Bieler+Lang

GMC 8022

from version 813b

GMC 8022 E
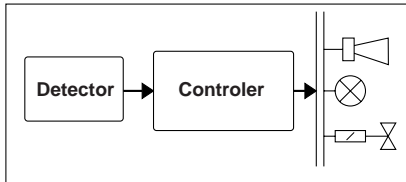
from version 813b

Data sheet

Gas Measuring and Alarm Systems

Application

The analysis unit GMC 8022 and GMC 8022E in connection with test probes with 4...20 mA signal output has the following functions:

- measuring and displaying gas concentrations
- monitoring and dangerous gas signaling
- triggering protective measures to counteract the increase of gas concentration.

Structure

Gas alarm unit comprising the following components:

- analysis system
- sensor probe
- selectable units, e.g.:
  - ventilator
  - solenoid valve
  - horn
  - warning sign

Product features

- Two designs:
  - GMC 8022: assembled in standard field distributor
  - GMC 8022E: 19" plug-in unit
- 2 measuring channels
- concentration display
- 2 alarm levels and additional horn output
- wide variety of functions and easy operation through microprocessor technology
- alarm trigger test without test gas
- fault monitoring for:
  - mains failure
  - computer defect
  - wire discontinuity / short circuit in sensor leads
- floating relay outputs for:
  - alarm 1 and 2
  - horn
  - error
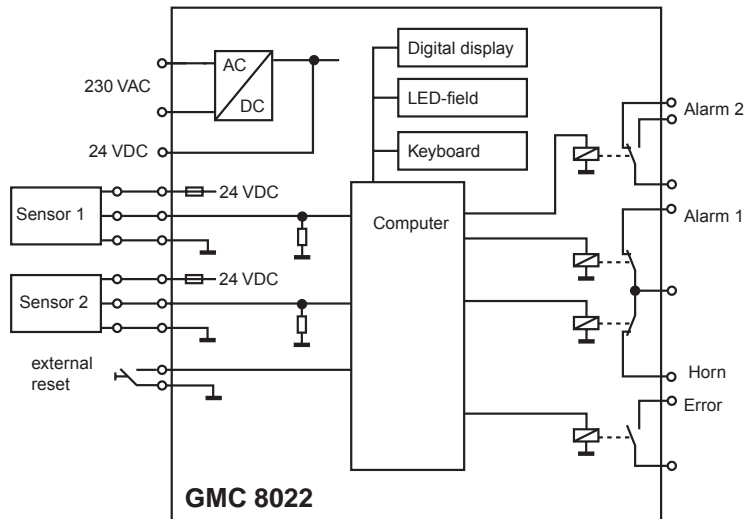- Analog output (GMC 8022E)

Mode of function

Lamp test after running up the system, with all LEDs lighting up for 2 seconds. The current software version is then shown on the display. To suppress a false alarm when switching on the system, the system first moves into the monitoring mode („Auto") after 30 seconds. The current concentration detected at each measuring point is shown in sequence, with the appropriate LED of the displayed sensor probe lighting up. As soon as a sensor probe reaches alarm level 1 or 2, the corresponding alarm LED starts to blink. The appropriate alarm relay is activated as soon as the preset time delay has elapsed. The alarm LED will light continuously. As each alarm level has an adjustable hysteresis, an alarm level will not be canceled until the current concentration falls below a second limit. This also applies to alarm 2 if the system has been programmed „non-memorising". If not, the alarm 2 remains stored and can only be canceled by pressing the reset key. Depending on programming, a relay output for a horn may also be activated when exceeding the alarm level 1 or 2. This can be canceled immediately by pressing the reset key. With each new alarm trigger the horn is activated again. An LED indicates if the horn is switched on or off. The concentration detected at a certain measuring point can also be displayed permanently (Stop mode). With the 19" version of the GMC 8022E the 4...20mA can be read out permanently from each sensor via an additional module. The system monitors permanently if the connecting lead to the sensor probes is in order. A error message is triggered as soon as a wire discontinuity or a short circuit is detected. The error LED "Err" of the affected measuring point lights up and the error signal relay is activated. If the supply voltage is no longer adequate or fails completely (mains failure), the unit signals a fault, the power LED is dark. The lamps can be tested at any time by pressing the key on the right.
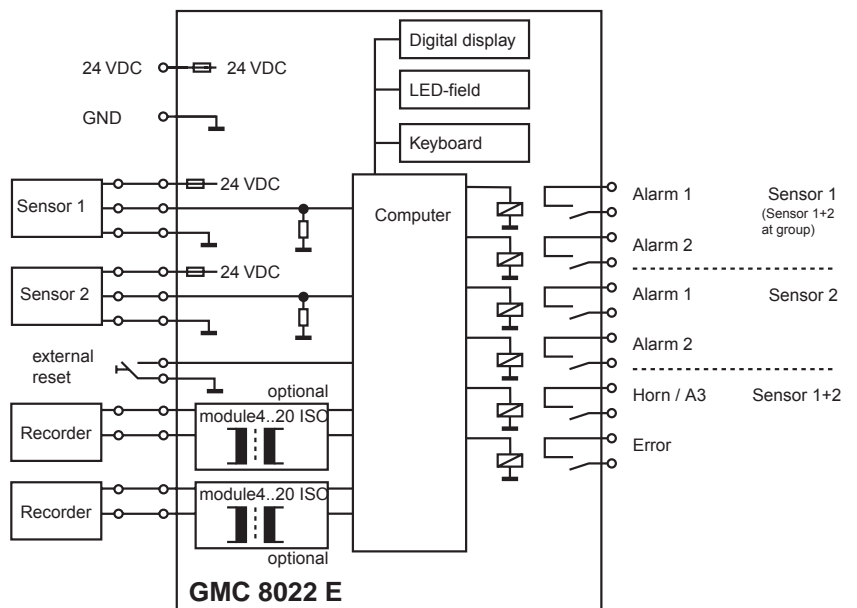
Mode of function

The alarm trigger function of the system can be tested without using test gas. In this case the sensors are disconnected internally from the unit, allowing an individual alarm simulation. To prevent false alarm when calibrating the connected sensor probes, the alarm trigger of the analysis unit can be suppressed using a special menu. Sensors featuring a special calibration signal (series Gasmonitor / Exmonitor) automatically activate this menu. The system data (hooter at alarm 1 or 2; alarm 2 memorising or non-memorising; alarm triggered by sensor signal when exceeding or falling below) are shown as code word during programming. The system data can be modified. The numerical formats of each measuring point are then defined. The parameters including measuring range end value, limits for triggering and switching off alarm level 1 and 2, as well as an alarm time delay can now be selected for each individual measuring point. Additional menus such as programming, alarm simulation or suppressing the alarm trigger can only be carried out by entering a special password.

Block diagram

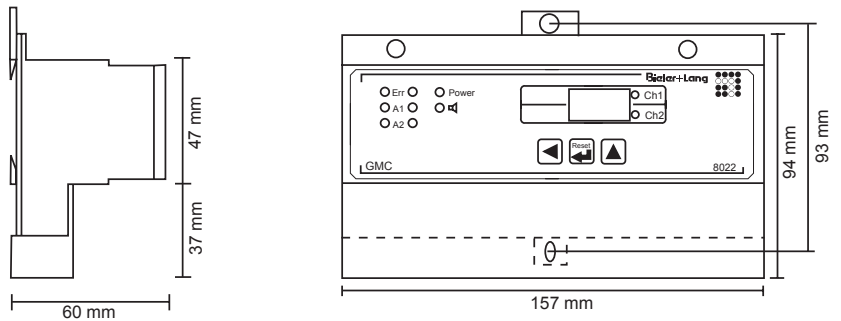Note: Relay shown in alarm status

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Technical specifications

Type designation	GMC 8022	GMC 8022E
Channels	2	
Suitable sensors	Series ExDetector, Gasmonitor, Exmonitor	
EX-Type-Examination Directive 94/9/EC (Performance certification)	BVS 03 ATEX G 007 X	
max. distance of sensors	approx 500 to 1000 m, depending on unit configuration and sensor used . See data sheet of the used sensor.	
Sensor interface	linear input 4...20 mA, Shunt 226 Ohm to GND sensor power supply: 24VDC (20...27,6 VDC), SELV, max. 100 mA for each sensor	
Alarm levels	Group outputs for measuring channel 1 and 2: ● alarm 1 and 2 ● horn ● error	Selectable alarm trigger: ● group alarm - alarm 1 sensors 1 and 2 - alarm 2 sensors 1 and 2 ● single alarm - alarm 1 of each sensor - alarm 2 jof each sensor - horn sensors 1 and 2 - error sensors 1 and 2
Outputs	● floating group alarm relay for: - alarm 1: make contact - alarm 2: changeover contact - error: break contact - horn: make contact	● single / group alarm relay with floating contact - alarm 1: break contact - alarm 2: break contact ● group alarm relay with floating contact - error: break contact - horn: break contact
Make-break capacity of output relays	230 VAC, 2A 30 VDC, 2A	50 VAC, 1A 75 VDC, 1A
supply voltage	230 VAC, 50...60 Hz	
	24 VDC (21,7 ... 28 VDC) SELV for connection to usal alternating current- / continuos current - inverter	
Current input without sensors at 24 VDC	110 mA	● 150 mA ● 260 mA with connected 4...20 modules
Power input	14W / 20VA	
Operating temperature range	0...+55 °C	
Operating humidity range	0 ... 90 % rH	
Environment	● Not for use more than 2000m above sea level ● Protect from direct sunlight	
Storage temp.	-25...+55 °C	
Display elements	● LEDs for each measuring channel: - alarm 1 and 2 - error - displayed sensor ● ready ● horn ● digital indication for concentration and programming data	
Resolution of concentration display	measuring range end value 100 - 999: 1 measuring range end value10,0 - 99,9: 0,1 measuring range end value1,00 - 9,99: 0,01	
Operating elements	3 keys for: ● horn and alarm reset ● guidance through menus ● programming	
Reset input	make contact for looping the internal control voltage 24 VDC, SELV	
Run-in time	depending on used sensor	
Analog outputs		optionally equipped with 2 pcs. 4...20 mA output cards
Analog output data		4...20 mADC, SELV, resolution 0,078 mA, max load 250 Ohm

Mechanical specifications

● **GMC 8022**

Design	suitable for installation in standard field distribution or other suitable housings
Protection class	IP30
Terminals	1,5 mm²
Enclosure material	plastic (Lexan)
Weight	approx 750 g
Dimensions (H x W x D)	94 x 157 x 60 mm

● **GMC 8022E**

Design	19" plug-in unit
Connection	32-pin plug connector DIN 41612
Enclosure material	front panel, aluminium
Weight	approx 290 g
Dimensions	19" plug-in unit 12 TE, 3 HE

Safety

The following standards guarantee ultimate appliance safety:

● GMC 8022 and GMC 8022E
  - EN 50270 Electromagnetic compatibility
  - EN 61010 Safety requirements for electrical equipment for measurement, control and laboratory use

EC-Type-Examination

EC-Type-Examination for compustible gases: BVS 03 ATEX G007 X

● **EN 60079-29-1**
  Explosive atmospheres - Gas detectors - Performance requirements of detectors for flammable gases

● **EN 50271**
  Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen - Requirements and tests for apparatus using software and/or digital technologies.

This control device is defeated at operation with feelers to the measurement of combustible gases in hazardous areas of the directive 94/9/EC.

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Equipment

- hooters
- warning lights
- solenoid valve
- central emergency power supply
- for GMC 8022E:
    - power supply unit
    - 4-20 mA output modules
    - relay cards RK1, RK2 for switching mains voltages of up to 2A

Service

Everything from one source - from project development to the installation of your new gas alarm unit. Guaranteed by our comprehensive sales and service network. Call us for the address of your local contact partner. Our after-sales technicians are pleased to assist you with hands-on help and advice.

Custom-made equipment

Our sales and service engineers will help you with your measuring and controlling problems. A wide range of units, appliances, enclosures and equipment as well as many years of experience in the field allow us to develop and construct a measuring system for your very special requirements.

State: 02/2011
Subject to change without notice!