



Agilent Cary 660/670/680 FTIR

Unrivalled. Sensitive. Flexible.

Specifications



Design overview

The Agilent Cary 660 FTIR spectrometer design is based on a 38 mm dynamically aligned, 60° mechanical bearing Michelson interferometer and is capable of covering a wide spectral range from the UV to Far-IR. The Cary 660 FTIR guarantees better than 0.075 cm^{-1} maximum resolution, and includes a revolutionary air-cooled source capable of delivering more than 50 mW of power to the sample for maximum sensitivity. The Cary 660 FTIR can also be upgraded to a Cary 670 or Cary 680 FTIR, providing you with maximum flexibility as your FTIR needs change.

The Agilent Cary 670 and Cary 680 FTIR incorporate a 57 mm dynamically aligned, 60° air bearing Michelson interferometer covering a wide spectral range from the UV to Far-IR. Both spectrometer models come with the high-throughput air-cooled source, delivering over four times greater sensitivity than any other available FTIR spectrometer. The Cary 670 FTIR is a rapid-scan spectrometer that can be upgraded to the step-scan Cary 680 FTIR system.

The Cary 660/670/680 FTIR are compatible with a wide range of accessories. These include single-point microscopy, micro-chemical imaging, ATR imaging, PAS, PM-IRRAS, μs and nsTRS (time-resolved spectroscopy) and hyphenated techniques such as GC-IR, GPC-IR and TGA-IR.

Agilent FTIR spectrometers are manufactured according to a quality management system certified to ISO 9001.



Performance specifications

Type	Cary 660 FTIR	Cary 670 FTIR	Cary 680 FTIR
Interferometer type	38 mm dynamically aligned, 60° mechanical bearing Michelson	57 mm dynamically aligned, 60° air bearing Michelson	57 mm dynamically aligned, 60° air bearing Michelson
Spectral range (cm⁻¹)			
Standard ¹	Mid-IR: 9,000–350	Mid-IR: 9,000–350	Mid-IR: 9,000–350
Optional	53,000–20	53,000–10	53,000–10
Spectral resolution (cm⁻¹)			
Typical	Better than 0.06	Better than 0.06	Better than 0.06
Guaranteed	Better than 0.075	Better than 0.075	Better than 0.075
Signal-to-noise ratio^{2,3}			
Guaranteed 5 sec p-p	>10,000:1	>48,000:1	>48,000:1
Typical 5 sec p-p	>16,000:1	>70,000:1	>70,000:1
Typical 5 sec p-p with ATR	>4,500:1	>12,000:1	>12,000:1
Typical 1 min p-p	>50,000:1	>200,000:1	>200,000:1
Typical 1 min RMS	>210,000:1	>860,000:1	>860,000:1
Infrared power (at the sample focus)	>50 mW	>200 mW	>200 mW
Wavenumber			
Accuracy	0.005 cm ⁻¹ at 2,200 cm ⁻¹	0.005 cm ⁻¹ at 2,200 cm ⁻¹	0.005 cm ⁻¹ at 2,200 cm ⁻¹
Precision	0.003 cm ⁻¹	0.002 cm ⁻¹	0.002 cm ⁻¹
Photometric performance			
Ordinate linearity DLaTGS (Deviation from 0%T based on ASTM1421)	Better than 0.06%T	Better than 0.06%T	Better than 0.06%T
Ordinate linearity, linearized MCT (Deviation from 1.60 Abs polystyrene peak at 2920 cm ⁻¹)	Better than 0.10 Abs	Better than 0.10 Abs	Better than 0.10 Abs
Kinetics scan rates			
Standard (16 cm ⁻¹ spectral resolution)	>40 spectra/second	>110 spectra/second	>110 spectra/second
Optional (16 cm ⁻¹ spectral resolution)	>70 spectra/second	N/A	N/A
Time resolved spectroscopy			
µs sampling rate	Upgrade	Upgrade	1.67 µs
ns sampling rate	Upgrade	Upgrade	1 ns
Spectrometer enclosure			
Standard	Sealed and dessicated	Purged	Purged
Optional	Purged or tropical (moisture-resistant windows)	N/A	N/A
A/D converter	Delta-Sigma, 24 bit, 600 kHz (Dual ADC optional)	Delta-Sigma, 24 bit, 600 kHz (Dual ADC standard)	Delta-Sigma, 24 bit, 600 kHz (Dual ADC standard)
Spectrometer interface	USB 2	USB 2	USB 2
External ports	3 (left, right and rear emission)	3 (left, right and rear emission)	3 (left, right and rear emission)
Upgradeable	Yes, to 670 or 680 FTIR	Yes, to 680 FTIR	N/A
Step-scan capability	Upgrade	Upgrade	Yes (DSP1, 2 and 3) <ul style="list-style-type: none"> • PM-IRRAS⁴ • Polymer stretching • µs TRS • ns TRS • Simultaneous multidepth profiling using PAS⁴

Agilent Cary 660/670/680 FTIR

Physical specifications

Type	Cary 660 FTIR	Cary 670 FTIR	Cary 680 FTIR
Sample compartment dimensions (W x D x H)	23.2 x 27.6 x 15.4 cm (9.1 x 10.9 x 6.1 in)	23.2 x 27.6 x 15.4 cm (9.1 x 10.9 x 6.1 in)	23.2 x 27.6 x 15.4 cm (9.1 x 10.9 x 6.1 in)
Spectrometer dimensions (W x D x H)	70.8 x 75.6 x 34.4 cm (27.9 x 29.8 x 13.5 in)	70.8 x 75.6 x 34.4 cm (27.9 x 29.8 x 13.5 in)	70.8 x 75.6 x 34.4 cm (27.9 x 29.8 x 13.5 in)
Weight	80 kg (176 lb)	80 kg (176 lb)	80 kg (176 lb)

Configurations

Standard system configurations ⁵	Range (cm ⁻¹) ⁶	Source(s)	Beamsplitter(s)	Detector(s)
Mid-IR	9,000–350	Ceramic	Extended range KBr	Cooled DLaTGS
Near-IR	18,000–2,800	Tungsten-halogen	NIR quartz or CaF ₂	Cooled DLaTGS
Mid-near IR (dual)	18,000–350	Ceramic, tungsten-halogen	Extended range KBr/ NIR quartz or CaF ₂	Cooled DLaTGS
Mid-far IR	6,000–225	Ceramic	CsI	Cooled DLaTGS
Far-IR	700–20	Ceramic or Hg-arc	Mylar	Far-IR DLaTGS
UV-Vis	53,000–12,000	Deuterium	UV quartz	PMT

Configurable options	Type	Spectral range (cm ⁻¹)
Sources (Single or dual source assemblies available)	Ceramic air-cooled	Mid-IR: 9,000–20
	Tungsten-halogen	Visible-near IR: 25,000–2,100
	Hg-arc (external)	Far-IR: 600–10
	Xenon (external)	UV-visible: 40,000–10,000
	Deuterium (external)	UV: 53,000–12,000
Beamsplitters (With internal storage for 2 extra beamsplitters)	Extended range KBr	11,000–350
	CsI	6,000–225
	NIR quartz	20,000–2,800
	UV-Vis quartz	53,000–4,000
	CaF ₂	18,000–1,200
	Set of five Mylar (6.25, 12.5, 25, 50 and 125 μm)	700–10
Detectors (Single or dual detector assemblies available)	Cooled/ambient DLaTGS	18,000–150
	MCT	12,000–450
	Linearized MCT	12,000–450
	Far-IR DLaTGS	700–20
	Lead selenide (PbSe)	16,000–2,000
	Silicon	18,000–8,600
	PMT: R446	54,000–11,500 (185–870 nm)

Accessories

Type	Specification
The Agilent Cary 660/670/680 FTIR are compatible with sample compartment accessories from all major accessory manufacturers and use Accessory Recognition Technology (ART).	
Major accessories include	Cary 610 FTIR Microscope Cary 620 FTIR Chemical Imaging Microscope PM-IRRAS PAS GC-IR accessory TGA-IR accessory GPC-IR accessory

Support policies

Type	Policy
Warranty	12 months, though this may vary according to location.
Hardware support period	Seven (7) years from date of last unit manufacture. After this time, parts and supplies will be provided if available.
Software support	Software upgrades to add additional functionality will attract a fee.

Further details

More information
For further information please consult your Agilent office or supplier, or our website at www.agilent.com .

CAUTION



LASER LIGHT DO NOT STARE INTO BEAM
600 MICROWATTS AT 632.8 nm CW

CLASS II LASER PRODUCT

1. Represents only an approximate range based on a configuration with Mid-IR source, KBr beamsplitter and DLATGS detector.
2. Measured as peak-to-peak, between 2,200 and 2,100 cm^{-1} under a standard configuration with 4 cm^{-1} spectral resolution. The ATR measurement is made using a single-bounce, Diamond ATR accessory and the peak-to-peak signal-to-noise ratio is calculated between 2,800 and 2,700 cm^{-1} .
3. Due to the high energy throughput of the 670/680 FTIR, signal-to-noise cannot be measured with an open beam, because the detector saturates. As such, this S:N number is calculated by measuring S:N with the beam attenuated by 75% and multiplying by four. This compensates for the 75% attenuation and allows a 'like-for-like' comparison with other FTIR instruments.
4. Rapid-scan options available for the 660 and 670 FTIR.
5. Other configurations may be available.
6. This represents only an approximate range based on the configuration of components shown in the table. Other combinations components may alter this range.

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