FREEDOM Xi

Excellence in action



THE NEW GENERATION OF GAS DETECTORS

FREEDOM detects the invisible,
adapts to any environment,
and operates on its own.
A perfect blend of intelligence
and reliability for unmatched safety.

TELEDYNE
Gas and Flame Detection



FREEDOM Xi, the most advanced model in the FREEDOM platform, is engineered for mission-critical applications requiring precise gas detection, flexible configuration, and reliable operation in harsh environments.

It features a clogging control diagnostic for enhanced sensor reliability, a unique hot-swappable cartridge for quick maintenance that's ATEX/IECEx certified for hazardous areas. With expanded integration options and an interchangeable cell block design, it minimizes downtime and ownership costs.

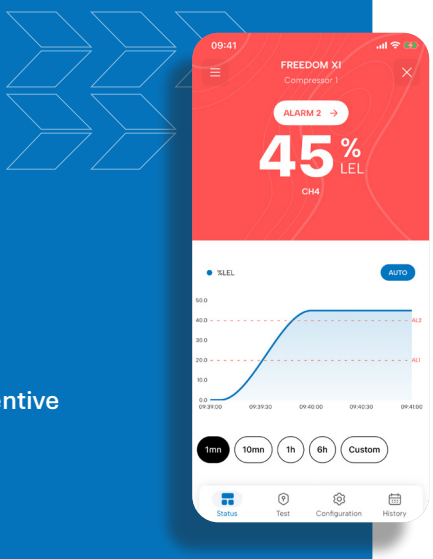
When safety is paramount in demanding conditions, FREEDOM Xi delivers trusted performance.

KEY FEATURES

- Universal gas detection transmitter for toxic, oxygen, combustible and refrigerant gas
- Designed for hazardous areas
- Comprehensive detection technologies: Catalytic Bead, Electrochemical Cell, Rock Solid, Semi-conductor, Infrared, MEMS compatible with the same PCB version
- Hot swappable sensor certified feature in hazardous location
- Clogging control for maintenance call in case of sinter blockage
- Dual head
- User-friendly graphical TFT display with real-time trend curve
- Front multicolor ring LED for intuitive status indication

Teledyne GF Sync

CYBER RESILIENCE BY DESIGN



Teledyne GF Sync App

Free download on App Store and Google Play

- Real-time readings, status and event log
- Full configuration and calibration for commissioning or preventive maintenance
- Professional calibration reports that are easy to download
- Cyber Security certified

FREEDOM Xi



ENVIRONMENTAL

Operating Temperature	-40° to 167°F (-40° to +75°c) LCD Display -4° to 131°F (-30° to +55°c) TFT Display
Operating humidity	0-99 % RH (non-condensing)
Storage conditions	-4° to 104° F (-20° to +40°c), 20-80 % RH (non-condensing)

PHYSICAL SPECIFICATION

Material	Copper Free Aluminum or Stainless Steel 316L
Weight	Aluminum: 10,58 lbs (4,8 Kg), Spacer version: 11,13 lbs (5,05 Kg) (With Cartridge)
	Stainless steel: 13,23 lbs (6,8 Kg), Spacer version: 16,58 lbs (7,52 Kg) (With Cartridge)
Dimension	Standard: 9,25 x 6,46 x 5,98 " (235 x 164 x 152 mm)
	Spacer version: 9,25 x 6,46 x 6,89 " (235 x 164 x 175 mm) (With relays option)
Enclosure Ingress Protection	NEMA 4, IP 66
Cable Entries	4 conduit / cable entries, ¾ inch NPT or M20

ELECTRICAL SPECIFICATION

Wiring	2 or 3 wires, 18 to 12 AWG(0,9 to 2,5 mm2)
Operating Voltage	24 VDC nominal, 2 wire 17,8 / 31,5 VDC, 3 wire 10 /31,8 VDC
Power consumption	Transmitter: 35 W (3 wires), 1W (2 wires)
	Catalytic: 0,8 W, Infrared 1 W, MEMS 1 W,
	Electrochemical Cell: 0,1 W, Semi-Conductor 0,6 W, MOS 0,6 W
	Additional optional Relays: x W, Additional heating option: x W
Load impedance source	2 wires: 250 Ohm max, 3 wires: 500 Ohm max, non isolated current source

OUTPUT

Analog	Measuring range 4-20 mA, source
	Discrete 0 to 4 mA configurable setting (fault, inhibit, maintenance call ...)
	Isolated 4-20 mA outputs, Configurable Source or Sink mode (Optional)
Digital	HART™ Version 7 (3 wires only), RS485 Modbus RTU (Optional)
Relays (Optional)	3 user configurable alarm relays SPDT 4 A/24 VDC, 4 A/230 VAC
	1 fault relay SPDT 4 A/24 VDC, 4 A/230 VAC
	Max cable size: 12 AWG, 2.5 mm2

USER INTERFACE

Display	TFT or LCD display
	Main screen: Gas reading, label, zone, gas name, measurement unit
	Intuitive automatic calibration procedure
	Multi languages: English, Spanish, French ...
	2 level passwords, Event datalogging
	TFT: Graphical multicolor high resolution, display size 1,65 x 1,25 inch (42 x 32 mm)
	Trend Graph with selectable time scale showing current reading and alarm
	LCD: Custom segmented LCD, 8 digits, display size 1.92 × 1.14 in (49 × 29 mm)
	Version without display
LED	Peripheral multicolor LED (Normal operation, Alarm, default, Inhibition, Calibration, Bluetooth communication)
	Status icons LED (Normal operation, Alarm, default, Bluetooth)
Alarms	3 programmable alarms with set and reset
Memory	Non-volatile memory ensures configuration parameters are retained in the event of power loss
Magnetic Switch	4 capacitive keys activable with magnetic switch for menu navigation and acknowledgement and validation operations

WIRELESS BLUETOOTH COMMUNICATION	
Version	Bluetooth BLE 5 , point to point mode
	Option disable
Approval	Encrypt AES128 , registered SIG, Cyber STD conception
App	Teledyne GF Sync® - Free available on App Store and Google App
Distance	Up to 49 ft (15 m)
Functionality	Real time reading, status, event history
	Full detector set up (range, alarm, calibration, relays, options parameter)
	Calibration operation & report edition

CERTIFICATION	
Hazardous Area	ATEX II 2(1) GD, Ex db ia [ia Ga] IIC T4..T6 Gb / Ex tb ia [ia Da] IIIC T135°C..T85°C Db
	IECEX, Ex db ia [ia Ga] IIC T4..T6 Gb / Ex tb ia [ia Da] IIIC T135°C..T85°C Db
	FM (Pending)
Metrologic Performance	Flammable IEC 60079-29-1 (Pending)
	H2S IEC62990-1 (Pending)
Cybersecurity	Certified Cyber Resiliance Act IEC 62443-4-2 (SL1)
Functional safety	SIL 2 / SC3 High Demand (TUV Pending)

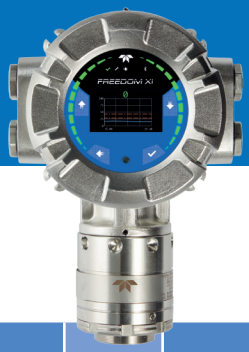
WARRANTY	
Transmitter	2 years
Sensor	Catalytic Bead sensor 2 years
	Infrared sensor: CO2 3 years, refrigerant: 2 years
	MEMS sensor 2 years
	Electrochemical sensor: cell dependant
	Rock Solid 1 year
	Semi Conductor sensor 1 year
	Metal Oxide Semiconductor sensor 2 years

HUB	
Weight	Aluminum 17,0 lbs (7,7 Kg)
Dimension	15,75 x 6,46 x 6,89“ (400 x 164 x 175 mm)
Enclosure Ingress Protection	NEMA 4, IP 66

REMOTE CARTRIDGE	
Distance	Remote until 98 ft (30 m), cable
Weight	Aluminum 4,37 lbs (1,98 Kg), Stainless Steel 7,52 lbs (3,41 Kg) (with cartridge)
Dimension	7,44 x 5,43 x 3,31‘‚‘ (189 x 138 x 84 mm)
Enclosure Ingress Protection	NEMA 4, IP 66
Cable Entries	2 conduit / cable entries, ¾ inch NPT or M20
Hazardous Area	ATEX II 2 GD, Ex db ia IIC T4..T6 Gb / Ex tb ia IIIC T135°C..T85°C Db
	ATEX II 1 GD, Ex ia IIC T5 Ga / Ex ia IIIC T100°C Da
	IECEX, Ex db ia IIC T4..T6 Gb / Ex tb ia IIIC T135°C..T85°C Db
	IECEX, Ex ia IIC T5 Ga / Ex ia IIIC T100°C Da
	FM (Pending)

SENSOR SPECIFICATION	
Universal Detector cartridge	Detector head accepts all sensor types
Sensor Types	Combustible: Catalytic Bead, MEMS and Infrared Toxic & Oxygen: Electrochemical and Rock Solid Refrigerent gas: Infrared and Semi conductor CO2: Infrared H2S: Metal Oxide Semiconductor (MOS)
Hotswap	Swapable cartridge under power and certified in Hazardous Area

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Gas Formula	Gas Name	Measuring Range	Gas Code Teledyne	Detection Technology	Techno Code Teledyne	Temperature Range	Humidity Range	Accuracy	Response Time T90	Average life expectancy
						°F / °C	% RH		s	Month
C3H8	Propane	0-100 %LEL	005	Catalytic	AP (CAT16)	-40°C to 50°C	0 to 90		41	>60 months
C4H10	n-butane	0-100 %LEL	004	Catalytic	AP (CAT16)	-40°C to 50°C	0 to 90		51	>60 months
CH4	Methane	0-100 %LEL	002	Catalytic	AP (CAT16)	-40°C to 50°C	0 to 90		25	>60 months
H2	Hydrogène	0-100 %LEL	003	Catalytic	AP (CAT16)	-40°C to 50°C	0 to 90		12	>60 months
C5H12	Pentane	0-100 %LEL	051	Catalytic	AP (CAT16)	-40°C to 50°C	0 to 90		80	>60 months
C3H8	Propane	0-100 %LEL	005	Catalytic	CB (VQ3)	-40°C to 75°C	0 to 95	+/- 1%LEL	27	>36 months
C4H10	Butane	0-100 %LEL	004	Catalytic	CB (VQ3)	-40°C to 75°C	0 to 95	+/-2% LEL	30	>36 months
CH4	Méthane	0-100 %LEL	002	Catalytic	CB (VQ3)	-40°C to 75°C	0 to 95	+/- 1%LEL	20	>36 months
H2	Hydrogène	0-100 %LEL	003	Catalytic	CB (VQ3)	-40°C to 75°C	0 to 95	+/- 4%LEL	11	>36 months
C5H12	Pentane	0-100 %LEL	051	Catalytic	CB (VQ3)	-40°C to 75°C	0 to 95		43	>36 months
Cl2	Chlore	0-10 ppm	224	Electrochem	EC	-20°C to 40°C	15 to 90		55	>24 months
CO	Monoxyde de carbone	0-100 ppm	203	Electrochem	EC	-30°C to 50°C	15 to 90	+/-2%	24	>48 months
CO	Monoxyde de carbone	0-1000 ppm	205	Electrochem	EC	-30°C to 50°C	15 to 90	+/-2%	24	>48 months
CO	Monoxyde de carbone	0-300 ppm	204	Electrochem	EC	-30°C to 50°C	15 to 90	+/-2%	24	>48 months
CO	Monoxyde de carbone	0-2000 ppm	266	Electrochem	EC	-30°C to 50°C	15 to 90	+/-2%	24	>48 months
H2S	Hydrogène sulfuré	0-30 ppm	213	Electrochem	EC	-30°C to 50°C	15 to 90		27	>48 months
H2S	Hydrogène sulfuré	0-100 ppm	214	Electrochem	EC	-30°C to 50°C	15 to 90		27	>48 months
NH3	Ammoniac	0-1000 ppm	232	Electrochem	EC	-40°C to 50°C	15 to 90		44	>24 months
NH3	Ammoniac	0-1000 ppm	265	Electrochem	EC	-40°C to 50°C	15 to 90		44	>24 months
O2	Oxygène	0-30 %vol	272	Electrochem	EC	-40°C to 60°C	15 to 90		20	>60 months
O3	Ozone	0-1 ppm	284	Electrochem	EC	-20°C to 40°C	15 to 90		41	>18 months
NH3	Ammoniac	0-300 ppm	273	Electrochem	EC	-40°C to 50°C	15 to 90		44	>24 months
NO	Monoxyde d'azote	0-100 ppm	216	Electrochem	EC	-30°C to 50°C	15 to 90	+/-5%	24	>12 months
NO2	Dioxyde d'azote	0-10 ppm	219	Electrochem	EC	-30°C to 50°C	15 to 90		41	>24 months
NO2	Dioxyde d'azote	0-100 ppm	287	Electrochem	EC	-30°C to 50°C	15 to 90		41	>24 months
C2H4O	Oxyde d'éthylène	0-30 ppm	244	Electrochem	EC	-20°C to 50°C	15 to 90		150	>24 months
O2	Oxygène	0-10 %vol	282	Electrochem	EC	-40°C to 60°C	15 to 90		20	>60 months

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CO	Mon-oxyde de carbone compensé H2	0-1000 ppm	289	Electrochem	EC	-20°C to 50°C	15 to 90		79	36 months
H2S	Hydrogène sulfuré	0-100 ppm	311	Electrochem	EC	-30°C to 70°C	0 to 95		37	>24 months
CO	Monoxyde de car-bone	0-100 ppm	203	Electrochem	EF	-30°C to 50°C	15 to 90	+/-2%	35	>48 months
CO	Monoxyde de car-bone	0-1000 ppm	205	Electrochem	EF	-30°C to 50°C	15 to 90	+/-2%	35	>48 months
CO	Monoxyde de car-bone	0-300 ppm	204	Electrochem	EF	-30°C to 50°C	15 to 90	+/-2%	35	>48 months
CO	Monoxyde de car-bone	0-2000 ppm	266	Electrochem	EF	-30°C to 50°C	15 to 90	+/-2%	35	>48 months
H2S	Hydrogène sulfuré	0-30 ppm	213	Electrochem	EF	-30°C to 50°C	15 to 90		36	>48 months
NH3	Ammoniac	0-1000 ppm	232	Electrochem	EF	-40°C to 50°C	15 to 90		61	>24 months
O2	Oxygène	0-30 %vol	272	Electrochem	EF	-40°C to 60°C	15 to 90		25	>60 months
H2S	Hydrogène sulfuré	0-100 ppm	214	Electrochem	EF	-30°C to 50°C	15 to 90		36	>48 months
NH3	Ammoniac	0-1000 ppm	265	Electrochem	EF	-40°C to 50°C	15 to 90		61	>24 months
NH3	Ammoniac	0-300 ppm	273	Electrochem	EF	-40°C to 50°C	15 to 90		61	>24 months
O2	Oxygène	0-10 %vol	282	Electrochem	EF	-40°C to 60°C	15 to 90		25	>60 months
CO	Mon-oxyde de carbone compensé H2	0-1000 ppm	289	Electrochem	EF	-20°C to 50°C	15 to 90		81	36 months
CO2	Dioxyde de carbone	0-5 %vol	239	Infrared	IF				51	
R134a	R134a	0-2000 ppm	502	Infrared	IF				131	
C3H8	Propane	0-100 %LEL	005	Infrared	IW					
C4H10	n-butane	0-100 %LEL	004	Infrared	IW					
CH4	Méthane	0-100 %LEL	002	Infrared	IW					
H2S	Hydrogène sulfuré	0-50 ppm	275	MOS	MOS	-40°C to 75°C	5 to 100			5 to 10 years
H2S	Hydrogène sulfuré	0-100 ppm	214	MOS	MOS	-40°C to 75°C	5 to 100			5 to 10 years
O3	Ozone	0-1 ppm	284	Electrochem	RS	-40°C to 40°C	0 to 95		120	

AP: Cat bead CAT16 (Fritte)
CB: Cat bead VQ3 (Fritte)
EC: Electrochem (Grille)
EF: Electrochem (Fritte)
SC: Semi conductor (Fritte)
IF: IR SMART / IR NET (Fritte)
IW: IR Raw (Flammable) (Fritte)
KE: KE25 (Grille)

RS: Rock solid (Grille)
MO: MOS (Fritte)
MS: MPS (Fritte)
PI: PID (Fritte)
KT: Catharometer (fritté)

TELEDYNE
Gas and Flame Detection

Teledyne Gas and Flame Detection quality assurance programmes demand the continuous assessment and improvement of all our products. Information in this leaflet could thus change without notification and does not constitute a product specification.
For more information, please contact us or your company representative.