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), and HART. Detcon’s oxygen sensors have a long shelf life and are supported by an industry-leading warranty.

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

Fail-safe User-Friendly Interface
- LED Display (With Anti-glare 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
### 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 IIIC
- 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%

**Mechanical Specifications**

**Dimensions**
- 7”H x 2.2” Dia.; 178mmH x 65mm Dia.

**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

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN 967-343490-25P_</td>
<td>DM-700-O2 Sensor Assembly (no junction box)</td>
</tr>
<tr>
<td>PN 967-343491-25P_</td>
<td>DM-700-O2 Sensor Assembly with Aluminum J-Box</td>
</tr>
<tr>
<td>PN 967-343494-25P_</td>
<td>DM-700-O2 Sensor Assembly with 316 SS J-Box</td>
</tr>
</tbody>
</table>

### Integration Options

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