Bieler+Lang

GMC 8364
version 4.0

Operation and Installation

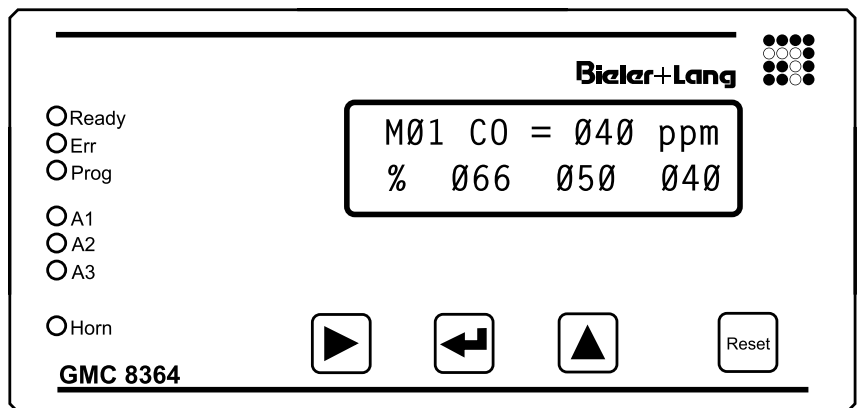# Gas Measuring and Alarm Systems

Contents

View of device

GMC 8364

```
                                    Bieler+Lang   ████
                                                  ████
  ○ Ready      ┌──────────────────────────┐      ████
  ○ Err        │  MØ1 CO = Ø4Ø ppm         │
  ○ Prog       │  %   Ø66   Ø5Ø   Ø4Ø      │
               └──────────────────────────┘
  ○ A1
  ○ A2
  ○ A3

  ○ Horn        [▶]    [↵]    [▲]      [Reset]
  GMC 8364
```

Important notices

The safe operation of the system is only ensured when the folowing 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 relevant safety regulations.

Installation

- Avoid external influences such as water splashes, oil, dust, etc. and factors likely to cause mechanical damage.
- Install only in a safe area.
- Installation site must have low vibration and stable temperature.
- There must be easy access to the system for maintenance purposes.

Notes on installation

- The specifications for cable material and the termination system must be observed. When routing cables make sure that they are not located in immediate vicinity of sources of electromagnetic interference.
- The limit stability to 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 detector cable must be connected at one end. This can be either at the controller (or safety barrier) or at the detector. The operating and installation instructions for the sensor used, and the relevant regulations (e.g. VDE 0165), provide information on which end of the shield should be connected and to what. If the shield is to be connected to the controller, discharge is preferably to be made to PE, although use of the GND terminal is also possible.

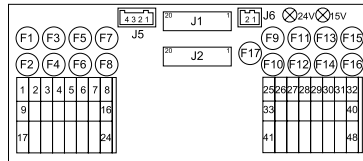**Bieler+Lang**

Termination system

Prewired gas alarm system

Please refer to the specific installation and schematic diagrams for the connections of detector terminals, signal units and the power supply.
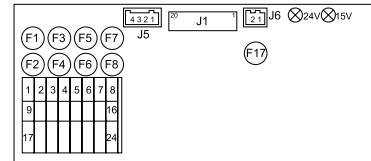

Termination system

**Sensor input cards
AI-16 and AI-8**

● **View of AI-16**

● **View of AI-8**

● **Function of AI-8 / AI-16**

The sensor input cards function correctly when both LEDs are illuminated. At the detector terminals, the power supply for the sensors is provided and also a 4- 20 mA input for the signal. The whole card is protected by fuse F17. In addition, every measuring point is provided with an overcurrent protector. The fuse F1 is assigned to measuring point 1, F2 to measuring point 2 etc.

● **Pin assignments AI-8 / AI-16**

21.7 ... 27.6 VDC →
4 ... 20 mA Input →
GND →

Detector 1, Detector 2, Detector 8, Detector 9, Detector 16
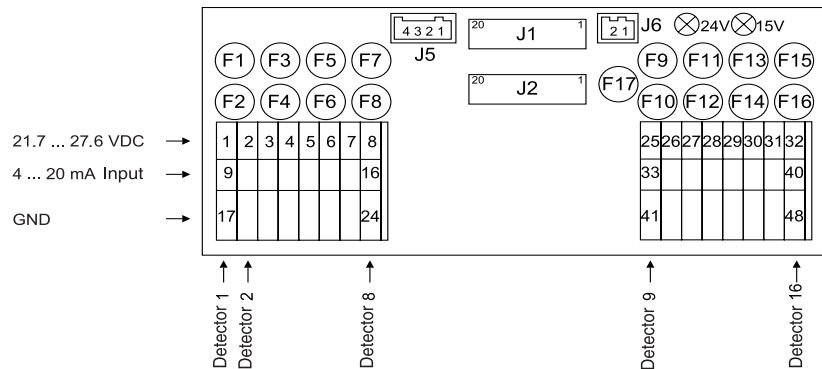
● **Circuit diagram**
  ● J5: power supply
    - Pin 3 / 4: GND from power supply
    - Pin 1 / 2: 21.7 - 27.6 VDC from power supply
  ● J6: Analog GND
    - Pin 1 / 2: Analog GND
  ● Connection J11-J1: max. length: 3m
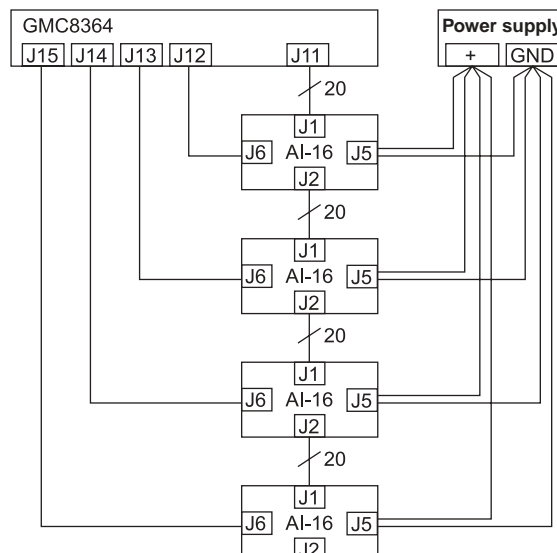
Termination system

DIO-18

● **Function DIO-18**

- The card is ready for operation when both LEDs are illuminated.
- Outputs
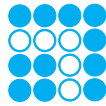 The terminals 1 - 24 provide open collector outputs, and a supply voltage of 21.7 - 27.6 VDC. These must be driven by the voltages provided. The maximum switching current must not exceed 50mA. A connection example is shown in the diagram. A discharge diode must be wired in to protect the circuit electronics. An overload protector (F2; 1,0 AT) limits the total switching current.
- Inputs
  The terminals 25 - 48 are used to read in the switching states. As switching voltages, 21.7 - 27.6 VDC and GND are provided . The inputs are optically decoupled, a switching current of 10mA is required. The power supply is protected by fuse F1 (0.2 AT). If an external switching voltage is looped in, the jumpers J4 / J7 have to be removed. The external voltage must be in the range 21.7 - 27.6 VDC and protected externally in the same way with a 200 mAT fuse. Please refer to the diagram for a connection example.
  Hint: If there is an external loop-in, all the inputs must be wired with this voltage!

● **Pin assignments DIO-18**
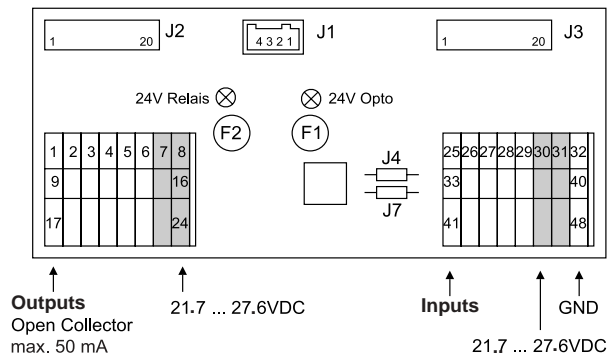
GMC 8364	Terminal no.
Relay 1	1
Relay 2	9
Relay 3	17
Relay 4	2
Relay 5	10
Relay 6	18
Relay 7	3
Relay 8	11
Relay 9	19
Relay 10	4
Relay 11	12
Relay 12	20
Relay 13	5
Relay 14	13
Relay 15	21
Relay 16	6
Sensor fault	14
Hardware fault	22
External reset	27

Termination system

DIO-18

● **Wiring example**
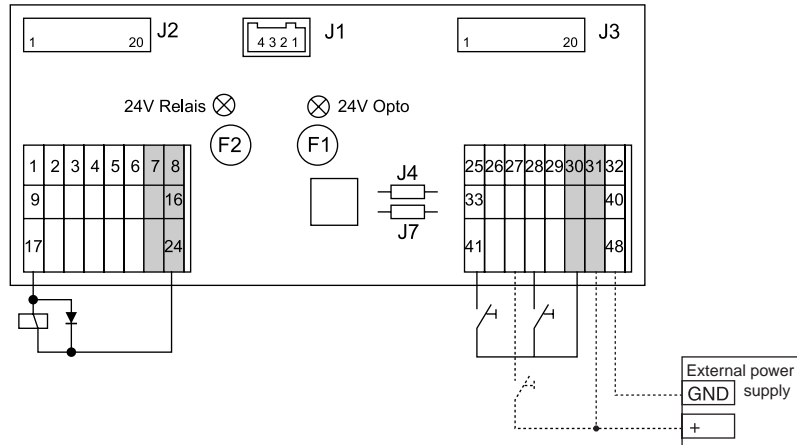
Hint: connect signals from pressure sensors, fire protection flaps and motor protectors as break contacts and the external reset as a make contact. If break contacts are not required, please insert jumpers!

● **Circuit diagram**

- J1: power supply
  - Pin 3 / 4: GND from power supply
  - Pin 1 / 2: 21.7 - 27.6 VDC from power supply
- Connection J2/J2 und J3/J3: max. length: 3m
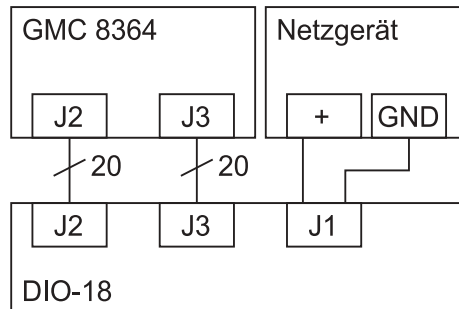
Termination system

DIO-32

● **Function DIO-32**
- The card is ready for operation when both LEDs are illuminated.
- The circuit is protected with a fuse F1 (500 mA T).
- Outputs
  The terminals 1 - 24 provide open collector outputs, and a supply voltage of 21.7 - 27.6 VDC. These must be driven by the voltages provided, the maximum current must not exceed 50mA. A connection example is shown in the diagram. A discharge diode must be wired in to protect the circuit electronics.
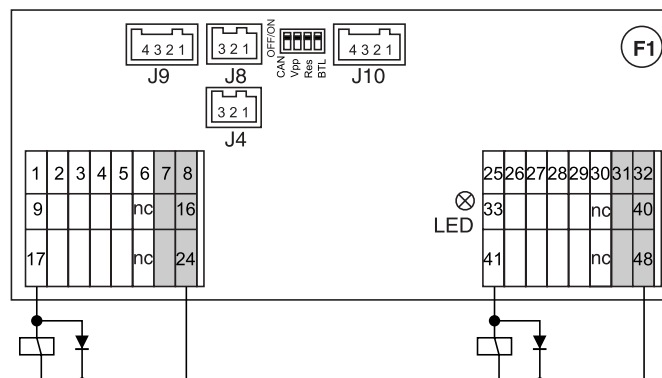
Termination system

DIO-32

● **Pin assignments DIO-32**

Outputs
Open Collector
max. 50 mA

21.7 ... 27.6 VDC

Outputs
Open Collector
max. 50 mA

21.7 ... 27.6 VDC

Relay no.	Terminal no.	Relay no.	Terminal no.
17	1	33	25
18	9	34	33
19	17	35	41
20	2	36	26
21	10	37	34
22	18	38	42
23	3	39	27
24	11	40	35
25	19	41	43
26	4	42	28
27	12	43	36
28	20	44	44
29	5	45	29
30	13	46	37
31	21	47	45
32	6	48	30

● J10: power supply
  - Pin 3 / 4: GND from power supply
  - Pin 1 / 2: 21.7 - 27.6 VDC from power supply (fuse F1 0.5AT)
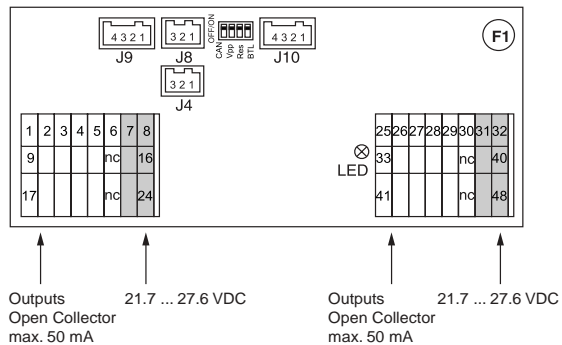● J4 / J8 CAN (max. length: 3m):
  - Pin 1: CAN H
  - Pin 2: CAN L
● S1: DIL-switch
  - All switches must be in the OFF position in normal operation.
  - Hardware reset: press switch 3 (Res) and hold for approx. 5 seconds in the ON position and then release to the OFF position.
● J9: Serial interface RS232
  - In the case of a 9-pin computer interface:
    - connect pin 4: GND to pin 5 (D-Sub)
    - connect pin 3: GND to pin 5 (D-Sub)
    - connect pin 2: TXT to pin 3 (D-Sub)
    - connect pin 1: RXD to pin 2 (D-Sub)
  - *Hint: The length of the data cable should not exceed 2 m.*

● **Circuit diagram**
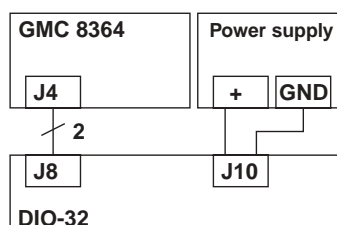
Termination system

GMC 8364

● **View**
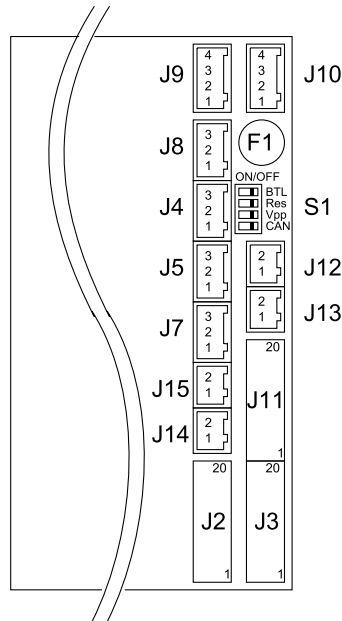
● **Pin assignments GMC 8364**
  ● J10: power supply
  - Pin 3 / 4: GND from power supply
    - Pin 1 / 2: 21.7 - 27.6 VDC from power supply (fuse F1 0.5AT)
  ● J12 / J13 / J14 / J15: Analog GND
    Pin 1 / 2: Analog GND respectively
  ● S1: DIL-switch
    - All switches must be in the OFF position in normal operation.
    - Hardware reset: press switch 3 (Res) and hold for approx. 5 seconds in the ON position and then release to the OFF position.
  ● J4 / J8 CAN (max. length: 3m):
    - Pin 1: CAN H
    - Pin 2: CAN L
  ● J9: Serial interface RS232
    - In the case of a 9-pin computer interface:
      - connect pin 4: GND to pin 5 (D-Sub)
      - connect pin 3: GND to pin 5 (D-Sub)
      - connect pin 2: TXT to pin 3 (D-Sub)
      - connect pin 1: RXD to pin 2 (D-Sub)
    - *Hint: The length of the data cable should not exceed 2 m.*

● **Circuit diagram**
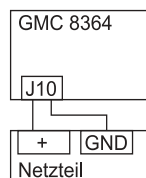
S t a r t - u p

- Ensure that all the switches (S1 of GMC 8364) are in the OFF position.
- Turn on the controller unit / system (power supply).
- The GMC begins monitoring in the AUTO Menu.
- After a run-in time of 30 minutes, check the function of the unit combination detector / controller using test gas.

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Operating elements

▶ • Move cursor to the right

↵ • Acknowledge menus
  • Select menus

▲ • Incremental increase in numerical values
  • Change data selection

Reset • Alarm and horn reset

Display elements

```
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○ Ready
○ Err          M01 CO = 040 ppm
○ Prog         %  066   050   040

○ A1
○ A2
○ A3

○ Horn          ▶    ↵    ▲    Reset

GMC 8364
```
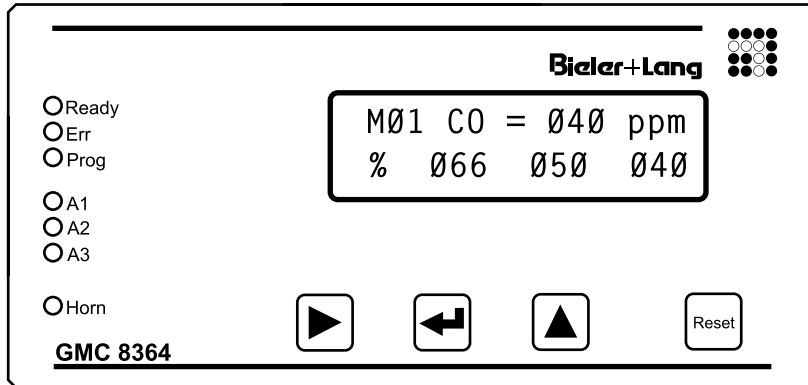
Ready	lights up	device ready
Err	blinks	detector fault / hardware fault / service
Prog	blinks	system data being entered. No monitoring
A1	lights up	a measuring point has reached alarm 1
A2	lights up	a measuring point has reached alarm 2
A3	lights up	a measuring point has reached alarm 3/4
Horn	lights up	a measuring point has reached horn alarm

Programme overview

1) AUTO	**1) NUM CHANNEL**
Cyclical display of every measuring point indicating an alarm or fault	No. of connected sensors
2) STOP	**2) NUM RELAIS**
Display of an individual measuring point	No. of outputs required
3) SYS DATA	**3) NUM CH-MOD**
System configuration	No. of sensor modes required
4) REL TEST	**4) CHANNEL-MOD**
Testing of the alarm outputs	- Gas - Measuring range - Alarm thresholds
5) CH on/off	**5) CH-MATRIX**
Turning-off of individual measuring points	Assigning every measuring point a measuring mode
	6) REL-MATRIX
	Assigning all alarm thresholds to an output
	7) REL-MOD
	- Fail-safe - Memorising/not memorising - Horn / blinking
	8) DATE/TIME
	Setting date and time
	9) PASSWORD
	Changing the password to protect entries
	10) SERVICE
	Entering the next service date
	11) PRINT SYS
	Printing out system data
	12) LANGUAGE
	Language of the menu control
	13) END
	Return to Top Menu

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Top Menu /
Main selection level

```
TOPMENU    V y.y
01. AUTO       >
```

- The most important operating and input menus can be selected in this main selection level. Please refer to the chapter Program overview for an outline. The software version is shown on the right of the display.
- If the display is showing the measured values cyclically in the AUTO mode, you can go to the Top Menu with ↵.
- Use ▶ to jump to the appropriate menu and select with ↵.

Lamp test

```
TOPMENU    V y.y
01. AUTO       >
```

- Jump as described under Main selection level.
- As long as ▲ is pressed, all the LEDs will light up.
- Press ▶ until the AUTO menu appears in the display. Acknowledge with ↵. You are now back in monitoring mode.

AUTO Menu

```
M01 CO = 040 ppm
%  100   066   033
```

```
M01 CO = 040 ppm
      SERVICE
```

```
    NO ALARM

```

```
    NO ALARM
    SERVICE
```

- 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 those measuring points that have exceeded an alarm threshold or have indicated a detector fault are shown cyclically. If there are no alarms or faults present, the „NO ALARM" message will be indicated in the display.
- If there are gas alarms or sensor faults present, the current measuring channel will be shown in the top left of the display. The gas and its current concentration, with units readable, is indicated in the top right of the display. The bottom line shows the percentage of the measured values in relation to the alarm threshold (100% means the alarm threshold has been reached) for each of the three alarm thresholds. If, instead of an equals sign, an arrow appears by the concentration arrow, the signal is outside the measuring range. A ▲ shows that the sensor range has been exceeded, a ▼ indicates that the concentration is below the measuring range.
- If the service deadline has been exceeded, the „SERVICE" message will be displayed as a hint, and a sensor fault will be indicated. However, the device is still operational. The sensors will however need to be re-calibrated.
- Select ↵ to go to Main selection level .

STOP Menu

```
M01 CO = 040 ppm
%  066   050   040
```

This section of the programme allows the cyclical display of the measured values (AUTO Menu) to be deactivated. A user-defined measuring point is continuously shown. The display format is identical to that of the AUTO Menu. In order to differentiate the two menus however, the selected measuring point will blink in the display.

```
TOPMENU    V y.y
02. STOP       >
```

- Select from the Top Menu by pressing the ▶ und ↵ buttons.
- To change the displayed measuring point: press   to increase the sensor number, press ▶ as well to decrease the sensor number.
- Press ↵ to return to the Main selection level.

System Data Menu

```
TOPMENU    V y.y
03. SYS DATA   >
```

- This section of the programme allows the system to be configured. Please read the chapter System data.
- Select this menu with the ▶ and ↵ buttons.

Test Menu

This section of the programme allows the alarm outputs to be tested without test gas. Any output sequence, or several outputs simultaneously, can be triggered. The test programme controls the outputs, as if an alarm had been set off in normal monitoring mode, for example, if an alarm has been defined in the system data entry as fail-safe, it will go to the alarm condition in the alarm test programme. During menu selection, a sensor fault will be signalled.

```
TOPMENU    V y.y
04. REL TEST   >
```

Select from the Top Menu using ▶ and ↵

```
REL-TEST
PASSWORD=0000  >
```

This section of the programme is protected with a password to guard against unauthorised access. The password can be changed in the system data.
- Enter the passwort (default= 1111) with the ▶ and ▲ buttons.
- After entering it correctly, go to the arrow symbol and acknowledge with ↵

```
REL-TEST      P01
< 001101001000 >
```

You can see the selected output in the top right-hand field of the display or, if the cursor is positioned on the < or > symbols, you can see the selected page. The second line gives a rapid overview of the alarm states.
- Select the desired output with the ▶ button.
- Using the ▲ button, set (State 1), or reset the output (State 0).
- To return to the Main selection level on page 1, go to the < symbol and press ↵ .

Mes. On/Off - Menu

This section of the programme allows individual measuring points to be excluded from the alarm check. If one or more detectors are deactivated, a detector fault will be indicated.

Select from the Top Menu using ▶ und ⏎

```
┌─────────────────────┐
│ TOPMENU     V y.y   │
│ 05.CH    on/off >   │
└─────────────────────┘
```
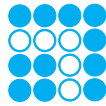
This section of the programme is protected with a password to guard against unauthorised access. The password can be changed in the system data.

● Enter the password (default = 1111) with the ▶ and ▲ buttons.
● After entering it correctly, go to the arrow symbol and acknowledge with ⏎

```
┌─────────────────────┐
│ CH on/off           │
│ PASSWORD=0000    >  │
└─────────────────────┘
```

```
┌─────────────────────┐
│ 1=on 0=off     P01  │
│ <    01001100    >  │
└─────────────────────┘
```

You can see the selected measuring point in the top right-hand field of the display or, if the cursor is positioned on < or >, you can see the selected page. The second line gives a quick view of the sensor states.

● Select the desired output by pressing the ▶ button.
● Using the ▲ button, set (State 1) or reset the output (State 0).
● To return to the Main selection level on page 1, go to the < symbol and press ⏎ .
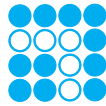
System Data

- Select SYS-Data in the Main selection level menu.
- You will now be prompted for your password.
- Enter your password (default 1111):
  - ▶ move cursor
  - ▲ change numerical value incrementally
  - If the entry is correct, go to the arrow symbol and acknowledge with ↵
- You are now in the System data entry menu and possess overall modification authority.
- *Hint: While you are in the System data entry menu, the LED „Prog" will light up and a sensor fault will be indicated. Alarm monitoring will not take place.*

Important hints on system programming

The programming of the GMC is very flexible. All the system parameters must therefore be precisely defined before entering data. The system tables at the end of these operating instructions serve as a guide. Please fill these out before beginning programming.

Number of measuring points
[01. NUM CHANNEL >]

[CH_max=08 >]
Enter the number of sensors used.

Number of relays
[02. NUM RELAIS >]

[REL_max=04 >]
Enter the number of output relays required.

No. of measuring point modes
[03. NUM CH-Mod >]

[Mod_max=00 >]
Enter the number of sensor modes required.

Measuring point mode
[04. CHANNEL-Mod >]

[Mod-No. XX MEDIUM=CO >]
The respective number of the sensor mode is shown at the top left of the display.
Enter the medium that is to be monitored.

[MOD-No. XX UNIT=ppm >]
Enter the signal units.

[MOD-No. XX POINT=000 >]
Enter the decimal point position.

[MOD-No. XX RANGE=300 >]
Enter the measuring range limit.

[MOD-No. XX ALARM at ^ >]
Should the alarm be triggered if the value exceeds or falls below the alarm threshold? (Symbol arrow upwards corresponds to exceeding)

[MOD-No. XX A4 ACTIV y/n >]
If alarm level 3 is programmed as the mean time value, a further alarm level 4 can be programmed as an instantaneous value for alarm level 3.

[MOD-No. XX A1 on= 60 >]
Enter the turn-on threshold for alarm 1.

[MOD-No. XX A1 off= 60 >]
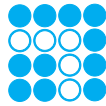Enter the turn-off threshold (hysteresis) for alarm 1.

[MOD-No. XX A2 on= 80 >]
[MOD-No. XX A2 off= 80 >]
[MOD-No. XX A3 on= 100 >]
[MOD-No. XX A3 off= 100 >]
[MOD-No. XX A4 on= 250 >]
[MOD-No. XX A4 off= 245 >]

System Data

Measuring point mode
[04. Mes-Mod >]

[MOD-No. XX Atime A1=30 Min >]
Enter the mean time value in minutes for alarms 1 - 3. Entering the time base 0 results in the the threshold being interpreted as an instantaneous value.

[MOD-No. XX Atime A2=30 Min >]
[MOD-No. XX Atime A3=30 Min >]

[MOD-No. XX Dtime A1=000s >]
Enter an alarm delay in seconds for all the instantaneous value thresholds. If the alarm value is given as a mean time value, an alarm delay cannot then be entered.

[MOD-No. XX Dtime A2=000s >]
[MOD-No. XX Dtime A3=000s >]

Measuring point matrix
[05. CH-MATRIX >]

[CH01-11 to MOD 01 CO >]
This submenu allows each measuring point to be assigned a previously defined sensor mode. The measuring points can either be defined as a range [CH01-11 to MOD 01 CO >] or as individual points. If only one input channel is defined, [CH05-05 to MOD 02 CO >] should be entered, for example. The corresponding sensor mode should be selected likewise. Acknowledge your entry with the arrow symbol.

Relay matrix
[06. REL-MATRIX >]

[A1 of CH01-11 to REL 01 =>]
This submenu assigns the output relays to the three alarm levels 1, 2 and 3. The respective alarm is indicated at the top of the display. Enter first the measuring channel range which you want to assign to a relay for the alarm stage shown. For a single measuring point, enter [A1 of CH01-01 to REL 01 =>], for example. Then select the desired output relay. Acknowledge with the „=" symbol in the event that you want to make more assignments for the indicated alarm level. Press the arrow symbol to enter the next higher alarm level. All entries are deleted by pressing the reset button.
Hint: It is entirely feasible to assign the same range and the same alarm level to several alarm outputs .

System data

Relay mode
[07. REL-MOD >]

[REL 01 = MOD 02 >]
A function type corresponding to the table must be entered for each relay. The relay relating to the current entry is shown in the display

Relay mode	In case of alarm				
	not resettable	automatically switched off after 2 mins.	blinking	fail-safe	memorising
1	X			X	
2	X				
3	X		X	X	
4	X		X		
5	X			X	X
6	X				X
7				X	
8					
9			X	X	
10			X		
11		X		X	
12		X			
13		X	X	X	
14		X	X		
15	X		X	X	X
16	X		X		X

System Data

Date / Time
[08. DATE/TIME >]

[WEDNESDAY 16.12.97 09:13 >]
Enter the current weekday, date and time.

Password
[09. PASSWORD >]

[NEW PASSWORD]
This menu allows your own password to be defined. The factory setting is predefined with 1111. The code protects the menus Relay Test and System Data Entry. The code must be entered again for security.

Service
[10. SERVICE>]

[SERVICE at]
Enter the date of the next service in the format DD.MM.YY. If automatic monitoring of the service date is not desired, enter the date „00.00.00".

Print system data
[11. PRINT SYS>]

Select to output the programmed system data to the serial interface. The print format is 9600 Baud, 8 Bit, 1 Stopbit, No Parity, 40 Characters per line.

Language settings
[12. LANGUAGE>]

[LANGUAGE=]
Select to choose the menu control language, either German or English.

End of System data entry
[13. END>]

Select to return to the Main selection level (Top Menu).

Spare parts

- **AI-8 / AI-16:**
  - Fuses F1 to F17
    100 mAT Type TR5-T in accordance with IEC 127-3, 250V
    Order number TN 12.070969
- **DIO-18:**
  - Fuse F1
    200 mAT Type TR5-T in accordance with IEC 127-3, 250V
    Order number TN 12.070426
  - Fuse F2
    1 AT Type TR5-T in accordance with IEC 127-3, 250V
    Order number TN 12.070438
- **DIO-32:**
  - Fuse F1
    500 mAT Type TR5-T in accordance with IEC 127-3, 250V
    Order number TN 12.070475
- **GMC 8364**
  - Fuse F1
    500 mAT Type TR5-T in accordance with IEC 127-3, 250V
    Order number TN 12.070475

- *Caution*
  The fuses may only be replaced by our service engineers or a qualified electrician. Before replacing the fuse, disconnect the mains supply. All display elements must turn off.

Overview of error messages

| LED / Relay	Cause
LED **Ready** out	- loss of power - device fuse defective
LED **Error** lights up	- see uder detector / hardware fault relay
LED **Prog** lights up	- you are in System data entry menu - no gas monitoring
Hardware fault relay triggered	- hardware fault
Detector fault relay triggered	- detector signal < 3 mA - detector fuse defective - no supply voltage - misssing or reversed 20-pin connection cable - broken connection - short circuit - system data entry active - relay test active - one or more measuring points turned off - service date exceeded
Relay type fail-safe triggered	- alarm message - no supply voltage - one of the fuses in the DIO-18 card is defective - missing 20-pin connection cable - 20-pin connection cable reversed

Default settings

In general, the settings are documented on the test log supplied with this unit. The following is the factory program setting, unless other information is available. This setting can be selected by holding   down, while the unit is briefly turned off.
Attention: this action will delete all previous system data!

No. of sensors	8
Password	1111
Service date	none
Gas	300 ppm CO (carbon monoxide)
Alarm 1	exceeding turn-on threshold 60 ppm turn-off threshold 60 ppm 30 minutes mean time value
Alarm 2	exceeding turn-on threshold 80 ppm turn-off threshold 80 ppm 30 minutes mean time value
Alarm 3	exceeding turn-on threshold 100 ppm turn-off threshold 100 ppm 30 minutes mean time value
Alarm 4	exceeding turn-on threshold 250 ppm turn-off threshold 245 ppm instantaneous value, no turn-on delay
Relay 1	alarm 1 not memorising
Relay 2	alarm 2 not memorising
Relay 3	alarm 3 (warning sign) blinking
Relay 4	alarm 3 (horn) off after 2 minutes off after pressing button

Bieler+Lang
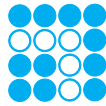
Definition table - detector mode

Detector mode	Medium	Unit	Measuring range	Alarm threshold		On	Off	Alarm trigger delay (Seconds)	Mean time value Minutes	Alarm if exceeding or undershooting
1				Alarm 1						
				Alarm 2						
				Alarm 3						
				Alarm 4					---	
2				Alarm 1						
				Alarm 2						
				Alarm 3						
				Alarm 4					---	
3				Alarm 1						
				Alarm 2						
				Alarm 3						
				Alarm 4					---	
4				Alarm 1						
				Alarm 2						
				Alarm 3						
				Alarm 4					---	
5				Alarm 1						
				Alarm 2						
				Alarm 3						
				Alarm 4					---	
6				Alarm 1						
				Alarm 2						
				Alarm 3						
				Alarm 4					---	
7				Alarm 1						
				Alarm 2						
				Alarm 3						
				Alarm 4					---	
8				Alarm 1						
				Alarm 2						
				Alarm 3						
				Alarm 4					---	
9				Alarm 1						
				Alarm 2						
				Alarm 3						
				Alarm 4					---	
10				Alarm 1						
				Alarm 2						
				Alarm 3						
				Alarm 4					---	

Definition table - relay matrix

GMC 8364

Relay no.	Relay mode	GMC 8364
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17	1	fault sensor
18	1	fault hardware

Definition table - measuring points

Measuring point no.	Detector mode	Alarm 1 relay no.	Alarm 2 relay no.	Alarm 3 / 4 relay no.

Notes on maintenance

Regular maintenance ultimately guarantees the safe and reliable function of the gas alarm unit. It is therefore absolutely necessary to check the unit at regular intervals. A maintenance agreement with us, covering your specific plant, is advisable. The condition (proper operation) of a gas alarm unit must be checked at least once every year by a qualified person (§8 and §53; VBG 61 UVV Gases). Before and after start-up the gas alarm unit must be inspected at reasonable intervals by a qualified person (§56; VBG 61,UVV Gases). Also, the BG instruction sheets T032, „Use of Stationary Gas Alarm Units for Explosion Protection" and T023 „Maintenance of Stationary Gas Alarm Units for Explosion Protection" must be observed.

Warranty

Delivery takes place only according to our wellknown terms with the newest date of January 2002. Defect of quality come under the statue of limitations within 12 months after the delivery.