

AGILENT 4300 HANDHELD FTIR WITH DTGS DETECTOR

The Measure of Confidence

For mobile, easy to use, non-destructive FTIR analysis



The Agilent 4300 Handheld FTIR is the first of its kind employing lightweight ergonomics, ease of use, ruggedness, and flexibility into one system. With its lighter weight and new design, the ergonomics of the system make it ideal for field use and deployment into non-laboratory situations.

The 4300 Handheld FTIR with DTGS detector (G8181AA) is the next leap in technology by Agilent in Handheld FTIR. It offers a variety of sampling interfaces (Diffuse Reflectance, External Reflectance, Grazing Angle, Diamond ATR, Ge ATR) and allows you to easily transition from one sample type to another while on the go, with no alignment or adjustments necessary. Sample types typically include infrared absorbing and scattering surfaces, reflective metal surfaces with coatings and films as well as analysis of bulk materials including powders and granules.

The hardware design, along with the easy to use MicroLab Mobile software, guides users from all experience levels to quickly utilize the system on the go. The high performance optics employed in the instrument allow for even the most difficult samples to be easily measured. This makes the 4300 Handheld FTIR ideal for a variety of non-destructive analysis applications. The analysis of polymers, coatings, composites and even historical artifacts and artwork can easily be done *in situ* without destroying the sample or removing it from its location. These benefits also make the 4300 Handheld FTIR the optimal analytical tool for both geological and soil science studies.

Product highlights

- Small and lightweight
- Highly accurate mid-IR analysis
- No sample preparation
- Designed for field use
- Hot swappable battery capability for extended usage
- Integrated CPU for ease of use
- USB connection to any computer, if necessary
- Interchangeable, auto-recognized sampling interfaces
- Water-resistant for inclement weather conditions

4300 DTGS system specifications

- Size: 10 x 19 x 35 cm (4 x 7.5 x 13.6 in)
- Weight: 1.88 kg (4.15 lbs) without batteries; 2.22 kg (4.9 lbs) with batteries
- Power: Two (2) Internal batteries (3 h), 100/120/240 V AC, 50/60 Hz
- Spectral range DTGS: 4500–650 cm⁻¹
- Resolution: 4–16 cm⁻¹
- Controller: Integrated CPU with Microsoft Windows CE 6.00 Edition
- Software: Can be operated by Agilent MicroLab PC or Mobile software
- Warmup time: 10 min
- Response time: 2 min

Durability

- Operating temperature: 0–50 °C (32–122 °F)
- Storage temperature: -25–75 °C (-13–167 °F)
- Humidity: 95% non-condensing
- Water resistance: completely sealed spectrometer compartment
- Shock withstands 40 G on each axis (in shipping case)
- Vibration withstands 60 Hz for 30 min



Agilent Technologies

The right interface for your sampling needs

Each sampling interface is designed for maximum throughput without additional alignment of the 4300 Handheld FTIR system. As well, each interface is programmed with an RFID chip which allows the system to immediately recognize which interface is installed and change conditions accordingly.

Sampling interface	Description
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P/N: G8180-68001

Diamond ATR Sample Interface: The ATR interface is ideal for the analysis of solids, liquids, pastes and gels. The interface is comprised of a diamond window, which makes it impervious to corrosion and scratching. The sample is brought into contact with the diamond window. ATR is a surface technique and only the top 2–3 μm are analyzed.



P/N: G8180-68004

Diffuse Reflectance Sample Interface: The diffuse reflectance sampling capability allows the 4300 Handheld FTIR to tackle an increased number of important applications. Testing has determined good results on a wide variety of samples including artwork, soils, rocks and minerals, composites, rough plastics, fabrics and corrosion on metal surfaces. In general, if the sample reflects little light, the diffuse reflectance interface will be the sampling method of choice. In many cases, the diffuse reflectance provides the easiest to use sample interface for the 4300 Handheld FTIR.

Sampling interface	Description
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P/N: G8180-68003

External Reflectance Sample Interface: The specular reflectance interface allows the analysis of films and coatings on reflective metal surfaces such as aluminum or steel. The angle of incidence is 45° . The infrared energy passes through the film, reflects off the steel, passes back through the film and is collected by the specular reflectance interface. In addition, it can be used for the analysis of smooth, opaque samples where infrared light reflects off the surface.



P/N: G8180-68005

Grazing Angle Sample Interface: The grazing angle specular reflectance interface is similar in concept to the specular reflectance interface. The grazing angle interface has an angle of incidence of 82° making it ideal for the analysis of very thin (sub-micron) films. The increased angle of incidence causes more interaction of the infrared energy within the thin sample and has the secondary benefit of increasing the pathlength of the sample. It is ideal for looking at trace contamination on reflective metal surfaces such as cleaning validation studies.



P/N: G8180-68002

Ge ATR Sample Interface: The ATR interface is ideal for the analysis of highly absorbing solids and liquids. The surface of the sample is analyzed by bringing it into contact with the germanium crystal ATR interface. Only the top 0.5–2 μm is measured, making this technique ideal for strongly absorbing samples such as carbon filled elastomers and rubbers.

Applications

Non-Destructive Evaluation of Composite Thermal Damage with Agilent's New Handheld 4300 FTIR, publication number 5991-4037EN

Positive Material Identification – Qualification, Composition Verification and Counterfeit Detection of Polymeric Material Using Mobile FTIR Spectrometers, publication number 5991-4122EN

Exploring the relationship between ergonomics and measurement quality in handheld FTIR spectrometers, publication number 5991-4108EN

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