

LPC Long Pass Flow Cells

LPC LONG PASS FLOW CELLS from Ocean Optics couple to the company's high-sensitivity fiber optic spectrometers and compact light sources via SMA terminations for simple, efficient measurement of low-volume or low-concentration (ppb-ppt) aqueous samples. LPC Long Pass Flow Cells are available in 1-meter, 5-meter and 10-meter path lengths for absorbance measurements. The Flow Cells will function with most liquids (except for perfluorinated solvents) having a refractive index ≥ 1.30 .

Caution!

-  Do not use perfluorinated solvents with the LPC because the amorphous fluoropolymer tubing is soluble in these chemicals.
-  LPC Flow Cells will function with most liquids (except for perfluorinated solvents) having a refractive index ≥ 1.30 .
-  Ensure the plumbing fittings through the front panel are tight and free of leaks.
-  Minimize the injection of bubbles into the LPC since they will cause erratic results. Continuous pumping will typically flush the bubbles through the system.
-  At the end of each experimental session, flush the system with solvent and then pump dry. Avoid leaving fluid in the LPC for extended periods of time.
-  DO NOT exceed a fluid pressure of 45 psi.

Operation

Using the Plumbing Connections

On the front panel, there are two plumbing feed-through ports. It does not matter which one is used for the plumbing input or the plumbing output. However, for experimental consistency, once you have assigned which fitting will be the plumbing input and which one will be the plumbing output, try not to switch the plumbing configuration. The tubing goes over the plumbing fittings, which are standard 1/4-28 threads. The tubing should fit snugly over the fittings and be free of leaks.

1. Attach one end of the tubing to your pump. The pump used must not pump the solution so fast that the fluid pressure exceeds 45psi. Remember to always turn off the pump in between taking a reference and taking sample measurements.
2. Make sure you have a proper waste receptacle for the other end of the tubing.

The plumbing connections inside the LPC are standard industry fittings. No maintenance should be required. However, if leaks develop, the plumbing connections will need to be tightened. To tighten the connections, simply follow these steps:

1. Remove the back panel.
2. Carefully slide off the top cover, being careful not to damage or pinch the tubing or fiber.
3. Hand-tighten the fittings and reassemble the cover and back panel.

Installing Fibers

On the front panel, there are two fiber feed-through ports. It does not matter which one is used for the fiber input or the fiber output. However, for experimental consistency, once you have assigned which fiber port will be the input and which one will be the output, try not to switch the fiber configuration. The fiber inside the LPC has a core diameter of 200 μm . External coupling fibers should be 200 μm or larger for maximum coupling efficiency.

1. Attach one end of an illumination fiber to a port on the LPC and the other end to your light source.
2. Attach one end of a read fiber to the second port on the LPC and the other end to your spectrometer.

Assessing if the LPC is Free of Particles

Fluids need to be relatively particle-free. Particles larger than 20 μm can be trapped inside the tubing and can then block or scatter a significant amount of light. To rid the LPC of particles, follow these steps:

1. Pump the sample fluid through the LPC.
2. While in Scope Mode, save a dark spectrum with the light source off and a reference spectrum with the light source on.
3. Continue to pump the sample fluid and switch to the Absorbance Mode. Ideally, you should see a spectrally flat line. Particle effects manifest themselves as an exponentially decreasing curve from shorter to longer wavelengths. The length of time that you pump the sample and the magnitude of the absorbance peak, depends upon the time required and the minimum detectable absorbance value for your specific analysis. Pre-filtering of the sample may be required to eliminate this exponentially decreasing absorbance spectrum if it is significant to your analysis.

Specifications

Path lengths:	1-meter, 5-meter and 10-meter options (standard); custom lengths also available
Tubing:	Teflon® Amorphous Fluoropolymer 2400 ~560 μm inner diameter, ~800 μm outer diameter
Refractive index:	1.29
Internal volume:	250 μl/meter
Chemical resistance:	tubing can be altered by perfluorinated solvents, FREON® 113, and Perclene®
Recommended optical fibers for coupling to spectrometers, light sources:	400 μm illumination fiber (UV-VIS) 200 μm or 400 μm read fiber (UV-VIS)
Plumbing fittings:	standard ¼" x 28 chromatography fittings