Transmitter
For gas density, temperature and pressure of SF_6 gas
Model GDT-20, with MODBUS® output

WIKA data sheet SP 60.09

Applications

- Permanent monitoring of the relevant gas condition parameters in closed tanks
- For indoor and outdoor SF_6 gas-insulated equipment

Special features

- High-accuracy sensor technology
- MODBUS® output protocol via RS-485 interface
- Ingress protection IP 65
- Very good long-term stability and EMC characteristics
- Compact dimensions

Transmitter model GDT-20

Description

The model GDT-20 transmitter is a multi-sensor system with digital output for the measurement parameters of pressure and temperature. Based on these measured values, the condition-related data can be determined.

Permanent monitoring
In order to prevent system failures in switchgear and network outages, the permanent monitoring of the gas density is essential.

The GDT-20 transmitter calculates the current gas density from the pressure and temperature using a complex virial equation in the transmitter's powerful microprocessor. Pressure changes resulting from thermal effects will be compensated by this and will not affect the output value.

MODBUS® field bus
The RS-485 interface communicates using the MODBUS® RTU protocol. The instrument's output parameters and their units can be configured and read according to requirements. The GDT-20 can be configured later by the customer for each defined SF_6 gas mixture with N_2 or CF_4.

Signal stability
Due to its high long-term stability, the transmitter is maintenance-free and requires no recalibration. Due to the hermetically sealed weld seam and a measuring cell design without sealing elements, the permanent sealing of the measuring cell is ensured.

The EMC characteristics fulfil the IEC 61000-4-2 through to IEC 61000-4-6 standards and guarantee an interference-free data output.

Specifications

Measuring ranges

Density:	0 ... 60 g/litre (8.87 bar abs. at 20 °C)
Temperature:	-40 ... +80 °C
Pressure:	0 ... 16 bar abs.
Burst pressure:	52 bar abs.
Overpressure limit:	up to 30 bar abs.
Pressure reference:	Absolute

Accuracy data

Specifications only valid for clean, gaseous SF_6

Density:	±0.60 %, ±0.35 g/litre (-40 ... +80 °C)
Temperature:	±1 K
Pressure:	±0.20 %, ±32 mbar (-40 ... < 0 °C) ±0.06 %, ±10 mbar (0 ... 80 °C)

Long-term stability at reference conditions

Temperature:	≤ ±0.10 % of span/year
Pressure:	≤ ±0.05 % of span/year

Refresh rate

Density:	20 ms
Temperature:	20 ms
Pressure:	20 ms

Permissible ambient temperature

Selectable versions		
	Operation	Storage
Standard	-40 ... +80 °C -40 ... +176 °F	-40 ... +80 °C -40 ... +176 °F
Option	-60 ... +80 °C -76 ... +176 °F	-60 ... +80 °C -76 ... +176 °F

Voltage supply U_B

DC 17 ... 30 V

Power consumption

max. 0.5 W

Electrical connection

Circular connector M12 x 1 (5-pin)
MODBUS® RTU via RS-485 interface

Circular connector M12 x 1 (5-pin)

1	C	Reference potential RS-485 (common)
2	U_B	Voltage supply
3	GND	Ground
4	A	Signal RS-485
5	B	Signal RS-485

Functionality MODBUS®

Mixture ratio of SF_6 to N_2 or CF_4 (Default 100 % SF_6 gas)
Customer-specific sensor name

Measured values with alternative units can be retrieved directly in the MODBUS® register.

- Density: g/litre, kg/m³
- Temperature: °C, °F, K
- Pressure: mbar, Pa, kPa, MPa, psi, N/cm², bar (at 20 °C)

Process connection

G ½ B (male), stainless steel
Transmission fluid: synthetic oil

Case

Stainless steel

Permissible humidity

≤ 90 % r. h. (non-condensing)

Ingress protection

IP 65, only when plugged in and using mating connectors with the corresponding ingress protection

Electrical safety

Protected against reverse polarity, protected against overvoltage

Dimensions

Diameter: 48 mm
Height: 103 mm

Weight

approx. 0.40 kg

CE conformity

EMC directive

2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (industrial application)

EMC tests

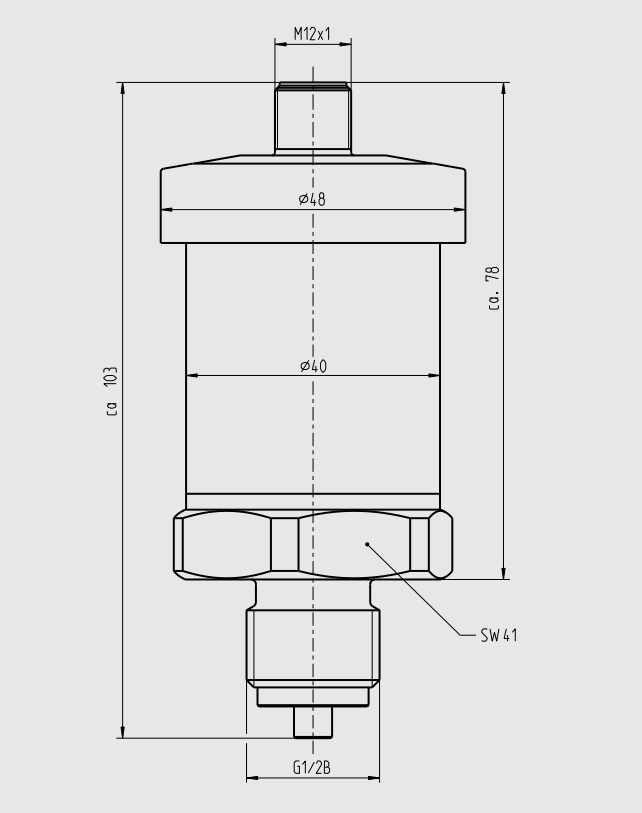
- **Interference immunity per IEC 61000-4-3:**
  30 V/m (80 MHz ... 2.7 GHz)
- **Burst per IEC 61000-4-4:**
  4 kV
- **Surge immunity per IEC 61000-4-5:**
  2 kV conductor to ground, 1 kV conductor to conductor
- **ESD per IEC 61000-4-2:**
  8 kV/15 kV, contact/air
- **High-frequency fields per IEC 61000-4-6:**
  10 V

Manufacturer's declaration

RoHS conformity

2002/95/EC

Dimensions in mm



Accessories

Description	Order no.
MODBUS® Startup-Kit for configuration, consisting of: ■ Power supply for transmitter ■ Cable with M12 x 1 connector ■ Interface converter (RS-485 to USB) ■ USB cable type A to type B ■ MODBUS® tool software on USB stick	14075896

Ordering information

Model / Permissible ambient temperature / Accessories

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