

Electronic transmitters for resistance thermometers & thermocouples



We transform!

Perfect devices for each application



Application

The task of electronic transmitters is to ensure that values measured by resistance thermometers, thermocouples or other physical sensors with small output signals are transmitted and displayed without distortion.

Undesired distortion due to the connecting cable is, depending on the sensor technology, generally caused by

- the ohmic resistance of the supply line (depending on the length, cross-section and temperature)
- parasitic thermoelectric voltages (at terminals, when using various materials in the connecting cable)
- electromagnetic interference (caused by machines, high-frequency transmitters, atmospheric pressure discharges, etc.)

Since the increase in interference and instabilities is directly proportional to the length of the connecting cable, the transmitter should be connected directly to the sensor output to ensure that interference to the unamplified signal is kept to a minimum. This requirement is met by so-called "head-mount transmitters", installed in the (DIN) connection head of the sensor.

If application of head-mount transmitters is not possible due to structural or service reasons, the unamplified sensor signal must be transmitted via a shielded connecting cable to the next switch cabinet where rail-mount transmitters can be applied.

Function

Transmitters convert the sensor signal (e.g. resistance change or thermoelectric voltage) into a standardized current or voltage signal. Due to amplification, interference susceptibility is considerably reduced and the length of the cable is irrespective for signal currents.

The transmitter is powered via the loop current or an external power supply unit.

Sensor break and sensor short-circuit

Breakdown, sensor break or sensor short-circuit, is indicated by over ranging or under ranging, resulting in an error message at the downstream display or analysis unit.

Head-mount transmitters

These transmitters are installed directly in the connection head or angle connector of the sensor and guarantee an undistorted measuring signal, even at the end of the connecting cable. SIKA provides transmitters for resistance thermometers and thermocouples for DIN Form B connection head, Form J connection head and angle connector DIN 43650.

Rail-mount transmitters

For switch cabinet installation, SIKA provides transmitters for resistance thermometers and thermocouples, as well as signal converters for current and voltage signals. The transmitters are contained in an extremely compact housing which can be simply clipped on to all commercially available mounting rails.

Special transmitters

Since head-mount or rail-mount installation is not always possible or switching outputs are required, SIKA also offers numerous special solutions. Connector-design transmitters are excellent for assembly in tubular housings. Connectors are used widely in the industry. This arrangement ensures cost-effective customized sensors with transmitters.

A relay is required to monitor temperatures or to realize simple controlled systems. A potential-free contact is operated when a freely selectable switching temperature is reached. The switching point and hysteresis can always be set.

Accessories

Extensive SIKA Prosoft software is available to program the MUT transmitter series. Can be easily user configured via a PC interface at an external computer.

Analogue transmitters

Head-mounting



Type MUB

Features	direct mounting in head type B
Housing	synthetic material polyurethane Ø app. 44.5 mm, high app. 26 mm, weight app. 30 g
Operating temperature	-25...85 °C
Connection	screw terminal (0.13...1.5 mm ²)

For thermocouples

Input	Type K, J(L), T(U),N, E, S and B
Output/ Power Supply	Type 101 4...20 mA, 2-wire / 10...35 VDC Type 102 0...10 V, 3-wire / 15...35 VDC
Zero	> -270 °C
Span	> 200 °C
Accuracy	< 1 % FS
Response time	< 0.1 s

For resistance thermometers

Input	Pt100/Pt1000. 2- or 3-wire
Measurement current	max. 1 mA
Output/ Power Supply	Type 103 4...20 mA, 2-wire / 10...35 VDC Type 104 0...20 mA, 3-wire / 18...30 VDC Type 108 0...10 V, 3-wire / 15...35 VDC
Zero	-200...800 °C
Span	20...800 °C
Accuracy	< 0.1 % FS
Response time	< 0.1 s



Type MUJ

Features	direct mounting in head type J
Housing	synthetic material polyurethane Ø app. 25 mm, high app. 15 mm, weight app. 30 g
Operating temperature	-25...85 °C
Connection	screw terminal (0.13...0.75 mm ²)

For thermocouples

Input	Type K, J(L), T(U),N, E, S and B
Output/ Power Supply	Type 141 4...20 mA, 2-wire / 10...35 VDC
Zero	> -270 °C
Span	> 200 °C
Accuracy	< 1 % FS
Response time	< 0.1 s

For resistance thermometers

Input	Type K, J(L), T(U),N, E, S and B
Measurement current	max. 1 mA
Output/ Power Supply	Type 143 4...20 mA, 2-wire / 10...35 VDC
Zero	-200...600 °C
Span	20...850 °C
Accuracy	< 0.1 % FS
Response time	< 0.1 s

Programmable transmitters

Rail-mounting



Type MUT

Features

- MUT 2015, 2115 and 4135: In- / Output programmable
- MUT 4135 additional: In- / Output galvanic isolated

Input

Type	measuring range	min. Span
Pt100	-200...850 °C	50 °C
Pt1000	-200...200 °C	50 °C
Ni 100	-60...180 °C	50 °C
Ni 1000	-60...150 °C	50 °C
Type J (Fe-CuNi)	-200...700 °C	2 mV
Type K (NiCr-Ni)	-200...1200 °C	2 mV
Type S (PtRh10-Pt)	-50...1760 °C	2 mV
Type R (PtRh13-Pt)	-50...1760 °C	2 mV
Type B (PtRh30-PtRh6)	400...1820 °C	2 mV
Type E (NiCr-CuNi)	-200...1000 °C	2 mV
Type T (Ecu-CuNi)	-200...400 °C	2 mV
Type N (NiCrSi-Ni-Si)	-200...1300 °C	2 mV
mV	-400...700 mV	2 mV
V	-10...10 V	500 mV
Poti	20...200 Ω	10%
Poti	200...500 Ω	10%
Poti	0.5...50 KΩ	10%
resistance	20...300 Ω	10 Ω
resistance	300...2000 Ω	200 Ω
current	-10...24 mA	

Housing

for rail-mounting
dimension sizes
98 x 90 x 12.5 mm
weight app. 65 g

Operating temperature

-20...70 °C

Connection

screw terminal
(0.13...1.5 mm²)

Power Supply

18...30 VDC

Load

max. 1000 Ω at 30 V

Accuracy

- resistance thermometers ±0.1 % FS
- thermocouples ±0.2 % FS

Temperature drift

0.01 % / °C FS

Program

configuration for customer specification or via PC-interface with SIKA-Prosoft software

Type 2015

Output	4...20 mA	2-wire
	20...4 mA	2-wire

Type 2115

Output	4...20 mA	3- or 4-wire
	20...4 mA	3- or 4-wire
	0...20 mA	3- or 4-wire
	20...0 mA	3- or 4-wire
	0...10 V	3- or 4-wire
	10...0 V	3- or 4-wire

Type 4135

Output	4...20 mA	3- or 4-wire
	20...4 mA	3- or 4-wire
	0...20 mA	3- or 4-wire
	20...0 mA	3- or 4-wire
	0...10 V	3- or 4-wire
	0...5 V	3- or 4-wire
	10...0 V	3- or 4-wire
	5...0 V	3- or 4-wire

Analogue transmitters

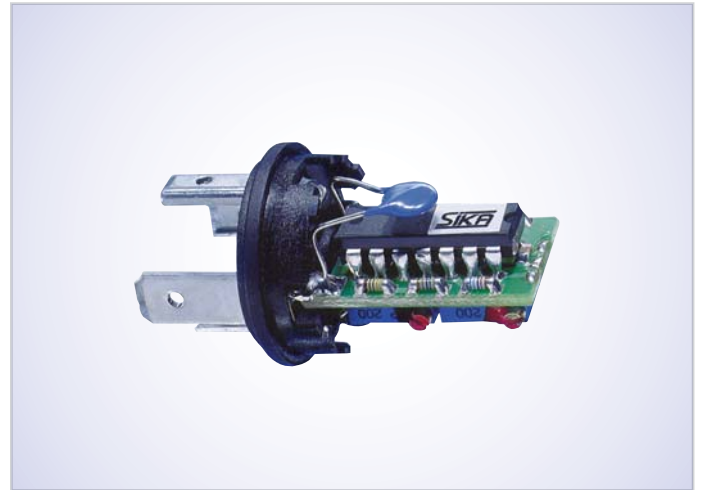
Special types



Type MUS

Analogue transmitter for resistance thermometers (RTD) mounted in head type B

Features	direct mounting in head type B with adjustable relay output
Housing	synthetic material polyurethane Ø app. 44.5 mm, high app. 26 mm weight app. 40 g
Operating temperature	-25...70 °C
Connection	screw terminal (0.13...1.5 mm ²)
Input	resistance thermometers Pt100 2-wire
Measurement current	max. 1 mA
Output/ Power Supply	Type 105 potential free relay contact / 21...27 VDC
Setpoint	16 selectable ranges between -200...480 °C
Switching voltage Switching current	30 VDC, 250 VAC max. 5 A
Zero Span Accuracy Response time	-200...800 °C 20...800 °C < 1 % FS < 0.1 s



Type MUS

Analogue transmitter for resistance thermometers (RTD) mounted in angle plug

Features	direct mounting in angle plug DIN 43650
Housing	Transmitter mounted in customer specific round housing dimensions of the printed circuit board 26 x 15.5 x 12.5 mm weight app. 10 g
Operating temperature	-25...85 °C
Connection	angle plug DIN 43650
Input	resistance thermometers Pt100 / PT1000 2- or 3-wire
Measurement current	max. 1 mA
Output/ Power Supply	Type 406 4...20 mA, 2-wire / 10...35 VDC Type 408 0...10 V, 3-wire / 15...35 VDC
Sensor connection	solder contacts
Zero Span Accuracy Response time	-200...800 °C 20...800 °C < 0.1 % FS < 0.1 s

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Temperature Sensors



Calibrators, DKD-Laboratory

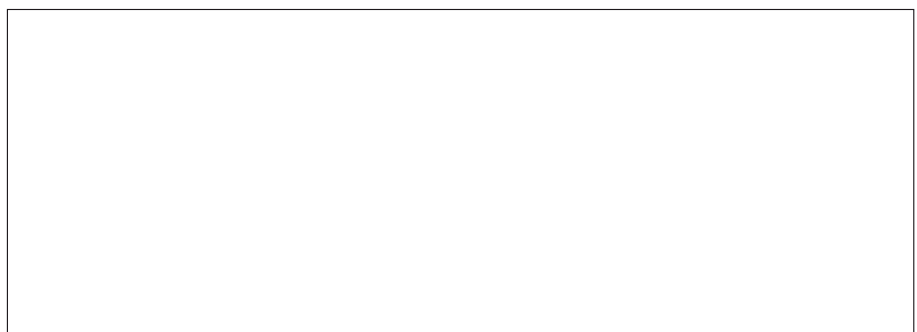
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Phone: 0700 CALL SIKA
Phone: +49 5605 803-0
Fax: +49 5605 803-54
E-Mail: info@sika.net
Internet: <http://www.sika.net>
Struthweg 7-9, 34260 Kaufungen
P. O. Box 1113, 34254 Kaufungen
Germany

Subject to technical modification



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