



SmartWireless[®] Gas Detection Technology

for Today's Industrial Environment



SmartWireless Site Sentinel

Transportable Gas Detection System

Detcon's advanced SmartWireless Site Sentinel is a lightweight, transportable gas detection system that can be fitted with one, or a combination of electrochemical and infrared sensors to monitor toxic gases and/or combustible hydrocarbons in heavy industrial environments. Designed for reliability in rugged environments, each system includes a tripod, network HMI, gas detection sensor(s), and alarm warning devices. An optional Sentinel SiteWatch provides remote access to system data via Ethernet or cellular communication. Power to the sensor assembly is supplied by a rechargeable Smart Battery Pack, disposable batteries or directly from HMI. Flexible and expandable, a Site Sentinel network can include up to 32 devices and consist of any combination of wireless and/or wired sensors, one or more HMI panels and optional solar panels. Additional sensors and/or remote alarm stations on tripods can be added as needed to assure widespread alert to site personnel.



SmartWireless Sensor Technology

Wireless Battery Powered Devices Eliminate Expensive Installation Costs

- ▶ Quick and Easy Deployment
- ▶ Permanent or Temporary Installations
- ▶ Fault Tolerant Safety Network
- ▶ Network Capacity up to 32 Devices
- ▶ No Single Point of Failure
- ▶ Universally Acceptable Frequency 2.4 GHz
- ▶ Low Power Requirement
- ▶ 1.5 Mile Line-of-Sight Range

Description

As wireless capabilities reach new technological milestones the integration of wireless gas detection systems in industrial applications is increasing. Among the smartest and most revolutionary product lines available today is Detcon's SmartWireless technology. Easy to customize for a wide range of locations and heavy industrial applications, wireless components include toxic and infrared combustible gas detectors, controllers, remote HMIs, network configuration tablets, audio visual alarm stations, solar panels and rechargeable or disposable batteries. For remote access via ethernet or cellular application, the Sentinel SiteWatch is a new innovative solution.

CXT Sensor Assemblies

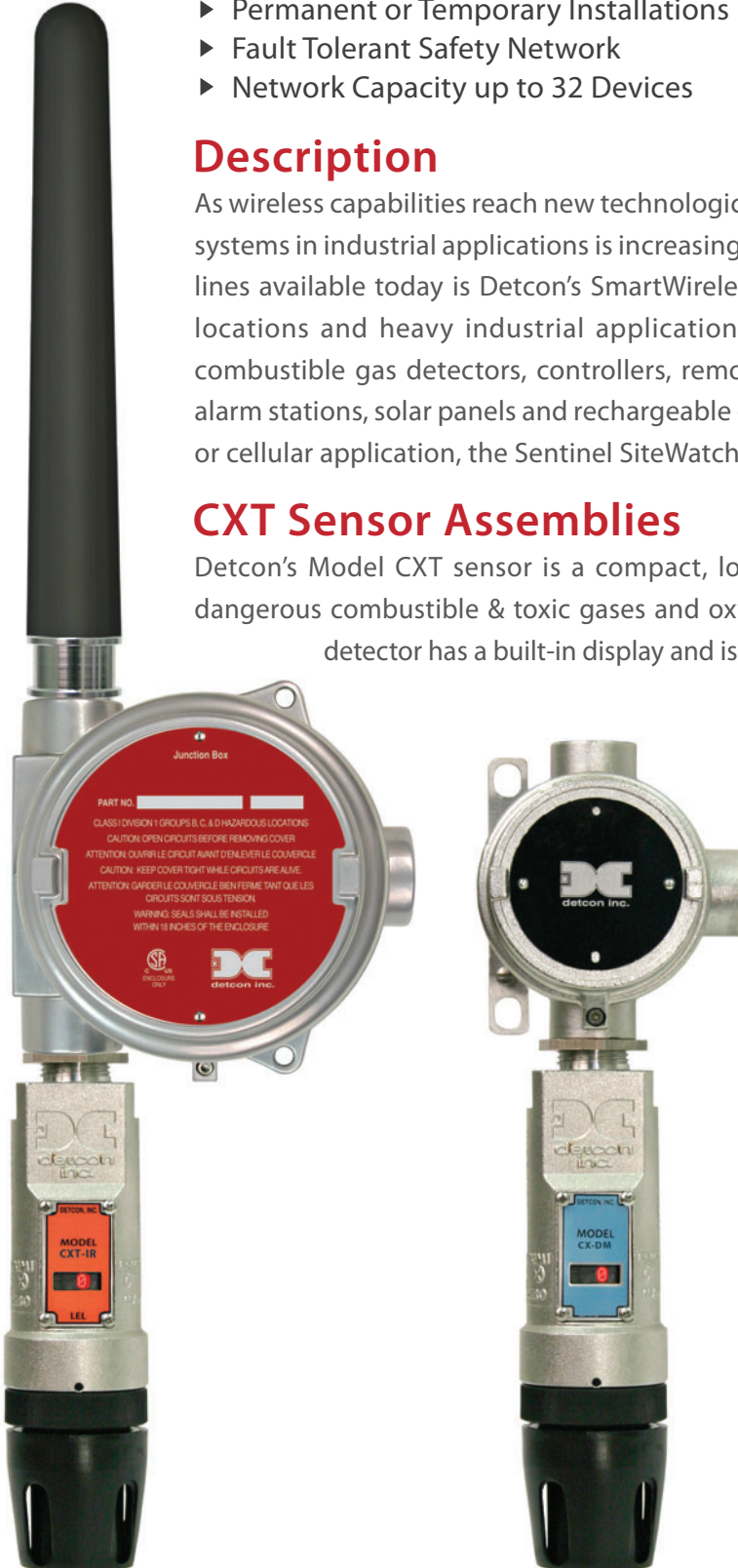
Detcon's Model CXT sensor is a compact, low powered, wireless gas detector that monitors for dangerous combustible & toxic gases and oxygen deficiency. This environmentally bulletproof gas detector has a built-in display and is powered by either rechargeable or disposable batteries.

CX Sensor Assemblies

Detcon's Model CX sensor is a wired version of the Model CXT that can be used with SmartWireless® Site Sentinel CX/CXT Controllers as well as other Detcon control systems. Standard outputs include 4-20 mA, and RS-485 Modbus.

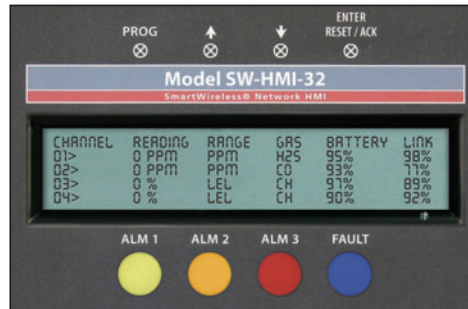
Detectable Gases

Combustible Hydrocarbons	Hydrazine N2H4
Acetylene C2H2	Hydrogen H2
Ammonia NH3	Hydrogen Bromide HBr
Arsine AsH3	Hydrogen Chloride HCL
Bromine Br2	Hydrogen Cyanide HCN
Butadiene C4H6	Hydrogen Fluoride HF
Carbon Monoxide CO	Hydrogen Sulfide H2S
Chlorine CL2	Methanol CH3OH
Chlorine Dioxide CLO2	Methyl Mercaptan CH3SH
Diborane B2H6	Nitric Oxide NO
Ethanol C2H5OH	Nitrogen Dioxide NO2
Ethyl Mercaptans C2H5SH	Oxygen Deficiency O2
Ethylene C2H4	Ozone O3
Ethylene Oxide C2H4O	Phosphine PH3
Fluorine F2	Silane SiH4
Formaldehyde CH2O	Sulfur Dioxide SO2



SmartWireless HMI

- ▶ Up to 32 Devices, Wired or Wireless
- ▶ NEMA 4X Div 1 & Div 2 Packages Available
- ▶ Configurable up to eight zones
- ▶ SD card with datalogging
- ▶ Alarm and Fault Condition LEDs
- ▶ Display Indicates: Field Device Location, Alarm Status, Channel, Gas Reading, Battery Life & Signal Strength



Site Sentinel CXT Controller

The SmartWireless® Site Sentinel CXT Controller provides operator interface to the network and real time status display of all network devices. Flexible and expandable, a Site Sentinel network consists of any combination of (up to 32) wireless and/or wired sensors, one or more control panels, and alarm warning devices. Command functions include alarm reset, alarm acknowledge, alarm test and radio silence. The control panel displays real time gas concentrations, field device status, battery levels, network RF signal quality and fault diagnostic conditions. Display indications include field device location, alarm status, channel, gas reading, battery life & link signal strength.

Site Sentinel CX Sensor Station

The Site Sentinel CX Sensor Station transmits data from up-to 4 wired gas detectors back to a CXT controller. The sensor station includes a battery that powers the radio, alarm devices, and the attached sensors.

SmartWireless X40 Alarm & Control System

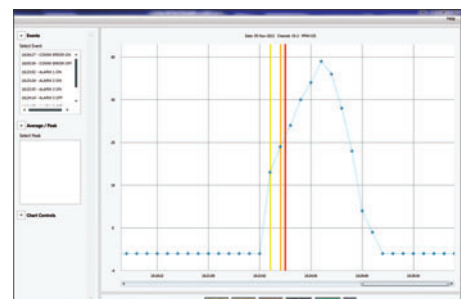
Model X40 controller provides many of the same features and capabilities of the Site Sentinel CXT controller and can include up to 32 wired devices whereas the CXT controller can accommodate up to 4 wired devices. The Model X40 also allows for expanded use of Detcon addressable I/O modules that include a 4-channel 4-20mA input module (DA-4), a 4-alarm relay output module (RL-4), a 4-channel 4-20mA output module (AO-4), and a 4-relay contact input module (DI-4). Detcon modules can be mounted within the main system enclosure or installed remotely to simplify field wiring.

SmartWireless MCX-32 Alarm & Control System

In addition to providing many of the same capabilities of the Model X40, the MCX-32 adds 64-channel capability and an advanced touch screen display.

Log File Viewer Data Logging Software

Detcon *Log File Viewer* is an advanced catalog viewing system designed for use with the Site Sentinel, X40 and MCX-32 controllers. The software allows gas sensor information that is recorded by the controller to be stored on a secure digital memory card that can then be uploaded and viewed on a PC, laptop or tablet. Detcon *Log File Viewer* displays detailed sensor information in an easy-to-read chart format that can be examined by date, individual channel, or by event to include alarms, communication errors, calibration cycles, and TLV-TWA/Peak readings.



SmartWireless Alarms



SW-AV Series Audio Visual Alarm Stations

Detcon SmartWireless audio-visual alarm stations are easily and economically deployable in both permanent and temporary installations. These devices feature a battery powered audio visual alarm station designed as a wireless cordless system component and are available in Class 1; Div 1 and Class I; Div 2, packages.

The standard rechargeable battery packs are capable of delivering enough energy for 4-6 hours of continuous operation in a full alarm condition or 5-6 months (no alarm condition). An optional solar charging panel can be used to extend operating time and maintain full battery charge levels for virtually any application. An optional battery pack that uses disposable "D" cells (3.6V) is capable of delivering even longer operating times.

Alarm relay options include adjustable set points and latching/non-latching relays. The audible alarm can be configured for acknowledge/silence via operator interface at the SmartWireless controller (CXT/X40/MCX-32).

Alarm Bar Audio Visual Alarm Stations

Alarm Bar audiovisual alarm stations consist of a siren and packaging options for two or four strobes. The Horn and Strobes meet NEMA 4X watertight, dust-tight requirements and are rated Class 1, Div 2. Alarm components are pre-assembled and packaged in a NEMA 4X rain tight enclosure that can be pipe or wall mounted.

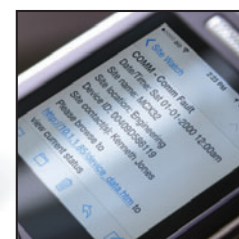


SmartWireless CXT Sensor with Visual Alarm

Detcon's Model CXT wireless gas detection sensors can be configured with an integral visual alarm strobe. The visual alarm supplements zoned alarm indicators by providing point indication of hazardous gas conditions.

Sentinel Sitewatch Remote Monitor

- ▶ Automated emails for gas detection alarm and fault conditions on both smart and cellular phones
- ▶ Email includes last 10 minutes of detector's output prior to going into alarm/fault and coming out of alarm/fault
- ▶ Strong SSL/TLS-based encryption ensures security
- ▶ Configurable up to eight zones
- ▶ SD card with datalogging

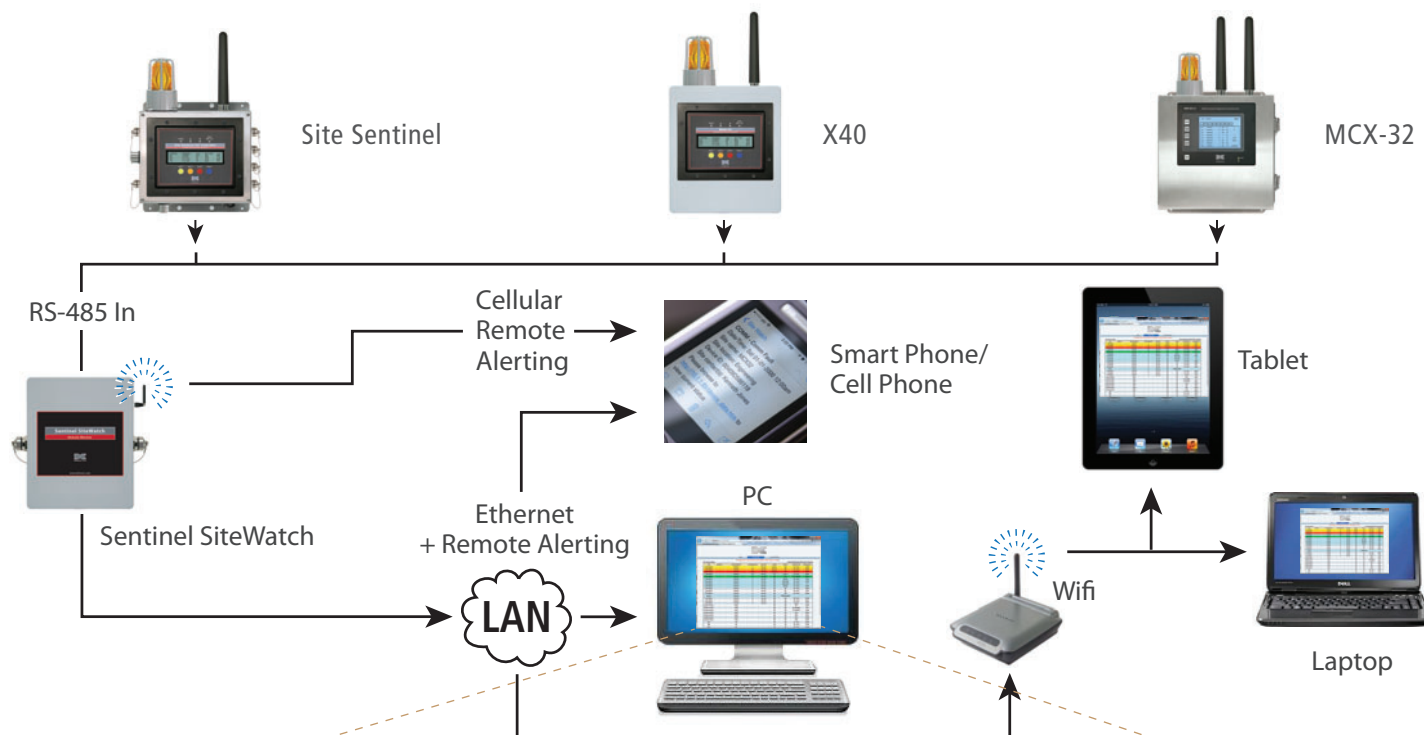


Description

Sentinel SiteWatch is an advanced networking device that provides remote access to any Detcon gas detection system via Ethernet or cellular communication. The Sentinel SiteWatch Ethernet version provides an IP addressed web page that can be accessed via any web browser and both the Ethernet and Cellular versions provide automated emails for all alarm and fault conditions instantaneously. SiteWatch technology can be embedded into the Detcon Model CXT, X40 & MCX-32 wireless controllers.

The Sentinel SiteWatch allows web browser access to real time data from the gas detection system that includes: detector type, serial number, location/name, gas concentration, gas type and alarm status. In addition, when used with Detcon SmartWireless systems, the data includes battery life and link quality of all devices in the network via LAN connection.

Sentinel SiteWatch allows convenient and efficient access to remote system data by computer (desktop, portable, tablet) and cellular devices (iPhone, Droid, etc.) — virtually any device that has ethernet, wifi or cellular access.



TYPE	SERIAL #	LOCATION/NAME	CONCENTRATION	GAS TYPE	ALARM	STATUS	BATTERY LIFE	LINK QUALITY
CXT SENSOR	937643	SHALE SHAKER	0	PPM H2S	OK	OK	45+ DAYS	100%
CXT SENSOR	937644	MUD TANK	50	% LEL	ALARM 3	OK	45+ DAYS	100%
ALARM STATION	937645	MUD PIT/SHALE SHAKER	—	—	—	OK	60%	80%
HMI	937646	DOG HOUSE	—	—	—	OK	45+ DAYS	100%

BM 25W Wireless Transportable Monitor

- ▶ Up to 5 gases simultaneously
- ▶ 103 dB at 3 feet audible alarm
- ▶ Ultra-bright flashing signal at 360°
- ▶ Run time of up to 135 hours
- ▶ Resistant to harsh environments
- ▶ Easily transportable - less than 15 lbs
- ▶ Up to 30 devices per network
- ▶ Up to 16 independent networks
- ▶ More than 0.5 mile RF line of site
- ▶ Only 4.5 hours recharge time

Description

The BM 25W is a rugged, user-friendly and transportable multi-gas monitoring system that offers a wide range of applications. It was designed for mobile or temporary work applications, team protection, area surveillance or places where fixed detection systems are not suitable.

The BM 25W is durable and versatile. It is suitable for a wide range of industries including refineries and pharmaceutical production. Applications include turnaround work sites, rig overhauls and fence-line surveillance.

The system detects up to 5 gases and can include up to 30 devices in a standard network. Should a device fail or an obstruction occur, communication automatically re-routes allowing the network to remain in operation. Powered by a NiMH battery pack, the BM 25W offers up to 135 hours of continuous run time.

The monitor is equipped with a 360° flashing signal and an audible alarm rated 103 dB at 3 feet. Standard features include STEL and TWA values and data logging capacity of more than four months (for 5 gas configuration). An intrinsically safe trickle charger is also available for long-term area monitoring in classified zones.

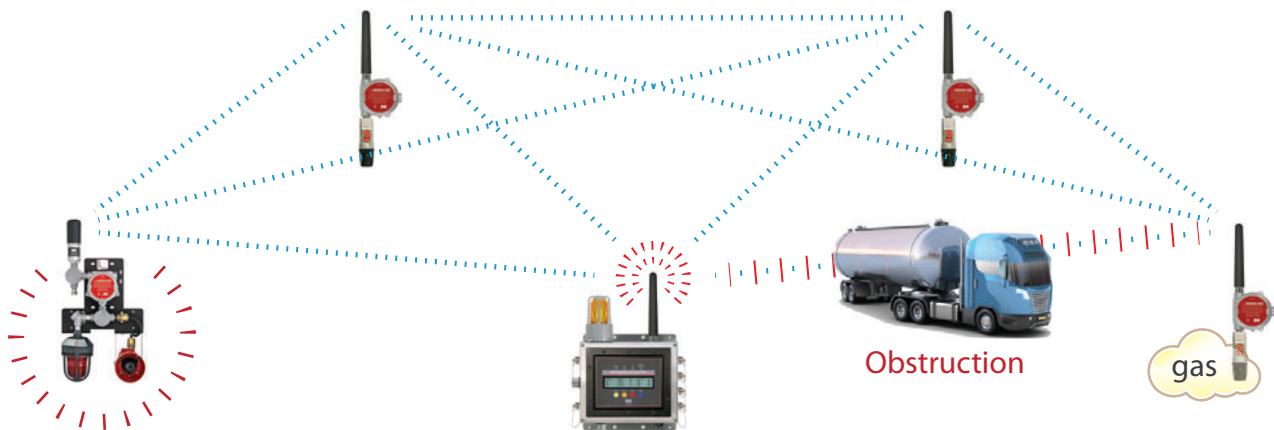
Wireless communication is made via a 2.4 GHz radio and emitted power is less than 100 mW. Maximum distance between two communicating devices is 0.6 mile line of sight. The BM 25W is compatible with Detcon's CXT, X40 & MCX-32 Wireless controllers.



SmartWireless Network Technologies

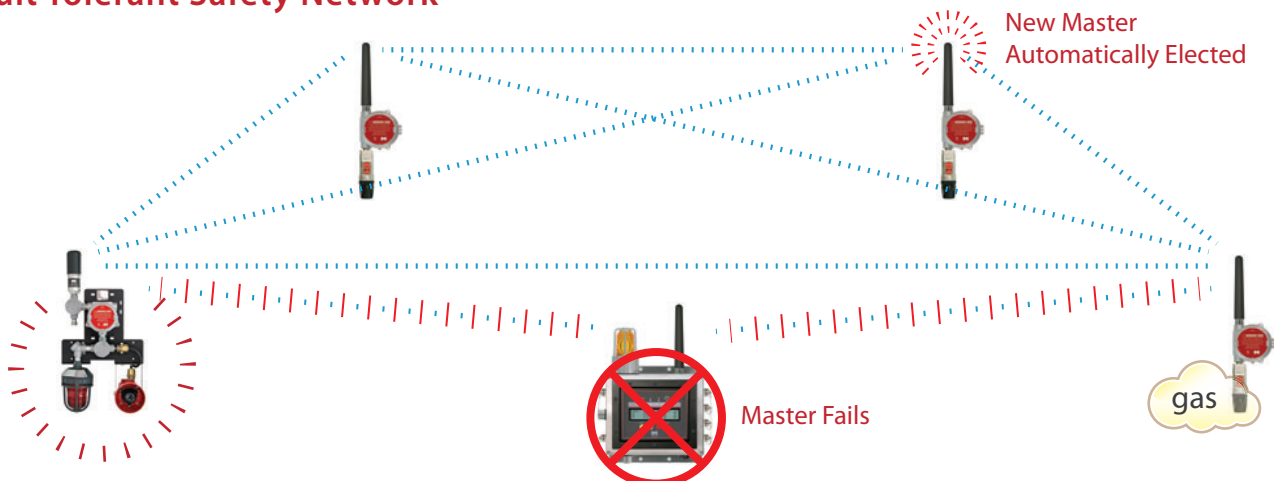
Detcon's SmartWireless systems are available in two technologies - **Standard Mesh Network** (320 System), and **Fault Tolerant Safety Network** (300 System). Both use an innovative "mesh" network topology that allows each device in the network to act as a router and repeater for every other device in the network. Therefore, if an instrument's signal is obstructed from communicating with the Master it will automatically reroute through another instrument to maintain communication. This technology creates a robust network that is not hindered by line-of-sight obstacles. Configuration and commissioning in the Standard Mesh Network is at the network HMI (CXT, X40 or MCX-32 Controller).

Standard Mesh Network



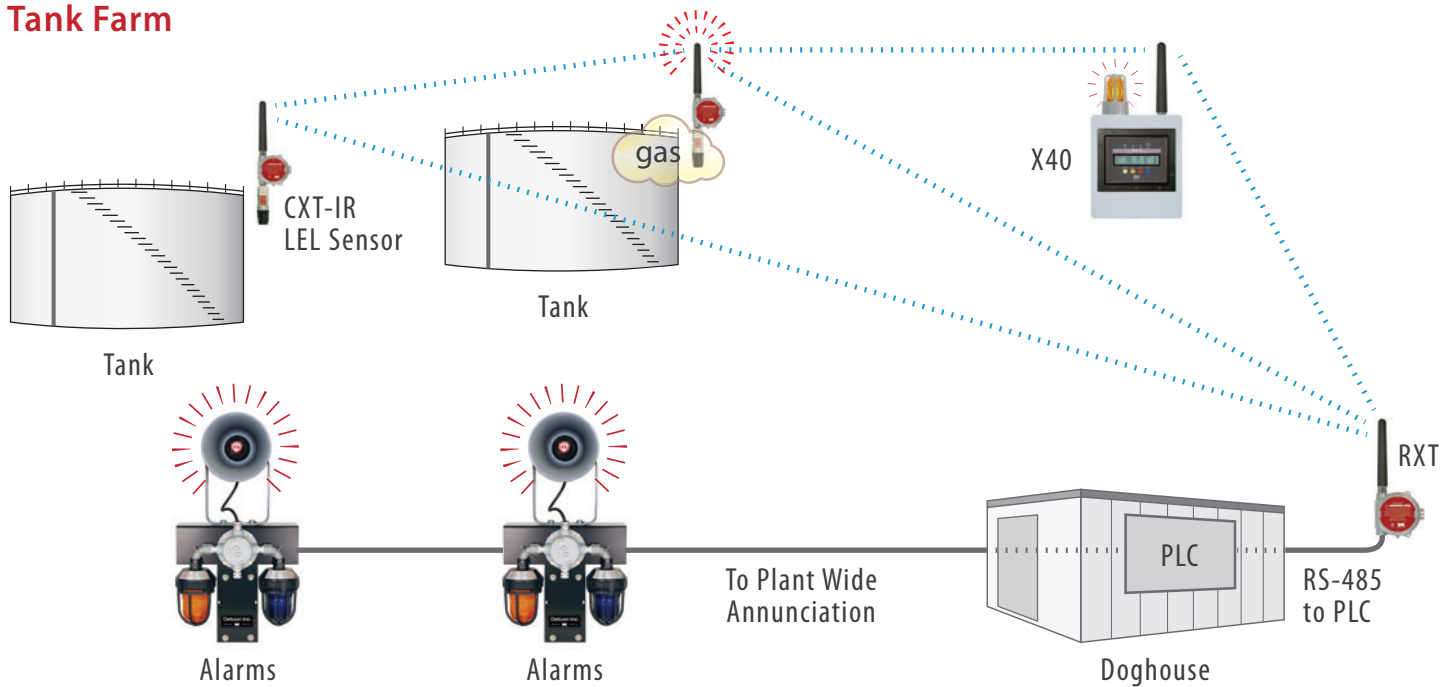
Detcon's proprietary **Fault Tolerant Safety Network** is designed with an additional and unique innovation in mesh-networking to ensure network protection and stability. Data processing capability is embedded in each device in the network, guaranteeing that no single point of failure will interrupt communication between devices. Therefore, if the master device fails the network automatically elects another device to take over as master. This feature significantly enhances the redundancy and overall safety level of the wireless system. Detcon's Configuration Tablet is used to configure and commission the Fault Tolerant Safety Network.

Fault Tolerant Safety Network

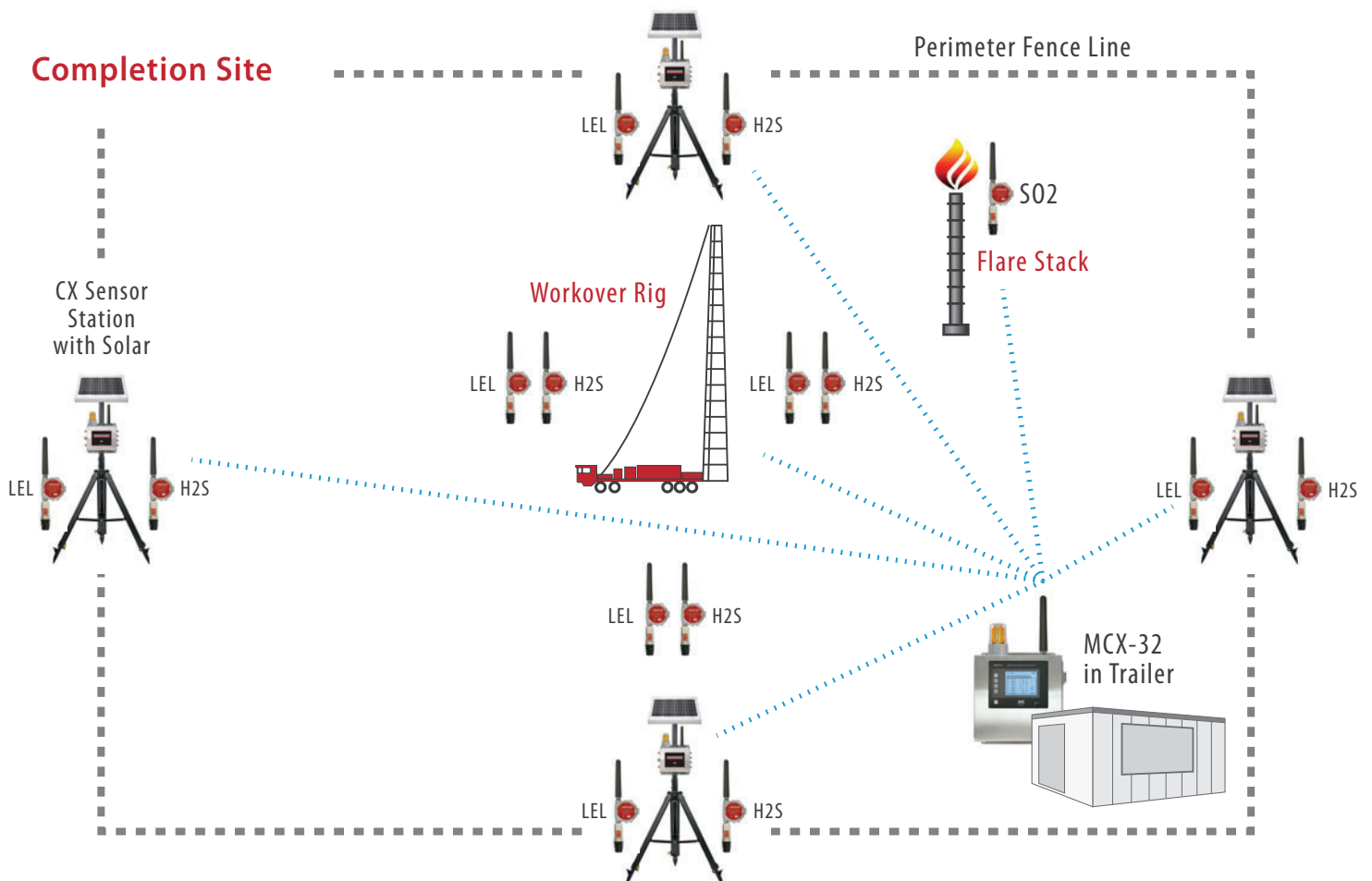


SmartWireless Applications

Tank Farm



Completion Site



Battery Options for Wireless Applications



Rechargeable and Disposable

Battery options include rechargeable packs as well as packs with disposable/replaceable batteries. Both use lithium ion technology and are available in low and high capacity versions. Detcon battery packs provide continuous run times for months at a time. Paired with a solar charging option Detcon SmartWireless® system components can provide indefinite run times.

The battery packs are packaged as a plug in module that uses a mechanical guide and gold plated mating connectors. A smaller compact version is packaged with a twist-lock design. Both are housed and secured inside a Division 1 enclosure. Optional solar charging panels are available in Class I, Div 1 (1.5 and 3 Watt) and Class I, Div 2 packages (5, 10, 20, 30 and 40 Wattt).

Integrated safety circuitry continuously monitors each battery pack. If the discharge current exceeds the battery rating the output will be turned off until reset. If the voltage drops below operating levels the output will be turned off until the battery is recharged (rechargeables) or replaced (replaceables). Rechargeable packs are also protected from over voltage during charging.

Battery Run Times

CXT Gas Detectors	"C" Cell Replaceable	Rechargeable	High Capacity Rechargeable	"D" Cell Replaceable
Model CXT-DM and CXT-IR	2 months	5 months	6 1/2 months	9 months

Audio Visual Alarms*	"C" Cell Replaceable	Rechargeable	High Capacity Rechargeable	"D" Cell Replaceable
No Alarms	na	5 months	6 1/2 months	6 1/2 months
Full Alarms - Continuous	na	4-7 hours	5-9 hours	5-9 hours

* Typical - See product data sheet for specific run times

Specifications (Abbreviated - See Specific Product Data Sheets for Full Specifications)

CX & CXT Sensor Assemblies

Sensor Type

Electrochemical for Toxics and Oxygen
Non-dispersive Infrared Optical (NDIR) - Combustible Gas
Sub-miniature Plug-in Field Replaceable

Input/Output

2.4Ghz DSSS Radio Transmission (CXT)
4-20 mA and RS-485 Modbus (CX)

Power Input

9-30 VDC and/or
Internal Battery Pack with "C" Size (3.6V) disposable batteries
Optional internal Battery Pack with "D" Size (3.6V) disposable batteries
Optional Lithium Ion Rechargeable Battery Pack

Safety Approvals

Explosion proof
cCSAus Class I, Division 1, Groups C, D (Tamb = -40°C to +60°C)
Class I, Zone 1, Group IIB
ATEX Ex d ib IIB T4 Gb (Tamb = -40°C to +60°C)
CE Marking

Performance Approvals

cCSAus Performance tested to ISA 12.13.01-2000 and CSA 22.2 #152

Site Sentinel HMI

Capacity

Up to 32 Input Devices

Display

1 1/4" x 6" Backlit LCD

Electrical Classification (Designed to)

Class I; Division 2; Groups A, B, C, D
NEMA4 General Purpose

Power Input

External: 11.5-30 VDC
Internal: Rechargeable Smart Battery (up to 60 days operation)

Operating Temperature Range

-20°C to +70°C; -4°F to +158°F

Alarm Stations

Input Voltage

24VDC

Electrical Classifications Available

Class I; Div 1; Groups C, D
Class I; Div 2; Groups A, B, C, D

Sound Output

115dB @ 1m (1kHz) (Div 2 Version)
95dB @ 1m (1kHz) (Div 1 Version)

Tones

On-board choice of 15 tones (Div 2 Version)
32 Selectable (Div 1 Version)

Strobe Colors

Amber, Blue, Clear, Green, Purple, Red (Div 2 Version)
Amber, Blue, Clear, Green, Opal, Red, Yellow (Div 1 Version)

Alarm Bar

Input Voltage: 12-48VDC

Electrical Classification: NEMA 4X Class I; Div 2; Groups A,B,C,D

Sound Output: 115dB @ 1m

Tones: 32 Selectable

Strobe Colors: Amber, Blue, Clear, Green, Purple, Red

Sentinel SiteWatch

Signal Input: RS-485

Signal Output: Ethernet; Cellular

Power Input: 115-230 VAC

Electrical Classification

NEMA 4X corrosion resistant weatherproof

Network Configuration Tool

Display

10.1" Wide (LED Backlit, 1366x768) Dual Bonded

Processor/Cache

Intel Atom Z670 processor (1.5 Ghz)

Inputs

Touch (Capacitive Multi-Touch) and Pen (Active Stylus)

Input Voltage

100-240VAC~1.5A, 50-60Hz
Lithium-Ion Battery with 43Whr capacity (up to 8 hours)

Operating Temperature Range

41°F to +109°F, +5°C to +43°C

BM 25W

Display: LCD with backlight

Sensor Type

Electrochemical for Toxics and Oxygen
Catalytic Diffusion for Combustible Gas
PID for Isobutylene
Infrared for CO2, Methane, Propane Butane, Isobutane,
LPG, Ethanol and Pentane

Audible Alarm

103 dB @ 1 meter

Visual Alarm

Ultrabright LED beacon visible 360 degrees

Run Time: 135 hours

Battery Options

Smart Rechargeable Pack

Power Rating - 13.2 AH; High Capacity Version - 17.4 AH

Operating Temperature Range

-20°C to +60°C; -4°F to +140°F

Pack with Disposable "C" Cells (3.6V)

Power Rating

8.5 AH

Operating Temperature Range

-55°C to +85°C; -67°F to +185°F

Pack with Disposable "D" Cells (3.6V)

Power Rating

19 AH; High Output Version - 13 AH (for alarms only)

Operating Temperature Range

-55°C to +85°C; -67°F to +185°F
-40°C to +85°C; -40°F to +185°F (High Output Version)

Solar Power Options

Electrical Classification

1.5 and 3 Watt - Class I; Div 1 Groups C, D
5, 10, 20 and 40 Watt - Class 1, Div 2



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