Gas density transmitter
With 4 ... 20 mA density and 4 ... 20 mA temperature signal
Model GD10-F2

Applications

- Gas density monitoring of closed SF_6 tanks
- For indoor and outdoor installation in SF_6-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 SF_6 gas according to the virial equation. The gas density transmitter picks up the pressure and temperature of the SF_6 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 accroding 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

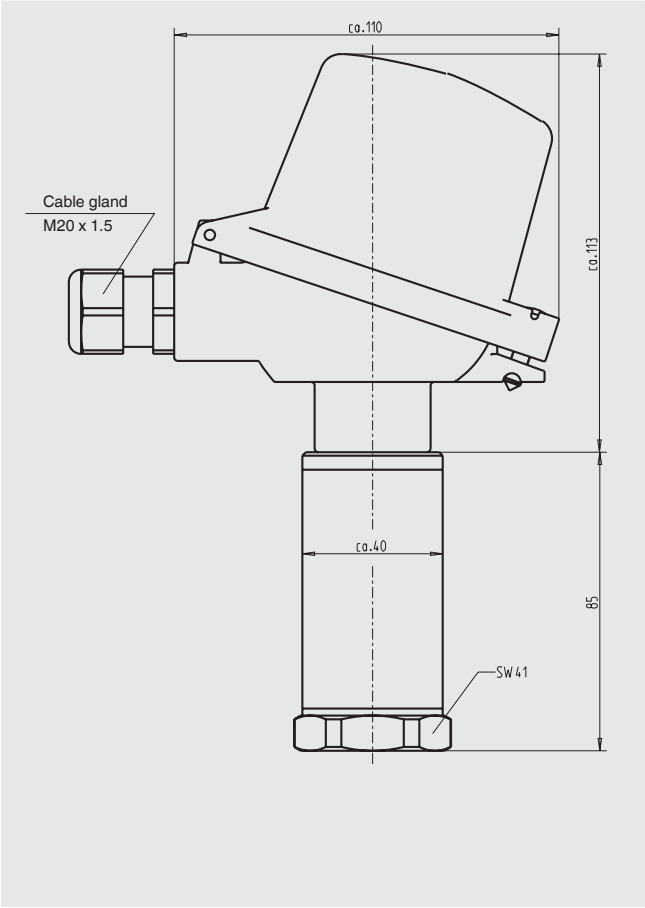
Model TR40, Pt100, Grade B (according to DIN EN 60751), 3-wire connection, see data sheet TE 60.40

Temperature transmitter

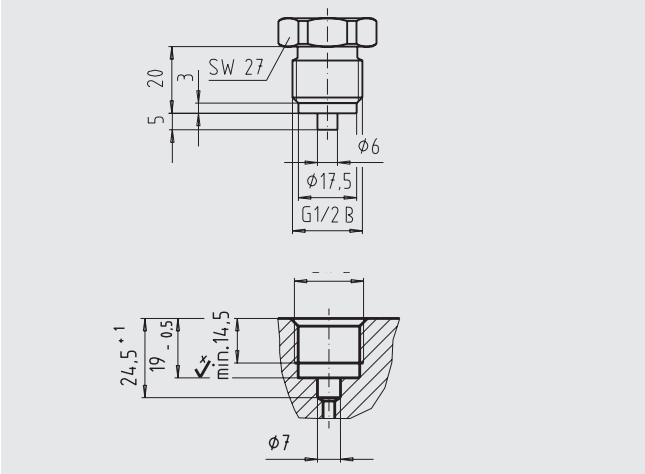
For details regarding the used temperature transmitter model T32.1S, see data sheet TE 32.04

Dimensions in mm

Dual 4 ... 20 mA version



Process connection, socket



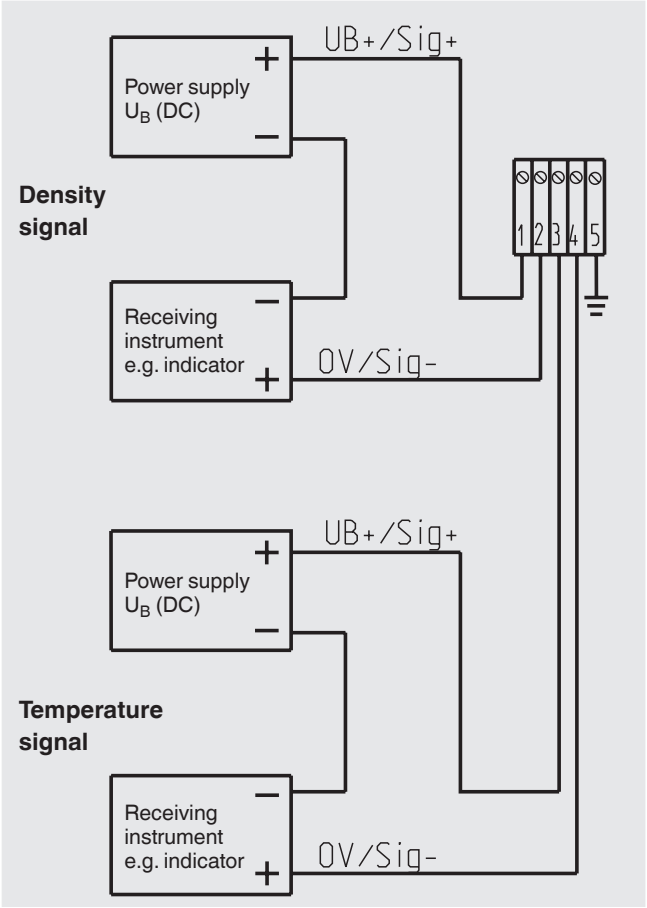
Wiring details

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, $R_A \leq (U_B - 10\ V) / 0.02\ A$ 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