VENTILATION MEASURING AND MONITORING UNIT

Type AGA 15.15.xxx

Evaluator
Type GMA 31.00.7xx

Anemometer
Type WGA 15.15

CH_4-sensor/transmitter
Type GMM 01.13

CO_2-sensor/transmitter
Type GMM 04.14

- **I M1 Ex ia I Ma**
- **Version for gas exhaustion pipes and pipelines**
- **Measuring range: 0.50...50.00 m/s or 0.001...50.00 m^3/s**
- **Differential pressure measurement principle. Very low long-time drift**
- **High accuracy of measurement by use of additional temperature and pressure sensors for compensation**
- **Outputs also for temperature in the pipe and differential pressure pipe/environment**
- **CH_4- and CO_2- or CO-sensor/transmitter can be connected for measurement and evaluation as well as for optimal compensation of the gas influences**
- **Code lock to prevent unauthorized manipulation (can be switched off)**
- **Adjustments or status enquiries by means of a press button unit or a magnetic pointer. The housing need not be opened.**
- **Fault self-diagnosis with alpha numeric display**
- **Test of the output signals by simulated measurement values**
- **Choice between normed frequency or current output signals**
- **Output range of the output signals is variable**
- **Four independent limit switches with optocouplers and/or relays in the evaluator**
- **Connecting cables between anemometer, optional sensors and evaluator are pluggable**
- **The components can be replaced individually**

The permanently installed volume flow and wind speed measurement and monitoring unit AGA 15.15 has been designed especially for the continuous monitoring of the flow in pipes and for the gas exhaustion pipes in coal mines.

The certification of the devices is conform to the explosion protection rating of intrinsic safety ´i´, category Ex ia I Ma, I M1 of the ATEX-directive 2014/34/EU. This means that the devices can also be used under unpermitted high concentrations of methane gas.

The economical, permanently installed unit is characterised by its stable measurements, and simple and secure operation with a closed housing.

The wind speed is measured according to the principle of differential pressure measuring with a special flow part. The flow velocity can be measured from 0.50 to 50.00 m/s or the volume flow can be measured from 0.001 to 50.00 m^3/s.

The temperature and the pressure inside the pipe are also measured and used to increase the measurement accuracy.

The evaluator can display and output the gas concentrations of the optional CH_4- and CO_2-/CO-sensors. These measured values are also used for an optimal compensation of the influences on the flow values.

The operation is very simple: The housing need not be opened and the operator places a small magnetic press button unit on the device. As an alternative he can also use a magnetic pointer. A four digit code can be entered for protection against unauthorized changes 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 outputs, analogue and digital outputs and test functions etc.

A large illuminated graphic display shows the measured values of the anemometer and the optional gas sensors in 10 mm high digits. Further on the limit switch conditions, status information and messages in clear text are displayed.

The anemometer, the optional gas sensors and the evaluator are connected to each other by means of plugs and a connecting cable VDL 6.

For the transmission of the measured values up to five 5/6...15Hz or 0.1/0.2....1/mA or 4...20mA outputs are available. The transmission of the measured value signals can be checked with test signals from the evaluator.

For triggering the local alarms four integrated limit value switches with optocoupler- or relay outputs are available. Switching states are shown by LEDs. The limit values can be set up independently. The switches can be elective assigned to the sensors.

VENTILATION MEASURING AND MONITORING UNIT

Type AGA 15.15

Technical Data

Zone, Explosion protection rating	**Ⓔx I M1 Ex ia I Ma**
Certification body	EXAM BBG Prüf- und Zertifizier GmbH
EC-Type Examination Certificate	GMA 31.00: BVS 11 ATEX E 090 and WGA 15.15: BVS 11 ATEX E 091
Anemometer WGA 15.15	
Range of measurement	0.50..50.00 m/s
Resolution	0.01 m/s
Accuracy of measurement	≤ 1.5 % of the measured value + 0.1 m/s
Measured value response time t_{90}	≤ 4 s
CH_4-sensor/transmitter GMM 01.13	
Range of measurement	0.0..100.0 % CH_4
Resolution	0.1 % CH_4
CO_2-sensor/transmitter GMM 04.14	
Range of measurement	0.00..10.00 % CO_2
Resolution	0.01 % CO_2
Evalutor GMA 31.00.7xx	
Measured value display	4 digit, LC-graphic display
Display sequence	0.2 s
Display range of the measured speed value	0.00...50.00 m/s
Display range of the measured volumetric flow value	0.000...50.00 m^3/s
Specified range for the correction factor c	0.50...1.50
Specified range for the pipe diameter	10...9999 mm
Display delay, adjustable in steps of sec.	5...20 s
Adjusting range of the device code	0000...9999
Operating voltage	9...16 V–
Rated current	50...400 mA, , depending on equipment
Measured value outputs	**m/s or m_3/s, temperature, differential pressure pipe/environment, CH_4- concentration, CO_2/CO-concentration**
Frequency outputs	
Frequency range	6...15 Hz, 5 Hz fault, switchable to 5….15 Hz
Optocoupler output	max. 30 V, 100 mA, 100 mW
Current outputs	
Ranges	0.1/0.2...1 mA or 4...20 mA
Measurement span adjustable between	1...50 m/s, 0.1...999.9 m^3/s, 100…600 hPa, 5…100 % CH_4, 1…10 % CO_2
Test function by simulated measured values (It applies to all the data transmission outputs)	In 10 Steps from start to the end-value of the measurement span; additionally fault and overrun value
Value-limit switches GW 1 and GW 2	
Setting ranges	0,.1...99.99 m/s or 0.1...999.9 m^3/s 0.1...100.0 % CH_4 0.01...99.99 % CO_2/ 0.1…500.0 ppm CO
Optocoupler output (quiecent current principle)	max. 30 V, 100 mA, 100 mW
Relay output (quiecent current principle)	max. 30 V, 1 A, 30 W
Surroundings temperature	-20...+60°C
Humidity	0... 95% rel., non condensing
Housing:	
Dimensions incl. plugs	WGA 15.15 (without tube): W 220 mm, H 120 mm, D 100 mm GMA 31.00: W 360 mm, H 160 mm, D 100 mm GMM 01.13, 04.14, 03.15: W 102 mm, H 180 mm, D 100 mm
Weights	WGA 15.15: 2.7 kg; GMA 31.00: 4.0 kg
Anemometer WGA 15.15	Polyester, protecting rate IP 54, surface resistance <10^9 Ohm, impact strength >7 Joule, sensor: stainless steel 4301
Evaluator GMA 31.00.xxx	Polyester, protecting rate IP 54, surface resistance <10^9 Ohm, impact strength >7 Joule
Gas sensors GMM 01.13, 04.14, 03,15	Die cast metal, RAL 5012 (blue), impact strength >20 Joule
Accessory to be commanded separately:	
Connecting cable	VDL 6, 10 m lenngth; max. length 100 m
Press button device	TAS 3

Subject to technical updates 22-03

WOELKE INDUSTRIEELEKTRONIK GMBH
Sieperstr. 2
D-42551 Velbert, Germany

E-Mail: info@woelke-gmbh.com
Tel.: +49 (0)20 51-80 69 81 00
Fax: +49 (0)20 51-80 69 81 15