



# SmartWireless®

Model CXT-DM-SO2  
Sulfur Dioxide Gas Detection Sensor

GAS DETECTION SENSORS ■ INTEGRATED CONTROL SYSTEMS ■ SMARTWIRELESS® ■ PIPELINE ANALYZERS ■ ALARMS

## Description

Detcon Model CXT-DM-SO2 SmartWireless® sulfur dioxide gas detection sensors are easily and economically deployable in both permanent and temporary installations. These low power sensors assemblies utilize electrochemical technology for a long list of toxic gases. All component parts are rated for Class 1; Division 1, Group C, D hazardous areas. These advanced field devices consist of a Detcon Model Series CXT low power gas detection sensor, and wireless transceiver packaged in a single enclosure. Power is provided by an internal battery pack with disposable “C” cell (3.6V) batteries capable of continuous operation for greater than 60 days. An optional lithium ion rechargeable battery pack allows for 5 months operation. Solar power options allow for indefinite operation. An optional battery pack with disposable “D” cell (3.6V) batteries is capable of delivering up to 9 months operation.

Detcon’s proprietary “Self Healing Mesh” technology operates at 2.4 GHz and conforms to non licensed radio frequency appliance usage around the world. Wireless network integrity and security is accomplished using direct sequence spread spectrum DSSS programming topology. Wireless applications can be as simple as a single field device communicating with a host display or any number of field devices forming a network of subscribers. Each device in the network is assigned its unique device identification or a UID. Every device in the network can act as a router and repeater for all other devices in the network. This means that subscribers can “hop” through neighboring devices to communicate with each other thereby widening network access points. This unique and innovative technology is designed to create a robust network that automatically routes around congestion and line-of-sight obstacles while improving throughput as subscriber device density increases.

Standard network configuration is of the master/slave mesh type (320 Transceiver). An optional and proprietary technology referred to as “Fault Tolerant Safety Network” (300 Transceiver) is also available which guarantees that no single point of failure will interrupt communications between devices on the rest of the network, including loss of HMI. Processing power is, in a sense, shared among all devices. There is no controller dependence. Each device in the network is capable of acting as the network master, processing real time data and issuing commands to other devices in the network.



## Features

- ▶ Detcon self healing mesh network topology
- ▶ Universally accepted 2.4 GHz non-licensed frequency
- ▶ Low power gas detection sensors with built-in transceivers
- ▶ Built-in display for gas sensor/field device HMI
- ▶ Disposable battery packs

## Applications

- ▶ Oil and Gas Drilling Rigs
- ▶ Work-over and pulling units
- ▶ Oil and Gas Production
- ▶ Turn-a-rounds in Refining and Petrochemical Plants

## System Specifications

### Sensor Type

Continuous diffusion/adsorption  
3-electrode electrochemical cell  
Plug-in field replaceable

### Measurement Range

0-20 ppm, Other ranges available

### Accuracy/Repeatability

±2% FS

### Response/Clearing Time

T90 ≤20 seconds

### Span Drift

<2% signal loss per month

### Input/Output

2.4Ghz DSSS Radio Transmission

### 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 +50°C)  
CE Marking\*  
IECEX\*

\* "C" cell battery pack version only

### Ingress Protection

NEMA 4X

### Warranty

Plug-in detector - 2 years; Transmitter - 2 Years

## Mechanical Specifications

### Dimensions

With Stainless Steel Mini J-Box  
18"H x 3.62"W x 4.3"D; 457mmH x 92mmW x 109mmD  
18"H x 5.5"W x 4.3"D; 457mmH x 140mmW x 109mmD (with XP Power Switch)  
20.5"H; 520mmH (with splashguard)  
With Aluminum J-Box (rechargeable battery pack version)  
19"H x 5.8"W x 8.5"D; 482mmH x 147mmW x 216mmD  
19"H x 7.7"W x 8.5"D; 482mmH x 195mmW x 216mmD (with XP Power Switch)  
21.5"H; 546mmH (with splashguard)

### Weight

5.2 lbs/2.36 kg (w/stainless steel j-box); 6 lbs/2.72 kg (w/aluminum j-box)

## Accessory Options

Tripod for mounting (specify pole mount and/or leg mount brackets)  
Mini tripod for mounting (specify pole mount and/or leg mount brackets)  
7db gain antenna  
Solar charging panel

Specifications subject to change without notice

## Order Guide

Part Number	Description
96C-550_0_-020	Model CXT-DM-SO2, 20 PPM Sulfur Dioxide

To complete the part number please select from the options below. X X X - X X X \_ X \_ - X X X — The last 3 digit of the part number designate range - other ranges available

Position "7" select SmartWireless® Transceiver Option	Position "9" Junction Box Selection & Power Selection
0 - CXT-DM with 300 fault tolerant transceiver	1 - Aluminum Junction Box (no battery)
2 - CXT-DM with 320 mesh transceiver	2 - Stainless Steel Mini Junction Box, Internal Battery Pack with Disposable "C" Cells (3.6V)
	3 - Stainless Steel Junction Box (no battery)
	4 - Aluminum Enclosure with Rechargeable Battery Pack
	7 - Aluminum Enclosure with High Output Rechargeable Battery Pack
	D - Aluminum Enclosure, internal Battery Pack with Disposable "D" Cells (3.6V)
	5 - None

## Electrical Specifications

### 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

### Power Consumption

20mW (Low Power Mode); 100mW (typical); 500mW (max)

### RF

Outdoor RF Line of Sight (with standard antenna): 1.5 miles  
Interface Data Rate: 9,600bps  
Throughput Data Rate: 19,200bps  
RF Data Rate: 250,000bps  
Transceiver Sensitivity: -102dBm  
Frequency: 2.40-2.48GHz  
RF Channels: 16, each 5Mz wide  
Output Power: 100mW (20.5dBm) EIRP  
Spread Spectrum: DSSS (Direct Sequence Spread Spectrum)  
Modulation: 0-QPSK  
Supported Network Topologies: Mesh, Point-to-Point

### Antenna

5db flex whip; Screw on radome whip antenna guard included

### I/O Protection

Over-voltage, Miswiring, EMI/RFI Immunity

### Status Indicators

4-digit LED display with gas concentration  
Full-script menu prompts for Auto Zero/AutoSpan, & Fault Reporting

### Faults Monitored

Span, Memory, Processor, Clearing, Range,  
Zero, Sensor Fault 1, Sensor Fault 2

## Environmental Specifications

**Operating Temperature Range** (sensor); see battery temp specs below  
-4°F to +122°F; -20°C to +50°C

### Storage Temperature Range

-31°F to +131°F; -35°C to +55°C (typical)

### Operating Humidity Range

15% to 90% RH non-condensing

### Operating Pressure Range

Atmospheric ±10%

## Battery Specifications

**Battery Pack with Disposable "C" Cells (3.6V):** 2 months sensor run time full function  
(-55°C to +85°C; -67°F to +185°F discharge temperature).

**Battery Pack with Disposable "D" Cells (3.6V):** 9 months sensor run time full function  
(-55°C to +85°C; -67°F to +185°F discharge temperature).

**Smart Lithium Ion Rechargeable Battery:** 5 months sensor run time full function  
(-20°C to +60°C; -4°F to +140°F discharge temperature; -30°C intermittent).



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