

Gas density transmitter

With 4 ... 20 mA density and 4 ... 20 mA temperature signal

Model GD10-F2

WIKA data sheet SP 60.12

Applications

- Gas density monitoring of closed SF₆ tanks
- For indoor and outdoor installation in SF₆-gas-insulated switchgear
- Easily integrate able into a gas management system

Special features

- Dual density and temperature readout
- Deep case houses additional temperature transmitter
- Output: 2 x 4 ... 20 mA
- Wetted parts made of stainless steel, fully welded
- High EMI performance, excellent long-term stability



Gas density transmitter, model GD10-F2

Description

Model GD10-F2 features a gas density transmitter with additional temperature sensor and a temperature transmitter integrated into a special connection head. It functions fully as a standard GD10 gas density transmitter, however, the dual output allows to compensate individual tank temperature disbalance effects.

The gas density transmitter itself is electrically compensated following the non-linear behavior of SF₆ gas according to the virial equation. The gas density transmitter picks up the pressure and temperature of the SF₆ gas contained in the tank. The current gas density is ascertained from both variables by means of an electronic evaluation system. Thermal induced pressure changes are dynamically compensated and do not affect the output signal. The gas density transmitter generates a density proportional, standardized signal of 4 ... 20 mA (measuring ranges from 0 ... 10 g/liter to 0 ... 80 g/liter).

A recalibration of the zero signal as well as maintenance service are not necessary due to the high long-term stability of the gas density transmitter. As a standard, wetted parts are made of stainless steel. The hermetically welded measuring cell guarantees high long-term leak tightness. The specific structure of the measuring cell requires absolutely no internal sealing elements so that no leakage occurs through the instrument.

Due to these features the gas density transmitter is also independent of atmospheric pressure fluctuations and variations of the mounting height. The case is rated IP 65.

The EMI properties of the transmitter are tested according to industrial standards (see page 3) and guarantee a safe pick-up of the signal which is especially suited to conditions prevailing in high-voltage switching units.

Temperature sensor

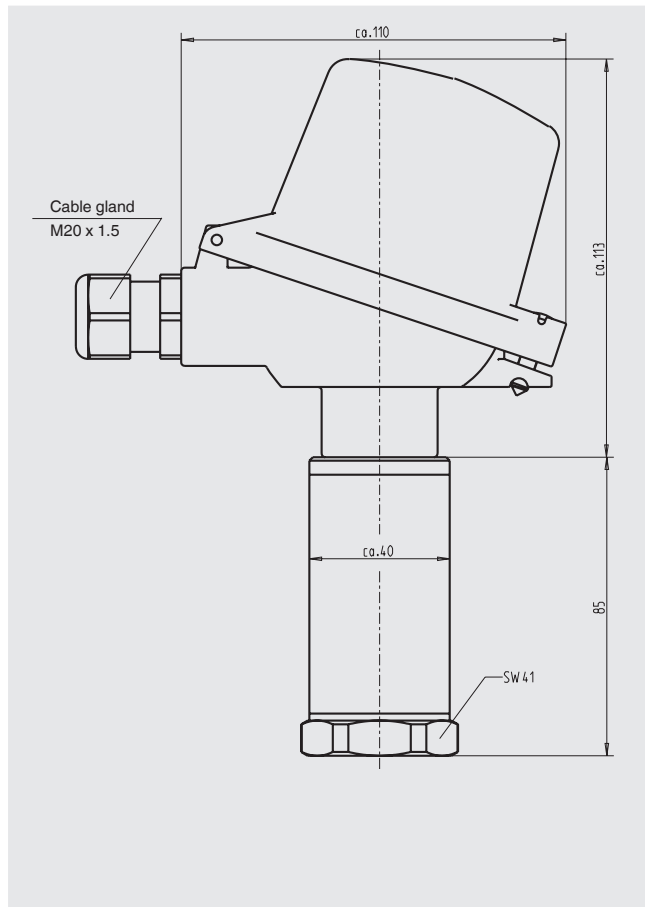
Model TR40, Pt100, Grade B (according to DIN EN 60751),
3-wire connection, see data sheet TE 60.40

Temperature transmitter

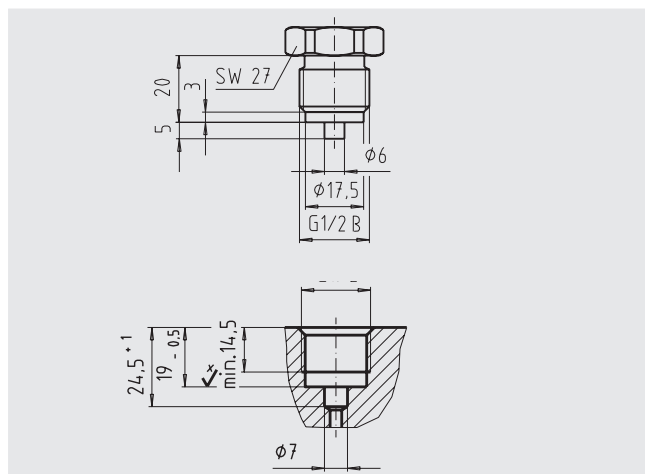
For details regarding the used temperature transmitter
model T32.1S, see data sheet TE 32.04

Dimensions in mm

Dual 4 ... 20 mA version



Process connection, socket



Wiring details

Density signal (4 ... 20 mA)

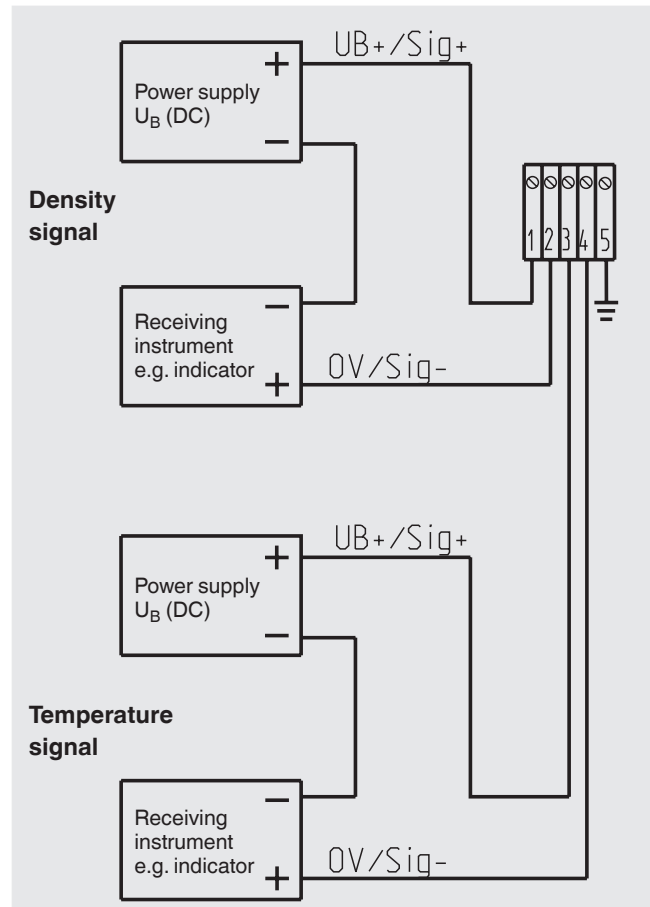
Clamp 1: U_{B+} / Sig+
Clamp 2: 0V / Sig-

Temperature signal (4 ... 20 mA)

Clamp 3: U_{B+} / Sig+
Clamp 4: 0V / Sig-

Clamp 5 is connected to the case to enable the connection of a shielding here. The cable shield of the line is connected there.

2-wire connection



Specifications

Specifications, model GD10-F2

Density ranges	g/Litre	10	16	25	40	60	80
(Pressure ranges related to 20 °C)	(bar abs.)	(1.64)	(2.59)	(3.97)	(6.16)	(8.87)	(11.33)
Over pressure safety	bar abs.	14	14	14	29	29	67
Burst pressure of sensor	bar abs.	17	17	17	35	35	80
Designed for sensing	pure SF ₆ gas						
Principle	piezoresistive						
Pressure reference	absolute pressure						
Process connection	G ½ B male (other connections on request)						
Materials							
■ Wetted parts	stainless steel						
■ Case, terminal case	aluminium						
Internal transmitting fluid	synthetic oil						
Power supply U _B	DC 10 ... 30 V						
Signal output and maximum load R _A	4 ... 20 mA, 2-wire, R _A ≤ (U _B - 10 V) / 0.02 A with R _A in Ohm and U _B in Volt						
Accuracy	-40 °C: 3 % of span, 20 °C: 1 % of span, 60 °C: 2.3 % of span (optimal accuracy point) -40 °C: 4 % of span, 20 °C: 2 % of span, 60 °C: 3.3 % of span (beginning and end of measuring range)						
1-year stability	≤ 0.3 % of span (at reference conditions)						
Permissible ambient temperatures							
■ Nominal temperature	-40 ... +60 °C (-40 ... +140 °F) [gas phase!]						
■ Storage temperature	-40 ... +80 °C (-40 ... +176 °F)						
CE conformity	EN 61326-1, EN 61326-2-3						
EMC directive	2004/108/EC, EN 61326 Emission (Group 1, Class B) and Immunity (industrial locations)						
High voltage strength	DC 750 V (wiring versus case)						
Electro-magnetic immunity (EMI) / RFI per IEC 61000-4	IEC 61000-4-2 (ESD): test level 4 (8 kV) IEC 61000-4-3 (Field): test level 3 (10 V/m) IEC 61000-4-4 (Burst): test level X (±4 kV) IEC 61000-4-5 (Surge): test level 2 (±1 kV) IEC 61000-4-6 (Conducted RFI): test level 3 (10 V)						
Cable gland	Cable gland M20 x 1.5						
Electrical connection	internal terminal screws, cross section max. 2.5 mm ²						
Wiring protection	protected against reverse polarity and overvoltage						
Ingress protection	IP 65 per EN 60529 / IEC 529						
Weight	approx. 0.75 kg						
Dimensions	see drawing						

Ordering information

Model / Density range / Process connection

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