



## ANNOVEX

### CH<sub>4</sub>-Sensor/transmitter type GMA 01.02.xxx

### CH<sub>4</sub>-Monitor type GMA 01.02.xxx

- I M1 Ex ia I Ma
- Measuring range 0.0...100.0 vol % CH<sub>4</sub>
- Thermal conductivity sensor with gas diffusion entry
- Increased accuracy by compensation of prevailing humidity and temperature by microcontroller (patented)
- Output range of the output signal is variable
- Adjustments or status enquiries by means of a press button unit or a magnetic pointer. The housing need not be opened
- Code lock to prevent unauthorized manipulation (can be switched off)
- Fault self diagnosis with alpha numeric display
- Test of the output signal by simulated CH<sub>4</sub> values
- Choice between normed analog or digital output signals (optional)
- Two built-in limit switches with optocouplers or relays in the monitor
- Audiovisual alarm optional (Monitor)
- Sensor can be replaced on site
- Housing protection rating IP65, sensor protection rating IP 54

The economical, permanently installed CH<sub>4</sub>-Sensor/transmitter and CH<sub>4</sub>-Monitor are characterised by their stable measurements, simple and secure operation, robustness, low weight and compact construction.

These devices conform to the explosion protection rating of intrinsic safety „i“, category I M1 Ex ia I Ma. This means that this device can be used in the zone M1 of underground mines, even when unpermitted high concentrations of the methane gas are prevailing.

This certification conforms to the ATEX directive 2014/34/EU for devices and protective systems permitted for use in areas endangered by explosions.

The CH<sub>4</sub>-Monitor differs from the CH<sub>4</sub>-Sensor/transmitter because of an additional limit value unit which is equipped with optocouplers or relays.

The measurement of the methane concentration in the sensor block is by means of an thermal conductivity sensor. The gas diffuses into the measuring chamber through a sinter metal disc.

To increase the measurement accuracy a microcontroller continuously compensates the prevailing temperature and humidity values.

A primary filter, which can be easily replaced, protects the sinter metal against dirt.

The test gases can be fed into the measurement chamber by means of a plug-on adapter of the type PGA 3.

The operation of the device is very simple: The operator places a small magnetic press button unit on the device. The housing need not be opened. As an alternative he can also use a magnetic pointer. A four digit code which can be entered initially, protects against unauthorized changing of the set values.

A self monitoring microcontroller system not only processes the measurement values precisely, it also carries out the operator specific instructions such as the entry of the code, signal instructions and messages, analog and digital outputs and test functions etc. A four digit back lit graphic display shows the measured values in 12 mm high digits.



These devices are placed in a fibre reinforced resin housing (impact strength 7 Joule) and are to be connected by means of a plug-in connector. The sensor block with the CH<sub>4</sub>-sensor is located next to the connector and it can be replaced easily on the underground site.

For the suspension of the device a steel hanger is attached. Holes on the back of the device permit a rigid mounting.

In addition the CH<sub>4</sub>-Monitor can be equipped with an audio visual alarm unit for giving alarms in the monitored area (see opposite illustration).

**ANNOVEX**  
**CH<sub>4</sub>-Sensor/transmitter type GMA 01.02.xxx**  
**CH<sub>4</sub>-Monitor type GMA 01.02.xxx**

**Technical Data**

<b>Certification</b>	 DMT 03 ATEX E 065 X according to directive 2014/34/EU
<b>Zone, Explosion protection rating</b>	 I M1 Ex ia I Ma
Principle of measurement Gas entry	Thermal conductivity Diffusion
<b>Range of measurement</b> Error of measurement: Influence of temperature, humidity and pressure	<b>0.0...100.0 % CH<sub>4</sub> (V/V)</b> 1.5 % (V/V) fulfils EN 60079-29-1
Resolution Measured value response time $t_{90}$ Display sequence	0.1 % CH <sub>4</sub> ≤ 18 s 0.5 s
Adjustment range of the device code	0000...9999
Supply voltage	9...16 V-
Current consumption Sensor/transmitter with 1 mA- or 15 Hz output Sensor/transmitter with 20 mA output Monitor with Optocouplers and 1 mA- or 15 Hz output Monitor with relays and 1 mA- or 15 Hz output Monitor with Optocouplers and 20 mA output Monitor with relays and 20 mA output	72 mA 92 mA 75 mA 85 mA 95 mA 105 mA
Current consumption of the audio visual alarm unit	additionally 100 mA max.
<b>Frequency output</b> Frequency range Output range adjustable between Optocoupler output	6...15 Hz, switchable to 5...15 Hz 1...100 % CH <sub>4</sub> max.: 30 V, 100 mA, 100 mW
<b>Current output (alternative to the frequency output)</b> Ranges and loads Output range adjustable from	0.1/0.2...1 mA / ≤5200 Ω to 4...20 mA / ≤200 Ω 1...100 vol % CH <sub>4</sub>
<b>Test function by simulated measured values</b>	10 decimal steps from 0% CH <sub>4</sub> to the final value of the range of the data transmission output
<b>Limit switch Alarm 1 and Alarm 2 (Monitor)</b> Setting range Optocoupler output (quiescent current principle) Relay output (quiescent current principle)	0.1...100 vol % CH <sub>4</sub> max. 30 V, 100 mA, 100 mW max. 30 V, 1 A, 30 W
<b>Audio visual alarm unit optional (Monitor)</b> Signal tone Sound intensity Flashing light Signal frequency Alarm 1, Alarm 2	Sweeping 2400-2850 Hz at 7 Hz max. 103 dB (1m) 10 red, ultra highbright, pulsed LEDs 0.5 Hz, 1 Hz
Surroundings temperature Humidity, non condensing	-20°C...+60°C 0... 99% rel.
Dimensions without hanger, without alarm unit Dimensions without hanger, with alarm unit Weight without alarm unit Type of protection Material / Impact strength	W 122 mm, D 90 mm, H 179 mm W 122 mm, D 90 mm, H 310 mm 2 kg IP 65, Gas inlet port IP 54 Polyester, surface resistance <10 <sup>9</sup> Ohm / >7 Joule
<b>Accessories to be ordered separately</b> Connecting cable Input filter Test gas adapter Test gas set Press button device	VDL 4, 20m, max. length 100 m ( $R_L \leq 7,8 \Omega$ ) STF 3 PGA 3 PGS 3 TAS 3

Subject to technical updates

22-11