



● **VERTEX 70** FT-IR Spectrometer

Specifications

Spectral range	8,000 to 350 cm^{-1} standard, with KBr beamsplitter, DTGS detector and MIR source
Spectral range options	Far IR: 680 to 15 cm^{-1} , Near IR: 15,500 to 4,000 cm^{-1} , Visible/UV: 28,000 to 9,000 cm^{-1}
Beamsplitter options	KBr (broadband): 10,000 to 380 cm^{-1} CaF ₂ -NIR: 15,500 to 1,200 cm^{-1} , Quartz-UV/VIS/NIR: 28,000 to 3,500 cm^{-1} Multilayer far IR: 680 to 30 cm^{-1} , Silicon solid state: 600 to 15 cm^{-1} Mylar® 23 μm : 120 to 30 cm^{-1} , Mylar® 50 μm : 60 to 15 cm^{-1} Beamsplitters are easy to exchange and stored inside the optics bench
Source	Internal ceramic source for mid and far IR, air cooled
Source options	Internal tungsten source for near IR/VIS, air cooled External water cooled far IR Mercury arc lamp, high power ceramic and tungsten sources
Detectors	DigiTect detector system, standard high sensitivity room temperature (RT)
Detector options	DTGS with CsI, far IR DTGS with PE window LN ₂ cooled MCT's (photo conductive and photovoltaic), LN ₂ cooled InSb detector and MCT/InSb sandwich detectors, RT and TE cooled InGaAs-, PbS-, Si- and GaP-diodes; Far IR/THz liquid He cooled bolometer detectors
Spectral resolution	Better than 0.4 cm^{-1} , optional better than 0.16 cm^{-1}

Wavenumber accuracy	Better than 0.005 cm ⁻¹ @ 2,000 cm ⁻¹
Photometric accuracy	Better than 0.1% T
Signal-to-Noise	5 sec sample, 5 sec reference: >9,000:1 (< 4.82 × 10 ⁻⁵ AU noise) peak-to-peak @ 2,000 cm ⁻¹ , 4 cm ⁻¹ spectral resolution and standard optical components
Signal-to-Noise, typical	5 sec sample: 12,000:1 (3.61 × 10 ⁻⁵ AU noise) peak-to-peak 1 min sample: 50,000:1 (8.6 × 10 ⁻⁶ AU noise) peak-to-peak
Aperture ratio	f/2.5, nominal beam diameter 40mm (1.57")
Interferometer	RockSolid permanently aligned, high stability interferometer
Interferometer scan speeds	8 velocities standard 1.6 - 60 kHz (1.0 - 38 mm/sec opd) Optional 12 velocities 1.6 – 160 kHz (1.0 – 100 mm/sec opd)
Rapid Scan	15 spectra/sec @ 8 cm ⁻¹ spectral resolution
Rapid Scan option	>68 spectra/sec @ 16 cm ⁻¹ or 42 spectra/sec @ 8 cm ⁻¹ spectral resolution
Step Scan option	Time resolved and modulation spectroscopy Temporal resolution of 6 microseconds in connection with internal ADC and down to 2.5/4 nanoseconds using dual channel 14 bit transient recorder with fast detector and preamplifier
Slow Scan option	Continuously variable scanner velocity down to 100 Hz (0.0063 cm/sec opd)
A/D converter	True 24-bit dynamic range for all scan velocities, dual channel data acquisition
Validation	Internal validation unit, 6 positions, certified standards optional
Aperture wheel	12 positions, fixed diameters, ranging from 250 μm to 8 mm; additional positions and shape optional
Optics bench	Sealed and desiccated, or purgeable, gold coated mirrors
Flexibility & automation opt.	Two internal detector positions, software selectable Two internal source positions, software selectable Five output ports at the right, front and left side of the optics bench, software selectable Two input ports at the right (uses aperture and optical filter wheels) and rear side of the optics bench, software selectable Automatic sample compartment shutters
Sample compartment	25.5 (W) x 27 (D) x 16 (H) cm
Spectrometer size	84 (W) x 64(D) x 27.5 (H) cm
Weight	62 kg (basic configuration)
Spectrometer power	100 - 240 VAC, 50 - 60Hz, typical 100W (without data system)
Computer interface	Industry standard Ethernet connection, TCP/IP protocol
Spectroscopy software	OPUS easy to use, fully GLP and 21 CFR part 11 compliant software

QuickLock accessories with Automatic Accessory Recognition (AAR) for the sample compartment

- Sampling accessory kit including ATR
- Diffuse reflectance
- Specular reflectance with fixed angle of incidence
- Variable angle specular reflectance
- Liquid cells, demountable and fixed
- Liquid autosampler
- Gas cells, variable and fixed pathlength
- Micro ATR with Ge, ZnSe and diamond crystals
- Horizontal ATR, multiple reflection
- Photoacoustic cell
- Beam condensers
- Parallel beam unit

and many more...

Virtually all commercially available sampling accessories are adaptable to the sample compartment

External accessories

- HYPERION series FT-IR microscope
- HTS-XT, High Throughput Screening eXTension
- RAM II FT-Raman and PL II photoluminescence module
- IMAC, IMaging ACcessory
- TGA-FT-IR coupling
- PMA 50, Polarization Modulation Accessory for VCD and PM-IRRAS
- MICOR-ID, Micro-organisms identification
- External sample compartment
- Fiber optic coupling unit with fiber probe for solids and liquids
- Integrating sphere (internal and external)
- Auto samplers

Technologies used are protected by one or more of the following patents: US 5309217; DE 4212143; US 7034944; US 5923422; DE 19704598

Bruker Optics is ISO 9001 certified. Laser class 2

www.brukeroptics.com ● **Bruker Optics Inc.**

Billerica, MA · USA
Phone +1 (978) 439-9899
Fax +1 (978) 663-9177
info@brukeroptics.com

Bruker Optik GmbH

Ettlingen · Germany
Phone +49 (7243) 504-2000
Fax +49 (7243) 504-2050
info@brukeroptics.de

Bruker Hong Kong Ltd.

Hong Kong
Phone +852 2796-6100
Fax +852 2796-6109
hk@brukeroptics.com.hk