Technical Specification

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

Optional fitting kit and connector/leads are available on request (Fig 2)

Table 1. Transmitter Board and Sensors

GAS	SENSOR TYPE A	MAXIMUM CONCENTRATION (ppm)	SENSOR TYPE B	MAXIMUM 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.

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4 to 20 mA Digital Transmitter Board
Alphasense Type A and B Toxic Gas Sensors

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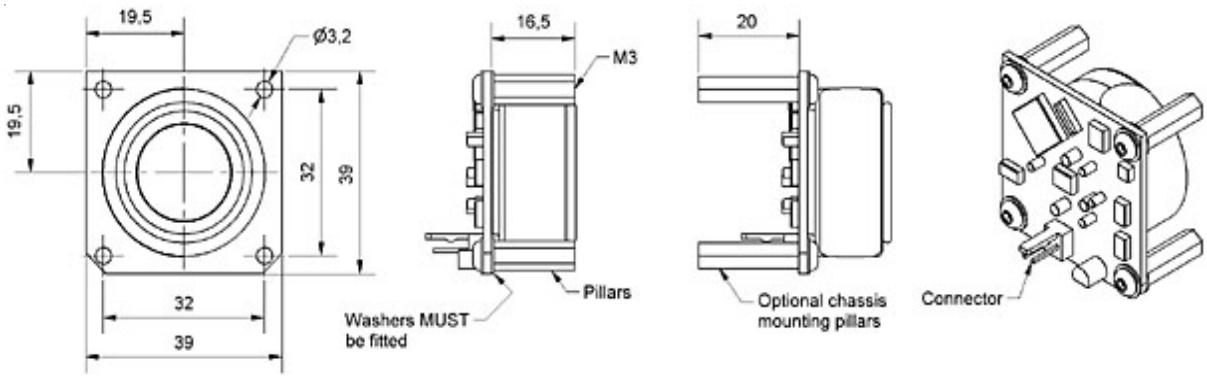
INPUT	Type	3-electrode gas sensor: type A or type B
	Maximum range:	-220uA to +320 uA
	Minimum range:	± 3 uA
	Sample rate:	500ms per sample
	Thermal drift:	0.05 uA/°C
	Power-off state:	Shorting FET connects working to reference electrode
	Resolution:	11 nA
	Bias:	Selectable: Off, +200 and +300mV (±10 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 21.5mA
	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:	> 21.5mA
	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)

Fig 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

For further information on the performance of sensors in the Alphasense range or any other subject, please contact Alphasense Ltd. For Application Notes visit "www.alphasense.com"

NOTE: as applications of use are beyond our control, the information provided is given without legal responsibility. Customers should test under their own conditions, to ensure that the sensors and transmitters are suitable for their own requirements.