XCell® **Oxygen (O₂) Sensor**

MSA
The Safety Company

Supplemental Technical Data Sheet

This information contained within this document is a supplement to the MSA transmitter user manual.

Applicable Product(s):

- ULTIMA® X5000 Gas Monitor
- General Monitors S5000 Gas Monitor

RANGE	**0–25% Vol.**
X5000 GAS CODE	16
S5000 GAS CODE	D16
DEFAULT SPAN VALUE	20.8
DEFAULT ALARM 1	19.5
DEFAULT ALARM 2	18.0
SENSOR DESIGN	Non-consuming Electrochemical Sensor
SAFESWAP	Sensor can be changed under power
WARRANTY/SHELF LIFE	3 years
SENSOR LIFE[2]	> 5 years
CALIBRATION	For greatest accuracy and zero stability, allow powered sensor 24 hours to acclimate before performing first calibration.
FREQUENCY	Every 3-6 months
REGULATOR	1 LPM
ZERO GAS	Not required
ACCURACY[1,4]	< ±1% of measured value
LINEARITY[1]	< ±2% of measured value
OPERATING TEMPERATURE RANGE	−40°C to 60°C (−40°F to 140°F)
OPERATING HUMIDITY RANGE	
INTERMITTENT	0% to 100 % relative humidity
CONTINUOUS	10% to 95% r.h. non-condensing
OPERATING PRESSURE RANGE	800–1200 mbar
TEMPERATURE EFFECT	
ZERO	No effect
SENSITIVITY	No effect
HUMIDITY EFFECTS	No effect
PRESSURE EFFECTS	No effect
ZERO DRIFT[1]	< 0.2% Vol/year
SPAN DRIFT[1]	< 0.2% Vol/year
RESPONSE TIME	
T_{50}[1]	< 6 seconds
T_{90}[1]	< 11 seconds
RECOVERY T_{90}[1]	< 13 seconds
GAS EXPOSURE LIMITATION[3]	Not intended for continuous inert monitoring
WARM-UP TIME (X5000, S5000)[1]	30 min.
	May require longer warm up times, see manual. For optimum sensor performance, allow sensor 24 hours to acclimate to conditions before performing first calibration.
ADDITIONAL CONSIDERATIONS	Lead-free design

[1] All performance values are typical as applied to new sensors in ambient laboratory conditions.
[2] Individual results may vary based on individual sensor environmental exposure conditions.
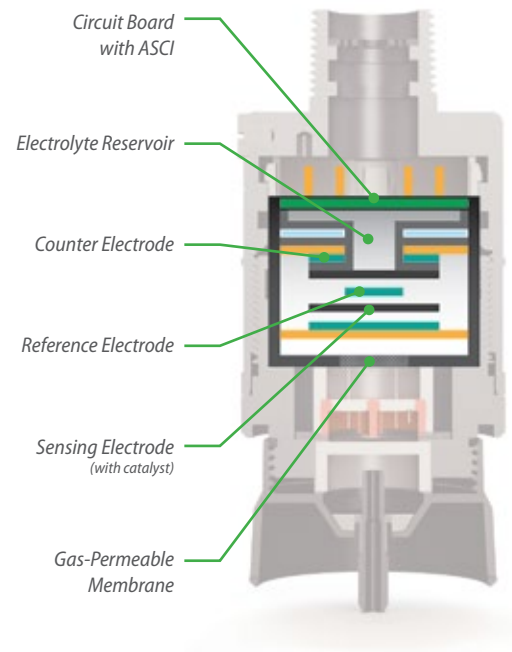[3] As tested per ISA standards.
[4] Does not account for variances in calibration gas accuracy.

WE KNOW WHAT'S AT STAKE.

Why MSA XCell® O_2 Sensors?

Longer Life!

The electrochemical system in the MSA XCell O_2 Sensor uses a non-consuming chemical reaction. O_2 molecules entering the sensor react with the working electrode creating electron flow and water as a byproduct. At the counter electrode, water is converted back into O_2 molecules. The chemical reaction requires a low voltage, which is controlled by the application-specific integrated circuit (ASIC) in the XCell Sensor. Because nothing is consumed or "used up" as the sensor is functioning, the sensor has a longer lifespan. XCell O_2 Sensors have a typical life of more than four years.

This non-consuming chemical reaction also means that the sensor can have a much longer shelf-life. The chemical reaction in a traditional lead-based O_2 sensor starts the second the sensor is manufactured. At this time, the chemical process whereby the lead is converted to lead oxide begins and the finite sensor life begins. The MSA XCell O_2 sensor is designed to have a very long shelf-life. While the sensor sits un-powered, no chemical reactions with O_2 are taking place and no life is being depleted from the sensor.

Circuit Board
with ASCI

Electrolyte Reservoir

Counter Electrode

Reference Electrode

Sensing Electrode
(with catalyst)

Gas-Permeable
Membrane

Our Mission

MSA's mission is to see to it that men and women may work in safety and that they, their families and their communities may live in health throughout the world.

MSA: WE KNOW WHAT'S AT STAKE.

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