Temperature transmitter GV4 MiniTherm

for installation in a separate thermowell

Type series GV4730

Application area

- Pharmaceutical industry
- Food industry
- Biotechnology

Features

- Compact case of stainless steel in hygienic design according to recommendations from EHEDG and 3A, degree of protection IP 65/67
- High-resolution graphic display with Intuitive operation and backlight
- Quick access to device data
- Accuracy ≤ 0.25 K
- Temperature range: -50...200 °C
- Output signal 4…20 mA with HART® protocol
- Digital communication via PDM/EDD and FDT/DTM
- Measuring resistor Pt100, class A
- Measuring insert spring loaded
- Fast response

Options

- Approvals/Certificates
  - Calibration certificate per EN 10204-3.1
- As per UKCA regulations
- Degree of protection IP 69K
- Case and front cover of stainless steel 316L

Application

The temperature transmitter GV4730 MiniTherm is designed for the installation in a separate thermowell. Due to the design the transmitter is suitable for highest requirements. The 4 operation buttons allow an easy and fast parameterisation.

In the data sheet DB_T5-051 (Thermowells for MiniTherm) you can find the suitable thermowells.

The HIT thermowell system (data sheet DB_T5-050) can also be offered upon request.

Technical data

Constructional design

Design:	Hygienic case of stainless steel, continuously rotatable by ± 170°
Material case and front cover:	Process connection back: Stainless steel mat.-no. 1.4305 (303) Option: stainless steel mat.-no. 1.4404 (316L) Process connection bottom: Stainless steel mat.-no. 1.4301 (304) Option: stainless steel mat.-no. 1.4404 (316L)
Gasket:	Silicone EPDM / FKM (if degree of protection IP 69K)
Degree of protection per EN 60529:	IP 65 / IP 67 Option: IP 69K
Climatic category:	4K4H per EN 60721 3-4
Material window:	Macrolon hardened Option: Non-splintering glass
Electrical connection:	Circular connector M12 Option: Cable glands ■ M16 x 1.5, PA black ■ M16 x 1.5, brass nickel-plated ■ M16 x 1.5, stainless steel ■ M20 x 1.5, PA black ■ M20 x 1.5, brass nickel-plated ■ M20 x 1.5, stainless steel ■ 1/2" NPT, PA black Further connections upon request
Terminal blocks:	Spring clamp terminals up to 2 mm²
Type plate:	Adhesive label

Measuring system

Design:	Measuring insert Ø 3 mm, spring loaded and union nut M16 x 1.5
Material:	Measuring insert: stainless steel mat.-no. 1.4404 (316L) Union nut: stainless steel mat.-no. 1.4301 (304)
Length measuring insert:	See order code
Measuring resistor:	Pt100 per EN 60751, class A
Instrument connection:	Union nut M16 x 1.5

Accuracy

Accuracy:	≤ 0.25 K
Temperature influence case:	typ. 0.1 K/10 K
Response time per EN 60751 (with flowing water):	For measuring insert Ø 3 mm: t_{90} = 3s For further information see the data sheets of the thermowells.

We recommend the use of heat sink compound.

Indication

Display:
- High-resolution graphic display with backlight
- 4-button operation
- Freely configurable display modes
- Continuously rotatable
- Removable under voltage

Output

Signal:	2-wire technology	4…20 mA
	Lower limit	3.8…4 mA
	Upper limit	20…21 mA
	Lower alarm current	< 3.6 mA
	Upper alarm current	> 21 mA
	Current limitation	22 mA
	Digital communication	HART®-protocol, version 7

Device driver:
- EDD for SIMATIC PDM
- DTM for PACTware or compatible systems (FDT compliance)

Resolution:	≤ 1 µA
Current sensingfunction:	3.55…21.5 mA selectable in steps of 0.001 mA
Load R:	R ≤ (U-12V DC)/0.022 A [Ω] U = supply voltage for HART®communication R ≥ 230 Ω

Supply voltage

Functional range:	12…30 V DC, protected against polarity reversal
Ripple:	< 5 %

Temperature ranges

Ambient:	-20...80 °C Option: -40…80 °C (Display visibility is limited at temperatures below - 30 °C)
Media:	-50...200 °C
Storage:	-40...80 °C

Parameterisation

Parameterisation

Parameter	Values	Default setting
Device		
device ID	16 digits, freely selectable	ID:GV4 MiniTherm
Display and control unit		
temperature unit	°C, °F. °R, K	°C
lighting	on, off	on
language	English, German, Chinese	German
decimal point	auto, x.xxxx, xx.xxx, xxx.xx, xxxx.x, xxxxx	auto
display mode	four values, three values, two values, big display	three values
main value	temperature, current (%), current (mA)	temperature
secondary values	temperature, current (%), current (mA), device ID, Bargraph, HART-TAG, HART descriptor, <empty>	device ID, Bargraph
Current output		
output function	linear, invers	linear
lower range value	at any value within nominal range	0 °C
upper range value	at any value within nominal range	150 °C
lower current limit	3.8…4.0 mA	3.8 mA
upper current limit	20…21 mA	20.5 mA
alarm current	low (< 3.6 mA), high (> 21.0 mA)	low (< 3.6 mA)
HART® data		
HART® address	0…63	0
number of response preambels	5…20	5
current mode	proportional, constant	proportional

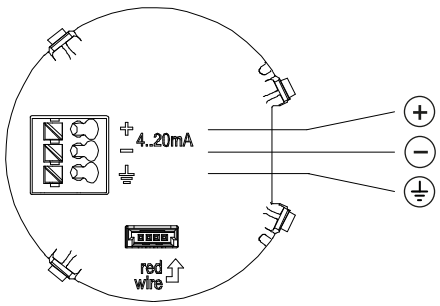
Diagnostic functions

loop-test	setting of a fixed current value at the output	3.55…21.5 mA
temperature simulation	setting a fixed temperature value	nominal range
min/max values	for temperature	/

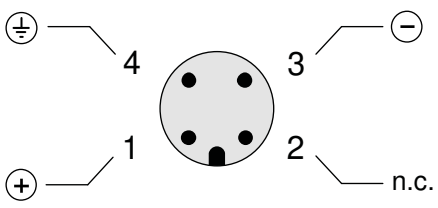
Adjustment

Adjustment type	Description
lower adjustment	adjusts reading of mounted device at ambient temperature (affects zero and span)
upper adjustment	adjusts reading to applied temperature (affects span only)
current adjustment	adjusts current output to achieve 4 resp. 20 mA at the end of the measurement chain

Connection diagram



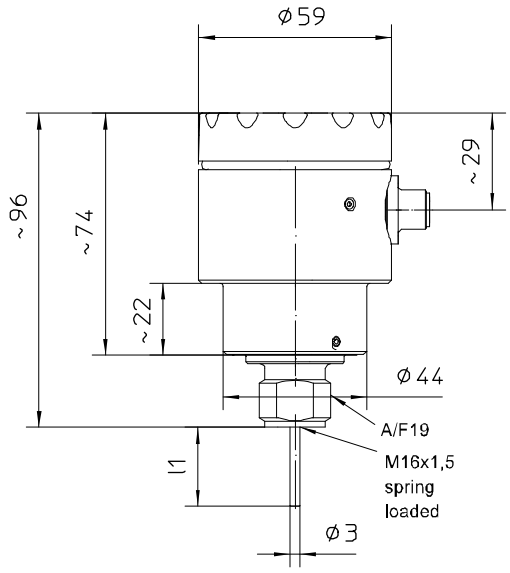
Cable gland



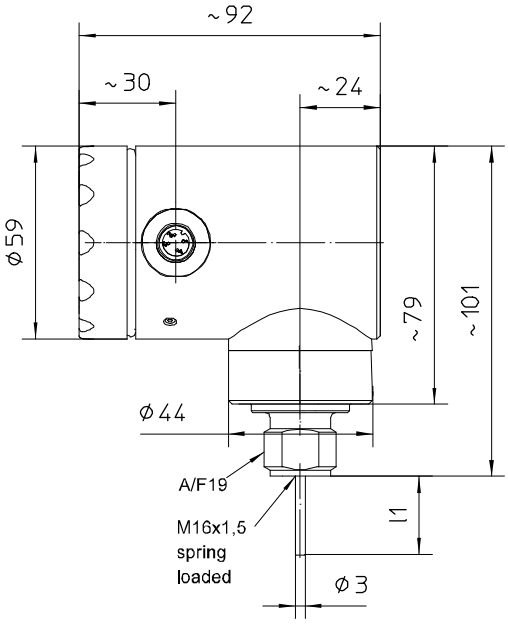
Circular connector M12 x 1

Dimensions

Case and temperature sensor

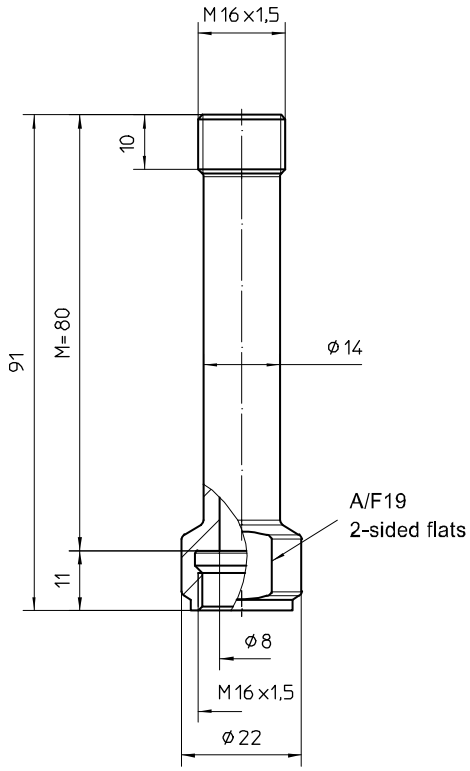


process connection back



process connection bottom

Neck tube



Order details

Temperature transmitter GV4 MiniTherm
for installation in a separate thermowell, Type series GV4730

Order details GV4730			
GV4730	temperature transmitter GV4 MiniTherm		
R70	position process connection	back	
R71		bottom	
F1	parameterisation	standard according to data sheet (see parameterisation table)	
F9		as per customer's specification (pls. specify)	
Q1	accuracy	≤ 0.25 K	
H21	output signal	4...20 mA, with HART®-protocol	
Y14	material case/window	stainless steel mat.-no.1.4301/1.4305 (304/303)	window Macrolon
Y12			window non-splintering glass
Y13			closed, without window
Y24		stainless steel mat.-no. 1.4404 (316L)	window Macrolon
Y22			window non-splintering glass
Y23			closed, without window
T1	case degree of protection	IP 65 / IP 67	
T4		IP 69K [1]	
			default language
M21.1	display	High-resolution graphic display with backlight, intuitive 4-button operation, quick-setup function	English
M21.2			German
M21.3			Chinese
M1		without display	
T20	electrical connection	cable gland M16 x 1.5	polyamide for cable Ø 4.5-10 [2]
T21			brass nickel plated for cable Ø 5-10
T22			stainless steel mat.-no. 1.4404 (316L) for cable Ø 5-9 [2]
T15		cable gland M20 x 1.5	polyamide for cable Ø 7-13 [2]
T16			brass nickel plated for cable Ø 7-13
T17			stainless steel mat.-no. 1.4404 (316L) for cable Ø 8-13
T27		cable gland 1/2" NPT	polyamide for cable Ø 5-12
T30		circular connector M12x1 (4 pin) [2]	
A12	instrument connection	union nut M16 x 1.5	
A99		as in writing	
C3 . . .	temperature sensor	Ø 3 mm	
998	insertion length l1	suitable for thermowell U1 ≤ 250 mm	
028		28 mm	
038		38 mm	
060		60 mm	
084		84 mm	
161		161 mm	
. . .		required insertion length up to 250 mm can directly be ordered, e.g. l1: 100 mm, order code 100	
N32	measuring insert	1 x Pt100	
U1	ambient temperature	-20...80 °C	
U7		-40...80 °C	

Additional features (to be indicated in case of need, only)		
V2080	neck tube (M16 x 1.5)	length of neck tube M = 80 mm
V2999		length of neck tube M (in mm)
W1204	calibration certificate	per EN 10204-3.1, 3 measuring points
W1201		per EN 10204-3.1, 5 measuring points
W2660	as per UKCA regulations	

Order code (example): GV4730 - R70 - F1 - Q1 - H21 - Y13 - T1 - M1 - T22 - A12 - C3084 - N32 - U1

[1] only possible with window of Macrolon, gasket made of EPDM/FKM and selected electrical connections (see footnote 2)
[2] suitable for degree of protection IP 69K