

## OPERATING INSTRUCTION

## GAS SENSOR GMF 400/401 3E



**GMF 400**

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### Important!

The devices may only be operated if this operating instruction has been understood and is applied. The attachment "Safety for installers and operators" must be observed!

### Sensoric Technology

The sensor GMF 400 3E is powered by electrochemical sensors, whose signal is converted to the measuring current range of 4-20mA.

The sensor provide a corresponding output signal, which can generate in an evaluation unit via a load resistor to ground an usable voltage signal.

### Mounting

The sensor is suitable for a wall or ceiling mounting.

### Sensor connection

In order to supply the gas sensor GMF 400 3E an unregulated DC voltage from 8 - 30 V is required.

The shielded cable JY ( St) 2x2x0.8 mm have to be used as sensor supply cable. The wire colors must be assigned as follows :

red => +24V (KI 1), white => 4-20mA (KI 2), black => 0 V (KI 3), yellow => PE (KI 4)

**The drain wire on the evaluation unit must be twisted with the yellow wire to be connected to terminal 4 (PE conductor).**

The drain wire on the sensor must be connected to the metal housing.

**CAUTION:** When installing, make sure that bare cable end and the bare drain wire be covered with insulation and cannot come into contact with the circuit.

Is the metal housing mounted on grounded steel beams, the drain wire and the wire for terminal 4 (PE) must not be connected on the evaluation unit.

## Adjustment

Electrochemical sensors must have been in operation about 1 hour, so that you can start with the adjustment. The test gas shall be the ambient temperature, that means the same temperature as the sensor.

## Maintenance aids

Voltage meter 0-20 V  
Screwdriver  
Calibration gas  
Gas control valves (flow controller, flow measure 0-1 liters / min)  
Gas feeding adapter

## Adjust zero point

Adjust the trimmer "P1" so that you can measure the measuring pin "MP2" a **voltage** of 0.40 volts. This represents a measuring loop of 4mA.

It is a prerequisite for this setting that the sensor does not contain residual gas, check the sensor voltage to MP0, this should be max. 1/100 of the voltage at MP0 at gas feeding, otherwise the sensor must be removed during the adjustment.

## Reinforcement adjustment:

Enter now for a gas concentration, and set the voltage to the measuring pin "MP2" with the trimmer "P2" on a value Umeas to be calculated.

The value is calculated as follows:

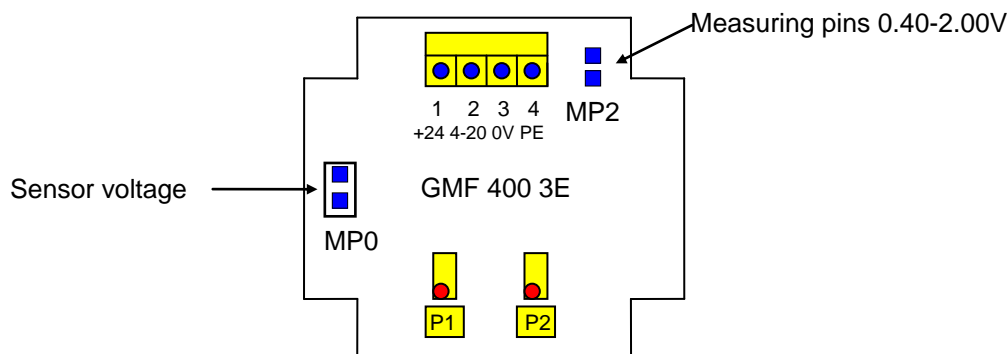
$$U_{meas} = 1.6 \text{ volts} * \text{gas concentration} / \text{range} + 0.4 \text{ Volt}$$

E.g.	for 10 ppm HCL	for a measurement range of 20 ppm	:	1,200 volts
	for 500 ppb O3	for a measurement range of 1000ppb (=1 ppm)	:	1,200 volts
	for 200 ppm CO	for a measurement range of 300 ppm	:	1,466 volts
	for 1000 ppm NH3	for a measurement range of 1000 ppm	:	2,000 volts
	for 20.9 vol% oxygen	for a measurement range of 25 Vol %	:	1,738 volts

The zero point is slightly affected when changing the gain adjustment  
It should be followed up.

Sensors that operate with bias voltage (e.g. HCL, NO) need to start a few hours until the zero point is stabilizing. Therefore there is a higher initial measurement display.

## Connection diagram and position of the potentiometer at the GMF 400 3E



## **Commissioning**

The setting of the sensor must be checked during commissioning by a test gas feeding.

## **Maintenance**

In order to maintain the functional reliability, maintenance at certain intervals is required. The maintenance interval can be seen from the test sticker on the controller. There is a maximum of 1/2 year.

## **Decommissioning**

If the sensor is for longer than 4 weeks out of operation, it must be checked after a week uptime with test gas or be recalibrated if necessary.

Status November 2014

Subject to technical changes