

## Liquid Light Guide, Ø3 mm Core, 8' Long, 340 - 800 nm



LLG3-8H

### Description

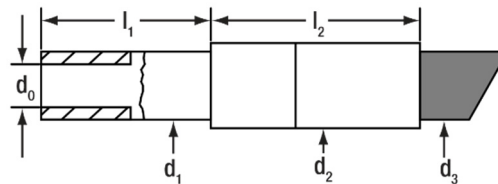
Thorlabs' LLG3-8H Liquid Light Guide offers high transmission from 340 to 800 nm for white light illumination applications. The light guide provides excellent transmission from the near UV to the far red range. The yellow band serves as a visual indicator for when used with the HPLS343 high-power plasma light source; the LLG is correctly inserted when the edge of the band is flush with the front panel of the instrument. The light guide is recommended for use with tungsten halogen, xenon, or metal halide light sources. The long-term temperature range for the liquid light guide is from -5 to 35 °C. The light guide is 8 feet in length with a core diameter of 3 mm. The light guide can also be offered with custom core diameters or in custom lengths up to 30 m. Please contact [techsupport@thorlabs.com](mailto:techsupport@thorlabs.com) with inquiries.

### Specifications

LLG3-8H	
Wavelength Range	340 - 800 nm
Numerical Aperture	0.59
Half Angle ( $\theta$ )	36°
Minimum Bend Radius	40 mm
Core Diameter	3 mm
Length	8' (2.4 m)

LLG3-8H	
Temperature Range	
Continuous, Long Term	-5 to 35 °C (23 to 95 °F)
Few Days, Maximum	-15 to 50 °C (5 to 122 °F)
Few Hours, Maximum	-20 to 70 °C (-4 to 158 °F)

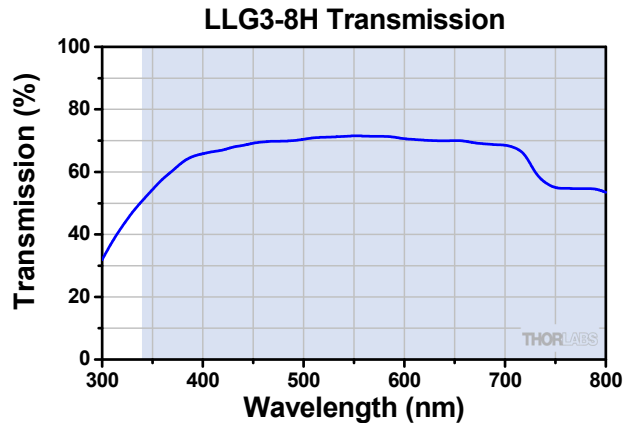
### Drawing



Active Core Diameter	Standard End Fittings				Protective Sleeve	Minimum Bend Radius
$d_0$	$d_1$	$l_1$	$d_2$	$l_2$	$d_3$	
Ø3 mm	Ø5 +0/-0.1 mm	20 ± 0.1 mm	Ø9 ± 0.1 mm	24 ± 0.1 mm	Ø7 mm	40 mm

**Note:** We recommend securing the liquid light guide by the ferrule (dimension  $d_1$  above) with a setscrew. Two setscrews will help center the ferrule if they are placed opposite each other at 180 degrees. We do not recommend securing the light guide at the thickest part (dimension  $d_2$  above) because the gasket is sealed within this section.

## Transmission



The blue-shaded region denotes the spectral range over which we recommend using this liquid light guide. The transmission was measured using an input light source with a full entrance angle of 50°.

## Lifetime and Stability

Liquid light guides can operate under normal conditions for many years without degradation of transmission properties. The life of the light guide depends on the type of light source and filter being used. The liquids inside this light guide are stable over years if the light guide is not exposed to wavelengths below 340 nm or above 800 nm. Depending on the input power, shorter wavelengths may destroy the transmission properties of the liquid, while longer wavelengths may overheat the liquid and cause bubbles.

Under normal temperatures (i.e. -5 °C up to 35 °C), there is no degradation of transmission to be expected. Exceeding these limits, i.e. below -5 °C, may cause bubbles, which usually will disappear after storing at room temperatures for a few days. Temperatures over 35 °C and below 50 °C are usually no problem for a few days. Exceeding this limit does not destroy the liquid itself but may cause degradation of the sealing, resulting in bubbles that will permanently damage the light guide. However, the tip may be as hot as 200 °C as long as the temperature does not exceed 60 °C at the gasket of the light guide, which is indicated by the change in the fitting from chrome metal to a black color. This temperature difference is possible because the tip is made of metal, quartz, glass, and Teflon, which does not conduct heat back to the gasket. The temperature of the gasket largely depends on the cooling capabilities of the light source. The diagram shown to the lower left demonstrates the ideal way to set up the light guide. The liquid light guide is an optical instrument and has to be handled with care. Sharp bending (tighter than the minimum bend radius) may cause the tube to kink, making transmission drop by a minimum of 20%.

