

The Kaiser Raman Rxn4™

LNG custody transfer analyzer

The Kaiser Raman Rxn4™ is a process Raman analyzer and is ideal for the manufacturing or process environment. When combined with Kaiser Raman phase-optimized sampling probes, the Kaiser Raman Rxn4 offers high-resolution performance for *in situ*, real-time process measurement and control.



Kaiser Raman Rxn4 analyzer.

Key Features

- Direct *in situ* measurement of process samples
- Up to 4 measurement points from a single analyzer
- Multi-analyzer calibration transfer demonstrated
- Low cost of ownership
- Easy to install
- No consumables
- Minimal maintenance requirements / analyzer technician times
- Robust data modeling based on Raman Spectroscopy
- Modbus, or OPC analyzer outputs

LNG Applications

- Baseload export custody transfer
- Baseload import custody transfer
- Truck loading
- Bunkering

Process Enabled

- Fast non-destructive measurements of multicomponent systems
- Rack-mounted packaging for easy 3rd-party integration

The Kaiser Raman Rxn4 rack-mountable analyzer has a unique self-monitoring system to ensure the validity of each measurement. The analyzer is capable of self-calibration and utilizes self-diagnostics and spectral correction methods when system calibration is unnecessary.

Ruggedness, versatility, and reliability are distinguishing features of the Kaiser Raman Rxn4 analyzer. Kaiser Raman analyzers perform whether you have a classified environment, washdown requirement, or control room installation.

When combined with the latest version of our process-ready software application, the Kaiser Raman Rxn4 analyzer provides analyzer control and DCS communication for process monitoring and control. A Raman spectrum contains features that are ideal for fast qualitative and robust quantitative analyses, often without the need for multivariate techniques.

The Kaiser Raman Rxn4 fiber-coupled Raman analyzer is ideally suited to serve the needs of composition and energy content determination in the liquefied natural gas (LNG) market when coupled with the Pilot probe for cryogenic liquids, allowing measurement of LNG and other cryogenic liquids without having to vaporize the sample.

Installation flexibility is accomplished by fiber-optically coupling a Kaiser Raman Rxn4 analyzer with a high-performance liquid probe, including a cryogenic Pilot™ probe for *in situ* analysis of LNG in the liquid phase.

Proven technology The Kaiser Raman Rxn4 analyzer offers an alternative to typical process analyzers. The chemical specificity and spectral range of the Kaiser Raman Rxn4 analyzer allows multiple components to be independently identified. Benefits for Raman-based component analysis include fiber-optic connectivity to remote sampling locations (no sampling loops required), no consumables, and the ability of a single analyzer to measure up to four sample locations. The Kaiser Raman Rxn4 multi-channel analyzer has been designed for easy integration into standardized installation packages.


The heart of the Kaiser Raman Rxn4 analyzer is a unique analyzer self-monitoring system, Cal-Check™, to ensure the validity of each analysis. The analyzer is capable of self-calibration, Auto-Cal™, in extreme environments and utilizes self-diagnostics and spectral correction methods when system calibration is unnecessary. The analyzer's precision is essential for robust chemometric analyses and calibration transfer between analyzers.

Implementation - Options

- General-purpose, Rack-mounted Packaging
- Supports Classified Area Sampling Requirements (ATEX Certifiable)
- Fiber Optic Analyzer to Sample Points
- Direct Insertion
- Optimized Liquid Probes (Pilot™)



Technical Specifications

Laser wavelength	785 nm
Spectral coverage	150-3425 cm ⁻¹ (λ=785 nm)
Temperature % relative humidity	5°C-35°C, operating; -15°C to 65°C, storage 20-80% RH, noncondensing
Input voltage	110-240 VAC, 50-60Hz standard
Maximum power	<400 Watts on startup; <150 Watts typical
Warm up time	20 minutes initial, 240 minutes for maximum accuracy
Unit dimensions (mm)	480 x 686 x 280
Weight (kg)	31
Sampling probe compatibility	Pilot™ Probe for cryogenic liquids
Connection interface	Modbus General purpose area, non-classified environments.
Packaging options	19 inch rack package
Certifications	ATEX*: CE Ex II (2) (1) G Ex [ia Ga] [op sh Gb] IIC ETL:  Intrinsically Safe output for probe and sensors used in Class I, Division 1, Groups A, B, C, and D; Ambient Temperature Range: +5°C ≤ T _{amb} ≤ + 35°C

*The Kaiser Rxn4 analyzer consists of an enclosure fabricated from steel (painted mild steel or stainless steel) for location in a non-hazardous location. The system provides intrinsically safe and protected optical source for connection to a probe in contact with a process in the hazardous area.



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