PolyGard® Gas Controller System DGC-05

DESCRIPTION

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

The gas controller series DGC-05 can monitor and process up to 98 digital (RS 485) and/or analog (4 to 20 mA) gas transmitters of the ADT-X3 and MA/MD series. Five free adjustable alarm thresholds are provided per transmitter. For the alarm messages, up to 30 alarm relays with potential-free changeover contact and up to 12 analog outputs (4 to 20 mA) are available.

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 without special programming knowledge due to the logical, simple menu structure directly at the controller. The DGC-EasyConf Software enables the loading, changing and storing of the application parameters via a serial interface.

The DGC-05 series are equipped with a self-monitoring system, with power failure message as well as with a functional control of the registered digital/ analog transmitters according to the requirements of the gas measuring technique.

In addition, the gas controller is available with an uninterruptible power supply supported by a rechargeable battery.

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

APPLICATION

The DGC-05 gas controller series are used for the monitoring and warning of toxic and combustible gases as well as 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-05 gas controller fulfils the functions of monitoring carbon monoxide (CO) in garages, tunnels and cart tracks etc. according to the current VDI 2053 and ÖNORM. 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".

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FEATURES

- For up to max. 98 PolyGard transmitters of the ADTX3 series and/or MA/MD series
- Transmitters can be connected in digital (RS 485) and/or analog (4 to 20 mA) mode.
- For monitoring more than 30 toxic, combustible or refrigerant gases, temperature and humidity
- Simple and comfortable commissioning by configuration with standard parameters
- Logical system menu
- Flexible configuration thanks to programmable parameters and set-points
- Five free adjustable alarm thresholds per transmitter
- 6 menu languages free adjustable
- Several alarm relays configurable per alarm
- Adaptation of the transmitter communication (digital and/or analog) in the menu
- Stored alarms resettable via a digital input
- Temporary locking of transmitters possible for the customer
- Alarm release selectable for falling or increasing gas concentrations
- Connector for DGC-EasyConf at the controller module
- Max. 30 relays with change-over contact, potential-free, max. 250 V AC, 5A
- Fault relay with change-over contact, potential-free, max. 250 V AC, 5A
- Max. 12 analog outputs, 4 to 20 mA
- Max. 23 EP-05 modules (= 96 analog inputs) connectable
- VDI - 2053 conform
- UL/ EN-61010 conform
- Shapely, durable housing
- Option: Housing lockable
- Option: Integrated UPS
- Option: Flashing light at power failure
- Option: Integrated buzzer
- Option: USB port for data logger function, for all measured values and alarms/ faults
- Option: Serial interface with ModBus protocol for the connection to BMS etc.
- Option: Serial interface TLS protocol
- Option: Certification according to UL 2017

SPECIFICATIONS

Electrical	
Power supply	110/230 V AC 50/60 Hz; 24 V AC/DC -10% + 20%
Power consumption (incl. transmitters)	Min. 30 W, 0.15 A Max. 160 W, 0.7 A Depending on type and configuration
Analog input (4 to max. 96)	4 to 20 mA, overload and short-circuit- protected, input resistance 200 Ω
Tension for external analog transmitter	24 VDC, max. 50 mA /per transmitter
Analog output (max 12) configurable for each input	4 to 20 mA, overload and short-circuit- protected, max. load 500 Ω
Alarm relay (max. 30)	250 V AC, 5 A, potential-free, change-over SPDT
Fault relay (1)	250 V AC, 5 A, potential-free, change-over SPDT
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	
Gas Transmitters ADT-X3 and MA/MD	Toxic, combustible and refrigerant gases
Environmental	
Humidity	15 – 95 % RH non-condensing
Working temperature	- 10 °C to + 40 °C (14 °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 (grey)
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
Dimension Type 1 (XS) (W x H x D)	298 x 260 x 140 mm (11.7 x 10.2 x 5.5 in.)
Dimension Type 2 (S) (W x H x D)	298 x 420 x 140 mm (11.7 x 16.5 x 5.5 in.)
Dimension Type 3 (M) (W x H x D)	298 x 570 x 140 mm (11.7 x 22.4 x 5.5 in.)
Dimension 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, max. 1.5 mm^2 (22 to 16 AWG)
Input	Spring type: 0.5 to 1.5 mm^2 (22 to 16 AWG)
Guidelines	
	EMC–Directive 2004/108/EC; Low voltage directive 2006/95/EC VDI 2053 EN 61010-1:2010 ANSI/UL 61010-1 CAN/CSA-C22.2 No. 61010-1
Warranty	One year on material

Options	
UPS	
Battery backed supply for controller and transmitter	Supply duration 60 minutes, maintenance-free rechargeable batteries with charging function and deep discharge protection
Housing	Plastic housing with view cover
Colour	RAL 7035
Protection class	IP 65
Weight	Min. ca. 3.8 kg (6.6 lb) 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.) 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
Version according to UL 2017	
Housing	Plastic housing with view cover
Colour	RAL 7035
Protection class	IP 65
Weight	Min. ca. 2,7 kg (4.4 lb) Max. ca. 13 kg (28.7 lb) (depending on type)
Mounting	Wall mounting
Cable entry	M 16; M 20; M 25
Combustion	UL 95-5V
Conformity	UL Type 1 UL508/UL 50
Dimension: Type 1 (XS) (W x H x D)	306 x 290 x 145 mm (12.0 x 11.4 x 5.7 in.)
Dimension: Type 2 (S) (W x H x D)	306 x 430 x 145 mm (12.0 x 16.9 x 5.7 in.)
Dimension: Type 3 (M) (W x H x D)	306 x 580 x 145 mm (12.0 x 22.8 x 5.7 in.)
Approval controller	Conform to standard ANSI/UL 2017
Approval housing	UL Listed, E75645
Data Logger	
Function	Storage of measured values, of alarm status and faults with time and date stamp on an USB stick
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 all current and average values, of status alarm relays and analog inputs to external devices in ModBus RTU RS 485 protocol format
Communication module BacNET 05	Technical data, function and protocol see datasheet DB-BAC
LON Coupler DA & DB	Technical data, function and protocol see datasheet DB-GC05-RS485-LON
Print Communication module PR-05	Technical data, function and protocol see datasheet DBPrint05

	Options
1XXXXXX	Power failure flashing light
X1XXXXX	Warning buzzer
X2XXXXX	Version according to UL 2017[1]
XX1XXXX	Cable entry from below[2]
XX2XXXX	Cable entry from below and above[2]
XXX1XXX	Housing lockable
XXXX1XX	Data Logger function & USB stick
XXXXX1X	Interface ModBus RTU RS 485
XXXXX4X	Interface TLS protocol RS 485
XXXXXX?	Communication module BacNET 05[3]
XXXXXX?	LON coupler[3]
XXXXXX?	Print communication module PR-05[3]

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

ORDERING INFORMATION

Special versions[4]

DGC-X5-16-1-3-0-1-XXXXXXX-XX

[4] Is defined by MSR-E

	Alarm-relays	Analog inputs	Analog outputs	
0	05	04	02	0
1	10	08	04	3
2	15	12	16	6
3	20	16	08	9
4	25	20	10	12
5	30	24	12	15
6	30	28	12	18
7	30	32	12	21

Number of EP05 modules[5]

Option	
Per LON Coupler	3
Communic. Module BacNET	1
Print Module PR 05	1
UPS	1

Space unit A

Housing dimension 1	2	3	4 [6]	8 [7]
2	8	14	23	---

Max. space unit

⇑

⇒ Max. space unit = space unit A & space unit B

⇑

Space unit B

	0	1	2	3	4	5
Connector Module	0	1	1	1	1	1
Repeater Modules	0	0	1	2	3	4
Number of field bus lines 2-5	0	1	2	3	4	5

[5] More (max. 23) modules on request
[6/7] Not for option UL 2017
[7] Metal housing on request

	Field bus / Protocol
05	RS 485 / DGC05
15	RS 485 / MSR_D_Bus

Number of max. PolyGard transmitters	Power unit/ UPS [8] 1	2	3	4
	Pow.unit 4.5 A	Po.unit 6.5 A	UPS 2.2 Ah	UPS 7.2 Ah
	Max. current for supply of external devices (mA)[9]			
16	2000	3400	600	3000
32	1000	2700	2.2 Ah UPS not allowed	2400
48	4.5 A power unit not allowed	2000		1700
64		1200		1000
80		500		300
98		0		0

[8] Higher capacity or without power unit – on request
[9] Only for supply of external warning buzzers and warning lights.

WIRING CONFIGURATION

(Example DGC-05)