TORONTECH

HANDHELD FTIR SPECTROMETER

Handheld FTIR Spectrometer - ToronFTIR™ H7800A

ToronFTIR™ H7800A is a handheld FTIR spectrometer that identifies materials on site in seconds, with no sample preparation and no return trip to the lab. The instrument reads a sample's molecular fingerprint and matches it against an onboard library, so an operator confirms identity at the point of need. A single-technique design keeps the H7800A straightforward to run and lower in cost than dual-technique units, which suits teams that want fast infrared identification without added complexity. At 1.5 kg and 185 by 110 by 55 mm, the unit fits in one hand and goes wherever the sample is.

The ToronFTIR™ H7800A identifies organic and inorganic compounds, polymers, liquids, drugs, and gemstones through qualitative and quantitative analysis. The infrared section covers 7,800 to 650 cm^{-1} at a resolution better than 2 cm^{-1}, and moisture-protected optics keep performance steady as field conditions change. An onboard library of 20,000 to 250,000 spectra supports identification across the configured industry, while an audit-trail function and IQ, OQ, and PQ qualification support help regulated users keep traceable records.

The ToronFTIR™ H7800A serves customs inspection, incoming and finished-product quality control, petrochemical work, environmental monitoring, and food safety screening. Attachments for ATR, diffuse reflectance, and non-contact external reflection extend the unit to solids, powders, liquids, and films. The result is a practical entry into handheld infrared identification for field and shop-floor use.

APPLICATIONS

Handheld FTIR Spectrometer - ToronFTIR™ H7800A Applications

The ToronFTIR™ H7800A supports fast material identification and verification across industrial, environmental, and security settings.

- Raw Material and Incoming QC: verifies the identity of incoming materials against reference libraries before they enter production.
- Finished Product Verification: confirms composition and identity of finished goods during release and audit checks.
- Plastics and Polymer Identification: distinguishes PE, PVC, PP, PC, Nylon, ABS, and other polymers for sorting and QC.
- Petrochemical and Chemical: identifies solvents, intermediates, and products in the plant and in the field.
- Customs and Border Inspection: screens unknown substances and controlled materials at the point of inspection.
- Environmental Monitoring: identifies organic contaminants and unknown residues during site work.
- Pharmaceutical and Gemstone Screening: confirms drug identity and appraises jewelry without damaging the sample.

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FEATURES

Handheld FTIR Spectrometer - ToronFTIR™ H7800A Key Features

The ToronFTIR™ H7800A pairs a pocketable form factor with straightforward infrared identification and field-ready data tools.

- Handheld, Field-Ready Design: a 1.5 kg unit measuring 185 by 110 by 55 mm travels to the sample for on-site work.
- Single-Technique Simplicity: a streamlined infrared design keeps operation simple and cost lower than dual-technique units.
- Non-Destructive Identification: reads samples directly without damage, so product and evidence stay intact.
- Wide Infrared Range: covers 7,800 to 650 cm^{-1} at a resolution better than 2 cm^{-1} for clear functional-group information.
- Moisture-Protected Optics: a coated beamsplitter and protected optics hold performance in changing field conditions.
- Long-Life Infrared Source: a high-intensity, air-cooled source gives steady output with a long service life.
- Large Onboard Library: 20,000 to 250,000 reference spectra support identification across the configured industry.
- Flexible Sampling: ATR, diffuse reflectance, and non-contact external reflection attachments extend the unit to many formats.
- Audit-Trail Function: records operator actions and results to support data integrity in regulated use.
- Qualification Support: IQ, OQ, and PQ routines help laboratories qualify and document the instrument.

THEORY & METHOD

Theory and Method

Fourier transform infrared spectroscopy identifies materials by the way their molecular bonds absorb infrared light. Each bond vibrates at characteristic frequencies, so the pattern of absorbed wavelengths forms a fingerprint unique to a material. The ToronFTIR™ H7800A records all infrared wavelengths in a single measurement rather than scanning one at a time, which gives a fast result at the point of need and a strong signal at the detector.

The instrument builds each spectrum with a Michelson interferometer. A beamsplitter divides the infrared beam into two paths that reflect off a fixed and a moving mirror, and recombining the beams produces an interferogram. A Fourier transform then converts the interferogram into a readable absorbance spectrum. Because the method captures the full spectrum at once, it suits handheld use where speed and simplicity matter.

Turning a spectrum into an identity relies on matching. The H7800A compares the measured spectrum against its onboard library and reports the closest matches, which lets a non-specialist reach a confident result. Attachments for ATR, diffuse reflectance, and non-contact external reflection let the operator measure a sample in the form that gives the cleanest spectrum, all from a 1.5 kg unit built for the field.

TECHNICAL SPECIFICATIONS

Handheld FTIR Spectrometer - ToronFTIR™ H7800A Technical Specifications

Parameter	Specification
Spectral Range	7,800 to 650 cm^{-1}
Resolution	Better than 2 cm^{-1}
Detector	Infrared detector
Beamsplitter	Moisture-proof coated
Infrared Source	Long-life, high-intensity, air-cooled

Parameter	Specification
Scanning Speed	Computer-controlled, selectable
Reference Library	20,000 to 250,000 spectra (by configuration)
Sampling Options	ATR, diffuse reflectance, non-contact external reflection
Dimensions	185 × 110 × 55 mm
Weight	1.5 kg
Data Integrity	Audit trail; IQ / OQ / PQ qualification support

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