NWSPEC Ram-M Series · Teaching

Teaching Raman Microscope

A compact micro-Raman system designed for university teaching, laboratory training and first-step research. Integrated microscopy, laser safety interlock, simplified workflow and teaching software with preset experiments let students observe micro-regions, collect real Raman spectra and compare against libraries — safely and affordably.



Ram-M15

Price: POR — contact us for a quotation tailored to your configuration.

Choose Your Configuration

Ram-M15

Standard teaching configuration — 150 mm focal length, lab-powered, classroom-ready.

Ram-M15-P

Practical package — battery operation (≥2 h), XYZ imaging stage and expanded experiment library.

<10 cm^{-1}
Spectral resolution

>100:1
Si 2nd-order peak SNR (with cooled CCD)

±1 cm^{-1}
Wavenumber repeatability (Si 520.6 cm^{-1})

≥2 hours
Battery-powered portable teaching option

Compact teaching design

Integrated microscopy and Raman in a small footprint — flexible deployment in teaching labs and training centers.

Laser safety interlock

Simplified operation flow with hardware safety interlock lowers the barrier for students and protects the class.

Teaching software built in

Preset experiment protocols and spectral-library identification guide students through micro-observation, Raman testing and spectral comparison.

Low maintenance, easy to run

Stable performance and simple upkeep suit large-class, semester-long use.

Professional analysis software

The same imaging, baseline-removal, database and library tools as our research systems.

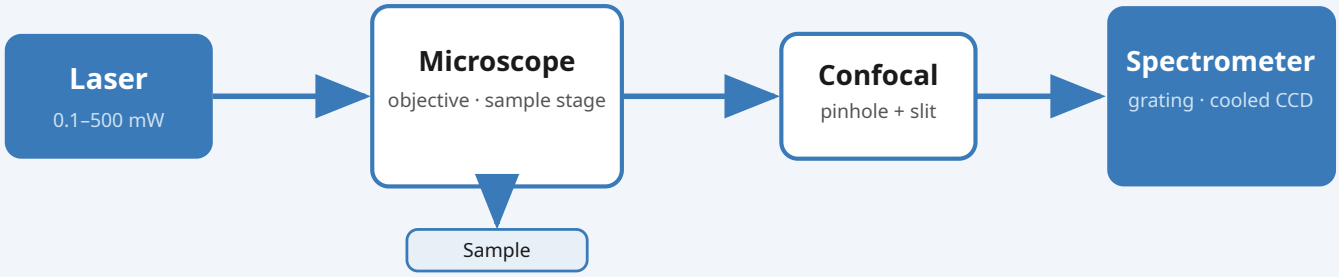
Open-structure optics education

Independent illumination, microscope, spectrometer, covers, baseboard and XY stage modules disassemble easily, and the open optical path lets students see how a Raman spectrometer really works.

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Call us: +86 189-6516-4839 · **Email:** sales@nwspec.com · **Address:** Xiongan Pilot Free Trade Zone, Hebei, China

How Confocal Raman Works



1 Excite
A narrow-linewidth laser (choose 405–1064 nm) safely illuminates the sample.

2 Collect
The compact microscope collects the Raman signal from the observed micro-region.

3 Filter
A slit confocal aperture (10–500 µm) rejects stray light.

4 Disperse
The 150 mm spectrometer spreads the spectrum for the class to interpret.

5 Detect
A back-illuminated CCD records the spectrum; software compares it with the library.

Also included: Teaching software with preset experiment protocols and spectral-library identification — students complete micro-observation, Raman testing and spectral comparison in one guided workflow.

System Overview

6 laser choices
405 / 532 / 633 / 785 / 830 / 850 / 1064 nm, one installed at order.

Slit confocal
10–500 µm selectable confocal slit.

USB + wireless
Multiple communication interfaces; wireless data transfer.

Battery option
Rechargeable Li battery for ≥2 hours of mobile teaching.

XYZ imaging stage
50 × 50 mm travel with <1 µm steps (option).

Small footprint
≤505 × 264 × 606 mm — fits any bench.

Typical Applications

University physics
Vibrational spectroscopy and light-scattering experiments.

Chemistry courses
Functional-group identification in real samples.

Materials teaching
Polymer, crystal and 2D-material demonstrations.

Pharmacy programs
Raw-drug identification against spectral libraries.

Cultural heritage
Pigment analysis demonstrations for conservation students.

Lab training centers
Instrument-operation certification courses.

Basic research entry
First micro-Raman projects and method development.

Science outreach
Mobile battery-powered demonstrations.

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Technical Specifications

Ram-M15 — Teaching Raman Microscope	
Detector	High-sensitivity back-illuminated area-array CCD (room temperature / 0 °C / −10 °C options)
Laser	Narrow-linewidth semiconductor laser — 405 / 532 / 633 / 785 / 830 / 850 / 1064 nm, choose 1
Peak wavelength	Selected wavelength ±0.5 nm
Power stability	RMS power stability 3% / 4 hours
Laser power	Continuously adjustable 0.1–500 mW
Laser lifetime	≥10,000 hours
Focal length	150 mm
Confocal optics	Slit confocal, 10–500 μm selectable
Resolution	<10 cm^{-1}
Spectral range	150–3200 cm^{-1} (customizable on request)
Sensitivity	Si 2nd-order peak SNR >100:1 (with cooled CCD)
Repeatability	±1 cm^{-1} (Si 520.6 cm^{-1} Raman band)
Raman imaging	Supported (requires XYZ motorized stage)
Motorized stage	XY travel ≥50 × 50 mm; minimum step ≤1 μm; repeatability ≤5 μm; max speed ≥50 mm/s; load ≥3 kg
Data interface	Multiple communication interfaces such as USB; wireless networking and data transfer supported
Battery	Optional rechargeable Li battery — ≥2 h system runtime
Dimensions	≤505 × 264 × 606 mm (W × D × H)

Specifications follow the OEM configuration sheet. Laser wavelength, CCD cooling, imaging stage and battery are selected at order.

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