



Gas & Flame Detection



3M™ Detcon™ Model DM-700-O₂ Oxygen Sensor

Description

Detcon Model DM-700-O₂ is a non-intrusive “Smart” sensor designed to detect and monitor Oxygen in air over the range of 0-25% by volume using electrochemical sensor technology. The plug-in, field replaceable sensor cell is temperature compensated and features over-sized gold-plated connections that help prevent corrosion. The Model 700’s rugged framework includes an intrinsically safe electro-polished 316 stainless steel housing with fully encapsulated electronics and dual layer surge protection. This innovative design virtually eliminates sensor failure due to water ingress, corrosion, vibration, and transient spikes. A primary feature of the Model 700 is embedded intuitive software that simplifies operator interface by guiding the user through routine calibration, configuration, and fault diagnostic functions using a built-in alpha/numeric display. The Model 700 is equipped with standard analog 4-20mA, and Modbus™ RS-485 outputs. Among its unique features is a wireless option that can be used with Detcon’s SmartWireless® product line. Additional integration options include a Remote Alarm Module (RAM), HART, and Foundation Fieldbus. Detcon’s oxygen sensors have a long shelf life and are supported by an industry-leading warranty.

Scrolling Full Message/Text Display



Electrochemical Fuel Cell
(shown as PN 967-343494-25P_ in SS junction box)



Applications

- Petrochemical
- Refineries
- Chemical plants
- Confined Space Monitoring
- Analyzer Shelters
- Wastewater treatment plants
- Wet wells-dry wells
- Pulp and paper
- Food and beverage
- Utilities

Features

Failsafe User-Friendly Interface

- LED Display (With Antiglare Cover)
- Full Text Display Method
- Non-intrusive Interface
- Auto Zero/Auto Span
- Pre-emptive Fault Diagnostics

Environmentally Bulletproof

- Electropolished 316SS Construction
- 100% Epoxy Encapsulated Circuitry
- Bulletproof I/O Protection
- Water-Proof, Corrosion-Proof, Vibration-Proof

Modular and Serviceable

- Modular Design
- Plug and Play Components
- Quick Thread Release (For Sensor Replacement)
- Integral Calibration Port



3M™ Detcon™ Model DM-700-O2

Oxygen Sensor

System Specifications

Sensor Type

Continuous diffusion/adsorption
2-electrode electrochemical cell
Plug-in field replaceable Intelligent Type

Sensor Life

2 1/2 to 3 years typical

Measurement Range

0-25% Oxygen by volume

Accuracy/Repeatability

±1% FS

Response/Clearing Time

T90 ≤ 10 seconds

Span Drift

<5% of signal per year (in first two years)

Outputs

Linear 4-20 mA DC
RS-485 MODBUS-RTU

Electrical Classification

Explosion proof
CSA and US (NRTL)
Class I, Division 1, Groups B, C, D
(Tamb = -40°C to +50°C)
Class I, Zone 1, Group IIC
ATEX
II 2 G Ex d ib IIB + H2 T4 Gb (Tamb = -40°C to +50°C)

Ingress Protection

NEMA 4X, IP66

Safety Approvals

cCSAusA
ATEX
CE Marking
SIL2 Certified to IEC 61508

Warranty

Plug-in Cell - 2 years; Transmitter - 2 Years

Environmental Specifications

Operating Temperature Range

-40°F to +122°F; -40°C to +50°C

Storage Temperature Range

-40°F to +122°F; -40°C to +50°C

Operating Humidity Range

0-99% RH non-condensing

Operating Pressure Range

Atmospheric ±10%

Specifications subject to change without notice

Mechanical Specifications

Dimensions

7"H x 2.2" Dia.; 178mmH x 65mm Dia.
(sensor assembly only)
11"H x 6.1"W x 3.75"D; 280mmH x 155mmW x 96mmD
(with junction box)
Mounting holes (J-box) 5.5"; 140mm center to center

Weight

2 lbs; 0.907kg (sensor only)
6 lbs; 2.72kg (w/ aluminum j-box)
9 lbs; 4.08kg (w/stainless steel j-box)

Electrical Specifications

Power Input

11-30 VDC

Power Consumption

Normal operation = 30mA (<0.75 watt)
Maximum = 50mA (1.2 watts)

Inrush Current

1.67A @ 24V

RFI/EMI Protection

Complies with EN50270

Analog Output

Linear 4-20mA DC (1,000 ohms max loop load @ 24VDC)
0mA All Fault Diagnostics
2mA In-Calibration
4-20mA 0-100% full-scale
22mA Over-range condition

Serial RS-485 Output

RS-485 Modbus™ RTU

Baud Rate

9600 BPS (9600,N,8,1 Half Duplex)

Status Indicators

4-digit LED display with gas concentration
Full-script menu prompts for AutoSpan,
Set-up Options, and Fault Reporting

Faults Monitored

Loop, Input Voltage,
Missing Sensor, Zero,
Processor, Memory, Calibration

Cable Requirements

Power/Analog
3-wire shielded cable
Maximum distance is 13,300 feet with 14 AWG
Serial Output
2-wire twisted-pair shielded cable specifically for
use with RS-485 installations
Maximum distance is 4,000 feet to last sensor

I/O Protection

Over-voltage, Miswiring, EMI/RFI Immunity

Order Guide

Specify junction box options (below)
PN 967-343490-25P_ DM-700-O2 Sensor Assembly (no junction box)
PN 967-343491-25P_ DM-700-O2 Sensor Assembly with Aluminum J-Box
PN 967-343494-25P_ DM-700-O2 Sensor Assembly with 316 SS J-Box

Integration Options

Remote Alarm Module (Remote Operation and 2 Alarm Relays plus Fault)
Hart Integration Module (Hart Communication Protocol version 7.0, HART Registered)
Foundation Fieldbus Integration Module (Foundation Fieldbus version 5.01)
Wireless Integration Module (Detcon Model RXT-320 SmartWireless® Transceivers)

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