



Model IR-700-CO2

Carbon Dioxide Sensor

GAS DETECTION SENSORS ■ INTEGRATED CONTROL SYSTEMS ■ SMARTWIRELESS® ■ PIPELINE ANALYZERS ■ ALARMS

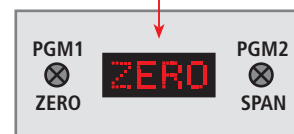
Description

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, Foundation Fieldbus, and Profibus. Detcon’s carbon dioxide gas sensor has an infinite shelf life and is supported by a 5-year pro-rated warranty.

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



Scrolling Full Message/Text Display



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

Applications

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

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°C to +75°C)
Class I, Zone 1, Group IIB+H2
ATEX
Ex d IIB+H2 T4 (Tamb = -40°C to +75°C)

Ingress Protection

NEMA 4X, IP66

Safety Approvals

cCSAus
ATEX
CE Marking
SIL2 FMEDA Rating

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 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

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

Houston

Odessa

Shanghai

Dammam

Del Carmen



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