QuasIR™ 3000

FT-NIR with Large Sampling Area for Analysis of Solids

High-Performance Spectroscopy at the Point-of-Need

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The QuasIR™ 3000 FT-NIR

Portability without compromising performance

Portability & Performance

Galaxy Scientific Inc. is pleased to present the QuasIR™ 3000. Designed to offer a new kind of NIR measurement solution, the QuasIR™ 3000 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

Galaxy Scientific offers a wide range of innovation to unleash the potential of NIR spectroscopy. Our industry-leading sampling designs optimize measurement volume for better testing results. Galaxy's PermAlign™ optics provide high spectral resolution with full spectral range. Our new concepts in software and algorithms, such as our Advanced-ID for low concentration targeted screening, merge powerful techniques with ease-of-use.
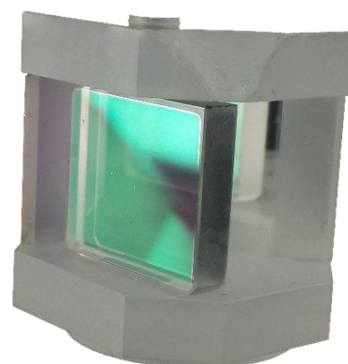
Expert Support

We've learned that the successful creation of an NIR solution requires teamwork, and so at Galaxy Scientific, technical staff should be thought of 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™ 3000 is our PermAlign™ optics technology, an innovative patented permanently aligned interferometer block that maintains alignment and performance under routine and severe conditions. Designed for portability, the QuasIR™ achieves high performance, even in harsh environments such as temperature extremes (common in field use), or in the presence of vibrations (often experienced in plant conditions).

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

Large Sampling Area for Solids

Experts know that good NIR results start with good sampling and this means a large measurement spot size and the largest possible sampling volume. With this in mind, the QuasIR™ 3000 has an enhanced 23mm sampling area, which is up to 5 times larger than competitive products. Our large sampling area, with a scratch-resistant sapphire window, helps produce better, more reproducible results.

An internal background shutter mechanism permits automatic collection of background scans without the need for external reference materials or user interaction.

QuasIR™ 3000 Sample Spinner and Cups

Sample Spinner

The QuasIR™ 3000 can be equipped with an optional sample spinner to further increase the sampling area. The sample spinner and other accessories can be easily attached in seconds, without the need for tools.

Various sampling cups and accessories are available for the system including:

- 98mm low OH quartz sampling cups

- 98mm petri dish adapter

- Transflection accessory for liquids

- 3 bottomless holders enable the use of a variety of standard laboratory glassware, offering many sampling options; fits 3 sizes of Pyrex® glass containers

   ♦ Petri dish

   ♦ 90 x 50 crystalizing dish

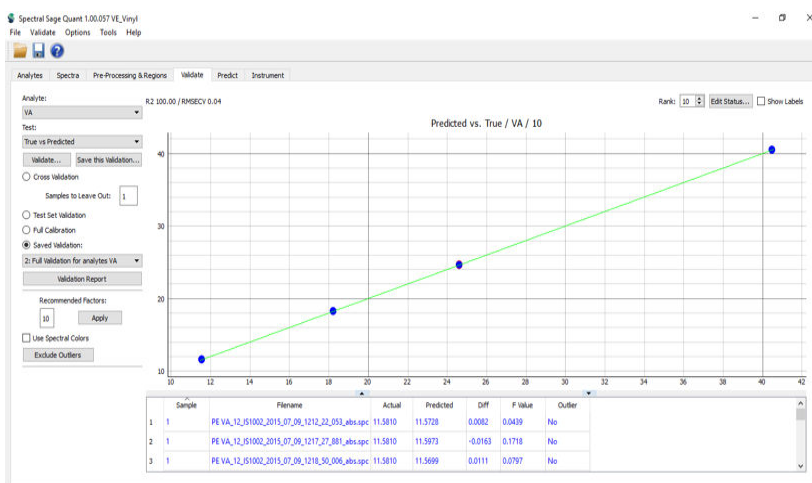   ♦ 600mL graduated beaker

Holders for Sample Spinner

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 an easy-to-use 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™ 3000 is compact and ready for travel.

- < 8.85 kg (<19.51 lbs.)
- 44.5 x 24.1 x 14.5 cm (WxDxH) without spinner
- Lightweight aluminum flip down carrying handles are highly durable and make for easy transport
- IP54 / NEMA 13

44.5 cm (17.52 in) 24.1 cm (9.49 in) 14.5 cm (5.71 in)

Travel Case

The QuasIR™ 3000 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.

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.

Low Cost of Ownership

Every aspect of the QuasIR™ is designed to bring value to our customers, and that includes reduced downtime and long-term cost of ownership.

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

- 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

The QuasIR™ 3000 is a dedicated NIR analyzer for analysis of chemical and physical properties of inhomogeneous solid samples in a wide range of industries.

- Animal Feed
- Agriculture
- Food and beverage
- Edible oils
- Wines & Spirits
- Tobacco
- Pharmaceutical
- Polymer
- Petrochemical
- Chemical
- Energy

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
- Moisture
- Protein
- Fat
- Fiber
- Digestability

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, Polymers, 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™ 3000 FT-NIR
System Specifications

General Specification	Value	Alternate Value/Benefit
Dimensions (W x D x H)	44.5 x 24.1 x 14.5 cm	17.52 x 9.49 x 5.71 in.
Weight	< 8.85 kg	< 19.51 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, Transflectance for liquids	Maximum signal and collection efficiency
Sampling Device	High performance gold-coated integrating sphere	Maximum signal and collection efficiency
Sampling Area	23 mm	Improved results
Automated Verification & Instrument Diagnostics	Automatic, internal, 4-position validation wheel	Continuous performance monitoring
Performance Specifications		
Wavelength Range	12,800 - 3,900 cm^{-1}	781- 2,560 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	