GALAXY SCIENTIFIC

QuasIR™ 2000

Fiber Optic FT-NIR

High-Performance Spectroscopy at the Point-of-Need

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The QuasIR™ 2000 FT-NIR

Portability without compromising performance

Portability & Performance

Galaxy Scientific Inc. is pleased to present the QuasIR™ 2000. Designed to offer a new kind of NIR measurement solution, the QuasIR™ 2000 brings together the portability required to move NIR analysis closer to the point-of-need, and unmatched spectroscopic performance for the fastest and most accurate results.

Problem Solving Innovation

The QuasIR™ 2000 delivers a wide range of technical innovations including our PermAlign™ interferometer optics and new concepts in software and algorithms, such as our Advanced-ID™ software for low concentration targeted screening.

Our industry-leading design optimizes the sensitivity and repeatability of the instrument for better measurement results. We merge powerful techniques with ease-of-use.

Expert Support

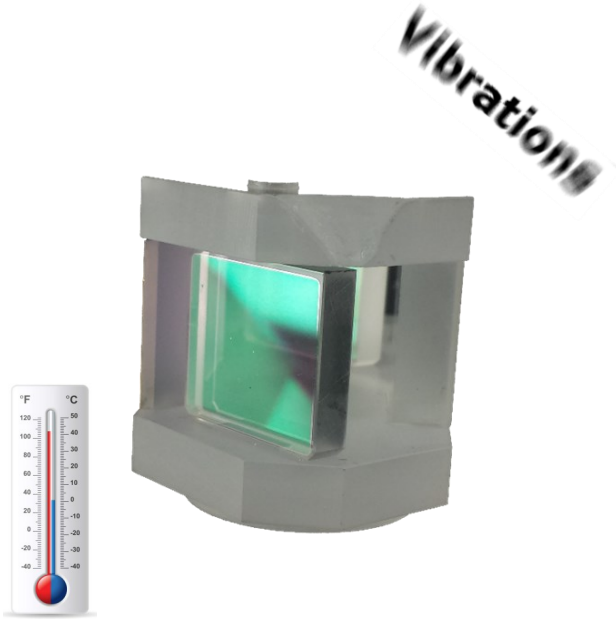
We've learned that the successful creation of an NIR solution requires teamwork, so, when you partner with Galaxy Scientific you can think of our technical staff as a part of your team. Our support personnel have decades of experience in developing, deploying, and servicing NIR customers. We offer complete professional services, including training, so we can tailor solutions to best meet your needs. In addition, Galaxy Scientific offers method development services as well as comprehensive calibration transfer services for customers who would like to migrate existing calibrations to our NIR platform.

Spectrometer Innovation

PermAlign™ Optics Technology

The heart of the QuasIR™ 2000 is our PermAlign™ optics technology, an innovative design that maintains alignment and performance under routine and severe conditions. Since the QuasIR™ was designed for portability, it was designed to achieve high performance, even in harsh conditions such as temperature extremes common in field use or in the presence of vibrations often experienced in manufacturing conditions.

With PermAlign™, you never need to make instrument adjustments and you can always have confidence in your results.



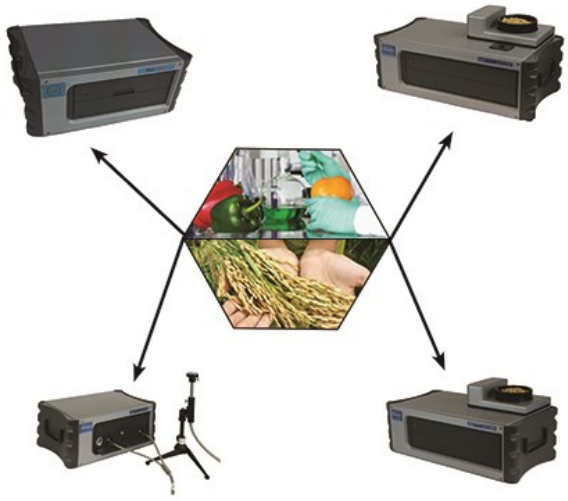
Automatic Instrument Performance

Every QuasIR™ is equipped with an automated performance testing unit. The system uses integrated standards to check and document all aspects of performance. This provides an easy, automated validation process for routine use and reduced documentation burden.

A New Standard in Consistency

The development of a robust NIR calibration often requires a significant investment of time and energy. The ability to deploy your calibrations quickly, successfully, and painlessly across a network of NIR systems can be critically important to getting the most out of your investment.

The QuasIR™ series is designed to ensure direct calibration transfer without the frustration of standardizing instruments or adjusting models to accommodate excessive instrument variability. Our technology and design ensure unmatched consistency and direct methods transfer with no loss in performance, so you can expand your QuasIR™ fleet with confidence.



Sampling Innovation

Proprietary Probe Design

Fiber probes are readily available from a number of sources, but many of the commercially available diffuse reflectance probes use a randomized bundle of fibers. This means that spectra acquired from two probes may be materially different. We have solved this problem by developing a proprietary design that uses a reproducible fiber layout in the probe.

Our design ensures that, with the exception of six fibers at the edges, all the launch fibers are surrounded by collection fibers. This maximizes the amount of reflected light collected by the probe. The number and diameter of the launch fibers was designed to throughput match the interferometer, maximizing performance.

Universal Connection

The QuasIR™ 2000 has two standard SMA 905 connectors, allowing it to be used with any commercially available probe that uses SMA 905 connectors. It can also attached to with fiber coupled collimators, transmission cells, and other accessories.

- Various lab or process probes
- Fiber coupled heated liquid transmission sampling accessory
- Gas cells
- Multiplexers that enable multi-channel measurements

Diffuse Reflectance Trigger Probe

The QuasIR™ 2000's Trigger Probe combines our high-performance, patterned diffuse reflectance fiber optics with visual and haptic feedback. With its hot swappable design, the Trigger Probe attaches quickly using two SMA 905 fiber connectors and a sealed IP65 electrical connector. Comfortable and lightweight, the ergonomic grip provides a simple point and pull interface to start data collection.

- Ergonomic grip with trigger to start collection
- Three easily visible indicators show the result of the analysis (Pass, Fail, In Progress)
- Haptic vibration feedback
- SMA type 905 fiber connectors with armored fiber optic cable
- 10 mm diameter, stainless steel probe ferrule

Spectral Sage™ Software Suite

The Spectral Sage™ Software Suite is an easy-to-use toolbox, featuring innovative functions for advanced method development. This package maximizes productivity at all levels and is designed with one goal: your successful development and deployment of NIR solutions.

Spectral Sage™ PLS Quantitative Analysis

The Spectral Sage™ PLS Quantitative method development software is designed to assist experts and first-time developers build, optimize, and deploy robust PLS quantitative models. The package offers:

- Automatic method optimization
- Advanced outlier management
- Fast operation, even with large data sets
- Support for a wide range of data formats

Spectral Sage™ Advanced-Identification

Using conventional methods, near-infrared spectroscopy is normally limited to the analysis of concentrations in the fraction of a percent level. But sometimes manufacturers are interested in ingredients, adulterants, or contaminants present at lower concentrations.

Advanced-Identification is a targeted screening software tool that allows quick screening and semi-quantitative results for concentrations substantially less than 0.1%. Advanced-Identification extends the use of NIR to further reduce ingredient supply chain risk and protect brand integrity.

Spectral Sage™ Routine Operation Software

Spectral Sage™ for Routine Operation provides everyday users a simple-to-learn interface with a convenient and easy-to-learn workflow. You don't need to be an expert to take measurements.

Benefits:

- Easy-to-use
- Convenient workflow
- Works with standard MS Windows computers

Ready for the Road

People looking for analysis on-the-go need an analyzer that is made for the job. The QuasIR™ 2000 is compact and ready for travel.

- 8.2 kg (QuasIR™ 2000 only)
- 35.5 x 24.1 x 14.5 cm (WxDxH)
- Lightweight aluminum flip down carrying handles are highly durable and make for easy transport
- IP65 / NEMA 4

Low Cost of Ownership

Every aspect of the QuasIR™ is designed to bring value to our customers by reducing downtime and lowering the long-term cost of ownership.

For maximum flexibility the QuasIR can operate from standard Windows computers and USB enabled Windows tablets.

Adjustable Probe Stand

Our adjustable probe stand offers several benefits:

- Stable platform to set the sample
- Folding design for portability
- Adjustable height and angle for flexibility
- Non-slip feet for stability

Battery, Mains, or Vehicle Powered

The QuasIR™ Series FT-NIR Analyzers can operate from mains power (110 - 240 VAC), external battery (12V, 2A), or vehicle power (12V, 2A). This gives you the capability to power the QuasIR™ anywhere you need it.

Travel Case

The QuasIR™ 2000 conveniently fits into our optional Pelican Storm™ travel case containing everything needed to operate the system. Made of HPX® high-performance resin, the hard case can withstand extreme conditions and is impact resistant. The dimensions of the case conform to airline standards for checked luggage making it easy to take your spectrometer anywhere it's needed.

- 20,000-hour user replaceable NIR source
- 10-year diode laser
- 10-year interferometer drive
- User replaceable desiccant
- Standard Windows PC or select table computers

QuasIR™ 2000 Industries and Applications

The QuasIR™ 2000 is a FT-NIR spectrometer with fiber optic interface for laboratory, field use or industrial in-line process applications.

- Pharmaceutical
- Polymer
- Petrochemical
- Chemical
- Energy
- Agriculture
- Animal Feed
- Food
- Wines & Spirits
- Tobacco

Food and Agriculture

Meat

- Fat
- Protein
- Moisture
- Collagen
- Salt

Beer - Wine - Liquor

- Ethanol, Water
- Sugar, Starch
- pH Value, Acids
- Organic Acids
- Amylopectin
- Maltose
- Fermentation

Animal Feed

- Moulture
- Protein
- Fat
- Fiber
- Digestabilty

Dairy

- Protein, Moisture, Fat(s)
- Total Solids/Solids-not-fat
- Casein, Urea,
- Lactic acid, Citric acid,
- Lactose, Glucose, Sucrose
- Screening/Adulteration

Edible Oils

- Fatty Acids
- Moisture
- Oxidation
- Saturation
- Authenticity

Tobacco

- Moisture
- Nicotine
- Total and Reducing Sugar
- Ash
- Classification & Grading

Coffee - Tea

- Caffeine
- Chlorogenic acid
- Free amino acids
- Polyphenols
- Origin & Grading

Baked Goods

- Fatty Acids
- Moisture
- Oxidation
- Saturation
- Authenticity

Ethanol

- Fermentation Process
- Glucose & Lactose
- % Ethanol
- DDGS Quality Control

Pharmaceutical, Petrochemical, Polymer, and Energy

Polymers

- Density, Hardness, Viscosity
- Molecular Weight and tacticity
- Saponification & OH Value
- Additives

Refining

- Octane
- Cetane
- Aromatics
- Distillation Range
- Flash & Freezing Points
- Additives

Coal

- Moisture
- Energy Content
- Ash Content
- Volatile Content

Pharma Raw Material

- Quick Raw Material Identification for Pharma, Nutraceutical, and Dietary Supplement Manufacturers

Counterfeit Drugs

- Product Authentication For Brand Protection
- Counterfeit Screening for Public Safety

Drug Manufacturing

- Quality Control
- Content Uniformity
- Blend Uniformity
- Process Analytical Technology

QuasIR™ 2000 FT-NIR

System Specifications

General Specification	Value	Alt. Value/Benefit
Dimensions	35.5 x 24.1 x 14.5cm (W x D x H)	13.98 x 9.49 x 5.71 in
Weight	< 8.2kg	< 18 lbs.
Power Supply	12V / 2A Supply, 60W max	
Communication	USB	
Operating Temperature	0°C to 40°C , <95% humidity, non-condensing	32°F to 104°F
Enclosure Protection	IP55 (dust and water)	NEMA 4
Sampling Mode	Diffuse Reflectance for solids, Transmission for liquids	
Sampling Device	Fits commercial probes and accessories; SMA 905 fiber connection	Fits commercial probes and accessories
Automated Verification & Instrument Diagnostics	Automatic, internal, 4 position validation wheel	Continuous performance monitoring
Performance Specifications		
Wavelength Range	12,800 - 4,000 cm^{-1}	785 - 2,500 nm
Spectral Resolution	Better than 4 cm^{-1}	< 0.3nm @ 870 nm
Wavelength Accuracy	< 0.05 cm-1 @ 7181.68 cm^{-1}	< 0.01 nm@1392 nm
Wavelength Repeatability	< 0.025 cm-1 @ 7181.68 cm^{-1}	<0.0048 nm@1392 nm
Photometric Accuracy	Better than 0.1% T	
Signal-to-Noise Ratio	> 20,000:1	Excellent sensitivity
Noise	Better than 20 micro au	Low detection limit
Detector	TE cooled InGaAs	
Data Acquisition A/D converter	24-bit high speed Delta-Sigma	
Reliability Specifications		
Laser Life	> 10 years	Low downtime & ownership costs
NIR Source Life	> 20,000 hours, user replaceable	Low downtime & ownership costs
Desiccant	User replaceable	Low ownership costs
Regulatory Compliance		
EMC directive 2004/108/EC	Complies	
RoHS directive 2002/95/EC	Exempt	
WEEE Directive 2002/96/EC	Complies	