



**GENERAL MONITORS**  
Protection for life.

# MODEL IR700

## Infrared Carbon Dioxide Point Detector



### Features

- No routine calibration required
- True fail-to-safe operation
- Multiple communication outputs
- Event logging
- Heated optics
- Dirty optics indication
- Wireless capability

### Benefits

- Low maintenance
- True gas detection performance
- Provides complete status and control capability in the control room
- Stores fault, gas check, calibration and alarm event history
- Eliminates condensation
- Discriminates between true fault and cleaning requirements
- Compatible with ELPRO Technologies wireless devices

### Description

The Model IR700 infrared (IR) point detector is a microprocessor-based carbon dioxide gas detector that continuously monitors CO<sub>2</sub> in ppm levels.

The IR700 detection principle is based on measuring the absorption of infrared radiation passing through a volume of gas using a dual beam, single detector method. The IR detector measures the intensity of two specific wavelengths, one at an absorption wavelength and another outside of the absorption wavelength. The gas concentration is determined by a comparison of these two values.

All of the IR700's electronics are contained within an explosion-proof housing allowing detector information to be processed at the point of detection. The IR700 provides 4-20 mA signal proportional to 0-100% full scale. In addition, the IR700 is equipped with Modbus or HART. Configurations with relays, Modbus, and HART are available.

The IR700 is calibrated at the factory and needs no routine field calibration. It requires only a periodic cleaning of the windows and re-zeroing to ensure dependable performance.

The IR700 IR point detector is available in either an aluminum or stainless steel housing and is designed for use in Class I, Div. 1, Groups B, C & D and Zone 1 areas for North America and Zones 1 and 21 internationally. The housing is IP66/Type 4X rated.

### Applications

- Carbon Capture and Storage
- Enhanced Oil Recovery
- Chemical Plants
- Fertilizers
- Food & Beverage Bottling Plants
- Coal Gasification
- Metals
- Wastewater Treatment Facilities



# MODEL IR700

## System Specifications

**Detector Type:** Infrared absorption type

**Measuring Range:** 0 to 5000 ppm  
*Consult factory for other ranges*

**Gases:** Carbon Dioxide (CO<sub>2</sub>)

**Detector Life:** Greater than 5 years

**Accuracy:** ± 5% full scale ≤ 2500 ppm  
± 10% full scale > 2500 ppm

**Response Time:** (with 100% FS gas applied)  
T50 ≤ 4 s, T90 ≤ 8 s

**Modes:** Self test, normal operation, calibration (zero only or complete calibration)

**Accessories:** IR4000S CO<sub>2</sub> monitor, junction box, duct mount junction box, calibration cup, flow block, splash guard, rain guard, portable purge calibrator

**Classification:** Class I, Divisions 1 & 2, Groups B, C & D  
(Ta = -40°C to +75°C)  
Type 4X Ex d, IIB+H<sub>2</sub> T5 Gb, IP66  
(Ta = -60°C to +75°C)  
Ex t IIIC T100°C Db

**Warranty:** Two years

**Approvals:** CSA, ATEX, IECEx, CE Marking, HART Registered.

## Environmental Specifications

**Operating Temperature Range:** -40°F to +122°F (-40°C to +50°C)

**Storage Temperature Range:** -76°F to +185°F (-60°C to +85°C)

**Humidity:** 10% to 95% RH, non-condensing

## Mechanical Specifications

**Diameter:** 2.9 inches (74 mm)

**Length:** 8.87 inches (225 mm)

**Weight:** 3 lbs (1.35 kg) - aluminum  
6 lbs (2.7 kg) - stainless steel

**Mounting:** 3/4" NPT

**Housing:** Aluminum 6061-T6 alloy or 316 stainless steel  
Explosion Proof, IP66, Type 4x

## Electrical Specifications

**Input Power:** 20-36 VDC  
24 VDC @ 200 mA max.

**Analog Signal:** 4-20 mA (600 ohms max.)  
Start up, Fault (non-HART)\* 0 mA  
Start up, Fault (HART)\* 1.25 mA  
Cal, Zero, Gas Check\* 1.5 mA  
Dirty Optics\* 2.0 mA  
0 to 100% LEL 4 to 20 mA (proportional)  
Over-range 21.7 mA

*\* Under HART, the analog output minimum level can be configured as 3.5 mA or as stated above, depending on user selection.*

**RS-485 Output:** Modbus RTU, suitable for linking up to 128 units or up to 247 units with repeaters

**Baud Rate:** 2400, 4800, 9600, or 19200 BPS

**HART:** (Optional) HART 6, HART Device Description available. AMS Device Manager support

**RFI/EMI Protection:** Complies with EN 50270, EN 61000-6-4

**Sample Cable Requirements:** For cable resistance of 3 ohms/1,000 ft, maximum distance between IR4000S and power source @ 24 VDC:  
14 AWG (2.5 mm<sup>2</sup>) - 3,330 ft (1,110 m)

For 16 AWG cable with cable resistance of 5 ohms/1,000 ft, maximum distance of analog output (100 ohms max.): 10,000 ft. (3,050 m)

**Faults Monitored:** Calibration errors, EPROM and EEPROM Checksum Errors, Optics Failure / Blockage; Low Supply Voltage

**Wireless Communication:** Available with ELPRO Technologies wireless devices

**Standard Configuration:** IR700-0-2-1-2-1  
0-5000 ppm range, aluminum housing, splashguard w/screen, no junction box

*Specifications subject to change without notice.*

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