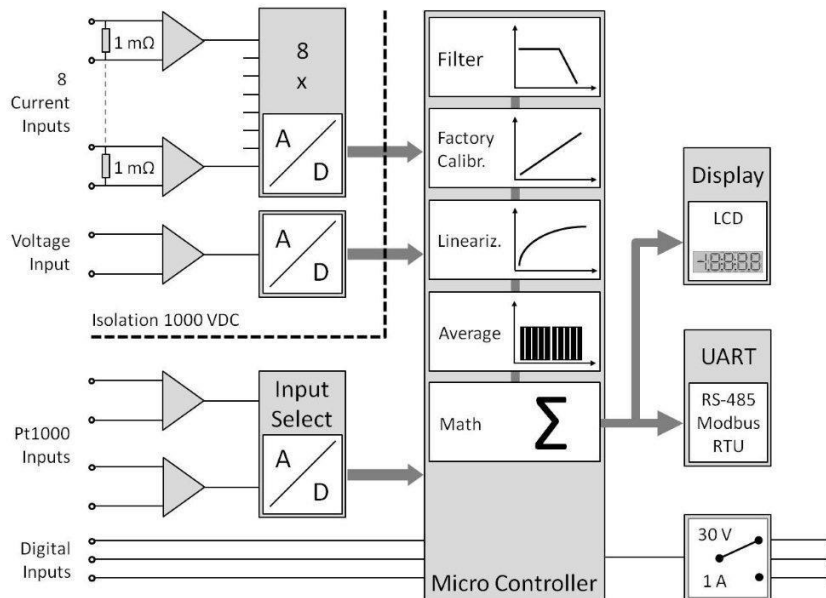
1500 VDC system voltages also available.

Key features:

- **Unifies DC measurement, fuses, overvoltage protection & communication → higher ROI due to faster assembly**
- **Significant reduction of interfaces leads to reduced risk and faster plant installation time**
- **24 String current inputs**
± 13 A String current, ± 312 A summary @ 60°C
- **48 PV Fuses incl. fuse holders**
15 A (typical) or based on customer requirements, positive and negative side
- **12 Analog inputs for current measurement**
± 26 A string current (calibrated)
- **1 Analog input channel for voltage measurement**
0-1000 VDC string voltage
- **1 On board temperature sensor**
Cabinet temperature
- **On board 1000 VDC SPD, RS 485 SPD**
- **2 Digital inputs**
Monitoring of overvoltage protection and main switch
- **Signal conditioning**
calculated DC Power, linearization, mean value, scaling, alarm
- **RS485 fieldbus interface**
up to 115,2 kbps: Modbus-RTU, ASCII (optional OEM protocols)
- **Connectivity**
Data logger (e. g. Q.reader) and gantner.webportal for worldwide access or other 3rd party applications



Block diagram



Input Current	
Max. Number	24
Max. current	±13 A
Connection	0.25 mm ² - 6 mm ² push-in spring-cage connection
Current measurement	
Max. Number	12
Range	± 26 A
Accuracy	0.25 %
Voltage measurement	
Number	1
Range	0-1000 VDC
Accuracy	0.2 %
Connection	0.25 mm ² - 6 mm ² push-in spring-cage connection
Input cabinet temperature	
Number	1
Type	Digital, onboard
Range	-40 °C till +125 °C
Accuracy	± 0.5 K
Digital Inputs	
Number	2
Input	State
Connection	0.25 mm ² - 1.5 mm ² push-in spring-cage connection

Digital Output	
Number	1
Output	State, alarm
Contact	Relay change
Load	30 VDC/1000 mA (ohmic load)
Connection	0.25 mm ² - 1.5 mm ² push-in spring-cage connection

Power Supply	
Power supply	10 up to 55 VDC, overvoltage and overload protection
Power consumption	approx. 1.5 W (0.4 W at a sampling rate of 30 seconds)
Connection	0.2 mm ² - 2.5 mm ² push-in spring-cage connection

Communication Interface	
Standard	RS-485, 2-wire
Data format	8e1
Protocols	Modbus-RTU: 19.200 bps (default), range: 9.600 bps up to 115.200 bps
Number of devices on the bus	max. 250
Connection	0.2 mm ² - 2.5 mm ² push-in spring-cage connection

Protection	
Overvoltage protection PV section	Overvoltage arrester 2 / II acc. to EN 61643-11 / IEC 61643-1/-11 Nominal surge current: (8/20) 20 kA with 3-stage DC- switch for PV Power Plants, up to 1000VDC
Overvoltage protection Communication (RS485)	Gas Discharge Tube - GDTs / Gas-Plasma-arrester mini trigard symmetrical SMT; Peak-impulse-current: 10 kA, 600 Watt Transient Voltage Suppressors
Electromagnetic Compatibility	according to EN 61000-4 and EN 55011

Environmental	
Operating temperature	-20 °C up to +60 °C @ max 312 A current
Storage temperature	-40 °C up to +85 °C
Relative humidity	5 % up to 95 % at 50 °C, non-condensing

Mechanical	
Dimensions (L x W x D)	(450 x 321 x 55) mm
Weight	approx. 2800 g

Warm Up Time

All declarations are valid after a warm up time of 45 minutes.

Valid from January 2015. Specification subject to change without prior notice.

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