**PolyGard®2**

# Gas Controller System DGC-06

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

The gas controller series DGC-06 is designed in accordance with the standard EN 50545-1. It can monitor and manage up to 128 gas sensors, 96 of them PolyGard®2 digital and/or 32 of them analog (4 to 20 mA) sensors. Four free adjustable alarm thresholds are provided per sensor. For the alarm messages the controller offers up to 32 alarm relays with potential-free change-over contact and up to 16 analog outputs with 4 to 20 mA signal.

Controller DGC-06

The free adjustable parameters and set points enable a very flexible use in the gas measuring technique. Simple and comfortable commissioning, however, is 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. The DGC-06 EasyConf Software enables the loading, changing and storing of the application parameters via a serial interface.

The DGC-06 series is equipped with a self-monitoring system, with 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. In addition, the gas controller is available with a battery backed, uninterruptible power supply incl. low voltage control.

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

Different interface und protocol options are available for the connection to a superior BMS.

**APPLICATION**

The DGC-06 gas controller series 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 set-points permit individual adaptation to many applications.

The DGC-06 gas controller fulfils the functions of monitoring carbon monoxide (CO) in garages, tunnels and cart tracks etc. according to the current EN 50545-1. Additionally, ammonia (NH3) refrigerant plants can be monitored according to the requirements EN 378, VBG 20 and the guidelines "safety requirements for ammonia refrigeration systems".



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# Gas Controller System DGC-06

**FEATURES**

- For 128 gas sensors, 96 of them PolyGard®2 digital and/or 32 of them analog (4 to 20 mA)
- Suitable for about 50 toxic, combustible and refrigerant gases
- Simple and comfortable commissioning by configuration with standard parameters
- Logical system menu
- Flexible configuration thanks to programmable parameters and set-points
- Four free adjustable alarm thresholds per sensor
- Six menu languages, free adjustable
- Several alarm relays configurable per alarm
- Access to menu operation via four code levels
- Project protection
- Alarms in latching mode resettable via a digital input
- Temporary locking of transmitters possible for the customer
- Alarm release by falling or increasing gas concentrations selectable for each alarm
- Connector for DGC-EasyConf at the controller module
- Max. 32 relays with change-over contact, potential-free, max. 250 V AC, 5 A
- Fault relay with normally open contact, potential-free, max. 250 V AC, 5 A
- Maximum 16 analog outputs, 4 to 20 mA, with selective signal output for special mode, fault, etc.
- Up to seven EP-06 modules connectable
- EP modules with integrated repeater function
- EN 50545-1 conformity
- SIL 2 Level
- Monitoring of the UPS batteries for charge condition and functionality
- Shapely, durable housing
- Option: Housing lockable
- Option: Monitoring of the connected warning devices for functionality and discontinuity
- Option: Integrated battery backed UPS, incl. charge condition and low voltage control
- Option: Flashing light at power failure
- Option: Integrated warning buzzer
- Option: USB port for data logger function for all measured values, alarms and faults
- Option: Serial interface with ModBus or TLS protocol for the connection to BMS etc.
- Option: MainBus interface for the connection of several GC-06 controllers
- Option: Communication module for BacNET, LON or printer module PR-06

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# Gas Controller System DGC-06

**SPECIFICATIONS**

| | | |
|---|---|---|
| **Electrical** | | |
| Power supply | | 90/230 V AC 50/60 Hz;<br>24 V DC - 20 % + 20 % |
| Power consumption (incl. sensors) | | Min. 30 W, 0.15 A, max. ca. 160 W, 0.7 A<br>Depending on type and configuration |
| Analog input (4 to max. 32) | | 4 to 20 mA, overload and short-circuit- protected, input resistance 200 Ω |
| Tension for external analog transmitter | | 24 V DC ± 20 %, max. 100 mA / per sensor |
| Analog output (max 16)<br>configurable for each input | | Proportional, overload and short-circuit- protected, charge ≤ 500 Ω<br>4 - 20 mA = measuring range<br>3.0 < 4 mA = underrange<br>>20 – 21.2 mA = overrange<br>2.0 mA = fault |
| Alarm relay (max. 32) | | 250 V AC, 5 A, potential-free, change-over (SPDT) |
| Fault relay (1) | | 250 V AC, 5 A, potential-free, normally open contact (SPST) |
| **Visualization** | | |
| LCD | | Two lines, 16 characters each, illuminated |
| Status LED (4) | | Operation – fault – 1st alarm – ≥ 2nd alarm |
| Operation | | 6 push-buttons |
| Menu language (selectable) | | German, English, Dutch, USA, French, Swedish |
| **Interface field bus** | | |
| Transceiver | | RS 485 / 19200 Baud |
| **Gases** | | Digital PolyGard®2 and analog sensors for toxic, combustible & refrigerant gases |
| **Environmental** | | |
| Humidity | | 15 – 95 % RH non-condensing |
| Working temperature | | -5 °C to +40 °C (23 °F to 104 °F) |
| Storage temperature | | 0 °C to +40 °C (32 °F to 104 °F) |
| **Physical** | | |
| Enclosure | | Plastic housing with view cover |
| Colour | | RAL 7035 |
| Protection class | | IP 65 |
| Weight | | Min. 2.7 kg (4.4 lb)<br>Max. 13 kg (28,7 lb) depending on type |
| Mounting | | Wall mounting |
| Cable entry | | M 16; M 20; M 25 |
| Dimensions: Type 1 (XS) | | (W x H x D) 298 x 260 x 140 mm (11.7 x 10.2 x 5.5 in.) |
| Dimensions: Type 2 (S) | | (W x H x D) 298 x 420 x 140 mm (11.7 x 16.5 x 5.5 in.) |
| Dimensions: Type 3 (M) | | (W x H x D) 298 x 570 x 140 mm (11.7 x 22.4 x 5.5 in.) |
| Dimensions: Type 4 (L) | | (W x H x D) 410 x 655 x 140 mm (16.1 x 25.8 x 5.5 in.) |
| Wire connection: | Power supply | Screw type terminal: 2.5 $mm^2$ (14 AWG) |
| | Output | 2 x spring type terminal: min. 0.5 $mm^2$, max. 1.5 $mm^2$ (22 to 16 AWG) |
| | Input | Spring type: min. 0.5 $mm^2$, max. 1.5 $mm^2$ (22 to 16 AWG) |
| **Guidelines** | | EMC – Directive 2014/30/EU<br>Low voltage directive 2014/35/EU<br>EN 50 545-1<br>EN 50271<br>Conform to:<br>EN 61010-1:2010<br>ANSI/UL 61010-1<br>CAN/CSA-C22.2 No. 61010-1 |
| **Warranty** | | 1 year on material |

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# Gas Controller System DGC-06

**SPECIFICATIONS - OPTIONS**

| | |
|---|---|
| **UPS** | |
| Battery backed supply for controller, sensors, warning signs and horns | Supply duration 60 minutes, maintenance-free rechargeable batteries with function control and deep discharge protection |
| Capacity | 2.2 Ah<br>7.2 Ah |
| Housing | Plastic housing with view cover |
| Colour | RAL 7035 |
| Protection class | IP 65 |
| Weight | Min. ca. 3.8 kg (6.6 lb)<br>Max. ca. 7.2 kg (15.4 lb) (depending on type) |
| Mounting | Wall mounting |
| Cable entry | M 16; M 20 |
| Dimensions: (W x H x D) | 298 x 260 x 140 mm (11.7 x 10.2 x 5.5 in.)<br>410 x 285 x 140 mm (16.1 x 25.8 x 5.5 in.) (depending on type) |
| **Flashing light at power failure** | Battery backed LEDs |
| Operation duration | 10 h (flashing) |
| **Warning buzzer** | |
| Acoustic pressure | 85 dB (distance 1000 mm) |
| Frequency | 3.5 kHz |
| **Data Logger** | |
| Function | Storage of measured values, of alarm status and faults 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 |
| **Interface ModBus RTU RS 485** | |
| Function | Transmission of current and average values, alarm and relay status, and analog output states in MODBus RTU RS 485 protocol to external devices |
| **Interface TLS protocol (TCP/IP)** | |
| Function | Transmission of current and average values, alarm and relay status, and analog output states in TLS protocol |
| **Communication module BacNET-06** | Technical data, function and protocol see datasheet DB-BAC |
| **Printer communication module PR-06** | Technical data and function see datasheet DBPrint06 |
| **MainBus Interface** | RS 485 interface for connection of up to four GC-06 controller modules |
| **Control of external warning devices** | |
| Power supply of the external warning devices | 24 V DC |
| Measuring resistance at the warning device | 12 kΩ, 0.5 W, 5 % |

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# Gas Controller System DGC-06

**ORDER INFORMATION**

DGC -06 - X - X - X- XXXXXXXXX

**OPTIONS**

**1**XXXXXXXX Power failure flashing light
X**1**XXXXXXX Warning buzzer
X**2**XXXXXXX* Version according to UL 2017 (incl. warning buzzer)
XX**1**XXXXXX Data logger incl. USB flash drive
XXX**1**XXXXX Interface MODBus RTU RS 485
XXX**4**XXXXX* Interface TLS protocol RS 485
XXXX**1**XXXX* MainBus interface
XXXXX**1**XXX* Control of external warning devices
XXXXXX**1**XX Cable entry from below[1]
XXXXXX**2**XX Cable entry from below and above[1]
XXXXXXX**1**X Housing lockable
XXXXXXXX**?** Communication module BacNET 06[2]
XXXXXXXX**?*** LON coupler[2]
XXXXXXXX**?*** Printer communication module PR-06[2]

[1] Standard is from above
[2] Respect place requirement in the housing, number code see data sheet

**HOUSING DIMENSIONS**[3]

**1** Max. space units 2
**2** Max. space units 8
**3** Max. space units 14
**4** Max. space units 23
**8** Metal housing max. space units 20 (600 x 600 x 250 mm/23.6 x 23.6 x 9.8 inch.)

[3] Space required for options: 3 units per LON coupler, 1 unit per communication, printer, repeater or UPS module

**NUMBER OF EP-06 MODULES**

| | AR | AI | AO | SU (AR: Alarm Relay / AI: Analog Input / AO: Analog Output / SU: Space Unit) |
|---|---|---|---|---|
| **0** | 04 | 04 | 02 | 0 |
| **1** | 08 | 08 | 04 | 3 |
| **2** | 12 | 12 | 06 | 6 |
| **3** | 16 | 16 | 08 | 9 |
| **4** | 20 | 20 | 10 | 12 |
| **5** | 24 | 24 | 12 | 15 |
| **6** | 28 | 28 | 14 | 18 |
| **7** | 32 | 32 | 16 | 21 |

**POWER UNIT / UPS**[4]

**0** Supply 24 V DC
**1** Power unit: 230/110 V AC <> 24 V DC, 2.5 A
**2** Power unit: 230/110 V AC <>24 V DC, 6.5 A
**3** UPS: 230/110 V AC <> 24 V DC, 2.2 Ah
**4** UPS: 230/110 V AC <> 24 V DC, 7.2 Ah
**5*** UPS with 12 Ah incl. battery
**6*** UPS with 12 Ah without battery

**FIELD BUS / PROTOCOL**

**06** RS 485 / DGC-06
**16** RS 485 / MSR_D_Bus

*** only on request**

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# Gas Controller System DGC-06

**EXAMPLE**

DGC-06 Controller, 96 PolyGard®2 sensors, 12 alarm relays, USV 7.2 Ah, power failure flashing light and data logger.

**Ordering number: DGC06-4-2-2-101000000**

**WIRING CONFIGURATION**