



IRmax

Infrared Hydrocarbon Gas Detector



IRmax

- Compact, low power and highly rugged infrared gas detector for monitoring potentially flammable concentrations of methane, butane, propane and many other hydrocarbon gases and vapours.

IR Display

- Display accessory available for direct connection to IRmax, or remote connection up to 30 metres from the detector.
- The IR Display shows gas and optical obscuration levels and enables non-intrusive calibration of the detector.

IRmax

IRmax is a premium quality IR gas detector designed for protecting facilities against flammable gas hazards. IRmax is the perfect choice for protecting new installations or for upgrading safety on existing sites.

Rugged & reliable

- **Fast response:** with a response time of only 4 seconds, IRmax provides rapid detection of hydrocarbon gas hazards.
- **Ultimate dependability:** designed and proven for compliance with IEC61508 SIL 2, IRmax has been rigorously tested in offshore environments.
- **Wide operating temperature range:** IRmax is fully temperature compensated for operation in environments from -40°C to +75°C.
- **Dependable detection:** IRmax continues to detect gas with the optical system 90% obscured by salt or other contaminants. The level of obscuration (contamination) can be checked easily via the IR Display, and a fault signal is generated when optics are 90% obscured.
- **Proven track record:** IRmax has been subjected to intense 3rd-party long-term tests for reliability in hot, cold, wet and saline environments.

Easy maintenance

- **Low maintenance:** IRmax employs sophisticated systems and algorithms to ensure reliable operation at all times.
- **Remote non-intrusive calibration:** the IR Display enables simple status checking, plus zeroing and calibration of the detector. The IR Display can be mounted up to 30 metres from the IRmax and test gas can be applied without needing to directly access the detector.
- **Hand-held I.S. calibrator:** where a local display is not required, IRmax detectors fitted with an I.S. barrier module can be checked and calibrated using an Intrinsically Safe (I.S.) calibration accessory.
- **STAY-CLIR optics:** optical components are treated with a patented coating to prevent potential obscuration in condensing atmospheres. The STAY-CLIR coating significantly reduces the build-up of dust, dirt or other contaminants on the window and mirror.



Simple to install

- **Compact size:** IRmax is much smaller than conventional IR gas detectors, and thus requires less space, effort and time to install.
- **Installation options:** IRmax can be wall mounted, fixed to a 2" (50mm) pipe or connected to an auxiliary junction box using a choice of mounting accessories.
- **Versatile connectivity:** with industry standard 4-20mA output signal plus options for RS-485 Modbus and HART communications, IRmax is compatible with virtually any control system.



Low cost of ownership

- **Low power:** unlike conventional IR gas detectors, IRmax does not require heated windows or mirrors. IRmax consumes only 1 Watt of power, enabling smaller power supplies and battery back-up systems to be used.
- **Remote IR Display:** the remote version of the IR Display enables checking, adjustment and calibration of the IRmax detector without requiring direct access. This feature removes the need to use ladders, scaffolding and 'cherry-pickers' to perform routine maintenance tasks on detectors mounted in inaccessible areas.
- **Minimal routine maintenance:** features such as automatic optical obscuration monitoring and the requirement only for occasional gas testing keep maintenance engineer costs to a minimum.

HART
COMMUNICATION PROTOCOL

SIL
IEC 61508
Validated

STAY-CLIR

IRmax Options

IRmax is available either as a basic unit without display, or with three display options. The Fixed IR Display is permanently fixed to the IRmax detector to enable simple status checking and non-intrusive calibration. The Remote IR Display can be mounted up to 30 metres from the IRmax detector simplifying checking and maintenance of detectors mounted in inaccessible areas. The Hand-Held I.S. Calibrator is available for temporary connection to IRmax detectors fitted with an I.S. Barrier Module.



IRmax

- Fast response
- IEC61508 SIL 2 compliant
- Wide range of gases



Fixed IR Display

- Large, clear display shows gas level and other status information
- Simple non-intrusive calibration
- Enables connection of hand-held HART communicators
- Can be rotated up and down to provide the optimum viewing angle.



Fixed IR Display module

Remote IR Display

- Can be mounted up to 30 metres from IRmax
- Removes the need to directly access the IRmax detector
- Choice of connection lead lengths



*I.S. Barrier Module
Enables connection of Remote IR Display or I.S. Calibrator to IRmax*

I.S. Hand-Held Calibrator

- Enables calibration and interrogation of IRmax detectors without a Fixed or Remote IR Display
- Only one I.S. hand-held calibrator required per IRmax detector fleet
- Intrinsically Safe; suitable for use in hazardous areas



HART Communications

- Hand-held HART communicators can be connected to the IR Display for local diagnostics and calibration
- HART data is super-imposed onto the 4-20mA signal for communicating with HART enabled control systems
- Compatible with point-to-point or addressable HART topologies

RS-485 Modbus

- Enables remote interrogation of IRmax
- Enables up to 32 detectors to be multi-dropped on an addressable network
- RS-485 physical platform for transmission of data up to 1Km

IRmax Specification:

Description	Dual-beam infrared hydrocarbon gas detector with optional display.
Enclosure material	316 stainless steel
Size	IRmax: 158L x 75H x 57D mm (6.2 x 2.9 x 2.3 ins) IRmax with Fixed IR Display: 230L x 75H x 57D mm (9 x 2.9 x 2.3 ins) IRmax with IS barrier module: 261L x 75H x 57D mm (10.2 x 2.9 x 2.3 ins) Remote IR Display: 60L x 54H x 48D mm (2.3 x 2.1 x 1.9 ins)
Weight	IRmax: 1.58Kg (3.5lbs) IRmax with Fixed IR Display: 2kg (4.4lbs) IRmax with IS barrier module: 2.4kg (5.3lbs) Remote IR Display: 0.2kg (0.4lbs)
Ingress protection	IP66
Connection	One M20 or ½"NPT cable gland entry
Power	12-30Vdc. <1W
Electrical output	4-20mA current sink or source 2mA dirty optics warning (at 75% obscuration, configurable) 0mA detector fault signal (at 90% obscuration, configurable) RS-485 Modbus (optional), HART 7 (optional)
IR Display	4-digit LCD with back-light Function buttons can be de-activated if required Terminals for connecting HART communicators (optional function) Red LED: Gas detected Amber LED: IRmax Fault Green LED: Healthy Display functions: gas level, obscuration level, supply voltage, signal current Password protected functions: zero, calibrate, ramp output, trim zero mA, trim span mA
Operating temperature	-40°C to +75°C (-40°F to 167°F)
Humidity	0 to 100% RH non-condensing
Pressure range	Atmospheric +/-10%
Repeatability	+/- 2% FSD
Zero drift	+/- 2% FSD per year maximum
Response time	T90 <4 secs.
Performance	Complies with EN60079-29-1
Functional safety	IEC61508 SIL 2
Approvals	IRmax without display ATEX & IECEx Ex II 2 GD Exd IIC T6 Gb (Tamb -40 to +50°C), T4 (Tamb -40 to +75°C) Ex tb IIIC T135°C Db (Tamb -40 to +75°C) IRmax with Fixed Display Ex II 2 G Exd ia IIC T4 Gb (Tamb -40 to +75°C) IRmax with Remote Display Ex II 2 GD Exd ia IIC T4 Gb (Tamb -40 to +75°C) Ex tb IIIC T135°C Db (Tamb -40 to +40°C)
Zones	Certified for use in Zone 1 & 2, and Zone 21 & 22 hazardous areas
EMC Compliance	EN50270:2006, FCC CFR47 Part 15B, ICES-003
Accuracy	+/-2% of reading
Linearity	+/-3% of full-scale

Crowcon reserves the right to change the design or specification of the product without notice.



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Accessories

Calibration cap



Mounting bracket kit



Spigot gland



Flow adaptor



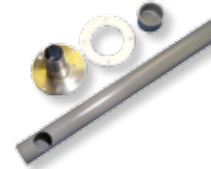
Auxiliary junction box



Sun shade



Duct mounting kit



I.S. remote display connecting leads



Linearisation

Range

Methane (CH ₄)	0-20, 50, 100% LEL
Acetone (C ₃ H ₆ O)	0-100% LEL
Butane (C ₄ H ₁₀)	0-100% LEL
Ethanol (C ₂ H ₅ OH)	0-100% LEL
Ethylene (C ₂ H ₄)	0-100% LEL
Ethyl Acetate (CH ₃ COOC ₂ H ₅)	0-100% LEL
Heptane (C ₇ H ₁₆)	0-100% LEL
Hexane (C ₆ H ₁₄)	0-100% LEL
Isopropanol (C ₃ H ₇ OH)	0-100% LEL
LPG	0-100% LEL
MEK (CH ₃ COC ₂ H ₅)	0-100% LEL
Methanol (CH ₃ OH)	0-100% LEL
Octane (C ₈ H ₁₈)	0-100% LEL
Pentane (C ₅ H ₁₂)	0-100% LEL
Petrol Vapour	0-100% LEL
Propane (C ₃ H ₈)	0-100% LEL
Propylene (CH ₃ CHCH ₂)	0-100% LEL
THF (Tetrahydrofuran) ((CH ₂) ₄ O)	0-100% LEL
Xylene ((CH ₃) ₂ C ₆ H ₄)	0-100% LEL

Other ranges may be available, contact Crowcon.

Area reserved for distributor stamp

CROWCON
Gas Detection You Can Trust