



Borovniško naselje 7
1412 Kisovec
Slovenia

Tel.: +386(0) 356 72 050
Fax.: +368(0)356 71 119
www.tevel.si

Measuring head type MG-de (USER MANUAL)



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1 Introduction

Measuring head MG-de is intended for use in explosive atmosphere in industry in Zone 1/21. It measures toxic and explosive gases. Measuring head MG-de consist of Ex e enclosure box with terminals and Ex d enclosure where all the electronics and sensors are.

Measuring head MG-de is designed to meet certification marking:

  **II 2G Ex db eb IIC T5 Gb**

  **II 2D Ex tb IIIC T100°C Db**

Compliance with Essential Health and Safety Requirements has been assured by compliance with:

**EN 60079-0:2018, EN 60079-1:2014, EN 60079-7:2015/AC:2018,
EN 60079-31:2014**

2 Special conditions for safe use

The measurement function reliability is not part of this certification.

Ambient temperature range: -20°C to +60°C

3 Sensor types and ranges:

MG-de/a-b-c - d

EXPLO	IR PEL	H U	1% Vol 2% Vol 5% Vol 10% Vol 50% Vol 100% Vol 100% LEL 25% 50ppm 100ppm 500ppm 1000ppm
CO ₂	IR		
O ₂	O2-A3 LFO2-A4 7OX-V		
TOX	CO SO ₂ H ₂ H ₂ S HCl NH ₃		

- EXPLO - IR: Infrared detection of explosive gases with ranges:
 - 0-100% SEM
 - 0-2% Vol
 - 0-5% Vol
 - 0-100% Vol

- EXPLO - PEL: Pelistor detection of explosive gases with range:
 - 0-100% SEM

- CO₂ - IR: Infrared detection of carbon dioxide with ranges:
 - 0-1% Vol
 - 0-2% Vol
 - 0-5% Vol
 - 0-10% Vol
 - 0-50% Vol
 - 0-100% Vol

- O₂: Oxygen sensor with range:
 - 0-25%

- TOX - CO: Carbon monoxide sensor with ranges:
 - 0-100 ppm
 - 0-500 ppm
 - 0-1000 ppm

- TOX - SO₂: Sulfur dioxide sensor with ranges:
 - 0-50 ppm
 - 0-100 ppm

Measuring head MG-de

- TOX - H₂: Hydrogen sensor with ranges:
 - 0-100 ppm
 - 0-500 ppm
 - 0-1000 ppm

- TOX - H₂S: Hydrogen sulfide sensor with ranges:
 - 0-50 ppm
 - 0-100 ppm
 - 0-500 ppm

- TOX - HCl: Hydrogen chloride sensor with range:
 - 0-50 ppm

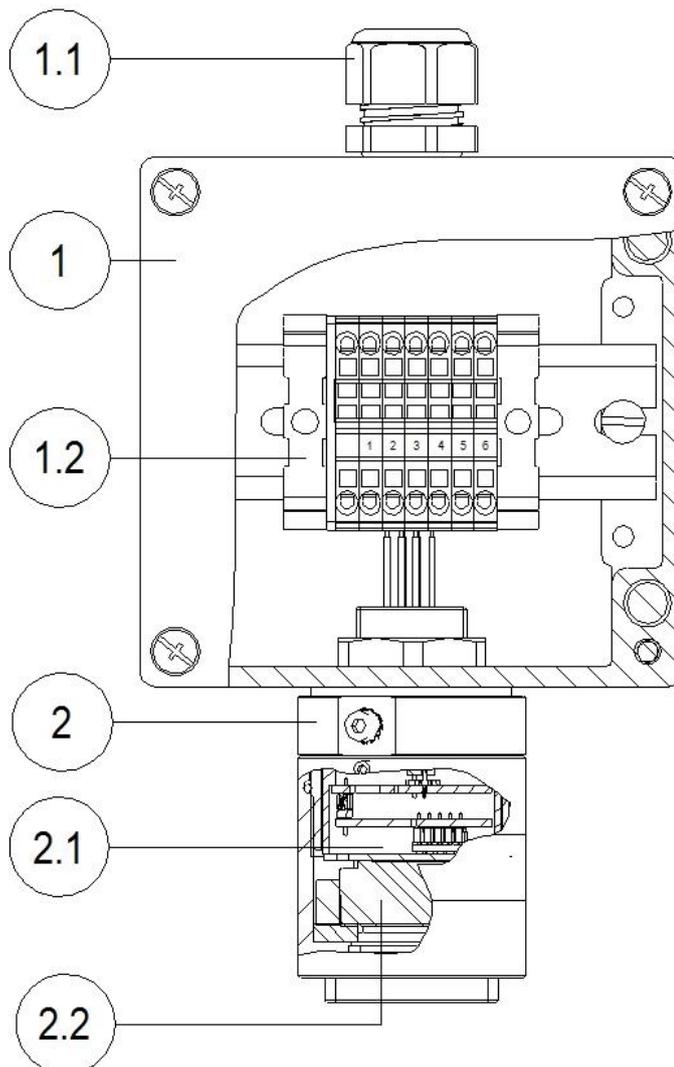
- TOX - NH₃: Ammonia sensor with ranges:
 - 0-50 ppm

- H: HART communication protocol
- U: UART communication protocol

4 Device components

Measuring head MG-de consists of:

1. Enclosure Ex e with
 - 1.1. Ex e cable gland
 - 1.2. Ex e terminals
2. Ex d enclosure with
 - 2.1. Electrical circuit for conversion of sensor signal
 - 2.2. Sensor



5 Technical data

- **Power supply U_n :** 20-30 VDC
- **Max Power Supply I_n :** 80 mA
- **Ambient temperature:** -20°C to +60°C
- **Degree of protection:** IP65
- **Weight:** 1 kg
- **Dimensions:** (h x w x d) 125 x 250 x 90mm

6 Operating principle

Measuring head MG-de is designed to detect a particular gas depending on the type of sensor used.

The measuring head MG-de converts the target gas into current. This electrical parameter is amplified, linearised and converted to 4-20mA signal and conducted via a connecting cable to an alarm unit (MX7, MX5000, MX6000).

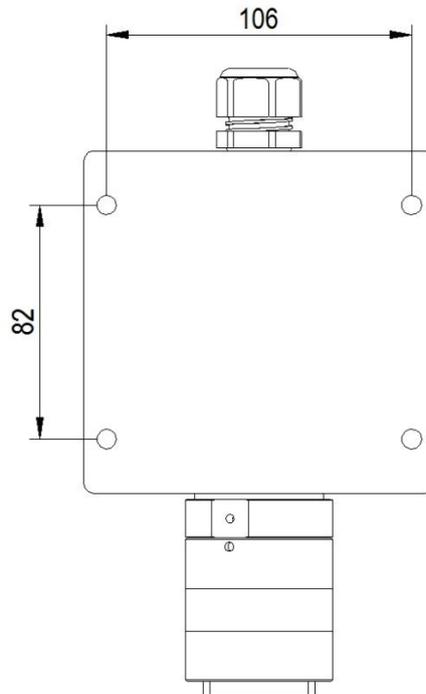
7 Device installation and connection

Depending on the density of the gas to be detected or the application, the detector shall be positioned at the ground level, or on the ceiling at the height of the airflow, or near to the air extraction ducts. Heavy gases may be detected at the ground level, while light gases will be found at ceiling height.

The measuring head MG-de shall be installed with the sensor pointing down.



Installation of the measuring head MG-de shall be secured with 4x M6 screws.



Measuring head MG-de shall be connected to a power supply 24VDC. Measuring head MG-de shall be connected to an alarm unit (MX7, MX5000, MX6000) by appropriate cable (min 3x0.5mm²). The choice of cable will be dictated by particular requirements of installation, distance and type of cable gland.

Inside Ex e enclosure are connection terminals for connecting the cable. Cable gland has a function of cable fixation so it is necessary to ensure that the cable size is suitable for this cable gland. After connecting the cable make sure that the cable gland is properly screwed and the seal is tighten enough.

Connection terminals are from Phoenix contact type ST 2,5. Feed-through terminal block, connection method: Spring-cage connection, cross section (flexible): 0,25 mm² – 2.5 mm².



CAUTION !

»Only qualified and authorised person can connect the measuring head to alarm unit«

Stabilization time

After mounting, it is essential to allow the detector temperature to stabilize. In addition after turning the power on, certain sensors require a further pre-heating time. Any adjustment before the pre-heating time will result in an incorrect measurement, which may in turn compromise the safety of the goods and personnel. The total waiting time is approx 30 to 120 minutes.

8 Maintenance and calibration

Our devices are constructed so that during normal operation there is no wear or failure. However it is advisable to execute periodic inspections every 6 months. Periodic inspections consist of visual control of connection points and calibration of sensor.

A calibration of measuring head MG-de should be performed every 6 months. Sensors have a limited lifetime and has to be replaced after that time. Only original sensor cells can be used.



CAUTION !

»Only qualified and authorised person can perform device maintenance and calibration«



CAUTION !

»Only original parts can be used«

9 Device storage

The device must be stored in a dry place at temperature from 10°C to 50°C.