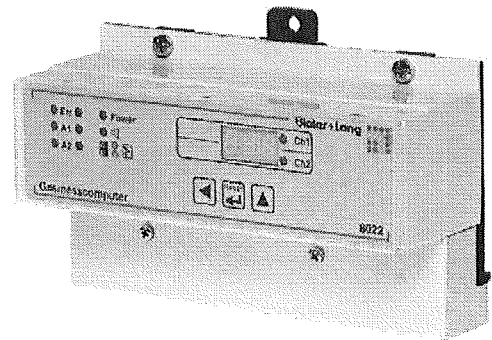


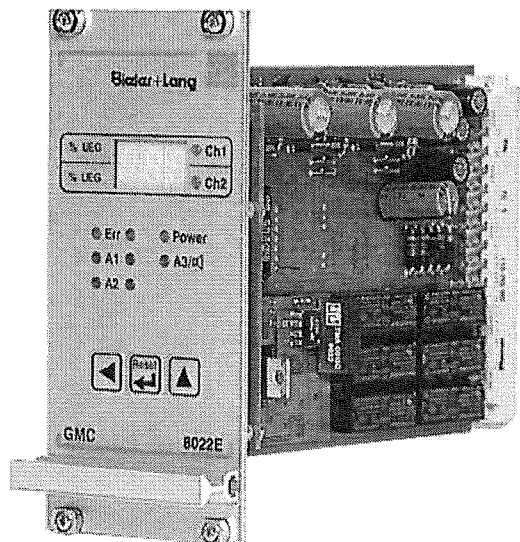
Gasmesscomputer 8022

from version 813



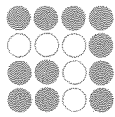
GMC 8022 E

from version 813

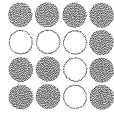


Operation and Installation

Gas Measuring and Alarm Systems

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**Important notices**

The safe operation of the system is ensured only if the following conditions are observed:

- Proper transport and handling.
 - Proper installation and start-up by qualified personnel (e.g. electrical technician)
 - Observance of the operating instructions and of the pertinent safety regulations.
 - Attention to the operating instructions of the connected feelers.
 - By the connection of feelers with 4-20 mA interface, the specifications of their 4-20 mA interface as well as the behavior are to be paid attention below 4 mA and above 20 mA.
 - This control device is defeated at operation with feelers to the measurement of combustible gases in explosion-hazardous areas of the directive 94 / 9 / EC: BVS 03 ATEX G 007 X
 - Before the application of the gas warning equipment is to be examined whether the set times are low enough, so that the security functions released by the device or emergency functions are implemented effectively and so quickly that security-technical dubious situations are avoided.
 - At operation in connection with the feelers which can supply signals in the measuring range with concentrations above the measuring range final value is to be guaranteed before transfer to reserve of a message about the excess of the measuring range final value by a measurement independent of the measuring equipment that in the feeler no concentrations are present above the measuring range final value. By introduction of the arrangement is to be proceeded as well.
-

Installation

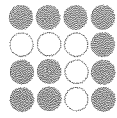
- Avoid external influences such as splash water, oil, dust, etc. and factors likely to cause mechanical damage.
 - Installation only in save area.
 - Installation site must be low in vibration and stable in temperature.
 - Easy access to the system for maintenance purposes must be assured.
-

Notes on installation

- The specifications relating to the cable material of the sensors and to the termination system must be observed. When routing the cables make sure that they are not located in immediate vicinity of electromagnetic sources of interference.
 - The limit stability of relevant standards for the CE symbol is guaranteed only if the system is used properly and installed in conformity with EMC regulations.
-

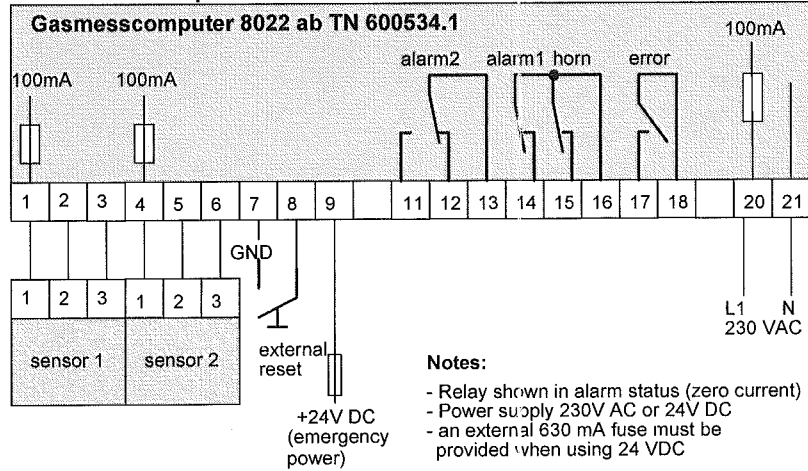
Screening

The shield of the sensor cable must be fitted with single ended discharge. This can be done either at the central analysis station (e.g. safety barrier) or at the actual sensor. The operating and assembly instructions of the sensor used, as well as the relevant codes (e.g. VDE 0165), provide information on which side and in which direction the shield is to be discharged. If the shield is to be connected to the analysis unit, discharge is preferably made to PE, although discharge is also possible to the GND terminal.

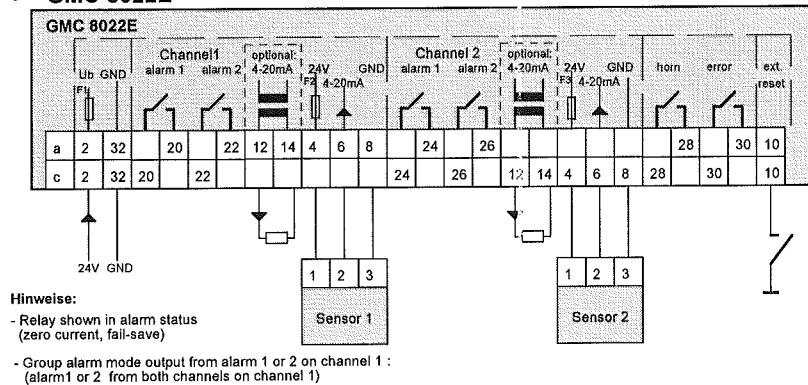


Termination system

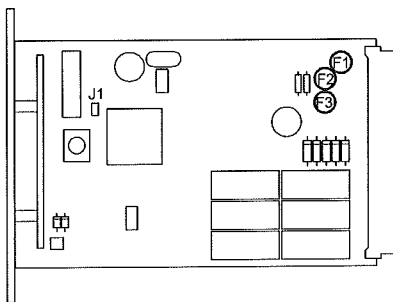
- **Prewired gas alarm system**
Please refer to the specific structural and schematic diagram for the assignment of the sensor terminals, signal units and the power supply.
- **Gasmesscomputer 8022**



- **GMC 8022E**



Configuration

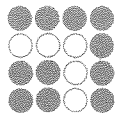


The GMC 8022E analysis unit can be set for the following functions:

- **Single alarm:**
Shorting plug J1 into specified position
- **Group alarm:**
No shorting plug J1 (remove).
In this operating mode the alarm trigger of both measuring points is activated only on channel 1. The alarm trigger of channel 2 is therefore inactive.

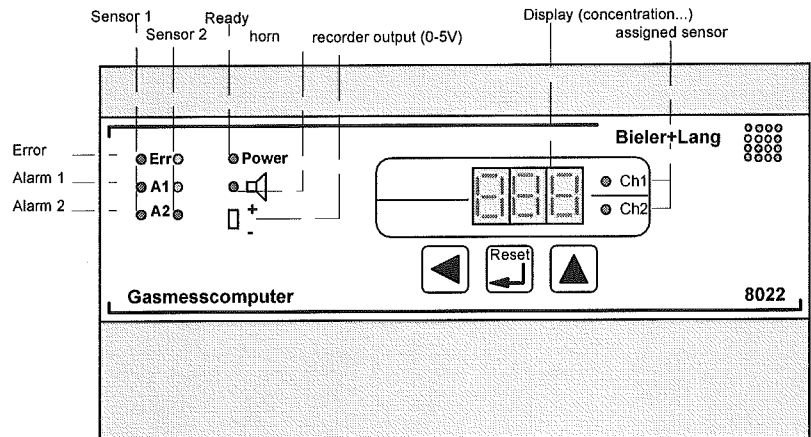
Start-up

- Switch on the analysing unit / system (supply voltage).
- The analysing unit carries out a lamp test lasting several seconds. The unit functions correctly if all LEDs and display segments light up.
- The current software version appears for a few seconds on the display; after another warm-up period (shown in the display by a moving bar) the system switches to the monitoring mode („Auto“)
- After a run-in time of 30 minutes at first start-up, check the function of the unit combination sensor / analysing unit using test gas.

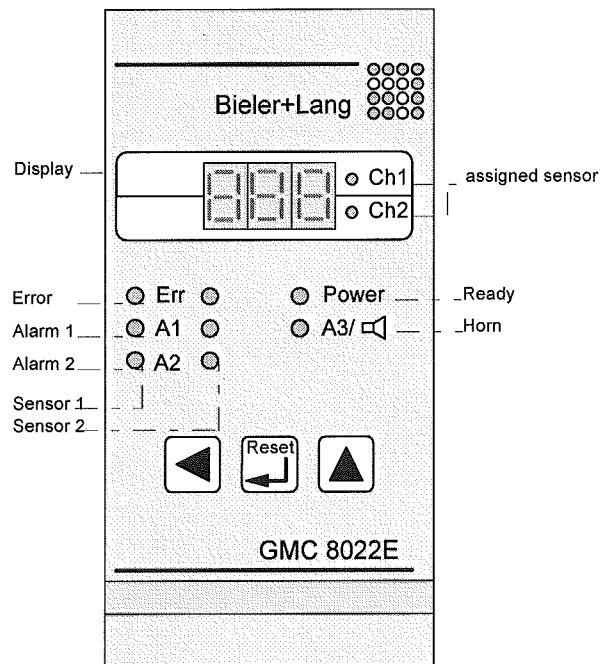


Display elements

• **Gasmesscomputer 8022**



• **GMC 8022E**



Operating elements



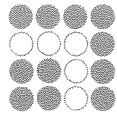
- Quit menu
- Change from Auto to Stop menu
- „Continue“ in Stop menu
- Move cursor



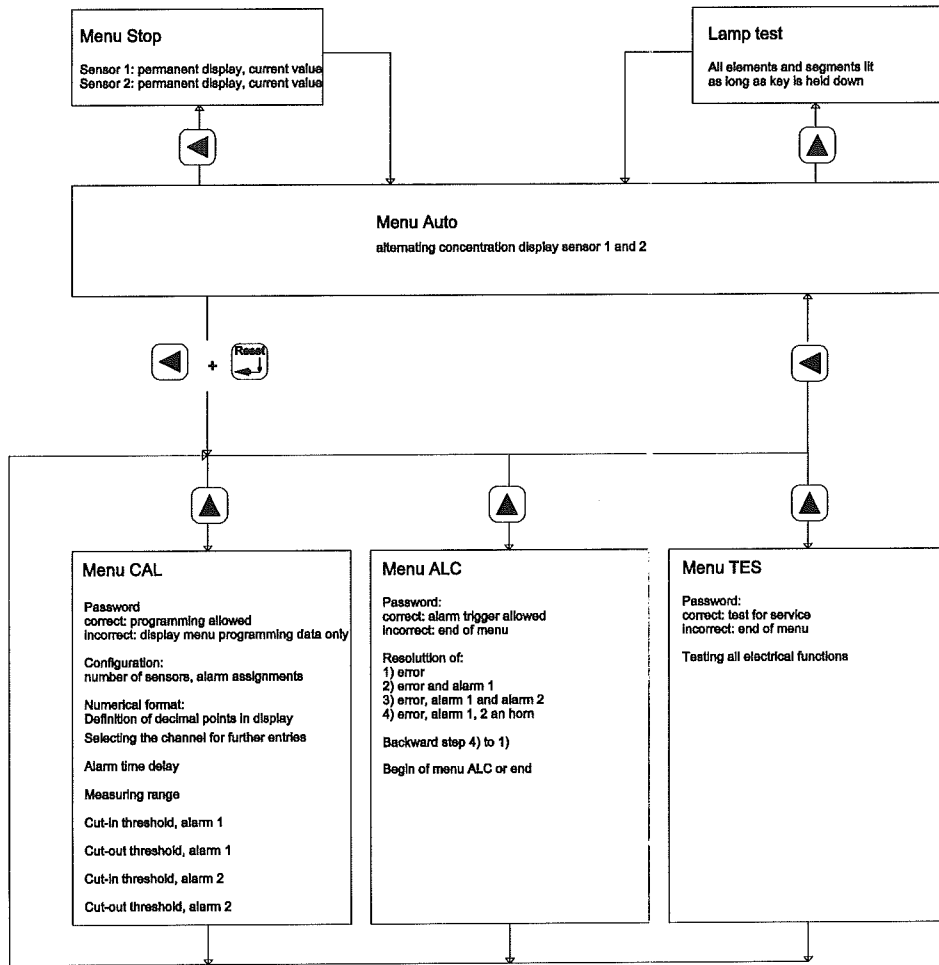
- Alarm and horn reset
- „Continue“ in calibration and alarm test menu
- Saving data



- Incremental increase of numerical values
- Lamp test



Program overview



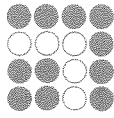
Auto Menu

This menu selection is the default monitoring mode. After turning on the unit, the system automatically changes to this operating mode. The measured values of both measuring points are shown in cycles. The measuring channel assigned to the displayed gas concentration can be identified by the appropriate LED lighting up (CH1 or CH2):



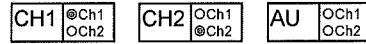
Further functions:

- The display blinks in case of overrange.
- Alarm LEDs / alarm trigger function
 - Blinking: alarm limit has been reached and time delay *not yet* elapsed.
 - Continuous light: alarm limit reached and time delay has lapsed (alarm triggered).
- The horn is activated immediately after reaching alarm 1 (2). Reset before time by pressing the (Reset) key.



Stop Menu

In contrast to the Auto Menu, the cyclical display of the measured values between channel 1 and 2 can be deactivated in this operating mode. The unit switches to the continuous display of the desired channel by pressing the (←) key. The analog output of the gas test computer 8022 now allows a voltage signal 0-5V analogous to the final display value to be picked off. The channel which has not been selected continues to be alarm monitored.



Select „CH1“ for measuring channel 1 or „CH2“ for measuring channel 2 by repeatedly pressing the (←) key. After a few seconds the display continually shows the measured values of the appropriate channel. Return to the Auto Menu by selecting the function „AU“ via the (←) key.

Lamp test

Lamp tests can be carried out at any time both in the „Auto“ and in the „Stop“ operating modes. If the unit functions properly, all LEDs and display segments will light up.

Press the (↑) key.

CAL Menu

The unit is initialised in this section of the program. Number and type of the connected sensors are entered; measuring range limit values of the display and of the analog outputs are set. The threshold values of alarm levels 1 and 2 and of the horn can be programmed. If this menu is selected, the unit signals a error and the alarm will not be transmitted downline through the calibration.

• **Selecting the CAL Menu**

Press (←) and the (Reset) key and hold for 5 seconds. -.

The following display will appear:



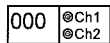
The LEDs „Err“, „CH1“ and „CH2“ start to blink.

Select the menu „CAL“ with the (↑) key. Acknowledge your selection with the (Reset) key; abort with the (←) key.

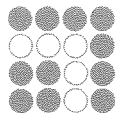
• **Password**

You will now be prompted to enter a password. All programming values can be modified by entering the code „432“. If the incorrect code is entered, the values can only be viewed but not modified.

The following display will appear:



Position the cursor (highlighted by the value blinking) with the (←) key. Increase the numerical values in increments by pressing the (↑) key. After all the required values have been entered, acknowledge with the (Reset) key.



CAL Menu

- **Configuration of the system, code word „P“**

By displaying „P“ the system prompts the entry of the alarm function:

P	⊙Ch1
	⊙Ch2

Acknowledge with the (Reset) key.

Using the code word „P“ selected from the table, set the type of sensor defined as „explosive“, „toxic“ or „oxygen“. The alarms are set when exceeding the thresholds (with the exception of Oxygen, where the shortfall is registered). Also, alarm threshold 2 can be programmed with memorising or non-memorising function. In the „memorising“ mode an alarm remains active even when falling short of the alarm level. It must be acknowledged manually by pressing (Reset). The horn can be assigned either to alarm level 1 or 2.

The display shows the currently selected code word „P“, e.g.:

1F	⊙Ch1
	⊙Ch2

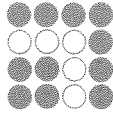
Select the code word from the table. As before, position the cursor using the (←) key and modify the alphanumerical values with (↑). If all values entered are correct, acknowledge with (Reset).

- **one or two sensor probes of the same model**

P		No. of sensors	Sensor No.	Sensor model	Alarm triggered when:	Alarm 2
1A	1b	1	1	explosive	exceeding	memorising
1E	1F	2	2	explosive	exceeding	memorising
18	19	1	1	toxic	exceeding	non-memorising
1C	1d	2	2	toxic	exceeding	non-memorising
00	01	1	1	oxygen	falling short	non-memorising
04	05	2	2	oxygen	falling short	non-memorising
Horn at						
A1	A2					

- **two different sensor probes**

P		No of sensors	Sensor No.	Sensor model	Alarm triggered when:	Alarm 2
1E	1F	2	1	explosive	exceeding	memorising
			2	toxic	exceeding	memorising
0E	0F	2	1	explosive	exceeding	memorising
			2	oxygen	falling short	memorising
0C	0d	2	1	toxic	exceeding	non-memorising
			2	oxygen	falling short	non-memorising
Horn at						
A1	A2					



CAL Menu

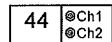
- **Configuration of the measuring range, code word „U“**

By displaying „U“ the system prompts the entry of the decimal points in the display.



Acknowledge with (Reset).

Use the code word U to position the decimal points in the display. The display shows the current code word „U“, e.g.:

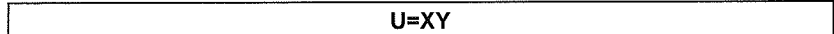


Use the keys (←), (↑) and (Reset) to enter the value selected from the table.

Sensor 2	
X	Display
4	ZZZ (Range: 100-999)
2	ZZ,Z (Range: 10.0-99.9)
1	Z,ZZ (Range: 1.00-9.99)

Sensor 1	
Y	Display
4	ZZZ (Range: 100-999)
2	ZZ,Z (Range: 10.0-99.9)
1	Z,ZZ (Range: 1.00-9.99)

The code word U is composed by juxtaposing the values X (sensor 2) and Y (sensor 1):

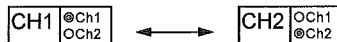


Note: If only one sensor is connected, X may equal 4, 2 or 1.

- **Selecting the channel**

All other entries must be made separately for each measuring channel. The unit now expects you to select a channel.

The display shows the channel selection, e.g.:



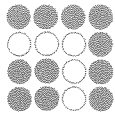
Select the channel with (↑). Acknowledge with (Reset). Abort by pressing (←) twice..

- **Alarm delay time „E“**

Alarm levels 1 and 2 can be set with an alarm trigger delay of between 0 and 60 seconds. Do not program a delay when monitoring explosive danger (E=0)!

The display shows „E“ for the expected entry.

Acknowledge with (Reset). Enter the time delay in seconds.



CAL Menu

Measuring range „AE“

Enter the end values of the measuring range corresponding to the 20 mA interface (e.g. 100% UEG or 300 ppm, etc).

- **Limit for alarm 1 „A1E“**

The unit expects the entry of the value for alarm level 1.

Note: for the application as directed at the warning before atmosphere capable of explosion the nationally recognized value current in each case of the LEL is to be applied.

- **Limit for switching off alarm 1 „A1A“**

Enter the value for switching off alarm level 1.

Note: In UEG and toxic monitoring, the threshold must be lower than the cut-in value.

E.g.: cut-in value A1E: 20% UEG; switch-off value A1A: 15% UEG.

- **Limit for alarm 2 „A2E“**

The unit expects the entry for alarm level 2.

- **Limit for switching off alarm 2 „A2A“**

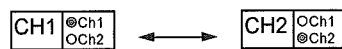
Enter the value for switching off alarm level 2.

Note: In UEG and toxic monitoring, the threshold must be lower than the cut-in value.

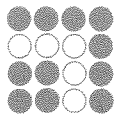
- **Return**

The program returns to the prompt „**Channel selection**“.

The display shows the channel selection, e.g.:



Select the channel with (↑). Acknowledge with (Reset).
 Quitting the CAL menu: press (←) twice.



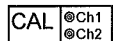
ALC Menu

This menu allows the alarm outputs of the unit to be tested without calibration gas. When selected, the unit immediately signals a error message.

- **Selecting the ALC Menu**

Press (←) and (Reset) keys at the same time and hold for 5 seconds.

The following display will appear:



Select Menu „ALC“ with the (↑) key. Acknowledge your selection with the (Reset) key, abort with the (←) key.

- **Password**

You will now be prompted to enter a password. If the code „321“ is entered, the alarm outputs can be tested. If an incorrect code has been entered, the system will return to the main selection menu level.

Select the sub-menus „ALC“, „CAL“ or „TES“ with (↑) and (Reset), or go to the monitoring mode „Auto“ with (←).

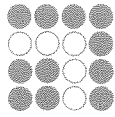
- **Triggering the alarms**

The alarms are increased/decreased in sequence by repeatedly pressing the (Reset) key.

Quit the ALC menu and return to the main selection menu level by pressing (←) twice. Select the sub-menus „ALC“, „CAL“ or „TES“ with (↑) and (Reset), or go to the monitoring mode „Auto“ with (←).

TES Menu

This menu is intended only for service personnel. It allows the option of testing the function of all electronic components with LEDs, key inputs and outputs.



Default settings

The settings are documented on the test log supplied with the unit. In general, the following programming settings are made in the factory, if the following conditions are met:

- delivery with 1 (2) x sensor probe model „Exmess HC 3“.
- delivery without sensors.

In all other instances the programming matches the sensors supplied with the unit.

Settings:

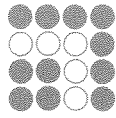
- Alarm trigger when exceeding the limits of alarm 1 and 2.
- Alarm 2 memorising.
- Horn triggered in alarm 2.

Parameter	Programming for both measuring points	Meaning
P	1b 1F	1 sensor 2 sensor
U	44	Display range: 100-999
AE	100	Measuring range
E	0	Time delay for alarm trigger
A1E	20	Limit for alarm 1 - <i>on</i>
A1A	15	Limit for alarm 1 - <i>off</i>
A2E	40	Limit for alarm 2 - <i>on</i>
A2A	35	Limit for alarm 2 - <i>off</i>

Display / output format of alarm / fault signal

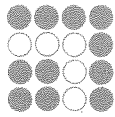
The measured value is continuously displayed up to the upper range limit. If the measured value exceeds this limit (20 mA), the concentration appears on the display in the blinking mode. If Alarm 2 is programmed in the memorising mode, the peak value will be stored and displayed. The memory function will be canceled by pressing (Reset) provided that the signal has fallen back below 20 mA. If 22 mA are exceeded, this will be displayed with three horizontal bars and the fault signal relay will be activated. Range underflows of 3 to 4 mA will be tolerated by the system as a negative value. Lower range underflows will trigger the output of a fault signal.

	4-20 mA input	Analog output GMC 8022	Analog output GMC 8022 E
Fault	< 3 mA	0 V	0 mA
Measuring range underflow	3 - 4 mA	0,75 - 1V	3 - 4 mA
Zero	4 mA	1V	4 mA
Upper range limit	20 mA	5 V	20 mA
Over-range	> 20 - 22 mA	5V frozen	20 mA frozen
Fault	> 22 mA	0 V	0 mA

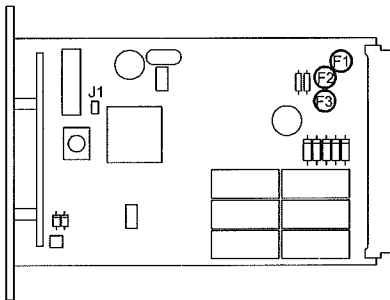
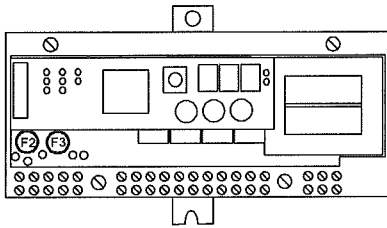


**Overview of messages,
Error messages**

LED	Status	Meaning	Cause
A1	blinks	<ul style="list-style-type: none"> Alarm level 1 reached. But as yet <i>no alarm triggered</i>. 	<ul style="list-style-type: none"> Measuring point 1/2 has reached pre-alarm. Time delay as yet <i>not elapsed</i>.
A2	blinks	<ul style="list-style-type: none"> Alarm level 1 reached. But as yet <i>no alarm triggered</i>. 	<ul style="list-style-type: none"> Measuring point 1/2 has triggered main alarm. Time delay as yet <i>not elapsed</i>.
A1	on	<ul style="list-style-type: none"> Alarm level 1 reached 	<ul style="list-style-type: none"> Measuring point 1/2 has triggered pre-alarm. Delay time has elapsed.
A2	on	<ul style="list-style-type: none"> Alarm level 2 reached 	<ul style="list-style-type: none"> Measuring point 1/2 has triggered main alarm. Delay time has elapsed.
Err	on	<ul style="list-style-type: none"> Only one LED „Err“ lit: <ul style="list-style-type: none"> Fault in the corresponding measuring point. Both LEDs „Err“ lit: <ul style="list-style-type: none"> Fault in both measuring points. Defective unit 	<ul style="list-style-type: none"> Line discontinuity/ short circuit in connecting lead to sensor probe. Fuse for power supply to sensor probe defective. Wiring error. sensor signal < 3 mA sensor signal > 22 mA
	blinks	<ul style="list-style-type: none"> Goes off after 30 secs. Unit in calibration or alarm test menu. 	<ul style="list-style-type: none"> Unit has just been switched on. Sensor Exmonitor/ Gasmonitor in CAL mode.
Power	on	<ul style="list-style-type: none"> Unit ready for operation. 	<ul style="list-style-type: none"> Power supply in allowed range
	off	<ul style="list-style-type: none"> Inadequate or no supply voltage. 	<ul style="list-style-type: none"> Defective mains fuse in unit. Wiring error. Power supply too small
Horn	on	<ul style="list-style-type: none"> Hooter is activated. 	<ul style="list-style-type: none"> Measuring point 1/2 has reached pre-alarm (or main alarm).
Ch1	on	<ul style="list-style-type: none"> Display of concentration from sensor 1. 	<ul style="list-style-type: none"> Unit in the monitoring menu.
	blinks	<ul style="list-style-type: none"> Infos to measuring point 1 are displayed. 	<ul style="list-style-type: none"> Unit in the calibration menu.
Ch2	on	<ul style="list-style-type: none"> Display of concentration from sensor 2. 	<ul style="list-style-type: none"> Unit in the monitoring menu.
	blinks	<ul style="list-style-type: none"> Infos to measuring point 2 are displayed. 	<ul style="list-style-type: none"> Unit in the calibration menu.
Display	blinks	<ul style="list-style-type: none"> Measuring range overflow Peak hold shown in display Steps: <ul style="list-style-type: none"> guarantee a safe atmosphere at the sensor Reset with reset key 	<ul style="list-style-type: none"> Overflow: 20 mA < signal < 22 mA High gas concentration
	"_"	<ul style="list-style-type: none"> Measuring range overflow Steps: <ul style="list-style-type: none"> guarantee a safe atmosphere at the sensor Reset with reset key 	<ul style="list-style-type: none"> Overflow: Sensor signal > 22 mA High gas concentration short circuit in connecting lead to sensor probe.



Spare parts



- **Fuses:**
 - F1: 500 mA Typ TR5-T nach IEC127-3, 250V
 - F2: 100 mA Typ TR5-T nach IEC127-3, 250V
 - F3: 100 mA Typ TR5-T nach IEC127-3, 250V

- **Part-numbers:**
 - F1: TN 70.475
 - F2: TN 70.969
 - F3: TN 70.969

- **Fuse replacement**

Caution: The fuses may be replaced only by our service engineers or by a qualified electrical engineer!

- Disconnect the supply voltage to the analysis unit. All display elements of the unit must be off.
- Gas test computer 8022:
 1. Remove terminal cover.
 2. Slacken the 4 bolts and pull off the enclosure
 3. Replace plug-type fuses.
- GMC 8022E:
 4. Slacken the 4 bolts on the front panel.
 5. Pull out the drawout unit.
 6. Replace the plug-type fuses.

Notes on maintenance

Regular maintenance ensures the long-term safe and reliable operation of the gas warning system. Hence it is absolutely vital that the system is checked at regular intervals. Because of this, you should arrange a system-specific maintenance contract with us.

The condition (operation in accordance with the regulations) of a gas warning system must be checked by a specialist at least once a year (Paras. 8 and 53; VBG 61 (Trade Association Regulations) UVV gases (Safety Rules - gases).

The gas warning system must be checked by an expert before commissioning and at regular intervals thereafter (Para. 56; VBG 61 UVV gases).

In addition, the requirements of the BG (Trade Association) specification T023 (BGI 518), "Gas warning devices for explosion protection – use and maintenance" must be observed.

Warranty

The general terms of delivery are considered to all deliveries for products and performances of the electrical industry. Guarantee on all parts 2 years, excluded wearing parts as for example the sensors, from delivery date or first introduction by our customer service or our representations. Particularly is to be paid attention that with not normal operation the right on announcement of a material defect goes out. Subject claims come under the statute of limitations in 12 months.

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