WOELKE
ENGINEERED SAFETY

ANNOVEX / MONIMET

METHEX 100

CH_4-measuring equipment for gas exhaustion pipes

Evaluator type
GMA 30.00.5xx

Sensor type
GMM 01.13.180

- **I M1 Ex ia I Ma**
- **Measuring range 0.0...100.0 vol % CH4**
- **Version for gas exhaustion pipes and pipelines**
- **Thermal conductivity sensor with gas diffusion entry**
- **Pipe probe type RSM 01.xx with test gas connection (optional)**
- **Increased accuracy by compensation of prevailing humidity and temperature by microcontroller (patented)**
- **Integrated pressure compensation in the sensor chamber (optional)**
- **Adjustments or status enquiries by means of a press button unit or a magnetic pointer. The housing need not be opened**
- **Illuminated four-digit display**
- **Code lock to prevent unauthorized manipulation (can be switched off)**
- **Fault self diagnosis with alpha numeric display**
- **Output range of the output signal is variable**
- **Test of the output signal by simulated CH4 values**
- **Choice between normed analog or digital output signals (optional)**
- **Two built-in limit switches with optocouplers or relays in the monitor**
- **Connecting cable between sensor und evaluator plug able**
- **Components exchangeable independent of each other**

The permanently installed CH_4-measuring equipment METHEX 100 is characterised by their stable measurements, simple and secure operation, robustness and compact construction. They are destined for the continuous monitoring of the methane concentration in gas suction pipes.

The gas supply from the suction pipe is achieved by an pipe probe type RSM 01.xx. The pipe probe contains a dust filter and a connection for the test gases.

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 built-in pressure sensor (optional) assures for a high measurement accuracy over a wide pressure range.

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 equipment is conform to the explosion protection rating of intrinsic safety „i“, category I M1 Ex ia I Ma. This means that these devices 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 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.

The sensor is protected against shocks, dust and humidity by a cast metal housing (impact strength 20 Joule). The evaluator has a robust, electrically conducting plastic case. They are to be connected by means of the connecting cable VDL 6 with two high-quality plugs.

The electrical connection of the equipment occurs fast and in a protected manner against wrong polarity through the connecting cable VDL 4 via a high-quality plug.

METHEX 100

CH_4-sensor type GMM 01.13.180 with evaluator type 30.00.5x5

Technical Data

Certification	CE DMT 03 ATEX E 065 X according to directive 2014/34/EU
Zone, Explosion protection rating	**Ex I M1 Ex ia I Ma**
Principle of measurement	Thermal conductivity
Gas entry	Diffusion over pipe probe
Range of measurement	**0,0...100,0 % CH4**
Resolution	**0,1 % CH4**
Display sequence	**0,5 s**
Linearity	**≤ 2 % CH4**
Short-term stability (1 h)	**≤ 1 % CH4**
Long-term stability (4 weeks)	**≤ 2 % CH4**
Response time t_{90} at flow velocities ≥ 1,0 m/s	< 53 s
at flow velocities ≥ 1,5 m/s	< 31 s
Response time t_{50} at flow velocities ≥ 1,0 m/s	≤ 30 s
at flow velocities ≥ 1,5 m/s	≤ 20 s
Volume flow for test gas feeding by pipe probe RSM 01	2 l/min
Adjustment range of the device code	0000...9999
Supply voltage	9...16 V–
Total current consumption with configuration:	
15 Hz -/1 mA output, 1 relay and 1 optocoupler	90 mA
20 mA output, 1 relay and 1 optocoupler	110 mA
Frequency output	
Frequency range	6...15 Hz, switchable to 5...15 Hz
Output range adjustable between	1...100% CH_4
Optocoupler output	max.: 30 V, 100 mA, 100 mW
Current output (alternative to the frequency output)	
Ranges and loads	0.1/0.2...1 mA / ≤5200 Ω to 4...20 mA / ≤200 Ω
Output range adjustable from	1...100% CH_4
Test function by simulated measured values	10 decimal steps from 0% CH_4 to the final value of the range of the data transmission output
Limit switch Alarm 1 and Alarm 2 (Monitor)	
Setting range	0.1...100.0% CH_4
Optocoupler output (quiescent current principle)	max. 30 V, 100 mA, 100 mW
Relay output (quiescent current principle)	max. 30 V, 1 A, 30 W
Surroundings temperature	-20°C...+55°C
Storage temperature	-20°C…+60°C
Humidity, non condensing	0... 99% rel.
Surroundings pressure	500…1300 hPa
Gas flow with pipe probe RSM 01.xxx	1…40 m/s
Working position (sensor)	vertical, ± 75° in all directions
Run in time	65 seconds
EMC interference immunity	EN 50270 type 2
Mechanical construction type GMM 01.13.180	
Dimensions (W x D x H), weight	102 x 100 x 180 mm (without pipe probe), 4,5 kg
Material, varnish paint, impact strength	Die cast metal, RAL 5012 (blue), 20 Joule
Mechanical construction type GMA 30.00.5x5	
Dimensions (W x D x H), weight	122 x 100 x 170 mm, 2,3 kg
Material, surface resistance, impact strength	GFK, $<10^9$ Ω, 7 Joule
Accessories to be ordered separately	
Connecting cable	VDL 4, 20m, max. length 100 m ($R_L \leq 7{,}8\ \Omega$)
Connecting cable	VDL 6, 10m, max. length 100 m
Input filter	STF 3
Press button device	TAS 3
Pipe probe, 90 mm	RSM 01.90
Pipe probe, 160 mm	RSM 01.160

Subject to technical updates

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