

T300-RT-UV-VIS Transmission Dip Probe

The **T300-RT-UV/VIS TRANSMISSION DIP PROBE** couples to our spectrometers and light sources to create small-footprint optical-sensing systems for measuring *in situ* transmission in chemical solutions and other liquids. The standard T300-RT-UV/VIS Transmission Dip Probe has (2) 300 μm diameter solarization-resistant fibers (1 illumination, 1 read), in a 5.0" x 0.25" OD stainless steel ferrule. Screw-on, interchangeable probe tips, in path lengths of 2 mm, 5 mm or 10 mm, are available to configure your system for either optically dense or dilute solutions.

Caution!

- ⚠ Handle with care. Dropping the instrument may cause permanent damage.
- ⚠ Bubbles will interfere with your readings. Regularly inspect the sample region for bubbles.

Operation

The T300 consists of two identical fibers in a bifurcated assembly. A plano-convex lens shapes the light coming out of the illumination fiber. The light is transmitted through the sample, hits the mirror, reflects off the mirror, and interacts with the sample again before being transmitted back through the probe via the read fiber. Because the light travels through the sampling region twice, the optical pathlength is actually twice the length of the sample aperture. The transmission cell is used to measure absorbance of the fluid that fills the sample compartment between the fibers and the mirror, which is a UV-enhanced aluminum, second-surface mirror.

1. Connect one leg of the probe to the light source and connect the other leg to the spectrometer. It does not matter which leg of the probe is connected to the light source or spectrometer.
2. Make sure the probe tip you want to use for your experiment is screwed onto the end of the probe. To replace the probe tip, simply unscrew the probe tip and screw in either the 2 mm, 5 mm or 10 mm replaceable tip.
3. Prepare your sample.
4. While the probe tip is in the sample, you should achieve a signal in Scope Mode (for OOIBase32 software) of ~3500 counts. To achieve the best signal, use an Allen wrench to loosen the set screw on the inner fiber barrel assembly and slide it up and down to change the intensity of the light returned. (The inner barrel is set at the time of manufacture for a 10 mm tip in aqueous media. If your application requires measuring gases you will have to adjust the inner barrel.) You may also have to adjust the integration time to achieve this signal.
5. Immerse the probe in distilled water or the solvent of your choice and take a reference spectra.
6. Remove the probe from the reference, block the light path going to the spectrometer and take a dark spectrum.
7. Make sure the light path is clear, place the probe in your sample solution and take your sample spectra.

Specifications

Fiber core diameter:	300 μm
Fiber material	silica (core/cladding), aluminum (jacketing)
Fiber bundle:	1 illumination fiber and 1 read fiber (solarization-resistant)
Fiber bundle length:	2 meters (breakout is 1.5 meters from probe tip)
Wavelength optimization:	200-1100 nm
Numerical aperture:	0.22
Inner and outer ferrules:	Stainless steel
Ferrule diameters:	0.125" (inner ferrule diameter), 0.25" (outer ferrule diameter)
Outer ferrule length:	5.0"
Terminations for illumination and read legs:	SMA 905
Path lengths:	2 mm, 5 mm and 10 mm stainless steel removable tips
Temperature tolerance of epoxy:	to 400° C