

OPERATING INSTRUCTIONS Gas sensor GMS Freone HL R22, R134a, R404a, R407c, R410



Fitting the sensor

When installing the sensor, note the type of gas used.

Gases lighter than air (e.g. methane) => room height, ceiling

Gases heavier than air (e.g. freone) => 10cm above the floor

For special gases, please call us.

Sensor connection

To power the MCS Gas Sensor GMS Freone HL A an unregulated DC of 22-26V is required.

As a sensor feed cable JY(St) 2x2x0.8mm shielded cable can be used.

The lead colours can be arranged as follows:

Red => +24V

White => 4-20mA

Black => 0V

Yellow => PE (Cl 4)

The drain wire should be twisted with the yellow lead and connected to the PE clamp (protective earth conductor).

The drain wire is connected with the shielding in the cable.

At the sensors – when using sensor enclosures made of metal, the drain wire should be connected with the bottom of the metal enclosure.

Sensor system

The GMS Freon HL sensor is driven by TYPE 1 semiconductor sensors, whose signal is converted to the measurement current range of 4-20mA.

The sensors supply an appropriate output signal, which can produce an analysable voltage signal in an analytical device via a load resistor to earth.

The sensor must be heated so it can react to gases.

The heat current for the sensor is sensor-dependent and lies in the 80 to 200mA range.

Depending on the lead length, this produces a drop in voltage from the analytical device to the sensor, which has to be taken into consideration when configuring the system.

Adjustment

The sensor to be adjusted must be operational for approximately one week, so it can stabilise and you can then start adjusting it.

Tools and resources

Voltage measuring device 0-20V

Screwdriver

Zero gas (synthetic air)

Calibrating gas

Gas feed devices (Flow regulator, flow meter 0-1 litres per minute)

Gas feed connector

Adjustments are carried out as follows:

Test gas calibration 1

Feed in a known concentration of gas and set the voltage on the “NP” measuring pins to zero with the “NP” trimmer. (for example R134a 1000 ppm)

The gas flow should be approximately 0.5 litres per minute.

The gas temperature should be at room temperature.

4-20mA calibration

Set the “K1” trimmer in such a way that you can read the test gas reading on the analytical device display or you can measure a **voltage** on the “4-20mA” measuring pins that matches the tabular value of the test gas.

(e.g. for 40% UEG: 0.7 volts from the table for semiconductor sensor 1)

Zero point calibration or test gas calibration 2

Make sure the sensor is not subjected to any concentration of gas for several minutes or with the aid of a gas feed connector with diffusion feed in zero gas (synthetic air) and set the “K2”

trimmer in such a way that 0 appears on the measuring display or a voltage of 0.4 volts can be measured on the “4-20mA” measuring pins.

Instead of zero gas a second gas concentration different to the first one can be used and the calibration then made.

If the test gas calibration 1 has been carried out exactly, the relevant reading is not influenced by the zero point setting and this can also be fine-tuned if need be.

Tabular values for TYPE 1 semiconductor sensors:

Adjustment to 0-100% UEG:

At	0 ppm	200 ppm	400 ppm	500 ppm	800 ppm	1000 ppm
Measurement current:	4mA	11.2 mA	14.3 mA	15.4 mA	18,5 mA	20 mA
4-20mA measuring pins:	0.40V	1.12 V	1.43 V	1.54 V	1.85 V	2 V

Should you require other measured curve values please contact us.

Opening housing:

