FT-NIR sampling offers quick, non-destructive analysis of many sample types. Automated accessories further improve productivity gains realized with the Thermo Scientific Antaris™ FT-NIR Analyzer.

Automation Tools for the Antaris FT-NIR Analyzer

Sampling accessories for automation, high throughput, and bulk sampling

To assist in regulatory compliance, Installation Qualification (IQ) and Operational Qualification (OQ) documentation is available for all Antaris FT-NIR sampling systems. In addition, certified support personnel install and qualify operation using USP-recommended standards and testing protocols.

A major economic benefit of FT-NIR sampling includes the ability to analyze samples non-destructively, without sample preparation, through containers. These advantages over traditional testing techniques have created a large migration toward FT-NIR testing of materials in many industries, including pharmaceutical, food & beverage, polymer and chemical. These advantages also deliver great improvements in sampling throughput. Sample throughput can be increased by an order of magnitude by automating the sampling process. Furthermore, some analyses can actually be more robust and reliable through automation; such is the case in bulk analysis of heterogeneous samples. Thermo Fisher Scientific has partnered with leaders in industry to develop FT-NIR automation tools for today's most important applications.

Antaris Automation: Integrated and Fit-for-Purpose

Antaris FT-NIR analyzer sampling automation tools are computer-controlled and can be integrated into existing RESULT™ software analysis routines. High repeatability, error-checking and system auditing provide high confidence in autosampling results. Final data can be stored and statistics calculated on individual samples or sample batches. Backgrounds can be collected as frequently as needed. For diffuse reflectance measurements, the background can be collected using either the analyzer's internal gold reference or external standards, such as Spectralon®. For transmission and diffuse reflectance the system can be configured to automatically recognize the accessory position which contains the background reference.

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MultiPro Autosampler

One tool for continuous sample analysis of powders, tablets and softgels

The MultiPro Autosampler for the Antaris FT-NIR analyzer automates the analysis of tablets, softgels, and powders in vials by utilizing both diffuse reflectance and transmission. With an increasing demand to test more samples in-process and just prior to packaging, the MultiPro Autosampler provides a fast, automated and nondestructive quality-control tool that will:

- Analyze multiple dosage forms on a single instrument
- Improve quality control efficiency
- Reduce testing labor and time

This dual-analysis capability provides you with information on:

- Product identity
- Drug content
- Tablet coating properties
- Moisture content of lyophilized materials in closed vials
- Excipients

The MultiPro Autosampler combines the capability of the analyzer's highly sensitive Integrating Sphere module for diffuse reflectance and the Tablet Analyzer module for transmission analysis of tablets and solids.

For tablets, these techniques provide complementary information, with a more complete picture of the sample's content and surface composition. Both measurements can be performed in a single analysis.

The autosampler has two user-interchangeable detector options optimized for transmission analysis of opaque tablets or softgels. Additional features of the MultiPro Autosampler include:

- Diffuse reflectance and transmission analysis
- Interchangeable carousels for continuous operation
- Highly reproducible sample positioning
- Automatic error detection

We designed the autosampler with precision engineering to guarantee reproducible positioning of samples. The MultiPro Autosampler is fitted with interchangeable sample carousels which can be loaded in groups for easy, continuous operation. Carousels are available in different sizes to accommodate 40 tablets of any size up to 10 mm in width, and common vials from 12 – 28 mm wide. To ensure the most accurate and reproducible sample positioning, custom carousels are designed to the exact size of your tablets. Sample positions in the carousel are recessed for easy placement and stability during transport and rotation of the autosampler.

Sample Cup Spinners

Sample Cup Spinners provide a method for the Antaris FT-NIR analyzer to obtain bulk material spectra, which are truly representative of heterogeneous samples such as powders with varying particle sizes or content, and polymer pellets. The Sample Cup Spinners eliminate the need to take multiple spectra of the same sample and use the average of these results to generate an answer.

Analyze a variety of samples with confidence including:

- Polymer pellets
- Powders
- Food ingredients and grains
- Coarse granular solids

Autosampler RS

Efficient, reliable and continuous sample analysis by diffuse reflectance

The Autosampler RS for Antaris FT-NIR analyzers automates the analysis of powdered or solid samples in vials or tablets. The autosampler interfaces to the Integrating Sphere module for diffuse reflectance measurements. This instrument gives users the ability to analyze up to 10 samples per minute, allowing continuous, unattended sample analysis.

The Autosampler RS offers:

- Analysis of powders and tablets by diffuse reflectance
- Reproducible sample positioning
- Automatic error detection
- Interchangeable carousels for easy and continuous operation

The Autosampler RS is controlled by RESULT software. It easily attaches to the top of the analyzer and can also be quickly removed. It is integrated with the system and requires no extra space. No additional power or external cables are needed to run the autosampler unit. We have designed the autosampler with precision engineering to guarantee reproducible positioning of samples.
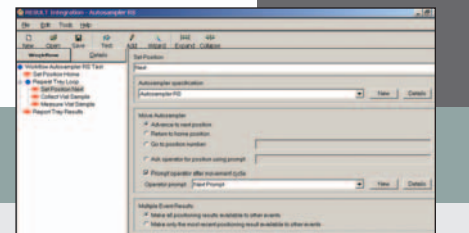
The Autosampler RS is fitted with inter-changeable sample carousels, and multiple carousels can be loaded with samples for easy, continuous operation. Carousels are available in several sizes to accommodate common vial dimensions from 12 – 28 mm. In addition, the sample holder positions are recessed for sample stability during transport and rotation of the autosampler.

Sample Cup Spinners allow a greater amount of sample to be analyzed by diffuse reflectance than in a single-point measurement. When analyzing coarse heterogeneous materials, it is important to obtain a result that is representative of the bulk material. The more sample that is analyzed, the more representative your measurement will be of the entire batch. The sample is placed in a cup and rotated through the NIR beam to produce a diffuse reflectance spectrum representative of the bulk sample.

These accessories easily mount to the Integrating Sphere module, and use the module's internal gold reference for automatic background collection, allowing the background to be collected even if a sample cup is in place. No external power supply is needed.

The accessory is available in the industry-standard size of 5 cm, and in an extra large size of 12 cm, for situations where additional sampling area is required. These accessories come with an open sample cup and are compatible with the macro- and micro-powder cups.

Product Specifications

Specifications

	MultiPro Autosampler	Autosampler RS	Sample Cup Spinner
Sample Types	Tablets, Softgels, Capsules Powders in vials	Powders in vials Tablets, Solids in vials	Food Products, Food Ingredients Grains, Polymer pellets, Powders Coarse samples
Open Sample Cup	N/A	N/A	4.78 cm or 12 cm Quartz window
Transmission Detector Options Standard Transmission Tablet Module	Spectral Range: 12000 – 5880 cm^{-1} (833 – 1700 nm)	N/A	N/A
SoftGel Transmission Tablet Module	Spectral Range: 12000 – 3800 cm^{-1} (833 – 2630 nm)	N/A	N/A
Maximum Tablet Size	2.54 cm (L) x 1.0 cm (W) x 0.79 cm (thickness)	2.54 cm (L) x 1.0 cm (W) x 0.79 cm (thickness)	N/A
Tablet Carousel	Custom carousel designed to your tablet specifications – 40 positions	Custom carousel designed to your tablet specifications – 40 positions	N/A
Maximum Number of Samples by Transmission	40 samples	N/A	N/A
Available Vial Carousels*	12 mm vials – 60 positions 15 mm vials – 50 positions 17 mm vials – 45 positions 19 mm vials – 40 positions 21 mm vials – 35 positions 28 mm vials – 30 positions Custom carousels		N/A
Maximum Number of Samples by Reflectance only	60 samples	60 samples	N/A
Positional Accuracy	± 0.13 cm ± 0.52 degrees (angular)	± 0.13 cm ± 0.52 degrees (angular)	N/A
Background Collection Options	Before every sample At the start of every carousel After a defined time interval Diffuse reflectance – uses either integrating sphere internal gold reference or external standards		Before every sample After a defined time interval
Dimension	Does not increase total dimension of analyzer 35.0 cm (W) x 41.4 cm (D) x 22.5 cm (H)		Does not increase total dimension of analyzer **5 cm Cup Spinner:** 13.3 cm (W) x 23.1 cm (D) x 6.4 cm (H) **12 cm Cup Spinner:** 33.0 cm (W) x 24.2 cm (D) x 6.4 cm (H)
Weight	7.2 kg	5.9 kg	**5 cm Cup Spinner:** 1.2 kg **12 cm Cup Spinner:** 1.7 kg
Compatible Antaris Systems	Method Development Sampling (MDS) System Reflection Transmission Sampling (RTS) System Solid Sampling System Tablet Analyzer System		
Compatible Software	RESULT Software Suite, Revision 2 or greater	RESULT Software Suite, Revision 1 or greater	RESULT Software Suite, Revision 2 or greater
Regulatory Approvals	CE LISTED N0291537110 ETL N0291537110	CE LISTED N0291537110 ETL N0291537110	
Power Requirements	No external supply required		

*Vial size is outer diameter measurement

Class IIa Laser Product Avoid long-term viewing of direct laser light.   Class I Laser Product

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