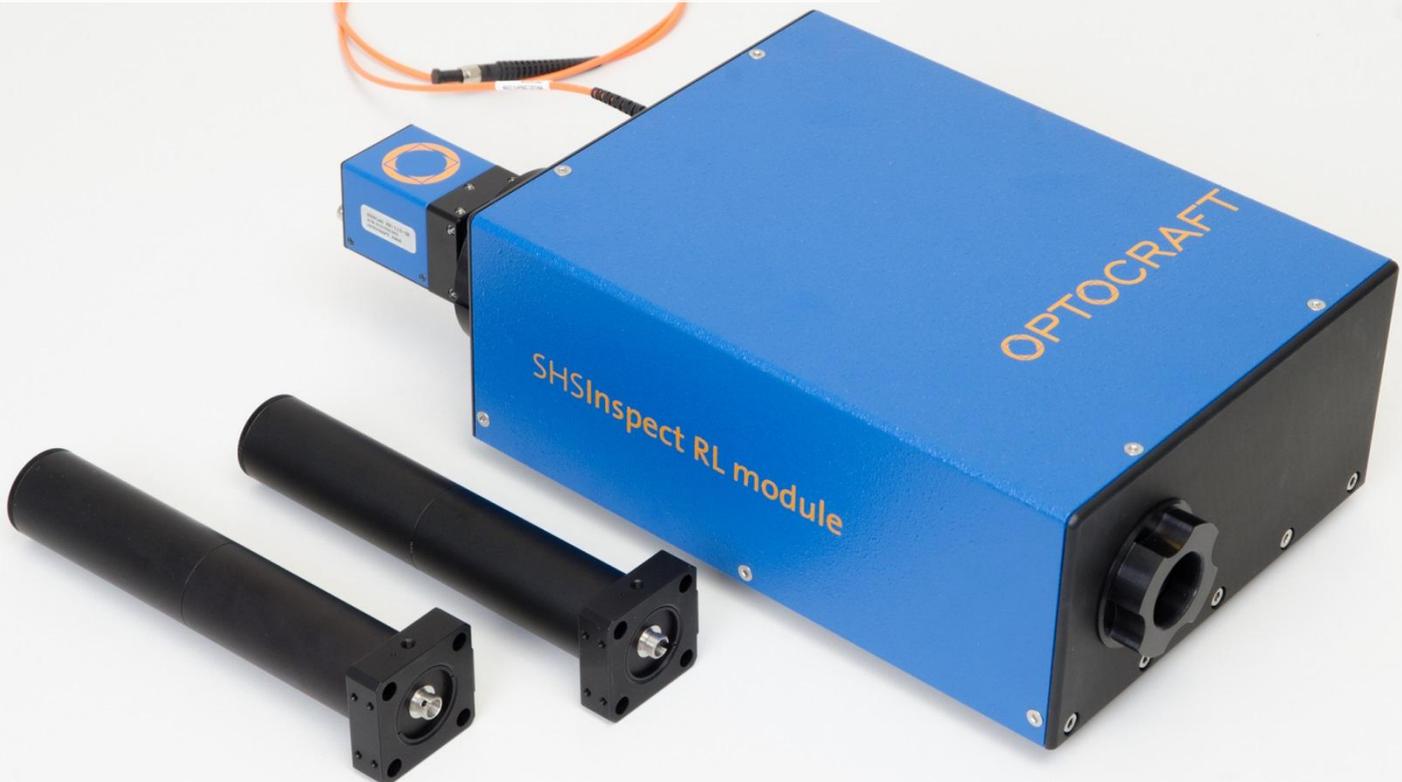


SHSInspect RL module



The SHSInspect RL module is a versatile wavefront measurement tool for functional testing of optics in double pass or for surface shape measurements. It unites SHSLab wavefront sensor, light source and imaging optics in a single, compact device and can be easily integrated into table top set-ups, testing platforms or production lines.

Benefits:

- Large variety of measurement configurations
- Modular illumination unit for easy wavelength change
- Internal relay optics with iris stop for blocking ghost reflections
- Well established calibration procedures for high accuracy measurements
- Wavefront sensor can be used separately

SHSInspect RL module

Optical System

Operation wavelength	VIS (400nm-700nm) or NIR (700nm-1050nm)
Exit pupil diameter	4.2mm / 10mm
Acceptance angle (light on detector)	+/- 1.8° ... 4.5° depending on SHSCam model and exit pupil diameter
Acceptance angle (Quantitative evaluation of wavefront tilt)	+/- 1.8° ... 4.5° depending on SHSCam model and exit pupil diameter
Internal imaging with iris stop	Yes

Mechanical Properties of RL module without SHSLab and additional optics

Dimensions (LxWxH)	275 x 180 x 90 mm ³
Weight	4 kg

SHSLab (quoted separately, see separate data sheets for further information)

	HR2-130-GE	HR3-075-GE	UHR3-075-GE
Lateral resolution	85 x 53	111 x 93	203 x 203
Evaluation rate (typ.) / Hz	18	10	4
Pupil diameter (circular) / mm	4.2mm or 10mm for each SHSLab model		

Performance of the RL module with SHSLab

Measurement accuracy	Typical $\lambda/20$ PVR; depends on application and calibration method
Repeatability ¹	2nm rms

Included Accessories

Cat's eye module	Tilt calibration unit
Plano mirror	$\lambda/20$ PVR on exit pupil diameter of RL module

Optional Accessories

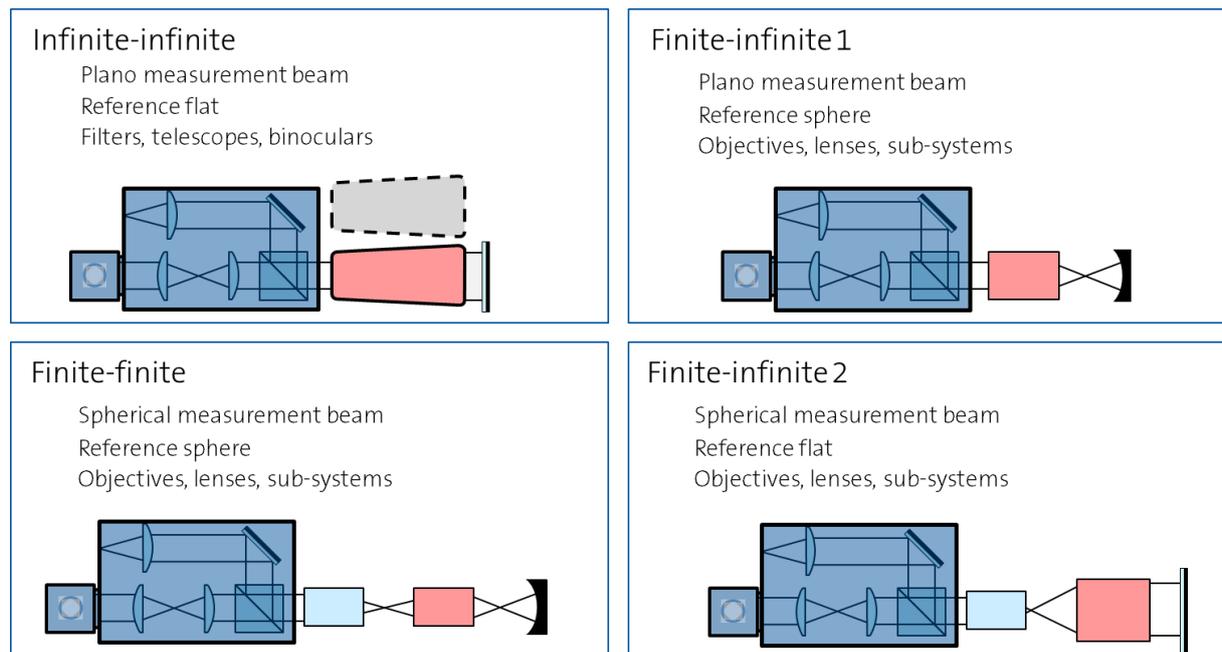
Null lenses	Microscope objectives with different NA available (up to NA=0.8)
Beam expander	For adaption of the diameter of the collimated out-put beam
Beam expander support	Mechanical support to stabilize beam expander in front of the module
Light sources	LEDs with quick-change collimation unit for easy change of light source
Calibration flats	For optics with large diameter
Reference spheres	For double pass measurement of optics and for calibration of objectives
Workstation PC	Notebook or desktop PC, pre-configured and tested
Zemax Model	Simulation model containing black boxes

Customization of the RL module is possible upon request:

- Other operation wavelength range (UV / SWIR)
- Other light sources (lasers, laser diodes)
- Other null lenses

¹ The repeatability depends on the selection of the wavefront sensor model and is the difference between two successive wavefront measurements.

Typical double pass configurations



Overview of Options

Thread:
 SM1 (1.035"-40) or C-Mount

Pupil diameter (plane wavefront):
 4.2mm or 10mm

SHSLab UHR3
 SHSLab HR3

Notebook
 Tower PC

Auxiliary lens	
On 4.2 mm pupil	On 10 mm pupil
NA 0.8	NA 0.5
NA 0.64	NA 0.28
NA 0.42	NA 0.19
NA 0.21	NA 0.1
NA 0.105	

Kepler-Telescope:
 Exit pupil up to 70mm

Mechanical support for horizontal setup

Plano mirror, Lambda/20, mounted in tip/tilt mount:
 Diameter: 6"
 Diameter: 4"
 Diameter: 3"
 Diameter: 2"

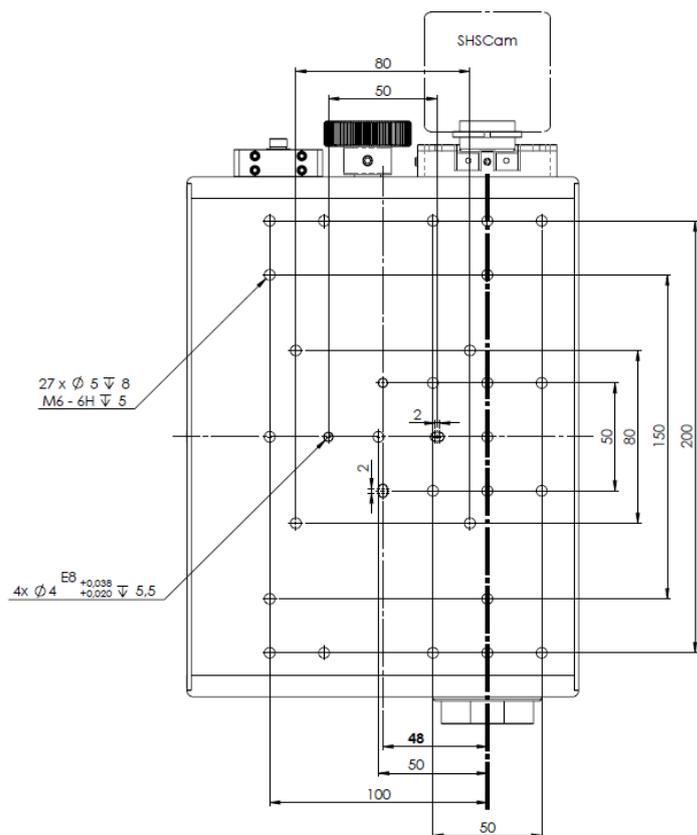
Reference Sphere:
 NA up to 0.95

4.05mm
 4.30mm
 4.5mm
 4.70mm
 5.05mm
 5.30mm
 5.54mm
 5.65mm
 5.95mm
 6.25mm
 6.60mm
 7.40mm
 8.50mm
 9.70 mm
 10.50mm

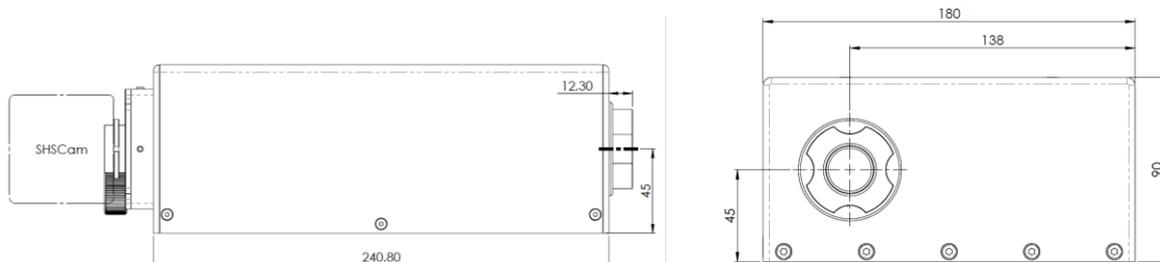
Light Sources: Different fibre-coupled LEDs available in combination with quick-change collimator tubes. When coupled to the RL module, all light sources will yield an output beam with a top hat like intensity profile and a plane wave-front profile.

Microscope Objectives: The objectives listed above are optimized for the VIS wavelength range. Further objectives for NIR range are available.

Schematic drawings



Base plate of the module and position of threaded holes.



Side- and top-view of the SHSInspect RL module, optical axis is indicated (SHSCam shown only schematically)