

## PolyGard® Carbon Dioxide CO<sub>2</sub> Flow Transmitter FT-D3 1164 with Infrared Sensor

### DESCRIPTION

CO<sub>2</sub> transmitter with two-beam infrared sensor for the continuous monitoring of the ambient air to detect carbon dioxide concentrations. The infrared measuring method with integrated temperature and drift compensation stands for highest accuracy, selectivity and reliability despite of the calibration interval of 3 years. The FT-D3 possesses a standard analog output (0) 4- 20 mA or (0) 2- 10 VDC, and an RS-485 interface. 2 relays with adjustable switching thresholds as well as an integrated display are available as options.

### APPLICATION

For detecting leakages in refrigeration plants with carbon dioxide as refrigerant, and also within a wide range of commercial and industrial applications. The measuring range 5000 ppm is provided for the indoor air quality control. Due to the standard analog signal and the RS-485 serial interface the CO<sub>2</sub> transmitter is compatible to the PolyGard gas controller series by MSR-E as well as to any other controllers or automation systems.



Standard enclosure

### FEATURES

- Two-beam infrared gas sensor (NDIR)
- High accuracy, selectivity and reliability
- Automatic drift and temperature compensation
- Good resistance to poisoning
- Life expectancy > 10 years
- Maintenance periods > 3 years
- Comfortable calibration with selective access release
- Reverse polarity protected, overload and short-circuit proof
- (0) 4 - 20 mA / (0) 2 – 10V analog signal output, selectable
- Serial interface RS-485
- IP65 version
- Housing fire-resistant according to UL 94V2
- Modular plug-in technology
- Manual addressing for RS-485 mode (optional)
- 4 – 20 mA analog input for external transmitter (optional)
- Relay output (optional)
- Integrated buzzer (optional)
- LED flashlight (optional)
- LCD display (optional)
- LED status indicator (optional)
- Heating (optional)

## SPECIFICATIONS

<b>General sensor performance</b>	
Detected gas	Carbon dioxide (CO <sub>2</sub> )
Sensor element	Two-beam infrared (NDIR)
Measuring ranges (4)	0- 5000 ppm / 0 – 5 / 20 / 100 Vol%
Accuracy	< 2 % of measuring range
Repeatability	< 2 % of measuring range
Response time	t <sub>90</sub> < 15 sec. @ 500 ml/min (constant)
Resolution	1 ppm/ 0.01 Vol.-%
Temperature range	-10 °C to + 40 °C (14 °F to 104 °F)
Long-term zero-point drift	< 2 % of measuring range/year
Long-term output drift	< 2 % of measuring range/year
Pressure range	800 -1200 hPa
Humidity range	0 – 95 % RH non-condensing
Life expectancy	> 10 years
Recommended calibration interval	> 3 years
Storage temperature	- 20 °C to 60 °C (-4 °F to 140 °F)
Storage time	Max. 12 months
<b>Pneumatic</b>	
Flow speed	200 – 800 ml/min (constant)
Tube connection	4 mm inner diameter
<b>Electrical</b>	
Power supply	18 - 28 VDC/AC, (reverse polarity protected)
Power consumption (without options)	45 mA, max. (1.1 VA)
<b>Output signal</b>	
Analog output signal	(0) 4 – 20 mA, load ≤ 500 Ω, Resolution 0.02 mA
Selectable: Current / tension	(0) 2 - 10 V, load ≥ 50 k Ω, Resolution 0.02 V
Starting point 0 / 20 %	proportional, overload and short-circuit proof
<b>Serial interface</b>	
Transceiver	RS 485 / 19200 Baud (9600 at ModBus)
<b>Physical characteristics</b>	
Enclosure plastic type C	Polycarbonate
Flammability	UL 94 V2
Enclosure colour	RAL 7032 (light grey)
Dimensions (W x H x D)	130 x 130 x 75 mm (5.12 x 5.12 x 2.95 inch.)
Weight	Approx. 0.5 kg (1.1 lbs.)
Protection class	IP 65
Installation	Wall mounting
Cable entry	Standard 1 x M 20
Wire connection	Screw type terminal, 0.25 - 2.5 mm <sup>2</sup> (24 - 14 AWG)
Wire distance	Current signal: ca. 500 m (1500 ft) Voltage signal: ca. 200 m (600 ft.)
<b>Guidelines</b>	EMC Directive 2004 / 108 / EC
	CE
<b>Warranty</b>	One year on material (without sensor)
<b>Options</b>	
<b>Relay output</b>	
Alarm relay 1	30 VAC/DC, 0.5 A, potential-free, SPDT
Alarm relay 2	30 VAC/DC, 0.5 A, potential-free, SPNO/SPNC
Power consumption	30 mA, (max 0.8 VA)
<b>Warning buzzer</b>	
Acoustic pressure	83 dB (distance 200 mm) (1 ft)
Frequency	2.3 kHz
Power consumption	30 mA, (max 0.8 VA)

# GAS ALARM SYSTEMS

<b>LCD Display</b>	
LCD	Two lines, each 16 characters
Power consumption	10 mA, (max 0.3 VA)
<b>LED Indicator</b>	
Green- yellow- red	Power supply, Low Alarm, High Alarm
Power Consumption	10 mA, (max. 0.3 VA)
<b>Heating</b>	
Temperature controlled	3 °C ±2° C (37.5 °F ± 3.6 °F)
Ambient temperature	- 30 °C (- 22 °F)
Power consumption	0.3 A; 7.5 VA
<b>Analog Input</b>	
Only for RS-485 mode	4 – 20 mA overload and short-circuit proof, input resistance 200 Ω
Power supply for external transmitter	24 VDC max. charge 50 mA

## ORDERING INFORMATION

FT-D3-1164-X-XXXXXXXXXX

### Options

1XXXXXXXX	Relay output <sup>1</sup>
X1XXXXXXXX	Warning buzzer integrated
X2XXXXXXXX	Flashlight (LED)
X3XXXXXXXX	Warning buzzer and flashlight
XX1XXXXXXXX	Heating
XXXX1XXXX	RS-485 protocol for DGC-05 series
XXXX2XXXX	RS-485 protocol ModBus
XXXX3XXXX	RS-485 protocol customers' specifications
XXXX4XXXX	RS-485 protocol BacNet
XXXXX2XXX	Manual calibration & tool addressing
XXXXX4XXX	Manual calibration & addressing
XXXXXX1XX	LCD display <sup>3</sup>
XXXXXX2XX	LED Indicator <sup>1,3</sup>
XXXXXX1X	4 - 20 mA analog input <sup>2</sup>
XXXXXXXX5	Factory calibration 0 – 5000 ppm
XXXXXXXX7	Factory calibration 0 – 5 Vol%
XXXXXXXX8	Factory calibration 0 – 20 Vol%
XXXXXXXX9	Factory calibration 0 – 100 Vol%

### Enclosure

C Plastic enclosure

<sup>1</sup> Please indicate the thresholds for Low and High Alarm, when ordering

<sup>2</sup> Only in connection with a RS-485 protocol

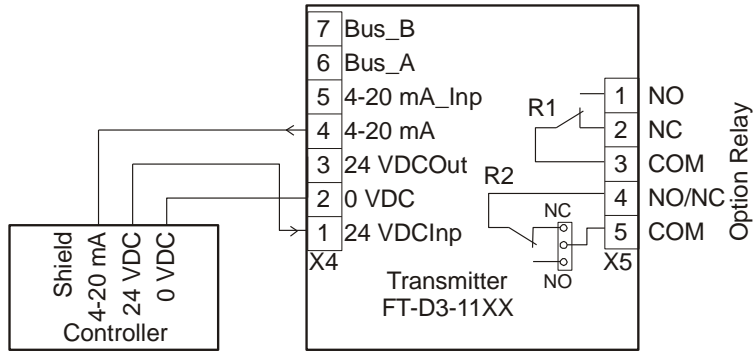
<sup>3</sup> Not in connection with option Relay or RS-485 interface

**Example:** Carbon dioxide IR transmitter, plastic housing, manual calibration & tool addressing, factory calibration 0 – 5 Vol%

**Ordering number: FT-D3-1164-C-XXXXX2XX7**

# GAS ALARM SYSTEMS

## ELECTRIC CONNECTION DIAGRAM



## PNEUMATIC CONNECTION

