Non-dispersive Infrared Optical Scroll Full Message/Text Display

Chemicals
Pesticides
Agriculture & Horticulture
Food & Beverage Bottling Plants
Sewer Entry
Waste Water Treatment Plants
Coal Gasification
Pulp & Paper Mills
Enhanced Oil Recovery

Description

Detcon Model IR-700-CO2 is a non-intrusive “Smart” sensor designed to detect and monitor carbon dioxide gas in air using miniature non-dispersive Infrared Optical (NDIR) sensor technology. Available in a low and a high range version, ranges of detection (by volume) are 0-0.3%, 0-1%, 0-3%, 0-5% (low range version) and 0-10%, 0-25%, 0-50%, and 0-100% (high range version). The plug-in, field replaceable detector provides a selective response to CO2 and features over-sized gold-plated connections that help prevent corrosion. The Model 700’s rugged framework includes an 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 IR-700-CO2 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 IR-700-CO2 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 carbon dioxide gas sensor has an infinite shelf life and is supported by a 5-year pro-rated warranty.

Features

- 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

Applications

- Chemicals
- Pesticides
- Agriculture & Horticulture
- Food & Beverage Bottling Plants
- Sewer Entry
- Waste Water Treatment Plants
- Coal Gasification
- Pulp & Paper Mills
- Enhanced Oil Recovery

Non-dispersive Infrared Optical (shown as PN 967-424520-005 in SS junction box)
### System Specifications

**Sensor Type**  
Continuous diffusion/adsorption  
Non-dispersive Infrared Optical (NDIR) - CO2  
Sub-miniature plug-in field replaceable

**Sensor Life**  
5 years typical

**Measurement Range (% by volume)**  
0-0.3, 0-0.5, 0-1, 0-3, 0-5 (low range version)  
0-10, 0-15, 0-20, 0-25, 0-50, 0-100 (high range version)

**Accuracy/Repeatability**  
±5% of range

**Response Time**  
T50 < 15 seconds, T90 < 40 seconds

**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°F to +75°C)  
Class I, Zone 1, Group II B+H2  
ATEX  
II 2 G Ex d IIB + H2 T4 Gb (Tamb = -40°F to +75°C)

**Ingress Protection**  
NEMA 4X, IP66

**Safety Approvals**  
< CSAus  
ATEX  
CE Marking  
SIL2 Certified to IEC 61508

**Warranty**  
Plug-in detector - 5 year pro-rated  
Transmitter - 2 Years

### 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 = 68mA (<1.7 watt)  
Maximum = 85mA (2 watts)

**Inrush Current**  
0.67A @ 24V

**RFI/EMI Protection**  
Complies with EN61000

**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, Zero, Sensor, 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

### Environmental Specifications

**Operating Temperature Range**  
-40°F to +167°F; -40°C to +75°C

**Storage Temperature Range**  
-40°F to +167°F; -40°C to +75°C

**Operating Humidity Range**  
0-100% RH non-condensing

**Specifications subject to change without notice**

### Order Guide

Specify junction box options (below)

<table>
<thead>
<tr>
<th>PN</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>967-405520-005</td>
<td>IR-700-CO2 (5% Range) Sensor Assembly (no J-box)</td>
</tr>
<tr>
<td>967-401520-005</td>
<td>IR-700-CO2 (5% Range) Sensor Assembly with Aluminum J-Box</td>
</tr>
<tr>
<td>967-404520-005</td>
<td>IR-700-CO2 (5% Range) Sensor Assembly with 316 SS J-Box</td>
</tr>
<tr>
<td>967-425520-025</td>
<td>IR-700-CO2 (25% Range) Sensor Assembly (no J-box)</td>
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<tr>
<td>967-421520-025</td>
<td>IR-700-CO2 (25% Range) Sensor Assembly with Aluminum J-Box</td>
</tr>
<tr>
<td>967-424520-025</td>
<td>IR-700-CO2 (25% Range) 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)
- **Foundation Fieldbus Integration Module** (Foundation Fieldbus version 5.01)
- **Wireless Integration Module** (Detcon Model RXT-320 SmartWireless® Transceivers)