Gas Controller
GMA 011-RC
stand-alone controller unit

Controller
with integrated sensor

for toxic gases, such as
NH3 refrigerating plants
chlorine, ozone, NO, NO2, O2, etc.

Technology in the Service of Mankind and the Environment

GMA 011 RC Gas Controller

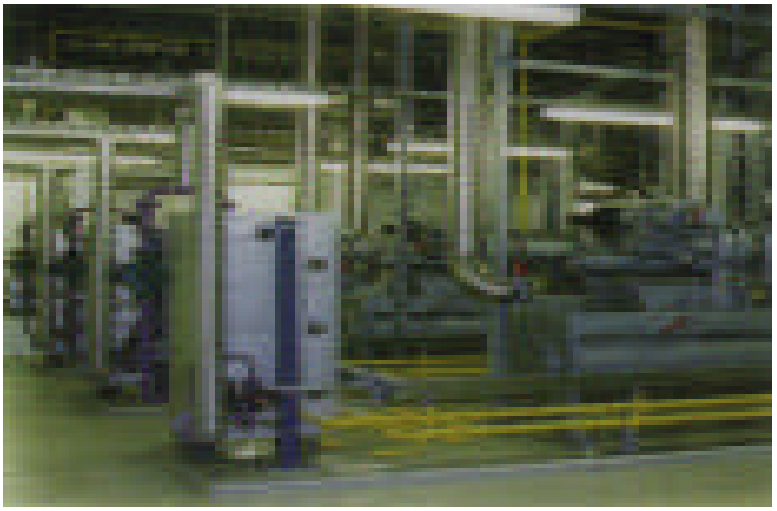
The alternative for stand-alone applications

GMA 011 RC Gas Controller
The GMA 011 RC Gas Controller is an alternative to conventional arrangements with separate sensor and analyzing unit.
The usual principle in gas measuring technology is "head and board", by which the gas measurement specialist means a sensor connected to a plug-in unit or a controller. In this case the limit contacts and other settings are performed on the decentralized controller/plug-in unit.

The GMA 011 RC (relay contacts) offers a very different approach.

In the stand-alone version both components are combined in a housing – with many advantages.

- controller/sensor in a single unit
- integrated relay contacts
- clear display of the measured value large LED display
- operating contact display
- programming mode display
- test and acknowledgment key
- 4 floating relay outputs
- programming via membrane keyboard of: threshold values calibration test function acknowledgment function
- housing with sealed front membrane
- housing in cast aluminium conforming to IP 65
- special sensor protection against water spray (optional)
- selectable measuring ranges, e.g. NH3 0..300/500/1000 ppm
- operating temperature -30..40°C



Machine room refrigerating plant

The compact GMA 011 RC has been developed in conformity with the latest requirements of safety engineering and environmental protection bodies. This quality product incorporates a versatile monitoring and control instrument featuring state-of-the-art, compact technology and an easy-to-install enclosure. With the GMA 011 RC a controller has been created which can be adapted to customers' needs. A wide range of applications are possible.

Measurement, alarm, control
The microprocessor integrated in the instrument provides for a wide range of adjustments to measuring tasks and alarm transmission, shut-down and ventilation actuation.

The GMA 011 RC display
The GMA 011 RC Gas Controller always displays the current measured value and operating status. The picture is always clear due to the large, clear LED display – even at low temperatures.

Easy, understandable display
The red LED display is legible at a distance and is also visible in poorly lit conditions.
The labels above clearly indicate the measuring range and physical quantities being measured by the controller.
The individual states of the

controller are displayed under the digital display.
The status currently active is always illuminated.
States A1/A2/S/F indicate the threshold values/alarm and the functions S (signalling) and F (malfunction), as well as sensor interruption/cable break.
LEDs S1, S2, Zero, CAL indicate during programming which set value is currently being changed.

And all with only two keys
We are all too familiar with instruments featuring a maze of keys in which only the development engineer himself can find his way around.

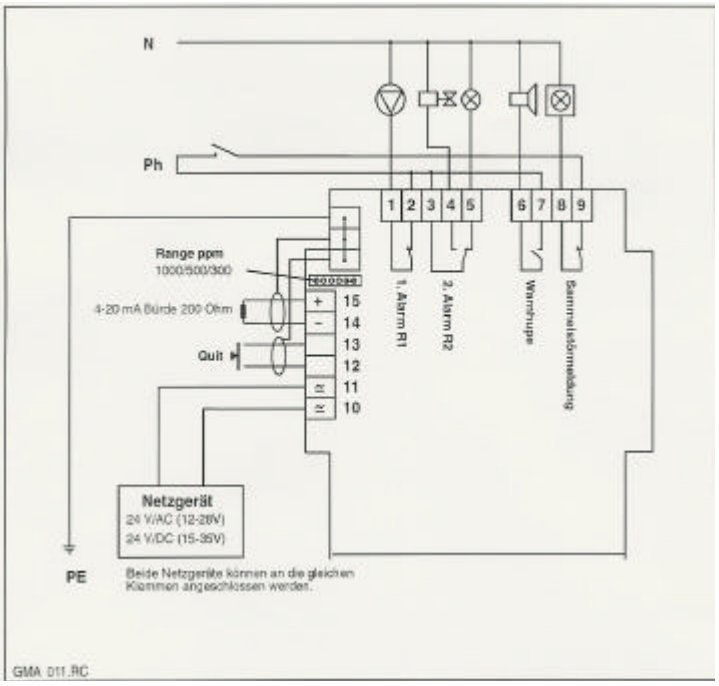
All-in-one controller and sensor

The GMA 011 RC Gas Controller proves that this doesn't have to be so. All options offered by the GMA 011 RC can be operated using only two multi-function buttons. The function is defined by means of the control mode (measuring/test/programmin g mode). The need to hold the key down for 2 seconds prevents incorrect operation. These two keys thus actuate and adjust

- threshold values
- delayed alarm output
- test function
- calibration
- acknowledgment.

Better safe than sorry
The simple test mode facilitates fast, uncomplicated testing, which can be performed by anyone without any difficulty. Simply press the test key, and the controller switches immediately to the test cycle and displays the set threshold values and functions in sequence. As soon as the key is released, the GMA 011 RC returns to normal mode after 2 minutes. When the test key is pressed, the alarm contacts are simulated; if necessary, this function can be disabled via the Test program item.

Floating contacts for actuation
The floating contacts can be actuated with 230 V, 6 Amp. The alarm contact is designed as a changeover contact. In the standard version the contacts are designed as alarm contacts (security systems standard) and open in the event of an alarm (NC).



Signal output and acknowledgment
A 4..20 mA output is provided for external signal applications. The acknowledgment contact is provided for external acknowledgment. This first acknowledges the first-time operation of the signal output, e.g. horn, and by a second operation Alarm 2 if the level falls below the Alarm 2 threshold value.

Testing
Continuous testing for ongoing safety goes without saying for GfG. We offer you the opportunity to conclude a regular service agreement for the unit installed, in accordance with official guidelines and regulations.

Good advice = customer satisfaction
Give us the opportunity to advise you on your project:

- consulting on gas and water monitoring – all from a single source at GfG
- positioning sensors
- signal actuation, etc.
- alarm concept
- assembly of complete switchgear cabinets for monitoring systems in refrigerating plants, incl. water monitoring
- drawing up customer-specific diagrams

GfG products not only have a good market value, they also have outstanding inherent value.

GMA 011 RC
Technical data

The GMA 011 RC features:

- safe, reliable technology
- compact design
- easy to install and service, even in cold rooms
- digital display of the measured values
- digital adjustment of measuring ranges, threshold values, zero point and rate-of-rise calibration, test and acknowledgment function
- housing conforming to IP 65
  special version for deep-freeze rooms and rooms with the risk of water spray (optional sensor protection against water spray)
- technical malfunction alarm contact
- large, clear LED display of measured values
- reset key for signal alarm on unit and externally
- test switch for checking switching contacts
- good price/performance ratio
- adjustable measuring ranges
  0..300/500/1000 ppm NH3
  chemical 3-electrode cell

Measuring range
adjustable according to measuring requirements
0..300/500/1000 ppm

Ambient temperature
-30 … +40°C

Power supply
15…35 V DC
15…29 V AC

Housing
cast aluminium
special version for deep-freeze rooms with built-in heater and insulation

Dimensions
100 x 100 x 80 mm
conforming to DIN 43880

Display
3-digit, red LED display for measured values
4 red LEDs for alarm and operating status
4 green LEDs for menu settings

Operation
using only two keys measuring/test/programming mode

Analog output
4..20 mA
max. load 200 Ohm

Alarm thresholds
freely adjustable via keyboard (accessible externally)

Contact ratings
floating contacts
contact rating 6 Amp., 230 V

Power consumption
60 mA

Response time
< 10 sec.

Long-term drift
+/- 1 ppm/month

Test certificates
EMC complying with CE standards

Installation
on the ceiling with sensor nozzle pointing downwards for NH3

GfG AG Gesellschaft für Gerätebau
Im Gassacher 6
CH – 8122 Binz
Phone: +41 982 12 90 Fax: +41 982 12 91
E-mail : info@gfg.ch Internet: www.gfg.ch

GMA 011 RC Operating Instructions

Two-key operation using blue keys with programming function and test/acknowledge function

Test function
Pressing the Test key activates the relays, thus enabling the relevant functions of the signal, shut-down and transmission relays to be checked.
NB: the key must be “held down” in order to actuate this function. Each time the key is then briefly pressed again, the relevant relays are activated.
A1 – A2 – S – F (red LEDs)

A1 = alarm threshold value 1
A2 = alarm threshold value 2
S = signal (horn/light)
F = malfunction/cable break

The set values are shown on the digital display.

The Test key must be held down to return to operating mode. If this is not done, the processor automatically returns to operating mode after 2 minutes.

Acknowledgment
Alarm 2 can be acknowledged directly on the controller by pressing the Quit key (acknowledgment).
Acknowledgment of all relays with latching is possible if the value is not reached.
This function can also be performed from an external location via a connection (see diagram).

Programming
The Programming menu is accessed by pressing both keys MODE + SET (blue). These keys must be “held down”.
The menu is moved on to the next parameter by briefly pressing the Mode key. This is displayed simultaneously by the red LEDs with the appropriate label.

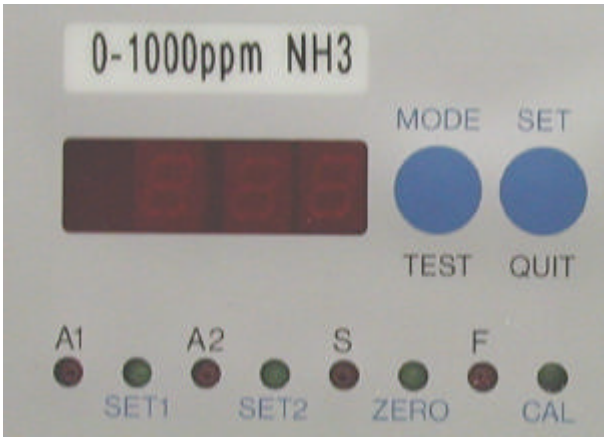
Programming options:
- A1 (threshold value)
- A2 (threshold value)
- Relay 3 (S = horn function)
  Mode of operation either on relay A1 or relay A2 or not activated.
- Relay 4 (F = malfunction)
  A2 threshold value 2 also acting on centralized fault indication yes/no
- A1 adjustable delay
  0…240 sec.
- Hold
  latching programmable relays 1…4
  i.e. each individual relay is adjustable, depending on its function
- Adjustable decimal point

- Range
  adjustable measuring range
  0..100
  0..200
  0..250
  0..300
  0..500
  0..1000
- Calibration gas/Calibration
  calibration gas value adjustable
- Calibration
  automatic zero point calibration via programming interface (admission of zero gas necessary) ZERO
  rate of rise = admission of calibration gas without opening the instrument cover – automatic adoption of calibration value CAL

Auto timeout
If no key is pressed in the programming mode (incl. calibration) or test mode, the controller reverts to the monitoring mode. The programmed values are then not stored; they are overwritten with the existing values in the EEPROM.

Auto security
Permanent monitoring of the sensor, processor and relay power supplies for over/undershoot = fault
Permanent monitoring by watchdog, setting parameters, read-in periodically from EEPROM
The controller does not need to be opened up for servicing, since all settings can be made via the membrane keyboard. This
especially important in cold rooms, in order to prevent refrigerated air from reaching the electronics.

Programming



Adjusting threshold values
SET 1 and SET 2
After the programming level has been selected by pressing the MODE/SET keys simultaneously, the required programming item is selected by continuing to press the MODE key briefly. This is indicated by the LED display and as a flashing value/ parameter. If the value is to be changed, this can be done by pressing the SET key in brief steps or holding it down for rapid progress.

Horn (relay 3)
The mode of operation must be defined during programming for actuating a signal acoustically or optically.
A1 or A2
Alarm 1 or Alarm 2 can be set. The alarm is thus actuated via the relay in question.
Display bIP
Relay displayed by red LED

FAL (relay 4)
Malfunctions act on relay 4
Whether Alarm 2 is also to act on relay 4 as a centralized fault signal can be programmed

Delay A 1
Adjustable delay time for relay 1 (pre-alarm)
adjustable from 0…240 sec.
value flashes to be changed

Malfunction delay (relay 4)
Adjustable delay acting on rela 4
adjustable from 0…240 sec.
value flashes to be changed

Hold
Display HLd
Programmable latching of relays 1…4
A1…A2..S..F
LED ON … if latching active

Decimal point
Decim al point can be shifted
000 or 0.00 or 00.0
point flashes when active

Range
Adjustable (incl. decimal point)
100
200
250
300
500
999
value flashing

Calibration gas
Adjustable value of the relevant calibration gas from 30…100% (full scale)
value flashing

Calibration
Display C00 Zero point calibration
- the LED (ZERO) also flashes

When this operating mode is selected, the display shows C00 flashing for 2 seconds. Then the measured value flashing for 2 seconds. If the zero gas admitted is stable, i.e. 2 successive readings are within +/- 1 digit, the value is set to ZERO. The display no longer flashes to indicate the end of the ZERO process.
(measured signal +/- 15% of nominal ZERO value 0.2 mA; if this value is smaller or greater, calibration restarts – i.e. the measuring cell may have to be replaced.

Display CAL
Rate-of-rise calibration
- the LED (CAL) also flashes

When this operating mode is selected, the display shows CAL flashing for 4 seconds. Then the measured value flashing for 4 seconds. If the calibration gas admitted is stable, i.e. 2 successive readings are within +/- 1 digit, the value is accepted on CAL.
If the measured signal is +/- 10% outside the measured value, the CAL process restarts.
The measuring cell may have to be replaced.

Wiring diagram
see diagram
Specific overall diagrams are produced by GfG for the individual customer.

Ready for connection
All programming is performed on the controller by GfG as instructed for delivery ready for connection.

Service
Request a service quotation for periodic checks.

GfG AG, Im Gassacher 6, CH – 8122 Binz, Phone: +41 982 12 90, Fax: +41 982 12 91, E-mail: info@gfg.ch, Internet : www.gfg.ch