

## PolyGard® Modbus Communication Module MOD-05 for DGC-05 System

### DESCRIPTION

The Bus Communication Module MOD-05 works as data server and protocol translator between DGC-05 system and open Modbus environment. It also protects the Modbus against overload, over-voltage and reverse polarity, with terminals for the direct connection of the fieldbus cable. The termination resistance for the return line is already included.

The Communication Module can be mounted in the central unit as well as in the field. The field version device is delivered with a separate housing.

A power supply unit (230 VAC / 24 VDC) is available for the field version in order to increase the supply voltage in the field.



### APPLICATION

The MOD-05 Communication Module is used in the DGC-05 system as data conversion module. The module passes all important data information from the internal DGC-05 system to external systems like PLC or visualisation systems via the MODBUS protocol.

### FEATURES

- Protection of the field-bus inputs against over-voltage and reverse polarity
- Overload protection of the fieldbus cable
- Termination resistance for fieldbus return line
- 4 terminals each for outgoing and return lines of the MODBUS cable
- Supply voltage 24 VDC
- Signal amplification for independent cable lengths > 900 m / 2700 ft.
- Suitable for rail mounting
- Option: Housing for field installation
- Option: Power supply unit 230 VAC / 24 VDC, 1,0 A, installed in the housing of the field device

## TECHNICAL DATA

<b>Electrical</b>	
Power supply	24 VDC (16 VDC to 30 VDC)
Power consumption	0,7 W, 30 mA
Fieldbus current	Max. 1,0 A
Over-voltage protection	Max. 35 V
Reverse polarity protection	Max. 30 V
<b>Repeater</b>	
Signal repeater	Max. 900 m /2700 ft. segment length
<b>Environmental conditions</b>	
Humidity	15 – 95 % RH non condensing
Working temperature	-10 °C to + 70 °C (14 °F to 158 °F)
Storage temperature	0 °C to + 50 °C (32 °F to 122 °F)
<b>Physical</b>	
Enclosure	Plastic housing ABS
Colour	RAL 7035
Protection class	IP 40
Weight	0,1 kg (0.2 lbs.)
Installation	Top hat rail installation
Connection	Spring type: 0,5, to 1,5 mm <sup>2</sup> (AWG 22 to 16)
Dimensions (W x H x D)	36 x 86 x 56 mm (1.4 x 3.4 x 2.2 in.)
<b>Physical (housing for field inst.)</b>	
Enclosure	Plastic housing ABS
Colour	RAL 7035
Protection class	IP 55
Weight	0,5 kg (1.1 lbs.)
Installation	Wall / ceiling installation
Dimensions (W x H x D)	112 x 152 x 76 mm (4.4 x 6.0 x 3.0 in.)
<b>Physical (housing incl. power supply unit / field installation)</b>	
Enclosure	Plastic housing ABS
Colour	RAL 7035
Protection class	IP 55
Weight	1,5 kg (3.2 lbs.)
Installation	Wall / ceiling installation
Dimensions (W x H x D)	200 x 250 x 100 mm (7.9 x 9.8 x 3.9 in.)
<b>Power supply unit for field installation</b>	
Power supply	110/230 VAC 50/60Hz
Secondary	24 VDC, 1,0 A max., overload and short-circuit proof
<b>Guidelines</b>	EMC Directives 89/336/EEC; Low voltage directive 73/23/EEC
<b>Warranty</b>	1 year on material

## ORDERING INFORMATION

**DGC-MOD-05-XXX**

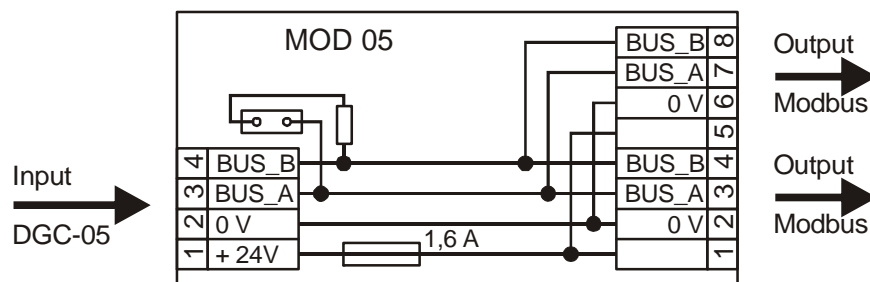
### Options

- 1XX Housing / field installation
- X1X Field installation incl. power supply unit  
230 VAC /24 VDC 1,0A
- XX1 With internal termination resistor
- XX2 Without internal termination resistor

Example: Module for field installation, with termination resistor

Order number: **DGC-MOD-05-1X1**

## WIRING CONNECTION



## COMMUNICATION AND PARAMETER DEFINITIONS

### Communication Definitions:

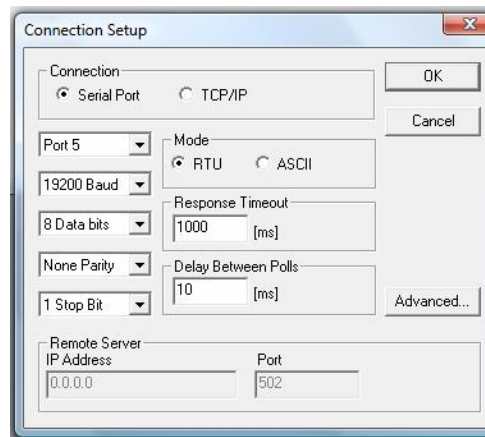
This module works

as **MODBUS slave** only

Baud rate 19.200 Baud

1 start bit, 8 data bits

1 stop bit, no parity



## Modbus function 16

Write Multiple Holding Registers are used to send the configuration to the communication module.

There are two kinds of information to define:

1. Own module Modbus address – address: 0
2. Full scale of each sensor from No. 1 to No. 98 on address: 1 to 98.

Internal signal range from 0-10.000 digits will be recalculated to 0- full scale value of above parameter.

## Modbus function 03

Read Holding Registers are used to get information from the DGC-05 system.

There are five blocks of information:

1. Current value of internal sensors- sensor address 1 to 98 MODBUS address: 1000 to 1098

	Alias	01000	Alias	01010	Alias	01020	Alias	01030	Alias	01040	Alias	01050	Alias	01060	Alias	01070	Alias	01080	Alias	01090
0				0		-10		-10		-10		-10		-10		-10		-10		-10
1		0		0		-10		-10		-10		-10		-10		-10		-10		-10
2		0		0		-10		-10		-10		-10		-10		-10		-10		-10
3		0		0		-10		-10		-10		-10		-10		-10		-10		-10
4		0		0		-10		-10		-10		-10		-10		-10		-10		-10
5		0		0		-10		-10		-10		-10		-10		-10		-10		-10
6		0		-10		-10		-10		-10		-10		-10		-10		-10		-10
7		0		-10		-10		-10		-10		-10		-10		-10		-10		-10
8		0		-10		-10		-10		-10		-10		-10		-10		-10		-10
9		0		-10		-10		-10		-10		-10		-10		-10		-10		0

2. Current value of external sensors- sensor address 1 to 98 MODBUS address: 2000 to 2098

3. Average value of internal sensors- sensor address 1 to 98 MODBUS address: 3000 to 3098

	Alias	03000	Alias	03010	Alias	03020	Alias	03030	Alias	03040	Alias	03050	Alias	03060	Alias	03070	Alias	03080	Alias	03090
0				0		-10		-10		-10		-10		-10		-10		-10		-10
1		0		0		-10		-10		-10		-10		-10		-10		-10		-10
2		0		0		-10		-10		-10		-10		-10		-10		-10		-10
3		0		0		-10		-10		-10		-10		-10		-10		-10		-10
4		0		0		-10		-10		-10		-10		-10		-10		-10		-10
5		0		0		-10		-10		-10		-10		-10		-10		-10		-10
6		0		-10		-10		-10		-10		-10		-10		-10		-10		-10
7		0		-10		-10		-10		-10		-10		-10		-10		-10		-10
8		0		-10		-10		-10		-10		-10		-10		-10		-10		-10
9		0		-10		-10		-10		-10		-10		-10		-10		-10		0

4. Average value of external sensors- sensor address 1 to 98 MODBUS address: 4000 to 4098



## 5. Output information block

Address 0: Own MODBUS address read information

Address 1: Relay information bits of first module (controller module)

Relay 1 is bit 0 to Relay 5 is bit4

Address 2: Relay information bits of extension module Address\_1

Relay 6 is bit 0 to Relay 10 is bit4

Address 3: Relay information bits of extension module Address\_2

Relay 11 is bit 0 to Relay 15 is bit4

Address 4: Relay information bits of extension module Address\_3

Relay 16 is bit 0 to Relay 20 is bit4

Address 5: Relay information bits of extension module Address\_4

Relay 21 is bit 0 to Relay 25 is bit4

Address 6: Relay information bits of extension module Address\_5

Relay 26 is bit 0 to Relay 30 is bit4

Address 8 to Address 19 will reflect Hardware Analog Output 1 to Analog Output 12

The values are defined from 0 to 10.000 (full scale value of the sensors)

	Alias	00000	Alias	00010
0	my_mod_adr	3	AO_3	1
1	master_modul	2	AO_4	1
2	ep_modul_1	3	AO_5	0
3	ep_modul_2	255	AO_6	0
4	ep_modul_3	255	AO_7	0
5	ep_modul_4	255	AO_8	0
6	ep_modul_5	255	AO_9	0
7	leer	0	AO_10	0
8	AO_1	0	AO_11	0
9	AO_2	1	AO_12	0

### Parameter Error Definitions:

If one unit is missing, the values will be set to the fixed presentable values:

Sensor\_values -10

Relay information (address 1 to 6) 255 means: information is not available

Changes of parameters are not admitted for safety reasons therefore the data direction is clearly defined from the warning system to the open MODBUS side! Retroaction is not possible.