

EXCALIBUR SERIES... FTS 4000 Spectrometer

► The Digilab Excalibur Series

The Digilab Excalibur Series is a family of FT-IR spectrometers based on Digilab's proprietary Permatrac dynamically aligned interferometers, offering upgradeability throughout the series, and capable of covering the spectral range from 20,000 cm^{-1} to 50 cm^{-1} . The Excalibur systems utilize a USB interface, the latest technology in computer interfaces, making it possible to use any standard computer without worrying about card slots, interrupts or baud rates. Excalibur Series spectrometer's external beam options are compatible with a wide array of external accessories, including the UMA 400 and 600 microscopes, GC-IR, TGA-IR, External Optical Bench, External Sample Compartment, FT-Raman and multiple combinations of these accessories.

The FTS 4000 Spectrometer

The Excalibur FTS 4000 spectrometer incorporates a two-inch clear aperture air-bearing interferometer for higher optical throughput and enhanced infrared sensitivity. With its high throughput interferometer, the FTS 4000 typically delivers more than 100 mW of infrared power to the sample focus, providing higher sensitivity for applications and accessories in which infrared throughput is limited, such as; FT-Raman, infrared microscopy, single-bounce ATR, diffuse reflectance, and high resolution measurements.

Excalibur FTS 4000 Optional Features

Sources

- Ceramic air-cooled source (Mid-IR)
- Tungsten halogen source (Near-IR)
- Mid-IR/Near-IR dual source assembly

Beamsplitters

- KBr 8,000-375 cm^{-1}
- CsI 4,500-225 cm^{-1}
- Far-IR 600-50 cm^{-1}
- CaF₂ 11,000-1,800 cm^{-1}
- Quartz 20,000-3,300 cm^{-1}

Detectors

- Peltier-cooled DTGS
- Ambient DTGS
- LN₂ cooled MCT
 - standard
 - linearized
- Lead Selenide
- Silicon
- LN₂ cooled InSb

Other Options

- Emission/Raman aperture mirror flipper
- Right side external beam

Enclosure:

- Purged

Excalibur Standard Features

Resolution	0.25 cm^{-1} optical 0.18 cm^{-1} unapodized
Eight position resolution aperture	Standard
Spectrometer interface	USB (Universal Serial Bus)
Operating System/Software	Windows 2000/Win-IR Pro
Signal to Noise Ratio ¹	30,000:1
Infrared Power	> 100 mW at the sample
Kinetic Scan Rates ²	40 spectra/second
Sample Compartment Conduit	Standard
Spectrometer Diagnostics	Standard
Internal Validation Standard	Standard
Training CD-ROM	Standard
Sample Compartment Dimensions Wide x deep x high	22.9 x 25.4 x 19.1 cm 9 x 10 x 7 1/2 in
Spectrometer Dimensions Wide x deep x high Weight	63.5 x 68.9 x 36.5 cm 25 x 27 1/8 x 14 3/8 in 71 Kg 160 pounds

1. Computed from an open beam sample scan at 4 cm^{-1} resolution.

2. Kinetic scan rate at 8 cm^{-1} data point resolution (16 cm^{-1} spectral resolution) with Win-IR Pro software.



Excalibur Standard System Configurations

Name	Resolution	Source(s)	Beamsplitter(s)	Enclosure	Detector(s)	Right hand side external beam
FTS 3000MX	0.25 cm ⁻¹	Ceramic	KBr	Sealed & Desiccated	Cooled DTGS	No
FTS 3000NX	0.25 cm ⁻¹	Tungsten-Halogen	Quartz	Sealed & Desiccated	PbSe	Yes
FTS 3000FX	0.25 cm ⁻¹	Ceramic	CsI	Tropical option	Cooled DTGS	No
FTS 3500GX	0.25 cm ⁻¹	Ceramic, Tungsten-Halogen	KBr Quartz	Sealed & Desiccated	Cooled DTGS, PbSe	Yes
FTS 3500ARX	0.25 cm ⁻¹	Ceramic, Tungsten-Halogen	KBr Quartz 6.25µ Mylar	Purged	Cooled DTGS, PbSe, DTGS/PE	Yes
FTS 4000MX	0.25 cm ⁻¹	Ceramic	KBr	Purged	Cooled DTGS	No

Minimum specifications for computer:

200 MHz Pentium, with 128 MB RAM, Windows Operating System supporting USB, USB interface, sound card, speakers, CD-ROM, 1 GB hard disk, mouse, keyboard, and a 17" Super VGA monitor set for screen resolution of 1024 by 768 and 256 colors.

The Excalibur series is compatible with sample compartment accessories with Accessory Recognition Technology (ART) from the major manufacturers.

Major Accessories:

FT-Raman accessory
 Gas Chromatography/FT-IR [GC/FT-IR] accessory
 Thermogravimetric analysis/FT-IR [TGA/FT-IR] accessory
 External sample compartment [ESC]
 Universal beam accessory [UBA]
 External experiment module

FT-IR microscope accessories:

UMA 400
 UMA 600

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