OPTOCRAFT
OPTICAL METROLOGY

SHSInspect RL module

The SHSInspect RL module is a versatile wavefront measurement tool for functional testing of optics in double pass or for surface 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
- Well established calibration procedures for high accuracy measurements
- Wavefront sensor can be used separately

SHSInspect RL module	
Illumination System	
Operation wavelength	VIS (400nm-700nm) or NIR (700nm-1050nm)
Exit pupil diameter	4.2mm / 10mm (plane wavefront)
Mechanical Properties of RL module without SHSCam and additional optics	
Dimensions (LxWxH)	275 x 180 x 90 mm³
Weight	4 kg
Included Accessories	
Cat's eye module	Tilt calibration unit
Plano mirror	lambda/20 PV on exit pupil diameter of RL module

SHSLab (quoted separately, see separate data sheets for further information)	
Lateral resolution	111 x 93 / 203 x 203 microlenses (SHSCam HR3/ UHR3)
Evaluation rate (typ.)	10Hz / 4Hz
Measurement accuracy	Typical lambda/20 PV; depends on application and calibration method
Software SHSWorks	Wavefront and Zernike analysis, PSF, MTF, Strehl ratio, etc.

Performance of the RL module with SHSLab	
Measurement accuracy	Typical lambda/20 PV; depends on application and calibration method
Repeatability	2nm rms[1]

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

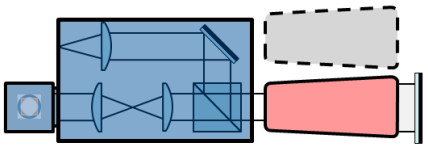
Customization of the RL module possible upon request:
- Other operation wavelength range (UV / SWIR)
- Other light sources (lasers, laser diodes)
- Other null lenses

[1] The repeatability is the difference between two successive wavefront measurements.

Typical double pass configurations

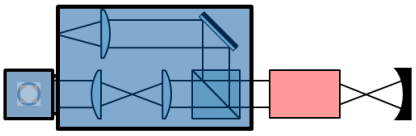
Infinite-infinite

Plano measurement beam
Reference flat
Filters, telescopes, binoculars



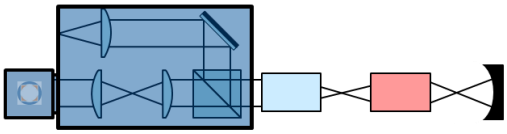
Finite-infinite 1

Plano measurement beam
Reference sphere
Objectives, lenses, sub-systems



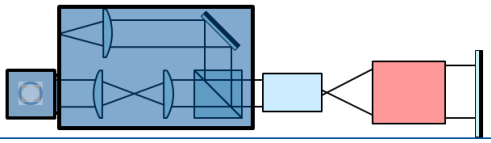
Finite-finite

Spherical measurement beam
Reference sphere
Objectives, lenses, sub-systems

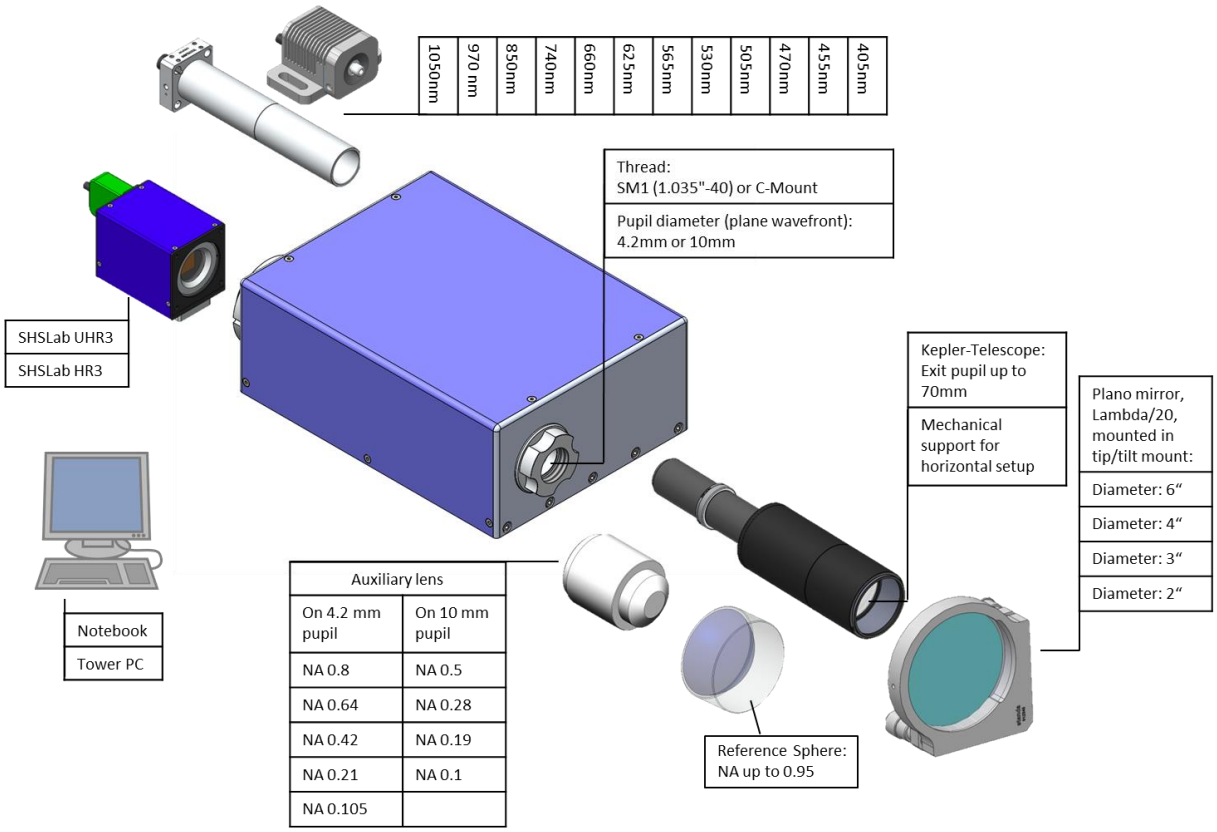


Finite-infinite 2

Spherical measurement beam
Reference flat
Objectives, lenses, sub-systems



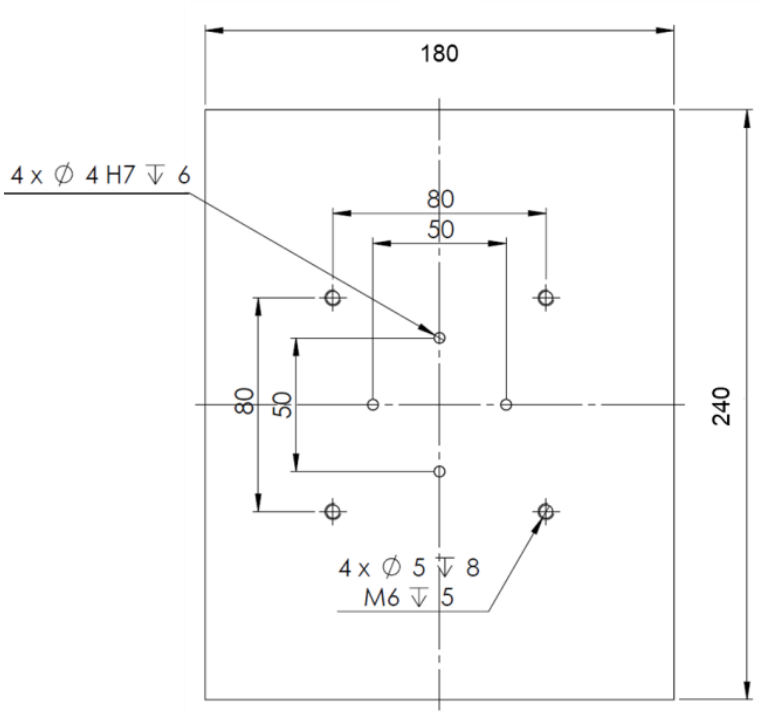
Overview of Options



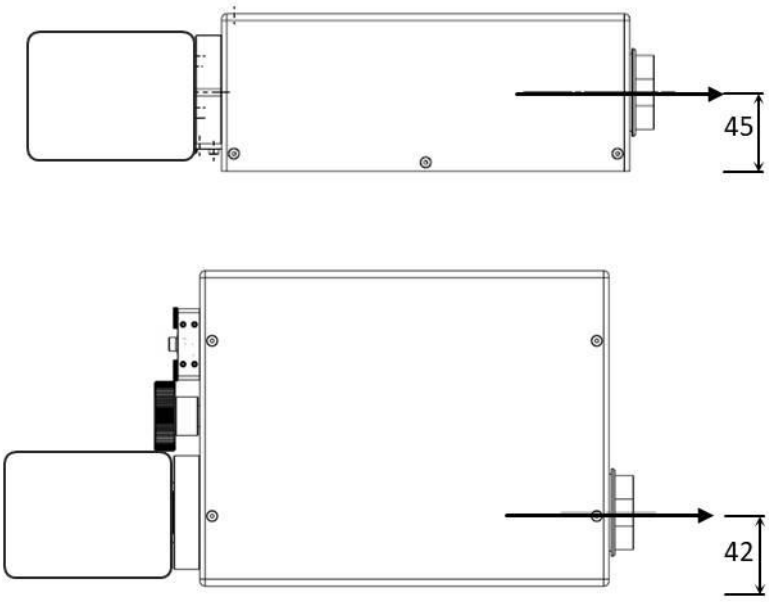
Light Sources: Different fibre-coupled LEDs available in combination with quick-change collimator tubes. When coupled to the RL module, all light sources will yield an output beam with a top hat like intensity profile and a plane wave-front profile.

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)