AMETEK®
PROCESS INSTRUMENTS

PRODUCT DATA SHEET

TM2000 Trace Oxygen Analyzer

Superior protection through quick response to process change

The TM2000 net oxygen (O_2) analyzer protects industrial processes by quickly responding to changes using an industry-proven zirconium oxide (ZrO_2) sensor. It operates within a wide range of 0.1 ppm to 100% O_2, and can accurately respond from atmosphere to low ppm O_2 levels in just seconds. In addition, the TM2000 can detect excess combustibles process upsets in the presence of very low ppm O_2 readings. This unique benefit is particularly important in cryogenic gas generating processes, where the TM2000 can distinguish between an O_2 upset condition and an excess combustibles upset condition.

The TM2000 is supported by the Series 2000 Controller, which features user-friendly, menu driven software with helpful system status text messages that allow you to begin using the TM2000 quickly. Advanced software diagnostics and on-line help further simplify the use of the TM2000, which comes complete with a standard weatherproof housing. The controller can be housed separately from the sensor.

KEY BENEFITS

- Modular design for easy upgrades and field service
- Process protection with a ZrO_2 sensor that will not fail to a zero O_2 reading
- Optional sample bypass improves response times and keeps sensor inlet purged of dead volume
- RS-485 serial communications, 0-20/4 – 20 mA current outputs, and digital alarms for systems integration

APPLICATIONS

- Cryogenic gas generating systems
- Nitrogen purity systems
- Blanket gas analysis
- Inert gas purity
- Welding atmospheres
- Air separation
- Atmospheric oven control
- Glove box applications

KEY MARKETS

- Specialty gases
- Bulk gas
- UHP gases

PERFORMANCE SPECIFICATIONS

Sensor Specifications

Operating range	0.1 ppm O_2 to 100% O_2
Accuracy	Percent: ± 1% of reading or .02% O_2 absolute, whichever is greater; ppm: ± 2% of reading or 0.5 ppm O_2 absolute, whichever is greater
Response time	Less than 5 seconds at 0.6 L/min. (1.3 scfh) over one decade
Repeatability	Percent: ± 0.5% of reading or 0.1% O_2 absolute, whichever is greater; ppm: ± 0.5% of reading or 0.1 ppm O_2 absolute, whichever is greater
Ambient temperature	-18°C to 50°C (0°F to 122°F)
Max inlet temperature	71°C (160°F)
Sample flow	0.1 to 1.0 L/min (0.2 to 2.1 scfh)
Power requirements	115 VAC ±10%, 50/60 Hz. 288 VA (230 VAC optional)
Zero gas	From 0.1 ppm to 10% O_2, balance nitrogen
Span gas	Minimum one decade above zero gas (10 times greater)
Enclosure	Indoor/Outdoor NEMA 3R

Series 2000 Controller Unit Specifications

Display	Four-line by 20-character vacuum fluorescent Displays combinations of O_2 (0.1 ppm O_2 to 100%, autoranging), time and date, cell temperature, user programmable text, thermocouple mV or cell mV Password protection, programmable pressure compensation and context-sensitive help are also provided
Analog output	Two isolated linear current outputs. Assign O_2, cell temperature, thermocouple mV, or cell mV Each output can be 4-20 mA, 0- 20 mA, 20-4 mA, 20-0 mA, and is fully scalable Hold or track during calibration and select degree of damping. Maximum load 1200 ohms
Alarms	Two independent O_2 alarms, each high or low selectable. One alarm can be assigned as O_2, calibrate or verify Set relays to energize or deenergize on alarm
Contact rating	0.5A, 30V, 10VA max. noninductive load, AC or DC
Diagnostics	Watchdog timer and service alarms. System test for A/D, RAM, EEPROM and keypad. Display line four reserved for full text error and diagnostic messages. 20 entry exception log for automatically detected system events
Communications	RS-485, two-way addressable
Ambient temperature	-10°C to 50°C (14°F to 122°F)
Enclosure	Standard weatherproof NEMA 4 (IP 56) wall/panel mount. Optional GP (General Purpose) wall mount, GP 19" rack mount, GP panel mount, or stainless steel weatherproof NEMA 4X (IP 56) wall/panel mount. All are UL Listed for NEC Class I, Division 2 areas Purged and explosion-proof versions also available
Power requirements	Nominal 115-230 VAC ±10%, 47-63 Hz, 75 VA max
System compliance	EMC Directive 2004/108/EC; Low Voltage Directive 73/23/EEC

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