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UMSITEC
Umwelt- und Sicherheitstechnik

OPERATING INSTRUCTIONS GMF 300 Z O2 4-20 mA Output

Oxygen – Sensor Unit with zirconium sensors

GMF 300 Z O2
With display

GMF 300 Z O2
Without display

GMF 300 Z O2
With LKA

GMF 300 Z O2 K
air duct mounting

Important!

In order to handle and operate this gas sensor unit appropriately you have to follow the instructions of this manual. The „Safety Instructions for the installing company and user“ (see annex) have to be strictly obeyed!

Sensors

The gas sensor unit GMF 300 Z is operated with zirconium sensors. The sensor signal is converted to the measurement current range of 4-20 mA. The output signal is linearly proportional to the concentration.

In an evaluator the current signal is able to produce an evaluable voltage signal through a load resistance against ground.

In order to be able to react to gases the sensor is heated.
The power consumption of the sensor is between 130 mA (supply = 28 V) and 340 mA (supply = 12V).

Connection of sensors

The gas sensor GMF 300 Z can be operated with an unregulated direct voltage of 15 - 35 V.

IMPORTANT:
- A time lag pre-fuse of 315 mA is necessary.
- You have to use a shielded cable.
- The metal housing has to be connected via the connecting cable or additionally to the equipotential bonding.
- If the housing itself has already been grounded during assembly, the cable shield and the PE-wire may only be applied to the sensor housing in order to avoid equalizing currents in the signal cable caused by potential differences.

ATTENTION: **During assembly it is vitally important to mantle bare cables with an insulating coat and to avoid any contact between them and the circuit.**

Heating period

After having applied the current supply, the sensor performs a self-test. Then the zirconium sensor will be heated slowly for 3 minutes.

Meanwhile the signal current is kept at 17,4 mA, which is corresponding to the partial pressure of an ambient air-oxygen concentration of 20,9 Vol%. In case of fault a signal current of 0,5 mA is output.
Both signal current values can be altered in the service-menu.

Adjustment

The sensor unit has been adjusted by the manufacturer. It is absolutely stable. Maintenance at regular intervals is nonetheless necessary in order to ensure the operational reliability.

If subsequent adjustments should be necessary, the O2-service-display and the service-instructions are needed.

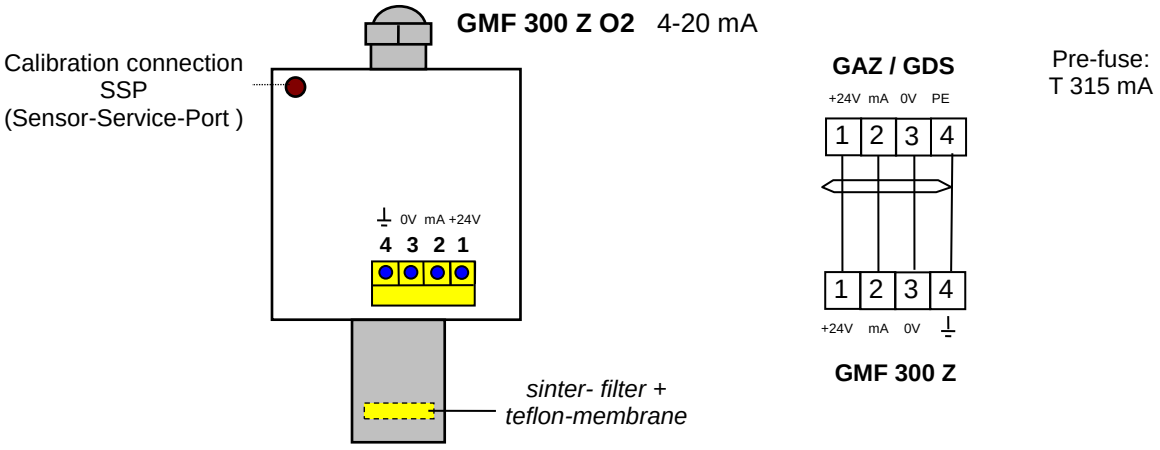
ATTENTION: Potentiometers should never be altered. They do not have any influence on calibration!

Maintenance tools

SSP - HANDY for sensor-service-port
Zero-gas (nitrogen)
Calibration - test gas (known oxygen concentration)
Gas feeding armatures (flow regulator, flow meter 0 - 1 liter/min)
Gas feeding connection adaptor

The sensor can be calibrated by means of an user-defined, well-known oxygen concentration.

Connection diagram



Signal table

Measuring range 0 ... 25 vol% O2:

Concentration	**0,0 Vol%**	3 Vol%	5 Vol%	10 Vol%	15 Vol%	17 Vol%	19 Vol%	**20,9 Vol%**	25 Vol%
Measurement current:	**4,0 mA**	5,92 mA	7,2 mA	10,4 mA	13,6 mA	14,88 mA	16,16 mA	**17,376 mA**	20,0 mA

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Technical data: GMF 300 Z O2

Measuring principle:	zirconium oxide
Type of gas:	oxygen
Measuring range:	0 ... 25 vol%
Measuring accuracy:	<+-1% of measuring range
Display:	LCD-concentration display, optional
Starting time:	< 4 minutes
Response time T90:	< 4,5 minutes
Temperature range:	-30..+60°C (environment)
Humidity range:	0..100% relative humidity
Pressure range:	700-1300 hPa
Housing:	aluminium, LxWxD: 160x80x60 mm
Protection type:	IP65
Gas entry:	diffusion
Protective components:	hydrophobic and oleophobic teflon-membrane and sinter-filter
Output signal:	4-20 mA, linear
Max. load:	500 R
Durability:	>30.000 hours of operation
Storage time:	> 2 years
CE-conformity:	emission: living area, immunity: industrial area
Weight:	730 g
Supply:	15-35V DC
Power consumption :	4 W
Connecting cable:	up to 400 m: JY (ST) Y 2x2x0,8 mm², (supply > 24V) from 400 m: 4x1,5 mm², shielded

Commissioning and Maintenance

In order to control function and accuracy of measurement the sensor has to be controlled on commissioning and at regular intervals, particularly before every trip of the containership, by exposing the measuring unit to a test gas of a well-known concentration.

In addition, it has to be ensured that the housing and the teflon-membrane at the diffusion port are in perfect order and condition.

Putting out of operation

If the sensor is put out of operation for more than 4 weeks it has to be – after at least two days of operation – tested by means of test gas. If necessary, it has to be calibrated again.

January 2008

Technical data are subject to change