



GfG Instrumentation

Worldwide Manufacturer of Gas Detection Solutions

GMA 200-RT

Operations Manual

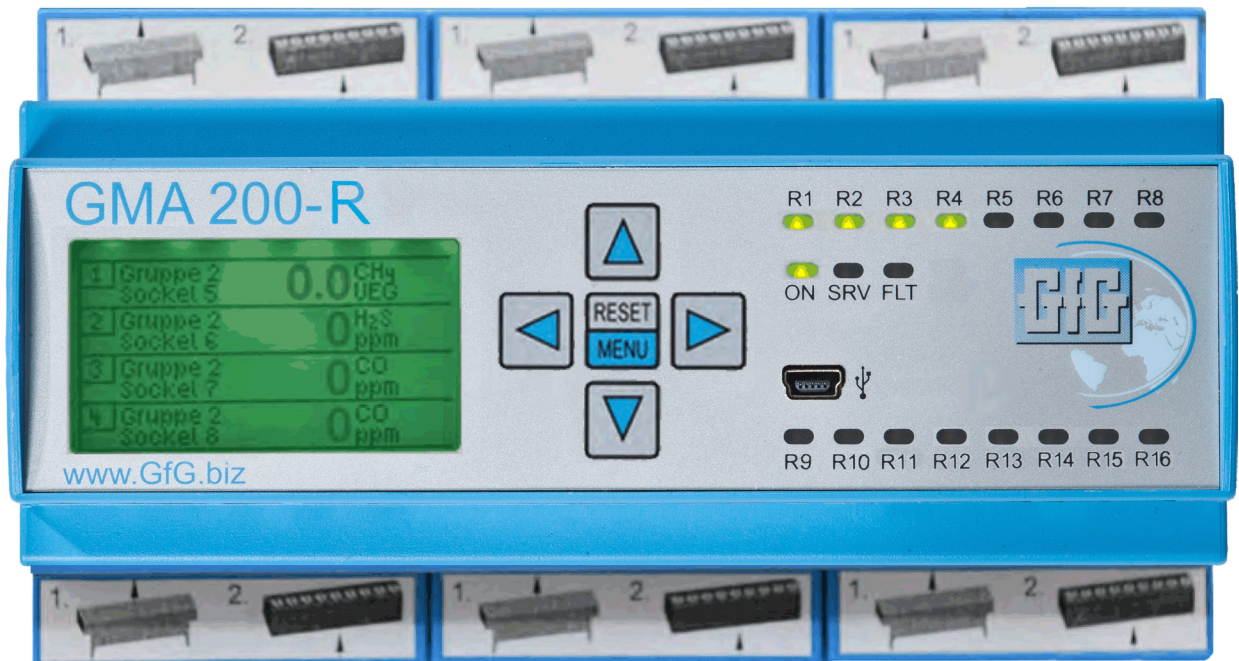


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Introduction

For your safety

As with any piece of complex equipment, the GMA 200-RT 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

GMA 200-RT and GMA 200-RTD are relay modules in the rail housing mounting which can be used as an extension of the relay outputs to the gas detection controller (e.g. GMA 200-MT6). The GMA 200-RT relay modules are connected directly to the gas detection controller by a plug-in connection or a bus cable.

The "GMA200Config" software program is required to configure the controller GMA 200-MW16 and the relay module GMA 200-RT.

Special conditions for safe application

Important information:

The GMA 200-MT/-MW gas detection controllers and the configuration software "GMA200Config" are not described in this user manual.

Relay modules GMA 200-RT/-RTD

General description

The fundamental configuration and design of the GMA 200-MT/-MW gas detection controllers in combination with the GMA 200-RT/-RTD relay modules ensure flexible, simple and clearly structured operation in industrial and commercial applications for measuring combustible and toxic gases/vapors and oxygen concentrations.

In addition to the internal relays of the gas detection controller of the GMA 200-MT/-MW, the GMA 200-RT/-RTD relay modules can be used for extension purposes. The GMA 200-RT/-RTD relay modules are connected directly to the gas detection controller by a plug-in connection or a bus cable.

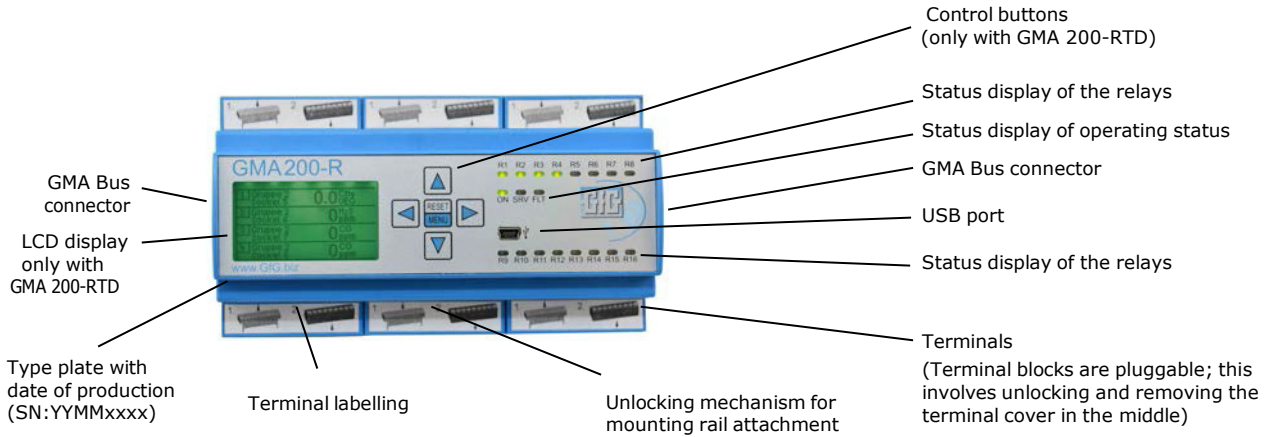
The relays are managed through the microprocessor of the GMA 200-MT/-MW gas detection controller and activated in the event of an alarm or a fault.

The GMA 200-RTD relay module is equipped with an integrated graphical display.

Device design

The GMA 200-RT/-RTD relay module enables the addition of 16 freely configurable relays. A total of 4 relay modules with 64 additional relays can be managed from the GMA 200-MT/-MW controller. The GMA 200-RT relay modules are connected to the GMA 200-MT/-MW controller by the digital interface RS485, which also enables the spatial separation of the relay modules (max. 1,092 yards / 1,000 m).

The optionally available display at the GMA 200-RTD relay module enables the local display of measured values, which are transferred by a GMA 200- MT/-MW gas detection controller through the digital interface.



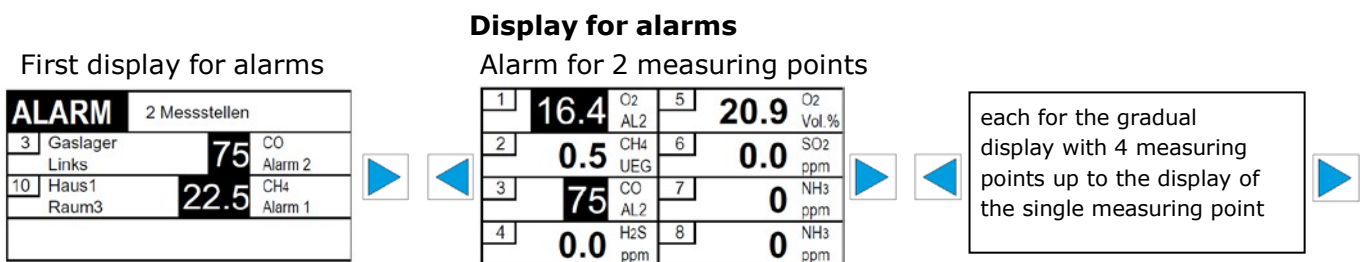
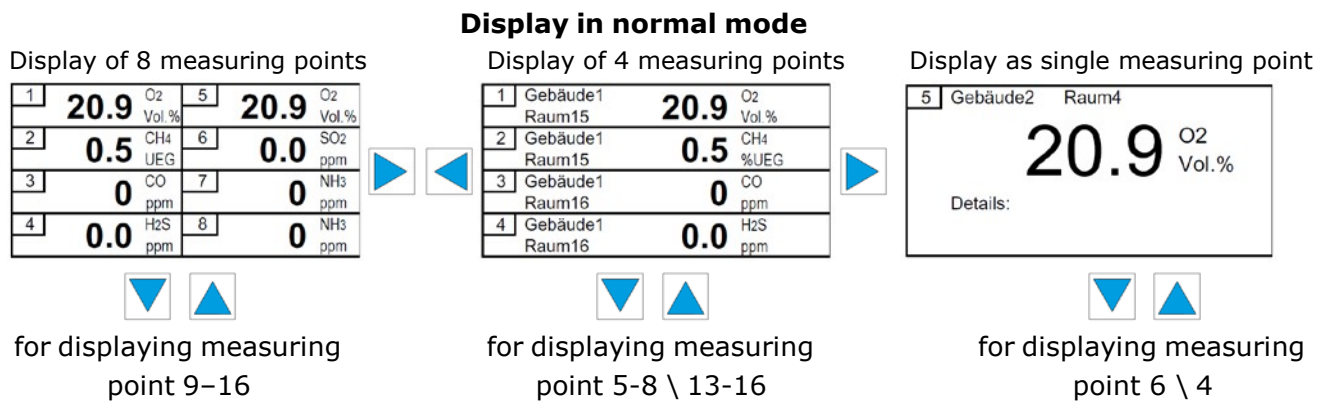
LED status displays

During operation, LED status displays at the GMA 200-RT/-RTD relay module indicate the following statuses according to the event:

Event	LED status display
Operating status (ON)	green
Service (SRV) required	yellow
Fault (FLT)	yellow
Relay 1 (R1) – Relay 16 (R16)	red
(Relay activated in case of an alarm or fault)	

Graphical display at the relay module GMA 200-RTD

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.

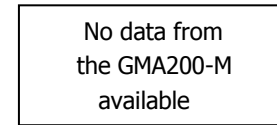


The display is backlit; the light intensity can be increased using any control button. In the event of a gas alarm or faults, the display lighting is automatically activated with a red background.

General information about the measured value display

Operation of the graphical display is locked:

- If the keyboard at the GMA 200-MT/-MW gas detection controller is/has been operated at the same moment or within the last minute.
- When activating the main menu or using the service menu of the GMA 200-MT/-MW gas detection controller, the connection to the relay module is interrupted and shown on the display.



After the display is shown and one of the arrow buttons has been pressed, the display changes to the measured value display and the display can be operated.

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

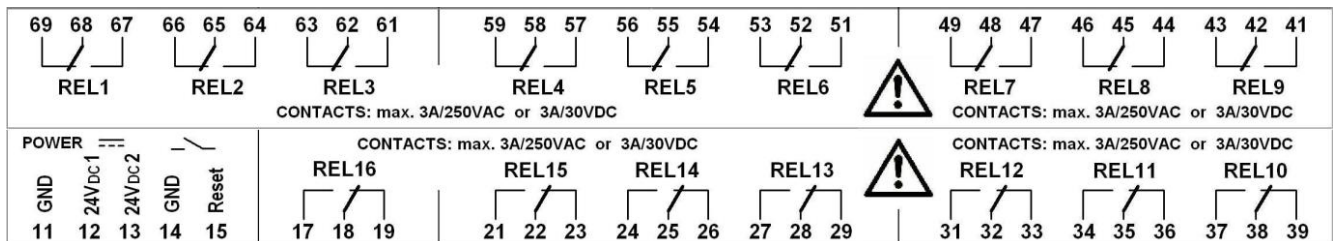
Assembly and installation instructions


Site of installation

The GMA 200-RT and GMA 200-RTD are designed for assembly on a mounting rail in a control cabinet or a wall mounted housing 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 relay contacts are connected according to the terminal assignment diagram which is also located at the GMA 200 housing inside the terminal cover.



 The symbols have the following meaning:
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 at the GMA 200-RT/-RTD during operation, please note that hazardous live voltages may be present at the relay terminals Y17-69. 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 Y17-69 (contacts of the relays 1-16). The contacts of the adjacent relays 1&2, 2&3, 4&5, 5&6, 7&8, 8&9, 10&11, 11&12, 13&14 and 14&15 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-RT/-RTD is 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 (24V_{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 (24V_{DC2}) and Y14 (GND). The power supply unit should comply with EN60950-1 or feature reinforced or double insulation between the mains supply circuit and output voltage circuit similar to devices of protection class II (protective insulation \square). If the GMA 200-RT/-RTD is operated in a 24 V DC power supply network, it must be safety extra-low voltage (SELV) or protective extra-low voltage (PELV). Otherwise, the same requirements as for the previously described power supply units apply to the 24 V DC power supply network.

Connection at the gas detection controller using digital interface (RS485)

When the GMA 200-RT/-RTD relay module is used as an extension of the gas detection controller (e.g. GMA 200-MT6), a respective communication connection must be established between both devices.

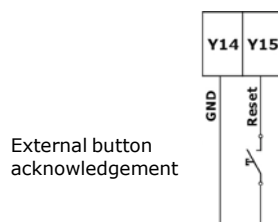
In the simplest case, the relay module can be connected directly to the GMA bus connector of the gas detection controller. If this is not possible due to the spatial limitations, a cable with pluggable terminals (GMA 200-BC, see section Accessories and Spare Parts) can be used for the bus connection.

If the relay module GMA 200-RT/-RTD should be connected at the TRM-Bus1 or TRM-Bus2 of the gas detection controller, it must take place using a cable and pluggable terminal (GMA 200-BC, see above).

Using the alarm acknowledgement input

A freely configurable input for connecting an external acknowledgement button is available at terminal Y15. The function of this input can be configured in the gas detection controller (e.g. GMA 200-MT6).

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



Commissioning

Commissioning can commence after assembling the GMA 200-RT/-RTD and establishing a bus connection to the gas detection controller (e.g. a GMA 200-MT6) 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 at your request.

Operating instructions

Operating mode

Normal operating mode of the relay module is achieved approximately 10 seconds after connection to the voltage supply. Device readiness is indicated by a short optical signal.

The LED "FLT" is activated depending on the operating status of the GMA 200-MT/- MW gas detection controller, the transmitter type and its warm-up phase*. Subsequently, a brief, yet complete test of all LEDs takes place. In normal operating mode, all LEDs are inactive and the operation display ON lights up green.

If a display is available, allocation to the respective measuring point "SRT" is displayed during the warm-up phase*. All configured measuring points (max. 8 measuring points, Changes of the Display) are subsequently shown in the display.

*(typically between 1 and 2 minutes)

Faults

Faults at the relay module are displayed at the LED "FLT".

Possible causes:

- Defective electronics
- Operating voltage has not been achieved
- Communication error to the GMA 200-MT/-MW gas detection controller
- 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.

Keyboard and menus

The main menu is accessible from the display using the keyboard at the relay module.

Operation and menu navigation

Menu navigation occurs by using the control keyboard at the relay module:



Function when pressed: 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  button to access the main menu.

The main menu is divided into:

- Status relay module
- Info relay module
- Info relays
- Tests (test LCD display, LED/horn, ext. AI. reset)
- Service menu (password protected)

User navigation in the main menu occurs by using the keyboard at the relay module GMA 200-RT.

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 relay module 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
Password, Language, BUS settings, Display contrast, Horn volume
- Test relay 1..16

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
- 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 also 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
- Monitoring of parameterization by target / actual comparison
- Inspection of signaling and registration modules

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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Parts and accessories

Description	Part Number
36 W power supply unit for mounting rail assembly (input: 85-264 V AC output: 24 V DC/1.5 A)	1000271
60W power supply unit for mounting rail assembly (input: 88-264 V AC output: 24 V DC/2.5A)	1000272
GMA 200-BC terminals for GMA Bus connector	2200200
Spare slow-blow fuse T 500 mA (F1 for GMA 200) PU=10 pieces	2200301
Flat ribbon cable for GMA 200-MT/-RT (L=22 cm)	2200309
Terminal cover for GMA 200-MT/-RT (9-hole)	2200310

Technical data

Type designation:	GMA 200-RT	GMA 200-RTD
Display & control elements	19 status LEDs for operating and relay statuses	19 status LEDs for operating and relay statuses, 2.2" graphical display and 5 buttons
Ambient conditions For storage: For operation: Site of installation:	-13..+140 °F / -25..+60 °C 0..99 % RH (recommended 0...+86 °F / +30 °C) -4..+122 °F / -20..+50 °C 0..99 % RH 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 Operating voltage: Power consumption: Fuses:	24 V DC (20-30 V DC permissible) max. 6 W F1= slow-blow T 500 mA	
RS485 connection GMA Bus:	RS485; half-duplex; galvanically isolated; max. 230400 Baud (for GMA 200-M, control center, PC, PLC or Gateway)	
Relay outputs Contacts: Contact rating: Insulation distances:	16 relays each with a changeover contact 3 A / 250 V AC or 3 A / 30 V DC Basic insulation between the relays: 1&2, 2&3, 4&5, 5&6, 7&8, 8&9, 10&11, 11&12, 13&14, 14&15 Double insulation between the relays: 3&4, 6&7, 9&10, 12&13, 15&16	
Alarm acknowledgement inputs Reset:	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: Protection class: Material: Weight: Dimensions:	on mounting rail TS35 according to DIN 60715 IP20 Plastic approximately 14.5 oz. / 410 g 6.4 x 3.8 x 2.4 inches / 162 x 97 x 62 mm (W x H x D)	
Connection cables Terminal blocks: Cable:	0.8..2.5 mm ² cross section 2-4-wire 0.5-1.5 mm ² LiYY, NYM (for GMA200 supply) 2-wire 1 x 2 x 0.22 mm ² BUS-LD (for GMA Bus with a length >33' / 10 m)	
Approvals/Tests Electromagnetic compatibility: Electrical safety:	EN 50270:2006 EN 61010:2010	Emitted interference: Type class I Interference resistance: Type class II Degree of soiling 2 Overvoltage category III for relay contacts

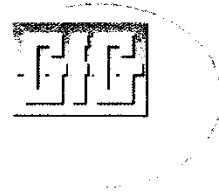
EC declaration of conformity

EG-Konformitätserklärung

GfG Gesellschaft für Gerätebau mbH

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GMA200-RTD

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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 Relaismodule der Serie **GMA200-RT** 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 222-000.24 sind zu beachten.

Dortmund, den 12.04.2013

Dipl.-Kfm. H.J. Hübner
Geschäftsführer

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GfG reserves the right to change part numbers,
prices, and/or technical information without notification.



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