

ModulSensor System

Temperature, Pressure, Level, Flow and Humidity



ModulSensors

The measurement of temperature, pressure, humidity, flow or fill level is a core element in numerous industrial applications for process monitoring and control. Strict requirements regarding the quality of the manufactured products, e.g., in the pharmaceutical, foodstuffs or automotive industry, determines the specification of the sensors. To deliver constant results at all times, they must remain reliable, precise, robust, but also intelligent under the most varied operation conditions.

To meet these strict requirements, we present our new ModulSensor System. Reliable and rugged thanks to stainless steel connections and a housing made of glass-fibre-reinforced plastic; precise and intelligent with equipment features that can be adapted to customer needs.

As a result, it is possible to use a module to assemble cost-effective limit switches, transmitters with HART signals, wireless transmitters, or fully-equipped sensors with a display and HART signals. In addition, all sensors can be supplied with industry-standard electrical plug connectors.

Equipped in this way, our ModulSensors are the optimum solution for all your measuring tasks.

Four ModulSensor Variants

- 1 Transmitter version
- 2 Display version
- 3 Limit switches
- 4 Wireless transmitter



Overview of Variants

1 Transmitter Version

The transmitter version can be used as a cost effective measuring device by ensuring the raw signals are converted to an analogue signal and HART protocol. This allows precise measurements where a process display is not required.

- Signal transmission not susceptible to noise or interference
- Input: RTD, 0...1000 mV, resistance
- Output: 4...20 mA, 2-wire HART
- HART-programmable
- Wide supply voltage range

2 Display Version

The loop powered LED display head is versatile and user friendly and can be used in all areas where a display is necessary. Easily configured via the three capacitive buttons and 4-digit 7-segment display, it also has the ability to rotate up to 300 ° and adjust the orientation by 180 ° for overhead installations.

- 4-digit, 7-segment digital display
- Output: 4...20 mA, 2-wire HART
- 2 switching outputs PNP, 30 VDC, 200 mA
- HART-programmable
- Peak value memory min/max
- Can be linearised
- Menu navigation according to VDMA 245741-4

3 Limit Switch

Limit switch variants are cost-effective basic equipment which have simple on-site switch point adjustment, high switching accuracy, rapid response time and easy assembly. Now available for several physical measurements covering a wide range of industrial applications.

- High switching accuracy with swift response times
- Output: 4 or 20 mA, 2-wire, open collector
- Switching output NPN, 30 VDC, 200 mA
- Output signal to PLC
- Switching point adjustment with modem or digital switch on the device
- Visual indication of switching status by LED

4 Wireless Transmitter

With help of lithium-ion technology, wireless transmitters are able to operate as fundamentally self-sufficient systems in battery mode. Their internal antenna gives them a range of up to 50 m.

As an option, the equipment can be adapted on a modular basis: an external power supply charges the internal batteries or guarantees extended operating times. The transmission range can be increased to a maximum of 200 m by adding the optional connection and external antenna.

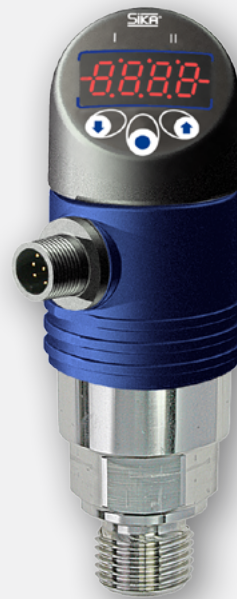
- 200 m Range (with optional external antenna)
- Repeater for greater ranges
- Output: 4...20 mA, 0...10V, RS232, RS485

	Temperature	Pressure	Level	Flow	Humidity
1 Transmitter Version	✓	✓	✓		
2 Display Version	✓	✓	✓	✓	✓
3 Limit Switch	✓	✓			
4 Wireless Transmitter	✓	✓	✓		



Temperature

Type MSTST /MSTID



Version	Transmitter Version		Display Version	
Type	MSTST	MSTSD	MSTLD	MSTID
Description	Standard	Standard	Food	Infrared
Input	Pt100	Pt100	Pt100	Infrared radiation
Output	4...20 mA, 2-wire, HART configuration via HART interface/software	4...20 mA, 2-wire, HART configuration via HART interface/software, Limit contacts: 2 x switching output PNP, 30 VDC, 200 mA		
Measuring range	-50...200 °C	-50...200 °C		-40...1000 °C
Power supply	12...40 VDC	12...40 VDC		24 VDC ±10 %
Display	Without	Display 4-digit, adjustable via 3 keys		
Process connection	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$, G1, $\frac{1}{4}$ NPT, $\frac{3}{8}$ NPT, $\frac{1}{2}$ NPT	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$, G1, $\frac{1}{4}$ NPT, $\frac{3}{8}$ NPT, $\frac{1}{2}$ NPT	G $\frac{1}{2}$ Food	G $\frac{1}{2}$, G $\frac{3}{4}$, G1, $\frac{1}{2}$ NPT
Electrical connection	See options on page 10			
Immersion tube length	Up to 1000 mm	Up to 1000 mm		---
Material	Housing and cover PBT GF30, Process connection stainless steel 1.4571	Display unit polycarbonate, housing PBT GF30, Process connection stainless steel 1.4571		
Degree of protection	Minimum of IP65, electronic completely encapsulated			

Type MSTSS / MSTSW



Version	Limit Switch	Wireless Transmitter
Type	MSTSS	MSTSW
Description	Standard	Standard
Input	Pt100	Pt100
Output	Limit contact: 1 x switching output, NPN, 30 VDC, 200mA	Radio transceiver (868/915 MHz)
Measuring range	-50...200 °C	
Power supply	24...30 VDC	Rechargeable Lithium-Ion battery 3.6 V / 2600 mAh
Display	LED red for switching status signal	LED green/red for status signal
Process connection	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$, G1, $\frac{1}{4}$ NPT, $\frac{3}{8}$ NPT, $\frac{1}{2}$ NPT	
Electrical connection	See options on page 10	M12 x 1 only for recharge/supply
Immersion tube length	Up to 1000 mm	
Material	Housing and cover PBT GF30, lens PMMA, process connection stainless steel 1.4571	Housing PA6.6 GF30, lens PMMA, Process connection stainless steel 1.4571
Degree of protection	Minimum of IP65, electronic completely encapsulated	

Pressure

Type MSPSS / MSPSD



Version	Transmitter Version	Limit Switch	Display Version
Type	MSPST	MSPSS	MSPSD
Description	Standard	Standard	Standard
Input	Pressure, relative/ absolute	Pressure, relative/ absolute	Pressure, relative/ absolute
Output	4...20 mA, 2-wire, HART configuration via HART interface/software	4 or 20 mA, 2-wire, Limit contacts: 1 x switching output, NPN, 30 VDC, 200mA	4...20 mA, 2-wire, HART configuration via HART interface/software, Limit contacts: 2 x switching output PNP, 30 VDC, 200 mA
Measuring range	0...100 mbar to 0...1000 bar		
Power supply	12...40 VDC	24...30 VDC	12...40 VDC
Display	---	LED red for switching status signal	Display 4-digit, adjustable via 3 keys
Process connection	G $\frac{1}{4}$ B, G $\frac{1}{2}$ B, G $\frac{1}{2}$ B flush mounted, $\frac{1}{2}$ NPT, $\frac{1}{4}$ NPT		
Electrical connection	See options on page 10		
Material	Housing and cover PBT GF30, Process connection stainless steel 1.4571	Housing and cover PBT GF30, lens PMMA, Process connection stainless steel 1.4571	Display unit polycarbonate, housing PBT GF30, Process connection stainless steel 1.4571
Degree of protection	Minimum of IP65, electronic completely encapsulated		

Type MSPHD / MSPSW



Version	Display Version		Wireless Transmitter
Type	MSPHD	MSPFD	MSPSW
Description	Hygienic	Food	Standard
Input	Pressure, relative/ absolute	Pressure, relative/ absolute	Pressure, relative/ absolute
Output	4...20 mA, 2-wire, HART configuration via HART interface/software, Limit contacts: 2 x switching output PNP, 30 VDC, 200 mA		Radio transceiver (868/915 MHz)
Measuring range	0...160 mbar to 0...40 bar (relative) 0...6 bar (absolute)	0...100 mbar to 0...600 bar	0...100 mbar to 0...1000 bar
Power supply	12...40 VDC		Rechargeable Lithium-Ion battery 3,6 V / 2600 mAh
Display	Display 4-digit, adjustable via 3 keys		LED green/red for status signal
Process connection	Flange, several for food, pharma, bio	G½ B, G1 B flush mounted, G1 hygienic	G¼ B, G½ B, G½ B flush mounted, ½ NPT, ¼ NPT
Electrical connection	See options on page 10		M12 x 1 only for recharge/supply
Material	Display unit polycarbonate, housing PBT GF30, Process connection stainless steel 1.4301	Display unit polycarbonate, housing PBT GF30, Process connection stainless steel 1.4571	Housing PA6.6 GF30, lens PMMA, Process connection stainless steel 1.4571
Degree of protection	Minimum of IP65, electronic completely encapsulated		

Level

Type MSLUD / MSLSW



Version	Transmitter Version	Display Version		Wireless Transmitter
Type	MSLST	MSLSD	MSLUD	MSLSW
Description	Standard	Standard	Ultrasonic	Standard
Input	Level of non-aggressive fluids		Level of fluids and solids	Level of non-aggressive fluids
Output	4...20 mA, 2-wire, HART configuration via HART interface/software	4...20 mA, 2-wire, HART configuration via HART interface/software, Limit contacts: 2 x switching output PNP, 30 VDC, 200 mA	4...20 mA, 3-wire, HART configuration via HART interface/software, Limit contacts: 2 x switching output PNP, 30 VDC, 200 mA	Radio transceiver (868/915 MHz)
Measuring range	100...1000 mm	100...1000 mm	150...3500 mm	100...1000 mm
Power supply	12...40 VDC	12...40 VDC		Rechargeable Lithium-Ion battery 3.6 V / 2600 mAh
Display	---	Display 4-digit, adjustable via 3 keys		LED green/red for status signal
Process connection	G¾, G1		M12 x 1, M18 x 1.5, M30 x 1.5	G¾, G1
Electrical connection	See options on page 10			M12 x 1 only for recharge / supply
Material	Housing and cover PBT GF30, Process connection stainless steel 1.4571	Display unit polycarbonate, housing PBT GF30, Process connection stainless steel 1.4571		Housing PA6.6 GF30, lens PMMA, Process connection stainless steel 1.4571
Degree of protection	Minimum of IP65, electronic completely encapsulated			









Flow and Humidity

Type VL / MSHSD



	Display Version	
Type	VL	MSHSD
Description	Gas flow sensor	Humidity sensor
Input	Flow non-aggressive gases	Non-aggressive gases
Output	4...20 mA, 3-wire, Limit contacts: 2 x switching output PNP, 30 VDC, 200 mA	
Measuring range	0...10 m/s to 0...30 m/s (calorimetric)	0...100% RH
Power supply	24 VDC ±10 %	12...30 VDC
Display	Display 4-digit, adjustable via 3 keys	
Process connection	Without, G½, G¾, G1, G1½, ½ NPT	G½, G¾, G1, G 1½, ½ NPT
Electrical connection	See options on page 10	
Material	Display unit polycarbonate, housing PBT GF30, Process connection stainless steel 1.4571	
Degree of protection	Minimum of IP65, electronic completely encapsulated	

Options

Electrical connections*	
Plug M12 x 1, 8-pole (optional 5- or 4-pole)	
Plug Deutsch DT04-4P, 4-pole	
Plug Deutsch DT04-3P, 3-pole	
Plug DIN Bajonett, 4-pole	
Plug Super Seal 1.5, 3-pole	
Cable direct outlet, x-pole	
Valve plug DIN EN175301-803, 4-pole	
MIL plug Amphenol PT 028-10, 6-pole	

* some plugs are not suitable for all ModulSensors

Accessories

HART Modem / Wireless Transmitter



Technical data			
Type	MSUSBM	MSUSBW	MSMUTW
Description	HART Modem	USB Transceiver	Rail Transceiver
Input	USB 2.0 (plug type A)	HF	HF
Output	HART (alligator clip)	USB	0(4)...20 mA, 0...10 V, RS 232
Frequency range	---	868/915 MHz ISM band	868/915 MHz ISM band
Function	---	Transceiver	Transceiver
Transmission power	---	3.5 mW	3.5 mW
Range of transmission	---	500 m	500 m
Housing (Degree of protection)	ABS, 105 x 66 x 20 mm (IP20)	Plastic housing ABS, black	Plastic housing PA66 GF30, DIN rail 22.5 mm
Power supply	5 V via USB-Port		24 VDC
Electrical connection	USB-Plug Type A	---	---
Features	USB interface for PC configuration and calibration of HART devices	MS software up to 64 channels	Optional antenna with 2 m cable for external installation



Sensors and Measuring Instruments



Flow Measuring Instruments



Test and Calibration Instruments



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