4 to 20 mA Digital Transmitter Board

Alphasense Type A and B Toxic Gas Sensors

Alphasense 4-20mA digital transmitters offer the following features:

- Factory calibration, custom-set for immediate use
- Digital zero, sensitivity and temperature compensation
- Digital and 4-20mA output
- Biased or unbiased operation
- Calibration and range change

Alphasense 4-20mA digital transmitter boards provide a cost-effective way for Original Equipment Manufacturers to include 4-20mA gas sensor transmitters for fixed installation systems. The range of sensors are shown in Table 1. Transmitters are supplied with pre-calibrated sensors.

The 4-20mA output signal performance is as shown on individual sensor datasheets. Calibration and digital interface communication use the 2-wire power supply (HART-type communications).

Optional fitting kit and connector/leads are available on request. Please see Figure 2.

Table 1. Transmitter Board and Sensors

Gas	Sensor Type A	Max concentration (ppm)	Sensor Type B	Max concentration (ppm)
Carbon Monoxide	CO-AF	5,000	CO-BF	5,000
	CO-AE	10,000	CO-B1	5,000
	CO-AX	2,000	CO-BX	2,000
Hydrogen Sulfide	H2S-A1	100	H2S-B1	200
	H2S-AH	50	H2S-BH	50
	H2S-AE	2,000	H2S-BE	2,000
Sulfur Dioxide	SO2-AF	50	SO2-BF	100
	SO2-AE	2,000		
Nitrogen Dioxide	NO2-A1	20	NO2-B1	20
	NO2-AE	200		
Chlorine	CL2-A1	20	CL2-B1	20
Nitric Oxide*	NO-A1	250	NO-B1	250
	NO-AE	5,000		
Phosphine	PH3-A1	10	PH3-B1	10
			PH3-BE	2,000
Ethylene Oxide*	ETO-A1	100	ETO-B1	100
Hydrogen Cyanide	HCN-A1	100	HCN-B1	100
Hydrogen Chloride	HCL-A1	20	HCL-B1	20
Ammonia			NH3-B1	100

* Biased sensors require at least 12 hours to stabilise after first powered on. Specify required full scale gas concentration.
Do not exceed maximum gas concentration shown in table.

INPUT

Type:	3-electrode gas sensor: type A or type B
Maximum range:	-220uA to +320 uA
Minimum range:	± 3 uA
Sample rate:	500ms per sample
Thermal drift:	0.05 uA/°C
Power-off state:	Shorting FET connects working to reference electrode
Resolution:	11 nA
Bias:	Selectable: Off, +200 and +300mV (±10 mV tolerance)
Temperature compensation:	On-board temperature sensor. Range -30°C to 60°C ± 0.5°C. Software correction of Zero and Span.
Connection:	2-pin MOLEX plug (ref 22-27-2021)

OUTPUT

Type:	4 mA to 20 mA 2-wire loop powered
Output current range:	3.8 mA to 21.5 mA
Supply voltage:	10 to 30 VDC
Supply sensitivity:	< 0.03% 10 to 30 VDC
Loop ripple effect:	± 2 uA measure @ 1 volt RMS 50Hz supply ripple
Thermal drift:	± 0.2 uA /°C
Accuracy:	± 5 uA
Maximum loop resistance:	700 Ω @ 24VDC
Resolution:	0.75 uA
Sensor over-range:	> 21.5 mA
Protection:	Reverse connection and over-voltage protection
Connection:	2-Pin MOLEX plug (Ref. 22-27-2021)

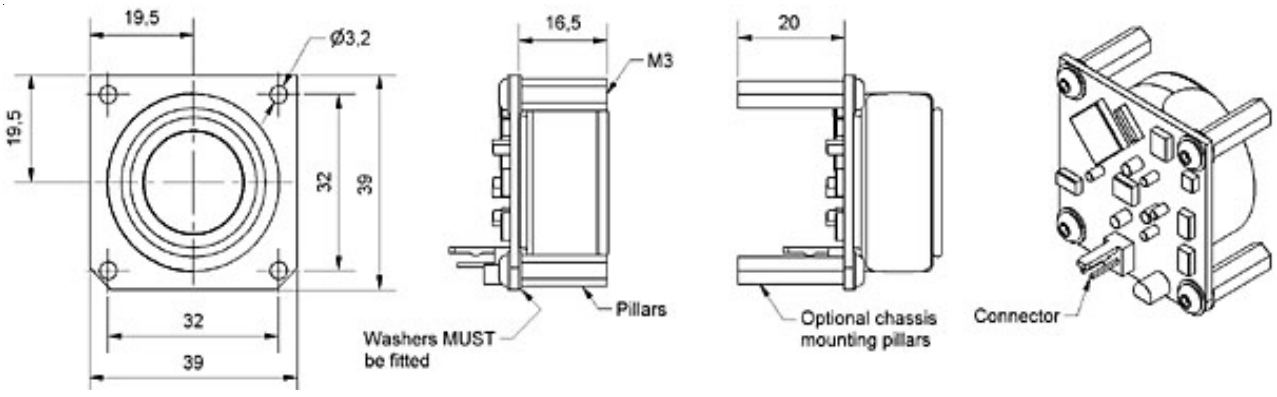
ENVIRONMENT

Ambient temperature:	-30°C to 60°C
Ambient storage:	-40°C to 70°C
Ambient humidity:	0% to 95% continuous (non-condensing)
Coating:	Conformal spray coated

CE APPROVAL

BS EN 61326 (Industrial)

Figure 2 Transmitter Board Dimension Details



Optional fitting kit # 000-0420-KIT	
4 x pillars	16.0 mm length, M3 tapped
8 x washers	M3 flat washers
4 x screws	M3 x 8 button head screws
1 x transmitter lead	Molex socket housing with 150 mm leads