

# MOX9 GAS SENSOR

002829

Issue 10

## MediceL<sup>®</sup> Oxygen (O<sub>2</sub>) Gas Sensor



Oxygen (O<sub>2</sub>) Gas Sensor:  
**MOX9**  
Part Number: AAD29-210

### DESCRIPTION

Honeywell MediceL<sup>®</sup> (MOX) Sensors include oxygen and a range of other gases that are designed specifically for use in respiratory and anesthesia applications.

### 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 three 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).

### APPLICATIONS

- Critical care anesthesia



### PORTFOLIO

The MOX MediceL<sup>®</sup> sensor family is part of the extensive line of Honeywell gas sensors.

To learn more about the product, or the many other gas sensors in this series, [click here](#).

## FEATURES AND BENEFITS



Meets the requirements of ISO 80601-2-55



Linear output from 0% to 100% Oxygen



13-month warranty



RoHS compliant

# MEDICEL® GAS SENSORS

## MOX9 SERIES

**TABLE 1. TECHNICAL SPECIFICATIONS**

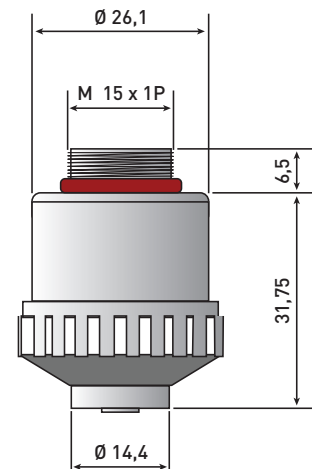
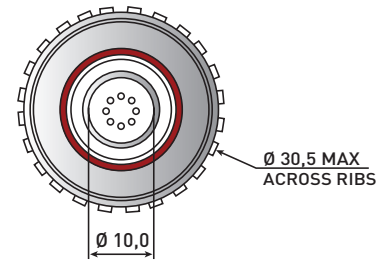
MEASUREMENT	
<b>Operating Principle</b>	Partial Pressure Electrochemical
<b>Output</b>	9 mV to 13 mV in 210 mBar O <sub>2</sub>
<b>Measurement Range</b>	0 mBar to 1500 mBar O <sub>2</sub>
<b>T90 Response Time*</b>	< 15 s (air to 100 % O <sub>2</sub> )
<b>Baseline Offset*</b>	< 200 μV
<b>Linearity</b>	Linear 0 % to 100 % O <sub>2</sub> (See Note 1)
ELECTRICAL	
<b>Temperature Compensation</b>	< 2 % O <sub>2</sub> equivalent (0°C to 40°C)
<b>External Load Resistor</b>	10 kOhm minimum (See Important Note)
<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>Weight</b>	31 g
<b>Housing Material</b>	White ABS
<b>Orientation</b>	Any
ENVIRONMENTAL	
<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 %RH 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 (This amounts to a variation of condition 1 of our standard terms and conditions which otherwise apply)

\*Specifications are based on measurements made with cylinder gases using a flow rate of 100 mls min<sup>-1</sup> and are valid at 20°C, 50% RH and 1013 mBar, using Honeywell recommended circuitry. Performance characteristics outline the performance of sensors supplied within the first three months. Output signal can drift below the lower limit over time.

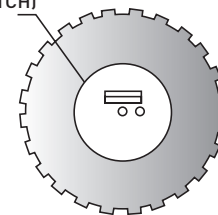
**Note 1:** Use of a regression coefficient shows a best fit straight line better than 0.9995 when measured through the four data points from testing with 100 % N<sub>2</sub>, 21 % O<sub>2</sub>, 60 % O<sub>2</sub> and 100 % O<sub>2</sub>

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 Honeywell.

## Product Dimensions



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



All dimensions in mm

All tolerances ±0,15 mm unless otherwise stated

## IMPORTANT NOTES

Connection should be made via mating parts only. Soldering to the sensor will result in damage and invalidate the warranty.

For further information on the external load resistance and connection to the recommended mating part, please see Operating Principle OPO4 or contact Honeywell.

# MEDICEL® GAS SENSORS

## MOX9 SERIES

### Poisoning

MediceLs 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 MediceL 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 manufacturers 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 Honeywell.

### Certifications



**0123**

Manufacturer: EnviteC-Wismar GmbH, Alter Holzhafen 18, 23966 Wismar, Germany  
This product has been licensed for sale by the FDA in the US. For confirmation, see:  
<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfurl/rl.cfm?lid=604764&lpcd=CCL>

# MEDICEL® GAS SENSORS MOX9 SERIES

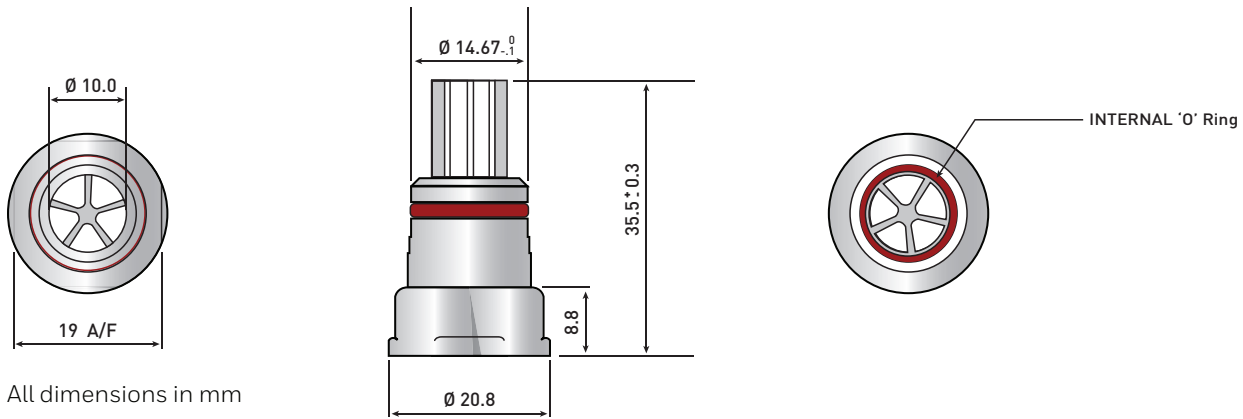
## Cross Sensitivity Table

The table below shows how MOX9 MediceLs respond when tested with the gas mixtures listed in ISO 80601-2-55.

TABLE 2. CROSS SENSITIVITY	
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.



## WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, 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 Honeywell be liable for consequential, special, or indirect damages.**

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Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, Honeywell assumes no responsibility for its use.

## FOR MORE INFORMATION

Honeywell Sensing and Safety Technologies services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing, or the nearest Authorized Distributor, visit [sps.honeywell.com/ast](https://sps.honeywell.com/ast) or call:

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## WARNING MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

## 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.

**Honeywell**