**3M™ Detcon™ Model IR-700-CH**
Combustible Gas Sensor

**Description**

Detcon Model IR-700-CH is a non-intrusive “Smart” sensor designed to detect and monitor combustible hydrocarbon gases in air over the range of 0-100% LEL using miniature non-dispersive Infrared Optical (NDIR) sensor technology. As compared to catalytic bead sensors, with NDIR there is no risk of sensor poisoning, no risk of high concentration saturation, and no need for O2 to be present. The plug-in, field replaceable detector features over-sized gold-plated connections that help prevent corrosion. The IR-700-CH’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-CH 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-CH 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 combustible gas sensor has an infinite shelf life and is supported by a 5-year warranty.

**Applications**

- Oil and Gas Drilling Rigs
- Oil and Gas Production Sites
- Offshore Production Platforms
- FPSOs
- LNG/CNG Plants
- Refining and Petrochemical
- Pulp and Paper Mills
- Waste Water Treatment Plants

**Gas Detected**

- Methane
- Ethane
- Propane
- Butane
- Pentane
- Ethylene
- Gasoline Vapor
- Diesel Fuel Vapor
- Jet Fuel Vapor

For other gases consult the factory.

**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

**Non-dispersive Infrared Optical**
(shown as PN 967-214520-100 in SS junction box)

**Scrolling Full Message/Text Display**
System Specifications

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

Sensor Life
5 years typical

Measurement Range
- 0-100% LEL (lower explosive limit)
- 0-100% by volume

Accuracy
±2% F.S. (0-50% LEL)

Repeatability
±2% F.S.

Response Time*
T50 < 6 seconds, T90 < 10 seconds

Zero Drift (typical)
±2% per 2 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 +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 Performance to ISA 12.13.01-2000 and CSA 22.2 #152
- ATEX
- CE Marking
- SIL2 Certified to IEC 61508 (ATEX version only)

Warranty
- Plug-in detector - 5 years
- Transmitter - 2 Years
* As tested with 1 lpm flowrate

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

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

Order Guide
Specify junction box options (below)
PN 987-215520-100 IR-700-CH Sensor Assembly (no junction box)
PN 987-211520-100 IR-700-CH Sensor Assembly with Aluminum Junction Box
PN 987-214520-100 IR-700-CH Sensor Assembly with 316 SS Junction Box
PN 9H7-211520-100 IR-700-CH Sensor Assembly with HART, Aluminum Junction Box
PN 9H7-214520-100 IR-700-CH Sensor Assembly with HART, 316 SS Junction Box
PN 9R7-211520-100 IR-700-CH Sensor Assembly with RAM, Aluminum Junction Box
PN 9R7-214520-100 IR-700-CH Sensor Assembly with RAM, 316 SS Junction Box

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