

LABORATORY FTIR / DATA SHEET
SF300Z

Fourier Transform Infrared Spectrometer

A compact FTIR platform engineered for dependable material identification, routine quality control and research workflows.

Designed for confident routine analysis

SF300Z integrates a sealed Michelson interferometer, high-sensitivity DLATGS detection and guided FTIR software in a compact 14 kg platform.

- Gold-coated, high-throughput reflective optics
- Moisture-protected sealed optical architecture
- Large chamber for transmission and ATR accessories
- Guided acquisition, processing and library search



450 × 350 × 210 mm
DIMENSIONS

14 kg
WEIGHT

< 30 W
NORMAL POWER

7800–350
SPECTRAL RANGE,
CM⁻¹

Key Advantages

- Sealed optical architecture helps protect the infrared path from moisture.
- Large-aperture reflective optics support efficient energy transfer.
- Flexible sample chamber supports transmission and ATR accessories.
- Guided acquisition, processing, library search and reporting tools.

Application Scenarios

- Pharmaceutical, polymer and petrochemical analysis.
- Oil, food, materials and semiconductor workflows.
- Research, qualitative analysis and routine QA/QC.
- Material identification across solids, powders, liquids and surfaces.

MEASUREMENT PRINCIPLE

FTIR Platform

SF300Z combines a sealed optical architecture, high-efficiency infrared components and guided software to deliver dependable spectral acquisition for routine and research laboratories.

01 Ceramic source	02 Michelson interferometer	03 Sample / accessory	04 DLATGS detector	05 Fourier transform
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Engineered for stability, energy efficiency and easy maintenance
01 High-throughput optics

Large-aperture gold-coated reflective optics and SPDT-machined off-axis mirrors support efficient energy transfer and optical consistency.

02 Sealed interferometer

A sealed Michelson interferometer with moisture-protected components, large desiccant capacity and external humidity observation helps protect the optical path.

03 Stable mechanical alignment Precision locating features for critical components reduce routine optical adjustment and help maintain repeatable performance.	04 Flexible sample compartment A large sample chamber and sliding door reduce exposure to ambient H ₂ O and CO ₂ while accommodating common FTIR accessories.
05 Efficient electronics A 24-bit, 500 kHz A/D system and high-speed USB interface support real-time acquisition with typical instrument power below 30 W.	06 Guided operation Intuitive acquisition, status monitoring, library search, data processing and report tools help new and experienced users work efficiently.

Bench-ready system at a glance

24-bit A/D CONVERSION	500 kHz SAMPLING ELECTRONICS	< 30 W TYPICAL POWER	USB FAST DATA TRANSFER
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TECHNICAL SPECIFICATIONS

Performance Data

The following specifications are compiled from the supplied SF300Z technical document. Configuration-specific values should be confirmed at quotation.

Optical performance

Item	Specification
Spectral range	7800–350 cm ⁻¹ (approx. 1.28–28.57 μm)
Spectral resolution	Better than 1.0 cm ⁻¹
Wavenumber precision	≤ 0.01 cm ⁻¹
Signal-to-noise ratio	Better than 15,000:1 standard; better than 30,000:1 optional (peak-to-peak, 4 cm ⁻¹ , 1-minute acquisition)
Interferometer	Michelson interferometer, 30° incidence; continuous dynamic alignment
Beam splitter	Germanium-coated KBr substrate with moisture protection
Detector	High-sensitivity DLATGS detector with moisture barrier
Infrared source	High-energy, high-efficiency, long-life ceramic source
Reference laser	High-performance VCSEL laser

System and electrical

Item	Specification
A/D conversion	24-bit, 500 kHz
Data interface	USB 2.0; compatible with USB 3.0 host ports
Data acquisition	Real-time spectral acquisition and instrument status monitoring
Sample chamber	Large compartment with sliding door; supports multiple accessory types
Power consumption	Less than 30 W during normal operation
Input power	100–240 VAC, 50/60 Hz
Dimensions (W × D × H)	450 × 350 × 210 mm

Item	Specification
Weight	14 kg
Software platform	Windows PC; supported operating-system versions depend on software release

Recommended environment

Item	Specification
Operating temperature	15–30 °C
Operating relative humidity	15%–65% RH
Storage temperature	–20 to 55 °C
Laboratory	Dry, well ventilated and protected from direct sunlight; air conditioning and dehumidification recommended
Electrical	Stable, grounded supply; at least four grounded sockets recommended for a complete workstation

CONFIGURATION NOTE

S/N ratio, spectral libraries, sampling accessories and current software / OS compatibility are configuration dependent. Confirm the ordered configuration before purchase.

SOFTWARE AND DATA

Intelligent Workflow

From acquisition to confident identification

The infrared workstation brings instrument monitoring, spectrum processing, library search, quantitative tools and reporting into a unified workflow.

Live acquisition preview

Monitor spectral acquisition, instrument condition and key component status while collecting data.

1 Acquire and monitor Guided acquisition, real-time spectrum preview, instrument self-check, system-state display and component current / voltage / temperature monitoring.	2 Process and interpret Absorbance / transmittance conversion, peak labeling, spectrum arithmetic, smoothing, advanced smoothing, baseline correction, display control and Y-axis normalization.
3 Correct and analyze H ₂ O / CO ₂ compensation, ATR and advanced ATR correction, Kramers–Kronig conversion, curve fitting, multi-component quantitation and 2D correlation tools.	4 Compare and report Standard QA/QC comparison, high-sensitivity correlation matching, full report generation and electronic laboratory notebook functions.

Spectral libraries and data exchange

Capability	Source-supported content
Standard library	Approximately 1,800 standard reference spectra
Professional library	Approximately 220,000 optional professional spectra
Common data formats	JCAMP, CSV, SPA, DPT, TXT and additional vendor-compatible formats

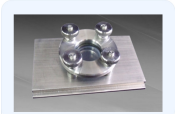
Capability	Source-supported content
Library coverage	Pharmaceutical, veterinary, polymer, rubber, gas, forensic, inorganic, organic, solvent, food additive, flavor / fragrance and coating collections; user-defined libraries supported
Calibration functions	Support for GB/T 21186-2007 and JJF 1319-2011 workflows as listed in the source document

SAMPLING AND APPLICATIONS

Flexible Configuration

Three practical routes from sample to spectrum

Configure SF300Z for classic transmission methods or rapid ATR measurements across solids, powders, liquids, films, coatings and polymers.

		
KBr pellet transmission POWDERS AND SOLIDS Grind approx. 1 mg of dry sample with approx. 200 mg of dry spectroscopic-grade KBr; press at about 15 MPa for 30–60 seconds, then measure the transparent or translucent pellet.	Demountable liquid cell FLOWING AND LOW-VISCOSITY LIQUIDS Place a drop between compatible infrared windows with the required spacer, assemble gradually and measure. Clean the windows with a suitable solvent immediately after use and protect them from moisture.	ATR measurement SOLIDS, POWDERS, LIQUIDS AND SURFACES Place the sample in firm contact with the ATR crystal and acquire directly. ATR reduces preparation effort for difficult-to-grind, insoluble or non-destructive surface measurements.

Representative application areas

Pharmaceuticals Identity testing of drugs and packaging materials	Polymers Plastics, rubber, nylon and resin identification
Petrochemicals Asphalt traceability, SBS content, fuels and additives	Oils Lubricating oil, mineral insulating oil and FAME analysis
Food Food safety, additives, ingredients and authenticity workflows	Materials Fibers, coatings, crystal quality and building glass
Semiconductors Carbon and oxygen measurement in silicon crystals	Research Molecular structure, qualitative analysis and routine QA/QC

Common accessory selection

Route	Typical accessory set
Pellet preparation	Press, pellet die, agate mortar, spectroscopic-grade KBr and drying oven

Route	Typical accessory set
Liquid transmission	Demountable liquid cell, infrared windows and thickness spacers
Rapid direct analysis	Single-reflection ATR accessory with pressure arm and suitable crystal

VERIFICATION AND INSTALLATION

Documented Performance

Performance verification and lab guidance

The supplied source document includes peak-position checks and operating recommendations. The values below are reproduced as representative verification data, not as an individual instrument certificate.

Peak-position verification

Acceptance band	Reference peak	Measured peak	Deviation	Result
$\leq \pm 5 \text{ cm}^{-1}$	3027 cm^{-1}	3026.49 cm^{-1}	-0.51 cm^{-1}	Pass
$\leq \pm 5 \text{ cm}^{-1}$	2851 cm^{-1}	2850.44 cm^{-1}	-0.56 cm^{-1}	Pass
$\leq \pm 1 \text{ cm}^{-1}$	1601 cm^{-1}	1601.17 cm^{-1}	$+0.17 \text{ cm}^{-1}$	Pass
$\leq \pm 1 \text{ cm}^{-1}$	1028 cm^{-1}	1028.63 cm^{-1}	$+0.63 \text{ cm}^{-1}$	Pass
$\leq \pm 1 \text{ cm}^{-1}$	907 cm^{-1}	906.93 cm^{-1}	-0.07 cm^{-1}	Pass

RESOLUTION CHECK

The supplied verification document reports that seven peaks in the $3110\text{--}2850 \text{ cm}^{-1}$ region were clearly resolved. SF300Z is specified at better than 1.0 cm^{-1} spectral resolution.

Installation and care

Laboratory setup • Operate at $15\text{--}30 \text{ }^{\circ}\text{C}$ and $15\%\text{--}65\%$ RH. • Use a dry, ventilated, clean room with good door and window sealing. • Provide air conditioning, dehumidification and a calibrated temperature / humidity meter. • Use a grounded $100\text{--}240 \text{ VAC}$, $50/60 \text{ Hz}$ supply.	Moisture management • Observe internal humidity routinely. • Keep the sample chamber and accessories clean and dry. • Regenerate or replace desiccant before it is exhausted and avoid contamination. • Store the instrument sealed if idle for an extended period.	Routine care • Use trained personnel and follow the operating manual. • Clean KBr windows, ATR crystals and sample tools promptly after measurement. • If unused, power the system at least weekly for not less than two hours. • Contact technical support if abnormal performance is observed.
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CONTACT / SUPPORT

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