

LDV-Beam Expander

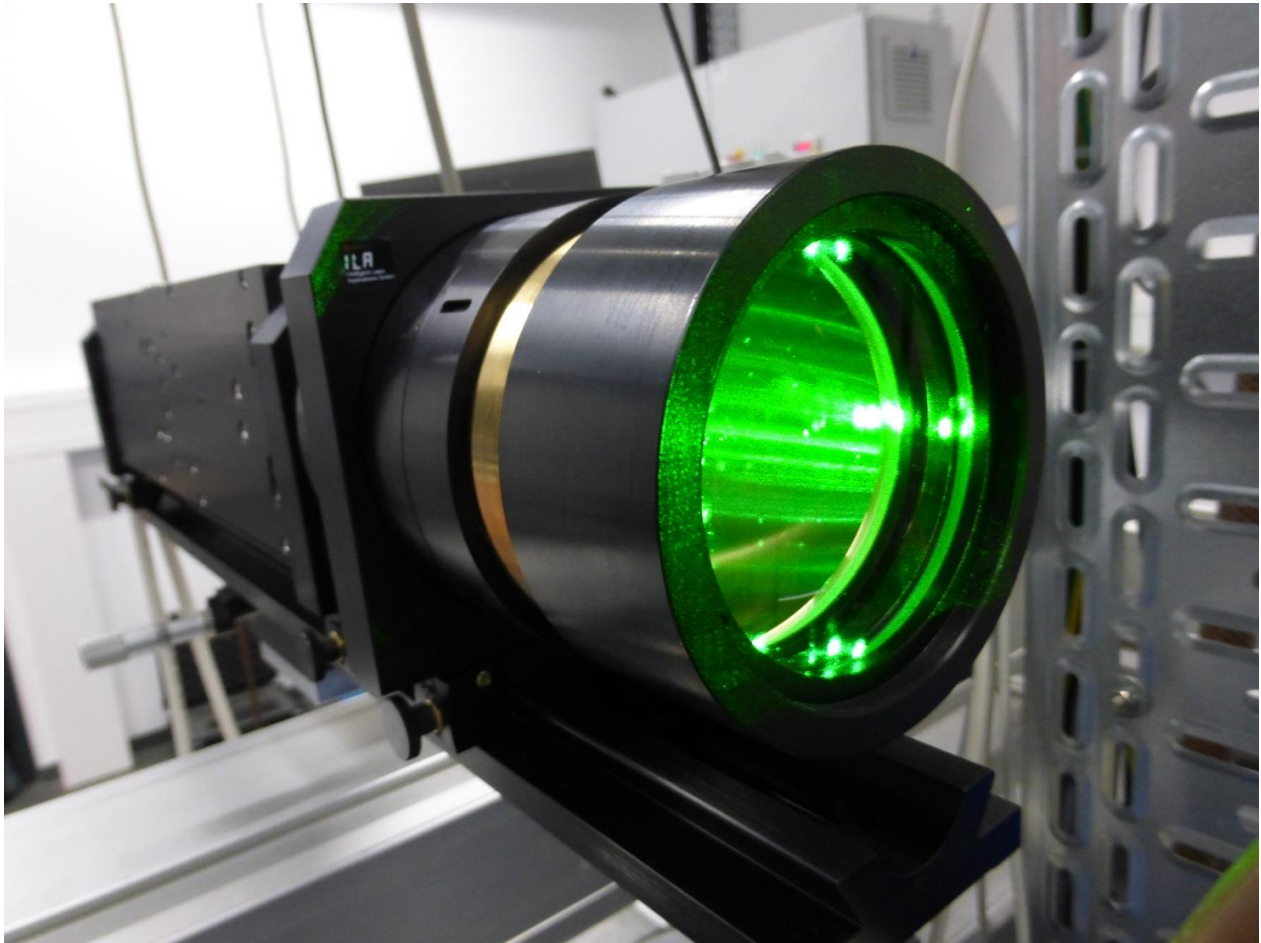


Fig.1: Beam Expander mounted on standard ILA 2D fp50-shift probe

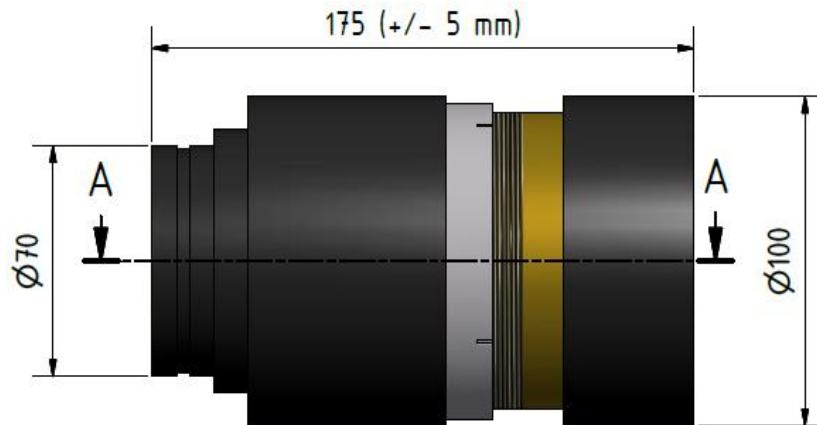
Overview

In LDV measurements, the size of the measuring volume depends on the beam distance, the beam diameter and the focal length of the LDV probe optics. Typically, fitting a standard LDV probe such as the ILA-fp50 with a long focal length front optics, say $f=800$ mm, will result in a measuring volume length of ca. 10mm. Often this is not sufficiently small to achieve a high spatial resolution in velocity measurements.

Combining the ILA-fp50 standard LDV probe optics with a beam expander leads to a significant shortening of the measuring volume. For a focal length of 800 mm, the length of the measuring volume can be reduced by more than 50%, to 4 mm. Furthermore the smaller size of the measuring volume results in higher illumination density in the measurement volume. This means higher signal quality, and higher data rate.

The ILA beam expander uses a Galilean telescope design. The beam distance is expanded from 45 mm to 70 mm. The focal distance of the front lens can be adjusted by distance of the lenses inside the beam expander. The beam expander is mounted directly onto the fp50 LDV probe.

Specifications



f in mm	E	ILA fp50 standard optic		ILA fp50 with beam	
		MV-width dx.L in mm	MV-Length dr.L in mm	MV-width dx.L in mm	MV-Length dr.L in mm
310	1,55	0,10	1,42	0,07	0,59
500	1,55	0,17	3,69	0,11	1,54
800	1,55	0,27	9,45	0,17	3,94
1000	1,55	0,33	14,76	0,21	6,15

calculated for 532 nm

Beam Expander

Dimensions	d=100 mm, L=175 mm
Weight	2.6 kg (without front lens)
Front lens focal length	310 mm - 1000 mm (optional)