

PRODUCT DATASHEET

Diamond 20™

FTIR/FT-NIR system for laboratory bench
and rugged at-line process environments



Superior Reliability

Fast and Precise

Compact Footprint

- Labs
- Refinery and Petrochemical
- Raw Materials QC
- General Chemical
- Pharmaceuticals
- Paint and Coating
- Film Extrusion/Fiber Webs
- Agriculture Chemicals
- Polymers

Diamond 20

Benchtop FTIR/FT-NIR Analyzer

The Diamond 20™ analyzer is an FTIR/FT-NIR system designed for operation in rugged at-line environments and benchtop laboratory applications. The Diamond 20 analyzer is typically used for calibration and applications development in support of the series of on-line continuous stream and batch process analyzers.

- Wide array of MIR and NIR sampling and detector
- Permanently aligned optics with patented Transept™ Interferometer
- Vibration-tolerant wedges use thickness and refractive index, instead of vibration-sensitive mirror position, to alter the interferometer path length
- Hermetically sealed interferometer withstands moisture and protects against contamination
- Seamless calibration transfer between Diamond 20 and other FTIR process analyzers
- Compact 18" footprint requires less bench space
- Multiple software options including FX90 featuring exceptional workstation graphics flexibility
- Two external beam ports
- Optibus™ efficiently transports the IR beam to any type of sampling peripheral
- High-performance data collection computer for high signal-to-noise spectra

Applications

- Refinery and Petrochemical
- Raw Materials QC
- General Chemical
- Pharmaceuticals
- Paint and Coating
- Film Extrusion/Fiber Webs
- Agriculture Chemicals
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Wide Range of Sample Options

- **Fiber Optic Devices**
 - Diffuse Reflectance
 - Fiber Optic Probes
 - Fiber Optic Launchers and Multiplexers
- **Probes**
 - ATR for highly absorbing Liquids
 - Fiber Optic Probes for Remote Measurements
 - Diamond-Tipped Probes for Harsh Conditions
 - General Reaction Probes
- **Sample Cells**
 - Short Gas Cells
 - Laminar Flow Long Gas Cells
 - White Cells
 - Liquid Transmission Cells
 - Flow-Through ATR
 - Open Boat ATR
 - Disposable Vial

TRANSEPT Interferometer

The Heart of the System

- Process-proven FT optical bench featuring Transept interferometer design and Optibus light conduit
- Superior analytical stability and accuracy
- Unique refractive scanning wedge design means no moving mirrors
- Permanently aligned optics using Corner-Cube technology
- Core optical technology shared in all FTIR products

NEW DCM 600 Data Collect Module

- Improved signal-to-noise across entire frequency range – up to 12X Performance Enhancement Factor
- Easily upgrade from prior generation DCM 400
 - same compact footprint

Specifications:	
Spectrometer	
Interferometer:	TranseptIV hermetically- sealed module with refractively scanned design. Precision cross-roller bearings and high accuracy Corner-Cube mirrors
Spectral Range:	Extended Mid-IR 7,400 to 450 cm^{-1} ; Near-IR 12,000 to 1,200 cm^{-1}
Resolution:	Keyboard-selectable to 1.5 cm^{-1} (unapodized); 2 cm^{-1} (apodized)
Scanning Speed:	Automatically optimized for detector type or software – selectable for specific applications. Adaptive digital servo drive uses laser quadrature for positive position reference. Optical speeds to 2.25 cm^{-1}
Wave Number Repeatability:	Better than $\pm 0.01 \text{ cm}^{-1}$
Apodization Functions:	Choice of 14 keyboard -selectable standard functions
Detector:	Standard–internal DTGS pyroelectric. Optional–full line of external Optibus detectors, including DTGS, liquid nitrogen cooled MCT, thermo-electrically controlled DTGS, MCT, InAs, and InGaAs. Optical bench can accommodate two software – selectable detectors at one time. Optional signal multiplexers allow additional detectors
Infrared Source:	Internal, air-cooled, high efficiency Reflex Sphere
Signal Conversion:	Computer-selectable gain, high- and low-pass filters, and delay compensation. High- accuracy, true 18- bit ADC
Sampling Optics:	Internal focused beam, external collimated beams
Communications Ports:	Standard Ethernet LAN protocol capabilities. Parallel port (e.g., for printer), two RS-232 ports (e.g., for plotter and communications link)
Cursor Readouts:	Continuous, in cm^{-1} or nanometers for abscissa, %T or absorbance units for ordinate

Software

Robust FX90 advanced spectroscopy platform

- Provides a comprehensive spectral capture and analysis program
- Simplifies many complex tasks associated with FTIR monitoring
- Supports spectral addition, subtraction, multiplication and division and automated functions such as baseline correction
- Full chemometric tool package
- Can be easily customized for reaction monitoring applications
- Also compatible with FX80, PC80, AnaGRAMS, CPSA. Third party software compatibility with Matlab®, Pirouette®, Lab Control Spectacle™ and GRAMS™, FTIR data station included

Experience and Support Makes a Difference

Our staff of applications experts provide feasibility and calibration services that set the worldwide standard. We also provide system integration and post-installation support to ensure your success. We also offer annual hardware maintenance and calibration modeling service support agreements.

GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights delivers premium analytical sensors, analyzers, instrumentation, software and solutions that are mission-critical to keep your operations, personnel, and the environment safe. Our commitment to customer satisfaction is evident through our diverse range of products, programs, and services, designed to accommodate various budgets and application needs.

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