PERFECT SOLUTIONS FOR **GAS ALARM** SYSTEMS

Technical Datasheet

PolyGard®2

Gas-Controller System DGC-06

MSR-Electronic GmbH | Buergermeister-Schoenbauer-Str. 13 | D-94060 Pocking

DESCRIPTION

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 digital PolyGard®2/PolyXeta®2 and/or 32 analog (4–20 mA) sensors. 4 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 4–20 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 PCE06 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 (NH_3) refrigerant plants can be monitored according to the requirements EN 378, VBG 20 and the guidelines "safety requirements for ammonia refrigeration systems".

FEATURES

- For 128 gas sensors, 96 digital PolyGard®2/PolyXeta®2 and/or 32 analog (4–20 mA) 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
- 5 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 PCE06 Software at the controller module
- Up to 32 relays with change-over contact, potential-free, max. 250 V AC, 5 A, 30 V DC, 2 A (via GC06 module and 1–7 EP-06 modules) and
- Up to 96 relays with change-over contact, potential-free, max. 250 V AC, 5 A, 30 V DC, 2 A (via MSC2/MSB2/MGC2) or
- Up to 96 relays with change-over contact, potential-free, max. 30 V AC, 0.5 A (locally via WSB2)
- Fault relay with normally open contact, potential-free, max. 250 V AC, 5 A, 30 V DC, 2 A
- Maximum 16 analog outputs, 4–20 mA, with selective signal output for special mode, fault, etc.
- Up to 7 EP-06 expansion modules with integrated repeater function connectable
- EN 50545-1 compliant
- SIL2 Level compliant
- Shapely, durable housing
- Option: Housing lockable
- Option: Integrated battery backed UPS, incl. function monitoring and deep discharge protection (in separate housing)
- 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 RS-485 with Modbus RTU protocol
- Option: Communication module with TCP/IP interface and Modbus RTU protocol
- Option: Communication module for BACnet

DGC-06 with UPS (in separate housing, behind)

DGC-06 in housing type 1 and type 3

SPECIFICATIONS

ELECTRICAL	
Power supply	90/230 V AC, 50/60 Hz; 24 V DC ± 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)	4–20 mA, overload and short-circuit proof, input resistance 130 Ω
Tension for external analog transmitter	24 V DC ± 20 %, max. 130 mA / per sensor
Analog output (max 16) 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
Relay (max. 32)	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 colours)	Green = Power, yellow = Fault, Light red = Alarm 1, dark red = Alarm 2
Operation	6 pushbuttons
Menu language (selectable)	German, English, USA, French, Italian
INTERFACE FIELD BUS	
Transceiver	RS-485 / 19200 Baud
GASE	
	Digital PolyGard®2/PolyXeta®2 and analog sensors for toxic, combustible & refrigerant gases
AMBIENT CONDITIONS	
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	IP65
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	(W x H x D) 298 x 260 x 140 mm (11.7 x 10.2 x 5.5 in.)
Dimensions: Type 2	(W x H x D) 298 x 420 x 140 mm (11.7 x 16.5 x 5.5 in.)
Dimensions: Type 3	(W x H x D) 298 x 570 x 140 mm (11.7 x 22.4 x 5.5 in.)
Dimensions: Type 4	(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: 0.5–2.5 mm² (22–14 AWG)
Output relays	2 x spring type terminal: 0.5–1.5 mm² (22–16 AWG)
Digital/analog signals	Spring type: 0.5–1.5 mm² (22–16 AWG)
REGULATIONS	
Directives	EMC Directive 2014/30/EU Low Voltage Directive 2014/35/EU EN 50271 EN 61010-1:2010 ANSI/UL 61010-1 CAN/CSA-C22.2 No. 61010-1 Conformity to: EN 50545-1
Warranty	2 years on device

OPTIONS	
UPS (see also DB_DGC06_USV)	
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 7.2 Ah 12 Ah
Housing	Plastic housing with view cover
Colour	RAL 7035
Protection class	IP65
Weight	Min. ca. 3.8 kg (6.6 lb) Max. ca. 9.4 kg (20.7 lb) (depending on type)
Mounting	Wall mounting
Cable entry	M 20
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)
FLASHING LIGHT AT POWER FAILURE	
LED	Battery backed
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 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
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
COMMUNICATION MODULE BACNET-06	
	Technical data, function and protocol see datasheet DB_BAC06_E
COMMUNICATION MODULE MODUS RTU TCP/IP	
	Technical data, function and protocol see datasheet DB_MODIP_E

All specifications were collected under optimal test conditions.
We confirm compliance with the minimum requirements of the applicable standard.

ORDERING INFORMATION

DGC- **X6-** **X-** **X-** **X-** **XXXX00XXX**

000000000	No further options	
1XXX00XXX	Power failure flashing light	
X**1**XX00XXX	Warning buzzer	
X**2**XX00X**0**X	Version according to UL 61010-1 (incl. warning buzzer)	
XX**1**X00XXX	Data logger incl. USB flash drive	
XXX**1**00XXX	Interface RS-485 Modbus RTU (in GC-06 Module)	
XXXX00**1**XX[1]	Cable entry from below	
XXXX00**2**XX[1]	Cable entry from below and above	
XXXX00X**1**X	Housing lockable (not for UL 61010-1 version)	
XXX**1**00XX**?**[2]	Communication module BACnet-06 (P, Q see DB_BAC)	
XXX**1**00XX**Z**[2]	Communication module Modbus TCP/IP (see DB_MODIP)	**Options**

1	1x GC-06 Module	
2	1x GC-06 Module and max. 2x EP-06 Modules	
3	1x GC-06 Module and max. 4x EP-06 Modules	
4	1x GC-06 Module and max. 7x EP-06 Modules	**Housing dimensions**
8*	Metal housing	

	AR	**AI**	**AO**	
(AR: Alarm-Relay / AE: Analog Input / AA: Analog Output)				
0	04	04	02	
1	08	08	04	
2	12	12	06	
3	16	16	08	
4	20	20	10	
5	24	24	12	
6	28	28	14	**Number of EP-06 modules**
7	32	32	16	

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	**Power supply / UPS[3]**
5	UPS: 230/110 V AC <> 24 V DC, 12 Ah	

06	**RS-485 / DGC-06**	**Field bus / protocol**
16	RS-485 / MSR_D_Bus	

* On request

[1] Standard is from above
[2] Only in connection with Modbus RTU RS 485, space requirements respected per housing, number code see data sheet
[3] Higher capacity or without power unit on request

EXAMPLE

DGC-06 Controller, 96 PolyGard®2 sensors, 12 alarm relays, UPS 7.2 Ah, power failure flashing light and data logger
Ordering number: DGC-06-4-2-2-101000000

ELECTRICAL CONNECTION