



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 system offers up to 128 relays with potential-free change-over contact and up to 16 analog outputs with 4 to 20 mA signal.

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".



Controller DGC-06



MSR-Electronic GmbH ::: Würdinger Str. 27 & 27A ::: 94060 Pocking ::: Germany

Specifications subject to change without notice.

Up-to-date data sheets and user manuals can be found in the download area of www.msr-24.com.

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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 more than 50 different toxic, combustibile and refrigerant gas types
- 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/DC, 5 A (via GC06 module and 1 to 7 EP06 modules) and
- Max. 96 relays with change-over contact, potential-free, max. 250 V AC/DC, 5 A (via MSC2 / MSB2 / MGC2) and/or
- Max. 96 relays with change-over contact, potential-free, max. 40 V AC, 0.5 A (via WSB2)
- 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 with integrated repeater function connectable
- 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



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SPECIFICATIONS

Electrical

Power supply	90/230 V AC 50/60 Hz; 24 V DC - 20 % + 20 %
Power consumption (incl. sensors)	Min. 30 W, 0.15 A, max. ca. 160 W, 0.7 A 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) configurable for each input	Proportional, overload and short-circuit- protected, charge ≤ 500 Ω 4 - 20 mA = measuring range 3.0 < 4 mA = underrange >20 – 21.2 mA = overrange 2.0 mA = fault
Relay (max. 32)	250 V AC/DC, 5 A, potential-free, change-over (SPDT)
Relay (max. 96) (via MSC2/MSB2/MGC2) and/or	250 V AC/DC, 5 A, potential-free, change-over (SPDT)
Relay (max. 96) (via WSB2)	40 V AC/DC, 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) 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	
Low voltage directive 2014/35/EU	
EN 50 545-1	
EN 50271	
Conform to:	
EN 61010-1:2010	
ANSI/UL 61010-1	
CAN/CSA-C22.2 No. 61010-1	

Warranty

1 year on sensor (not if poisoned or overloaded)	
2 years on device	





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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
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Capacity	2.2 Ah 7.2 Ah
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Housing	Plastic housing with view cover
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Colour	RAL 7035
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Protection class	IP 65
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Weight	Min. ca. 3.8 kg (6.6 lb) Max. ca. 7.2 kg (15.4 lb) (depending on type)
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Mounting	Wall mounting
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Cable entry	M 16; M 20
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Dimensions: (W x H x D)	298 x 260 x 140 mm (11.7 x 10.2 x 5.5 in.) 410 x 285 x 140 mm (16.1 x 25.8 x 5.5 in.) (depending on type)
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Flashing light at power failure	Battery backed LEDs
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Operation duration	10 h (flashing)
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Warning buzzer

Acoustic pressure	85 dB (distance 1000 mm)
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Frequency	3.5 kHz
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Data Logger

Function	Storage of measured values, of alarm status and faults with time and date stamp on an USB flash drive
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Log rate	Log rate adjustable from 10 to 10,000 sec.
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Data format	Output of the data in standard Excel format
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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
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Interface TLS protocol (TCP/IP)

Function	Transmission of current and average values, alarm and relay status, and analog output states in TLS protocol
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Communication module BacNET-06	Technical data, function and protocol see datasheet DB-BAC
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MainBus Interface	RS 485 interface for connection of up to four GC-06 controller modules
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Control of external warning devices

Power supply of the external warning devices	24 V DC
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Measuring resistance at the warning device	12 kΩ, 0.5 W, 5 %
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ORDER INFORMATION

DGC -06 - X - X - X- XXXXXXXXX

OPTIONS

- 1XXXXXXXX Power failure flashing light
- X1XXXXXXXX Warning buzzer
- X2XXXXXXXX Version according to UL 2017 (incl. warning buzzer)
- XX1XXXXXXXX Data logger incl. USB flash drive
- XXX1XXXXX Interface MODBus RTU RS 485
- XXX4XXXXX* Interface TLS protocol RS 485
- XXXX1XXXX* MainBus interface
- XXXXX1XXX* Control of external warning devices
- XXXXXX1XX Cable entry from below¹
- XXXXXX2XX Cable entry from below and above¹
- XXXXXX1X Housing lockable
- XXX1XXXX? Communication module BacNET 06²

¹ Standard is from above / ² Only in connection with MODBus RTU RS 485

² Respect place requirement in the housing, number code see data sheet

HOUSING DIMENSIONS³

- 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: 1 unit per communication, 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 / UPS⁴

- 0 Supply 24 V DC
- 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

⁴ Higher capacity or without power unit on request

FIELD BUS / PROTOCOL

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

* only on request



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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

