Gas Detection.

Technical Datasheet

PolyGard®

Gas-Controller Module GC

All Products Made in Germany

DESCRIPTION

Measuring, warning and controlling device for toxic, combustible and refrigerant gases and vapours.

The GC Gas-Controller is designed in accordance with the standard EN 50545-1, among others. It can monitor and evaluate up to 100 gas sensors, 96 digital PolyGard®/PolyXeta®2 and/or 4 analog (4–20 mA) sensors. 4 free adjustable alarm thresholds are provided per sensor. For the alarm messages the Controller offers 4 alarm relays with potential-free change-over contact and two analog outputs with 4–20 mA signal. With the extension modules EP the Gas-Controller can manage up to 32 analog gas sensors, 32 alarm relays and 16 analog outputs. For the field bus outputs there is an integrated overload and reverse polarity protection.

The free adjustable parameters and setpoints enable a very flexible use in many applications of the gas measuring technique. Simple and comfortable commissioning, however, is also granted by the configuration with default parameters.

Configuration, parameterization and operation are easy to do directly at the Controller without special programming knowledge due to the logical, simple menu structure. Alternatively, the PCE Software enables the convenient loading, changing and storing of the application parameters via a serial interface.

The GC is equipped with a self-monitoring system with integrated hardware watchdog and with a power failure message as well as with a functional control of the registered digital/analog sensors according to the requirements of the gas measuring technique.

The optional data logger permits to protocol all measured values, alarms and faults.

APPLICATION

The GC Gas-Controller is used for the monitoring and warning of toxic and combustible gases and vapours as well as of Freon refrigerants within a wide range of the gas measurement technique. Numerous adjustable parameters and setpoints permit individual adaptation to many applications.

The GC fulfils the functions of monitoring carbon monoxide (CO) in garages, tunnels and cart tracks etc. according to the current EN 50545-1. In addition, the functions of leakage monitoring in refrigeration plants are fulfilled in accordance with the requirements EN 378, VBG 20 and the guidelines "Safety requirements for ammonia refrigeration systems".

FEATURES

- For connection of up to 96 PolyGard®/PolyXeta®2 bus sensors
- 4 analog inputs, 4–20 mA, for analog sensors
- Suitable for more than 50 different toxic, combustible and refrigerant gas types
- Simple and comfortable commissioning by configuration with standard parameters
- Logical system menu
- Flexible configuration thanks to programmable parameters and setpoints
- 4 free adjustable alarm thresholds per sensor
- 6 menu languages, free adjustable
- Several alarm relays configurable per alarm
- Access to menu operation via 4 code levels
- Project protection
- Temporary locking of transmitters possible for the customer
- Alarm release by falling or increasing gas concentrations selectable for each alarm threshold
- Connector for PCE Software at the Controller module
- 4 own relays with change-over contact, potential-free, max. 250 V AC, 5 A; 30 V DC, 2 A
- Additional control of up to 28 relays with change-over contact, potential-free, max. 250 V AC, 5 A; 30 V DC, 2 A (1–7 EP modules)
- Additional control of up to 96 relays with change-over contact, potential-free, max. 250 V AC, 5 A; 30 V DC, 2 A (via MSC/MSB)
- Additional control of up to 96 relays with change-over contact, potential-free, max. 30 V AC, 0.5 A (locally via WSB)
- Fault relay with normally open contact, potential-free, max. 250 V AC, 5 A; 30 V DC, 2 A
- 2 analog outputs, 4–20 mA, with selective signal output for special mode, fault, etc.
- Up to 7 EP expansion modules with integrated repeater function connectable
- Serial interface RS-485 with Modbus RTU protocol
- EN 50545-1 compliant
- SIL2 Level compliant
- Integrated reverse polarity and overload protection for field bus outputs
- Suitable for rail mounting (distribution box)
- Monitoring of the external uninterruptible power supply (UPS) DGC-USV (with deep discharge protection and battery monitoring)
- Flashing light at power failure (option)
- USB port for data logger function for all measured values, alarms and faults (option)
- Door mounting (option): The door mounting version comes with the door mounting housing and 2 modules (display module for door mounting and relay module for rail mounting) (see figure 1 and figure 2).

Figure: 1: Door mounting version with 3 individual components

Figure 2: Door mounting version, installed

SPECIFICATIONS

ELECTRICAL	
Power supply	24 V DC ± 20 %
Power consumption	4 W, 150 mA
Analog input (4)	4–20 mA, overload and short-circuit proof, input resistance 130 Ω
Tension for external analog transmitter	24 V DC (same as power supply), max. 130 mA / per sensor
Analog output (2) configurable for each input	Proportional, overload and short-circuit proof, charge ≤ 500 Ω 4–20 mA = measuring range 3.0–<4 mA = underrange > 20–21.2 mA = overrange 2.0 mA = fault
Alarm relay (4)	250 V AC, 5 A; 30 V DC, 2 A potential-free, change-over (SPDT)
Fault relay (1)	250 V AC, 5 A; 30 V DC, 2 A potential-free, normally open contact (SPST)
VISUALISATION	
LCD	2 lines, 16 characters each, illuminated
Status LED (4)	Green = Power, yellow = Fault, Light red = Alarm 1, dark red = Alarm 2
Operation	6 pushbuttons
Menu language (selectable)	German, English (UK), Spanish, French, Italian, English USA
INTERFACE FIELD BUS	
Transceiver	RS-485 / 19200 Baud
INTERFACE RS-485 MODBUS RTU	
Function	Transmission of current and average values, alarm and relay status, and analog output states in Modbus RTU RS 485 protocol to external devices (see GA_GC_Modbus_Supplement_E)
GASES	
	Digital PolyGard®/PolyXeta®2 sensors and analog sensors for toxic, combustible & refrigerant gases and oxygen
AMBIENT CONDITIONS	
Humidity range	15–95 % RH non-condensing
Working temperature range	-5 °C to +40 °C (23 °F to 104 °F)
Pressure range	80–120 kPa
RECOMMENDED STORAGE CONDITIONS	
Storage temperature range[1]	0 °C to +40 °C (32 °F to 104 °F)
Storage time	Ca. 6 months
Humidity range	20–90 % RH non-condensing
Pressure range	80–120 kPa
PHYSICAL	
Housing	Plastic housing ABS
Colour	Similar to RAL 7035 (light grey)
Protection class	IP40
Weight	Ca.0,3 kg
Packaging volumes	Ca. 4.4 l
Mounting	Top DIN rail mounting, installation in distribution box
Dimensions (W x H x D)	106 x 110 x 62 mm (4.2 x 4.3 x 2.4 in.)
Wire connection: • Power supply • Output relays • Digital/analog signals	 Screw type terminal: 0.5–2.5 mm² (22–14 AWG) 2 x spring type terminal: 0.5–1.5 mm² (22–16 AWG) Spring type: 0.5–1.5 mm² (22–16 AWG)

[2] A deviating storage temperature can have a negative effect on sensitivity and service life.

REGULATIONS	
Directives	EMC Directive 2014/30/EU Low Voltage Directive 2014/35/EU EN 50271 EN 61010-1:2010 CE Conformity to: EN 50402 EN 50545-1 IEC/EN 61508-1–3 ANSI/UL 2017 / UL 61010-1 CAN/CSA-C22.2 No. 61010-1
Warranty	2 years on device
OPTIONS	
FLASHING LIGHT AT POWER FAILURE	
LED	Battery-buffered
Operation duration	10 h (flashing)
DATA LOGGER	
Function	Storage of measured values, of faults and alarm status with time and date stamp on an USB flash drive
Log rate	Log rate adjustable from 10 to 10,000 sec.
Data format	Output of the data in standard Excel format
DOOR MOUNTING (see fig. 1 and 2)	
Components (3)	• Door mounting housing • Display module for door mounting • I/O relay module for rail mounting
Housing	See also DIMENSIONS DOOR MOUNTING
Door mounting dimensions (W x H x D)	200 x 170 x 97 mm (7.9 x 6.7 x 3.8 in.)
Door mounting cut-out (W x H)	165 x 138 mm (6.5 x 5.4 in.)

All specifications were collected under optimal test conditions.
We confirm compliance with the minimum requirements of the applicable standard.
The T 021 (DGVU-I-213-056) and T 023 (DGVU-I-213-057) as well as T 055 leaflets must be observed.

SOFTWARE VARIANTS

The DGC software is available in several variants, which differ in terms of the number of configurable measuring points and outputs.

The number of measuring points has a direct influence on the cycle time - the time required by the system to fully analyse all connected measuring points and then update the system states of all components.

A shorter cycle time results in a faster reaction time of the overall system.

Number of Digital Points	Number of EP Modules	Number of Analog Points	Number of Signal Relays	Number of Alarm Relays	Number of Analog Outputs	Cycle time (approx.)
96	7	8 x 4 = 32	96	32	16	8000 ms
64	7	8 x 4 = 32	64	32	16	5300 ms
32	4	5 x 4 = 20	32	20	10	2600 ms
16	2	3 x 4 = 12	16	12	6	1300 ms

Table 1: Software Variants

ORDERING INFORMATION

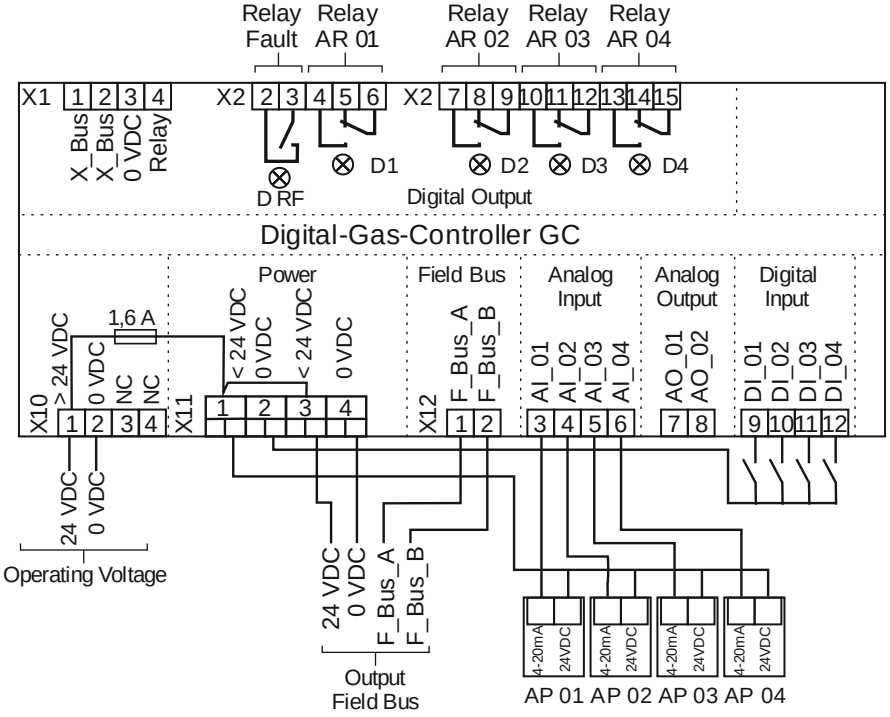
GC-06-	**XXX-**	**XX-**	**X**	
			0	**Without further options**
			A[1]	Version UL/CSA 61010-1 — **Further Option**
		96		96 measuring points (7x EP possible)
		64		64 measuring points (7x EP possible)
		32		32 measuring points (4x EP possible)
		16		16 measuring points (2x EP possible) — **Measuring Points**
	000			Without further options
	1XX			Power failure flashing light
	X1X			Door mounting (2 modules, w/o housing)
	X2X			Door mounting (2 modules with housing)
	X3X			Door mounting (2 modules with lockable housing)
	XX1			Data logger function & USB flash drive — **Options**

[1] Only valid in conjunction with the DGC as UL version and only available for version with 96 measuring points.

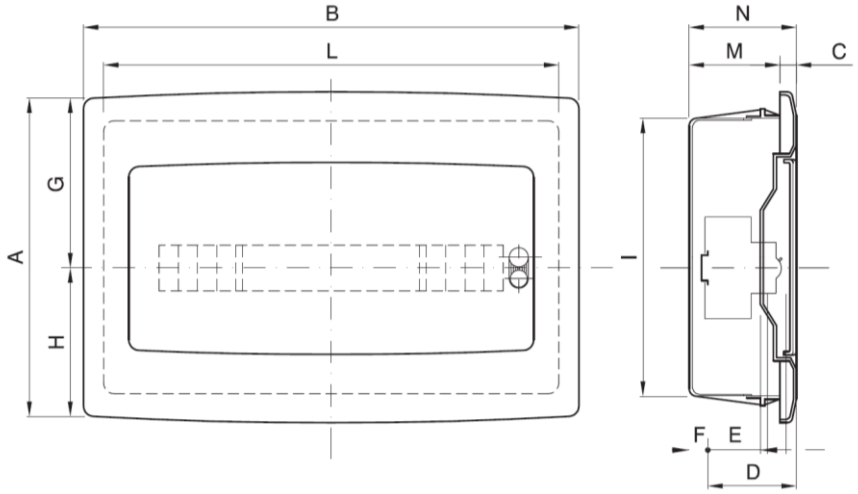
EXAMPLE

GC Gas-Controller module, with power failure flashing light, 96 measuring points, without further options (order number: GC-06-100-96-0)

ELECTRICAL CONNECTION



DIMENSIONS FOR DOOR MOUNTING (in mm)



EXTERNAL DIMENSIONS				DEVICE MOUNTING					FIXATION		
A	B	C	N	D	E	F	G	H	I	L	M
170	200	12	97	75	48	14	90	80	138	165	85

Documents

Catalog

YouTube