

**Technology in the Service of Mankind and
the Environment**



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GMA 160.CO/NO

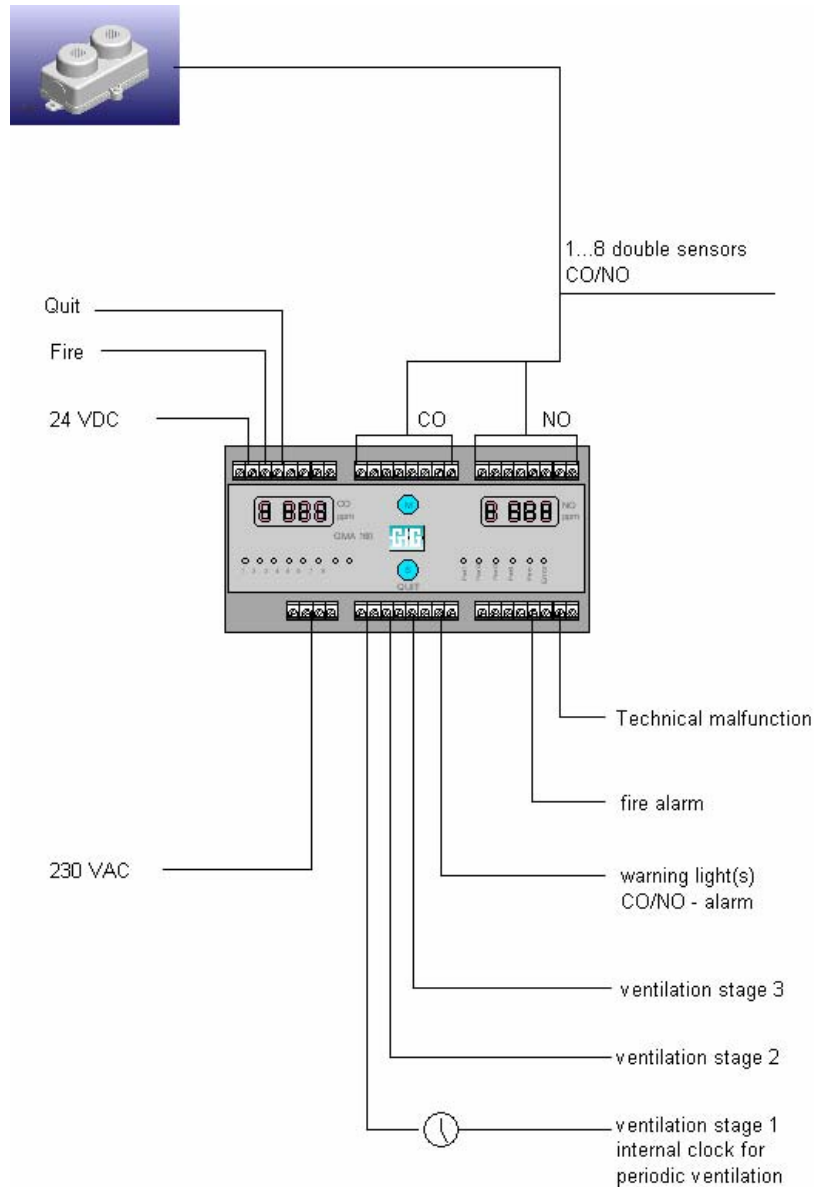
ventilation controller

**Operating
instructions**

General description

A fixed CO/NO measuring device consists of a double-sensor (MWG) and a controller unit (GMA). The sensor and the controller are connected by a measuring cable. The sensor converts the "gas concentration (ppm)" unit into an electrical measuring signal and transmits it along the measuring cable to the controller for further processing.

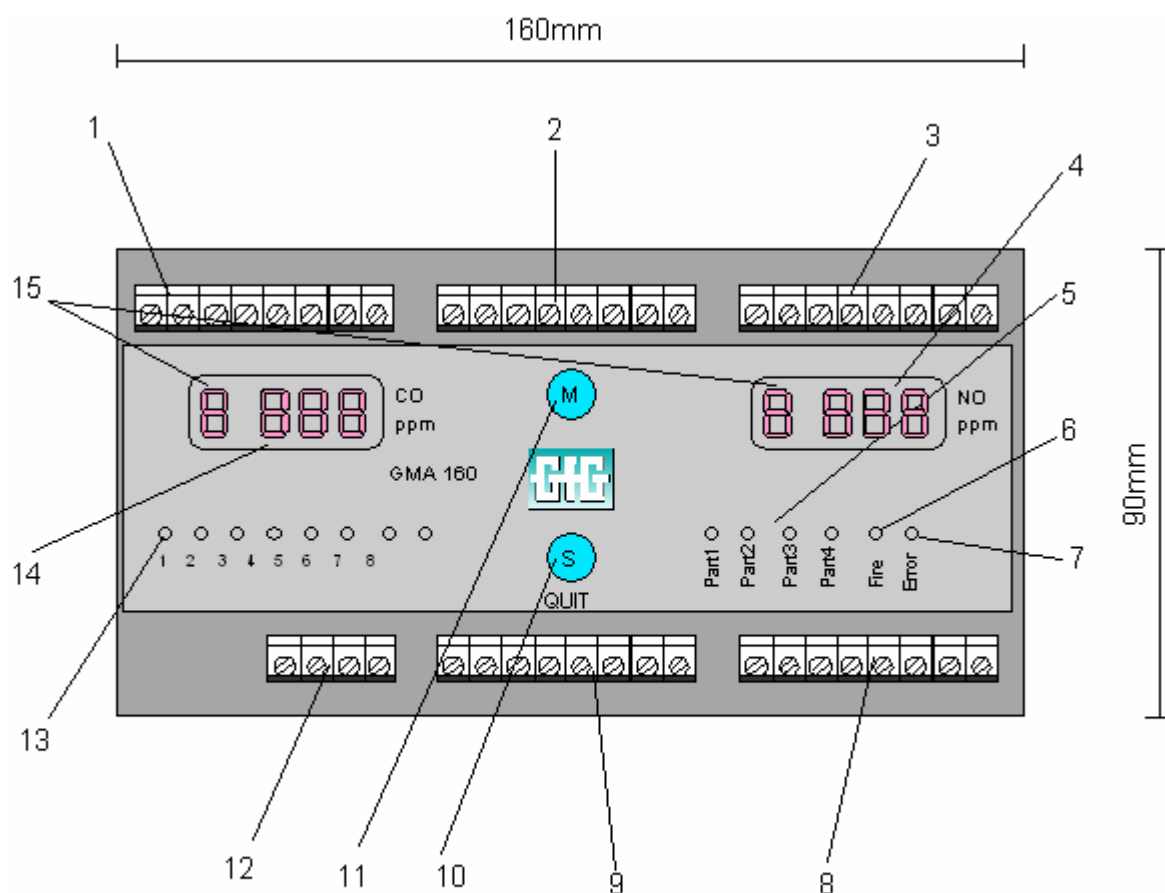
Measuring system



The GMA 160 is an "intelligent", microprocessor-controlled monitoring and control system. Its extensive electronics perform a wide range of tasks which facilitate operation and maintenance as well as considerably enhancing operating reliability and measuring accuracy. The programming/calibration/test function is performed by means of two operating buttons.

- easy calibration
- easy programming
- test function

Design of the GMA160 - description



Device for snap-on rail mounting
Mounting depth 60 mm

1. terminal 24VDC sensor supply
2. terminal sensor inputs CO-signal 1...8
3. terminal sensor inputs NO-signal 9...16
4. concentration reading NO (0 – 20ppm)
5. ventilation zone status LED's
6. fire alarm status LED
7. technical malfunction status LED
8. terminal relay contacts K5 – K8
9. terminal relay contacts K1 – K4
10. SET-button
11. MODE-button
12. terminal 230VAC power supply
13. relay contacts status LED's
14. concentration reading CO (0 - 300ppm)
15. number of the sensor (channel) in display

Relay contacts

Relay contacts S1-S4 are floating (external potential must be conducted via the contact; max. 230 Volt / 6 Amp.) and are designed as normally open contacts.
The relay contacts K7 and K8 can be programmed as well as normally close contacts.

SET – button Test-Mode

The operating status is permanently shown over the status LED's on the GMA160. These LED's give information about the alarm-relays and alarm-zones.
By prolonged pressure on the SET-button (approx. 2 sec.) the operator gets into the Test-Mode. The Test-Mode gives the possibility to checkout the whole ventilation system and alerting. (see appendix Test-Mode)

Drucktaste 4 Anzeigemodus Messfühler-Abfrage

All current readings of the individual sensors can be scanned at any time by pressing the MODE button. For this purpose the MODE button should initially be pressed for approx. 2 seconds. The measuring sensor number then appears in the first field of the digital display. In normal measuring mode the display indicates the sensor with the highest reading.
The measuring signals of the sensors are continuously monitored by the GMA160. If a signal is too low or completely absent, this actuates a technical malfunction signal. A technical malfunction signal always acts on alarm contact 8 and is indicated by the "Error" LED in the LED status display.

SF (sensor error) display

The sensor in question can now be identified in the display mode of the individual sensors.

If SF appears on the display after the channel number, this means that the measuring signal from this measuring sensor (number) is too low. The time and the event log can also be scanned in the display mode. (see Appendix: Display Mode)

Note

The GMA 160.A is a modern instrument supplied by GfG for monitoring carbon monoxide (CO) and nitrogen monoxide (NO).

The instrument may only be opened by authorized GfG personnel. Any manipulation inside the instrument can destroy it and is therefore prohibited. In the event of malfunctions in the instrument, contact GfG customer service.

According to regulations, a service contract must be concluded with the manufacturer for the monitoring system. The system must be calibrated annually with calibration gas for zero point and rate-of-rise of each sensor.

The operating instructions enable the instrument to be used as intended. They must be read by everyone who uses, services, maintains or checks the product.

Test mode

comprises:

- logical test sequence of the programmed relays (ventilation stages, zones and alarms)

The test mode enables the entire alarm control system to be tested in a logical sequence. The test always starts at ventilation stage 1, followed (only if programmed) by ventilation stages 2, 3 a.s.o.. The ventilation stages are followed by a simulation of the fire alarm and the technical malfunction signal. The relays for the fire alarm and technical malfunction are only actuated when this functions are programmed as "active".

Accessing the test mode

- Press the **"SET"** button (2 seconds)
- Display shows **"rELt"** (briefly)
- Display shows **"bEr1"** (briefly)
- Display shows **"1 x"** (1= simulation of measuring channel 1, x= simulation reading CO in ppm)

Simulation (actuation) of programmed ventilation stages and CO-alarms, or the service function and the technical malfunction signal, is actuated by pressing the **"SET"** button.

The relevant actuation threshold for each ventilation stage or alarm is shown on the display and the LED status display provides information on the ventilation zone and the ventilation stages actuated.

Switching to the next ventilation zone or the fire alarm and technical malfunction signal is actuated by pressing the **"MODE"** button

Exiting the test mode

- Press the **"SET"** button (2 seconds)

Display codes in the test mode:

„ LFb1 “	ventilation zone1
„ LFb2 “	ventilation zone2
„ LFb3 “	ventilation zone3
„ LFb4 “	ventilation zone4
„ brAL “	fire alarm (allways related to relay 7)
„ SErr “	technical malfunction (allways related to relay 8)
„ noPG “	alarm not active, not programmed

Example: (1 ventilation zone, 2 ventilation stages, fire alarm switched off, technical malfunction switched on)

- Press the **"SET"** button (2 seconds) → display „LFb1“ → display „1 5“
- Press the **"SET"** button (briefly) → display „1 50“ → ventilation stage 1 on
- Press the **"SET"** button (briefly) → display „1 70“ → ventilation stage 2 on
- Press the **"SET"** button (briefly) → display „1 150“ → CO-alarm on
- Press the **"SET"** button (briefly) → display „1 2“ → all stages and alarms off

Test of ventilation zone completed

- Press the „**MODE**“ button (briefly) → display „brAL“ → display „noPG“
the fire alarm is switched off (not programmed) and can therefore not be actuated via the "SET" button.
- Press the „**MODE**“ button (briefly) → display „SErr“ → display „ALof“
- Press the „**SET**“ button (briefly) → display „SErr“ → technical malfunction on

Appendix: Display mode

Display mode

comprises:

- Manual measuring channel display
- Alternating display of measuring channels
- Time display
- Event display

Accessing the display mode

- Press the **"MODE"** button (2 seconds)
- Display „**CHAN**“ (briefly)
- Display „1 **xx**“ (xx=measured value)

Manual measuring channel display

The **"Mode"** button can now be pressed briefly to switch to the next higher measuring channel. ***A technical malfunction signal (measuring signal drops below a specific limit of approx. 0.140mA) is shown on the display for the relevant measuring channel by "x SF" (x= measuring channel number).***

Alternating display of measuring channels

- Press the **"MODE"** button (2 seconds)
- Display **"ALCH"** (briefly)

The individual measuring channels are now shown alternately on the display. First the measuring channel number and then the relevant concentration or technical malfunction signal.

Time display

- Press the **"MODE"** button (2 seconds)
- Display „**Uhr**“ (briefly)

The current time is displayed

Event display

- Press the **"MODE"** button (2 seconds)
- Display **"Prot"** (briefly)

The GMA160 Controller features an event log. This records technical malfunction signals, fire alarm and CO/NO-alarm signals. The log can retain 20 events, the latest of which is always displayed first. In other words, when the log is full the oldest event is overwritten. The event code is always displayed first, followed by the year, day, month and time. If the log skips to a new page, the controller also records this in the memory as a **"Pr.ot"** display.

Display previous event: **"MODE"** (briefly)

The following event codes can be displayed:

„ AL x “ (x=measuring channel)	CO/NO-alarm measuring channel x
„ nA x “ (x=measuring channel)	CO/NO-alarm measuring channel x eliminated
„ SE x “ (x=measuring channel)	technical malfunction channel x
„ lo x “ (x=measuring channel I)	technical malfunction channel x eliminated
„ brAL “	fire alarm
„ nobA “	fire alarm eliminated (acknowledged)

Return to the normal measuring mode:

- Press the **"MODE"** button (2 seconds)
- Display: „**CH** “ (briefly)

Display mode terminated