

ZEBR[®]

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data sheet / specification

Spectrometer

Excitation Wavelength	532 nm	The gold standard for ROA signal reliability
Laser power at sample	1 – 1200 mW	high stability for all laser powers
Spectral range	80 – 4500 cm ⁻¹ ; modifications possible upon request	Apart from standard spectral range, low-freq and high-freq modes and circularly polarized luminescence can be studied
Spectral resolution	~7 cm ⁻¹	
Scattering geometry	Back-scattering	With specular beam analysis for damage control
Modulation scheme	SCP, ICP, DCP _I , DCP _{II}	Enabling artifact discrimination and robust interpretation, distinguish CPL from ROA
Wavenumber calibration	Automatic, no customer handling and calibration source needed	Insert & measure ready system
Intensity calibration	Raman intensity calibration accessory	Instrument spectral transmission compensation. Enables direct comparison with published catalogues and ab-initio simulations in broad spectral ranges

Detectors

Detector Type	Spectroscopic CCD, 1024 x 255 pixels
Detector Temperature	Down to -65 °C, stabilized
Quantum Efficiency	>85 % in spectral range 500-700 nm
Binning	Flexible and automatically adjustable to minimize readout
Gain	Adjustable

Samples & Measurement Options

Sample holders	3D fully motorized sample stage unit with automatic positioning	Micrometer-precision alignment and focus control; enables XYZ mapping
	Rotational cell 0-20 Hz	Homogeneous sampling of turbid or crystalline suspensions
	Temperature cell -10 to +95 °C	Resolution 0.1 °C; condensation protection
Cuvettes	Macro cuvette <70 µL	For standard measurements in solution
	Micro volume <5 µL	For scarce samples and low concentration measurements
Custom solution	Capillary system	<5 µL capillary array for automated batch measurements
	Microfluidic design	Custom specific multiple cells
	Double goniometer holder for angular positioning of crystalline samples	For precise alignment and/or ROA angular and positional dependence of solid samples



Translational motorized XYZ sample positioner

Motorized XYZ sample positioning	range 50 mm in each axis
Horizontal positioning accuracy	1 μm
Vertical positioning accuracy	10 μm
Maximum load	0.3 kg
Cell type mount	temperature control cell, capillary, micro-cell, macro-cell, various designs available upon special request,
Multiple sample	automatic motorized positioning, 5 sample positions
System integration	full, sample positioning during measurement possible
Safety	This item allows full control of sample position while maintaining laser safety class 1.

Control System & Software

PC	Industrial type; integrated
OS	Windows 11 or Linux
Monitor and keyboard position	adjustable
External control	Remote desktop connection, various options
Backup	HDD hot swap technology, RAID 1

Instrument Layout

Layout	Single standalone unit
External dimensions W x D x H	880 x 1070 x 1800 mm
Weight	max. 620 kg
Environmental temperature	+20 °C to +25 °C
Temperature stabilization	Internal, ± 1 °C
Support	4 stable legs with wheels for easy transport
Power supply backup	Fully integrated UPS with safety features
Safety	Class 1 laser device (advanced laser safety, laser interlocks, motorized XYZ sample positioner built-in)

Instrument Layout

Power supply	220-240 V, 110 V available upon request
Input power	< 700 W
External UPS	Not required
Pressurized Air	> 6 bar, external compressor available upon request
Ethernet connection	Yes; for optional external control
Outside temperature stabilization	Within 3 °C
Clean room environment	Not required

