



Laser Speckle Reducer LSR-3000 Series

Speckle noise from a laser-based system is reduced by dynamically diffusing the laser beam. An electro-active polymer membrane is internally fed with two electrical control signals that selectively move a central diffuser in x- and y- direction. The LSR-3000 Series integrates fully certified drive electronics powered through a single micro-USB connector. The LSR is available in two versions: the LSR-3005 and the LSR-3010 that respectively exhibit a clear aperture of 5 mm and 10mm. The following table outlines the specification of Optotune's laser speckle reducer LSR-3000 Series. The diffusion angle can be adapted on demand.

Mechanical specifications

	LSR-3005	LSR-3010	
External dimension	41	48	mm
Clear aperture	5	10	mm
Thickness	8.8	8.8	mm
Weight	24.5	32	g

Electrical specifications¹

Power supply (micro-USB interface)	5	5	VDC
Power consumption	310	310	mW

Optical specifications

Diffusion angle (FWHM)	1°/10°/20°	1°/10°/20°	
Transmission spectrum	see Figure 2	see Figure 2	
Optical damage threshold @ 1064nm	>10	>10	kW/cm ²
Oscillation frequency	300	180	Hz

Thermal specifications

Storage temperature	[-40,+100]	[-40,+100]	°C
Operating temperature	[-20,+65]	[-20,+65]	°C

Figure 1 (a-c) show the effect of the LSR-3005 on a laser spot ($\lambda=650\text{nm}$, $P=5\text{mW}$).

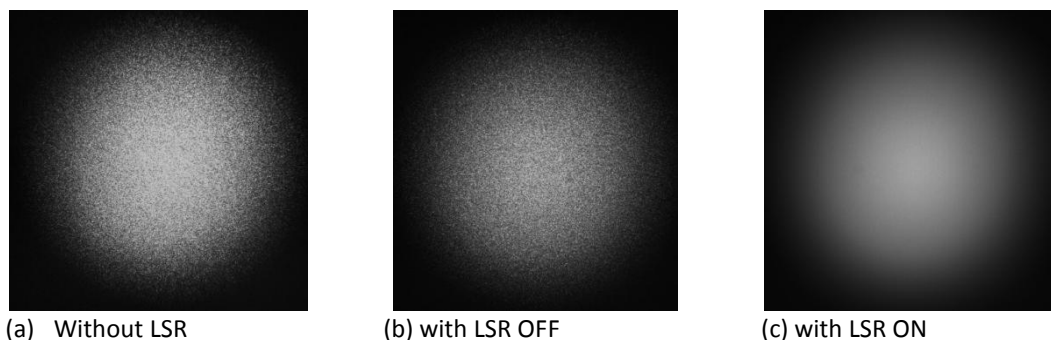


Figure 1: CCD images of a laser spot without and with LSR-3005 on.

¹ 100-230VAC to 5VDC micro-USB power supply provided by Optotune



Figure 2 shows the transmission spectrum of the LSR-3005 between 400 nm and 900 nm.

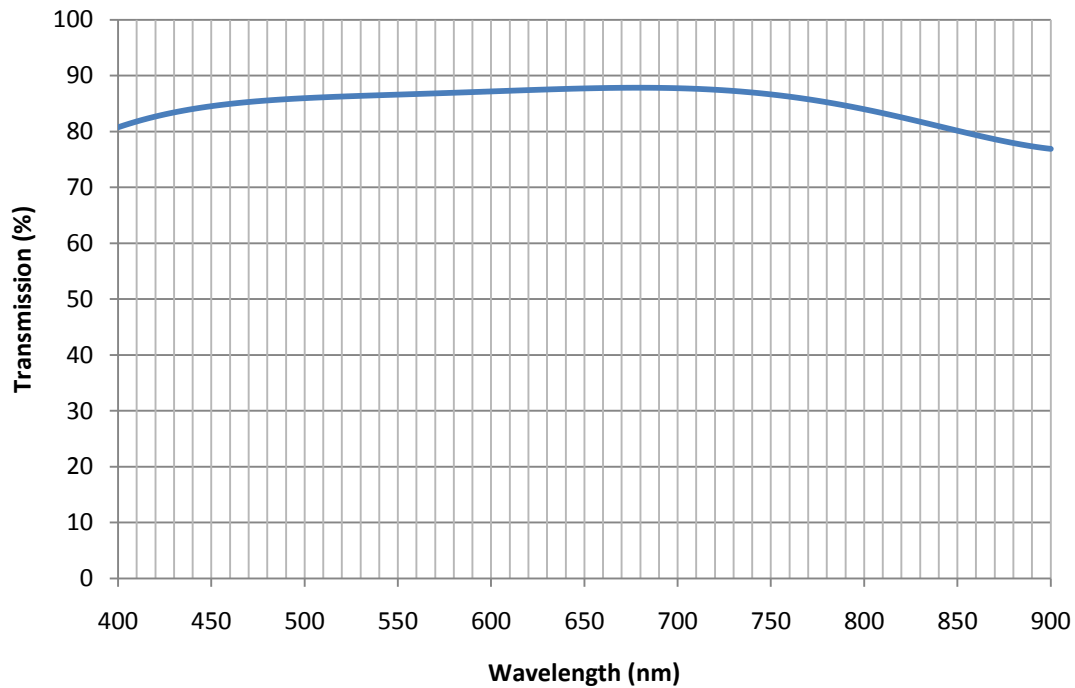


Figure 2: Transmission spectrum of the LSR-3000 series

Figure 3 shows the dimensions of the LSR-3005 (left) and of the LSR-3010 (right). The housing exhibits a M4 thread in order to facilitate the integration of the LSR on an optical table. The power supply interface is made through a micro-USB connector.

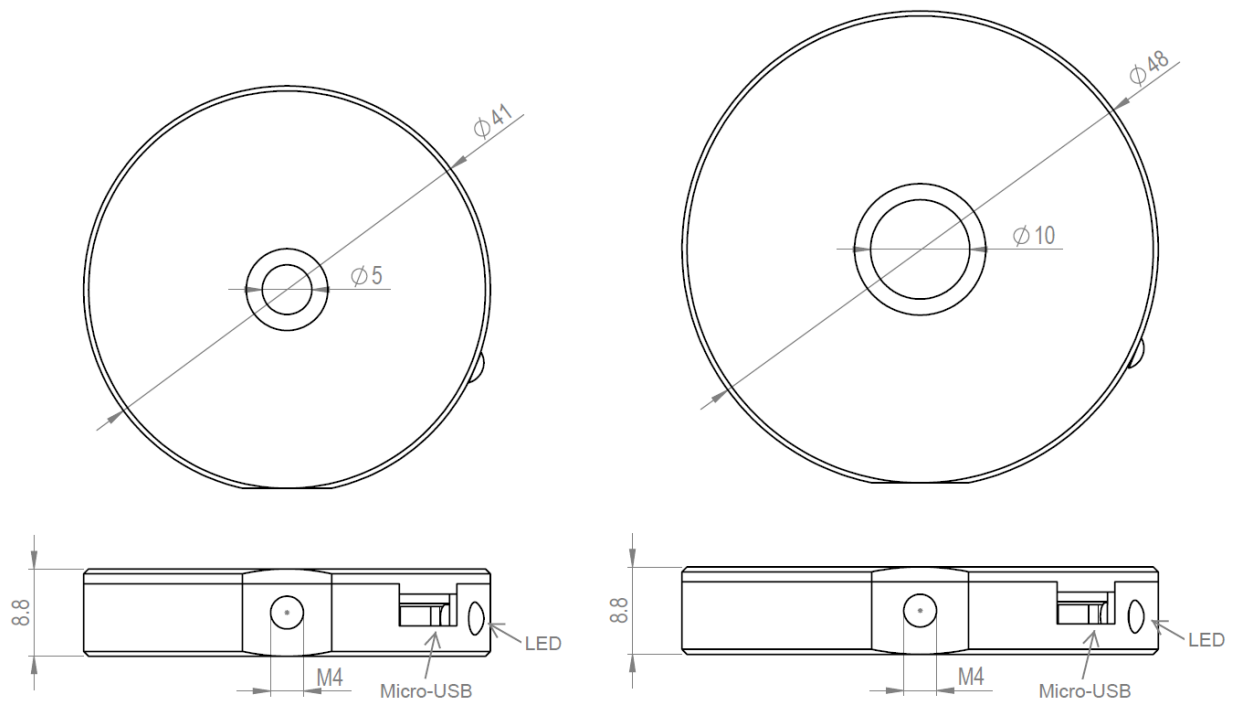


Figure 3: Mechanical drawing of the LSR-3005 (left) and of the LSR-3010 (right) (unit: mm)

Ordering information for standard products

The LSR-3005 can be delivered with three different diffusing angle (circular). When ordering, please mention the desired diffusing angle as follow:

LSR-3005- θ

θ = diffusing angle (1°/10°/20°)

Example: LSR-3005-1 refers to a speckle reducer of 5mm aperture with a diffusion angle of 1°.

Ordering information for custom diffusing angle

For a custom diffusing angle, please follow the instructions below.

LSR-C-3005- θ

θ = diffusing angle that can be chosen between circular and elliptical as follow

Circular : 0.5°/2°/30°/40°

Elliptical: on demand (e.g. 30°x5°)

Example: LSR-C-3005-2 refers to a custom laser speckle reducer of 5mm aperture with a circular diffusion angle of 2°.

For more information on optical, mechanical and electrical parameters, please contact sales@optotune.com.