CO_2 H_2S Cl_2 NH_3 O_3 CO O_2 CH_4 SO_2 CO_2 H_2S

Xgard

Fixed detectors for flammable, toxic or oxygen gases

Xgard Type 1:	Intrinsically safe toxic and oxygen gas detector
Xgard Type 2:	Flameproof toxic and oxygen gas detector
Xgard Type 3:	Flameproof flammable gas detector
Xgard Type 4:	Flameproof high temperature flammable gas detector
Xgard Type 5:	Flameproof flammable gas detector with 4-20mA output
Xgard Type 6:	Flameproof thermal conductivity type gas detector
Xsafe:	Safe area flammable gas detector

CROWCON

Gas Detection You Can Trust

Xgard

The Xgard range of gas detectors has been specifically designed to meet your requirements. The dangers presented by toxic and flammable gases as well as oxygen deficiency vary with each application.

Xgard offers three different sensor concepts so you can choose exactly what you need for your site. Xgard is available in flameproof, intrinsically safe or safe area formats for use in all environments, whatever the classification.

Low cost of ownership

- Xgard detectors are designed for easy installation and maintenance to keep costs down.
- The three junction box options are all designed to make replacement of sensors and sinters extremely simple. Spare sensors simply plug-in.
- Many spare parts are common to all Xgard models, which keeps spares holding requirements to a minimum.

Wide range of sensors

Xgard offers an extremely wide range of sensors for all applications:

- Poison resistant pellistors, for all flammable detection needs including hydrocarbons, hydrogen, ammonia, jet fuel, leaded petrol and vapours containing halogens.
- Electrochemical sensors are used to detect a vast range of toxic gases and oxygen.
- Thermal conductivity sensors are available to monitor volume concentrations of gases.

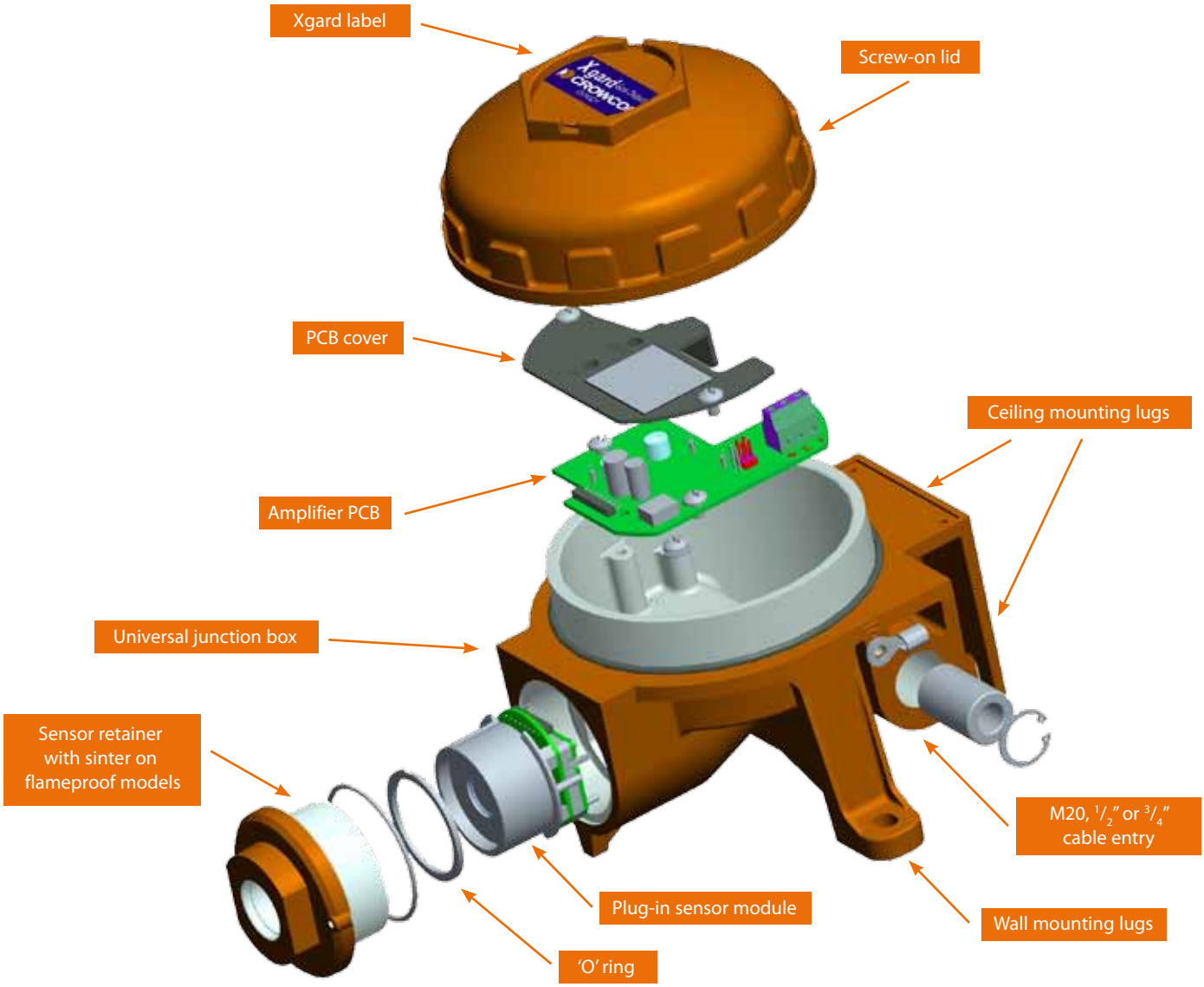
Flexible installation options

- Xgard is designed for either wall or ceiling mounting without the need for additional brackets.
- Xgard can accommodate M20, $^{1}/_{2}$" NPT or $^{3}/_{4}$" NPT cable glands to suit all site requirements.
- High temperature models are available for hot environments (up to 150ºC).
- Accessories are available for duct mounting and sampling applications as well as remote gassing for simple sensor checking.

Rugged and reliable

- Xgard is manufactured using a choice of three materials: glass reinforced nylon, highly durable aluminium with a tough polyester coating, or 316 stainless steel for ultimate corrosion resistance. All versions are designed to operate even in the harshest conditions.
- Spray deflectors and weatherproof caps are available for use in areas subject to regular wash-downs, or offshore environments.
- All models have been validated to the functional safety standard IEC 61508 (SIL 1 to SIL 3).

SIL IEC 61508 Validated



Accessories

(all accessories require an Accessory Adaptor to be fitted to the Xgard junction box)

Spray Deflector

For outdoor use and protection against wash-down operations.

Sun Shield

For use where a detector is installed in direct sunlight

Weatherproof Cap

For use in very wet conditions, such as offshore installations and ships.

Collector Cone

For aiding detection of gases which are lighter than air, such as hydrogen and methane.

Flow Adaptor

For use in sampling applications.

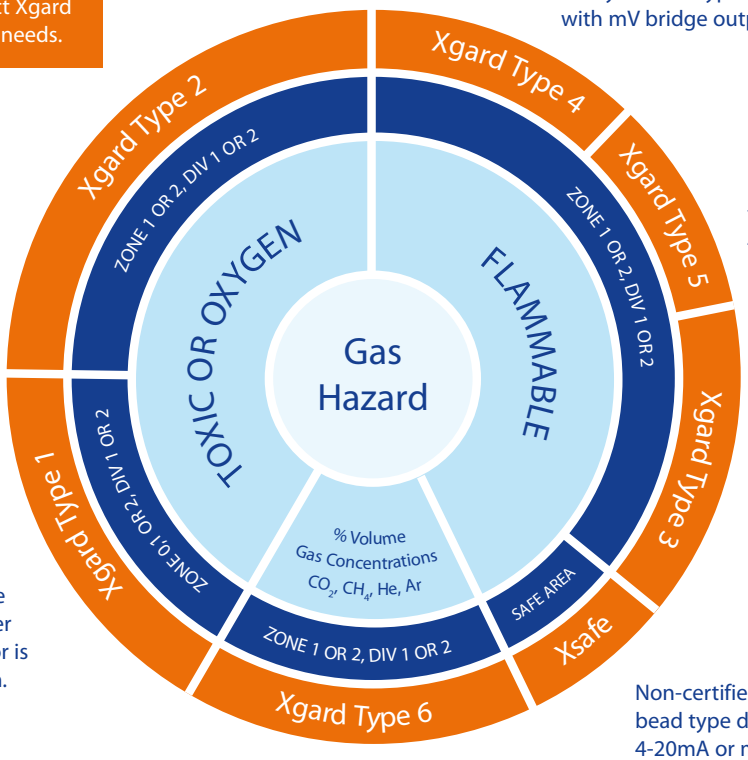
Accessory Adaptor

For fitting accessories to Xgard.

Detector Selector

The Xgard range offers a comprehensive selection of fixed point gas detectors that meet the diverse requirements for flammable and toxic gas detection and oxygen monitoring in industries throughout the world.

This diagram is designed to help you choose the correct Xgard detector to suit your needs.



Flameproof high temperature (up to 150°C) catalytic bead type detector with mV bridge output.

Flameproof catalytic bead type detector with 3-wire 4-20mA output.

Flameproof electrochemical type detector with 2-wire 4-20mA output.

Flameproof catalytic bead type detector with 3-wire mV bridge output.

Intrinsically Safe electrochemical type detector with 2-wire 4-20mA output. Wide range of sensor options. A zener barrier or galvanic isolator is required for I.S. operation.

Non-certified low cost catalytic bead type detector with 3-wire 4-20mA or mV bridge output.

Flameproof thermal conductivity type detector with 3-wire 4-20mA output.

Ordering Requirements

The following code is designed to help in the selection of the correct detector. The product reference number should be compiled by inserting the appropriate integer in each box.

Detector	Type No.	Code	Output	Junction Box	Code	Cable Entry	Code	Certification	Code	Gas Type	Range
XGARD	Type 1	1		Standard*1	A	M20	M20	ATEX	AT	Abbreviated up	From selection
XSAFE	Type 2	2		Stainless Steel*2	S	$^1/_2$"NPT	$^1/_2$	UL	UL	to 8 characters	shown on table
	Type 3	3				$^3/_4$"NPT	$^3/_4$				
	Type 4	4									
	Type 5	5									
	Type 6	6									
	XSAFE	XS	mV or mA								

*1: Xgard Type 1 ATEX certified detectors will be supplied in a glass-reinforced nylon enclosure as standard, or in a 316 stainless steel enclosure as an option. Xgard Type 1 UL certified detectors and all other Xgard Types will be supplied in aluminium as standard, or in a 316 stainless steel enclosure as an option.

*2: The stainless steel option is not available for Xsafe and Xgard type 4.
Example product reference for an I.S. 0-25ppm H2S detector with ATEX certification and M20 cable entry in a standard (nylon) junction box: XGARD/1/A/M20/AT/H2S/25.

Xgard Gases and Ranges:

Gas type	LTEL(ppm) LEL(%vol)	STEL(ppm) UEL(%vol)	Ranges Available: Type 1	Ranges Available: Type 2	Ranges Available: Type 3,4,5 & Xsafe	Ranges Available: Type 6
Acetylene (C_2H_2)	2.3 (2.4)	100			0-100% lel*	
Ammonia (NH_3)	25 15 (15)	35 33.6 (28)	50, 100, 250, 500, 1000 ppm		0-25%lel*	
Argon (Ar)	-	-				Contact Crowcon
Arsine (AsH_3)	0.05	-	1 ppm			
Bromine (Br_2)	0.1	0.2	3 ppm			
Butane (C_4H_{10})	1.4 (1.8)	9.3 (9)			0-100% lel*	
Carbon Dioxide (CO_2)	5000 (0.5%Vol)	15000 (1.5%Vol)				Contact Crowcon
Carbon Monoxide (CO)	30	200	50, 100, 200, 250, 500, 1000, 2000 ppm	50, 100, 250, 500, 1000, 2000 ppm		
Chlorine (Cl_2)	-	0.5	3,5,10,20,50,100 ppm			
Chlorine Dioxide (ClO_2)	0.1	0.3	1 ppm			
Diborane (B_2H_6)	0.1	-	1 ppm			
Ethane (C_2H_6)	2.5 (3)	15.5			0-100% lel*	
Ethylene (C_2H_4)	2.3 (2.7)	36			0-100% lel*	
Ethylene Oxide (C_2H_4O)	5	-	10, 50, 100 ppm			
Fluorine (F_2)	1	1	1 ppm			
Germane (GeH_4)	0.2	0.6	2 ppm			
Helium (He)	-	-				Contact Crowcon
Hydrogen (H_2)	4	77 (80)	200, 2000 ppm	200, 2000 ppm	0-100% lel*	0-5%, 10%, 50% vv (in air) 0-20%, 25%, 30%, 50% vv (H_2 in N_2)
Hydrogen Chloride (HCl)	1	5	10, 25 ppm			
Hydrogen Cyanide (HCN)	-	10	25ppm			
Hydrogen Fluoride (HF)	1.8	3	10 ppm			
Hydrogen Sulphide (H_2S)	5	10	5, 10, 20, 25, 50, 100, 200, 250, 300, 1000 ppm	5, 10, 20, 25, 50 100, 200 ppm		
LPG	2	10			0-100% lel	
Methane (CH_4)	4.4 (5)	17 (15)			0-100% lel	
Nitric Oxide (NO)	5*[1]	15*[1]	25, 50, 100 ppm			
Nitrogen Dioxide (NO_2)	1	1	10, 50, 100 ppm			
Ozone (O_3)	-	0.2	1 ppm			
Oxygen (O_2)	-	-	25% Vol	25% Vol		
Pentane (C_5H_{12})	1.4 (1.5) 600ppm	7.8 (7.8) 1800ppm			0-100% lel*	
Petrol Vapour	1.3	6			0-100% lel*	
Phosgene ($COCl_2$)	0.02	0.06	1 ppm			
Phosphine (PH_3)	0.1	0.2	1 ppm			
Propane (C_3H_8)	1.7 (2.2)	10.9 (10)			0-100% lel	
Silane (SiH_4)	0.5	1	1 ppm			
Sulphur Dioxide (SO_2)	1	1	10, 20, 50, 100, 250 ppm			
Vinyl Chloride (VCM) (CH_2=CHCl)	3.6 3	33 -			0-100% lel*	
Volatile Organics (VO)*[2]	-	-	0 - 100 ppm*[2]			

Notes: Other sensors and ranges may be available, please contact Crowcon.
*Ranges not available for Xsafe or Xgard Type 4
†Contact Crowcon for availability
LTEL & STEL figures are derived from the UK HSE document: EH40 Oct 07. Alternative thresholds may apply in countries outside of the UK
LEL figures derived from EN61779-1: 2000
*[1] Current limits advised in the UK
*[2] Nominal 0-100ppm range with Carbon Monoxide (CO). Contact Crowcon for a full list of gases that can be detected using this sensor

Xgard Specification:

Xgard Model	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Xsafe
Junction box material	ATEX Certified: Glass-reinforced nylon or 316 S/S UL Certified: Aluminium or 316 S/S.	Aluminium or 316 Stainless Steel	Aluminium or 316 Stainless Steel	Aluminium	Aluminium or 316 Stainless Steel	Aluminium or 316 Stainless Steel	Aluminium
Dimensions	156 x 166 x 111mm (6.1 x 6.5 x 4.3 inches)	156 x 166 x 111mm (6.1 x 6.5 x 4.3 inches)	156 x 166 x 111mm (6.1 x 6.5 x 4.3 inches)	195 x 166 x 111mm (7.6 x 6.5 x 4.3 inches)	156 x 166 x 111mm (6.1 x 6.5 x 4.3 inches)	156 x 166 x 111mm (6.1 x 6.5 x 4.3 inches)	156 x 166 x 111mm (6.1 x 6.5 x 4.3 inches)
Weight	Nylon 0.5Kg (1.1lbs) Alloy 1Kg (2.2 lbs) 316 S/S: 3.1kg (6.8 lbs)	AL 1Kg (2.2 lbs) 316 S/S: 3.1kg (6.8 lbs)	AL 1Kg (2.2 lbs) 316 S/S: 3.1kg (6.8 lbs)	1.5Kg (3.3 lbs)	AL 1Kg (2.2 lbs) 316 S/S: 3.1kg (6.8 lbs)	AL 1Kg (2.2 lbs) 316 S/S: 3.1kg (6.8 lbs)	1Kg (2.2 lbs)
Ingress protection	IP65	IP65	IP65	IP54	IP65	IP65	IP65
Cable entries	1 x M20 or $^1/_2$" NPT on right-side	1 x M20, $^1/_2$" NPT or $^3/_4$" NPT* on right-side	1 x M20, $^1/_2$" NPT or $^3/_4$" NPT* on right-side	1 x M20, $^1/_2$" NPT or $^3/_4$" NPT* on right-side	1 x M20, $^1/_2$" NPT or $^3/_4$" NPT* on right-side	1 x M20, $^1/_2$" NPT or $^3/_4$" NPT* on right-side	1 x M20, or $^1/_2$" NPT on right-side
Terminations	0.5 to 2.5mm^2 (20 to 13awg)	0.5 to 2.5mm^2 (20 to 13awg)	0.5 to 2.5mm^2 (20 to 13awg)	0.5 to 2.5mm^2 (20 to 13awg)	0.5 to 2.5mm^2 (20 to 13awg)	0.5 to 2.5mm^2 (20 to 13awg)	0.5 to 2.5mm^2 (20 to 13awg)
Sensor type	Electrochemical	Electrochemical	Catalytic bead	316 s/s sensor housing with catalytic beads	Catalytic bead	Thermal conductivity	Catalytic bead
Operating temperature	-20 to +50°C (-4 to 122°F) (sensor dependant)	-20 to +50°C (-4 to 122°F) (sensor dependant)	-40 to +80°C (-40 to 176°F)	-20 to +150°C (-4 to 302°F)	-40 to +55°C (-40 to 131°F)	+10 to +55°C (50 to 131°F)	-40 to +80°C (-40 to 176°F) (mV version) -40 to +55°C (-40 to 131°F) (mA version)
Humidity	15-90% RH non-condensing	15-90% RH non-condensing	0-99% RH non-condensing	0-99% RH non-condensing	0-99% RH non-condensing	0-90% RH non-condensing	0-99% RH non-condensing
Repeatability Zero drift	<2% FSD (Typ.) <2% FSD / month (Typ.)	<2% FSD (Typ.) <2% FSD / month (Typ.)	<2% FSD (Typ.) <2% FSD / month (Typ.)	<2% FSD (Typ.) <2% FSD / month (Typ.)	<2% FSD (Typ.) <2% FSD / month (Typ.)	<2% FSD (Typ.) <2% FSD / month (Typ.)	<2% FSD (Typ.) <2% FSD / month (Typ.)
Response time	T90 <10s Oxygen T90 <30s to 120s Toxic (sensor dependant)	T90 <10s Oxygen T90 <30s to 120s Toxic (sensor dependant)	T90 <15s (Typ)	T90 <15s (Typ)	T90 <15s (Typ)	T90 <15s (Typ)	T90 <15s (Typ)
Operating voltage	8 – 30V dc	8 – 30V dc	2.0V dc +/- 0.1V (Typ)	2.0V dc +/- 0.1V (Typ)	10 – 30V dc	10 – 30V dc	10 – 30V dc (mA version) 2.0V dc (mV version)
Power requirements	24mA max.	24mA max.	300mA (Typical)	300mA (Typical)	50mA @ 24V dc 1.2W	50mA @ 24V dc 1.2W	mA version: 50mA @ 24V dc 1.2W. mV version: 300mA (Typ.)
Electrical output	2-wire 4-20mA (current sink)	2-wire 4-20mA (current sink)	3-wire mV bridge Typical signal 12-15mV / %lel CH4	3-wire mV bridge Typical signal >10mV / %lel CH4	3-wire 4-20mA (current sink or source)	3-wire 4-20mA (current sink or source)	mA version: 3-wire 4-20mA (current sink or source) mV version: 3-wire mV bridge Typical signal 12-15mV / %lel CH4
Approvals	ATEX: Ⓔx II 1 G Exia IIC T4 (Tamb –40 to +55°C) UL/cUL: Cl I, Div 1 Groups A,B,C,D IECEx MED Marine (Oxygen Only) GOST-R	ATEX: Ⓔx II 2 GD Exd IIC T6 (Tamb –40 to +50°C) UL: Class 1, Div. 1 Groups B,C,D IECEx MED Marine (Oxygen Only) GOST-R	ATEX: Ⓔx II 2 GD Exd IIC T4 (Tamb –40 to +80°C) Exd IIC T6 Tamb (-40 to +50°C) UL: Class 1, Div. 1 Groups B,C,D IECEx GOST-R	ATEX: Ⓔx II 2 G Exd IIC T3 (Tamb –20 to +150°C)	ATEX: Ⓔx II 2 GD Exd IIC T6 (Tamb –40 to +50°C) Exd IIC T4 (Tamb –40 to +80°C) UL: Class 1, Div. 1 Groups B,C,D IECEx GOST-R	ATEX: Ⓔx II 2 GD Exd IIC T6 (Tamb –40 to +50°C) Exd IIC T4 (Tamb -40 to +80°C) UL: Class 1, Div. 1 Groups B,C,D IECEx GOST-R	Not certified for use in a hazardous environment.
EMC compliance	EN 50270 FCC Part 15 ICES-003	EN 50270 FCC Part 15 ICES-003	EN 50270 FCC Part 15 ICES-003	EN 50270 FCC Part 15 ICES-003	EN 50270 FCC Part 15 ICES-003	EN 50270 FCC Part 15 ICES-003	EN 50270 FCC Part 15 ICES-003

* $^3/_4$" cable entry only available on aluminium junction boxes

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