

Model 300T and Model 300P Trace and Percent Oxygen Transmitters



The Model 300T Trace Oxygen Transmitter and the Model 300P Percent Oxygen Transmitter accurately monitor oxygen in a wide variety of gases. These reliable loop-powered Transmitters offer full scale ranges from 0-10 ppm (Model 300T) up to 0-25% (Model 300P). The Transmitters provide a two-wire 4-20 mA output signal that is linearly and directly proportional to the oxygen content of the gas being monitored. The load resistance is connected in series with a dc power supply (24 VDC nominal), and the current drawn from the supply is the 4-20 mA output signal. This output interfaces with equipment such as the TAI Model 8000 Multipoint Monitor as well as with computers, recorders, alarms and other devices.



applications requiring intrinsic safety. An enclosure for the barriers is also optionally available.

Applications

The Model 300T and Model 300P monitor oxygen in nitrogen, hydrogen, argon, ethylene, butadiene, and many other pure gases and gas mixtures. Applications for these Transmitters can be found in virtually every industry. Note that the Transmitters monitor process control and quality assurance applications and are not intended for personnel safety.

FM Approved Intrinsically Safe

The Model 300T and Model 300P Oxygen Transmitters are approved by Factory Mutual Research (Norwood, MA) as intrinsically safe for use in Class I, Division 1, Groups A; B, C and D hazardous areas (FM identification #4R3A6.AX). The Transmitters are in compliance with the applicable requirements of:

Title: Intrinsically Safe Apparatus and Associated Apparatus for Use in Cl., Div. 1 Hazardous Locations (Class No. 3610, Issue Date Oct. 1988).

Title: Electrical Equipment for use in Hazardous (Classified) Locations General Requirements (Class No. 3600, Issue Date March 1989).

The FM approval requires that, to be intrinsically safe, the Model 300T and Model 300P transmitters must be used with approved safety barriers (see drawing on back). These barriers are available as an option for

Maintenance-Free Sensor

The Model 300T and Model 300P Transmitters use Teledyne's Micro-fuel Cell oxygen sensor. This sensor is a sealed electrochemical device with no electrolyte to change or electrodes to clean, so it is virtually maintenance-free. The sensor is capable of monitoring gas streams containing up to 100% hydrocarbons. Also, because the sensor has an absolute zero, no zero gases are needed for calibration.

Easy Calibration

The Micro-fuel Cell produces an output that is linear with respect to oxygen concentration from zero to 100% oxygen. That means you can use ambient air (20.9% oxygen) for calibration. Or, if you choose, you can calibrate with a certified span gas--which is advantageous for fastest possible calibration of the Model 300T's 0-10 ppm range.

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Analytical Instruments

SENSORS • ANALYZERS • SYSTEMS
Total Quality Commitment

Model 300T and Model 300P Trace and Percent Oxygen Transmitters



Features / Benefits

- ▼ Provides accurate monitoring of oxygen in a wide variety of gases
- ▼ 4-20 mA output signal
- ▼ High sensitivity and accuracy... unaffected by flow variation
- ▼ Fast response and recovery
- ▼ 2-wire (loop-powered)
- ▼ Compact size, easy to install
- ▼ RFI protection
- ▼ Long-life, maintenance-free Micro-fuel Cell Oxygen sensor
- ▼ Easy calibration
- ▼ Unaffected by oxidizable gases (HC's, CO, etc.)
- ▼ Rugged bulkhead mounted metal enclosure

Options

- ▼ TAI p/n B-382 intrinsic safety barriers (MTL #702)

- ▼ TAI p/n E-388 (MTL #MT-2) separate enclosure to house optional safety barriers

Applications

- ▼ Monitoring inert gas blanketing
- ▼ Air separation and liquefaction
- ▼ Chemical feedstock analysis
- ▼ Semiconductor manufacturing
- ▼ Petrochemical process control
- ▼ Monitoring inert gas generators
- ▼ Controlled atmosphere food packaging
- ▼ Heat treating / bright annealing
- ▼ Quality assurance
- ▼ Gas purity certification
- ▼ Gas pipeline leak detection
- ▼ Welding of exotic metals
- ▼ Nuclear fuel processing
- ▼ Flue gas analysis
- ▼ And many other applications

Specifications*

Ranges:

- *Model 300T*: 0-10 ppm oxygen and switch-selectable 0-21% (CAL) range (Optional ranges to 0-10,000 ppm)
- *Model 300P*: 0-25% oxygen and switch-selectable 0-21% (CAL) range (Optional ranges to 0-1%)

Accuracy:

- *Model 300T*: $\pm 2\%$ of full scale (fs) or ± 1 ppm, whichever is greater, at constant temperature; $\pm 5\%$ of fs or ± 1 ppm, over the operating temperature range
- *Model 300P*: $\pm 2\%$ of fs at constant temperature; $\pm 5\%$ of fs over the operating temperature range

Operating Temperature Range:

+32°F to +122°F (0°C to +50°C)

Voltage Requirements:

24VDC Nominal, Reverse Polarity Protected. V_{max} & V_{min} dependent upon safety barrier used. For FM approved intrinsically safe operation, an approved safety barrier must be used to limit line power to $V_{max}=25VDC$ and $I_{max}=125mA$.

Output Span:

4-20 mA

Area Classification:

Factory Mutual (FM) Research approved intrinsically safe for use in Class I, Division 1, Groups A, B, C and D hazardous areas (FM identification #4R3A6.AX). Requires optional barriers for FM approval as intrinsically safe.

Oxygen Sensor:

- *Model 300T*: Class B-2 Micro-fuel Cell
- *Model 300P*: Class B-1 Micro-fuel Cell

Response Time:

- *Model 300T*:
 - 90% of 0-10 ppm in under 60 seconds
 - 90% of 0-100 ppm in under 45 seconds
 - 90% of 0-1000 ppm in under 10 seconds
 - 90% of 0-10,000 ppm in under 10 sec.
- *Model 300P*: 90% of full scale in 7 sec.

Enclosure:

Weather-resistant, general purpose, sheet metal, bulkhead-mounted enclosure.

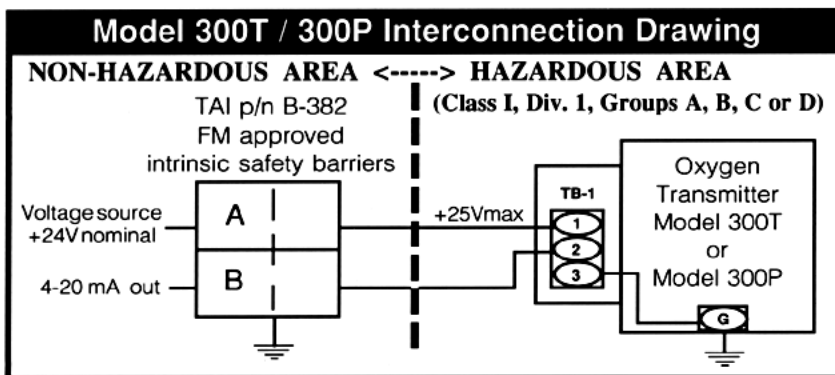
Dimensions (height x width x depth):

11.5 in. x 11 in. x 4.25 in.
(292 mm x 279 mm x 108 mm)

Calibration Gas:

Air (20.9% O₂) or a certified span gas may be used for calibration. No zero gas is needed. When a span gas is employed, Teledyne recommends use of a certified gas of oxygen content approximately 70 - 99% of full scale. (e.g., 70 - 99 ppm oxygen in nitrogen for the Model 300T with optional 0-100 ppm full scale range).

*Specifications/Features: vary with application, are established and validated during design, are not to be construed as test criteria for every product manufactured, and subject to change without notice.



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