WOELKE
ENGINEERED SAFETY

MONIMET Ⓔx

H_2-Sensor/transmitter type GMM 11.05.xxx
H_2-Monitor type GMM 11.05.xxx

- Ⓔx I M1 Ex ia I Ma
- Linearized measured value display from 0.0...1000.0 ppm H_2
- Electrochemical measurement process with gas diffusion entry
- Increased accuracy by compensation of prevailing air-pressure and temperature by microcontroller
- Special housing suited to the working conditions in mines and industry. Steel hanger for the suspension, screw threads on the backside optional
- Illuminated four-digit display
- 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 gas values
- Choice between normed analog or digital output signals (optional)
- Two built-in limit switches with optocouplers or relays in the monitor
- Sensor can be replaced on site
- Housing protection rating IP65, sensor protection rating IP 54

The economical, permanently installed H_2-Sensor/transmitter and H_2-Monitor are characterised by their stable measurements, simple and secure operation, robustness, 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 H_2-Monitor differs from the H_2-Sensor/transmitter because of an additional limit value unit which is equipped with optocouplers or relays.

The measurement of the hydrogen concentration in the sensor block is by means of an electrochemical 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 air-pressure 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 protected against shocks, dust and humidity by a cast metal housing (impact strength 20 Joule) and are to be connected by means of a plug-in connector. The sensor block with the H_2-sensor is attached on the lower side of the housing and it can be replaced easily on the underground site.

A steel hanger is attached for the suspension of the device. For a rigid mounting, the device can be provided with thread holes on its rear (extra charge).

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H_2-Monitor type GMM 11.05.xxx
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	Electrochemical cell
Gas entry	Diffusion
Range of measurement	**0.0...1000.0 ppm H_2 (V/V)**
Error of measurement: 0...100 ppm H_2 (V/V)	±4 ppm
100...1000 ppm H_2 (V/V)	±2 % of the final value of the measurement range
Influence of temperature, humidity and pressure	fulfils EN 45544
Resolution	0.5 ppm H_2
Measured value response time t_{90}	≤ 95 s with input filter
Display sequence	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	15 mA
Sensor/transmitter with 20 mA output	35 mA
Monitor with Optocouplers and 1 mA- or 15 Hz output	17 mA
Monitor with relays and 1 mA- or 15 Hz output	27 mA
Monitor with Optocouplers and 20 mA output	37 mA
Monitor with relays and 20 mA output	47 mA
Frequency output	
Frequency range	6...15 Hz, switchable to 5...15 Hz
Output range adjustable between	1...1000 ppm H_2
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...1000 ppm H_2
Test function by simulated measured values	10 decimal steps from 0 ppm H_2 to the final value of the range of the data transmission output
Limit switch Alarm 1 and Alarm 2 (Monitor)	
Setting range	0.1...999.9 ppm H_2
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...+50°C
Humidity	15... 95% rel., short-term 0...98% rel.
Dimensions without hanger	W 100 mm, D 100 mm, H 200 mm
Weight without alarm unit	4 kg
Type of protection	IP 65, Gas inlet port IP 54
Material / varnish paint	Die cast metal / RAL 5012 (blue)
Impact strength	20 Joule
Accessories to be ordered separately	
Connecting cable	VDL 4, 20m, max. length 100 m ($R_L \leq 7{,}8\ \Omega$)
Input filter	STF 3
Test gas adapter	PGA 3
Test gas set	PGS 3
Press button device	TAS 3

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