Model IR-700-CO2
Carbon Dioxide Sensor

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.

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

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

Scrolling Full Message/Text Display

PGM1
⊗
ZERO

ZERO

PGM2
⊗
SPAN

IR-080217

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

Ingress Protection
NEMA 4X, IP66

Safety Approvals
cCSAus
ATEX
CE Marking
SIL2 Certified to IEC 61508

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

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)