ORTEC®

AMETEK®

Detective DX1-TS

Detective DX1 “Trans-SPEC Edition”

The Premium Portable High Resolution Gamma Spectrometer for In-Situ Measurements



- Large P-Type High Purity Germanium Detector (65 x 50 mm) >40% Relative Efficiency
- High Reliability Stirling-Cycle Cooler with Hardened Cryostat
- Digital Signal Processing and active low frequency noise reduction (LFR)
- Rugged design for harsh environments (IP65 compliant)
- Compact and Light-Weight (15.95 lbs / 7.23 kg)
- Long Battery Life (8 hours) with two hot swappable batteries
- Large (5 inch) High Resolution capacitive touch screen easily readable in sunlight
- Internal and Removable File Storage (>100,000 spectra)
- Computer Control via USB, Ethernet, and Wi-Fi compatible with ORTEC Applications
- Mobile Phone, Tablet, and Computer application mirroring on iOS, Android, and Windows platforms

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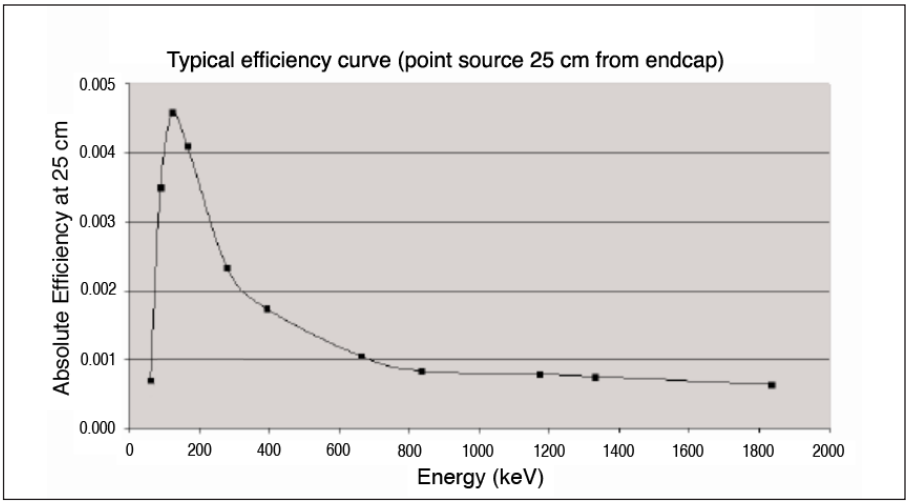
The DETECTIVE DX1-TS is a portable, all-inclusive, high resolution gamma spectrometer for in-situ measurements. It can be used as a stand-alone instrument to collect spectra in the field or controlled by a computer connected via USB, Ethernet, or Wi-Fi using applications such as MAESTRO-Pro (included), GammaVision, Isotopic, and others.



The DETECTIVE DX1-TS is physically identical to the popular DETECTIVE DX1 Radioisotope Identifier which is considered the “Gold Standard” for Mission Critical Detection and Identification. Like ORTEC’s legacy DETECTIVE-X-TS and MICRO-TRANS-SPEC instruments, the DETECTIVE DX1-TS is specifically intended for use as a more economical portable high resolution gamma spectrometer for field measurements rather than an automatic isotopic identifier. The DETECTIVE DX1-TS model includes warranted resolution performance and MCA Emulation software, but excludes the Isotopic Identification applications included with the other DETECTIVE DX1 models (EasyID, RAPiD, and Sleuth). The DETECTIVE DX1-TS can be upgraded to the DETECTIVE DX1 3 MeV and 8 MeV models along with a current Dose Rate calibration.



Why DETECTIVE DX1-TS?

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- High Reliability Stirling-Cycle Cooler with Hardened Cryostat
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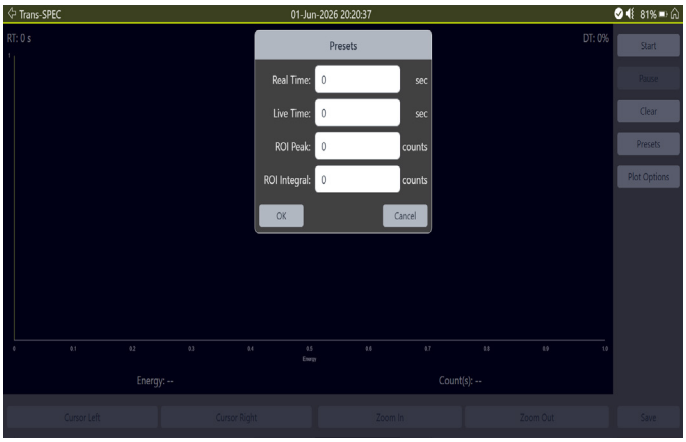
Application Features

Main Spectrum Display: Cursor Left/Right, Zoom In/Out, Start, Stop, Clear Acquisition, Presets, Plot Options, and Save Spectrum.

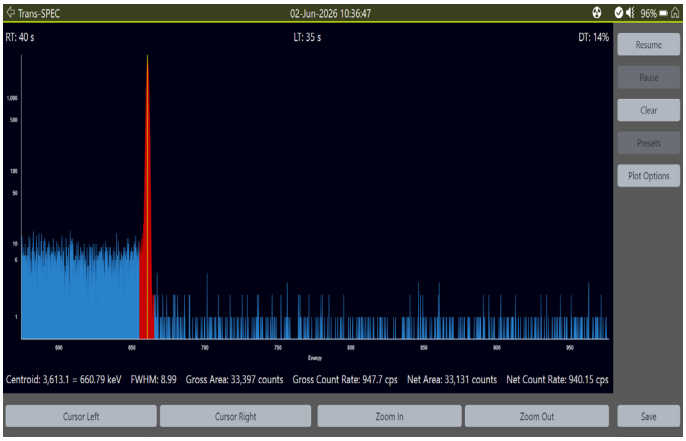
Presets: Live Time, Real Time, ROI Peak, and ROI Integral.

Plot Options: Cursor Behavior, Energy/Channel, Lin/Log, and Counts/ROI.

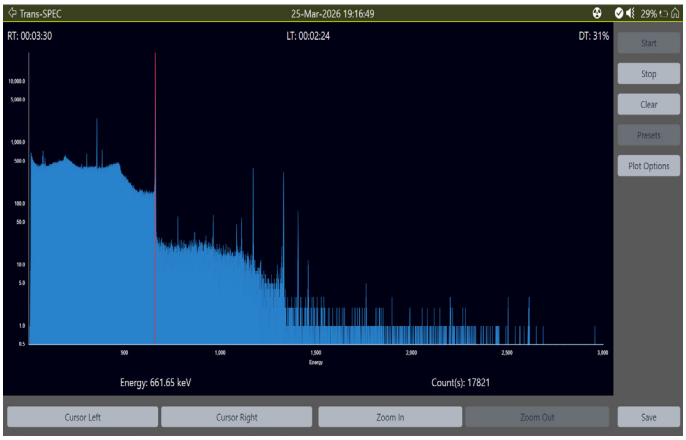
Status: Date/Time, Real Time, Live Time, Dead Time, Energy/Channel Location of Cursor, Counts in Channel/ Energy Location of Cursor, ROI Centroid, ROI Peak FWHM, ROI Gross Area, ROI Gross Counts, ROI Gross Count Rate, ROI Net Area, and ROI Net Count Rate.



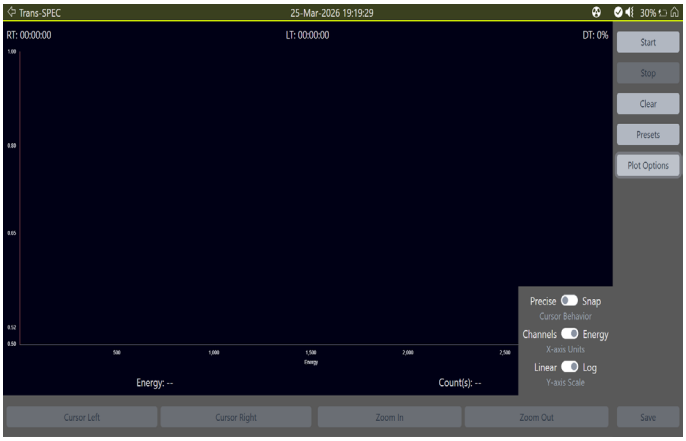
Presets



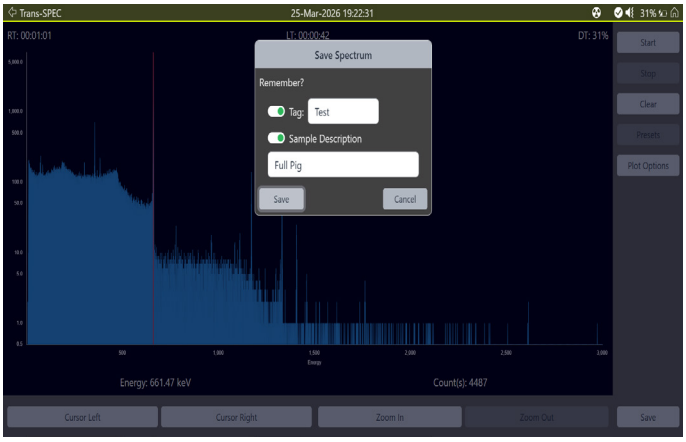
ROI with ROI Data



Acquisition in Progress



Plot Options



Save Spectrum with Tag and Description

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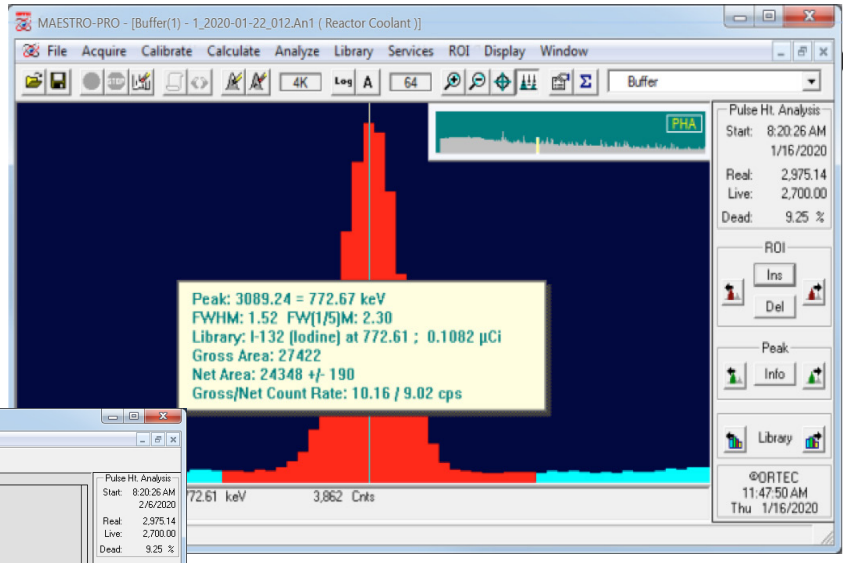
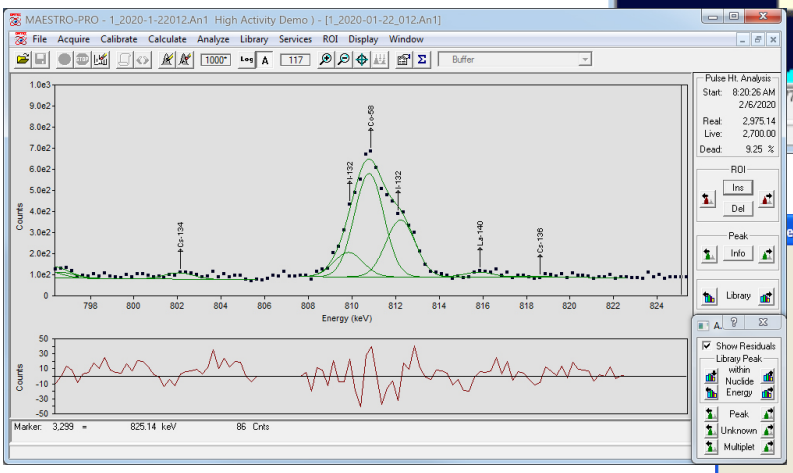
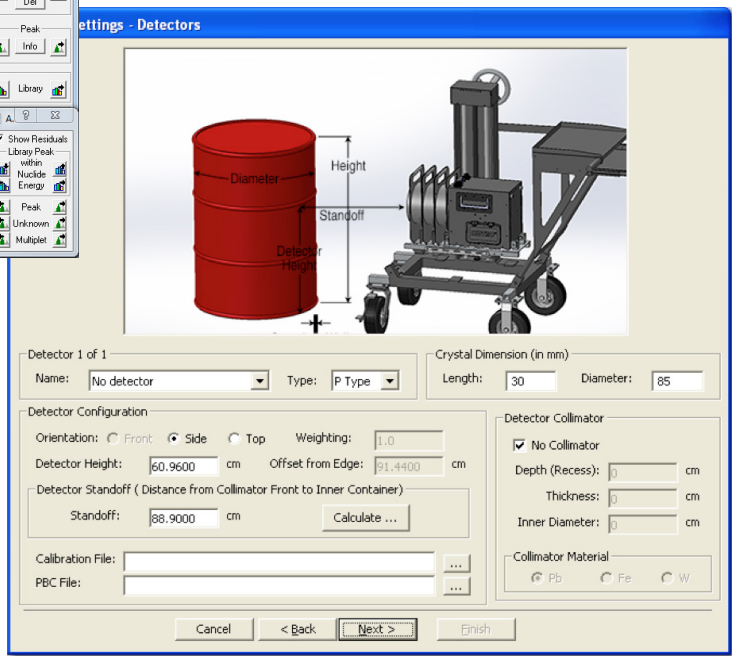
External Application Compatibility

The DETECTIVE DX1-TS is compatible with all ORTEC CONNECTIONS-based applications such as MAESTRO, MAESTRO-Pro, GammaVision, Isotopic, Renaissance, and the A11 Programmer’s Toolkit for a broad range of application uses.









TECHNICAL SPECIFICATIONS

DETECTOR / COOLER

Crystal: P-type high-purity germanium (HPGe). Coaxial construction. Nominally 65 mm diameter x 50 mm length.

Relative Efficiency: ≥40% typical (ANSI/IEEE 325-1996).

Resolution: ≤1630 eV @ 122 keV and ≤2.0 keV @ 1332 keV (FWHM Warranted at optimum settings).

Peak Shape: 1.9 typical (FWTM/FWHM).

Cryostat and Cooler: "Hardened" cryostat, with highreliability, low-power Stirling cooler. The cryostat design is such that the unit may be switched off at any time and power subsequently re-applied without having to wait for a full thermal cycle (full warm up before cool down). This feature greatly increases system availability during measurement campaigns.

Cool Down Time: The high-reliability cooler is designed for continuous operation. Between making measurements the unit is powered from a DC supply, car battery or other device. Initial cool down time depends on ambient temperature, but is typically 6 hours at 25°C.

DIGITAL MCA AND DATA PROCESSOR

Digital Low Frequency Noise Suppression: "LFR Filter".

Conversion Gain: Up to 16k channels.

Display: 5" IPS TFT-LCD (800 x 480 pixels) sunlight readable, PCAP, multi-touch sensitive, operate with finger or stylus.

Data Processor: NXP i.MX 8M Plus.

Data Storage Media: Internal RAM and removable low profile USB Flash drive. The unit is shipped with a USB Flash drive which can store over 100,000 spectra.

File Format: ANSI/IEEE N42.42 spectrum file format.

Computer and Device Interfacing: USB, Ethernet TCP/IP v4 connections via standard RJ45 Ethernet connection (10/100 Mbps, auto-sensing), Wi-Fi (IEEE 802.11a/b/g/e/i/h/j standards and IEEE 802.11n with protected access protocols including WPA and WPA2). Mobile MCB Server enables remote control through ORTEC CONNECTIONS-based applications, such as MAESTRO, GammaVision, etc.

PHYSICAL

Maximum Overall Dimensions: (including handle and Ge detector endcap) 15.5 in L x 5.6 in W x 9.2in H (39.5 cm L x 14.3 cm W x 23.2 cm H).

Weight: 15.95 lbs (7.23 kg).

Internal Battery: 2 Rechargeable Lithium Ion. 98 Wh each, nominal. Approximately 8 hours of battery life at 25°C when HPGe detector is cold. <4 hour time to charge. Internal battery is easily swapped.

External Battery: Battery lifetime may be extended indefinitely by the use of optional external battery packs. An external military battery (Model 2590) weighs less than 3.25 lbs and extends lifetime to >16 hrs.

Input Power: 12 to 17 V DC from battery or DC power supply (universal mains supply included).

Power Usage: Highest during cool down and charging battery: <100 Watt. Cold with fully charged battery <35 W.

Operation Range: Temperature: –20°C to 50°C. Relative Humidity: 95% non-condensing.

Instrument Enclosure: IP65 Sealed against ingress of dust and water. All perforations are sealed by rubber plugs (connectors, memory cards, etc.).

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Ordering Information

Model	Description
DX1-TS	Ultra-Light-Weight, Portable, High Efficiency, Standard HPGe Spectrometer. Includes mains adapter, vehicle power cable, USB flash drive, shoulder strap, MAESTRO-PRO software and wheeled hardsided case. **Does not include** Radioisotopic Identification applications (EasyID, Sleuth, and RAPiD).
DX1-TS-UPG-3	DETECTIVE DX1-TS Upgrade to full DETECTIVE DX1 3 MeV model including Radioisotopic Identification applications (EasyID, Sleuth, and RAPiD) and Dose Rate Calibration. Requires return to factory.
DX1-TS-UPG-8	DETECTIVE-DX1-TS Upgrade to full DETECTIVE DX1 8 MeV model including Radioisotopic Identification applications (EasyID, Sleuth, and RAPiD) and Dose Rate Calibration. Requires return to factory.

Accessories

Model	Description
DX1-ACC-BAT	Lithium-Ion Battery.
DX1-ACC-DUAL-CHGR	Standalone dual battery charger and calibrator.
DX1-ACC-SHOULDER-STRAP	Shoulder Strap with Stylus and Retractable Cord.
DX1-ACC-STYLUS	Stylus
DX1-ACC-SCREEN-PROTECT	Touchscreen Protector
DX1-ACC-VEHCHGR	Vehicle powered adapter cable.
DX1-ACC-PS	Universal AC mains power supply.
DX1-ACC-TRANSPORTCASE	Wheeled Transport Case
DX1-ACC-MANUAL	User’s Manual.
DX1-ACC-USBFLASH	USB Mini Flash Drive.
DX1-ACC-NEUTRON-DETECTOR	Neutron Detector
DX1-ACC-COL-ST	Steel Collimator 4 mm thick.
DX1-ACC-COL-W	Tungsten Collimator 4 mm thick.
DX1-ACC-RCFILTER	Low Energy Gamma Filter.
DX1-ACC-EXT-BATT	External Military 2590 battery with charger and cable.
DX1-ACC-2950-CABLE	Cable for Military 2590 battery.
DX1-ACC-RESERVE-COVER	Connector Dustcap, 12 mm
DX1-ACC-TH-CAL	Thoriated Tungsten Electrodes.
DX1-ACC-TRIPOD	Variable length tripod.
DX1-ACC-MOUNT-BRKT	Vertical Mounting Bracket for tripod.
DX1-ACC-TRIPOD-WITH-BRKT	Variable length tripod with vertical mounting bracket.
DX1-OPT-RFSECURE	Removal of WiFi, Bluetooth, and GPS signal capability from Detective DX1-TS (only at order of new unit).

Services

Model	Description
DX1-DOSE-CALIB	Certified dose rate calibration service. ORTEC provides a NIST traceable Calibration Certification with measurements all within ±10% for ten dose rates from .01 mR/hr to 2000 mR/hr. The total measurement uncertainty with all systematic sources of error included is less than ±20%. A certified Calibration Certificate is provided. The dose rate calibration is warranted for one year.

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Specifications subject to change
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