

Model IR-700-CO₂

Carbon Dioxide Sensor



Scrolling Full Message/Text Display



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



Description

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. Additional integration options include a Remote Alarm Module (RAM) & HART. Detcon’s carbon dioxide gas sensor has an infinite shelf life and is supported by a 5-year pro-rated warranty.

Applications

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

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 Resistant

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

Modular and Serviceable

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



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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
- cCSAus
 - Class I, Division 1, Groups B, C, D (Tamb = -40°C to +75°C)
 - Class I, Zone 1, Group IIB+H2
- ATEX
 - II 2 G Ex d IIB + H2 T4 Gb (Tamb = -40°C to +70°C)

Ingress Protection

- NEMA 4X, IP66

Safety Approvals

- cCSAus
- ATEX
- CE Marking

Warranty

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

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)

PN 967-405520-005	IR-700-CO2 (5% Range) Sensor Assembly (no J-box)
PN 967-401520-005	IR-700-CO2 (5% Range) Sensor Assembly with Aluminum J-Box
PN 967-404520-005	IR-700-CO2 (5% Range) Sensor Assembly with 316 SS J-Box
PN 967-425520-025	IR-700-CO2 (25% Range) Sensor Assembly (no J-box)
PN 967-421520-025	IR-700-CO2 (25% Range) Sensor Assembly with Aluminum J-Box
PN 967-424520-025	IR-700-CO2 (25% Range) Sensor Assembly with 316 SS J-Box

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 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,
- 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

Integration Options

Remote Alarm Module (Remote Operation and 2 Alarm Relays plus Fault)
Hart Integration Module (Hart Communication Protocol version 7.0, HART Registered)

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