

# MOX9 MediceL<sup>®</sup> Sensor

MOX9 Oxygen Sensor

Part Number: AAD29-210

## Document Purpose

The purpose of this document is to present the performance specification of the MOX9 oxygen gas sensor.

This document should be used in conjunction with the Operating Principles (OP04) and the Product Safety Datasheet (PSDS 4).

The data provided in this document are valid at 20°C, 50% RH and 1013 mBar for 3 months from the date of sensor manufacture.

Output signal can drift below the lower limit over time. For guidance on the safe use of the sensor, please refer to the Operating Principles (OP04).



## KEY FEATURES & BENEFITS



Meets the requirements  
of ISO 80601-2-55



Linear output from  
0 % to 100 % O<sub>2</sub>



13-month  
warranty

**RoHS** 

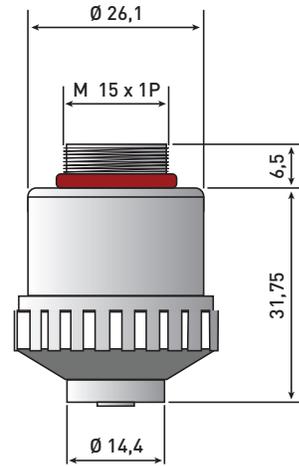
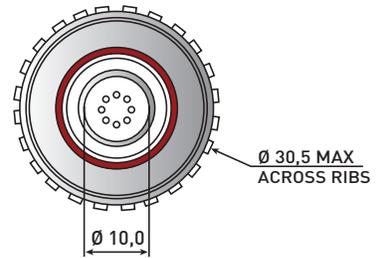
RoHS compliant

TECHNICAL SPECIFICATIONS	
MEASUREMENT	
<b>Operating Principle</b>	Partial pressure electrochemical
<b>Output</b>	9 mV to 13 mV in 210 mBar O <sub>2</sub>
<b>Measurement Range</b>	0 mBar to 1500 mBar O <sub>2</sub>
<b>Response Time (T<sub>90</sub>)</b>	<15 s (air to 100% O <sub>2</sub> )
<b>Baseline Offset</b>	<200 µV
<b>Linearity</b>	Linear 0% to 100% O <sub>2</sub> <small>[See Note1]</small>
ELECTRICAL	
<b>Temperature Compensation</b>	<2% O <sub>2</sub> equivalent (0°C to 40°C)
<b>External Load Resistor</b>	10 kΩ <small>[See Important Note]</small>
<b>Connector</b>	3-pin Molex header (MOLEX 22-29-2031)
<b>Recommended Mating Part</b>	Molex housing (MOLEX 22-01-2035) and Molex Crimp Terminals (MOLEX 08-45-0110)
MECHANICAL	
<b>Housing Material</b>	White ABS
<b>Weight</b>	31 g
<b>Orientation</b>	Any
ENVIRONMENTAL	
<b>Typical Applications</b>	Critical care anesthesia
<b>Operating Temperature Range</b>	-20°C to +50°C
<b>Operating Pressure Range</b>	0.5 Bar to 2.0 Bar
<b>Operating Humidity Range</b>	0% to 99% RH non-condensing
LIFETIME	
<b>Long-Term Output Drift in 100% O<sub>2</sub></b>	< 5% signal loss/year
<b>Recommended Storage Temperature</b>	-10°C to 40°C (short excursions to 50°C allowed)
<b>Expected Operating Life:</b>	
@ 20°C	0.9 x 10 <sup>6</sup> % O <sub>2</sub> hours
@ 40°C	0.6 x 10 <sup>6</sup> % O <sub>2</sub> hours
<b>Packaging</b>	Sealed blister
<b>Standard Warranty</b>	13 months from date of despatch <small>[This amounts to a variation of condition 6 of our standard terms and conditions]</small>

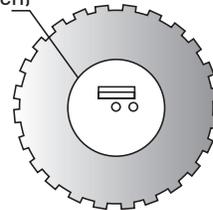
Note 1: The regression coefficient of the best fit line should be better than 0.9995 when measured through four data points from testing with 100% N<sub>2</sub>, 21% O<sub>2</sub>, 60% O<sub>2</sub> and 100% O<sub>2</sub>.

## Product Dimensions

All tolerances ±0.15 mm unless otherwise stated



TO SUIT 3-WAY (2,54 PITCH) MOLEX CONNECTOR REF. -22-01-2035



**Important Note:** Connection should be made via recommended mating parts only. Soldering to the sensor will damage it and invalidate the warranty.

For further information on the external load resistance and connection to the recommended mating part, please see Operating Principle OP-04 or contact City Technology.

All performance data is based on measurements made with cylinder gases using a flow rate of 100 mls/min. Conditions at 20°C, 50% RH and 1013 mBar. For sensor performance data under other conditions, contact City Technology.

Performance characteristics outline the performance of sensors supplied within the first 3 months. Output signal can drift below the lower limit over time.

## Poisoning

CiTiceLs are designed for operation in a wide range of environments and harsh conditions. However, it is important that exposure to high concentrations of solvent vapours is avoided, both during storage, fitting into instruments and operation.

When using sensors with printed circuit boards (PCBs), degreasing agents should be used before the sensor is fitted. Do not glue directly on or near the CiTiceL as the solvent may cause crazing of the plastic.

## Intended Use

These sensors are designed to be used to monitor the partial pressure of oxygen in anaesthesia (not including xenon), critical care, neonatal incubators and general oxygen monitors.

## Stabilisation Time

Allow at least 15 minutes to stabilise in the instrument before calibration or refer to manufacturer's instructions.

## Cleaning and Sterilisation

In case of contamination, the sensor may be cleaned with distilled water and allowed to dry naturally. The sensor is not suitable for sterilisation by steam or exposure to chemicals such as ethylene oxide or hydrogen peroxide.

## Calibration Interval

These sensors are designed to have minimal drift over their useful lifetime. For maximum accuracy, however, they should be calibrated before each use.

## If the Sensor is Dropped

If a sensor is dropped, then it should be placed in quarantine for 24 hours and a follow-up check made by a 2-point calibration.

## Mechanical Installation

When installing the sensor, it must only be screwed in hand-tight and a gas tight seal ensured. Spanners and similar mechanical aids may not be used, as excessive force may damage the sensor thread.

## RFI/EMI Susceptibility

MediceLs contain metal and may be susceptible to RFI or EMI. They are not suitable for use in MRI environments. For further information, please contact City Technology.

## Certifications



This product has been licensed for sale by the FDA in the U.S. For confirmation, see <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cftrl/rl.cfm?lid=604764&lpcd=CCL>

Manufacturer: EnviteC-Wismar GmbH, Alter Holzhafen 18, 23966 Wismar, Germany

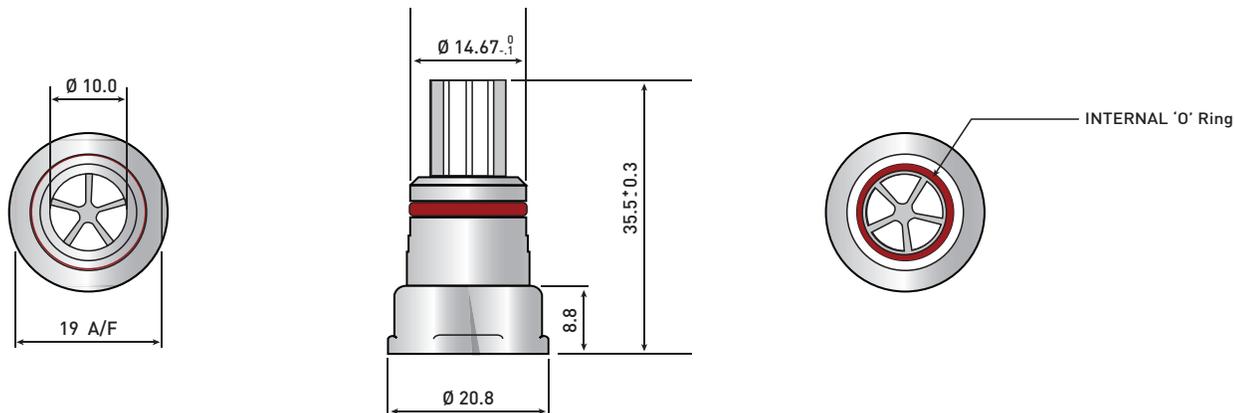
## Cross Sensitivity

The table below shows how sensors respond when tested with the gas mixtures listed in ISO 80601-2-55.

Test Gas	% O <sub>2</sub> Error
50% He / 50% O <sub>2</sub>	< 1%
60% N <sub>2</sub> O / 40% O <sub>2</sub>	< 1%
2% Halothane / 40% O <sub>2</sub> / 30% N <sub>2</sub> O / 5% CO <sub>2</sub> / Bal N <sub>2</sub>	< 1.5%
2% Enflurane / 40% O <sub>2</sub> / 30% N <sub>2</sub> O / 5% CO <sub>2</sub> / Bal N <sub>2</sub>	< 1.5%
2% Isoflurane / 40% O <sub>2</sub> / 30% N <sub>2</sub> O / 5% CO <sub>2</sub> / Bal N <sub>2</sub>	< 1.5%

## MOX Adaptor (15 mm Taper)

MOX9 Sensors are supplied with an adaptor that can be fitted to the sensor thread and used to direct gas flow to the sensor.



### SAFETY NOTE

This sensor is designed to be used in safety-critical applications. To ensure that the sensor and/or instrument in which it is used, are operating properly, it is a requirement that the function of the device is confirmed by exposure to target gas (bump check) before each use of the sensor and/or instrument. Failure to carry out such tests may jeopardize the safety of people and property.

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