Resistance thermometer Clamp-on technology
for temperature measurement on pipes, Type Series GA261 .

Features

- Hygienic temperature measurement, no contact to medium, for pipe diameter 4...300 mm
- Various clamping elements for process connection
  - clamping block (for pipe-Ø 4...57 mm)
  - clamping shoe (for pipe-Ø 10...300 mm)
  - clamping bracket (for pipe-Ø 4...17.2 mm)
- Measuring system patented
- High accuracy, fast response
- Quick and cost efficient installation
- No welding, no interruption of process
- No additional isolation required
- Hygienic design, constructive design according to the EHEDG recommendations
- Measuring resistor Pt 100
- Max. media temperature range: -40 °C up to + 150 °C
- Measuring insert can be recalibrated, replaceable; the installation arrangements are unchanged

Options

- Explosion protection
- Classification per SIL 2
- Transmitter 4...20 mA

Application area

· Food industry
· Pharmaceuticals
· Biotechnology

Application

The resistance thermometer in clamp-on technology is used for temperature sensing and process control, mainly for sterile applications in the food and pharmaceutical industries. The resistance thermometer can be quickly and easily fitted to all existing pipework. There are no changes necessary to the piping and no welding required. The resistance thermometer can be supplied with a built-in transmitter.

Technical data

Mechanical design
The measuring insert is suited with an especially fast operating silver temperature sensor.
Constant pressure is applied to the surface of the pipe by the spring force. The replaceable measuring insert is pressed against the pipe surface being measured by a pre-defined spring force. Because the insert is held permanently in the same installation position, all measurements taken are reproducible.

Electrical connection
selective
- circular connector with screw plug M12
- field housing, rotatable, positionable through ± 170°; screw cap, mat. stainless steel mat.-no.1.4305 (303)

degree of protection IP 67 according to DIN EN 60529

Clamping elements
material: temperature-resistant high performance plastics with integrated isolating system, hygienic design
process temperature: -40...+150 °C
degree of protection: IP 65

Further temperature ranges or other materials upon request.

Measuring insert
measuring insert mat. stainless steel
Ø 6 mm, hygienic design.
Measuring element from silver, thermally isolated with plastic insert. Measuring insert screwed into the connection head under spring tension.
Use heat sink compound as per data sheet T6-030.

Measuring resistor
Pt 100 per DIN EN 60751 class A
in 3-wire technology,
for measuring range - 40 °C up to 150 °C

Accuracy (Clamp-on system)
Integrated: Pt 100 per DIN EN 60751, class A, accuracy of system in the range
- 20 °C up to 150 °C
$(T_a - TM) \times 0{,}02$ *

T_a = ambient temperature
TM = media temperature

* use of heat sink compound

Response time (including pipe)
t_{90} = 8...15 s

Pipe nominal sizes
suited for all standard nominal sizes.
Dimensions see order details.

Ex-approval
TÜV 08 ATEX 554093 X
Ex II 1G Ex ia IIC T6/T5/T4
Ex II 2G Ex ib IIC T6/T5/T4
Ex II 1D Ex iaD 20 T89°C
Ex II 2D Ex ibD 21 T129°C
$U_i \leq 30$ V
$P_i \leq 200$ mW
C_i and L_i negligible small

Functional safety
per EN 61508, classification per SIL 2; without transmitter, only

Technical data

Weights (Clamping block)
with circular connector M12:
pipe-Ø ≤ 17,2 mm: approx. 100 g
pipe-Ø ≥ 18,0 mm: approx. 200 g
with field housing: approx. 400 g
with transmitter integrated in the circular connector M12:
pipe-Ø ≤ 17,2 mm: approx. 130 g
pipe-Ø ≥ 18,0 mm: approx. 230 g

Integrated transmitter
suitable Pt 100 transmitters can be integrated:
a) transmitter for head mounting with field housing
b) transmitter, type PA 2430, for circular connector M12
see product group T4

LED-on-site indication
see Clamp-on GS with 4 digit LED display, can be rotated and mirror-imaged, data sheet T4-034-1

Information on other models see order details or upon request.

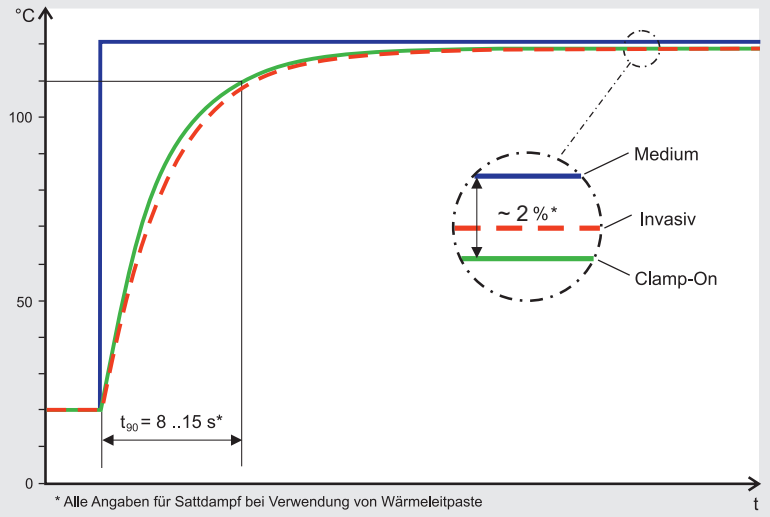
Response time/accuracy

Accuracy and response time depend on:
- pipe geometry
- medium
- ambient conditions

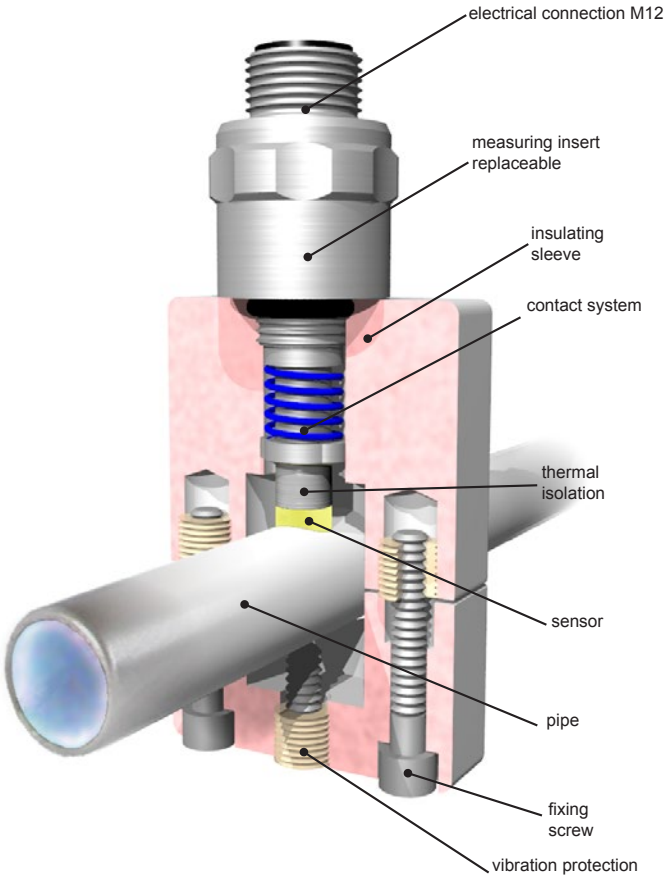
The following example:
pipe: 13 x 1,5 stainless steel
media: saturated steam, v = 3 m/s
ambient temperature: 20 °C

Repeatability
typical 0.1 °C, max. 0.2 °C
if use heat sink compound on pipe free of imperfections

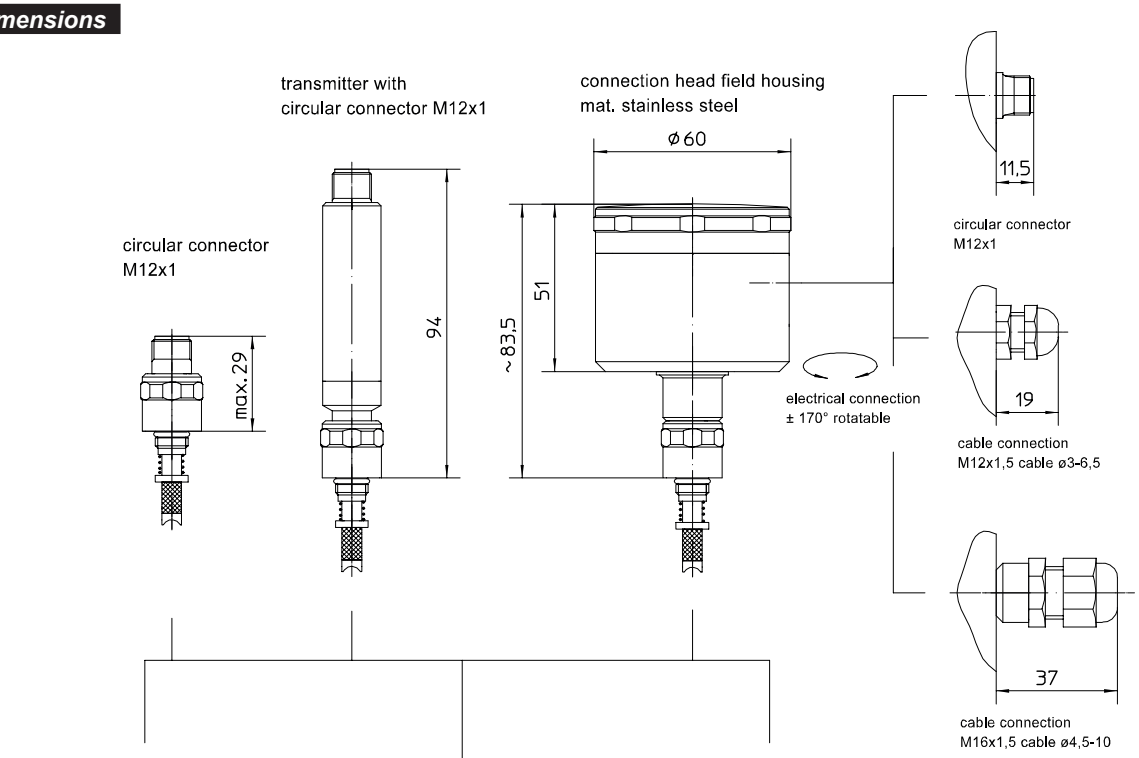
Please note:
Use of heat sink compound prior mounting of the sensor element recommended (see data sheet T6-030).



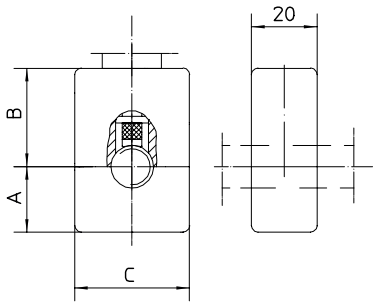
Design



Dimensions

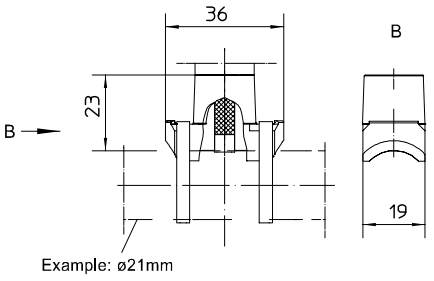


Clamping block
for pipe ø4-57

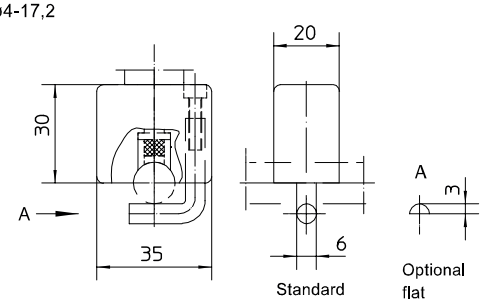


pipe-Ø	A	B	C
4-17.2	20	30	35
18-38	30	40	70
38.1-57	40	50	85

Clamping shoe
for pipe ≥ ø10 - ~ø300

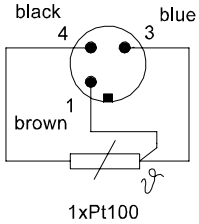


Clamping bracket
for pipe ø4-17,2



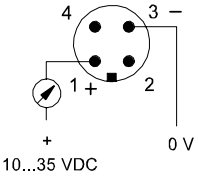
Connection diagram

circular connector
M12x1



1xPt100

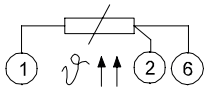
integrated transmitter
M12x1



10...35 VDC

2-wire circuitry 4...20 mA

connection head
with cable connection



Order Details - please give additional specifications for models not listed -

Resistance thermometer Clamp-on technology for temperature measurement on pipes			GA261 .
Ex-design	· without		0
	· explosion protection, type of ex-protection see below		1
clamping elements	· clamping block installation		A4 . . .
	· clamping shoe installation	· with hose clamps for pipe-Ø 10 mm or bigger	B5 . . .
	· clamping bracket installation	· clamping bracket, standard	C3 . . .
		· clamping bracket flat	C4 . . .

pipe external diameter mm	pipe external diameter	dimension of the clamping elements 50 x 35 x 20	70 x 70 x 20	90 x 85 x 20	23 x 36 x 19	30 x 35 x 20	
		A4 . . .	A4 . . .	A4 . . .	B5 . . .	C	
	4	x	-	-	-	x	040
	6	x	-	-	-	x	060
	6.35	x	-	-	-	x	063
	8	x	-	-	-	x	080
	9.35	x	-	-	-	x	093
	10	x	-	-	x	x	100
	10.2	x	-	-	x	x	102
	10.3	x	-	-	x	x	103
	12	x	-	-	x	x	120
	12.7	x	-	-	x	x	127
	13	x	-	-	x	x	130
	13.5	x	-	-	x	x	135
	13.7	x	-	-	x	x	137
	14	x	-	-	x	x	140
	15.88	x	-	-	x	x	158
	16	x	-	-	x	x	160
	17.2	x	-	-	x	x	172
	different Ø 4.0-17.9	x	-	-	-	x	997
	18.0	-	x	-	x	-	180
	19.0	-	x	-	x	-	190
	19.05	-	x	-	x	-	195
	20.0	-	x	-	x	-	200
	21.3	-	x	-	x	-	213
	22.0	-	x	-	x	-	220
	23.0	-	x	-	x	-	230
	24.0	-	x	-	x	-	240
	25.0	-	x	-	x	-	250
	25.4	-	x	-	x	-	254
	26.7	-	x	-	x	-	267
	26.9	-	x	-	x	-	269
	28.0	-	x	-	x	-	280
	29.0	-	x	-	x	-	290
	30.0	-	x	-	x	-	300
	31.8	-	x	-	x	-	318
	32.0	-	x	-	x	-	320
	33.4	-	x	-	x	-	334
	33.7	-	x	-	x	-	337
	34.0	-	x	-	x	-	340
	35.0	-	x	-	x	-	350
	36.0	-	x	-	x	-	360
	38.0	-	x	-	x	-	380
	different Ø 18.0-38.0	-	x	-	-	-	998
	38.1	-	-	x	x	-	381
	41.0	-	-	x	x	-	410
	42.4	-	-	x	x	-	424
	44.5	-	-	x	x	-	445
	48.3	-	-	x	x	-	483
	50.8	-	-	x	x	-	508
	53.0	-	-	x	x	-	530
	54.0	-	-	x	x	-	540
	57.0	-	-	x	x	-	570
	different Ø 38.1-57.0	-	-	x	-	-	999
	different Ø 10.0-300	-	-	-	x	-	991

process temperature	· -40 °C...+150 °C				M23
	· as in writing				M . .
measuring insert	· 1 x Pt 100 per DIN EN 60751, class A, 3-wire technology, fast response				N21
electrical connection	· circular connector M12x1 (4-pins), IP 67				T150
	· field housing Ø 60 mm, adjustable	cable gland	polyamid black	for cable Ø 3-6.5	T47
				for cable Ø 4.5-10	T47.40
			st. steel	for cable Ø 3-6.5	T47.21
		with circular connector M12x1			T47.51

additional features (to be indicated in case of need, only)

type of ex-protection	· Ex II 1G Ex ia IIC T6/T5/T4	S71
	· Ex II 2G Ex ib IIC T6/T5/T4	S72
	· Ex II 1D Ex iaD 20 T89°C	S73
	· Ex II 2D Ex ibD 21 T129°C	S74
incl. transmitter	· mounting on the measuring insert (instead of terminal block) ¹	Z1
	· integrated in the circular connector M12 ² type PA 2430, see data sheet T4-082-1	Z52
functional safety per EN 61508, classification per SIL 2		W2604

order code (example):	GA2610	A4060	M23	N21	T47			

¹ see product group T4 for transmitter ² not with ex-protection

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