

ORTEC[®]

Micro-Detective-HX

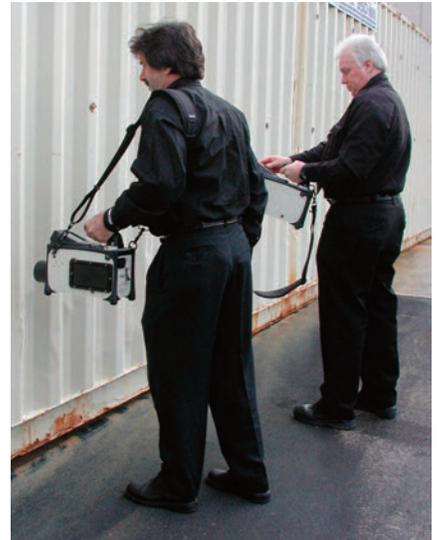
Enhanced Capability, Ultra-Light, High-Fidelity
Hand-Held Radioisotope Identifier



AMETEK[®]
ADVANCED MEASUREMENT TECHNOLOGY

Micro-Detective-HX

- Wireless Remote Monitoring – Remotely control and monitor from a central location.
- Portable – Light weight, long battery life, “one-hand” operation with GPS location.
- Simple to Operate – Touchscreen or push button with audible and visual alarm indicators.
- Rugged – High or low temperatures, water proof, dust proof and drop hardened.
- Superior Algorithms – Low false alarm rates, more than 150 nuclide IDs and superior SNM search.
- Gamma and Neutron Detection – Identification, dose rate and count rate.
- Detects and Identifies x-rays and gamma rays from radioactive sources in any form [solid, liquid, or gas]
- Auto Calibration – Continuous real-time detector stabilization.
- Detective-Remote Compatible – Use as a mobile, transportable or choke point monitor.



Micro-Detective-HX is the latest development of high purity germanium (HPGe) based hand-held radioisotope identifiers “RID”s. The “-HX” is a commercially available version hand-held that includes additional features carried out under contract with the U.S. Department of Homeland Security.¹

The Micro-Detective-HX Features

- 40% lighter than industry-leading ORTEC Detective-EX.
- 50% reduction in overall size.
- Simple to operate: Bright, clear, SUNLIGHT READABLE display, touch sensitive screen, and intuitive menus.
- Rugged: Enclosure, display, and all perforations are sealed against moisture and dust.
- Built in neutron detector.
- Built in GPS.
- Removable data storage SD card.
- WiFi 802.11 wireless communications.
- Wireless Mobile MCB Server software.

Plus the latest improvements

- Operating time of up to 5 hours on a single battery.
- “Snap-open” battery door for rapid battery exchange with minimal down-time.
- New improved, silent running, low-power cryo-cooler.

¹The contract was awarded by the U.S. Department of Homeland Security (DHS) Domestic Nuclear Detection Office (DNDO) under the Human Portable Radiation Detection System (HPRDS). The HPRDS program began in 2006 in order to develop next-generation hand-held devices that would bring faster and more reliable means to detecting and identifying radioactive materials. Of the five contractors initially chosen to improve and enhance their radiation identification technology, AMETEK recently was selected by DHS to continue in the HPRDS program.

Micro-Detective-HX

Hardware

The Micro-Detective-HX features compact, light weight and rugged hardware. A 50 mm diameter HPGe crystal in a “hardened” cryostat is cooled by an integrated low-power Stirling-cycle cryo-cooler. The latest version Micro-Detective-HX features a new cooler, offering reduced levels of acoustic noise and vibration, and longer operation life. The hardened cryostat is entirely free of conventional molecular sieve, allowing the instrument to be turned off or on at any point in the detector cool down or warm up cycle without risk. This is impossible with conventional HPGe cryostat systems which require careful temperature cycling procedures to avoid damage.

A built-in digital MCA system and powerful data processor are included. All models feature the same bright and clear VGA resolution display, readable in direct sunlight, with a touch sensitive operator screen. Menu navigation is highly intuitive. The radionuclide gamma-ray spectrum may be displayed and manipulated (e.g., vertical scale, zoom) like a conventional multichannel analyzer.

Gamma and neutron count rate and gamma dose rate are displayed continuously both numerically and in bar graph form.

In the latest version, the Micro-Detective-HX internal battery provides enough power for up to 5 hours of operation and is easily replaced in seconds, allowing continuous in-field operation. At just under 16 lbs. in weight, the Micro-Detective sets a world record for portable, high resolution nuclide identifiers, by a wide margin.

Exclusive to the -HX

- One-handed control of instrument through two handle-mounted buttons, or through touchscreen.
- Visual Alarms: LEDs provide clear and simple indication of nuclide type: threat, innocent or suspect, plus error indication.
- Vibrating alarm built into handle.
- 3-level auditory alarms can be routed through headphones.

-HX Software Approach

HPGe is already acknowledged as the “perfect” detector for a radioisotope identifier. It has ~40 times better energy resolution (selectivity) than the nearest alternative. Unlike lower-resolution detector types, HPGe crystals must operate at cryogenic temperatures — an engineering issue ORTEC solved 25 years ago. Several hundred Detective family instruments in the field attest to the reliability of today’s miniature Stirling cycle coolers used for this purpose.

Beyond the intrinsic selectivity of the HPGe detector type, the ultimate performance in terms of its fidelity of identification (zero false positives or false negatives is the goal) depends on the software algorithms. Its practicality in use depends on reliable hardware and a user interface which is easy to learn and interpret.

The Micro-Detective-HX performance has been enhanced with the introduction of the new Detective-Pro user interface. Further reductions in both false positive and false negative results have been achieved, combined with a new design user interface and new modes of operation.

The Detective-Pro User Interface is

- Clear.
- Simple and intuitive.
- Informative.
- Based on simple-to-use hardware, even with one gloved hand.



The snap-open battery compartment makes battery changing simple.



Desktop battery charger (MICRO-DET-ACC-CHGR). Recharges battery (MICRO-DET-ACC-BAT) in 4 hours.