Thermo Scientific iXR Raman Spectrometer

Research-grade Raman performance in a compact and configurable package

The Thermo Scientific™ iXR™ Raman spectrometer is specifically designed to bring research-grade measurements to your most challenging analytical applications. It is ideal for coupling to other analytical equipment, lending chemical composition and structural information to multi-modal analyses. Its compact footprint and flexible accessories afford operation in locations and scenarios unachievable by most laboratory instrumentation.





MARSXR, comprised of an iXR Spectrometer interfaced to a Thermo Scientific™ HAAKE™ MARS™ Rheometer



The iXR spectrometer is a highly-configurable system, with multiple dedicated sampling accessories available, capabilities for bench or rack mounting, and a compact footprint ready to be transported.

Powerful performance in a compact form factor – take the power of Raman to your application!

A complete Raman system for a range of applications

- Multi-Modal Analysis
- Art and Conservation
- Forensics
- Military
- Defect Analysis on large or small components
- Laboratory, table top, or rack-mount



Features that deliver research-grade results

- Achieves the quality and sensitivity of the DXR3 family of Raman instruments
- Multiple, changeable laser selections enhance measurement capability
- Robust, high-throughput, 1-box solution
- Breadth of processing & library capabilities with OMNIC software suite
- Take your DXR experience outside of the lab



iXR Raman Spectrometer

- Based on DXR Raman components
- Interface to other instruments by free space coupling
- Range of available sampling accessories enables adaptability to a wide range of measurement needs
- Interchangeable lasers, gratings and filters to optimize laser wavelength for the measurement



Physical dimensions

Width	29 cm
Depth	44 cm
Height	37 cm
Weight	25 Kg

Spectrograph

Design	Patented triplet spectrograph	No moving parts
Spectral dispersion	Full range grating	Average 2 cm^{-1} /CCD pixel element
	High resolution grating	Average 1 cm^{-1} /CCD pixel element
Aperture	Four software selectable apertures	25 and 50 um confocal pinhole apertures; 25 and 50 um slit apertures

DXR family shared component specifications

The iXR Raman Spectrometer is based on the same reliable research-grade design as our DXR benchtop and microscope systems, providing robust performance while allowing users to easily exchange pre-aligned laser, filter and grating components in the spectrometer.



General system features

Lasers	Multiple excitation lasers	Supported wavelengths 455 nm, 532 nm, 633nm and 785 nm
	Laser safety	Class 3B
	Laser power regulator	Active feedback system to control absolute laser power delivered to the sample
General	System alignment	Automatically optimized upon component exhange or on-demand
	Fine laser power control	Power controlled and reported at samples in 0.1 mW increments
Replaceable components	Smart components	Pre-aligned user-exchangeable system components (lasers, filters, gratings) lock into place and are automatically optimized with an internal calibration tool Software checks for laser, grating and filter compatibility Software restores alignment and calibration settings when components are exchanged
Computer interface		iXR communicates with single USB 2.0 connector (Camera Accessory communicates with a separate USB 2.0 connector)

Lasers



Lasers	455 nm	532 nm High Brightness	532 nm High Power	633 nm High Power	785 nm High Brightness	785 nm High Power
Power	max. 6 mW at sample	max. 10 mW at sample	max. 40 mW at sample	max. 25 mW at sample	max. 24 mW at sample	max. 150 mW at sample
Center Wavelength	455 +/- 0.2 nm	532 +/- 1 nm	532.3 +/- 0.3 nm	632.3 +/- 0.25 nm	785 +/- 0.2 nm	785 +/- 0.5 nm
Transverse Mode	TEM_{00}	TEM_{00}	TEM_{00}	TEM_{00}	TEM_{00}	Multi-Mode
Beam Quality (M^2)	<1.5	<1.3	<1.05	<1.5	<1.5	NA



Gratings



Filters

System performance - special range and resolution

Lasers		455 nm	532 nm	633 nm	785 nm
Full Range	Resolution[1]	5.0 cm^{-1} FWHM	5.0 cm^{-1} FWHM	5.0 cm^{-1} FWHM	5.0 cm^{-1} FWHM
	Upper Cutoff	3500 cm^{-1}	3500 cm^{-1}	3500 cm^{-1}	3300 cm^{-1}
	Lower Cutoff[2]	85 cm^{-1}	50 cm^{-1}	50 cm^{-1}	50 cm^{-1}
High Resolution	Resolution		2.0 cm^{-1} FWHM	2.0 cm^{-1} FWHM	2.0 cm^{-1} FWHM
	Upper Cutoff		1800 cm^{-1}	1800 cm^{-1}	1800 cm^{-1}
	Lower Cutoff		50 cm^{-1}	50 cm^{-1}	50 cm^{-1}
Extended Range	Resolution		11.0 cm^{-1}		
	Upper Cutoff		6000 cm^{-1}		
	Lower Cutoff		50 cm^{-1}		

[1]The system spectral resolution is measured using ASTM Method E-2529-06.

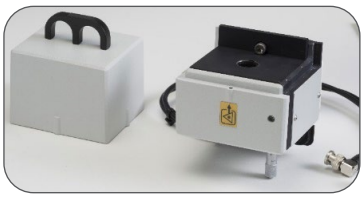
The difference between system spectral resolution and spectrograph resolution is primarily determined by the excitation bandwidth.

[2]50% maximum transmitted power.

iXR dedicated sampling accessories



Adjustable Side or Down Turning Sampling Accessory
Kit of adjustable beam-routing tools for measuring a wide range of samples too big for a typical microscope setup.



Macro Compartment Sampling Accessory
Platform for sampling bags, vials, and other bulk materials. Tight-fitting cover rejects ambient light.

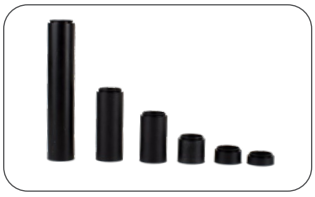


Micro Stage Sampling Accessory
Micro-sampling capabilities for the iXR. Manual XYZ stage for straightforward sample positioning and manipulation. Use with any magnification of microscope objective.



Camera Accessory
Visible camera for sample inspection. Can be used in conjunction with other sampling accessories.

iXR opto-mechanical interface parts for customizable free space coupling



Lens tubes
6”, 3”, 2”, 1”, 0.5” and 0.3”
left to right



90º flat mirror, coated for maximum reflectivity

Thermo Scientific software options for routine or advanced control and analysis

Thermo Scientific™ OMNIC™ Software	Full featured molecular spectroscopy acquisition and analysis software
OMNIC Series Software	Supports time-evolved data collection
OMNIC Macros/Pro Software	Interface to advanced Visual Basic programming

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Instrument alignment, calibration and optimization

Alignment and calibration[3]	Entirely software controlled	Autoalignment technique aligns laser and Raman emission
	Wavelength	Software-controlled calibration using multiple neon emission lines
	Laser frequency	Software-controlled calibration using multiple polystyrene Raman peaks
	Intensity	Software-controlled calibration using standardized white light source
Laser power regulator		Absolute excitation laser power at the sample controlled by OMNIC software laser power at sample reported in mW
Automatic fluorescence correction		Compensates for fluorescence prior to data analysis
Smart Background		Automatically accounts for background noise, improving spectral quality

[3]Standards incorporated into patented alignment tool

Instrument serviceability

Replacement lasers	User-installable
Instrument performance monitoring	Software provides real-time status of system readiness, including error condition checks and diagnostics
Additional laser, filter, grating sets	User installable

Other specifications

Environmental	Minimum temperature: 16°C
	Maximum temperature: 27°C
	Humidity range: 20-80%
Electrical	100-240 V AC, 47-63 Hz
Regulatory	CE, UL/CSA/ETL, 21 CFR1040.10
Warranty	12-month warranty standard, extended warranties available

The iXR Raman Spectrometer is a class 3B laser product. Can be operated as a class 1 laser product when properly installed in conjunction with other Thermo Scientific equipment.

Find out more at **thermofisher.com/ixr**

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