GfG Instrumentation

Worldwide Manufacturer of Gas Detection Solutions

GMA 200-MT

Operations Manual

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Introduction

For your safety

As with any piece of complex equipment, the GMA 200-MT will do the job it is designed to do only if it is used and serviced in accordance with the manufacturer's instructions. Please protect yourself and your employees by following the instructions in this manual. All individuals who have or will have the responsibility for using and servicing this product must carefully read this manual. The warranties made by GfG with respect to the product are void if functions or parameters are changed without the permission of GfG. They are also void if the product is not used and serviced in accordance with the instructions in this manual. Failures or false alarms caused by interfering gases or electrical signals are not part of the warranty obligation. The above does not alter any statements by GfG regarding warranties, conditions of sale and/or delivery.

Application

The GMA 200-MT6 and GMA 200-MT16 are gas detection controllers for mounting rail assembly. Combined with connected transmitters, they form a fixed gas warning system for the continuous measurement of gas concentrations and are used to issue a warning about combustible gases or vapors in the range below the lower explosion limit and about toxic gases in the ambient air, as well as to measure oxygen.

External relay modules GMA 200-RT are additionally available.

The “GMA200Config” software program is required to configure the controllers GMA 200-MT6 and GMA 200-MT16 and the relay module GMA 200-RT.

Special conditions for safe operation

According to the requirements stipulated, (e.g., by DIN EN 60079-29-1, DIN EN 45544 and DIN EN 50104) at least one alarm threshold with self-locking must be configured for potentially hazardous gas concentrations.

Gas detection controller GMA 200-MT

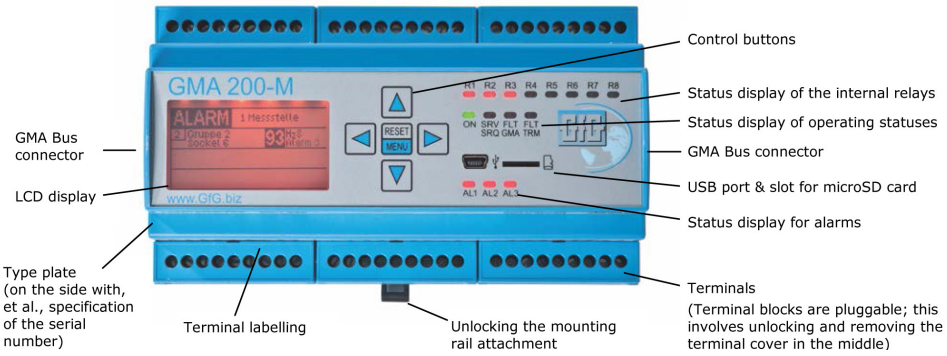
General Description

The fundamental configuration and design of the GMA 200-MT6 and GMA 200-MT16 gas detection controllers ensure flexible, simple and clearly structured operation in industrial and commercial applications for measuring combustible and toxic gases/vapors and oxygen concentrations.

Using the "GMA200Config" software program, it is possible to quickly and easily configure measuring points and relays even when extending already installed GMA200 gas warning systems. Among other things, measuring point designation, transmitter type, gas type and measuring range, as well as three individual or specified alarm thresholds, can be configured for each measuring point.

Device design

Up to 6 transmitters can be connected to the analog inputs of the GMA 200-MT6 and up to 16 transmitters with 4-20 mA or 0.2-1 mA output to the GMA 200-MT16. A microprocessor evaluates the analog input signals of the connected transmitters, and a clearly structured display with LEDs indicate the status of the gas detection controller, each measuring point and the relays.



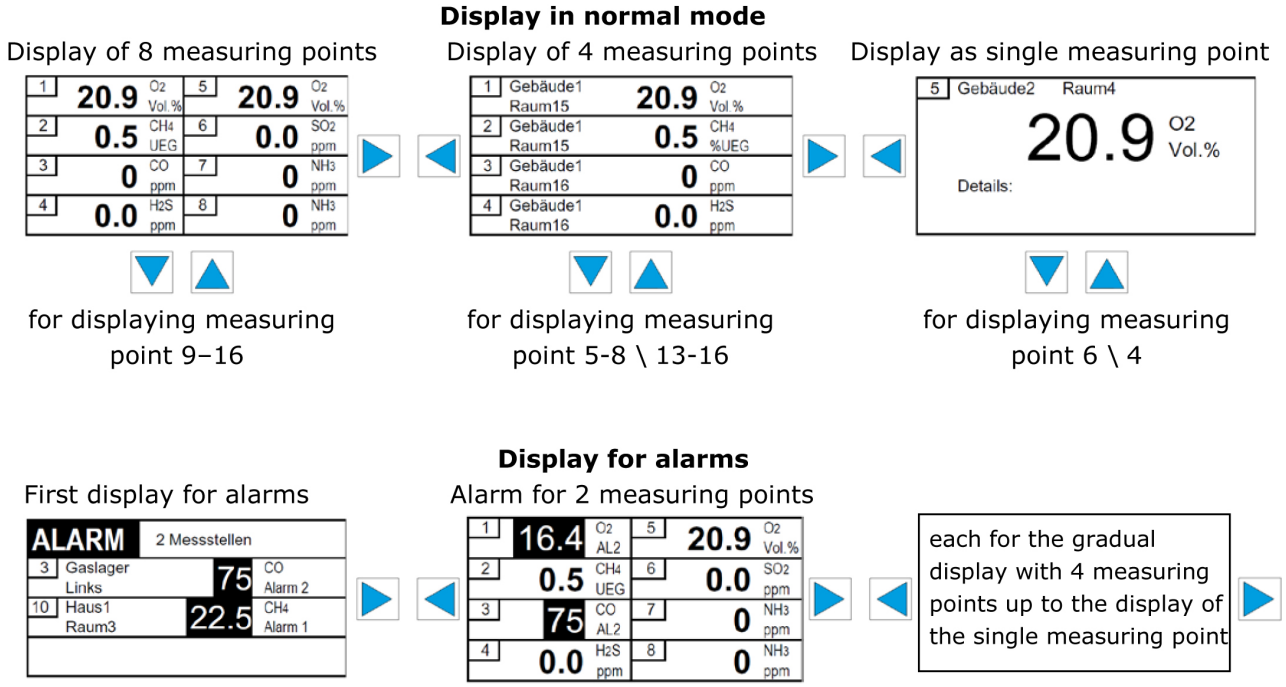
LED status displays

During operation, the LED status displays at the GMA 200 controller indicating the following statuses according to the event:

Event	LED status display
Operating status (ON)	green
Alarm 1 (AL1)	red
Alarm 2 (AL2)	red
Alarm 3 (AL3)	red
Service (SRV/SRQ) required	yellow
Fault (FLT) GMA	yellow
Fault (FLT) TRM	yellow
Relay 1 (R1) – Relay 8 (R8)	red
(Relay activated in case of an alarm or fault)	

Graphical display

The display shows the currently measured values for each measuring point. The display for the measuring points can be optionally set through the menu shown below.



The display is backlit; the light intensity can be increased using any control button.
In the event of a gas alarm or faults, the display lighting is automatically activated with a red background.

Internal relays of the GMA 200- MT

The GMA 200-MT6/ GMA 200-MT16 controllers feature a total of 8 relays. In order to realize specified safety measures and alarms, 6 relays can be configured using the “GMA200Config” software program. An additional relay is available for each controller as a safety-related fault message and maintenance relay.

External relay with the GMA 200-MT relay module

The GMA 200-RT relay module enables the addition of 16 more freely configurable relays. A total of 4 relay modules with 64 additional relays can be managed via the GMA 200-MT controller. The GMA 200-RT relay modules are connected to the GMA 200 controller using the RS-485 digital interface, which also enables the spatial separation of the relay modules (max. 1,000 m).

The relay module is not described in this user manual.

Relay configuration

Configuration of the relays using the “GMA200Config” software offers extensive options, (e.g. the allocation of individual or several measuring points to relays).

Configuration options:

- Single alarm per measuring point and alarm threshold
- Configuration of and / or conjunctions, collective or group alarms
- Fault messages
- Voting functions
- Open-circuit principle / closed-circuit principle

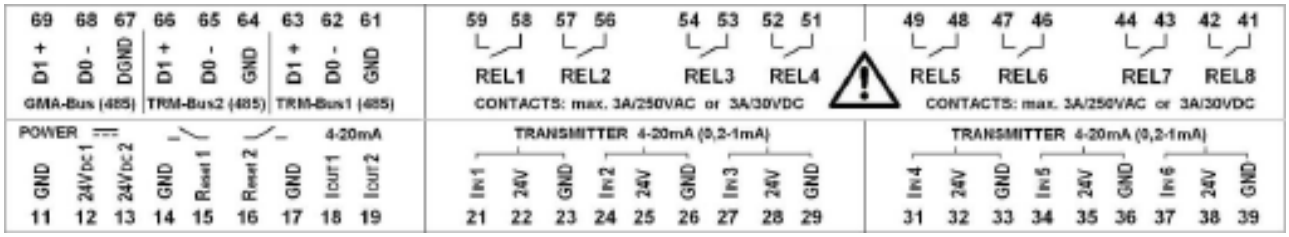
Assembly and installation instructions

Site of installation

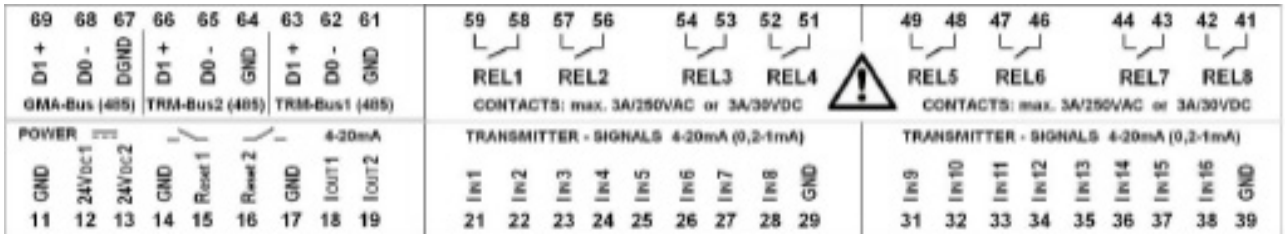
The GMA 200-MT6 and GMA 200-MT16 are designed for assembly on mounting rails in control cabinets or wall-mounted housings and should not be installed in potentially explosive atmospheres. They should be installed in areas with as little vibration as possible.

Electrical connections

The voltage supply and transmitter are connected according to the terminal assignment diagram located at the GMA 200 housing near the terminal covers.



The top terminal assignment applies to the GMA 200-MT6 and the bottom terminal assignment applies to the GMA 200-MT16.



This symbol shown on the terminal assignment diagram means:

General warning, see user manual.

Safety information

Electrical installation must always be carried out to DIN VDE 0100 or a similar country-specific standard. Cables with hazardous live voltages, (e.g. 230 V AC), and cables with non-hazardous live voltages, (e.g. 24 V DC), must be laid separately. The applied cables must be suitable for the connected transmitters or devices.

If maintenance work is carried out on the GMA 200-MT6/ GMA 200-MT16 during operation, please note that hazardous live voltages may be present at the relay terminals Y41-59. Never come into contact with these terminals.

Floating relay contacts

Additional external warning equipment, (e.g. control lamps, acoustic signal transmitters, etc.), can be connected to the terminals Y41-59 (contacts of the relays 1-8). The contacts of the adjacent relays 1&2, 3&4, 5&6 and 7&8 should only be operated with the same voltage.

Hazardous live voltages (e.g. 230 V AC) and protective extra-low voltages (e.g. 24 V DC) should not be connected together at these adjacent relays.

24 V DC voltage supply

The GMA 200-MT6 and GMA 200-MT16 are usually supplied with voltage from an external 24 V DC power supply unit or a 24 V DC power supply network. This voltage is connected to the terminals Y12 (24 V DC1) and Y11 (GND). A second 24 V DC power supply unit or a second 24 V DC power supply network can be optionally connected to the terminals Y13 (24 V DC2) and Y14 (GND) to ensure a redundant voltage supply. The power supply unit should comply with EN60950-1 or feature reinforced or double insulation between the main supply circuit and output voltage circuit similar to devices of protection class II (protective insulation).

If the GMA 200-MT6/ GMA 200-MT16 is operated in a 24 V DC power supply network, for safety reasons it must be safety extra-low voltage (SELV) or protective extra-low voltage (PELV). In addition to the same requirements as for the previously described power supply units that apply to the 24 V DC power supply network.

Connection of transmitters with an analog interface

When using the GMA 200-MT6, six transmitters with analog 4-20 mA or 0.2-1 mA output signals can be connected at terminals Y21-39. Three terminals (IIN, 24 V, GND) are available for each transmitter. The wire cross section to be used depends on the power consumption of the transmitters and the length of the cable. Please refer to the user manual of the connected transmitters for detailed information.

When using the GMA 200-MT16, only the signal lines of 16 transmitters with an analog 4-20 mA or 0.2-1 mA interface can be connected to the terminals Y21-38. Only one terminal (IIN) is available per transmitter; the power supply of the transmitters must therefore occur separately and be connected through external terminals.

Connection of transmitters with a digital interface (RS485)

Transmitters with a digital interface (RS485) can be connected to terminals Y61-63 (TRM- Bus1) or Y64-66 (TRM Bus2). Three terminals (GND, D0-, D1+) are available per transmitter bus. The 24 V power supply of the transmitters is connected according to the type of GMA 200.

When using the GMA 200-MT6, available 24 V terminals (Y22, Y25, Y28, Y32, Y35 or Y38) can be used for the 24 V transmitter power supply. The total power consumption of all connected transmitters should, however, not exceed 900 mA. Please refer to the user manuals of the connected transmitters for detailed information. The wire cross section to be used depends on the power consumption of the transmitters and the length of the cable.

When using the GMA 200-MT16, the 24 V DC power supply of the transmitters must occur separately and be connected through external terminals.

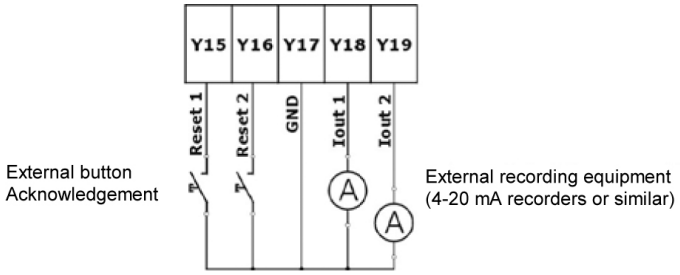
Connection of further devices with a digital interface (RS485)

In order to extend the GMA 200-MT6 or GMA 200-MT16 with additional relays, further relay modules can be connected to the terminals Y61-63 (TRM Bus1), Y64-66 (TRM Bus2) or Y67-69 (GMA Bus) or at the GMA Bus connector. If the GMA Bus is used for this extension, it must be configured as the master (addr.0).

In order to further process the measuring data of the GMA200-MT6 or GMA 200-MT16, a central unit or a respective Bus interface can be connected to the terminals Y67-69 (GMA Bus) or the GMA Bus connector. In this case, the GMA Bus connection must be configured as the slave (addr.1...255).

Using the alarm acknowledgement inputs

Two configurable alarm acknowledgement inputs (Reset1, Reset2) are located at the terminals Y15 and Y16 for connecting external acknowledgement buttons.



This type of input must be connected to GND to acknowledge alarms.

Using the 4 – 20 mA current outputs

Two configurable 4-20 mA power outputs (Iout1, Iout2) are located at the terminals Y18 and Y19. External recording equipment or recorders can be connected to these outputs to GND (see the figure above).

Commissioning

Commissioning can commence after assembling the GMA 200-MT6 or GMA 200-MT16 as well as all the transmitters and additional control modules, and once the voltage supply has been connected.

The gas warning system must be inspected and commissioned by a qualified GfG Representative after installation. Inspections must be carried out in accordance with the manufacturer's instructions and executed by a fully trained and qualified GfG Representative. Qualified GfG Representatives are available upon request.

Operating instructions

Measuring mode

Normal measuring mode of the GMA 200 is achieved approximately 10 seconds after connection to the voltage supply. Device readiness is indicated by a short optical signal.

Depending on the type of transmitter and its warm-up period, allocation to the respective measuring point "SRT" takes place in the display during the warm-up period. The warm-up period is usually between 1 and 2 minutes depending on the type of transmitter.

In normal measuring mode, all LEDs are inactive and the operation display “ON” lights up green. All configured measuring points (max. 8 measuring points, see Graphical Display diagram, and changes of the Display) are shown in the display.

Alarms

Three alarm thresholds can be configured within the measuring range for each measuring point. If the alarm thresholds are exceeded or not achieved, the alarm LEDs AL1, AL2, AL3 (collective alarm display) and the integrated acoustic alarm are activated. Detailed information on the gas concentration level, the alarm status (AL1, AL2 or AL3) of the respective measuring point are simultaneously shown in the Graphical Display shown previously in this manual.

The configured relays and the relay LEDs R1-R6 (typical configuration) are additionally activated according to the configuration.

Alarm configuration

The following settings can be configured for each measuring point using the “GMA200Config” software:

Alarm threshold Alarm 1 (can also be changed in the Main menu / Service menu)
Alarm threshold Alarm 2 (can also be changed in the Main menu / Service menu)
Alarm threshold Alarm 3 (can also be changed in the Main menu / Service menu)
Alarm exceeded, self-locking
Alarm exceeded, non-self-locking
Alarm not achieved, self-locking
Alarm not achieved, non-self-locking
Alarm with switch-on delay (up to max. 3 minutes)
Alarm with switch-off delay (up to max. 60 minutes)

Alarm acknowledgement (Reset)

Non-self-locking alarm:
A non-self-locking alarm is automatically reset if the gas concentration is below (above) the alarm threshold and the assigned relay(s) is / are deactivated.

Self-locking alarm:
A self-locking alarm remains even if the gas concentration is below (above) the alarm thresholds. The alarm and the assigned relay(s) can only be acknowledged if the alarm threshold has not been achieved (has been exceeded).

Acknowledgeable alarm relays:
Relays can be configured as acknowledgeable and are reserved for connection to acoustic/optical messages only. Acknowledgement can occur using the Reset button at the controller module. Alternatively, acknowledgement is also possible using external reset inputs.

Relays

The GMA 200-MT is equipped with 6 programmable relays (normally open contact) which can be configured using the “GMA200Config” software:

- Single alarm per measuring point and alarm threshold
- Fault messages
- And/or conjunctions
- Collective or group alarms
- Voting function, (e.g. 2 of 3 measuring points)
- Open-circuit principle / Closed-circuit principle

Furthermore, two additional relays are available as a safety-related fault message and for service or maintenance messages.

Up to four external relay modules (GMA 200–RT) can be used for extension purposes.

Faults

Fault messages are categorized as GMA controller faults and transmitter measuring point faults.

FLT/TRM Transmitter or measuring point fault:
A fault can be caused, (e.g., by a defective signal line or a defective transmitter).

Note: Observe the respective information for the connected transmitter in the user manual.

FLT/GMA GMA controller fault
Possible causes:

- Defective electronics
- Operating voltage has not been achieved
- Communication error to the external GMA modules (relay module GMA 200-RT)
- One or more defective internal relays or external relays (relay module GMA 200-RT)
- Program error (error in the parameters, check sums, etc.)

Please contact the GfG Service Center in case of faults.

Data logger function (configured using the "GMA200Config" software)

The GMA 200 gas warning system can be equipped with a microSD card for saving measured values as well as alarm events and faults.

The following is permanently recorded at individually configured intervals:

Mean values – recording intervals:	5/10/15/20/30 seconds or 1/2/3/5/10/15/20/30/60 minutes
Instantaneous values – recording intervals:	5/10/15/20/30/60 seconds

Depending on the configuration, the measured values are saved under a file name according to the calendar:

- Daily (file name: Year/Month/Day/Type*) (e.g. 13-0622M.txt)
- Weekly (file name: Year/W/Calendar week) (e.g. 13-W24M.txt)
- Monthly (file name: Year/Month/Type*) (e.g. 13-06M.txt)
- Annually (file name: Year/Type*) (e.g. 13-00M.txt)

*M = Mean value / A = Instantaneous value in case of an alarm

The SD card must be removed and read externally.

Important information: Prior to removing the SD card, stop or deactivate the data recording (also see the additional information on the service menu).

- Activate the GMA 200 menu by pressing and holding RESET MENU

- Select "Status Datalogger"; to acknowledge, press ▷

- Select "Stop Rec" (pause function) by pressing RESET MENU

- The status (available storage capacity) is also displayed in this menu item.

Proceed as follows to deactivate the data recording:

- Select "Service Menu" via ▽

- Enter the password (reference under Service Menu on page 13)

- Select "Datalogger" ▽ and acknowledge via RESET MENU

  . Activate the measured value recording ▷

  . Deactivate the measured value recording RESET MENU

- Press ◁ repeatedly to exit the service menu

Analog outputs

A 4-20 mA output can be configured for 2 measuring points for transfer, (e.g., to a control center or for external measured value recording).

Keyboard and menus

Alarms are acknowledged and the main menu is accessible from the keyboard at the controller.

Operation and menu navigation

Menu navigation occurs by using the control keyboard at the controller:

RESET / MENU Function when pressed:
Alarm acknowledgement for self-locking alarms, main menu activation.

 Function when pressed:
Access detailed information in the main menu, change the measured value display to single measuring point display, toggle from the alarm display function to display, select cursor position for entering the password in the service menu.

△ Function when pressed:
Toggle to menu items in the main menu, with single measuring point display to single view of other measuring points, toggle to total display (1-8, 9-16), select numerical values for entering the password in the service menu.

 Function when pressed:
Exit the detailed information in the main menu, exit the main menu, toggle the display to display of all measuring points, toggle the display function to alarm display function, select cursor position for entering the password in the service menu.

▽ Function when pressed:
Toggle to menu items in the main menu, with single measuring point display to single view of other measuring points, activate the auto-scroll function (10 sec. or 10 min., automatic change-over of the display), select numerical values for entering the password in the service menu.

Main menu

Press and hold down the RESET / MENU button to access the main menu.

The main menu is divided into:

- Status GMA
- Status data logger
- Info GMA
- Info measuring points
- Info relays
- Info analog outputs
- Tests (test LCD display, LED/horn, external switch)
- Service menu (password protected)

User navigation in the main menu occurs by using the keyboard at the GMA 200 controller.

Service menu

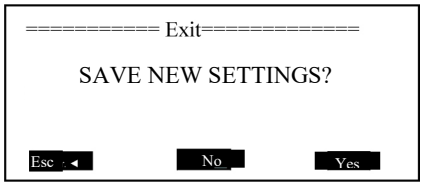
Access to the service menu is password protected and set to "0000" as standard upon delivery.

Access to the service menu is locked if the controller is connected to the "GMA200Config" software. The connection must be disconnected first. The configuration cannot be changed if the service menu is active at the same time.

The service menu is divided into:

- System settings: Time/Date, Password, Language, BUS settings, Display contrast, Horn volume
- Data logger SD card: REC activation and deactivation of measured value recording
- Measuring points: Change alarm thresholds, carry out fine adjustments, lock (deactivate the measuring points)
- Relays: Test (electrical test of the relay function), lock (deactivate the relays), trigger timer
- Analog outputs: Test, measuring point assignment

If settings are changed in the service menu, the following prompt is displayed when exiting the service menu:



Note: Safety-relevant changes should only be carried out by an authorized GfG Representative.

Appendix

Cleaning and care

External soiling of the device housing can be removed using a cloth dampened with water when the device has no power source. Do not use solvents or cleaning agents!

Maintenance and service

Maintenance and service include regular visual inspections, functional testing and system checks, as well as repairs to the gas warning system.

Visual inspection

Visual inspections should be carried out on a regular basis with a maximum interval of once a month and include the following tasks:

- Check the operation display and the status messages, (e.g. operation display "On", alarm and fault displays "Off")
- Check for mechanical damage and external soiling

Functional testing

Functional testing can be carried out at specific intervals, which depend on the gas hazard being monitored.
It includes the following tasks:

- Visual inspection as noted above
- Testing and evaluation of the measured value displays
- Triggering the alarm thresholds
- Triggering the test functions for display elements as well as optical and acoustic signal transducers, without triggering switching functions
- Inspection of saved messages, faults and maintenance requirements

System check

The system check must be carried out at regular intervals. The time between intervals should not exceed 1 year. It includes the following tasks:

- Functional testing as noted above
- Inspection of all safety functions, including triggering of switching functions
- Calibration of controller
- Inspection of signaling and horn

Repair

All repair and replacement tasks should only be carried out by the manufacturer and persons who have been authorized to do so by the manufacturer – GfG Instrumentation. Only original spare parts and original modules inspected and approved by the manufacturer should be used.

For additional questions on the product or in case of failure and problems please contact:

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Ann Arbor, MI 48108
Phone: (734) 761-5987
Fax: (734) 769-1888
E-Mail: info@gfg-inc.com

Parts and accessories

Description	Part Number
48 W power supply unit for mounting rail assembly (input: 100-240 V AC output: 24 V DC / 2.0 A)	4024-020
76.8 W power supply unit for mounting rail assembly (input: 100-240 V AC output: 24 V DC / 3.2 A)	4024-032
120 W power supply unit for mounting rail assembly (input: 100-240 V AC output: 24 V DC / 5.0 A)	4024-050
GMA200-BC terminals for GMA Bus connector	2200200
MicroSD card 2 GB	3005-MSDC
Spare fuse T 500 mA (F1 for GMA200) 10 pack	2200301
Spare fuse M 1 A (F2 for transmitter supply) 10 pack	2200302
Flat ribbon cable for GMA200-MT/-RT (L=22 cm)	2200309
Terminal cover for GMA200-MT/-RT (9-hole)	2200310

Technical data

Type designation:	**GMA 200-MT6**	**GMA 200-MT16**
Display & control elements	2.2" graphical display and 5 buttons 15 status LEDs for alarms, operating and relay statuses	
Ambient conditions		
For storage:	-13..+140°F / -25..+60 °C | 0..99 % RH (recommended 0...+86°F / +30 °C)	
For operation:	-4..+122°F / -20..+50 °C | 0..99 % RH	
Site of installation :	in a control cabinet or in a wall housing up to a height of 6,500 feet / 2,000 m above sea level	
Power supply		
Operational voltage:	24 V DC (20-30 V DC permissible)	24 V DC (20-30 V DC permissible)
Power consumption:	max. 5 W (without transmitter) max. 30 W (with transmitters)	max. 5 W
Fuses:	F1= T 500 mA (for GMA200) F2= M 1 A (for transmitter)	F1= T 500mA
Transmitter connections		
Supply:	24 V DC (20-30 V DC see above) 6x 150 mA or Itotal= 900 mA with other configuration	not possible
Analog signals IN:	6x 4-20 mA or 0.2-1 mA	16x 4-20 mA or 0.2-1 mA
	(resistance approx. 50..100 ., Imax= 70 mA permanently / 500 mA temporarily)	
Digital signals TRM Bus 1+2:	RS485; half-duplex; max. 38,400 Baud	
RS485 connections		
TRM Bus 1+2:	RS485; half-duplex; max. 38,400 Baud (for GMA 200 relay modules only)	
GMA Bus:	RS485; half-duplex; galvanically isolated; max. 230,400 Baud (for GMA 200 relay modules, control center, PC, PLC or Gateway)	
Relay outputs		
Contacts:	8 relays each with a normally open contact	
Contact rating:	3 A / 250 V AC or 3 A / 30 V DC	
Insulation distances:	Basic insulation between the relays: 1&2, 3&4, 5&6, 7&8 Double insulation between the relays: 2&3, 4&5, 6&7	
Analog outputs		
OUT 1+2:	4-20 mA (resistance max. 560 .)	
Alarm acknowledgement inputs		
Reset 1+2:	0-3 V DC (alarm acknowledgement occurs at contact with GND; U_{MAX}= 30 V DC)	
USB connection	Mini USB port for device configuration via PC	
Housing		
Attachment:	on mounting rail TS35 according to DIN 60715	
Protection class:	IP20	
Material:	Plastic	
Weight:	approximately 13 oz. / 370 g	
Dimensions:	6.4 x 3.8189 x 2.4409 inches / 162 x 97 x 62 mm (W x H x D)	
Connection cables		
Terminal blocks:	0.8..2.5 mm2 cross section	
Cable:	2-4-wire 0.5-1.5 mm2 LiYY, NYM (for GMA 200 supply – 18 GA) 2-4-wire 0.5-1.5 mm2 LiYY, LiYCY (for transmitte r – 16-20 GA) 2-wire 1 x 2 x 0.22 mm2 BUS-LD (for GMA Bus with a length >33' / 10 m – 16-18 GA)	
Approvals/Tests		
Electromagnetic Compatibility:	EN 50270:2015 (interference emission: type class I, interference immunity: type class II)	
Electrical safety:	EN 61010-1:2010 (Pollution degree 2, overvoltage category III for relay contacts)	
Functional safety:	EN 50402:2017; IEC 61508-1 to -7:2010 (SIL2/SC3)	
Functional safety:	EN 50271:2018; EN 62061:2016; ISO 13849-1:2015	
Metrological suitability:	EN 60079-29-1:2016 (EX); EN 50104:2010 (OX); EN 45544-1/-2/-3:2015 (TOX)	

EG-Konformitätserklärung

GfG Gesellschaft für Gerätebau mbH

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GMA200-MT6
GMA200-MT16

Erstellt: 12.04.2013 Geändert:

Die GfG Gesellschaft für Gerätebau mbH entwickelt, produziert und vertreibt Gassensoren und Gaswarnanlagen unter Anwendung eines **Qualitätsmanagementsystems** nach DIN EN ISO 9001 Überwacht wird die Produktion von elektrischen Betriebsmitteln der Gerätegruppen I und II, Kategorien M1, M2, 1G und 2G für Gassensoren, Gasmessgeräte, Gaswarnanlagen in den Zündschutzarten Druckfeste Kapselung, Erhöhte Sicherheit, Vergusskapselung und Eigensicherheit mit deren Messfunktion mit Hilfe eines **Qualitätssicherungssystems** – Zertifikats-Nr. BVS 03 ATEX ZQS / E 187 - durch die benannte Stelle, DEKRA EXAM GmbH.

Die Gasmesscomputer der Serie **GMA200-MT** entsprechen der **Richtlinie 2004/108/EG** für die elektromagnetische Verträglichkeit und der **Richtlinie 2006/95/EG** für Niederspannungen.

Kennzeichnung CE

Die Richtlinien wurden unter Berücksichtigung der folgenden Normen eingehalten:

- **Elektromagnetische Verträglichkeit**

  - Elektrische Geräte für die Detektion und Messung von brennbaren Gasen, toxischen Gasen und Sauerstoff. EN 50270
    Störaussendung: Typ 1
    Störfestigkeit: Typ 2

- **Elektrische Sicherheit**

  - Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte. Allgemeine Anforderungen. EN 61010-1

Mit der Prüfung und Bewertung der elektromagnetischen Verträglichkeit wurde das EMV Messlabor EM TEST GmbH, Kamen beauftragt. Mit der Prüfung und Bewertung der elektrischen Sicherheit wurde das Ingenieurbüro du.tronic Consulting & Engineering, Ratingen beauftragt.

Die Sicherheitshinweise in der Betriebsanleitung 222-000.20 sind zu beachten.

Dortmund, den 12.04.2013

Dipl. Kfm. H-J. Hübner
Geschäftsführer

Certificate

No.: 968/FSP 1324.01/17

Product tested	Gas Detection Controller	**Certificate holder**	Gesellschaft für Gerätebau mbH Klönnestr. 99 44143 Dortmund Germany
Type designation	GMA200-MT6, GMA200-MT16, GMA200-MW4, GMA200-MW16		
Codes and standards	IEC 61508 Parts 1-7:2010 EN 50402:2017		EN ISO 13849-1:2015 IEC 62061:2015
Intended application	The gas detection controllers GMA200-M... comply with the requirements of the product standard EN 50402, IEC 61508 and IEC 62061 for SIL 2 and PL d acc. EN ISO 13849-1. They can be used in a single channel architecture (HFT=0) up to SIL 2 / PL d and in a redundant HFT=1 architecture up to SIL 3 / PL e.		
Specific requirements	The instructions of the associated operation manual shall be considered. In safety applications the fault relay resp. the GMA-status register has to be evaluated in addition to the alarm relay. In SIL 2 / PL d applications and higher the relay contact current has to be limited to 2 A. In machinery applications the alarm relays have to be configured following the idle current principle. Alternatively a redundant power supply may be used. The demand rate of the safety function shall not exceed 75 demands a year.		

Valid until 2022-10-04

The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/FSP 1324.01/17 dated 2017-10-04.
This certificate is valid only for products which are identical with the product tested. It becomes invalid at any change of the codes and standards forming the basis of testing for the intended application.

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit
Am Grauen Stein, 51105 Köln
Certification Body Safety & Security for Automation & Grid

Köln, 2017-10-04

Dipl.-Ing. Stephan Häb

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Translation

EU-Type Examination Certificate

2 **Device with a measuring function for explosion protection**
Directive 2014/34/EU

3 EU-Type Examination Certificate Number: **BVS 19 ATEX G 001 X**

4 Product: **GMA200**

5 Manufacturer: **GfG Gesellschaft für Gerätebau mbH**

6 Address: **Klönnestraße 99, 44143 Dortmund, Germany**

7 This product and any acceptable variation thereto are specified in the annex to this certificate and the documents therein referred to.

8 DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential test report PFG-no. 41300419P.

9 The Essential Health and Safety Requirements with respect to the measuring function for explosion protection are assured in consideration of:

EN 60079-29-1:2016
EN 50104:2010
EN 50271:2018

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

Ex II (2) G

DEKRA Testing and Certification GmbH
Bochum, 2019-05-13

Signed: Kilisch
Managing Director

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
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13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 19 ATEX G 001 X

15 **Product description**

15.1 **Subject and type**

Control unit GMA200

15.2 **Description**

The control unit GMA200, when operated with transmitters with a 0.2-1 mA or 4-20 mA interface or a digital interface, is a fixed system for the measurement of flammable gases or vapours, of oxygen or of toxic gases. The control unit is intended for wall mounting or rail mounting. The control unit is not suitable for use in potentially explosive atmospheres.

15.3 **Parameters**

not applicable

15.4 **Measuring function for explosion protection**

This EU-type examination certificate covers:

- Control unit GMA200 with the following versions:
  - Gas detection controller GMA200-MW4
  - Gas detection controller GMA200-MW16
  - Gas detection controller GMA200-MT6
  - Gas detection controller GMA200-MT16

  with software versions V2.10 (GMA200 Main) and V2.10 (GMA200 Display)
- when operated with transmitters with a 0.2-1 mA or 4-20 mA interface (2-wire or 3-wire) the measurement of the flammable gases and vapours which are listed in the EC- or EU-type examination certificate of the transmitter
- when operated with transmitters with a 0.2-1 mA or 4-20 mA interface (2-wire or 3-wire) the measurement of oxygen (measurement of inertisation) according to the EC- or EU-type examination certificate of the transmitter
- use of the following outputs for safety relevant purposes:
  - relays
  - GMA-Bus
- use of the following options and accessories:
  - PC-Software GMA200Config V2.10.10
  - GMA200Visual V1.27.00

The EU-type examination includes the following deviations from the operating conditions required by EN 60079-29-1 or EN 50104, respectively:
- Extended range of temperature at operation (GMA200-MW4 / -MW16): -20 °C to +55 °C
- Deviating range of temperature at operation (GMA200-MT6 / -MT16): -20 °C to +50 °C

16 **Test report**

PFG-no. 41300419P of 2019-05-13

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Appendix to

Type Examination Certificate

PFG 19 G 002 X

Description of the gas detector

The control unit GMA200, when operated with transmitters with a 0.2-1 mA or 4-20 mA interface or a digital interface, is a fixed system for the measurement of flammable gases or vapours, of oxygen or of toxic gases. The control unit is intended for wall mounting or rail mounting. The control unit is not suitable for use in potentially explosive atmospheres.

Type of protection

not applicable

Special conditions for use

- When using 0.2-1 mA or 4-20 mA transmitters, pay particular attention to the followings:
  - The specifications of the 0.2-1 mA or 4-20 mA interface
  - Behaviour with currents less than 0.2 mA or 4 mA, respectively
  - Behaviour with currents in excess of 1 mA or 20 mA, respectively
- The operation with GfG-transmitters connected to the TRM-bus is permitted but not subject of this EU-type examination certificate with respect to the measuring function of the control unit with such transmitters
- Configure the alarm with the highest significance for safety as latching for each channel.
- Configure relays for safety-related switching operations in such a way that they cannot be reset while the alarm condition is present.
- Time delayed alarms should not be used for safety related purposes. If their use is unavoidable, the alarm delay time shall be set to the minimum value that is feasible for the required operation. Take the maximum possible rate of increase of gas concentration into account when determining the alarm delay time.
- The function "Time control" for relays is not subject of this type examination certificate.
- Measurement of oxygen:
  - Do not set the parameter "resolution" above 0.1 %(v/v).
  - Do not set the parameter "Fault message when Measure underrange" below -5 % of the upper limit of the measuring range.
  - Do not set the parameter "Tolerance band" above 2 % of the upper limit of the measuring range.
- Operation according to EN 45544-2:
  - GMA200 is suitable for use with 4-20 mA transmitters where the output at the limit value is between 4.48 mA and 12 mA.
  - Do not set the parameter "resolution" above 1 % of the upper limit of measurement and not above 5 % of the limit value. The lower limit of measurement is 0.6 % of the upper limit of measurement in this case. It decreases if the parameter "resolution" is set to a smaller value.
  - Do not set the parameter "Tolerance band" above the lower limit of measurement (calculated for the combination of GMA200 and the connected transmitter).

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- Operation according to EN 45544-3:
  - Do not set the parameter "resolution" above 1 % of the upper limit of measurement.
  - Do not set the parameter "Tolerance band" above 5 % of the upper limit of measurement.

Additional Information

- The measuring function of the control unit for flammable gases according to directive 2014/34/EU is subject of the EU-type examination certificate BVS 19 ATEX G 001 X.
- This type examination certificate covers:
  - Control unit GMA200 with the following versions:
    - Gas detection controller GMA200-MW4
    - Gas detection controller GMA200-MW16
    - Gas detection controller GMA200-MT6
    - Gas detection controller GMA200-MT16

    with software versions V2.10 (GMA200 Main) and V2.10 (GMA200 Display)
  - use of the following outputs for safety relevant purposes:
    - relays
    - GMA-Bus
  - use of the following options and accessories:
    - PC-Software GMA200Config V2.10.10
    - GMA200Visual V1.27.00
- The type examination includes the following deviations from the operating conditions required by EN 45544-1 or EN 50104, respectively:
  - Extended range at the test Unpowered Storage: -25 °C to +60 °C
  - Extended range of temperature at operation (GMA200-MW4 / -MW16): -20 °C to +55 °C
  - Deviating range of temperature at operation (GMA200-MT6 / -MT16): -20 °C to +50 °C

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2019-05-13

Managing Director

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GfG Instrumentation
Worldwide Manufacturer of Gas Detection Solutions

7004-200 Rev. 6 (03/23/21)