

Model IR700

Infrared Carbon Dioxide Point Detector



General Monitors



Applications

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

Features

- No routine calibration required
- True fail-to-safe operation
- Multiple communication outputs
- Even 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
- 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 CO₂ 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.



The Safety Company

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System Specifications	
DETECTOR TYPE	Infrared absorption type
MEASURING RANGE	0 to 5000 ppm <i>Consult factory for other ranges</i>
GASES	Carbon Dioxide (CO ₂)
DETECTOR LIFE	Greater than 5 years
ACCURACY @ 25°C	± 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 ₂ 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+H2 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	<i>Aluminum</i> 3 lbs (1.35 kg) <i>Stainless Steel</i> 6 lbs (2.7 kg)
MOUNTING	¾" NPT
HOUSING	Aluminum 6061-T6 alloy or 316 stainless steel Explosion Proof, IP66, Type 4x

Electrical Specifications	
INPUT POWER	20-36 VDC 24 VDC nominal @ 200 mA max.
ANALOG SIGNAL	0-21.7 mA (600 ohms max.)
<i>Start up, Fault (non-HART)</i>	0 mA
<i>Start up, Fault (HART)*</i>	1.25 mA
<i>Cal, Zero, Gas Check*</i>	1.5 mA
<i>Dirty Optics*</i>	2.0 mA
<i>0 to 100% LEL</i>	4 to 20 mA (<i>proportional</i>)
<i>Over-range</i>	21.7 mA
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 Descriptor available. AMS Device anager 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 ²) - 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

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

Specifications subject to change without notice.

Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products. Specifications subject to change without notice.



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