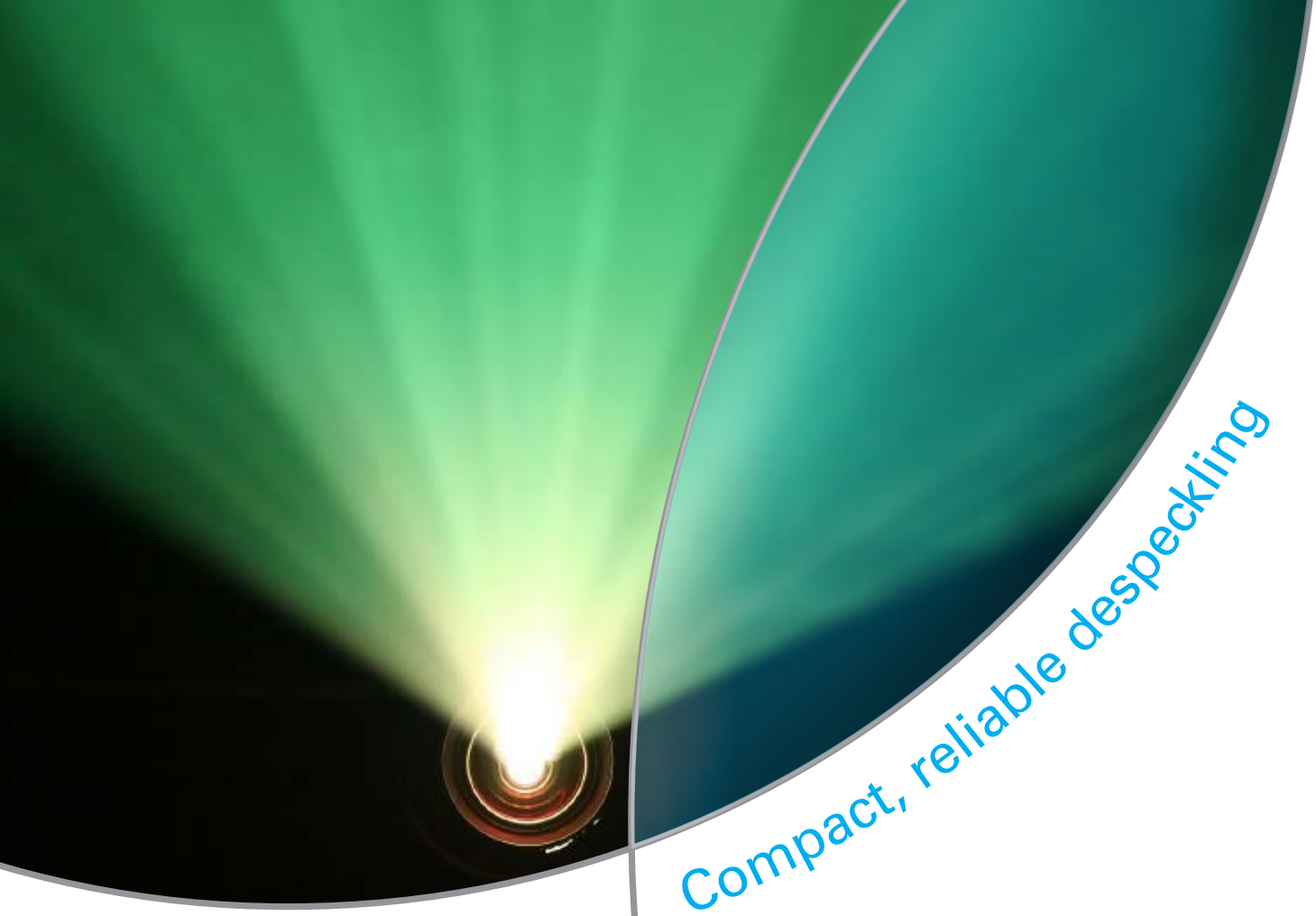

Compact, reliable despeckling

Laser speckle reducers

Optotune's transmissive laser speckle reducers offer the most compact and reliable way to remove speckle noise and homogenize light beams. An integrated actuator oscillates a diffusor in its plane, completely free of mechanics. Closed loop drive electronics allow for easy integration. A choice of glass and polycarbonate diffusors is available.

optotune

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Laser speckle reducers

LSR-4C - Compact, reliable despeckling & homogenization

Laser speckle is one of the main obstacles to the widespread use of lasers in display applications, microscopy illumination, automotive HUD and metrology. Optotune's laser speckle reducer (LSR) is the ideal solution to overcome this issue.

Optotune's LSRs are nothing other than fast moving diffusers. However, the way they are actuated is unique and allows for highly integrated compact solutions.

The reluctance actuation technology is suitable for harsh environment and allows the mounting of AR-coated glass diffusors for high laser power applications.

Advantages

> Compact design with integrated actuator
> Works with different diffusor materials (also non-gaussian)
> Driving electronics integrated on flex-cable
> Robust design for harsh environments
> Long operational lifetime

Applications

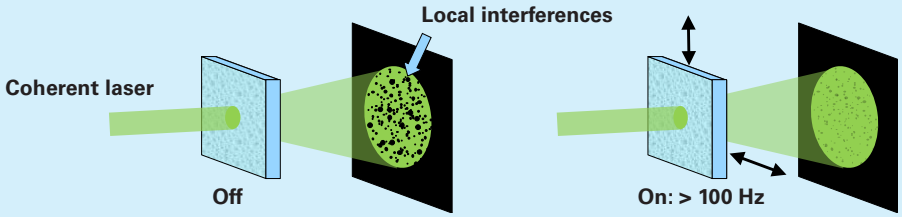
> Laser based projectors from cinema to pico
> Head-up displays
> Microscopy illumination
> Beam homogenizer
> Metrology

Key specifications	LSR-4C
Clear aperture	18.5 mm x 18.5 mm
Actuator	Reluctance force
Oscillation type	1D or 2x1D (linear)
Diffusor type	AR-coated glass diffusor,
Diffusion angle (FWHM)	8.5° (up to 20° on request)
Oscillation frequency	120 +/- 10 Hz
Oscillation amplitude (peak to peak)	0.8 mm (typical)
Weight	11 g
Vibrations	Low, depends on mechanical mount
Cover glasses	None
Supply voltage / power consumption	5 VDC / 50 mW

Large 2D LSR for HUD

Optotune can customize LSRs based on its new voice-coil actuation platform that supports large clear apertures and large circular amplitudes in 2D. The devices can be driven with power-efficient PWM drivers and closed-loop control can be added. Such devices are suitable for de-speckling in head up displays (HUDs) when placed in the intermediate image plane. Please contact Optotune if you are interested to learn more about our development kit and customization projects.

Principle



Recommended layout for fiber coupling