Mini Transmission Dip Probes

For absorption measurements in miniaturized centrifuge tubes or vessels, Avantes offers the mini transmission dip probe. It features a miniaturized tip which is 130 mm long and 3.2 mm in diameter.

The mini transmission dip probe has a fixed 5 or 10 mm optical path length. It is available in a UV/VIS/NIR (200-2500 nm) version. The probe features Avantes ME, chrome plated brass, jacketing.

Optionally the probe can be configured with a longer stainless steel or Hastelloy® tip, and/or other jacketing options. The probe has two SMA connectors (FC/PC also available) for convenient coupling to the Avantes line of spectrometers and light sources.

Please contact us for special requirements.

Technical Data

Fibers	1 illumination and 1 detection fiber, both 200 µm, standard 2 meters length
Wavelength Range	200-2500 nm (UV/VIS/NIR)
Connectors	2 x SMA-905
Probe End	Stainless steel 316 cylinder, 130 mm long x 3.2 mm (1/8") diameter. The probe end contains 5 mm physical, 10 mm optical path, or a 2.5 mm physical gap (5 mm optical path). Optionally –HY for Hastelloy® C276
Jacketing	The optical fibers are protected by a silicon inner tube and a flexible stainless steel (optional BX, O.D. 6.0 mm) or chrome plated brass (standard ME, 5.0 mm) outer jacket. The jacketing also gives stress relieve.
Temperature	-40 ºC to 100 ºC. (-HT version 200ºC)
Pressure	Probe head 10 bar @ 25ºC
Bending	Minimum bend radius: Short term (few seconds) 20 mm, long term: 120 mm

Ordering Information

FDP-2UVIR200-2-2.5-mini	• 1/8" Mini Dip Probe, 2.5 mm path length (optical 5 mm), 2 m length
FDP-2UVIR200-2-5-mini	• 1/8" Mini Dip Probe, 5 mm path length (optical 10 mm), 2 m length

Options

-BX	• Stainless steel jacket
-HT	• High Temperature version (up to 200ºC)

Transmission Dip Probes

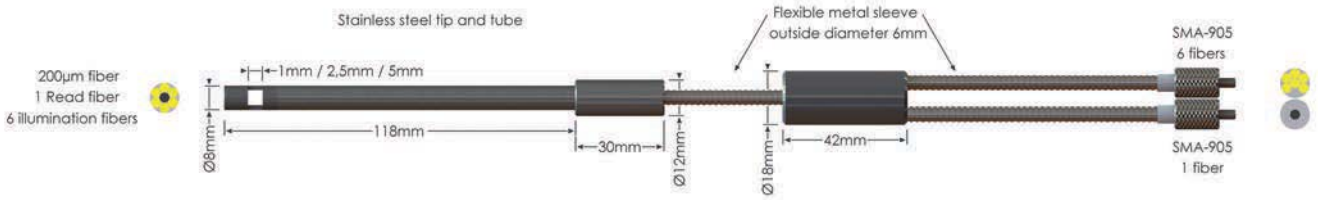
For online and inline absorbance measurements in fluids, transmission dip probes are used. When dipping or permanently mounting the probe end into the fluid, absorbance can be measured.

A standard SMA-905 connector is used to couple light into a fiber bundle, typically consisting out of six fibers (other configurations available upon request). The light is transmitted to the probe end, where it crosses the predetermined gap and is then reflected against a diffuse white reflective material back onto the receiving read fiber, which is coupled, to a spectrometer on the second leg of the probe.

The read fiber is placed in the center of the illumination fiber bundle to provide the best collection efficiency for the probe. Both bundles are housed in flexible stainless steel jacketing and the probe tip is also made of stainless steel. At the mid-point of the assembly a ferrule is used to split the fibers into their respective legs (illumination and read) which are terminated in SMA-905 connectors.

Technical Data

Fibers	6 illumination fibers, 1 detection fiber, all 200 µm, standard 2 meters
Wavelength range	200-2500 nm (UV/VIS/NIR)
Connectors	SMA-905 connectors (2x)
Tips	Replacement tips are available with 1, 2.5 and 5 mm spacing, i.e. an optical path of 2,5 and 10 mm and contain a 5 mm diam. x 1 mm thick fused silica window
Probe end	Stainless steel 316 cylinder, 100 mm long x 8,0 mm diameter. Waterproof.
Jacketing	The optical fibers are protected by a silicon inner tube and a flexible stainless steel (optional BX, O.D. 6.0 mm) or chrome plated brass (standard ME, 5.0 mm) outer jacket. The jacketing also gives stress relieve.
Temperature	-30ºC to 100ºC. (-HT version 200ºC)
Pressure	Probe head 10 bar @ 25ºC
Bending	Minimum bend radius: Short term (few seconds) 20 mm, long term: 120 mm



Ordering Information

FDP-7UVIR200-2-yy	• Transmission Dip Probe, yy (1, 2.5, 5 mm) gap, 2 m length, SMA term.
FDP-TIP-yy	• Replacement tips, 1 mm, 2.5 mm, 5 mm gap for probe (fill in gap length for yy, note optical path =2*yy)

Options

-BX	• Stainless steel jacket
-HT	• High Temperature version,(up to 200ºC)

Transmission Dip Probes with Variable Path Length

For more flexibility during absorbance measurements in fluids, this fiber-optic probe features a variable and adjustable path length. The gap between the fiber and the diffuser can be set anywhere between 0.25 and 10 mm.

A standard SMA-905 connector is used to couple light into a fiber bundle, typically consisting out of six fibers (other configurations available upon request). The light is transmitted to the probe end, where it crosses the predetermined gap and is then reflected against a diffuse white reflective material back onto the receiving read fiber which is coupled to a spectrometer on the second leg of the probe.

The read fiber is placed in the center of the illumination fiber bundle to provide the best collection efficiency for the probe. Both bundles are housed in flexible stainless steel jacketing and the probe tip is also made of stainless steel. At the mid-point of the assembly a ferrule is used to split the fibers into their respective legs (illumination or read) which are terminated in SMA-905 connectors.

Technical Data

Fibers	6 illumination fibers, 1 detection fiber, all 200 µm, standard 2 meters
Wavelength range	200-2500 nm (UV/VIS/NIR)
Connectors	SMA-905 connectors (2x)
Optical Path	0.25 - 10 mm physical gap, i.e. an optical path of 0.5-20 mm
Probe end	Stainless steel 316, 150-160 mm long x 12,7 mm (½") diameter. Waterproof.
Jacketing	The optical fibers are protected by a silicon inner tube and a flexible stainless steel (optional BX, O.D. 6.0 mm) or chrome plated brass (standard ME, 5.0 mm) outer jacket. Optionally a waterproof, steel reinforced, silicon tubing can be provided (-MS)
Temperature	-30ºC to 100ºC. (-HT version 200ºC)
Pressure	Probe head 10 bar @ 25ºC
Bending	Minimum bend radius: Short term (few seconds) 20 mm, long term: 120 mm

Ordering Information

FDP-7UVIR200-2-VAR	• Transmission Dip Probe in stainless steel with variable tip length, 2 m length, SMA term.
FDP-TIP-VAR	• Replacement Stainless Steel tip for Transmission dip probe with variable tip length

Options

-BX	• Stainless steel jacket
-HT	• High Temperature version (up to 200ºC)

Special Fiber Assemblies and Probes

For some applications a very specific fiber or probe is needed. Avantes has almost 20 years of experience in designing the custom probes for unique applications. Avantes has significant expertise in designing fiber-optics for high temperature (HTX), high pressure (HP), vacuum and other difficult conditions. Avantes wide variety of standard and custom materials can be configured to provide a fiber assembly which can meet the challenges of your environment.

Below are some examples of our special designs. Please contact us to discuss your needs.

High temperature UV/VIS/NIR probe with gas connection

The universities of Bochum (Germany) and Utrecht (The Netherlands) approached us with a problem doing high temperature measurements at low pressure of dehydrogenation of propane: an ideal situation for the creation of cokes. Therefore every time the probe was contaminated with coke residue on the tip, meaning they could only do a single test after which they had to replace the probe.

Avantes responded by designing this high temperature probe. It's resistant to temperatures of 700 degrees centigrade or more and features a connection for gas insertion into the probe. So far, during one test the probe was used over 150 hours continuously, with temperatures of 550-600 degrees. The gas used was nitrogen. The result was a clean tip, re-usable probe and very happy customers.

Chemical resistant reflection probe

In chemical environments, standard reflection probes have a huge disadvantage: many chemicals interfere with the glue used to construct the probes. This version eliminates this disadvantage: all connections are mechanical, sapphire windows and o-rings are used. The material used is stainless steel 310, which is chemical resistant as well.

A reflection probe is inserted into the back of this probe: it serves as a protective sleeve. The path length is variable and up to 30 mm.