Hach Homeland Security Technologies

Homeland Security Technologies

See Inside!

- **Providing water quality and security solutions from source to tap.**
- **NEW! Introducing CityGuard—your virtual command center for viewing and controlling multiple source water and distribution water monitoring stations from any PC with internet access.**
- **GuardianBlue Event Detection System is Safety Act Certified by the U.S. Department of Homeland Security!**

…and Much More!

HACH®

Homeland Security Technologies

CityGuard—your virtual command center…from source to tap.

NEW!

Source Water Monitoring Panel
(See page 508.)

GuardianBlue Event Detection System
(See page 500.)

Water Distribution Monitoring Panel
(See page 504.)

Your source and distribution system…at your fingertips.

Hach Homeland Security Technologies (HST) introduces CityGuard, a security network portal, command center and real-time water distribution monitoring system that optimizes the use of utility dollars while maximizing water quality protection. By adding CityGuard, water utilities have a bi-directional monitoring and control system that integrates the sensor data from water quality monitoring points strategically located throughout a community's distribution system. This allows utility personnel to simultaneously view and minimize response time to critical real-time water quality data from any internet browser at any location.

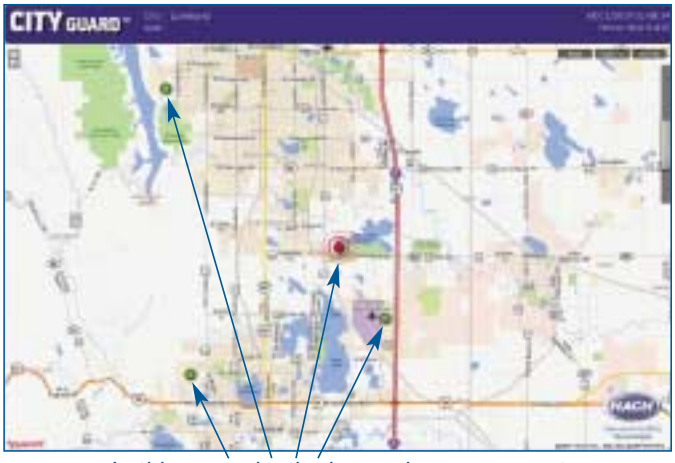
The capabilities of CityGuard essentially provides utilities with a "virtual command center" for critical water distribution monitoring and control. CityGuard allows for an effective response to minimize the adverse impacts that could result from an event, whether it's a security-related contamination, or other water quality changes in the system such as quality degradation due to water age, a ruptured water main, cross connection, or an accidental over-feed.

CityGuard works in concert with proprietary event monitors coupled with Hach GuardianBlue Event Detection System (EDS), Water Distribution Monitoring Panels (WDMP sc), and Source Water Monitoring Panels (SWMP) located throughout the utility system. Each of these systems employ an array of analytical instrumentation combined with advanced interpretive algorithms to provide accurate, data-rich detection/classification networks.

CityGuard allows utilities to:

- *View the status of multiple distribution monitoring points at a glance.*
- *Have bi-directional control of multiple Event Monitors from any location with Internet access.*
- *Save time and costs associated with travel to remote monitoring sites.*
- *Drill down, view, and analyze water quality data from multiple distribution monitoring points from a single location.*
- *Maximize the value of source water and water distribution monitoring and drinking water security programs.*
- *If in alarm state, you can quickly access the Event Monitor(s) affected by the water quality event and minimize response time.*
- *Minimal server requirements.*

CityGuard allows you to see the status of multiple sites at a glance



In this example, the icons above represent monitoring sites equipped with Event Monitors.

View and compare multiple monitoring sites with a simple "double-click" to access this in-depth pop-up screen.

Prod. No.	Description
CGBASE	CityGuard Base, Initial installation
CGADDEM	CityGuard Add an Event Monitor (per each additional EM)
CGENT	CityGuard Enterprise (up to 40 Event Monitors)
UPGRADES, SOFTWARE VERSION UPGRADES	
CGUPGRADEBASE	CityGuard Upgrade Base
CGUPGRADEADDEM	CityGuard Upgrade Add an Event Monitor
CGUPGRADEENT	CityGuard Upgrade Enterprise
MAINTENANCE/ SOFTWARE UPDATES	
CGMAINTBASE	Support w/Updates to Base
CGMAINTADDEM	Support of each additional Event Mntr
CGMAINTENT	Support of Enterprise

For more information, call to request Literature #2648, or visit www.hachhst.com

Add an Event Monitor for simplified event detection.

The Event Monitor adds event detection capabilities to sensor data from the Source Water Monitoring Panel, the Distribution Monitoring Panel or the GuardianBlue System.

The Event Monitor develops a baseline that is site specific and creates a trigger signal from the sensor data. The trigger signal is a combination of the water quality parameters which translates to a summation of the deviation from baseline. The larger the trigger signal, the larger the deviation from baseline. Once a minute the trigger signal is compared to the baseline and should the user-set threshold be exceeded, an alarm is thrown. Once the alarm is investigated, the fingerprint to the alarm can be named and should the event reoccur, the Event Monitor will recall the event by name, along with its priority.

Attaching either of these three systems to Hach CityGuard software allows you to control the Event Monitor as if you were standing in front of the instrument and can help minimize the response time to an event—potentially reducing damage to populations and infrastructure.

Continuously monitor the quality of your incoming source water.

- *Easily hooked up to Event Monitor for advanced event detection capability*
- *Anticipate changes to the treatment process that are needed to react to storms, algal blooms, industrial discharge, chemical spills, reservoir stratification/destratification, construction activity, sewage spills and other natural or man-made occurrences*
- *Improve process control—make necessary changes to your chemical quantities before the water enters your plant*
- *Improve your response time to changes in your incoming water*
- *Improve taste and odor problems*
- *Test up to six different parameters in one common trough, saving space and effort*
- *One controller for all sensors*
- *Can upgrade system with TOC analyzer or auto-sampler*

Source waters can be vulnerable to an accidental or intentional contaminant events. Monitoring an input water source can provide useful information to the Drinking Water Plants that process incoming water. Plants can shut their intake down should their Source Water Panel parameters change significantly.

Water Quality, Security, and Event Detection

GuardianBlue is the first and only system for drinking water to obtain SAFETY Act certification and designation. The certification and designation by the U.S. Department of Homeland Security means GuardianBlue is approved as a security product and offers municipalities and their contractors litigation protection under the SAFETY Act.

The innovative and award winning GuardianBlue system uses patented technology to detect, alert and classify potentially harmful contaminants that can be intentionally or accidentally added into the distribution system.

While GuardianBlue's benefits to the security of the distribution system are undeniable, the system can also detect, alert, classify and LEARN operational events, such as caustic overfeeds, roadwork, and pipebursts—improving your insight into the quality of the water within the distribution system.

NOTE: The Agent Library is available to U.S. domestic customers only.

Attaching the system to Hach CityGuard software allows you to control the Event Monitor as if you were standing in front of the instrument and can help minimize the response time to an event-potentially reducing damage to populations and infrastructure.

Water Quality and Event Detection

The Water Distribution Monitoring Panel can be hooked up to a Event Monitor for simplified event detection in distribution waters. You will be alerted to water quality deviations through the event monitor.

The Event Monitor uses patented technology to develop a baseline and an algorithm to combine the parameters into a dimensionless trigger signal. The trigger signal can be described as a summation of the deviation from baseline, so the higher the trigger signal is, the more significant the deviation from baseline is.

Used in combination with the Event Monitor, you can teach the system to recognize normal and abnormal events and designate an alarm priority for the fingerprint—either alarm, alert or normal. Together these tools can provide you with analyzed data and information that could escape the human eye.

Attaching the system to Hach CityGuard software allows you to control the Event Monitor as if you were standing in front of the instrument and can help minimize the response time to an event—potentially reducing damage to populations and infrastructure. Event Detection has been simplified.

GuardianBlue® Event Detection System

GuardianBlue = Water Security

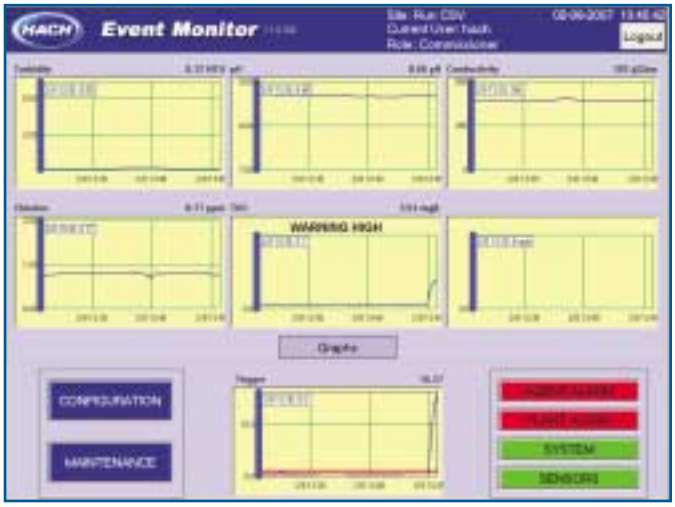
GuardianBlue is the first and only event detection system for drinking water certified and designated by the U.S. Department of Homeland Security.

The GuardianBlue system has over 500,000 hours of real-world customer use. Extensive testing by Hach Company, the U.S. Army, U.S. Army Corp of Engineers and U.S. EPA ETV study have been performed. Testing at Edgewood Chemical Biological Center (ECBC), and the Army Corps of Engineer's Construction Engineering Research Laboratory (CERL) were conducted using live warfare agents.

NOTE: The Agent Library is available to U.S. domestic customers only.

The following Event Monitor screen shots show the classification process of the threat agent.

Normal water quality. Sensor data is steady and stable, creating a trigger signal that is also steady and stable.



A water quality deviation is detected, and the fingerprint of this event is matched to a fingerprint within the Agent Library, causing the Agent Alarm annunciator to flash red.

A closer look at the trigger signal graph will determine the length of time and possible magnitude of the event. The individual sensor readings can be seen on this screen as well.

The Agent fingerprint is classified as Dichlorvos or Dicrotophos or Methomyl with the greatest probability being Dichlorvos, and the automatic sampler has pulled a sample for forensic analysis.

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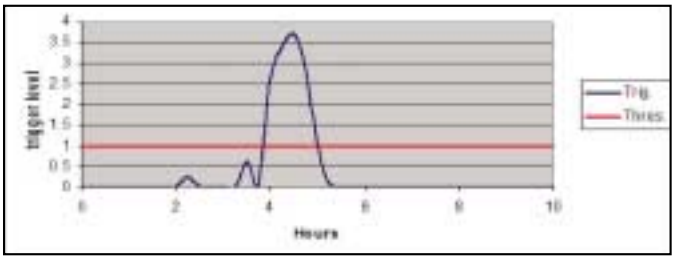
800-604-3493
Outside the United States, call 970-669-3050

GuardianBlue = Water Quality

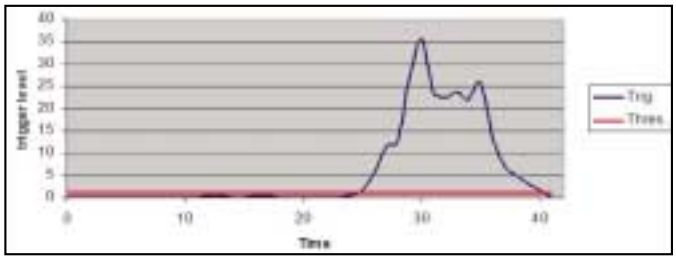
Ensure the health of your distribution system—build a distribution monitoring network for maximum surveillance capability.

- *Reduce response time to minimize damage to populations and critical infrastructure*
- *Detect cross connection in real time*
- *Detect contamination events—intentional or accidental*
- *Stay alert to quality degradation due to water age*
- *Identify degradation in water quality due to biofouling*
- *Locate and monitor dead ends and low flow areas of the system*
- *Detect corrosion by-products, improve corrosion control*
- *Alert operators and managers to undesirable changes in water quality*
- *Reduce labor costs associated with time and travel to perform grab sampling*
- *Troubleshoot distribution system issues remotely*
- *Identify trends and adjust operation parameters more efficiently*



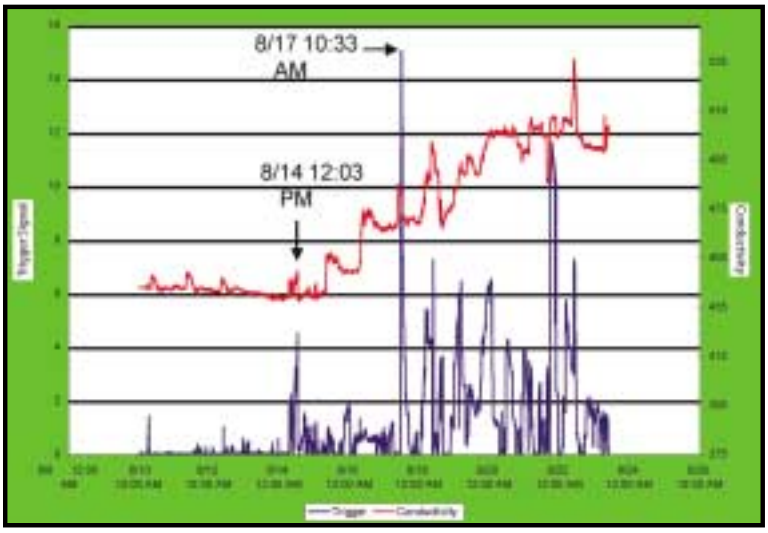
Caustic Overfeed Event

This event occurred when a plant experienced an operational problem that resulted in the feed of excess caustic. This affected pH and conductivity of the water, causing the Event Monitor to alarm. Operators named the event, and the Event Monitor learned and stored it in the Plant Library, so that a recurrence of the event can be identified.



Roadwork Event

Road work near a distribution line dislodged biomass and other particulate matter. This event illustrates the ability of the Event Monitor to detect and alarm on unanticipated events. This fingerprint for the materials adhering to the walls of the pipes in this location is automatically stored in the Plant Library.



Pipeburst Event

This graph depicts a 36-inch main break. GuardianBlue was 2 miles upstream and started to see significant deviations in water quality almost 3 full days before the catastrophic pipe break occurred.

For more information, call to request Literature #2573, or visit www.hachhst.com

GuardianBlue® Event Monitor

The brains behind GuardianBlue.

- *Detects, alerts, and classifies threat contaminant and operational events*
- *Alarm when water quality deviates from baseline, whether its a known or unknown event*
- *Trigger signal shows current deviation from water quality baseline, real-time*
- *View trigger signal and all parameter measurements from the main screen*
- *Touch screen interface for fast and easy system navigation*
- *Patented technology*
- *Real-time, on-line analysis of sensor data*
- *Designed to be hooked up to the CityGuard system for centralized surveillance*
- *Easily communicates with your SCADA system for data recording*

The Event Monitor contains Hach's patented water security algorithms and is the brains behind GuardianBlue Event Detection System. It integrates multiple sensor outputs from GuardianBlue's Water Panel and TOC Analyzer. Every 60 seconds, the system's patented algorithm analyzes deviations in five water quality parameters and uses the measurements to calculate a site's water quality baseline. The system alarms when the trigger signal exceeds a user-set threshold, indicating a water quality deviation from the system's normal operating baseline parameters.

Agent Library—Detects Intentional Contamination

The Event Monitor is equipped with a SAFETY Act designated and certified Agent Library which contains fingerprints of a wide variety of threat contaminants, ranging from cyanide and anthrax to arsenic and pesticides. The Agent Library provides the Event Monitor with the ability to classify contaminants that are nearly impossible to identify using current water quality monitoring techniques.

Municipalities will be able to update their Agent Library with new fingerprints through a subscription service when they are approved and released by Hach HST, allowing water utilities to take advantage of the latest research and development.

NOTE: The Agent Library is available to U.S. domestic customers only.

Plant Library—"Learns" Water Quality Events

The patented Event Monitor Trigger System identifies deviations in water quality due to operational fluctuations and calculates a fingerprint of each system event which is then catalogued in the monitor's "Plant Library." Operators can label event fingerprints for simplified identification should the event recur. With its demonstrated ability to "learn" specific system dynamics, the Event Monitor promises to become an invaluable tool for water utilities looking to quickly detect system events, lower system maintenance costs, and streamline plant operations, all while improving water quality and customer satisfaction.

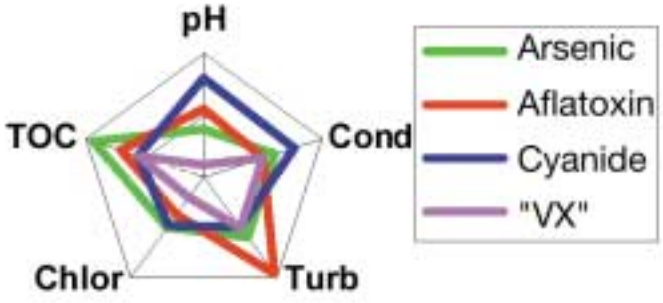
The GuardianBlue system analyzes 5 commonly measured parameters: pH, Conductivity, Turbidity, Chlorine, and TOC.

The system then develops a baseline for normal water quality for that site.

The GuardianBlue Event Monitor takes these 5 parameters, and through a highly sophisticated algorithm, it creates a dimensionless single signal vector called the trigger signal. Once a minute, the trigger signal is compared to the baseline, and if the user-set threshold is exceeded, a significant water quality deviation event has occurred.

The Event Monitor then compares the fingerprint of this event to its libraries, the Agent Library and the Plant Library.

The Agent Library has been created and developed by Hach Homeland Security Technologies through years of empirical data and testing. The Plant Library is developed on-site over time. These event fingerprints are learned and require the interpretation of operators who know the distribution system, so that the fingerprints can be properly interpreted and named. If a match in either library is detected, the Event Monitor reports the results. If the optional automatic sampler is purchased, it pulls a sample for additional forensic analysis.



Graphic of an Agent Fingerprint.

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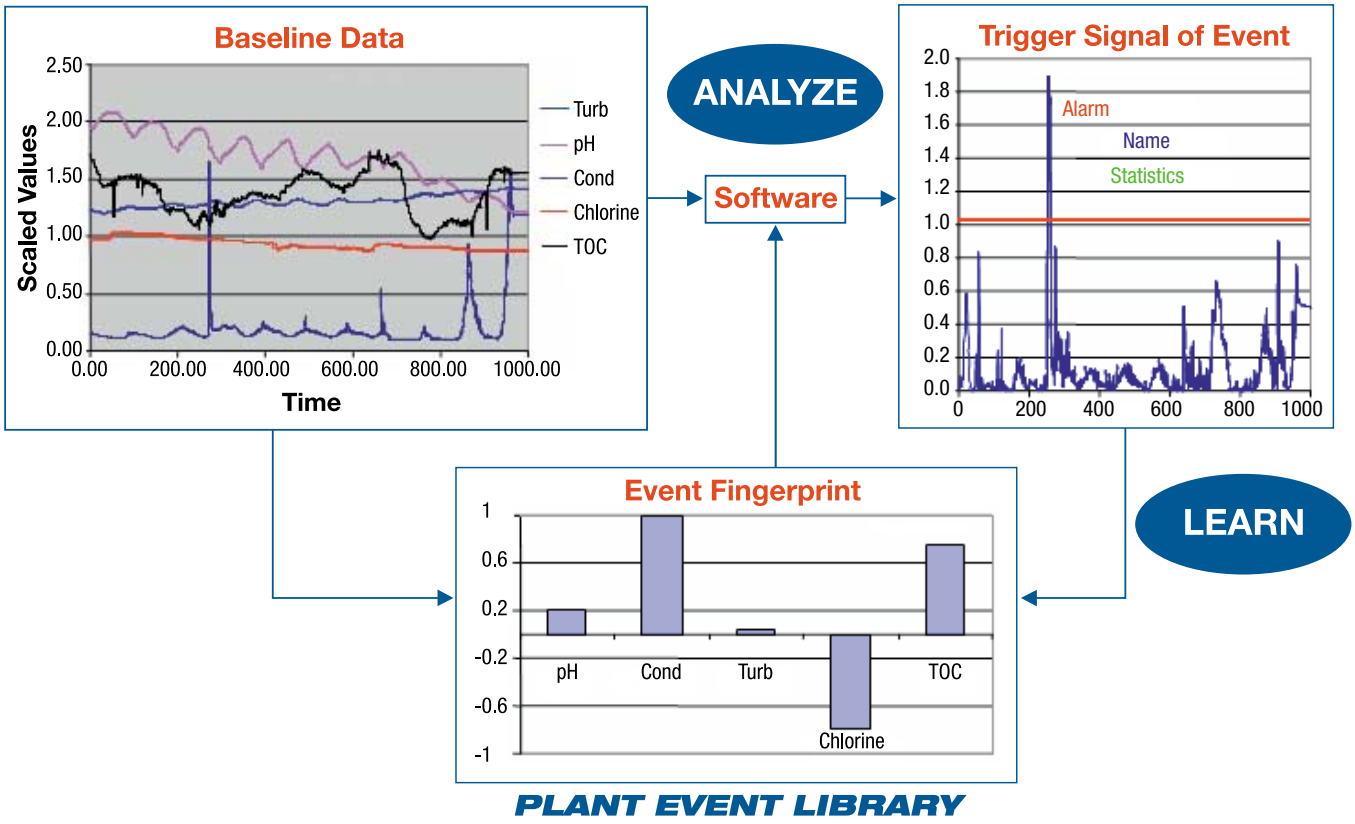
INPUT FIVE PARAMETER SIGNALS

OUTPUT TRIGGER SIGNAL



PLANT EVENT LIBRARY

Prod. No.	Description
6960600	GuardianBlue Event Monitor
6960000	GuardianBlue Agent Library, perpetual license
6960010	GuardianBlue Agent Library, annual license
6960200	GuardianBlue Agent Library, optional subscription service (for 2nd year for perpetual license holders)
ACCESSORIES	
120161	Free-Standing Rack, wheeled
COMPLETE CARE PACKAGES	
FSPGuardianB12	Monthly service visit

For GuardianBlue Water Distribution Monitoring Instrumentation, see Water Panel pages 504-505, Automatic Sampler page 509, and On-line TOC Analyzer page 506. For the WDMP sc as a stand-alone instrument, please see pages 420-421.

For more information, call to request Literature #2477, or visit www.hachhst.com

*Specifications**

Alarms
Trigger Signal Alarm, High/Low Parameter Alarms, Frozen Parameter Alarm, Sensor Off-line Alarm; Agent Alarm; Plant Alarm; Missing Sensor; Invalid Data

Power Requirements
100-230 Vac

Operating Temperature
5 to 40ºC

Storage Temperature
-20 to 65ºC

Humidity
90% at 40ºC max

Environmental
Industrial grade, meets Nema 4 and IP65 for indoor use

Communications
RS-485 MODBUS®

Dimensions
21"(w) x 19.5"(h) x 7"(d)
(53cm x 50 cm x 18 cm)

Weight
50 lbs. (23 kg)

Enclosure Material
316 Stainless steel

Mounting
Wall mount or rack mount

Display
15" touch screen

Certification
Listed to UL 1010 by ETS

Instrumentation
Interfaces with Hach WDM Panel or Source Water Monitoring Panel; astroTOC UV On-line TOC Analyzer; Hach Sigma Portable, Refrigerated, or All-Weather Autosamplers

**Subject to change without notice.*

GuardianBlue® Water Panel

The backbone behind GuardianBlue.

- *The right tool to establish your distribution system's water quality baseline*
- *Field-proven instruments you can count on*
- *Multi-parameter on-line panel includes pH, conductivity, chlorine (free or total), turbidity, temperature, and sample pressure*
- *Single sample inlet, outlet, and power hook-ups for ready-to-install convenience*

Know the Health of Your Water Distribution System

The initial step in knowing the health of your water distribution system is taking system vitals to establish a normal baseline at critical nodes, storage reservoirs, booster stations, pump stations, and other key monitoring points. The Water Distribution Monitoring Panel monitors the right combination of "indicator" parameters chosen by industry experts and recommended by the USEPA. In combination with the Hach Event Monitor™ Trigger System, you can now detect deviations from the baseline.

Instruments You Can Count On, Each Ranked Top in Category

Reliability is critical for continuous, uninterrupted surveillance of your distribution system. Each instrument in the Water Distribution Monitoring Panel utilizes proven technology and provides readings with little or no time lag. All data is logged to the network controller and sent to the Event Monitor and SCADA or other remote locations.

What's on each WDMPsc and why.

Hach scientists chose commonly tested parameters and robust instrumentation.

Chlorine- CL17 Chlorine Analyzer

Every 2.5 minutes the instrument obtains a sample, applies a DPD colorimetric method based on an approved USEPA method, and gives either a free or total chlorine reading, depending on the reagent in use at the time. You want adequate chlorine residuals to provide a first defense against microorganism contamination, yet excess chlorine can form DBPs in the network.

Turbidity- 1720E Turbidimeter

Continuously flowing sample enters the turbidimeter body and flows through a bubble trap designed to vent any entrained air bubbles from the sample stream. Turbidity is measured by directing a beam of light from the sensor assembly into the sample in the turbidimeter body and measuring the scatter light at 90 degrees with a photocell. The amount of light scattered is proportional to the amount of turbidity in the sample. Corrosion products and biogrowth can elevate the turbidity level in the distribution system above that of the plant effluent. The "E" uses USEPA approved method 180.1.

Sensor Manifold

pH and Conductivity Probes from Hach/GLI

A patented differential pH sensor provides information on the acid/base nature of the water. A two-electrode conductivity sensor measures the total ionic concentration in the water.

Temperature

Temperature is measured to ensure the probes are measuring correctly and for other generic water quality information.

Sample Pressure

The sample pressure is measured to ensure that the sample going to the panel is within the specified range.

800-604-3493
Outside the United States, call 970-669-3050

*Specifications**

Hach Distribution Monitoring Panel

sc1000 CONTROLLER

Dimensions
22 x 51.5"

SAMPLE REQUIREMENTS

Sample Inlet
1/2" OD Tube Connection

Sample Flow
400-600 mL/min

Sample Pressure
20 - 100 psig

Sample Operating Temperature
5 to 40ºC

Waste/Drain
3/4" NPT Hose Barb Connection

Waste/Drain Pressure
ambient, free flowing

Sampler Connection
1/4" NPT on inlet manifold

ELECTRICAL REQUIREMENTS

Line Voltage
115 Vac / 60 Hz, 230 Vac

Power Consumption
90 VA maximum for CI17; 30 VA for others

Digital Output
RS 485 MODBUS

Hach CL17 Chlorine Analyzer

Range
0 to 5 mg/L free or total residual chlorine

Accuracy
±5% or 0.035 mg/L as Cl_2, whichever is greater

Precision
±5% or 0.005 mg/L as Cl_2, whichever is greater

Minimum Detection Limit
0.035 mg/L

Hach 1720E Turbidimeter

Range
0.01-100 Nephelometric Turbidity Units (NTU)

Accuracy
±2% of reading or ±0.015 NTU (whichever is greater) from 0 to 40 NTU; ±5% of reading from 40 to 100 NTU

Displayed Resolution
0.0001 NTU up to 9.9999 NTU; 0.001 NTU from 10.000 to 99.999 NTU

Repeatability
Better than ±1.0% of reading or ±0.002 NTU, whichever is greater

Sample Flow Required
200 to 750 mL/minute (3.1 to 11.9 gal/hour)

Hach On-line pH Monitor

Range
0-14 pH

Sensitivity
Less than 0.005 pH

Stability
0.03 pH per 24 hours, non-cumulative

Hach On-line Conductivity Monitor

Range
0-2000 µS/cm

Accuracy
±0.01 % of reading

Stability
0.05 % of span per 24 hours, non-cumulative

Repeatability
0.1% of span or better

Temperature
20 to 200ºC

Pressure Sensor (Gems)

Range
0 - 150 psi

**Subject to change without notice.*

Hach's Water Distribution Monitoring Panels are shipped fully tested on a panel for wall mounting with a start-up kit and manual. The start-up kit includes reagents, and calibration standards for the CL17, 1720E, pH, and conductivity instruments. All panels include three flow meters, one Y-strainer, one pressure sensor, and one sample pressure regulator with gauge.

Prod. No.	Description
6846000	GuardianBlue Water Panel
6856900	GuardianBlue Monthly Reagent Set (Free Chlorine and TOC Reagent)
6857100	GuardianBlue Monthly Reagent Set (Total Chlorine and TOC Reagent)
6857300	GuardianBlue Quarterly Reagent Set

ACCESSORIES

6846600	Pressure Regulator Brings sample pressure down to 100 psi where the panel can safely use it, upward limit of 300 psi.
6846700	sc1000 Controller Attachment Plate Allows sc1000 controller to be attached to the WDMP sc wheeled rack.
6844600	WDMP sc Mounting Rack, Wheeled
6840000	Probe Plug (extra)

COMPLETE CARE PACKAGES

FSPGuardianB12 Monthly service visit

Calibration Shelf

For Hach Event Monitor Trigger System see pages 502-503; for On-line TOC Analyzer see page 506.

For more information, call to request Literature #2566 or #2573, or visit www.hachhst.com

GuardianBlue® TOC Analyzer

Homeland Security Technologies

The GuardianBlue On-line Total Organic Carbon Analyzer increases system sensitivity to organic chemicals in the distribution system.

- *Greatly enhances the detection and classification capabilities of GuardianBlue Event Detection System*
- *When combined with the Water Panel, the TOC Analyzer exponentially increases the system's sensitivity to organic chemicals, creating one of the industry's most unique and innovative early warning systems. Total organic carbon is a crucial part of the fingerprint structure.*
- *Combines chemical and ultraviolet oxidation techniques in a low-temperature reactor to deliver direct TOC measurements*
- *Uses a multi-staged UV oxidation reactor and a chemically impervious non-dispersive infrared (NDIR) CO_2 detector system, assuring full compliance with Standard Methods 5310 C and EPA method 415.1*

One of Hach's most sophisticated water quality sensors

In the first analysis step, the sample is mixed with acid, converting the total inorganic carbon (TIC) into CO_2. The TIC sparger removes all the CO_2 from the sample solution. Subsequently, the TIC-free sample is mixed with sodium persulfate and routed through the UV reactor, oxidizing the TOC into CO_2.

The gas/liquid mixture is transported by the carrier gas into the gas-liquid separator (GLS), where the sample gas is separated and diverted into the NDIR detector for the direct, interference-free CO_2 measurement. The resulting CO_2 concentration measurement is directly proportional to the original TOC concentration found in the sample. The front panel displays the TOC concentration in mg/L.

For more information, call to request Literature #2573, or visit www.hachhst.com

*Specifications**

Range
0-25 mg/L

Accuracy
±2% of full scale at 25ºC

Repeatability
±2% of reading at 25ºC

Minimum Detection Limit
≤0.015 mg/L for 0-5 mg/L

Response Time
T90 ≤8 min.

Serial Communication
Multi-function RS-232 or RS-485 serial port (MODBUS®, CSV)

Mounting
Wall mount or optional rack mount

**Subject to change without notice.*

Includes one-month's supply of reagents, 2 UV lamps, view window, drain, and reagent level indicators.

Prod. No.	Description
6960300	GuardianBlue TOC Analyzer
6856900	GuardianBlue Monthly Reagent Set (Free Chlorine and TOC Reagent)
6857100	GuardianBlue Monthly Reagent Set (Total Chlorine and TOC Reagent)
6857300	GuardianBlue Quarterly Reagent Set (TOC Reagent only)
8814000K	TOC IR Bench Calibration Gas, Nitrogen Zero
8814100K	TOC IR Bench Calibration Gas, Carbon Dioxide, 1000 PPM
8814300	Adjustable Regulator and Flowmeter Combo for 103L gases
ACCESSORIES	
4300-0008	Purge Gas Generator with compressor, 110V
4300-0009	Purge Gas Generator with compressor, 230V
120161	Free Standing Rack, wheeled
COMPLETE CARE PACKAGES	
FSPGuardianB12	Monthly service visit

HACH® Be Right™

800-604-3493
Outside the United States, call 970-669-3050

Keep your GuardianBlue Event Detection System online and accurate with one of these service plans.

Start-up is included with every GuardianBlue Event Detection System. We also offer the optional Complete Care Packages called FSPWDMPSCFULL and FSPGuardianB12. With the FSPWDMPSCFULL plan, a Hach service professional visits your site on a quarterly basis and will assist you with upkeeping your GuardianBlue system. With this plan you will still need to replace the monthly reagents used by the instruments. The FSPGuardianB12 plan provides monthly site visits, and we take care of virtually everything.

Complete Care Package	Start-Up*	FSPWDMPSCFULL	FSPGuardianB12
System Commissioning/ Start-Up	■	■	■
System Training for up to 5 personnel	■	■	■
Parts included for preventative maintenance, including maintenance kit for 3 month, 6 month, 9 month, 1 year		■	■
Field Service priority access direct to Technical Consulting Services, just call the exclusive toll free number.	■	■	■
Annual Check-up		■	■
Emergency Repair @ Standard Rate	■		
Priority Emergency Repair @ no additional cost		■	■
Quarterly Reagent Replacement		■	
Quarterly Preventative Maintenance		■	
Monthly Reagent Replacement for instruments			■
Monthly Preventative Maintenance			■
Monthly Instrument/System Verification			■
Biannual audit by HST Development Team			■
Optional Reagent Reordering Plan Reagents must be ordered separately, and are not included with Complete Care Packages.	■	■	■

Included in GB system price.

GuardianBlue Early Warning System requires the use of reagents on a monthly and quarterly basis. These product numbers were designed to minimize any of the hassles associates with obtaining reagents and/or maintenance parts. Just ask your customer service representative to do a "future ship date" and tell the representative your desired ship date.

Choose either of these two Product Numbers depending on the reagent you use with your CL17 Chlorine Analyzer.

Prod. No.	Description
6856900	GuardianBlue Monthly Reagent Set, Free Chlorine All monthly reagents required to run the GuardianBlue system, using free chlorine for the CL17
6857100	GuardianBlue Monthly Reagent Set, Total Chlorine All monthly reagents required to run the GuardianBlue system, using total chlorine for the CL17

Choose this Product Number for the convenient delivery of your quarterly reagent and calibration standards.

6857300	GuardianBlue Quarterly Reagent Set (TOC Reagent only) All quarterly reagents and calibrations standards required to run the GuardianBlue system as per the specifications listed in manual.

Prod. No.	Description
MAINTENANCE KITS	
6856600	GuardianBlue 3 Month Maintenance Kit Replacement parts for all components of the GuardianBlue system after 3 months and 9 months of operation
6856700	GuardianBlue 6 Month Maintenance Kit Replacement parts for all components of the GuardianBlue system after 6 months of operation
6964300	GuardianBlue 1 Year Maintenance Kit Replacement parts for all components for the GuardianBlue system after 1 year of operation
6961700	Sampler Maintenance Kit Replacement parts for the Automatic Sampler after 1 year of operation
SPARE PARTS KIT (Designed for service professionals)	
6857700	GuardianBlue Spare Parts Kit for TOC and the Other Instruments If you are planning on servicing your own system, this may come in very handy. It contains various miscellaneous screws, filters, fuses, o-rings and the resample block.
6857600	Cyanide Surrogate—designed to exercise the sensors of the GuardianBlue System

Source Water Monitoring Panel

Continuously monitor the quality of your incoming source water.

- *Easily hooked up to Event Monitor for advanced event detection capability*
- *Anticipate changes to the treatment process that are needed to react to storms, algal blooms, industrial discharge, chemical spills, reservoir stratification/destratification, construction activity, sewage spills and other natural or man-made occurrences*
- *Improve process control—make necessary changes to your chemical quantities before the water enters your plant*
- *Improve your response time to changes in your incoming water*
- *Improve taste and odor problems*
- *Test up to six different parameters in one common trough, saving space and effort*
- *One controller for all sensors*
- *Can upgrade system with TOC analyzer or auto-sampler*

Source waters can be vulnerable to an accidental or intentional contaminant events. Monitoring an input water source can provide useful information to the Drinking Water Plants that process incoming water. Plants can shut their intake down should their Source Water Panel parameters change significantly.

Parameters Used to Monitor Source Water

Parameter	Product to Measure	Rational
Organics	UVAS sc probe, 5mm	Useful for season changes and accidental spills of organic nature
Ammonium	NH4D degradation of organic matter	May indicate presence of pesticides or other biological
pH	pH sensor, Ryton	Acid/base relationships within water
Conductivity	Conductivity Inductive	May indicate presence of ionic species; measures the total ionic concentration in water
ORP	ORP Sensor	May indicate sudden changes for oxidative or reducing species introduced into the water
Turbidity, High Range	SOLITAX t-line	May indicate some chemical compounds or increased bacterial levels (can measure suspended solids as well if proper Prod. No. ordered)
Dissolved Oxygen, Luminescent	LDO	Sudden change may indicate toxic conditions that effect algal respiration or increased levels of bacteria using up the oxygen
Level	Level	Useful with SWP trough
Nitrate	NITRATAX plus sc 5 mm	Nutrient level within water; agricultural runoff

*Specifications**

Dimensions
31" x 29"

Inlet Dimension
3/8 FNPT supplied with 1/2 OD tubing quick connect fitting

Drain (Outlet) Dimension
3/4 FNPT supplied with 3/4 barb fitting

Flow Required
Up to 4,000 mL/minute

Minimum Flow Requirement
900 mL/minute

Sample Pressure
20 – 80psig

Power
90-240 Vac for use worldwide

Certifications
UL/CSA/CE Compliant

Mounting
Wall or rack

Weight
65 lbs

Data Logging
about 28 days; first in, first out

Probes hold accuracy specifications.

Subject to change without notice.

Contact your local Hach sales representative to configure a Source Water Monitoring Panel for your application.

For more information, call to request Literature #2610, or visit www.hachhst.com

HACH®
Be Right™

800-604-3493
Outside the United States, call 970-669-3050

GuardianBlue® Verification Kit

An easy, portable way to verify your system is working properly at any time.

The GuardianBlue Verification Kit monitors:

- *pH*
- *Conductivity*
- *Arsenic*
- *Chlorine*
- *Turbidity*
- *Alkalinity*
- *Toxicity*
- *Hardness (total and calcium)*
- *Cyanide*
- *Radiation*

This convenient kit was designed to verify proper functionality of the GuardianBlue system anytime. Additional tests are included for emergency response purposes. What do you do when the GuardianBlue Event Monitor triggers and tells you there is an agent? Before you initiate your emergency response plan, use this kit and Hach's Technical Consulting Services to verify your instruments are working properly. Also use this kit to verify instrumentation accuracy after an event is recorded.

Prod. No.	Description
6857000	GuardianBlue Verification Kit
2510600	Replacement Reagent Set
6857600	Cyanide Surrogate—for additional verification of the GuardianBlue System

Automatic Sampler

When the Event Monitor triggers, it instantly signals the Automatic Sampler to capture a real-time water sample.

- *Rugged All-Weather Refrigerated Sampler is recommended for use with GuardianBlue*
- *Capture a real-time sample of the water causing an alarm*
- *Use the sample for additional forensic analysis*

The Automatic Sampler is an Important Complement of the GuardianBlue Early Warning System.

When the Event Monitor triggers on significant water quality deviations, it instantly signals the Sampler to capture a real-time water sample. This allows water utilities to conduct additional forensic analysis and testing on actual water samples. The GuardianBlue Early Warning System uses the Sigma 900 Max All-Weather Refrigerated Sampler to ensure maximum flexibility and dependability and to allow water utilities to meet all sampling requirements.

Prod. No.	Description
007184	Automatic Sampler Recommended for use with GuardianBlue
6961700	Sampler Maintenance Kit (1 year)
FSP900Max	Field Service for 900Max Sampler

Eclox™ Rapid Response Water Test Kit

Homeland Security Technologies

Rapid results for seven tests in one easy-to-use kit.

- *Rapid detection of contaminated water*
- *Reliable indicator of relative water quality*
- *Used in a wide range of environmental conditions*
- *Software provided for data download*
- *Sensitive to heavy metals, poisons and chemical warfare agents*
- *Used for environmental mapping studies, distribution monitoring studies, emergency response, and more*
- *New ISO Luminescent Bacteria Test available*

Eclox Water Test Kit includes tests for:

1. Chemiluminescence toxicity screening (Eclox)
2. Arsenic
3. Pesticide/Nerve Agents
4. Chlorine
5. Color
6. Total Dissolved Solids (TDS)
7. pH

The Hach Eclox Water Test Kit packages the Eclox chemiluminescence toxicity test, along with screening tests for pesticide/nerve agents and field-proven Hach quality tests. This field kit is designed to serve in various applications as a first-line tool in general water quality assessment. As such, it provides economical, qualitative indication of water quality that quickly helps operators, technicians, and first responders determine if action is required. A baseline, using ECLOX, for each site is required for optimal interpretation.

The technique used by the Eclox luminometer is the same as that validated by the USEPA Environmental Technology Verification (ETV) program to yield reliable detection of heavy metals, poisons, and chemical warfare agents on-site. It is the preferred solution for municipalities seeking instrumental toxicity assessment and military specifications.

For more information, call to request Literature #2404, or visit www.hachhst.com

*Specifications**

Dimensions
520 x 450 x 215 mm
(20.5 x 17.5 x 8.5 in)

Weight
9 kg (20 lbs.) fully loaded

Temperature
Tested from -20 to 55 °C
(-4 to 131°F)

Quality Standards
Manufactured by ISO9000 certified company

Military Standards
Def Stan 08-41 Chemical hardness, Def Stan 07-55 Robustness, Def Stan 00-35 Environmental conditions

Batteries (for luminometer)
Alkaline cell, lithium cell, AA

Battery Life (for luminometer)
AA batteries- more than 250 tests, Other batteries- more than 2000 tests

Compliance
CE Marked for compliance with European standards

Data Logging (for luminometer)
Up to 60 test results recorded in full detail

Communications (for luminometer)
RS232 cable provided for results download to computer

Software
Database software provided to record and analyze results

Tests
Arsenic, Chemiluminescence toxicity, Chlorine-free and total, Color, APHA Platinum-Cobalt, Nerve agents, Pesticides, pH, Total Dissolved Solids (Conductivity)

Shelf Life
Two years

Storage Conditions
Ambient temperature

**Subject to change without notice.*

Prod. No.	Description
2886800	Eclox Water Test Kit, includes consumables, reagents, luminometer, batteries, apparatus, case, and manual
2886900	Eclox Reagent Set includes 50 chemiluminescence tests, 10 pesticide/nerve agent tests, 50 each free and total chlorine tests, 10 each pH 4.01 and 7.00 Singlet solutions, 100 EZ arsenic tests
2887500	Eclox Chemiluminescence Reagent Set, 50 tests
94-9004	Eclox Chemiluminescence Reagent Set, 100 tests
2887600	Pesticide/Nerve Agent Test Strips, 25 tests
1407799	DPD Free Chlorine, 100 tests
1407699	DPD Total Chlorine, 100 tests
2769920	Singlet Solution Package, pH 4.01 and 7.00, pk/10 each
2307542	NaCl, 85.47 mg/L, 100 mL each
2823200	EZ Arsenic Reagent set, 100 tests
10-9004	Mustard Gas Test (optional), 50 tests

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800-604-3493
Outside the United States, call 970-669-3050

Emergency Response Tool Kit

Ready to respond to water quality emergencies.

- *Based on the EPA's Response Protocol Toolbox*
- *Contains field-proven key tests recommended by the EPA*
- *Portable laboratory in one package*
- *Includes portable Radiation Monitor*

Meets Government Agency Recommendations

The Hach Emergency Response Tool Kit is closely modeled after the EPA's December 2003 recommendations for a core field test kit for drinking water site characterization. It includes a radiation monitor for first-level field safety screening, as well as the equipment, reagents, spare parts, and documentation needed to perform the rapid chlorine, cyanide, and pH tests recommended by the agency for characterizing hazards at a particular site.

Utilities will find this organized kit, with water quality tests that are easy to learn and use, an efficient and effective way to meet EPA-recommended preparedness.

Prod. No.	Description
2884100	Emergency Response Tool Kit
TEST KIT REFILLS	
1407799	DPD Free Chlorine reagent, 100 individual 5-mL samples
2438200	Cyanide reagent, 100 tests
pH BUFFERING SOLUTION	
Refills for the pH buffer solution include 20 singlet packets of buffer solution.	
2770020	pH 4.01 buffer solution
2770120	pH 7.00 buffer solution
2770220	pH 10.01 buffer solution

For more information, call to request Literature #2402, or visit www.hachhst.com

Specifications*

Emergency Response Tool Kit
Dimensions: 44 x 26 x 22 cm (17.5 x 10.25 x 8.5 in.)

CN-66F Free Chlorine Test Kit
DPD, Color Disc
Range: 0 to 3.5 mg/L with accuracy of ±0.1mg/L

CYN-3 Cyanide Test Kit
Pyridine-Pyrazolone, Color Disc
Range: 0 to 0.3 mg/L range with accuracy of ±0.1mg/L

Pocket Pal pH Tester
Range: 0.0 to 14.0 with accuracy of ±0.1 pH at 20°C
Operating Temperature: 0 to 50°C (32 to 122°F)

Pocket Pal Conductivity Tester
Range: 10 to 1990 µS/cm with accuracy of ±2% of reading at 25°C calibration and 25°C sample. ±10% of temperature compensated µS/cm readings over 0 to 50°C range.
Operating Temperature: 0 to 50°C (32 to 122°F)

Inspector Alert Nuclear Radiation Monitor
(See Lit. # 2490 for detailed specifications.)
Range: 0.001 to 100.0mR/hr. 0 to 350,000 CPM, 1 to 9,999,000 total counts, 0.01 to 1,000 µSv/hr, 0 to 5,000 CPS with accuracy of 15% up to 50 mR/hr; 20% up to 100 mR/hr
Operating Temperature: -20 to 50°C (-4 to 122°F)

**Subject to change without notice.*

Hach Technical Training Center (HTTC)

The Hach Technical Training Center offers a variety of classes, the ones outlined here are specific to Distribution Monitoring and the products Hach offers for a complete solution.

Some classes are offered at Hach Company in Loveland Colorado, others are offered at your site. You can get certified in the GuardianBlue Event Detection System by completing all three levels of training.

Prod. No.	Description
TRD10101	Basic System Training, WDMP (onsite)
TRD10102	Basic System Training, WDMP & TOC (onsite)
TRD10103	Level II Basic System Training, WDMP/TOC/Event Monitor (in Lvd)
TRD10104	Level II Basic System Training, WDMP/TOC/Event Monitor (onsite)
TRD10201	Level III-Basic & Advanced, Guardian Blue (Lvd & onsite)
TRD10202	Level III-Basic & Advanced, Guardian Blue (onsite only)

ToxTrak™ Toxicity Test Kit

Evaluate water quality in emergency situations.

- *Confirm the integrity of drinking water supplies—at the source—during treatment or in the distribution system*
- *Protect wastewater treatment plant biomass*
- *Protect receiving waters from toxic substances*
- *Evaluate the toxicity of chemicals used in the lab or the plant*
- *Provides results within forty-five minutes*

ToxTrak™ Toxicity Test Kit contains:

25 tests including comparator, reusable viewing tubes, 12 Total Bacterial Count Medium tubes, 50 ToxTrak Reagent Pillows, ToxTrak Accelerator Solution, transfer pipets, and apparatus.

Colorimetric Method

Toxicity-the inhibitory effects of a waste stream on bacterial growth-can be monitored using methods such as direct growth, specific enzyme activity, bioluminescence, and respiration. These methods usually require lengthy incubation times, centrifugation, solvent extraction, laborious colony-counting procedures, and expensive equipment. The ToxTrak™ Toxicity Test uses a colorimetric method to determine toxicity with a spectrophotometer or color disc comparator. The colorimetric method is quick and inexpensive, making it practical to monitor more frequently and with larger numbers of samples.

Economical Alternative to Bioassays

ToxTrak is an inexpensive alternative that has results comparable to respirometric methods measuring dissolved oxygen consumption. Use ToxTrak to screen influent and effluent and/or process waters from wastewater treatment plants, pulp and paper facilities, power plants, chemical production facilities, petroleum manufacturing, and metal plating facilities.

Prod. No.	Description
2597700	ToxTrak Toxicity Test Kit
2597200	ToxTrak Reagent Set (for use with photometers)
2597800	Lauryl Tryptose Broth pk/30
2560766	ToxTrak Reagent Powder Pillows; 2 pillows per test / 50 per pkg
2560836	ToxTrak Accelerator Solution, 4 drops per test / 15 mL SCDB
2277700	Total Bacteria Count Broth Tubes; 1 per test / 12 per pkg
27242	Water, deionized; varies per test 100 mL

Nuclear Radiation Monitors

Radalert™ 100 and Inspector Alert™ Nuclear Radiation Monitors

- *Portable radiation monitors for lab and field use*
- *Measures alpha, beta, gamma and x-radiation*
- *Easy-to-read digital display*
- *Capable of detecting radiation leaks and contamination*
- *Monitor personal exposure, changes in background radiation and an area or perimeter*
- *Safety-first calibration feature eliminates personal exposure*
- *Total/Timer feature allows timed reading for precise measurement of low-level contamination*
- *Halogen-quenched, Geiger Mueller tube detector with mica window*
- *Handheld, battery operated*

Prod. No.	Description
2884000	Radalert™ 100 Nuclear Radiation Monitor
2884200	Inspector Alert™ Nuclear Radiation Monitor

*Specifications**

RADALERT™ 50 NUCLEAR RADIATION MONITOR

Operating Range
mR/hr- .001-50.00 CPM- 0-50,000
Total- 0-60,000 counts

Sensitivity
1000 cpm/mR/hr referenced to Cs-137

Accuracy
±10 %, ±15% max

INSPECTOR ALERT™ NUCLEAR RADIATION MONITOR

Operating Range
mR/hr - 0.001to 100.0, CPM- 0 to 350,000
Total- 1 to 9,999,000 counts, µSv/hr- 0.01 to 1,000
CPS- 0 to 5,000

Sensitivity
3500 CPM/mR/hr referenced to Cs-137

Accuracy
± 15% 0-50 mR/hr and 0-130,000 CPM;
± 20% 50-100 mR/hr and 130,000-350,000 CPM

Temperature Range
-20 to 50ºC (-4 to 122ºF)

**Subject to change without notice.*

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