SENSORS CONDITIONING
RS485 Modbus RTU, 4÷20 mA outputs

MSB-Modbus Sensor box

- N.1 high-resolution input (18 bit) for Pyranometer/reference cell (µV, mV) or 0÷1V. Configurable pyranometer sensitivity value
- N.2 Pt100 inputs (3-wire) with 0,5°C accuracy
- N.1 included internal Pt100 temperature sensor as alternative to external sensor
- N.1 pulse/frequency input for LSI LASTEM wind speed sensors (DNA202.1-30x)
- N.1 input RS232 for Storm Front Distance sensor (DQA601.1)
- RS485 (2-wire) Modbus RTU® port with galvanic insulation
- Output: instant value and current statistical values (min/avg/max, tot.) for every channel over programmable time base
- 9÷30 Vdc Power Supply
- N.1 RS232 port on board for configuration using Terminal Emulation program
- IP66 protection grade

Sensor conditioning unit to convert (Volt, Pt100 e Hz) signals into RS485 over RTU Modbus protocol. It can receive signals from different sensors on the market as: solar irradiance sensor, also pyranometers (configurable sensitivity value), temperature sensors (Pt100), wind speed sensor (Hz) and Storm distance sensor.

Technical Specifications

PN	MDMMA1010.1	
Input 1	Type	Voltage
	Ranges	0÷30 mV, 0÷1000 mV selectable by switch
	Resolution (@25°C)	< ± 0,5 µV (range 0÷30 mV) < ± 20 µV (range 0÷1000 mV)
	Accuracy (@25°C)	< ± 5 µV (range 0÷30 mV) < 130 µV (range 0÷1000 mV)
Input 2 & 3	Type	RTD Pt100 3-wires
	Range	-20÷100°C
	Resolution	~ 0,04°C
	Accuracy (@25°C)	< ±0,1°C
	Thermal drift	0,1°C/10°C
	Line resistance error	0,06°C/Ω
Input 4	Sensor type	Wind speed (DNA202.1, DNA30x)
	Range	0÷10 kHz
	Input signal	0÷3 V (supported 0÷5 V)
	Photodiode power	3,3 V (limited to 6 mA)
	Resolution	1 Hz
	Accuray	± 0,5% reading
	User's adjustment	Using polynomial function (3th°)

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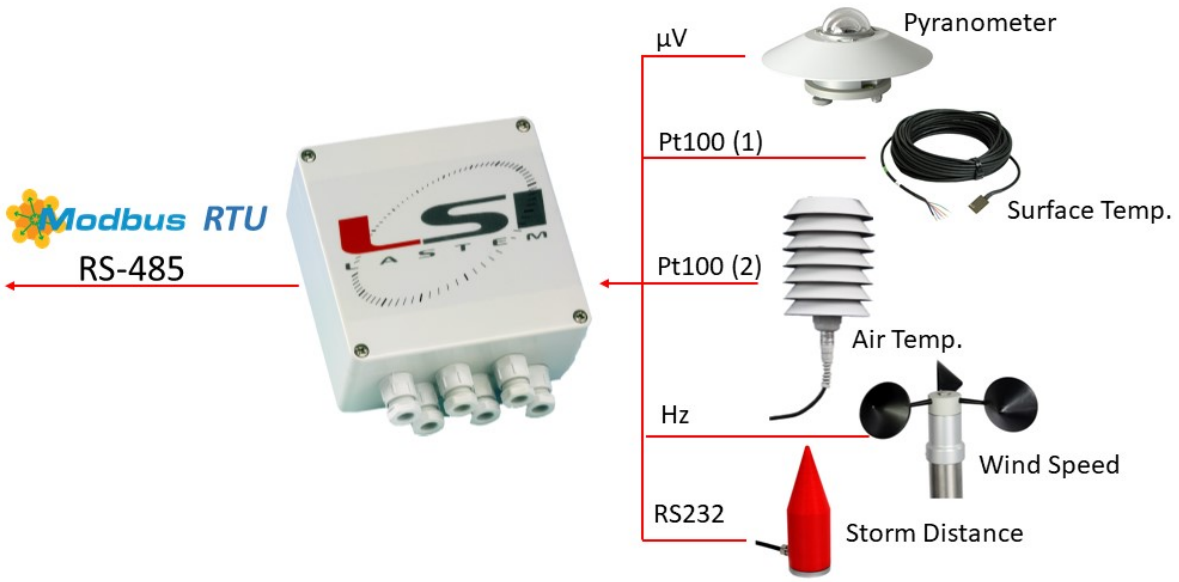
Input 5	Sensor type	Storm front distance (DQA601.1)
	Range	1 ÷ 40 km, N.15 steps: 1, 5, 6, 8, 10, 12, 14, 17, 20,
	Configurations	• Strikes number for true measurement • Strikes absence time for reset • Sensitivity
Output	Type	2-wires RS485
	Protocols	Modbus RTU®
	Programmable ouput	• Instant values • Current values (Average, Maximum, Minimum, Total) over programmable time rate: 1÷3600 s
	Protection	Galvanic insulation (3 kV, according to UL1577)
	Connection	Screw terminals
Configuration	Program	Hyper Terminal emulation program
	Input	9-pin RS232 on board (DTE/DCE cable, not
Power supply	Input voltage	9÷30 Vcc, free polarity
	Consumption	250 mW
Sampling rate	Sampling rate (input 1, 2, 3, 4)	1 Hz
EMC Protections	Type	Transzorb, EMI filters
Environmental limit	Operative temperature	- 30÷70°C
	Protection	IP66



MSB unit can be used as converter between a range of signals into Modbus RS485. It finds great application in PV plants, where the sensors list is suitable for the assessment of the plant performances (Performance ratio).

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SENSORS CONDITIONING
RS485 Modbus RTU, 4÷20 mA output
STB-Sensor Transducer Box

- N.1 high resolution input (18 bit) for Pyranometer/reference cell (µV, mV). Configurable sensitivity value
- DEA421: N.2 Voltage inputs (0÷1 V)
- DEA420.1: N.2 Pt100 inputs (3-wire)
- DEA420.2: N.1 Pt100 inputs (3-wire) N.1 Thermocouple T type input
- N.1 pulse/frequency input
- N.1 Pt100 internal temperature sensor as alternative to external sensor
- Screw terminal connections
- Output as instant values or currenet statistical values for every parameter over programmable time base
- 9÷30 Vdc or 85÷264 Vac (DEA421) Power Supply
- IP66 protection grade
- N.1 RS232 port for setup using Terminal Emulation program

Four inputs signal conditioning unit to convert Voltage, Pt100, Thermocouples and Frequency signals into 4÷20 mA. It can receive signals from different sensors on the market as: solar irradiance sensor, also pyranometers (configurable sensitivity value), temperature sensors (Pt100 and thermocouples) and wind speed sensor (Hz).
The DEA421 model, thanks to the internal power supply, has two 0÷1 V inputs to power external 12V sensors.

Technical Specifications

PN		DEA420.1	DEA420.2	DEA421
Input 1	Type	RTD Pt100 3 wires		Voltage
	Measurement range	-20÷100°C		0÷1 V
	Resolution	~ 0,04°C		< 0,3 mV
	Accuracy	<±0,2°C		< ± 0,7 mV
	Thermal Drift	0,05°C/10°C		NA
	Line resistance error	0,06°C/Ω		NA
Input 2	Type	RTD Pt100 3 wires	Termocouple T	Voltage
	Measurement range	-20÷100°C	-20÷100°C	0÷1 V
	Resolution	~ 0,04°C	~ 0,04°C	< 0,3 mV
	Accuracy	<±0,2°C	<±0,3°C (+ cold joint: ±0,3°C)	< ± 0,7 mV
	Thermal Drift	0,05°C/10°C	0,1°C/10°C	NA
	Line resistance error	0,06°C/Ω		NA

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PN		DEA420.1	DEA420.2	DEA421
Input 3	Type	Frequency		
	Sensor	DNA202.1-30x wind sensor		
	Measurement range	0÷10 kHz		
	Signal input	0÷3 V (supports 0÷5 V)		
	Photodiode power supply	3,3 V (6 mA)		
	Resolution	1 Hz		
	Accuracy	± 0.5% reading		
	User's calibration	Using polynomial function (3th°)		
Input 4	Type	Voltage		
	Sensor	Pyranometer μV/W/m^2 output		
	Measurement range	0÷30 mV		
	Resolution (@25°C)	8 μV		
	Accuracy (@25°C)	< ±20 μV		
	Thermal Drift	1 W/m^2 (radiation) / 10°C		

Common Technical Specifications

Output	Type	N.4 x 4÷20 mA (Max load 500 Ω 24 V; 300 Ω 12 V)	
	Resolution	< 6 μA	
	Accuracy	±15 μA	
	Programmable output	Instant, max., min., ave. (1÷3600 sec)	
	Connection	Screw terminals	
Configuration	Program	Using Hyper Terminal emulation program	
	Input	9-pin RS232 on board (DTE/DCE cable not included)	
Instrument power supply	Input voltage	9÷30 Vcc	85÷264 Vca
	Power		30 W
	Consumption	< 0.4 W	
Power supply for external devices (only DEA421)	Power supply	-	13,8 V
	Max output current	-	2 A
EMC Protections	Type	Transzorb, EMI filters Short circuit, Overtensions, Overcurrents	
Data acquisition	Sampling rate	1 s	
Environmental limit	Operative temperature and Humidity	-30÷70°C ; 20÷90%	
	Protection grade	IP66	IP65

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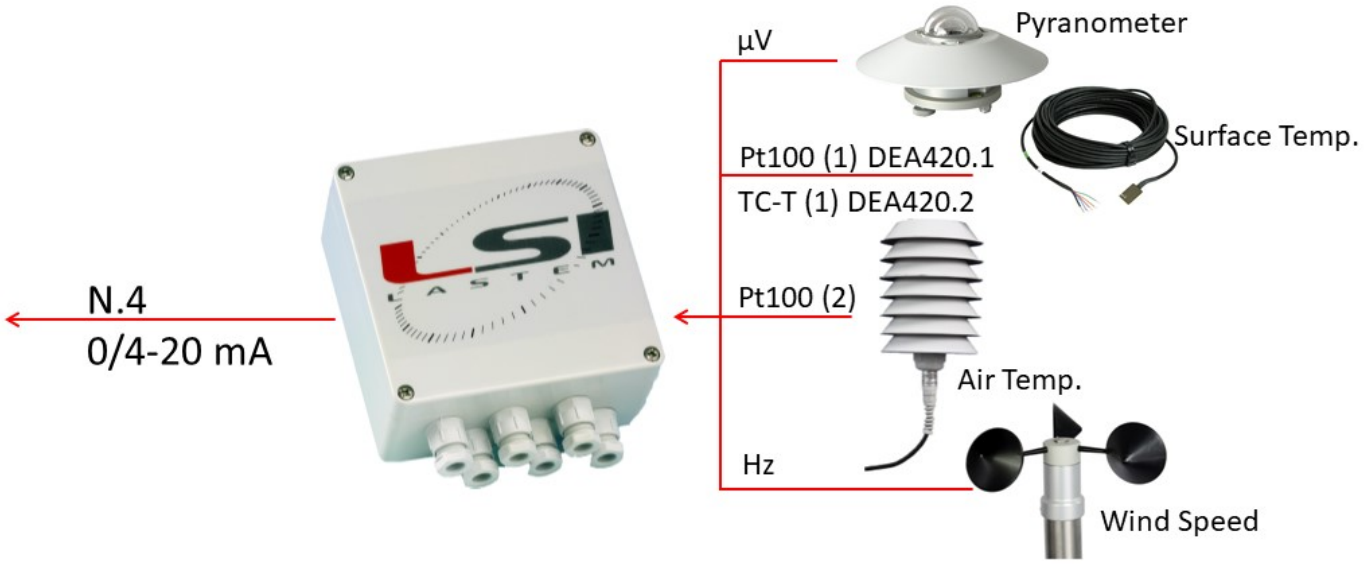
STB-Sensor Transducer Box



STB unit can be used as converter between a range of signals into 0/4÷20 mA.
It finds great application in PV plants, where the sensors list is suitable for the assessment of the plant performances.

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