CW SENTRY™ Chemical Warfare Agent Detector

- ➔ Accurate, quantifiable and highly specific detection of Chemical Warfare Agents (CWAs) and Toxic Industrial Chemicals (TICs)

- ➔ Built-in networking and testing capabilities

- ➔ Integrates into existing building security systems

- ➔ Currently deployed at hundreds of key stations

- ➔ Protects the lives of millions of people daily

Introduction | Detect to Protect

The **CW Sentry** Detector is a fixed-point, third generation detector which has been extensively evaluated by US national labs with hundreds of instruments installed in key locations across the US, safe guarding the public against terrorist attacks and chemical spills. The Sentry Detector's primary role is consequence management. Specifically, it is designed to minimize casualties by rapidly alerting security personnel upon detection of trace amounts of a targeted chemical gas.

Principle of Operation

The **CW Sentry** Detector is a hybrid system employing two separate detector arrays. The first array consists of Surface Acoustic Wave (SAW) microsensors for the detection of nerve and blister agents. SAW sensors are piezoelectric crystals that detect the mass of chemical vapors absorbed into chemically selective coatings on the sensor surface. This absorption causes a change in the resonant frequency of the sensor. The internal microcomputer measures these changes and uses them to determine the presence and concentration of chemical agents.

The secondary array is an optional configuration of electrochemical cells and is employed for broad detection of Toxic Industrial Chemicals (TICs).

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CW Sentry Detector Solutions

The *CW Sentry Detector* is designed to meet the growing need for facilities protection against chemical agents.

Typical applications for which the *CW Sentry Detector* is well-suited are:

- Subway protection
- Airports protection
- Public buildings protection
- HVAC systems
- Event site monitoring
 (*Olympics, high-profile sporting events, political conventions*)

CW Sentry Detector Features

With more systems installed than those of any other supplier in this industry, the *CW Sentry Detector* is rich with superior and desirable features:

- Broad threat detection (CWAs & TICs)
- Industry's lowest false-positive rate
- Field-proven experience
- On-board validation check source
- Reliable, low maintenance operation
- Sensor temperature controls
- Flexible connectivity
  (*IP, ethernet, fiber, RS-232, wireless*)
- Easy servicing
- Superior sampling system

User Interface

The *CW Sentry Detector* is capable of communicating with a wide variety of security systems via a data port. The Sentry Detector also offers a networking accessory configurable to the specific application. This option employs a Graphical User Interface (GUI) to visually detail threat alarms, fault conditions and service requests at each instrument location. Bi-directional communication and comprehensive data-logging for historical event analysis is also provided. These features greatly improve operational capabilities, ease-of-use and incident response time.
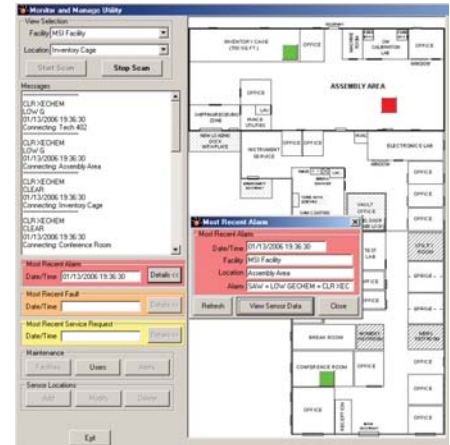
Alarm Condition The red icon in the upper right hand corner of the facility map indicates an "Alarm" condition reported by the CW Sentry 3G detector. The Sentry unit reports "LOW", "MED" and "HI" values for the presence of nerve, blister, blood, choke, halogen and hydride gases. *RED* indicates an "Alarm", *ORANGE* indicates a "Fault" condition, *YELLOW* indicates a "Service Request" and *BLUE* indicates "Offline".
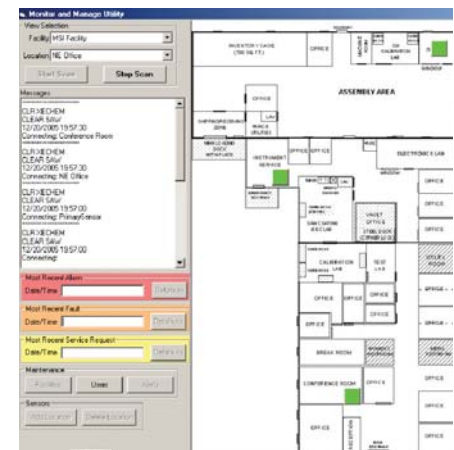
All Sensors Clear The interface provides a graphical representation of the user facility. In this pictorial the green icons symbolize each CW Sentry 3G detector installed in the facility. Green indicates the instrument is reporting an "ALL CLEAR" status. Historical data reported by each installed Sentry instrument can be reviewed in the *Messages* block on the left hand side of the display.
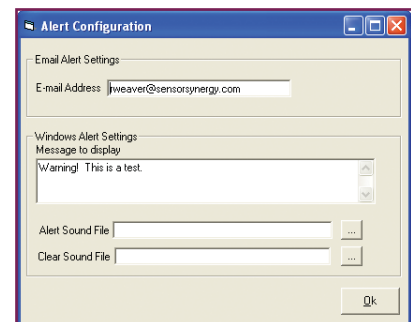
Alert Configuration Instrument alerts (Alarms, Faults and Service Requests) are automatically emailed to the individual identified in the *Alert Configuration* utility. This utility has multi-level security to configure permissions at both the User and the Administrator level. WAV or other sounds files can be loaded for each type alarm condition.

System Components

The **CW Sentry Detector** consists of a fiberglass enclosure, sensor engine, and exhaust pipe. The sampling system has redundant capabilities for reliable, continuous use in a harsh, urban environment.

Agent Alarm LEDs

System Reset Button

Status and System Fault LEDs

System Test Button

Case

Status Panel | *This panel is located on the internal sensor engine accessed through the door of the external box. The LEDs provide visual verification of agent alarm and system status conditions. The CW Sentry Detector can be manually reset using the **RESET** button, and its SAW Sensor performance verified by pressing the **TEST** button.*

Sample Inlet | *An internal fan draws air into the CW Sentry Detector exterior box from a distance of up to 20 feet through 1/2" OD tubing. There are 2 filters to prevent contamination from ambient dust and dirt. An internal pump then pulls the filtered air into the sample engine.*

Data Connectivity | *RS-232 serial port provides data output. Optional communications functionality, such as ethernet and fiber optics, is available.*

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Technical Aspects

Having been field deployed since 2001, the third generation system represents significant improvements in detector performance and maintainability to meet the demanding requirements of critical infrastructure protection.
The CW Sentry Detector reduces the occurance of false alarms in environments containing unpredictable chemical backgrounds.

CW Sentry Detector Specifications

Weight
40 pounds (18.2 kg)

Dimensions
24.75 x 19.5 x 9.5 in (62.9 x 49.5 x 24.2 cm)

Sensor Technologies
Surface Acoustic Wave Microsensor Array
Electrochemical Cell Array

Analysis Time – SAW Sensors
30 seconds

Analysis Time - Electrochemical
5 seconds

Maximum Sampling Distance
20 feet

Warm-Up Time
Less than 5 minutes at 77° F (25° C)

CWA Alarm Thresholds
Meets the ECT_{50} exposure dose level*
Nerve Agents (G)
GA (Tabun) ≥ 0.5 mg/m^3
GB (Sarin) ≥ 0.7 mg/m^3
GD (Soman) ≥ 0.5 mg/m^3
GF (Cyclosarin) ≥ 0.5 mg/m^3

Blister Agents (H)
HD (Mustard) ≥ 2 mg/m^3
HN-3 (Nitrogen Mustard) ≥ 2 mg/m^3

TIC Alarm Thresholds
Hydrogen Cyanide – Blood Agent –
"BLoD" (AC) – 5.0 ppm

Phosgene – Choke Agent –
"CHOK" (CG) – 0.3 ppm

Hydride – "HYdR" – 0.5 ppm
Halogen – "HALO" – 10.0 ppm

Data Output
RS-232 serial port and dry contact closure, ethernet, fiber optic and wireless functionality, optional.

Operating Temperature
-20° to 50° C, -4° to 122° F

Operating Humidity
0 to 95% non-condensing

Power Supply
90 - 240v, 50/60 Hz (60 watts)

Warranty
One year parts and labor

CW Sentry Detector Product Configurations

Part Number	Description
10056374	Detects nerve and blister agents
10074654	Detects nerve and blister agents and hydrogen cyanide (Blood Agent)
10074655	Detects nerve and blister agents and phosgene (Choke Agent)
10074656	Detects nerve and blister agents and Toxic Industrial Chemicals (TICs) (*Hydrogen Cyanide, Phosgene, Halogen and Hydride Gases*)

Optional Features

Ethernet communications port, fiber optics communications port, conduit pipe power connector and annual service contract.

* 2-minute exposure of the effective concentration that has a negative effect on 50% of population (*http://fas.org/irp/doddir/army/fm3-11-9.pdf*).

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