

## Minox i

### Intrinsically Safe Oxygen Transmitter

Hazardous area approved, the Minox i is an intrinsically safe, 2-wire, loop-powered oxygen transmitter, with a 4...20 mA output. It is designed with proven sensor technology to accurately measure O<sub>2</sub> in a variety of gases, in the most demanding applications and hazardous environments.

Minox i has a small footprint and offers a variety of process connectors for oxygen measurement. With an industry-standard electrical plug, this compact transmitter can be installed in any OEM equipment simply and cost-effectively.



KF-40 Flange



Flow Through



2" Tri-Clamp



#### Highlights

- Measurement ranges from 0...10 ppm<sub>v</sub> up to 0...25 % O<sub>2</sub>
- Process connections for inline or extractive measurement applications
- ATEX, IECEx and UKEX certified, IIC for use in H<sub>2</sub> applications
- 2-wire loop-powered 4...20 mA output for easy integration
- Plug-and-play transmitter – combined sensor and electronics
- Electrochemical and solid-state sensor technology
- 316 stainless steel gas wetted parts.

#### Applications

- Inerting
- Glove box purge and containment solutions
- Sieving and powder transfer systems (PTS)
- Additive manufacturing
- H<sub>2</sub> generation
- N<sub>2</sub> generation
- Biogas and biomethane
- Pharmaceutical.

## The Minox i in detail

### The versatile oxygen transmitter

Compact in size, the Minox i can be packaged for traditional flow-through sensing, as well as in-situ measurement via KF-40 flange or tri clamp process connection.

In a single-build configuration, the Minox i is hazardous area certified by three internationally recognized safety directives.

At its most compact configuration, 59 mm (2.32") diameter and 85 mm (3.35") length, Minox i can be mounted close to sample points with easy integration onto sample panels or process skids.

### Easy install – plug-&-play

The Minox i is factory calibrated traceable to national standards, allowing the transmitter to be used as soon as it is connected. It requires a 2-wire industry standard 4...20 mA loop-power supply.

### Sensor technology

We use two different sensing technologies in the Minox i:

#### Trace oxygen (ppm)

We offer two galvanic electrochemical sensors for the measurement of 0...1000 ppm oxygen within gases. The standard sensor is suitable for inert gases such as nitrogen or argon, as well as hydrogen and helium.

A second sensor is offered for process gases that can have a composition containing hydrocarbons or CO<sub>2</sub>.

### Percentage level

Both a standard electrochemical and a solid-state electrochemical sensor is offered for percentage-level measurement.

The standard sensor is suitable for inert gases and hydrogen. The solid-state sensor is designed for harsh applications and is not gas-specific. The sensor is unaffected by orientation and offers a key benefit of having a longer measurement life.

The result is an oxygen sensor that is chemically resistant to most sampling atmospheres, and can be used in applications where trace solvents and hydrocarbons are present.

### Reliable, flexible, and accurate

With a choice of measurement technologies, the Minox i gives you reliability, flexibility, and accuracy. Measurement performance can be selected to fit your application, with a broad selection of fixed-range oxygen measurements from 0...10ppm<sub>v</sub> to 0...25 % O<sub>2</sub>.

### One-touch calibration

Calibrating the Minox i is a straightforward process that can be carried out quickly by a qualified and experienced technician, even in a hazardous area.

The % transmitter can be exposed to ambient air and calibrated with one touch, using the MagTip calibration tool provided. The ppm transmitter can be calibrated in the same way but requires a certified reference gas instead of ambient air.

With an electrochemical sensor, Minox i requires quarterly calibration, while a solid-state sensor can stretch the calibration interval up to a year.

### CAUTION

Do not exceed maximum ratings and ensure transmitter(s) is operated in accordance with requirements. Carefully follow all wiring instructions, as incorrect wiring may cause permanent damage to the device.

### INFORMATION

As customer applications are outside of PST control, the information provided is given without legal responsibility. Customers should test under their own conditions to ensure the equipment is suitable for the intended application(s).

PST adopts a continuous development program which sometimes necessitates specification changes without notice.

For technical assistance or enquiries about other options, please contact:

[oxygen@processensing.com](mailto:oxygen@processensing.com).

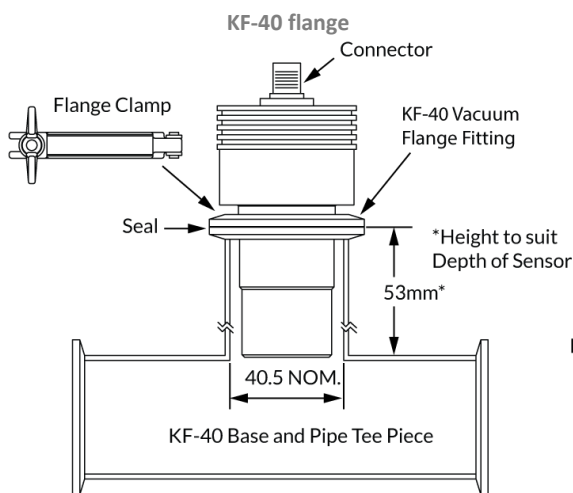
## Minox i: Applications in detail

The Minox i was designed specifically to measure both percentage and trace (ppm) oxygen in flammable gases such as hydrogen, natural gas, biomethane and biogas. With its compact size, 316 stainless steel gas-wetted parts, IIC rating, Gas & Dust ATEX certification and IP66 (NEMA4), the Minox i can be installed close to the process and offers installation flexibility.

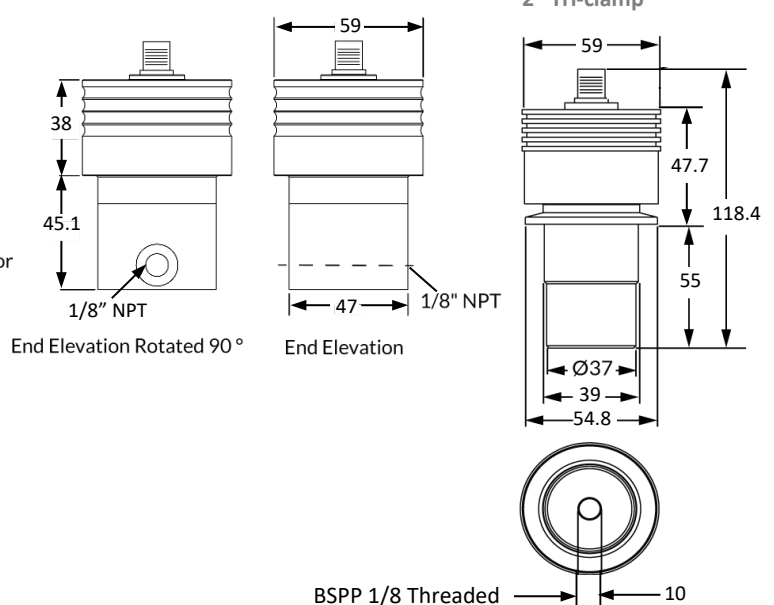
- Generation of H<sub>2</sub> using electrolysis
  - Monitor electrolyzer N<sub>2</sub> purge before start-up
  - Measure 0...10ppm O<sub>2</sub> for H<sub>2</sub> purity
- Inerting / N<sub>2</sub> generation
  - Monitor quality of N<sub>2</sub> blanket gas at point of generation
  - Monitor blanket gas from solvent and petrochemical tanks to ensure safety
- Pharmaceutical
  - Hazardous area dust rating permits Minox i to be used in powder sieving and transportation applications
  - Monitor O<sub>2</sub> in the reactor / mixing applications to ensure safe operating conditions
- Biogas and biomethane production
  - Solid-state sensor robustness measures O<sub>2</sub> independent of background gas composition
  - Safety measurement ranges 0...25% O<sub>2</sub>



## Minox i dimensions





Flow-through



Dimensions are in mm unless otherwise stated.

## Technical specifications

Sensor				
	Solid-state	Electrochemical (%)	Electrochemical (ppm)	Electrochemical (ppm)
Model	OC-92	OC-90	OC-60	OC-69
Operating temperature	-20 °C...+50 °C (-4 °F...+122 °F)	5 °C...+45 °C (+31 °F...+113 °F)	+5 °C...+45 °C (+31 °F...+113 °F)	-10 °C...+45 °C (+14 °F...+113 °F)
Calibration interval	Up to 1 year	Up to 6 months		Up to 3 months
Operational life (dependent on O2 and moisture concentration)	Up to 2 years	Up to 18 months		Up to 12 months
Shelf life (in original packaging)	Up to 1 year		Up to 6 months	
Calibration interval	Up to 1 year	Up to 6 months		Up to 3 months
Gas-wetted materials	Acetal, Stycast 2651 mm, stainless steel, PTFE, FR4 and gold	HDPVDF, ABS, Teflon, FR4 and gold	HDPVDF, stainless steel, Teflon, FR4 and gold	
Performance				
Measuring range		0...25% O <sub>2</sub>		0...10, 0...100, 0...1000 ppmv O <sub>2</sub>
Output resolution		0.01 % O <sub>2</sub>		1 ppmv O <sub>2</sub>
LDL (sensitivity)		0.05 % O <sub>2</sub> (500 ppm)		1 ppmv O <sub>2</sub>
Accuracy (intrinsic error)		+/- 2 % of reading @ calibrated temperature and pressure		
Linearity		+/- 2 % of reading		
Response time (T90)		< 15 seconds @ 25 °C (77 °F) within selected range		
Flow rate		250...500 ml/min (0.5...1.0 SCFH)		
Humidity		0...98 %rh non-condensing		
Operating pressure		Nominally atmospheric (+/-100 mBar)		
Electrical input/output				
Output signal		4...20 mA		
Power supply		24 V DC +/- 10 %		
Maximum power consumption		50 mA @ 24 V DC		
Electrical interface		M12 connector (1.5 metre cable supplied)		
Mechanical				
Housing material		303 and 316 stainless steel		
Gas-wetted materials excluding sensor		316 stainless steel		
O-ring material		Nitrile		
Ingress protection		IP66 (NEMA4)		
Weight		800 g (28 oz)		
Hazardous area certification				
ATEX / IECEx / UKEX		cQPSus and TIIS		
 ia IIC T4 Ga (-20°C ≤ Ta ≤ +55°C)		Certification in progress		
 ia IIIC T <sub>200</sub> 135°C Da (-20°C ≤ Ta ≤ +55°C)				

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