



A universal fiber-optic sampling accessory for liquids and solids in any form.

The FST-500 is truly unique. It is the first near infrared sampling system designed to provide continuously variable pathlength over a wide range while accommodating virtually any form of sample. The key to its operation is the use of a pair of optical probes, one fixed and one movable, to transmit and receive radiation obtained from a suitable NIR spectrometer. In normal operation, the field of view of the stationary probe points upward through a window in the sample supporting stage. The second (downward pointing) probe is mounted on a rack and pinion drive above the stage much like a microscope objective. This allows the upper probe to be moved up and down to set the sample gap at any desired separation. The standard upper probe is fabricated from fused silica to provide a high degree of chemical resistance and to enable it to serve as a light guide. The capabilities of the FST-500 are best understood by considering a few sample types.

Solids

Free-standing pliable samples can simply be placed on a microscope slide and positioned on the stage. The upper probe is then brought down and pressed against, or into, the sample until the desired pathlength is established. Rigid solids having flat, parallel surfaces can be analyzed in the same way except that the pathlength will be determined by the thickness of the sample rather than the placement of the optical probe.

Liquids

Liquids can be sampled in a small beaker or optically transparent dish placed on the stage. Since the upper probe tip can be immersed in the liquid, this form of operation makes it possible to rapidly measure NIR spectra as a function of pathlength from contact up to distances as great as six centimeters without changing samples. This capability can be invaluable for tasks such as optimizing an analysis for later use in a dedicated application.

Packaged Samples

Packaged samples, such as those contained in plastic bags or cuvettes, can also be easily analyzed using the FST-500. In this case, it is best to obtain and store a spectrum of an empty package. This can then be subtracted from the composite spectrum to remove spectral features characteristic of the package.

Precise Pathlength Display

The FST-500 is equipped with a precision, Digital scale which measures and displays the position of the upper (adjustable) probe. As a result, determining the exact pathlength for each measurement is as easy as reading the high

FST-500
UNIPROBE SAMPLE
STAGE



Features:

- Rapid pathlength variation from 0 to 6 cm
- Accurate electronic pathlength readout
- Accommodates packaged or unpackaged samples
- Useable with strong acids and bases
- Compatible with single fibers and small bundles

resolution LCD display on the back of the unit. The display is powered by an SR-44 battery, (which should last about a year with normal use). Push button switches provide the following functions: On/Off, Zero-Set and measurement unit selection (inches or mm). What's more, pathlength data can be outputted to an RS-232 input port on a PC or control computer with the addition of cables and a conversion device available from the scale manufacture.

In summary, whether your requirements are for general purpose laboratory analysis or the optimization of sampling parameters for subsequent process measurement, the FST-500 can provide a unique combination of speed, flexibility, accuracy, and convenience to meet all of your transmission measurement needs.

FST-500R Specifications	
Readout Resolution:	0.01 mm
Transmission:	30 % (typical without sample)
Probe Material:	Fused Silica (NIR or Visible) or UV Grade Fused Silica (UV)
Fiber-Optic Connectors:	SMA-905 Female, others available
Maximum Fiber or Bundle Diameter:	2.4 mm (with SMA connectors)
Spectral Ranges and suffix "R" designations:	
R = N (800-2400 nm), R = V (350-2000 nm), or R = U (200-800 nm, optimized for 230-250 nm)	

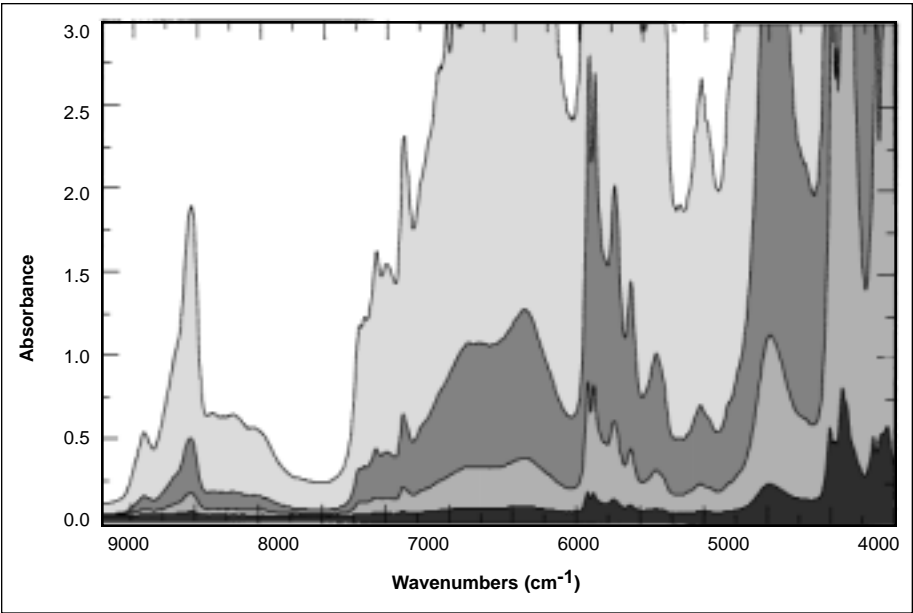


Figure 1: The spectra above (isopropanol obtained over a range of pathlengths from 0.4 to 25.6 mm) demonstrate the FST-500's utility for methods development. The use of a wide range of pathlengths allows band strengths in various overtone and combination tone regions to be optimized in turn for individual analysis.