CITY TECHNOLOGY
ENGINEERING SAFETY

Sensor Mounting Application Note for use with Intelligent Sensors (iseries) Gas Sensors

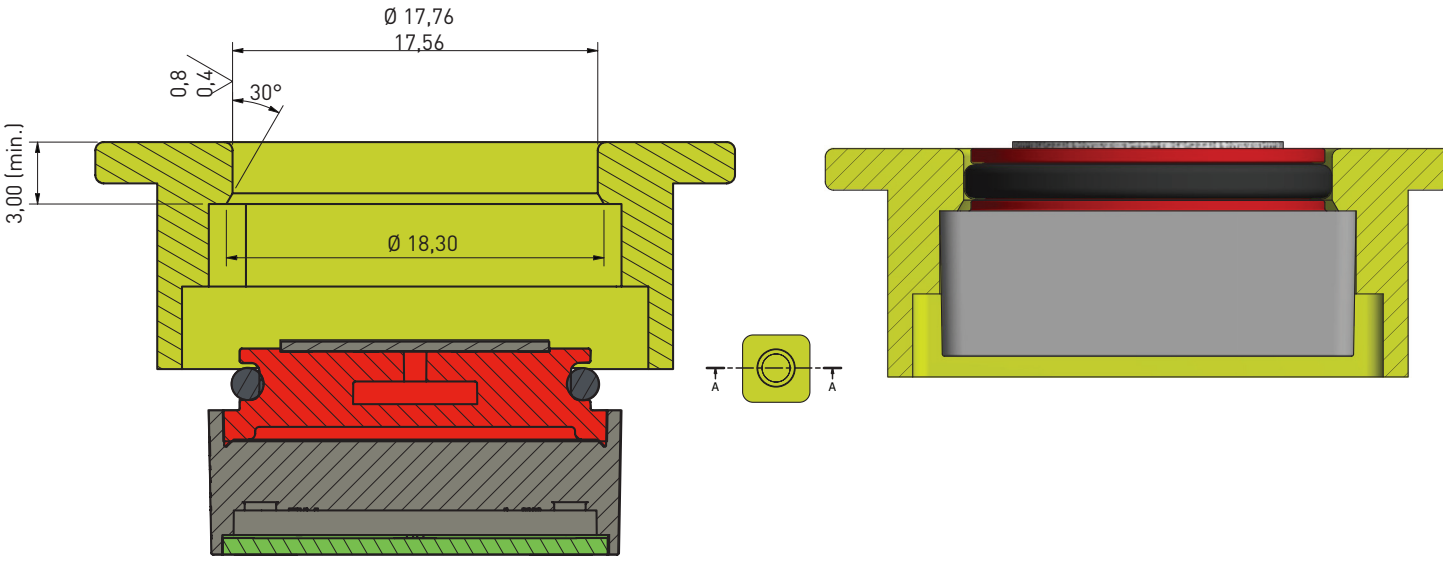
Contents

Turret Sealing: IP68 Design

The front of the sensor is fit enough to withstand dust, sand, and dirt, along with being resistant to submersion up to a maximum depth of 1,5 m underwater for up to thirty minutes if the sensor is mounted using the recommended turret seal design. The O-ring around the sensor allows the user to seal the sensor and attain the IP68 rating. Note that the rear of the sensor is not water-proof.

The recommended turret dimmensions for the bore diameter are from 17,56 mm (min) to 17,76 mm (max), and the surface finish must be longer than 3 mm, as depicted in Figure 1.

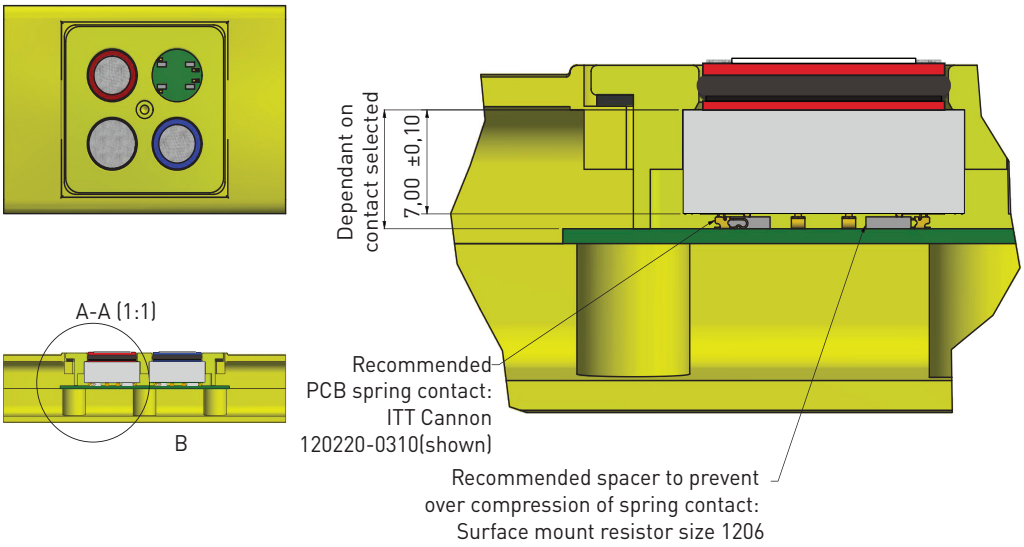
Figure 1. iseries Sensor (Recommended Turret Dimensions)



PCB Mounting

If the sensor is mounted inside an instrument, it is required to allow a minimum space height under the cell; this height will depend on the connector. Depending on which of connector is used, the minimum height between the cell and PCB would change.

Figure 2. iseries Sensor (Mounted Inside an Instrument)



If the sensor is installed inside an instrument, the airpath of the gas is different to access the sensor; likewise, if an additional membrane is used on top of the sensor, the gas diffusion would be different. In general, if the gas dynamics change, the measured concentration value would also change. To compensate for this, it is necessary to change the user factor accordingly.

The sensor/instrument coupling can be analysed by City Technology, so the user factor can be determined accordingly. This would mean that once the user factor is assigned, the sensor would be ready to be set in your instrument (fully calibrated).

Recommended Spring Contact

Under no circumstances should intelligent sensor pads be soldered to, as this can cause leakage of electrolyte. Connection should be made via a mounting socket and spring connector.

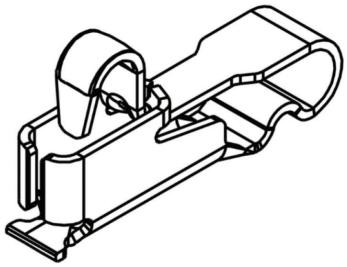
WARNING: SOLDERING TO PADS WILL RENDER YOUR WARRANTY VOID.

Details of recommended spring connects are given below:

Supplier:
UK – Cannon
VEAM Jays Close, Viables Estate
Basingstoke, RG22 4BA
phone: +44.1256.311200
fax: +44.1256.323356
http://www.itt.com

Micro Universal contact: uncompressed height: 1.1 mm, P0.4 SPC
Manufacturing part number: 120220-0348

Figure 3. ITT Spring Contact: 120220-0348



CITY TECHNOLOGY
ENGINEERING SAFETY

Flow Rate

Minimum Flow Rate Required

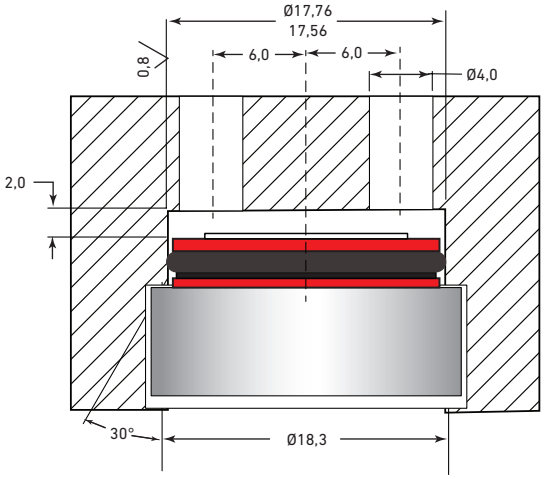
A minimum flow rate is required to ensure accurate calibration - it also means that the response from a sensor is equivalent in configurations where gas is flowing over the sensor and those where the sample is allowed to diffuse to the sensor. The minimum flow which is required will be different depending on the sensor type.

The reaction mechanism of sensors, consumes target gas - this means that the concentration of target gas will be depleted immediately in front of the sensor. The minimum flow rates are set so that, the sensor is exposed to a constant concentration of target gas - the flow rate is great enough to ensure that this depleted concentration is immediately replaced. This mimics the situation where the sample diffuses to the sensor; there will be a large volume of target gas so that the depletion is immediately replaced - via diffusion.

Recommended Gassing Hood

The following diagram (Figure 3) shows the cross-sectional drawing of the recommended gassing hood.

Figure 3. Recommended Gassing Hood Dimensions



The gassing hood used in this design enables a constant flow-rate in the inlet and outlet of the arrangement. The typical, minimum and maximum flow-rates of the recommended gassing hood are:

Table 1. Flow Rates of the Recommended Gassing Hood

FLOW RATE	UNITS
Minimum	100 ml/min.
Typical	200 ml/min.
Maximum	500 ml/min.

CITY TECHNOLOGY
ENGINEERING SAFETY

In accordance with the company's policy of continued product improvement City Technology reserves the right to make product changes without notice. The products are always subject to a programme of improvement and testing which may result in some changes in the characteristics quoted. As the products may be used by the client in circumstances beyond the knowledge and control of City Technology, we cannot give any warranty as to the relevance of these particulars to an application. City Technology warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. City Technology's standard product warranty applies unless agreed to otherwise by City Technology in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to City Technology during the period of coverage, City Technology will repair or replace, at its option, without charge those items that City Technology, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall City Technology be liable for consequential, special, or indirect damages.** Though City Technology provides application assistance personally, or through our literature and website, it is buyer's sole responsibility to determine the suitability of the product in the application. Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, City Technology assumes no responsibility for its use.

CITY TECHNOLOGY
ENGINEERING SAFETY

Sensor Mounting Application Note - iseries Intelligent Sensors | Issue 1 | 10/20