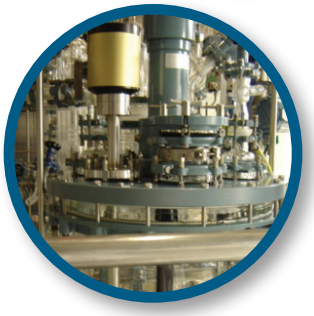

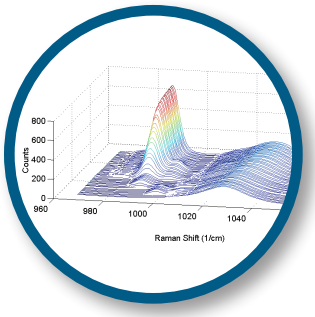

RAMANRXN2™
Multi-channel Raman Analyzer

The **RAMANRXN SYSTEMS™** suite of instruments has set the standard for analyzing, monitoring, and controlling chemical processes since its introduction. Raman spectroscopy provides the chemical specificity of a mid-IR analyzer with the ease of sampling of a near-IR analyzer. The **RAMANRXN2™** analyzer is ideally suited for applications in early Development, process optimizations, scale-up, and manufacturing. This ability to follow several different potential reaction pathways can significantly speed up early process development, remove bottlenecks in the scale-up pipeline, and optimize the process chemistry throughout its life cycle. The Multi-channel **RAMANRXN2™** enables the use of a single-analyzer in support of up to 4 probes. The **RAMANRXN2™** 4-channel Raman analyzer operates sequentially allowing both fast analysis per channel and programmable channel interrogation.

By operating in the visible spectral region, Raman spectroscopy allows vibrational spectra to be collected *in situ*, using fiber-coupled probe heads, without sample purging, and without the use of exotic sampling devices. Several probes are available to meet the needs of *in situ* monitoring from laboratory development to the processing setting. Alternatively non-contact probe solutions are also available. Standard on all **RAMANRXN2C™** analyzer models and available as an option for the **RAMANRXN2™** analyzer is an ergonomic trolley including built-in probe and optic storage, a routine-analysis sample compartment, fiber storage, and the analyzer control system.

At the heart of the **RAMANRXN2™** analyzer is a unique analyzer self monitoring system to ensure the validity of each analysis. The analyzer is capable of self-calibration in extreme environments and utilizes self-diagnostics and spectral correction methods when system calibration is unnecessary. The analyzer's precision is essential for robust multivariate analyses and calibration transfer between analyzers.

The **RAMANRXN2™** analyzer provides the capability of several different Raman analyzers in a single system. It is equally capable of being a transportable raw materials identification analyzer, a methods development analyzer for the scale-up and parallel synthesis lab, reaction monitoring in the pilot plant, and process control development in a manufacturing environment.

The **RAMANRXN2™** fiber-coupled Multi-channel Raman analyzer serves the needs of the analytical Raman market, process analytics, chemical, and polymer markets, as well as the pharmaceutical and biotech markets. This analyzer can be combined with the compliant data acquisition software to comply with GLP/GMP guidelines of the pharmaceutical industry and both PAT/QbD initiatives.

Applications

- Pharmaceutical API Development: Reaction Chemistry, Yield
- Crystallization and Polymorph
- Polymerization
- Polymer Blending
- Extrusion Monitoring
- Catalysis Investigations
- PAT / QbD Applications
- Biologics / Biomedical

Versatile Analyzer

- Simultaneous Full Spectral Coverage for Widest Chemistry Coverage
- *In situ*, Non-destructive Measurement
- Qualitative and Quantitative Analysis
- Laboratory, Scale-up, and Pilot-plant Compatibility

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An Endress+Hauser Company
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Fast, Sequential, Multi-channel Raman Measurement

Analyzer Features

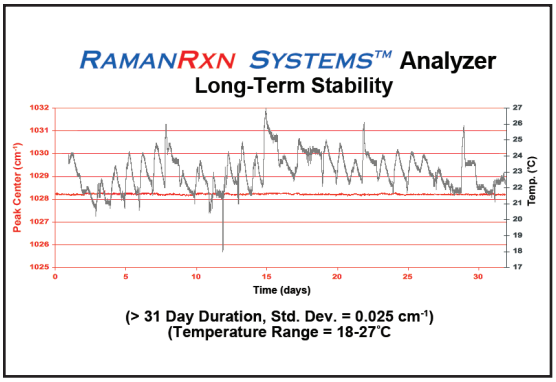
- High Performance Spectroscopy
- *In situ* Reaction Sampling
- Programmable 4-channel Operation
- Cal-Check™ – System Verification
- Auto-Cal™ for Analyzer Calibration
- Demonstrated Calibration Transfer: Pilot-to-plant, Country-to-country

Options

- Transport Option
- ¼-inch-diameter Immersion Optic
- ½-inch-diameter Immersion Optic
- Non-contact Optics
- Pilot Plant Compatible Probes
- Sampling Compartment

Multi-channel Capable

- Up to 4 Channel Operation (4 separate processes)
- ConcIRT™ Option
- Programmable Channel Monitoring
- Sequential Operation for Fast Acquisitions
- Activate and Deactivate Channels as Required
- Study Different Chemistries with Optimized Probes
- Optimize Acquisition Parameters for Each Channel



RamanRxn2™
Multi-channel Raman Analyzer

Specifications:

Measurement:	Raman
Laser Wavelength:	532nm, 785nm
Spectral Coverage:	175-4375 cm^{-1} (532nm), 150-3425 cm^{-1} (785nm)

Environmental:

Temperature:	15°C (Min) / 30°C (Max)
Relative Humidity:	20-80% Noncondensing

Electrical Data - Base Unit:

Input Voltage:	110-240 VAC, 50-60Hz Standard
Max Power:	<400 Watts Max (startup), <150 Watts Typical
User Interface:	Approved PC Operating Windows 7, 32 Bit Professional

Physical - Base Unit:

Enclosure Type:	Painted Steel, Aluminum, and Plastic
Mounting:	Benchtop / Cart
Dimensions:	28 cm (l) x 62 cm (d) x 48 cm (h) 11" x 24.5" x 19" (benchtop model)
	63.5 cm (l) x 76 cm (d) x 142 cm (h) 25" x 30" x 56" (cart-mounted model)
Weight:	68 lbs / 31 kg (benchtop model)
	195 lbs / 88.5 kg (cart-mounted model)
Number of Probes:	Multi-channel - Up to Four (programmable sequential operation)

KAISER OPTICAL SYSTEMS, INC.
An Endress+Hauser Company

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