SIEMENS

Combining perfect senses and intelligence for every degree and condition

SITRANS T: highly accurate temperature sensors and transmitters with unique communication capabilities

Answers for industry.

Meeting all process industry's demands:

The SITRANS T family for temperature measurement

Whether it is about faster processes, higher product quality or quality control, optimized plant availability and safety, more efficient workflow or lower costs – process industries need to master a variety of demands for competitive advantage. Devices for measuring temperature are one but essential part to achieve these goals. With the product family SITRANS T Siemens offers you a complete spectrum of temperature sensors and transmitters including comprehensive services – from a single source.

Your application requires individual components or complete solutions? No problem with SITRANS T. The product family delivers highly accurate temperature sensors and transmitters for every application in the process industry – even under extreme conditions: general purpose, intrinsically safe or explosion-proof and with globally recognized certificates. They are as easily integrated in different control systems as configured. They prove highest flexibility as they are available as a complete measuring point with a widespread portfolio or as transmitter for head-, rail- or field-mount installation. Furthermore, they convince with communications capability and offer unique features as diagnostics displays. And to make the portfolio perfect, Siemens supports you with application and process know-how from worldwide presales and technical support to on-site servicing.

It's all about communication – easy integration and configuration of SITRANS T

With SITRANS T you benefit from continuous ease of use and highest transparency – thanks to powerful software and a whole range of communications capabilities that allow the integration of field devices into the overall plant.

Most of our temperature transmitters use a communication based on industrial standards like HART, PROFIBUS PA or FOUNDATION Fieldbus. The EDD (Enhanced Device Description) technology is used to integrate these devices in different process control systems like SIMATIC PCS 7.

SIMATIC PDM (Process Device Manager) is a consistent, vendor-independent tool for operation, setup, maintenance and diagnostics of intelligent field devices. It uses exactly these EDDs to operate devices with HART and PROFIBUS PA communication. HART means here: wired HART and WirelessHART which is part of HART V7.

So the new WirelessHART temperature transmitter can also be operated with SIMATIC PDM, based on a modern EDD. Most devices are also integrated in third-party tools like HART Communicator or AMS.

For FOUNDATION Fieldbus, AMS or the F Communicator offer easy integration. For 4 - 20 mA devices without HART a special tool SIPROM T is available for point-to-point communications. This tool reflects the advanced operating philosophy and look and feel of SIMATIC PDM, so that it is also familiar to the PDM user.

Precision where the temperature takes place:

SITRANS TS temperature sensors

SITRANS TS temperature sensors are the perfect base for accurate and secure temperature measurement. They support a very broad scope of different applications in the process industries. Equipped with our head-mount transmitters they provide easy system integration. With the optional display a comfortable read out of the process variable supports local operation and monitoring.

Benefits at a glance

- Broad portfolio support of all main applications
- Secure use in intrinsic safe and Ex d instrumented plants
- Modular system for easy configuration
- Support with 4 - 20 mA, HART, PROFIBUS PA and FOUNDATION Fieldbus

Intelligence on-site:

SITRANS T temperature transmitters

SITRANS T temperature transmitters are the first choice to bring intelligence in your temperature sensor. The status of your measurement is easy to monitor remotely or locally. Unique support of maintenance such as two-color diagnostics LED and test pins let you detect with one glance suspect measurements and with one touch you measure the current loop without interruption of the measuring.

Benefits at a glance

- Support of various designs: head-, rail-, field-mount
- Easy integration in your system with 4 - 20 mA, HART, PROFIBUS PA, FOUNDATION Fieldbus as well as WirelessHART
- Extended diagnostics
- Maintenance benefits

The complete range

SITRANS TS temperature sensors

SITRANS TS100

This cable temperature sensor product series comes with a direct mounted cable. As a basic or mineral-insulated version a wide field of application is supported. The installation is easy and flexible by using compression or soldering fittings. With the optional adapter surface measurement is simple to apply. The intrinsic safe version has the approval for operating even in zone 0 without an additional protection tube. In such application the excellent response time of the sensor will be an outstanding benefit.

SITRANS TS200

The compact temperature sensor series adds to the excellent benefits of our SITRANS TS100. Instead of the flexible cable, it comes with a fixed connection M12, Lemo etc.

SITRANS TS500

The industry temperature sensor series supports a wide field of measurements, from simple applications up to solutions for harsh environments. Designed as a modular system of tubular or barstock thermowell, extension, connection head and optional transmitter and display, the customers profit from the use of standard components for individual applications. Intrinsic safe versions are available as well as Ex d.

SITRANS T temperature sensors – special for food and pharma

Our food and pharma temperature sensor product series is featured with a wide range of appropriate process connections – the classical method. With the clamp-on temperature sensor Siemens strikes a new path. Comparable with built-in measurement regarding response time and accuracy the advantages especially at small pipe diameters are obviously. No welding and welding validation, no process disturbance, easy pigging, easy dismantling for recalibration.

SITRANS T temperature transmitters

SITRANS TH

Weak sensor signal, expensive compensation cables, various I/O for each sensor type? The use of our SITRANS TH for mounting in the connection head of the temperature sensor makes you forget that troubles. The sensor signal is amplified and transmitted EMI-resistant to the control system. With the full range of outputs 4 - 20 mA, HART, PROFIBUS PA, FOUNDATION Fieldbus you will profit from easy integration in your process control system. The galvanic insulation and the fault detection provide a proper operation. Further benefits are the outstanding maintenance options: extended diagnostics and unique diagnostics displays that show the device status at a glance. The technician simply connects an ammeter via the test sockets and can then read the output current without opening the measuring circuit. International engineering is no problem with the broad range of approvals e.g. for Europe, USA, Canada and Brazil. Functional safety is certified for SIL 2/3 applications.

SITRANS TR

You want to use the excellent features of the SITRANS TH family but prefer a centralized access to all connected measurement points in junction boxes or in the control room close to the process? SITRANS TR family, the two-wire rail-mount transmitters, support this strategy in a perfect way.

SITRANS TW

Looking for a Swiss army knife in temperature measurement, this real universal device is your choice. Multi-voltages power supply, 4 - 20 mA, 2 - 10 V, HART, relay output, individual curves are only an extract of the features of that device.

SITRANS TF

You have extreme environmental conditions? Temperature sensor mounted in an inconvenient location? With the rugged-built field device SITRANS TF, available in die-cast aluminum or durable stainless steel housing, also harsh conditions can be coped. Mount your transmitter near to the sensor, but out of a hot zone of heat or vibration. Direct on the plant floor easy read out of the metering is your benefit.

SITRANS TF280

The SITRANS TF280 is a WirelessHART temperature transmitter that provides all measured process values as well as diagnostics information, parameters and functions via radio. The device is powered by an internal battery and designed for ultra-low power consumption. Its compact and rugged design makes it especially suitable for direct mounting on tanks and pipes in remote parts of plants, and on moving or rotating equipment for process monitoring or asset management applications.

SITRANS TS at a glance

Type	SITRANS TS Insert	SITRANS TS100	SITRANS TS200
	Measuring inser spares Mineral-insulated execution (MIC)	Temperature Sensors in cable version Mineralinsulated version	Temperature Sensors in compact version Mineral-insulated version
Application	Spares	Plant and machinery construction, bearing temperature, surface measurement	Plant and machinery construction, bearing temperature, surface measurement
Process connection		Compression or soldering fittings: G [1/4, 1/2]"; 1/2"NPT; M8x1; M18x1.5 Surface mounting adapter for installation on flat surfaces pipes	Compression or soldering fittings: G [1/4, 1/2]"; 1/2"NPT; M8x1; M18x1.5 Surface mounting adapter for installation on flat surfaces pipes
Certificates	Europe+IEC EX: • intrinsic safety "ia", "ic" • for flameproof enclosure "d"; for dust protection by enclosure "t"	Europe+IEC EX: • intrinsic safety "ia", "ic"	Europe+IEC EX: • intrinsic safety "ia", "ic"
Output	Direct sensor signal 4...20 mA (TH100/TH200) HART (TH300) PA (TH400) FF (TH400)	Direct sensor signal	Direct sensor signal
Wetted material	SS similar 1.4404 (RTD), 2.4816 (Thermocouple) (SS sim. 316L, Alloy 600)	SS similar 1.4404 (RTD), 2.4816 (Thermocouple) (SS sim. 316L, Alloy 600)	SS similar 1.4404 (RTD), 2.4816 (Thermocouple) (SS sim. 316L, Alloy 600)
Technical data			
Temperature limits*	Pt100 Basic: −30...+400 °C Pt100 Extend: −196...+600 °C Thermocouple: −196...+1100 °C (depends on type)	Pt100 Basic: −30...+400 °C Pt100 Extend: −196...+600 °C Thermocouple: −196...+1100 °C (depends on type)	Pt100 Basic: −30...+400 °C Pt100 Extend: −196...+600 °C Thermocouple: −196...+1100 °C (depends on type)
Minimum response time $t_{0,5}$	2...6s	2...6s	2...6s
Ingress Protection	IP54	IP54	IP54 (some connetors lower)

* Combination of loads (temperature, flow, vibration, pressure) lower this values partly extensive.
  Further temperature limits are a result of the used thermowell materials
  (e.g. 1.4571 / 316Ti resistant to compression stress until 450...550 °C, material limit 800 °C.)

SITRANS TS300	SITRANS TS500	SITRANS TS500	SITRANS TS500
Temperature Sensors for Food&Beverage/Pharma In-pipe or clamp-on	Temperature Sensors for installation in existing thermowells Suitable for thermowells according to DIN 43772 as well as ASME B40.9-2001	Temperature Sensors with tubular thermowell for low to middle process load Thermowell Form 2 or Form 3 (tapered) according to DIN 43772 and Form 2N; with thread, flange or without process connection	Temperature Sensors with barstock thermowell for high process load Thermowell according to DIN 43772 Form 4 for weld-in or Form 4F with flange
For advanced hygienic requirements	Vessel and pipes	Vessel and pipes	Vessel and pipes
In-pipe: Clamp-flange; DIN 11851; Varivent; BioControl; Neumo; Ingold; spherical-welding-sleeve Clamp-on: collar 4...57 mm strap up to 200 mm	Connection to thermowell: M18x1.5; G1/2", 1/2"NPT	Compression fitting G1/2"; 1/2"NPT; welded thread G1/2"; G1"; 1/2"NPT; welded flange DN25PN40; 1RF150; 1.5RF150; 1.5RF300	Form 4 for weld-in Form 4F with flange: DN25PN40; 1RF150; 1RF300; 1.5RF150; 1.5RF300
	Europe+IEC EX: • intrinsic safety "ia", "ic" • flameproof enclosure "d"; dust protection by enclosure "t" • non-sparking "n"	Europe+IEC EX: • intrinsic safety "ia", "ic" • flameproof enclosure "d"; dust protection by enclosure "t" • non-sparking "n"	Europe+IEC EX: • intrinsic safety "ia", "ic" • flameproof enclosure "d"; dust protection by enclosure "t" • non-sparking "n"
Direct sensor signal 4 - 20 mA (TH100/TH200) HART (TH300) PA (TH400) FF (TH400)	Direct sensor signal 4 - 20 mA (TH100/TH200) HART (TH300) PA (TH400) FF (TH400)	Direct sensor signal 4 - 20 mA (TH100/TH200) HART (TH300) PA (TH400) FF (TH400)	Direct sensor signal 4 - 20 mA (TH100/TH200) HART (TH300) PA (TH400) FF (TH400)
In-pipe: 1.4404/316L Clamp-on: no wetted parts	no wetted parts	1.4404; 1.4571 (316L; 316TI)	Form 4F: 1.4404; 1.4571 (316L; 316TI) Form 4 additionally 1.7335; 1.5415 (A 182 F11; A 204 Gr.A)
In-pipe: −30...+300 °C Clamp-on: −20...+160 °C	Pt100 Basic: −30...+400 °C Pt100 Extend: −196...+600 °C Thermocouple: −196...+1100 °C (depends on type)	Pt100 Basic: −30...+400 °C Pt100 Extend: −196...+600 °C Thermocouple: −196...+1100 °C (depends on type)	Pt100 Basic: −30...+400 °C Pt100 Extend: −196...+600 °C Thermocouple: −196...+1100 °C (depends on type)
5 s	Depends on type of thermowell	7...45s	20...45s
IP65 (IP54 at some head types)	IP65 (IP54 at some head types)	IP65 (IP54 at some head types)	IP65 (IP54 at some head types)

SITRANS TH, TR, TW and TF at a glance

Installation	In the connection head			
	Two-wire			
Type	SITRANS TH100	SITRANS TH200	SITRANS TH300	SITRANS TH400
Input (connectable sensors)	Pt100 resistance thermometers	Resistance thermometers Thermocouples Resistance-type sensors DC sources	Resistance thermometers Thermocouples Resistance-type sensors DC sources	Resistance thermometers Thermocouples Resistance-type sensors DC sources
Output	4 - 20 mA	4 - 20 mA	4 - 20 mA, HART	PROFIBUS PA version FOUNDATION Fieldbus version
Local display	N/A	N/A	N/A	N/A
Power supply	8.5 - 36 V DC (30 V for Ex)	11 - 35 V DC (30 V for Ex)	11 - 35 V DC (30 V for Ex)	9 - 32 V DC (30 V for Ex and 17.5 V for FISCO)
Housing material	Molded plastic, embedded electronics	Molded plastic, embedded electronics	Molded plastic, embedded electronics	Molded plastic, embedded electronics
Ambient temperature	−40...+85 °C	−40...+85 °C	−40...+85 °C	−40...+85 °C
Degree of protection	IP40	IP40	IP40	IP40
Certificates	Europe (ATEX): Ex ia, ib, ic, Ex n USA (cFMus): IS, NI Canada (cFMus): IS, NI other certificates: GOST,NEPSI,PESO	Europe (ATEX): Ex ia, ib, ic, Ex n USA (cFMus): IS, NI Canada (cFMus): IS, NI, NiFW, DIP SIL 2 und SIL2/3 other certificates: GOST,NEPSI,PESO,EXPLABS	Europe (ATEX): Ex ia, ib, ic Ex n USA (cFMus): IS, NI Canada (cFMus): IS, NI, NiFW, DIP SIL 2 und SIL2/3 other certificates: GOST,NEPSI,PESO,EXPLABS	Europe (ATEX): Ex ia, Ex ib, Ex n USA (cFMus): IS, NI Canada (cFMus): IS, NI other certificates: GOST, PESO
Operator input				
SIMATIC PDM			•	PROFIBUS PA FOUNDATION Fieldbus
Handheld 375			•	FF version
AMS			•	FF version
SIPROM T and special modem	•	•		
Local configuration using 3 push buttons				

On DIN rail			Field device	
Two-wire		**Four-wire**	**Two-wire**	**Wireless**
SITRANS TR200	**SITRANS TR300**	**SITRANS TW**	**SITRANS TF**	**SITRANS TF280**
Resistance thermometers Thermocouples Resistance-type sensors DC sources	Resistance thermometers Thermocouples Resistance-type sensors DC sources	Resistance thermometers Thermocouples Resistance-type sensors DC sources	Resistance thermometers Thermocouples Resistance-type sensors DC sources Current sources	Pt100 resistance thermometer
4 - 20 mA	4 - 20 mA, HART	0/4 - 20 mA, HART 0/2 - 10 V, HART	4 - 20 mA 4 - 20 mA, HART PROFIBUS PA FOUNDATION Fieldbus	WirelessHART
			LCD (with version 4 - 20 mA and 4 - 20 mA, HART)	back-lighted LCD
11 - 35 V DC (30 V for Ex ia)	11 - 35 V DC (30 V for Ex ia)	115/230 V UC or 24 V UC	DC 11/13,5 - 35V (30 V for Ex ia and 17.5 V for FISCO)	Lithium thionyl battery D-cell 3.6 V
Molded plastic	Molded plastic	Molded plastic	Varnished die-cast aluminum or stainless steel	Varnished die-cast aluminum
−40 - +85 ℃	−40 - +85 ℃	−25 - +70 ℃	−40 - +85 ℃	−40 - +80 ℃
IP20	IP20	IP20	IP67	IP65
Europe (ATEX): Ex ia or Ex ib, Ex n SIL 2 und SIL2/3 other certificates: NEPSI	Europe (ATEX): Ex ia or Ex ib, Ex n SIL 2 und SIL2/3 other certificates: NEPSI	Europe (ATEX): Ex (ia) or Ex (ib) SIL 1 other certificates: GOST	Europe (ATEX): Ex ia, Ex d, Ex n USA: XP/DIP/NI/S SIL 2 und SIL2/3 (4...20 mA/HART) other certificates: GOST,INMETRO, NEPSI,KOSHA	R&TTE, FCC
	•	•	HART / PROFIBUS PA/ FOUNDATION Fieldbus	•
	•	•	HART / FOUNDATION Fieldbus	
	•	•	HART / FOUNDATION Fieldbus	
•			4...20 mA	
				•

More information:

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