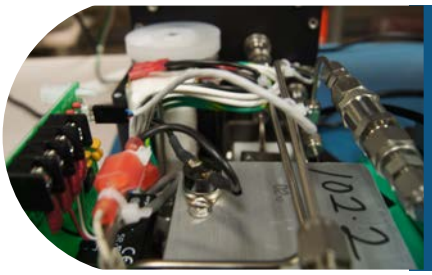
MODEL 3100

Percent oxygen analyzer

Compact series/ high purity

Neutronics
Gas Analysis Solutions



Ultrafast. Accurate. Robust.

- PPM to 100% measurement range
- Rapid-response Neutronics zirconium oxide sensor
- 5 year sensor life
- T_{90} < 5 seconds
- Less than 10 seconds from air to ppm levels

Description

The Neutronics Model 3100 is a compact analyzer that features the Neutronics rapid response zirconium oxide sensor and a measurement range of 0.1 ppm to 100% oxygen. With its extremely fast response time and high accuracy, the Model 3100 delivers reliable performance for a wide variety of oxygen gas measurement and critical process control applications.

Rapid response zirconium oxide sensor

The robust design of the Neutronics zirconium oxide sensor gives this analyzer the ability to rapidly measure oxygen through large step changes in concentration and the ability to accurately measure ppm concentrations of oxygen within seconds after exposure to air. When heated to an elevated temperature, the rapid-response zirconium oxide sensor produces a predictable electrical output in response to changes in the partial pressure of oxygen. The sensor is a solid-state device that utilizes yttria-stabilized zirconia (YSZ), a zirconium-oxide based ceramic in which the crystal structure of the zirconium oxide is made stable at room temperature by the addition of yttrium oxide.

Precise sensor temperature control

Critical to reliable performance and rapid response, the remote sensor module (RSM) includes a precision controlled sensor heater assembly designed to maintain the temperature of the sensor at 650° C by continuously modulating the VAC electrical power input. To meet strict heat loss requirements, the sensor heater housing utilizes high temperature microporous insulation, a low density material with an extremely low thermal conductivity.

Long sensor life

The expected service life for the Neutronics zirconium oxide sensor is greater than 5 years. The sensor has an unlimited shelf life and will not dry out or freeze.

Wide measurement range

The Model 3100 provides a simple solution for a wide range of applications with fast and reliable measurement of oxygen concentrations from 0.1 ppm up to 100%.

Compact modular design

The compact series analyzers are easy to install. With a small footprint, they are designed to be flush mounted onto the surface of a control panel and integrated into a variety of equipment components. A separate remote sensor module (RSM) houses the sensor, the heater assembly, and the delivery system for the gas sample. The pump driven unit utilizes a diaphragm pump to extract the process gas from a non-pressurized source. The positive pressure driven unit is designed for system operating pressures above 5 psig.

Low maintenance

The Model 3100 does not require any major periodic servicing. Calibration of the sensor should be performed only as needed. Validation of the display to a known gas source should be performed on a regular basis.

Simple to install

The analyzer is not position or motion sensitive. An optional ventilation port may be included on the RSM for dust and temperature control.

Easy to operate

The Model 3100 is shipped ready to install and operate. Each unit is configured and tested prior to shipment. Configuration parameters may be changed by the user through the setup menu on the keypad or by using the RS-232 service port interface.

Communication options

The user has a choice of options for communicating between the Model 3100 analyzer and the operating system controller. Two analog outputs are available: 4-20 mA and 0-1, 0-5, or 0-10 VDC. The RS-232 digital interface gives the user access to all settings including the option to restore the analyzer to its factory delivered settings.

Two adjustable alarms

Alarms with configurable relay outputs initiate active modes and light indicator LEDs based on user defined settings. The alarm status clears automatically when the measured oxygen concentration is within the set threshold value.

Auto or fixed range measurement

The Model 3100 can be configured to automatically change the measurement range based on the concentration of oxygen in the process. The analyzer features a 0-10 VDC auto-range identification output.

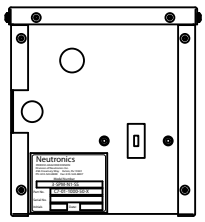
MODEL 3100

Trace oxygen analyzer

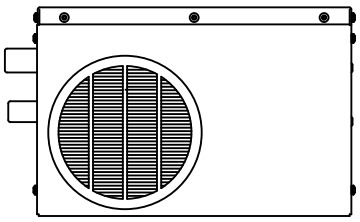
Specifications

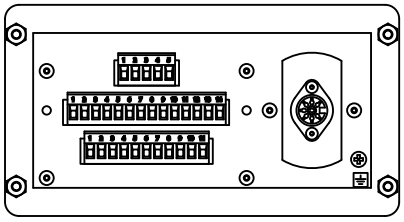
Type	Trace oxygen analyzer
Operating range	0-10 ppm, 0-100 ppm, 0-1,000 ppm, 0-10,000 ppm, 0-10%, 0-100%, auto
Sensor	Neutronics rapid-response zirconium oxide, ZR-100
Accuracy	± 2.0% of range @ CTP or ± 0.5 ppm, whichever is greater
Response time	T_{90} < 5 seconds for order of magnitude change; < 10 seconds from air to ppm
Warm up time	10 minutes to operation; 60 minutes to thermal equilibrium
Sensor expected service life	5-7 years
Relative humidity (analyzer)	0 to 95%, non-condensing
Operating temperature	0° to 40° C (32° to 104° F)
Sample pressure (pump drive)	12inHg vacuum to 7 psig
Sample pressure (positive pressure drive)	6 to 60 psig
Materials of construction	316 Stainless Steel wetted parts
Display	7-segment, 0.75" alphanumeric LED, 4 characters
	LEDs for system status: run, fault, alarm-1, alarm-2
Power supply	90 - 264 VAC or 24 VDC
Analog current output	4 - 20 mA, 12 VDC, powered by the analyzer
Analog voltage output	0-1, 0-5, 0-10 VDC
Relay outputs	Two alarm relays, field adjustable Form C (SPDT)
	One system fault relay, non-adjustable Form B (SPST)
Serial service port	RS-232
Control panel rating	Weatherproof NEMA 4, IP66
Rear electronics chassis rating	NEMA 1, IP20
Warranty	12 months from date of shipment
Analyzer dimensions (LxWxH)	7.00" (119mm) x 4.125" (105mm) x 3.75" (95mm)
RSM dimensions (LxWxH)	9.22" (234mm) x 5.40" (137mm) x 6.12" (155mm)
Weight	2 lbs. (analyzer); 8.5 lbs. (RSM)

Specifications are subject to change without notice.



RSM left end


RSM side view


Oxygen analyzer

Order information

Part	Part number
3-SPM-N1-SS, RSM (with Pump)	C7-01-1000-50-1
3-SPM-N1-SS, RSM (with Pump, 1/4" VCR Fittings)	C7-01-1000-50-3
3-LP-N1-SS, RSM (Positive Pressure), (110 VAC)	C7-01-1000-52-0
3-LP-N1-SS, RSM (Positive Pressure), (220 VAC)	C7-01-1000-52-2
3-SPM-N1-SS-XPM3, RSM (with pump, 110 VAC)	C7-01-1000-85-0
3100-N1 analyzer module	C7-01-3100-00-0

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