

Handheld Spectrometer



Overview

Portable handheld spectrometers Malvern Panalytical offers a range of portable spectrometers and a portable XRF analyzer alternative to a Portable Spectrom.

Key Takeaways

A handheld spectrometer is a compact, portable device that enables rapid, on-site spectral analysis for material identification, chemical composition, and quality control.

Handheld spectrometers are portable analytical instruments designed to perform spectral analysis outside traditional laboratory settings. They allow users to identify materials, detect chemical compounds, and measure elemental composition in real time, making them ideal for fieldwork, industrial quality control, environmental monitoring, and research applications .

Key Technologies

- Raman Spectroscopy (SORS): Devices like the Agilent Resolve and TruScan™ G3 use spatially offset Raman spectroscopy (SORS) to analyze materials through non-transparent containers or beneath surfaces, enabling rapid chemical identification without sample destruction .
- X-ray Fluorescence (XRF): Handheld XRF analyzers, such as the SciAps X Series and S1 TITAN, provide elemental analysis for metals, alloys, and environmental samples. They are robust, fast, and suitable for harsh field conditions .

- **Laser-Induced Breakdown Spectroscopy (LIBS):** Instruments like the SciAps Z Series detect light elements (e.g., lithium, beryllium, carbon) that are challenging for XRF, offering rapid elemental quantification .

- **Near-Infrared (NIR) and FTIR Spectroscopy:** Devices like the ChemWiz-ADK Series 3 and 4300 Handheld FTIR enable non-destructive analysis of organic compounds, pharmaceuticals, and polymers .

Features and Advantages

- **Portability:** Lightweight and ergonomic designs allow easy transport and field deployment.

- **Real-Time Analysis:** Provides immediate results, enhancing decision-making and productivity.

- **Durability:** Rugged construction ensures reliable performance in harsh environments.

- **Ease of Use:** Intuitive interfaces, touchscreens, and onboard software simplify operation and data interpretation.

- **Versatility:** Capable of analyzing solids, liquids, powders, and complex matrices with minimal sample preparation .

Applications

- **Industrial and Manufacturing:** Quality control, raw material verification, and alloy composition analysis.

- **Environmental Monitoring:** Soil, water, and air analysis for contaminants or elemental content.

- **Pharmaceuticals and Biotechnology:** Rapid identification of APIs, excipients, and raw materials.

- **Mining and Geology:** On-site elemental and mineral analysis for exploration and resource assessment.

- **Security and Hazardous Materials:** Detection of chemicals behind barriers or in sealed containers .

Conclusion

Handheld spectrometers combine portability, speed, and analytical precision, making them indispensable tools for professionals who require rapid, accurate, and non-destructive analysis in the field or on-site. With multiple technologies available—Raman, XRF, LIBS, NIR, and FTIR—users can select instruments tailored to their specific analytical needs .

Article Content

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Portable spectrometers / handheld spectrometers allow researchers to analyze samples on the go. Perfect for applications like field

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Buyer's Guide: Portable Spectrometers | Labcompare

Specifications like spectral range, resolution and limits of detection are common sense

Portable XRF Metal Analyzer

Meet your metal analysis needs anywhere with the JITA19201 Handheld XRF Analyzer. This rugged

BRAVO Handheld Raman Spectrometer | Bruker

Versatile and Yet so Simple Being THE handheld Raman spectrometer solution for a broad range of

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Portable, high-accuracy spectrum analyzers for real-time RF analysis—spot interference and ensure

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A handheld FTIR spectrometer for mobile non-destructive testing in the field and non-laboratory

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Portable Spectrometer / Portable Spectrum Analyzer

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Handheld Portable Spectrometers – Gamma Scientific

It is designed for fast, accurate illuminance measurements for general lighting and LED applications. The

Handheld Spectrometers | BaySpec

Handheld VIS – NIR – SWIR Spectrometers - Breeze™, offer efficient and maximum sensitive

ASD Portable Spectrometers & Spectroradiometers | Malvern Panalytical

Whether you're mapping mineralogy from the sky or drilling into data on the ground, these spectrometers and spectroradiometers

Handheld Spectrometer, Portable SORS Raman

The Agilent Resolve Raman handheld spectrometer is a cutting-edge analytical instrument, specifically

12 Best Portable Spectrometers (July 2026) Top Picks

The market has evolved significantly, with options ranging from basic spectroscopes under

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