ORTEC

PINS3-CW-G2

Chemical identification with a neutron generator – no ^{252}Cf or liquid nitrogen

PINS system for non-destructive identification of the chemical contents of munitions and other unopened containers. It uses a small electrical D-D neutron generator instead of a ^{252}Cf source and a mechanically cooled HPGe spectrometer instead of liquid nitrogen, which eases deployment abroad. The software identifies the substance automatically, and the complete system packs into two Pelican-style cases.



Relative efficiency
>50% typical (ANSI/IEEE 325-1996) [1]

Energy resolution at 122 keV
<1600 eV FWHM (warranted at optimum settings and depending on detector type) [1]

Energy resolution at 1.33 MeV
≤2.5 keV FWHM at 1,332 keV (warranted at optimum settings a nd depending on detector type) [1]

Specifications

DETECTOR

Neutron generator	miniGEN (D-D): nominal 6 × 10⁶ n/s, mean neutron energy 2.5 MeV, pulse range 0.5–20 kHz, duty cycle 5–90%; under 75 W typical; 7.3 kg	[1]

PERFORMANCE

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Energy resolution at 1.33 MeV	≤2.5 keV FWHM at 1,332 keV (warranted at optimum settings and depending on detector type)	[1]

COOLING

Cooling	Stirling cooler, approx. 30 W; initial cool-down <10 hours at 25 °C	[1]

SOFTWARE & DATA

Analysis	Automatic chemical analysis every 10 seconds: peak fitting, energy recalibration and decision-tree logic	[1]

POWER & BATTERY

Battery life	Spectrometer: >3 hours internal at 25 °C with cold detector; up to 12 hours with external battery	[1]
Power supply	Spectrometer: 10–17 V DC at 30 W; internal battery, external battery, vehicle battery (12 V DC) or line power with automatic switchover	[1]

MECHANICAL

Dimensions	Spectrometer: 39.4 × 16.3 × 34.9 cm (L × W × H)	[1]

Weight	Spectrometer 11.1 kg; laptop 3.7 kg; neutron generator 7.3 kg	[1]

GENERAL

Measurement technique	PINS: neutrons from an electrical D-D neutron generator excite the nuclei and the characteristic gamma rays are measured with an HPGe spectrometer	[1]
Spectrometer	RTEC trans-SPEC-N, mechanically cooled HPGe (Stirling cooler, no liquid n itrogen) with built-in digital MCA, up to 16k channels	[1]
Automatically identified substances	Chemical warfare agents: BR-2, CG, CK, GB, HD, HN, VX, WL; riot agents: CA, CNB, CNS; practice fills: bleach, POP, sand, water-antifreeze; smoke c hemicals: FM, FS, HC, WP	[1]
Control computer	Ruggedised Panasonic Toughbook CF laptop, Windows 7 or Windows 10, 320 GB; 25 m connecting cables	[1]

Sources

[1] **PINS3-CW-G2 Portable Isotopic Neutron Spectroscopy**
RTEC (AMETEK) · product-page · How It Works; trans-SPEC-N; Specifications – Gamma-Ray HPGe Spectrometer; Specifications – Gamma-Ray H PGe Spectrometer · checked 2026-10-16
https://web.archive.org/web/20261016000000/https://www.ortec-online.com/products/systems/chemical-weapons-id...

Every value is taken from the manufacturer’s own document; the number after the value refers to the source list. Always check against the latest datasheet before ordering.

The data comes from the manufacturer’s published documents. Manufacturers may change specifications; the current configuration and performance are confirmed in the quotation.