

RAMAN SPECTROSCOPY / DATA SHEET

SR130X_Pro

Handheld Area-Scan Raman Detector

Portable 785 nm Raman identification platform using area-scan acquisition for rapid, non-contact screening of solids, liquids, powders and challenging dark-colored samples.

Overview

- Raman spectroscopy rapidly identifies unknown substances in solid, liquid or powder form.
- Area-scan excitation distributes energy over an area, reducing local laser power density.
- Lower local energy density helps address dark-colored, sensitive and challenging samples.
- Compatible with non-contact through-container measurement and SERS workflows.



785 nm
EXCITATION
WAVELENGTH

200-3200 cm⁻¹
SPECTRAL RANGE

6-8 cm⁻¹
RESOLUTION

>12 h
BATTERY LIFE

APPLICATIONS

Typical Applications

Field Screening

- On-site case handling and evidence screening.
- Patrol, public-security and border inspection.
- Customs clearance and transportation-hub checks.

Research & Materials

- Scientific research and university studies.
- Natural-versus-synthetic fiber differentiation.
- Blend composition and proportion analysis.

TECHNOLOGY

Area-Scan Raman Design

Area-scan excitation distributes energy over an area rather than a single focal point, reducing local laser power density. As described in the source, this helps address dark-colored, sensitive and potentially flammable or explosive samples.

Technology	Source-supported capability
Area-scan excitation	Reduced local laser power density compared with conventional single-point focusing.
Non-contact operation	Through-package measurement, delayed start and remote acquisition without direct sample contact.
Blend analysis	Mixture-recognition workflow identifies component types and proportions in blended materials.

Technology	Source-supported capability
Fiber identification	Differentiates natural fibers such as cotton and wool from synthetic fibers such as polyester and nylon.
Non-destructive testing	No sample destruction is required for valuable textiles or cultural objects.

PERFORMANCE

Technical Specifications

Specifications are compiled from the supplied SR130X_Pro source document.

Item	Specification
Dimensions	182 × 88 × 30 mm
Weight	≥500 g
Battery life	>12 h
Excitation wavelength	785 nm
Laser power	0-500 mW, adjustable
Spectral range	200-3200 cm ⁻¹
Resolution	6-8 cm ⁻¹
Laser lifetime	10,000 h
Operating temperature	-20 to 50 °C
Working distance	Continuously adjustable
Battery	Replaceable; supports high-capacity battery
Connectivity	Wi-Fi, 4G
Database	>1k
Software functions	Model matching; report generation, etc.

OPERATION

Field Identification Workflow

01 Aim / Sample Position the optical interface toward the target sample, package or container.	02 Acquire Spectrum Run Raman acquisition at the required working distance and laser-power setting.	03 Match / Report Compare the spectrum with the reference database; use model matching or report-generation functions as configured.
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Deployment Notes

- Use non-contact measurement where through-package optical access is suitable and safer handling is required.
- Laser power is adjustable from 0 to 500 mW according to the source specification.
- Working distance is continuously adjustable; use the configured mixture-recognition workflow for blended textiles.
- The source lists Wi-Fi and 4G connectivity, a >1k database and a 12 MP camera.

APPLICATION

Application Cases

Natural and Synthetic Fiber Differentiation

Natural fibers such as cotton and synthetic fibers show different characteristic Raman peak positions. The source highlights the $1278\text{-}1400\text{ cm}^{-1}$ region and the 1578 cm^{-1} band as useful markers for distinguishing the two categories; natural-fiber peaks mainly arise from cellulose or protein vibrations, while synthetic fibers exhibit signals associated with synthetic polymers.

Blended-Material Composition and Proportion Analysis

Using the mixture-recognition algorithm described in the source material, the textile-testing configuration can identify common blended materials such as garments and determine component types and proportions. The workflow combines fiber-feature analysis with Raman spectral data for comprehensive composition identification.

CONTACT / SUPPORT

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