

Gas warning device GWA M 3.6



- Gas control center with bus technology
- Up to 10 measuring points for flammable or toxic gases
- Menu-driven pushbutton operation
- Two variably adjustable alarm thresholds per sensor
- Password protected configuration level
- Large LCD plain text display
- 6 floating alarm relays
- Bus interface to the BMS (Modbus RTU)
- LED status display for the system

Technical data

Housing:	ABS plastic
Dimensions:	200 x 145 x 87 mm (L x W x D)
Protection class:	IP 65
Alarm switching points:	Pre-alarm and main alarm adjustable for each sensor pre-alarm self-canceling main alarm self-sustaining
Alarm relays:	6 switching relays 250 V/5 A for pre-alarm, main alarm, horn, warning light, failure, BMS
Input:	External reset
Supply voltage:	230 V AC 50/60Hz and 24 V DC
Optional UPS:	24 V DC (20 up to 32 V DC)
Ambient temperature:	0 °C up to +40 °C
Cable entry point:	11 x M16 x 1.5
Connection:	Spring clips 0.5 – 1.5 mm ²
Weight:	1 kg
Guidelines:	
- EMC directives:	EN 61000-6-2 EN 61000-6-3
- Low voltage directive:	EN 60950-1
Data communication:	
- To the sensors	via RS485 interfaces, GMF-Modbus (for cable lengths, see page 3)
Measuring head:	LPG, methane, Freon, CO, NO ₂ Description on page 3

Intended use

The device is used for

- Measuring and evaluation of gas concentrations in the ambient air
- Warning in cases of over- or under concentrations and their possible consequences (e.g. danger of poisoning, asphyxiation or explosion)
- Controlling countermeasures, such as operating cutoff valves, turning on ventilation.

Please observe current local rules and regulations, our guidelines for project planning of gas detection systems as well as our safety-related directions for installers and operators of gas detection systems.

All work (such as installation, electrical connection, start-up, operation and maintenance), must be carried out by sufficiently qualified craftsman. Current local rules and regulations (e.g. building regulations, electrical/VDE guidelines, etc.) are to be observed. Installers and operators are required to be adequately informed before operation. Read the product description before device start-up. Make sure that the product is fully suited to the respective applications. We assume no liability for misprints and changes after printing. Compliance with operating and installation instructions is also included within the regulations of intended use. We assume no liability for damages caused by improper use. Operating licenses and guarantees and all warranty claims will be voided in the event of unauthorized modifications or any tampering with the device.

Different types of gas sensors can be connected simultaneously. A maximum of 10 sensors can be monitored. (See the table on page 4). The connection between control unit and sensor occurs over four wires, 2 for supply and 2 for data transfer. Data transfer to the gas sensors is digital. Communication takes place via RS485 Bus.

System description

The GWA M 3.6 is a bus-compatible measurement and control system used to monitor the air for concentrations of toxic or flammable gases.

This analysis device is not approved for use in potentially explosive areas.



The control center cyclically queries the gas sensors and stores the instantaneous values for further processing. In this way even buses and sensors are monitored. Malfunctions are signaled. The measuring signals of the gas sensor heads are digitized in the sensor electronics. The measurement data are temperature compensated, scaled and evaluated according to the set alarm thresholds

Alarm messages

In the normal malfunction-free and alarm-free operation, the green operation LED lights up, all relays are energized and the operating mode and current time and date are shown on the display (overview display). By means of the arrow keys you can switch to the detail view. The detailed measured values from each sensor are displayed here (scroll using the arrow keys). Use the Home key to change back to the overview. If a failure or an alarm occurs during the detailed view, or if no keys are pressed for some time, the device will automatically switch to the overview display. In the event of an alarm number all sensors with measured values above the alarm value are displayed in sequence. By pressing the arrow keys the detailed measurement data of each sensor can be viewed. By pressing the reset button in malfunction-free and alarm-free operation a device test can be carried out. All the relays drop out so that the connected warning devices can be tested. Pressing the Home key changes the display back to the overview.

If the measurement signal reaches a switching point, the corresponding alarm is triggered. The corresponding LED lights up and the associated relay is activated.

When switching point 1 (pre-alarm) is reached, the relay for the connection with warning lights is activated. If the measurement signal again drops below switching point 1, alarm 1 will again be cancelled after dropping below the hysteresis.

When switching point 2 (main alarm) is reached, the internal buzzer and the relay for connecting acoustic warning devices (horn relay) is activated. They remain active until the reset button is pressed.

Alarm 2 is self retaining and can be deleted by pressing the device reset button or a connected external switch (normally open contact). The prerequisite is that the measurement signal has already dropped below switching level 1. The internal buzzer and horn relay can always be acknowledged with the help of the device reset button or a connected external switch (normally open contact). The system status is indicated by LEDs parallel to the LCD display. The parameterization of the GWA takes place via special GWA software (PC).

The plain text display on the control center's LCD display is in German. Access to the super ordinate menu is password protected to prevent improper operation.

A connection to the BMS, e.g. for data logging, can also take place via RS485 Modbus RTU. Please refer to the separate bus protocol for this.

The calibration of the connected gas sensors is carried out at the sensors with a manual control unit HB1.0.

The supply voltage for the GWA M 3.6 is 230 V AC, the connection of an additional uninterruptible power supply (UPS) of 24 V DC is provided.

Device malfunction alert

A device malfunction alert is displayed under the following conditions:

- Power failure
- With active false alarm reduction in the warm-up phase until about 1 Min. after power recovery
- Fuse failure
- Equipment failure
- Break or short circuit of measuring head supply line
- Sensor failure

Power failure alarm suppression

The device has a time delay that is activated after power supply failure, and the alarms which would inevitably arise due to the warming up of the sensors are suppressed. During this time the malfunction alert is displayed.

About 1 minute after application of the power supply, the device is in a state of readiness, as long as there are no other malfunctions.

Start of operation

The device's functions should be checked through a test gas exercise during initial operation.

Maintenance / removal from service

To maintain operational reliability, maintenance at specific intervals is required. The maintenance interval is found on the test label. It is a maximum of 1 year.

If the device is out of operation for longer than 4 weeks, the measuring heads must be tested with test gas after start-up and recalibrated if necessary.

Liability for function or damages

The liability for the device's function passes over to the owner or operator, provided the device is not serviced by Oppermann Regelgeräte GmbH personnel, it is improperly serviced or repaired, or if operation takes place that does not comply with intended use.

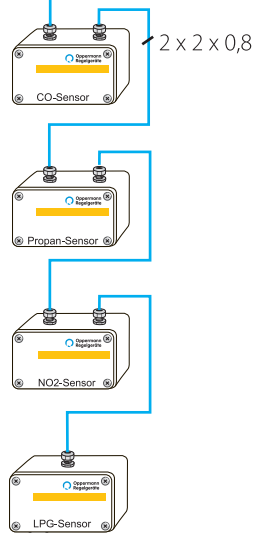
For damage caused by the failure to comply with the above instructions, the company Oppermann Regelgeräte GmbH is not liable.

GWA M 3.6 Gas Warning Device

Sensor

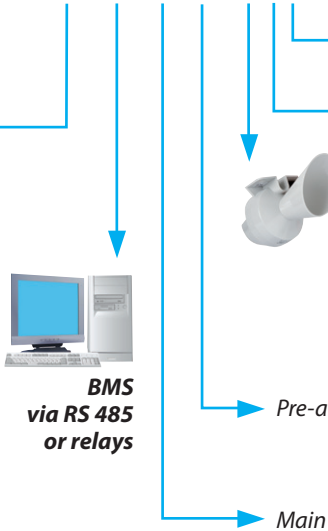
- GMF 4/5.E.CO.08 MOD
- GMF 4/5.E.NO₂.03 MOD
- GMF 4/5.P.C₃H₈.30.MOD
- GMF 4/5.P.CH₄.30.MOD
- GMF 4/5.H.R134a.12.MOD
- GMF 4/5.H.R404a.12.MOD
- GMF 4/5.H.R407a.12.MOD

up to 10 pieces



Sensor-DUO

- GMF-DUO.E/
 - P.CO/LPG-MOD
- up to 9 pieces



Mains 230 V AC
24 V DC

GASALARM

WT warning light

Sensors for connecting to the GWA 3.6 M

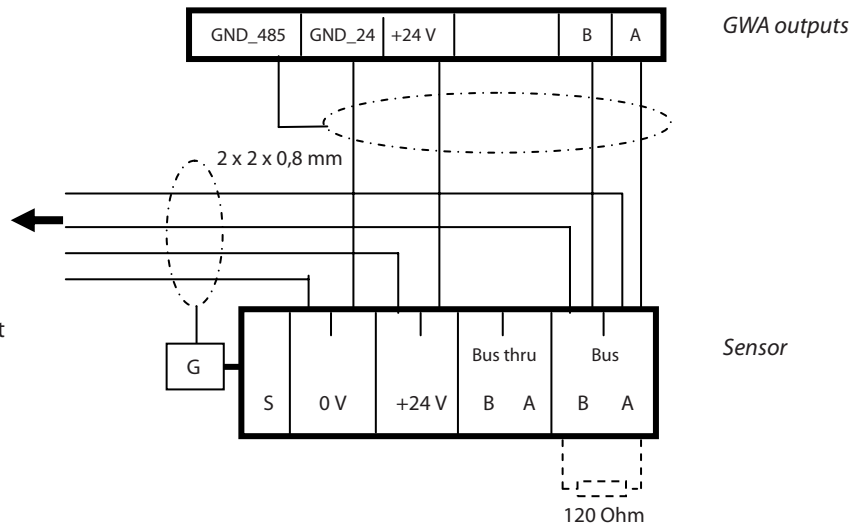
Carbon monoxide CO	Type GMF 4.E.CO.08.MOD	Data sheet No: 38100
Nitrogen dioxide NO ₂	Type GMF 4.E.NO2.03.MOD	Data sheet No: 38101
Propane (LPG) C ₃ H ₈	Type GMF 4.P.C3H8.30.MOD	Data sheet No: 38102
Natural gas (methane), CH ₄	Type GMF 4.P.CH4.30.MOD	Data sheet No: 38103
Combi CO / LPG	Type GMF DUO.E / P.CO / LPG.MOD	Data sheet No: 38104
Freon (R134a, 404a, 407a)	Type GMF 4.H.Rxxxx.12.MOD	Data sheet No: 38105

Note: All sensors are also possible in a version with housing type 5. See data sheet 38106/38107.

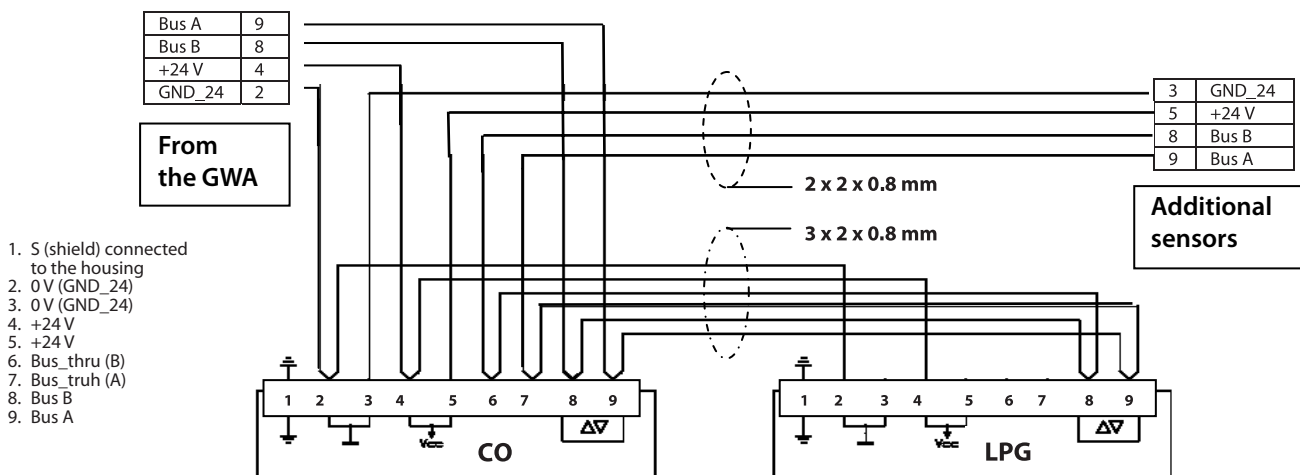
Measuring sensor
Modbus connection

Additional sensors

To avoid reflections when using long cable lengths, the communication lines A+B must be provided with a terminating resistor of 120 ohm at both ends.



Wiring for GMF DUO.E/P.CO/LPG. MOD



1. S (shield) connected to the housing
2. 0 V (GND_24)
3. 0 V (GND_24)
4. +24 V
5. +24 V
6. Bus_thru (B)
7. Bus_thru (A)
8. Bus B
9. Bus A

Measuring sensor type	max. wire	max. sensors
GMF 4.E.CO.08.MOD	500 m	10 Pcs.
GMF 4.E.CNO2.03.MOD	500 m	10 Pcs.
GMF 4.P.C3H8.30.MOD	200 m	10 Pcs.
GMF 4.P.CH4.30.MOD	200 m	10 Pcs.
GMF DUO.E/P.CO/LPG.MOD	180 m	9 Pcs.
GMF 4.H.Rxxxx.12.MOD	500 m	10 Pcs.

When wiring the Modbus (EN 50173) the technical guidelines must be considered.
Line JY (St) Y 2 x 2 x 0.8 mm²



Bus cable

Only wiring cables which comply with the recommendations of the EIA 485 guidelines may be used for the Modbus.

The bus cable must be laid at a distance of at least 20 cm from other lines. It should be installed in a separate, conductive and grounded cable trunking. It is important to ensure that no potential differences between devices can occur on the Modbus (perform equipotential bonding).

The cable shield must be connected to the sensor in the housing (ground screws are available). In the GWA the cable shield is to be contacted to the terminal GND_485/Schirm .

Ensure EMC-compliant wiring:

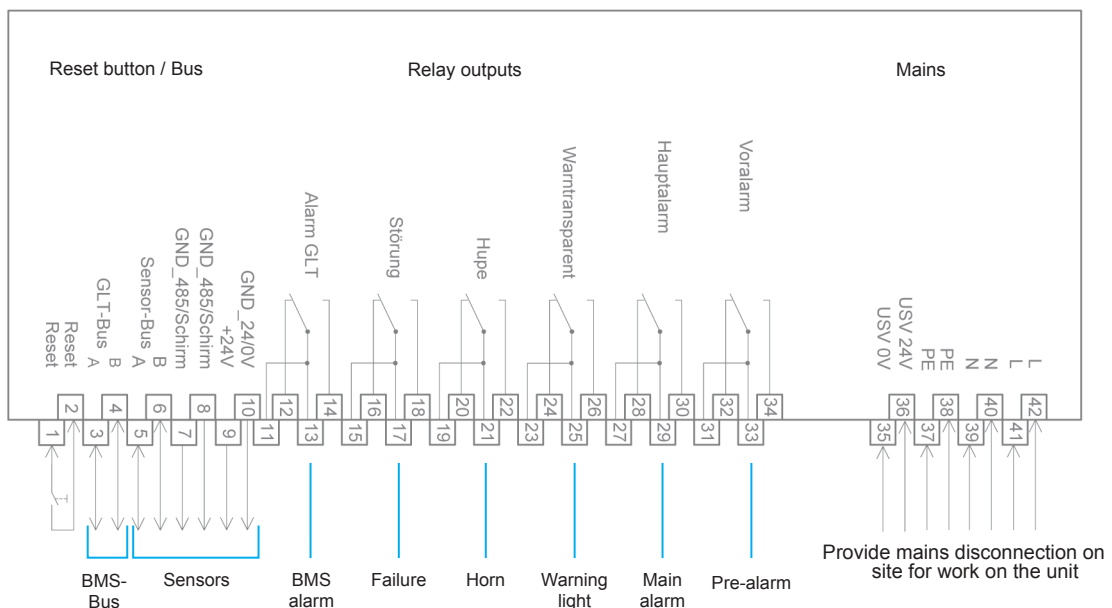
Signal and bus lines are susceptible to interference.

Motor cables tend to be prone to disruptions. Lines that are susceptible to interference and prone to disruption should be placed at the greatest possible distance from one another. The inference immunity of signal and bus cables increases when the cables are laid close to the ground potential. If possible, avoid long cables and make sure that they are installed in areas of less disruption. Avoid long parallel stretches of cable that are susceptible or prone to interference.

Connection diagram

Work on the electrical systems or equipment may only be carried out by a qualified electrician or by an instructed person who is under the guidance and supervision of a qualified electrician, and accordingly regarding the appropriate electrical regulations.

Note: Depiction of the output relay in de-energized (alarm) status. The 24 V DC supply voltage must be secured on site with a 2.5 A fuse.





Ex-Ox-Tox Gasdetectie
Westerdreef 5V
2152 CS Nieuw-Vennep
Telefoon: 0252 620885
E-mail: info@exotox.nl
Website: www.exotox.nl