

## Custom Sensor Circuit Board (ISB) Alphasense B4 Four-Electrode Gas Sensor

Based on the design, Alphasense B4 series four-electrode sensor needs to be combined with ISB to make **Figure 1 ISB**

This voltage regulator provides a dual channel voltage output.

The low-noise bandgap provides biasing for NO sensors, and the ISB can simultaneously measure oxidizing gases (CO, H<sub>2</sub>S, SO<sub>2</sub>, and NO) and reducing gases (O<sub>3</sub> and NO<sub>2</sub>). The ISB is specifically configured for specific sensors: NO, NO<sub>2</sub>, O<sub>3</sub>, and CO/H<sub>2</sub>S/SO<sub>2</sub>.

Based on the low power design, the ISB only needs 3.5~6.4VDC voltage stabilization at 1mA.

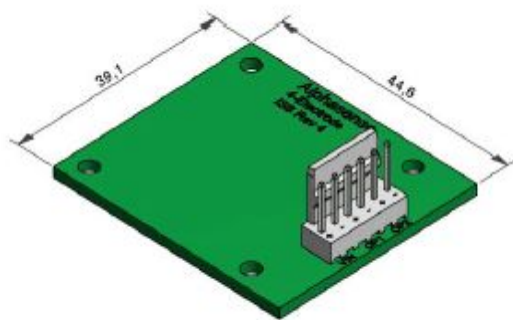
If the ISB and B4 series sensors are supplied separately, ensure that it matches the sensor in Table 1:



**Table 1 ISB material number**

P / N	sensor
000-0ISB-00	CO-B4, SO <sub>2</sub> -B4, H <sub>2</sub> S-B4, NO-B4
000-0ISB-02	NO <sub>2</sub> -B43F, OX-B431

**Figure 2 ISB Size and Power and Signal Slots**



The working electrode and auxiliary electrode (used to compensate for zero current) feature an equivalent second-order operational amplifier, with buffered signals available on the 6-channel Molex socket and power input pins. Adjustments cannot be made on the ISB: both the zero bias and gain are fixed.

The ISB operates at extremely low noise levels, requiring special attention to grounding and shielding during installation to achieve optimal resolution in parts per billion (ppb). Power supply filtering must be implemented to prevent output noise. The kit includes a calibrated inspection hood, mounting posts, sealing rings, and hardware for securing the enclosure.

Figure 3 ISB Size and Installation Hole Positioning

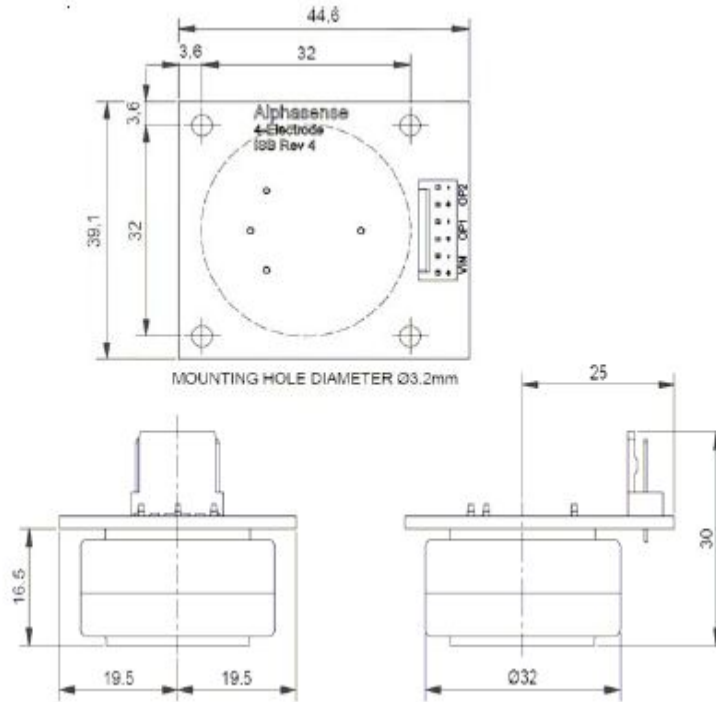


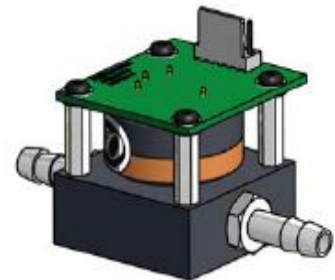
Table 2 Optional ISB Accessories

Optional part number: 000-0ISB-KIT	
4* studs	Long 16.0 mm, M3 tapping
8* shim	M3 flat washer
4* screws	M3*8 hex head screw
A connecting wire	Molex slot, with 150mm wiring

Note: 000-0ISB-KIT is required when using a gas mask

Figure 4 Gas Mask, Sensor and ISB

P / N	Gas mask *
000-GSHD-00	SS Swagelok 1/4" connector
000-GSHD-01	PFA Swagelok 1/4" pipe connector
000-GSHD-02	Nickel brass 1/4" standard pipe thread (standard)
000-TUBE-FEP	1/4" OD O FEP pipe 1.5 meters



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