

inVia general specifications

inVia platform capabilities

Spectrometer type	On-axis stigmatic rotating grating	Minimises aberrations and maximises signal-to-noise ratios
Supported excitation wavelengths	Multiple, from the deep-ultraviolet to the near-infrared	
Wavelength range	200 nm to 2200 nm	
Lasers supported	From 224 nm to 1064 nm	
Spectral resolution	0.3 cm ⁻¹ (FWHM)	Highest typically necessary: 1 cm ⁻¹
Low wavenumber cut-off	5 cm ⁻¹	Lowest typically necessary: 100 cm ⁻¹
High wavenumber cut-off	30,000 cm ⁻¹	Standard: 4000 cm ⁻¹ . Necessary for Raman: 4000 cm ⁻¹
Sensitivity	> 20:1	3 rd order Si band signal-to-noise ratio. Standard: > 15:1
Sensitivity	> 4:1	4 th order Si band signal-to-noise ratio. Standard: > 2:1
Anti-Stokes capability	Option	Typically anti-Stokes is not necessary for most Raman applications
Reproducibility	< ±0.1 cm ⁻¹	Variation in Raman band centre after multiple grating moves.
Stability	< ±0.01 cm ⁻¹	Variation in the centre frequency value of curve-fitted Si 520 cm ⁻¹ band, following repeat measurements. Achieved using a spectral resolution of 1 cm ⁻¹ or higher

Spatial

Spatial resolution (lateral)	0.25 µm	Standard: 1 µm. 0.25 µm requires high NA objective
Spatial resolution (axial)	< 1 µm	Standard: < 2 µm. Dependent on objective and laser

Detectors*

Detector size (standard)	1024 pixel × 256 pixel	
Detector size (small area)	578 pixel × 395 pixel	
Pixel size (standard)	26 µm	
Pixel size (small area)	22 µm	
Operating temperature	-70 °C	
Dark noise	< 0.0002 e ⁻ pixel ⁻¹ s ⁻¹	Standard: 0.03 e ⁻ pixel ⁻¹ s ⁻¹
Readout noise	< 4 e ⁻ (RMS)	
Peak quantum efficiency	> 48%	Optional > 92%
Maximum readout rate	> 1800 spectra s ⁻¹	
Detector cooling	Thermoelectric	No LN2 required

*Specifications are chip/detector/gain dependent. See data sheet DS033 for more detailed specifications on the standard Centrus detector.

System performance depends on individual configuration and options.

Due to the range of options and configurations of the inVia this information is given as a guide to performance.

For more detailed and specific performance and specifications please contact your local Renishaw representative.

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Additional features

Optical beam-paths	Multiple (giving optimised performance)	Automated control and adjustment
Rayleigh filters supported	Unlimited	Up to 4 filter sets in automated mount. Unlimited additional filter sets supported by user-switchable accurately-locating kinematic mount
Number of lasers supported	Unlimited	1 as standard. Additional lasers beyond 4 require mounting on an optical table
Windows® PC controlled	Latest specification Windows 10 PC	Includes monitor, keyboard, trackball and PC workstation

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Laser safety

- Class 3B laser product in standard configurations
- Optional Class 1 laser safe enclosure for systems using Class 3B lasers
- Systems using deep UV (≤ 315 nm) or high power (> 500 mW) CW visible/NIR lasers are Class 4
- Fully interlocked with interlock self-test features

Laser safety labels



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