Environmental Monitoring Solutions

SENSORS CONDITIONING
RS485 Modbus RTU, 4...20 mA outputs

MSB-Modbus Sensor box

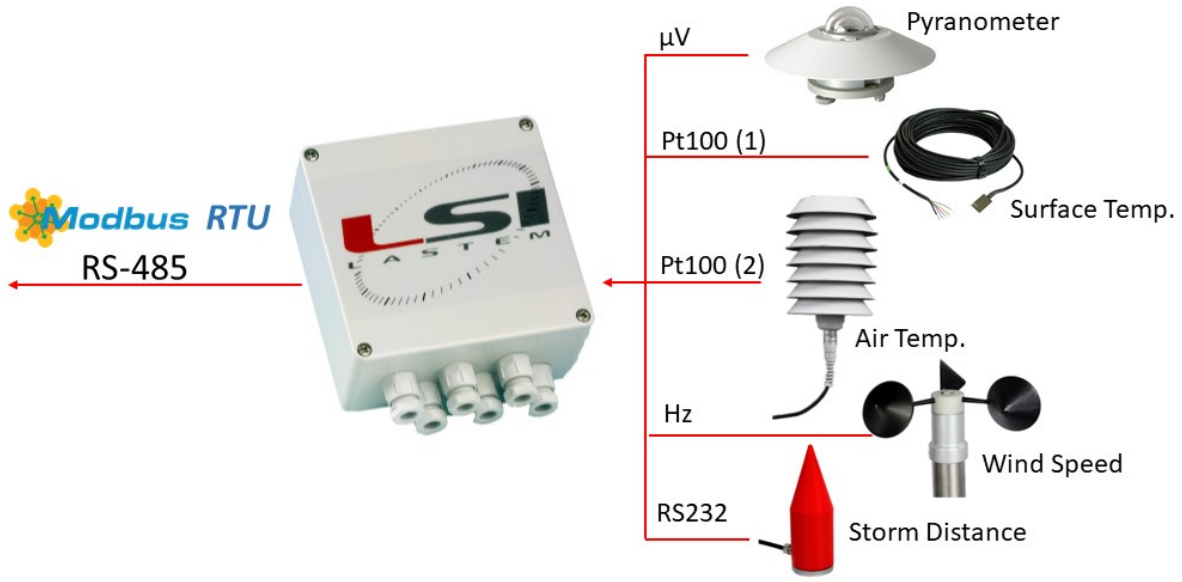
- N.1 high-resolution input (18 bit) for Pyranometer/reference cell (µV, mV) or 0...1V. Configurable pyranometer sensitivity value
- N.2 Pt100 inputs (3-wire) with 0.5°C accuracy
- N.1 included internal Pt100 temperature sensor as alternative to external sensor
- N.1 pulse/frequency input for LSI LASTEM 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	< 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°)

Input 5	Sensor type	Storm front distance (DQA601A.3)
	Range	1...40 km, N.15 steps: 1, 5, 6, 8, 10, 12, 14, 17, 20, 24, 27, 31, 34, 37, 40. When no strikes: 100 km
	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 included)
Power supply	Input voltage	9...30 V DC, 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
	Weight	0.32 kg



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).

STB-Sensor Transducer Box

- N.1 high resolution input (18 bit) for Pyranometer/reference cell (µV, mV). Configurable sensitivity value
- DEA421 e DEA420.4: 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 12 V sensors.

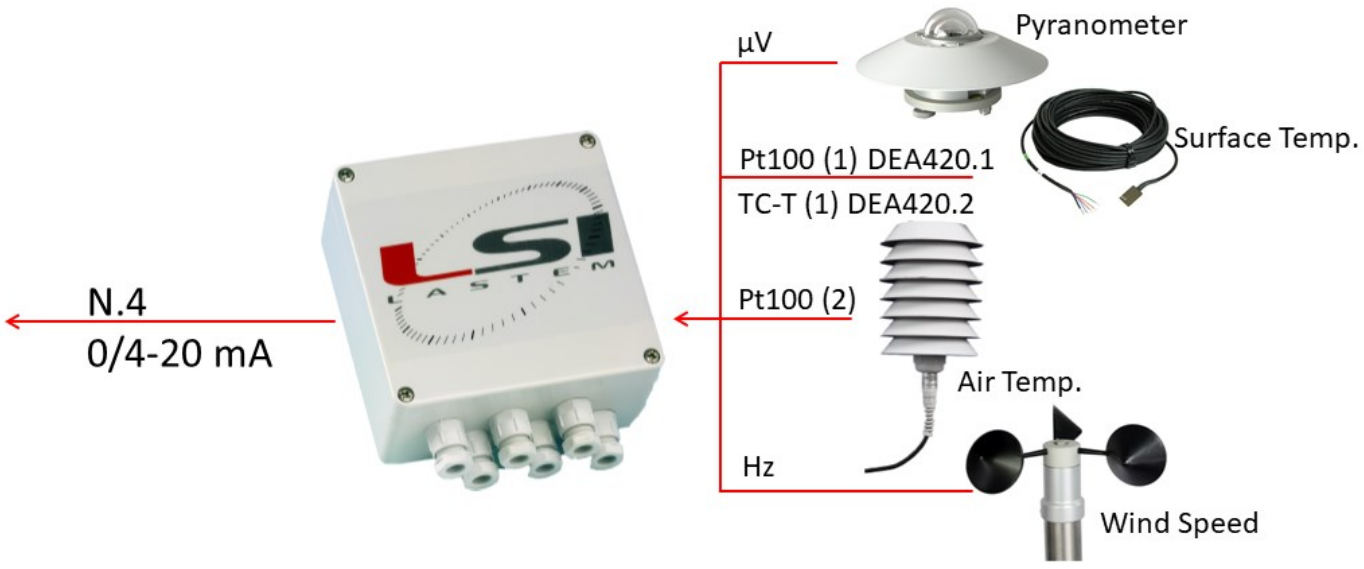
Technical Specifications

PN		DEA420.1	DEA420.2	DEA420.4	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	Thermocouple 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	

PN		DEA420.1	DEA420.2	DEA420.4	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			
Output	Type	N.4 x 4...20 mA (Max load 500 Ω 24 V; 300 Ω 12 V)			
	Resolution	< 6 μA			
	Accuracy	±15 μA			
	Programma-ble output	Instant, max., min., ave. (1...3600 s)			
	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 V DC			85...264 V AC
	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
	Weight	0.32 kg			1,45 kg

Accessories

	DYA090	Fixing accessory for 45...65 mm pole for MSB and STB
	MN1027.20R	4-core cable for converters, max 2 output signals D=5 mm, Ø 0,25 mm^2, L=20 m
	MN1027.25R	4-core cable for converters, max 2 output signals D=5 mm, Ø 0,25 mm^2, L=25 m
	MN1027.50R	4-core cable for converters, max 2 output signals D=5 mm, Ø 0,25 mm^2, L=50 m
	MN1027.200R	4-core cable for converters, max 2 output signals D=5 mm, Ø 0,25 mm^2, L=200 m
	MN1081.20R	6-core cable for converters, max 4 output signals D=8 mm, Ø 0,5 mm^2, L=20 m
	MN1081.25R	6-core cable for converters, max 4 output signals D=8 mm, Ø 0,5 mm^2, L=25 m
	MN1081.50R	6-core cable for converters, max 4 output signals D=8 mm, Ø 0,5 mm^2, L=50 m
	MN1081.200R	6-core cable for converters, max 4 output signals D=8 mm, Ø 0,5 mm^2, L=200 m



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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