ORTEC®

Detective-Remote™

Remote Monitoring and Control Software

Instrument Remote Monitoring and Control Software

"The right software, the right solution,
the right answer!"

AMETEK®
ADVANCED MEASUREMENT TECHNOLOGY

Detective-Remote™

Detective-Remote is a Windows®-based software for use in a range of applications in conjunction with one or more ORTEC Detective-200 radionuclide identifiers or other compatible ORTEC Detective models. These applications involve detection and identification of radioactive sources either in motion relative to the detector, at a distance from the detector, or both.

With Detective-Remote software, Detective Identifier hardware, necessary cables, laptop computers, and other ancillaries, solutions may be easily configured for:

• Mobile Search Applications

These are generally measurements in which one or more vehicle mounted Detective instruments collect spectral data in drive-by or fly-by mode. Detective-Remote software can control simultaneous data acquisition by multiple Detective instruments, processing the composite data through the advanced Detective ID algorithms and posting alarms IN REAL TIME when sources are detected. All data points are stored along with time and GPS co-ordinates and can be exported into other applications such as spreadsheets, GIS applications, or reports.

• Maritime Nuclide Identification

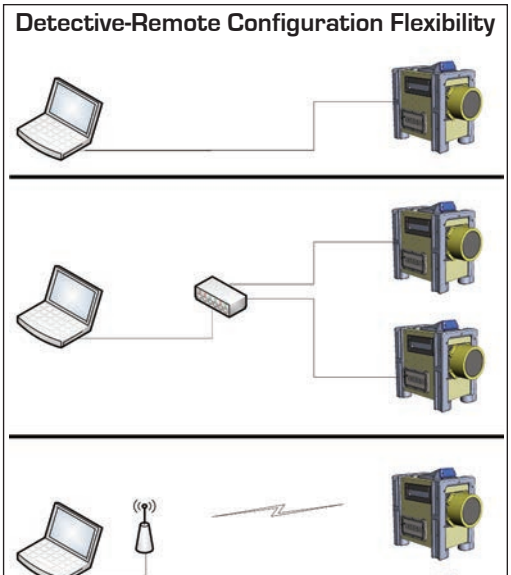
In maritime applications the Detective-200 ruggedness is a vital prerequisite. The requirement for stand-off (stationary) detection can be added to the search application in order, for example, to scrutinize a vessel at sea. The Detective-Remote software provides a simple, user-friendly display of alarms, nuclides, and threats. A “long count” mode is provided for distant stand-off objects.

• Portable Choke Point Monitoring

The term choke point monitoring is intended to convey a measurement when the measurement system is stationary and the source transits through a detection zone. This can either be a steady transit or a “wait in” measurement. Examples include:

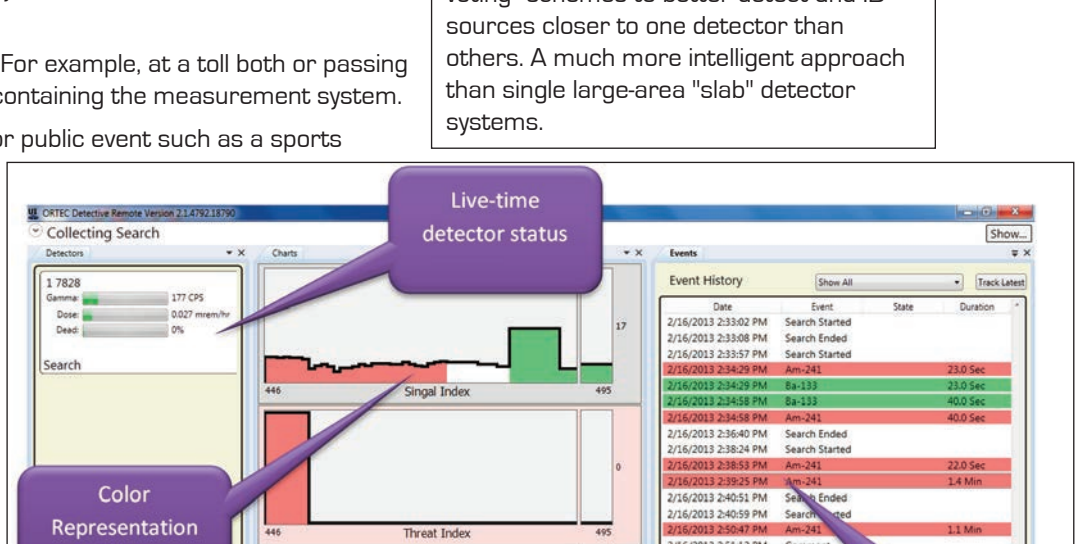
- Monitoring of traffic flows on a highway. For example, at a toll both or passing under a bridge, or passing by a vehicle containing the measurement system.
- Monitoring of individuals entering a major public event such as a sports arena.
- “Ad-Hoc” contamination or health physics measurements after a nuclear incident.

Detective-Remote Configuration Flexibility



Detective-Remote measurement solutions are easily configured to meet the CONOPS requirement that USB and wireless communications methods be provided.

Advanced ORTEC Detective ID algorithms allow Detectives in multi-detector configurations to participate in "majority voting" schemes to better detect and ID sources closer to one detector than others. A much more intelligent approach than single large-area "slab" detector systems.



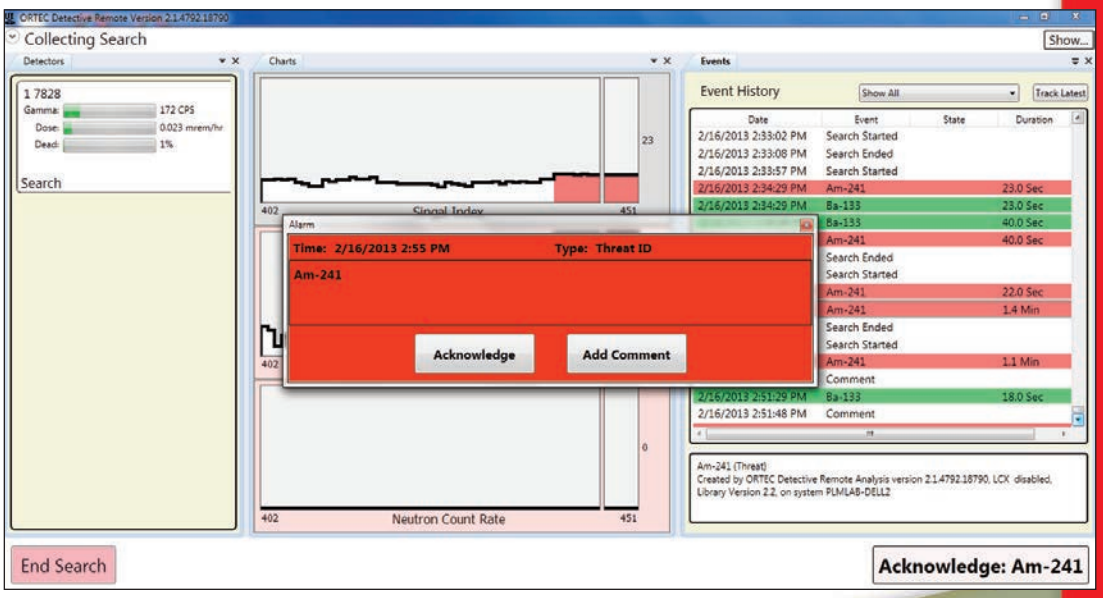
Detective-Remote Software Features

- Popup alarms.
- Automatic identification.
- Color indication of Threat, Suspect and Innocent alarms.
- Search, Stand-in, and Review mode functionality.
- Real-time system status checking.
- Real-time graphing.
- Wireless operation.
- Built in reachback reporting capability.
- Configurable views provide customization to support different CONOPS:
    - Intuitive software layout: simple to learn.
    - Built on Microsoft SQL Server 2008 database server software.
    - Supports single or multiple Detective instrument configurations.
    - Combines the data from multiple detectors for the most sensitive and accurate detection and identifications.
    - Uses the optimum combination of data to get the most sensitive results in real time.
- Increased sensitivity LCX identification mode.
- The Data Record for each measurement point contains:
    - Identified source(s) list.
    - Time and location.
    - Threat and Signal indices.
    - Spectroscopic data.
    - Gamma ray (and optional neutron) gross count rate data.
- ANSI N42.42 data format.

The Detective-Remote software is designed to be a simple to use application for operating hardware in mobile detection and identification applications. The system user interface is focused on three modes of operation, “Search”, “Stand-In”, and “Review”. Each mode of operation is slightly different but designed to support all phases of a mobile search mission.

The Detective-Remote software application provides multiple levels of control and operation of the system. The standard configuration is “Search Mode” which is an easy user interface that monitors for radionuclides over several configurable integration times.

The integration times can be set to accommodate multiple CONOPS where short and long count times may be required for a particular mission. The instrument collects one spectrum per second and runs the ID algorithm against a user selectable sliding average. This mode is more sensitive to sources that move relative to the instrument.



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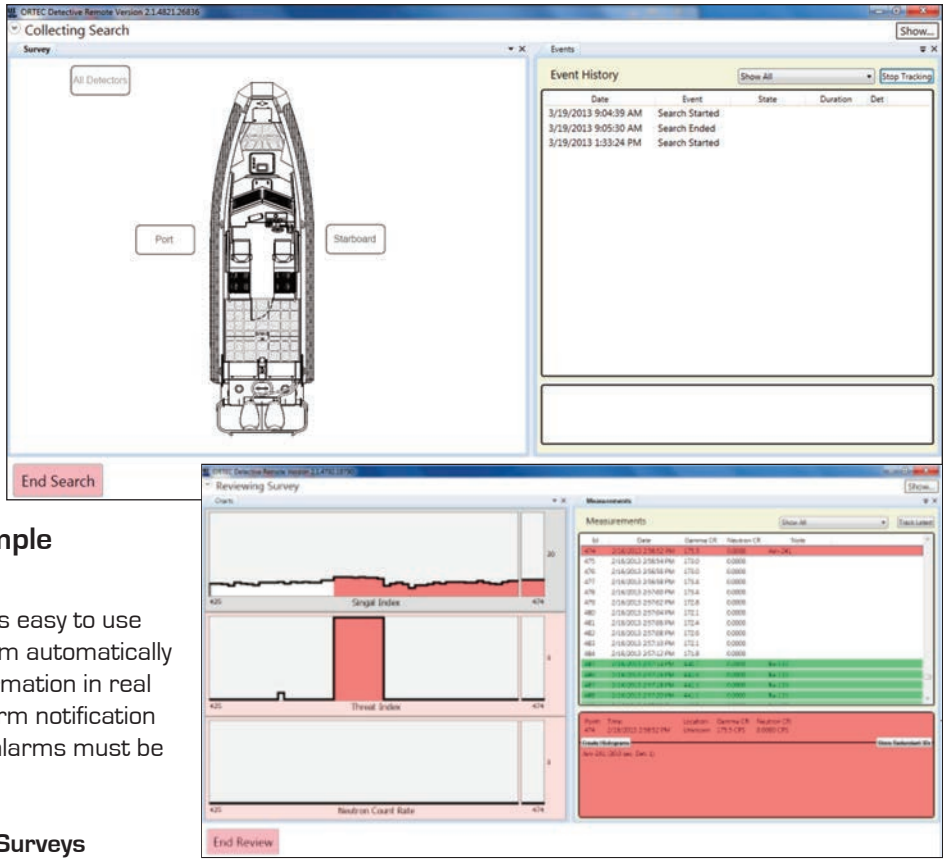
A Stand-In mode is available in the Detective-Remote software to support longer acquisition times. The instrument collects a spectrum based on a long integration/acquisition time. This mode is ideal for operations that support interrogation or longer inspection times.

A Review mode is available to provide users with a complete second by second timeline review of previously acquired surveys and searches. This mode is suitable for reviewing information on an alarm or event that requires adjudication



Detective-Remote in Use, the Simple Operator Interface

The Detective-Remote software system is easy to use with minimal training required. The system automatically begins collecting data and analyzing information in real time. If an alarm limit is exceeded, an alarm notification occurs showing the alarm condition. All alarms must be acknowledged or they will persist.

Data Collection, Analysis, and Storage Surveys

The Detective-Remote system performs radiation surveys that identify the source of radiation based on the radionuclide identification library. A survey is a record of all the spectroscopic data, location data (if a GPS is being used), and analysis results collected over a period of time.

Survey Data Capture and Analysis

Whenever the User Interface and Analysis programs are running, and the Detective-200(s) are transmitting data, the system continuously monitors for all of the radionuclides in the library, and posts IDs and alarms as appropriate.

Each Detective is polled approximately once per second. As mentioned earlier, the algorithm combines the data from multiple detectors for the most sensitive and accurate detection and identifications.

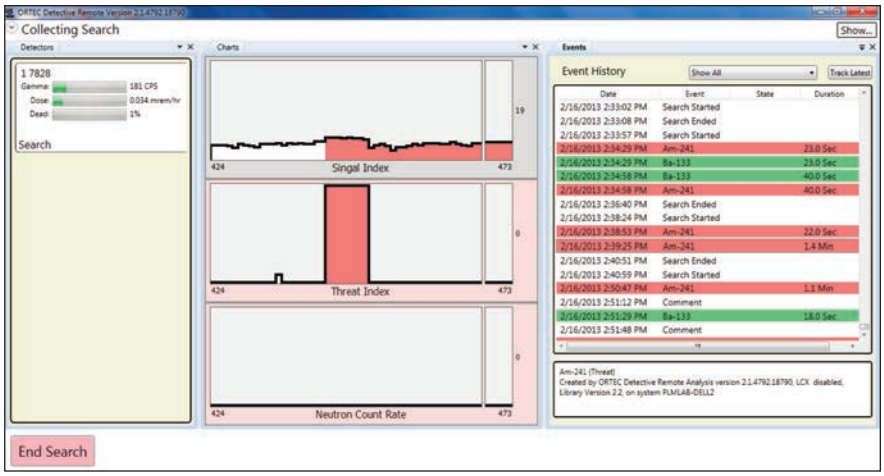
The survey database records the following:

- Raw spectrum data from each detector, collected at least once per second.
- A list of the identifications that were present along with their confidence values and the combination of detectors and data integrators that produced each identification.
- The time and GPS coordinates associated with the data.
- Signal Index and Threat Index values.

Threat and Signal Indices and Long Count Mode

In the Charts tab (right), the center of the display shows "Threat" and "Signal" Indices in order to alert the operator to changes in the gamma-ray flux below the alarm level that might otherwise go unnoticed in a survey.

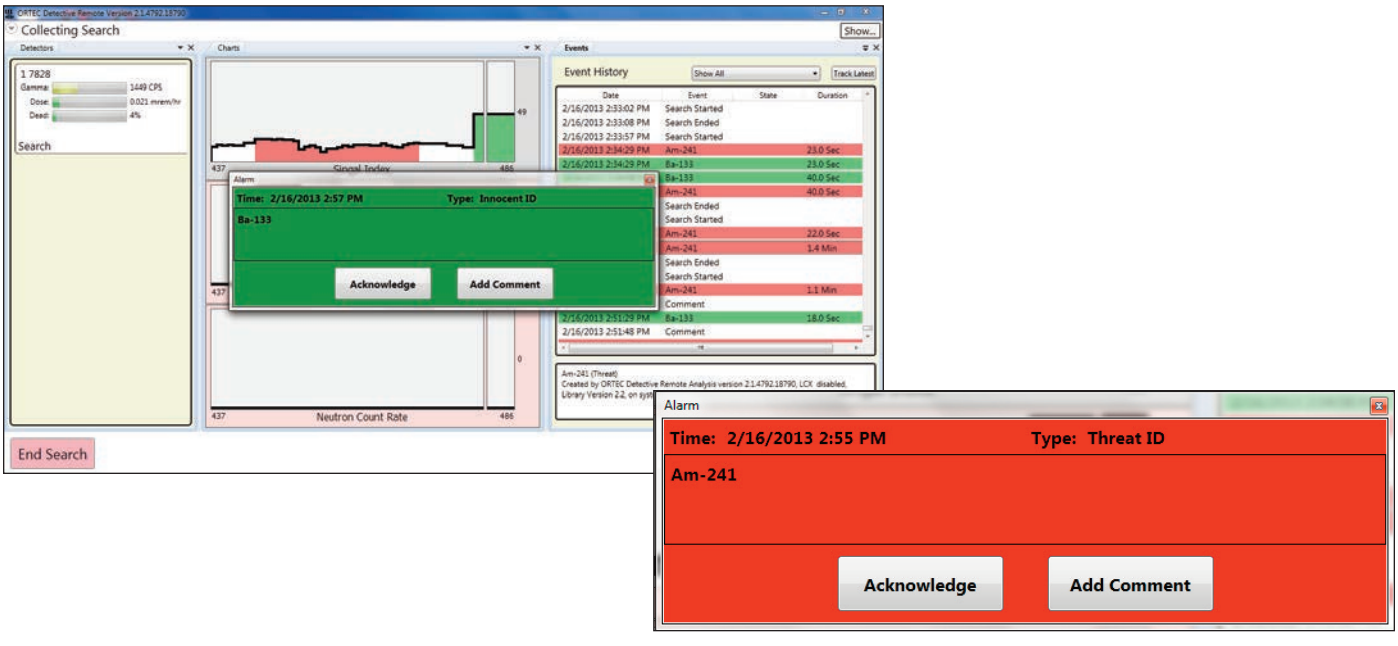
The Threat Index is an indication of the highest peak confidence level currently occurring for any of the nuclides designated as "threat" in the table of nuclides. The Signal Index is similar, but count rate related. A raised Threat or Signal Index indicates where stationary measurements or further investigations should be performed.



Real-Time Alarm Indicator

Each time an alarm is generated, an alarm ID and the corresponding alarm color are posted in the Event or Alarm window in chronological order.

The application also provides a user configurable "popup" alarm dialog box along with audio that will indicate to the user that an alarm event has occurred. If multiple alarms are generated at one time, they are presented highest priority first.



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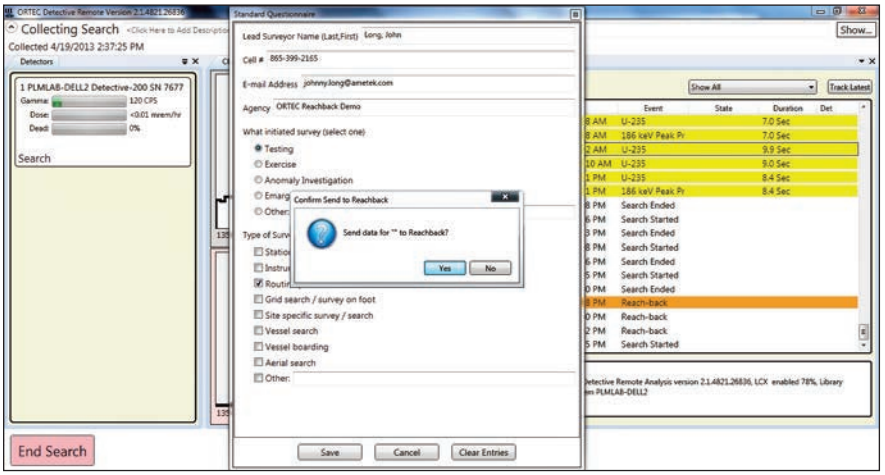
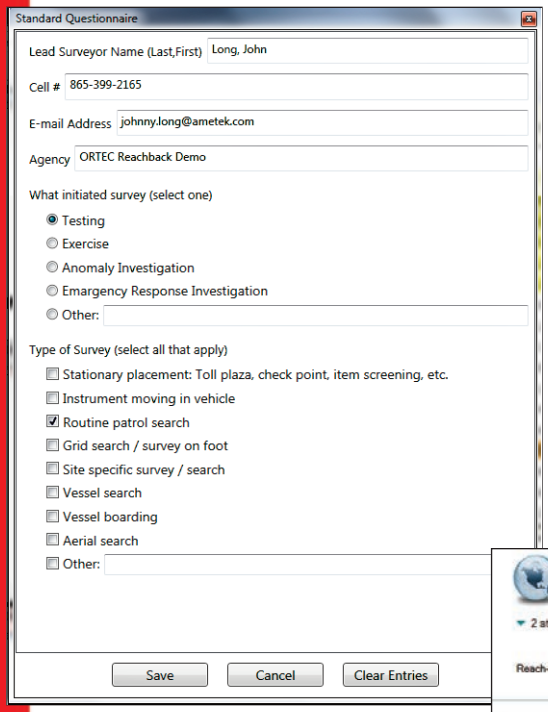
Reachback Process

Detective-Remote includes an easy to use reachback process that enables users to quickly and easily send alarm information, spectroscopy data, and detailed parameters about the potential threat to fusion or command centers designated as reachback support service areas.



- Any alarm can be selected from the list of events and with a right click of the mouse or a touch screen selection will launch the reachback information form that the user can populate with specific information about the alarm.
- All data and information associated with the alarm is packaged in a formatted email that is sent to a pre-configured email address.

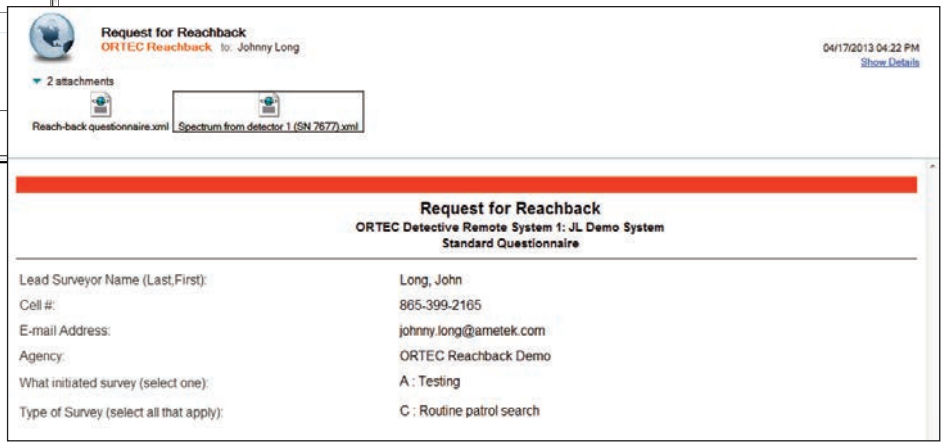


The integrated reachback process is designed to provide users with the ability to monitor, capture and send representative information about an alarm or suspect alarm with little to no typing or keyboard control.

- Users select the alarm from the event list.
- Right click to run reachback.
- A pre-configured form is opened for review by the user.
- User presses send, and an email containing all of the spectra and associated information is sent to their pre-configured fusion center.

The reachback form is completely configurable and can contain specific information that an agency may want as part of their adjudication protocol.

The email containing the information required by the reachback personnel is simple and easy to recognize. The configuration flexibility supports multiple agencies operating in a single location.



Detective-Remote Radionuclide Library

The following table lists the threat and innocent identifications for the standard identification mode.

THREAT	INNOCENT	INNOCENT	INNOCENT	INNOCENT	INNOCENT	INNOCENT
Am-241 (shielded)	Ac-225	Cf-252/Cf-249	Ga-64 (shielded)	Ir-192 (shielded)	Pd-103	Tc-99M
Am-241	Ac-227	Cm-242	Ga-67	Os-194/Ir-194	Rh-105	Te-132
Am-241 (59.5 keV)	Ag-110m	Cm-243	Ge-68/Ga-68	Ir-194 (shielded)	Ru-97	Tl-201
Enriched Uranium	Ar-41	Cm-244	Gd-153	K-40	Ru-106/Rh-106	Tl-200
HEU	As-72	Co-56 (shielded)	Gd-159	Kr-87	Po-210	Tl-202
Neutron Cr {0}	As-74	Co-55	Hf-181	Kr-88	Pr-144	Tl-204
Neutrons Present	At-211	Co-56	Hg-203	Kr-88 (shielded)	Ra-223	Th-229
Np-237	Au-198	Co-57	Ho-166m	La-140	Ra-226	Th-230
Pu-239	Ba-133	Co-58	Ho-166m (shielded)	Lu-172	Ru-103	Th-232
U-232	Ba-140	Co-60	Ho-166	Lu-176	Sb-124	Tm-170
U-233	Be-7	Cr-51	I-123	Lu-177	Sb-124 (shielded)	Tm-171
U-235	Bi-207	Cs-131	I-123 (shielded)	Lu-177M	Sb-125	U-232/Th-232
U-238	Bi-212 (Th232/U232 daughter)	Cs-134	I-124	Mn-52	Sb-127	W-188/Re-188
	Bi-214 (Ra226 daughter)	Cs-137	I-125	Mn-54	Sc-46	Xe-127
	Br-76	Cu-64	I-126	Mn-56	Se-75	Xe-133
Suspect (LCX Mode only)	Br-76 (shielded)	Cu-67/Ga-67	I-126 (shielded)	Mo-99	Sm-153	Xe-131M
186 Peak Present	Br-76 (heavily shielded)	Eu-152	I-131	Na-22	Sm-153 (shielded)	Xe-135
375/414 Peak Present	Br-77	Eu-154	I-131 (shielded)	Na-24	Sn-113	Y-88
	Ca-47	Eu-155	I-132	Nb-94	Sr-82/Rb-82	Y-91
	Cd-109	Eu-156	I-133	Nb-95	Sr-85	Yb-169
	Cd-115	F-18	I-134	Nb-96 (shielded)	Sr-89	Zn-65
	Ce-139	Neutrons on Fe	I-135	Nd-147	Sr-90/Sr-89/ Y-90	Zn-62
	Ce-141	Elevated radiation or beta emitter	In-111	Pa-231	Ta-182	Zr-95
	Ce-144	Ga-64	Ir-192	Pb-203	Tc-96	

Detective-Remote™

Ordering Information

DETDX-200
Ultra-High-Sensitivity, Ruggedized, Transportable HPGe Radioisotope Identifier (Gamma Only) with AC/DC power adapter charger, automobile power cable, external battery kit, and wheeled transport case, and Detective-Remote software with Laptop computer, external GPS, and MAESTRO software.

DETDX-200-2
Includes 2 each DETDX-200 Ultra-High-Sensitivity, Ruggedized, Transportable HPGe Radioisotope Identifiers (Gamma Only) with AC/DC power adapter charger, automobile power cable, external battery kit, and wheeled transport case, and 1 each Detective-Remote software with Laptop computer, external GPS, and MAESTRO software.

DETDX-200-4
Includes 4 each DETDX-200 Ultra-High-Sensitivity, Ruggedized, Transportable HPGe Radioisotope Identifiers (Gamma Only) with AC/DC power adapter charger, automobile power cable, external battery kit, and wheeled transport case, and 1 each Detective-Remote software with Laptop computer, external GPS, and MAESTRO software.

DETEX-200
Ultra-High-Sensitivity, Ruggedized, Transportable HPGe Radioisotope Identifier (Gamma and Neutron) with AC/DC power adapter charger, automobile power cable, external battery kit, and wheeled transport case, and Detective-Remote software with Laptop computer, external GPS, and MAESTRO software.

DETEX-200-2
Includes 2 each DETEX-200 Ultra-High-Sensitivity, Ruggedized, Transportable HPGe Radioisotope Identifiers (Gamma and Neutron) with AC/DC power adapter charger, automobile power cable, external battery kit, and wheeled transport case, and 1 each Detective-Remote software with Laptop computer, external GPS, and MAESTRO software.

DETEX-200-4
Includes 4 each DETEX-200 Ultra-High-Sensitivity, Ruggedized, Transportable HPGe Radioisotope Identifiers (Gamma and Neutron) with AC/DC power adapter charger, automobile power cable, external battery kit, and wheeled transport case, and 1 each Detective-Remote software with Laptop computer, external GPS, and MAESTRO software.

DETECTIVE-REMOTE-MOB-SYS
Detective-Remote software with Detective software update, Laptop computer, external GPS, and MAESTRO software.

For price and delivery, email ortec.info@ametek.com.

Specifications subject to change
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