Intellium™ SBSI

SHEARING INTERFEROMETER

Small Beam Wavefront Analyzer

Visualize collimation and wavefronts of 1 to 8 mm diameter beams in real-time

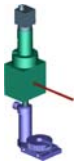
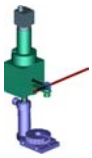
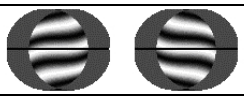
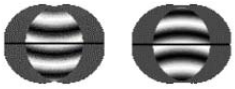
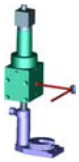
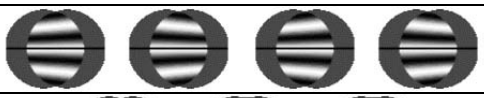
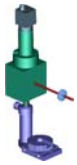
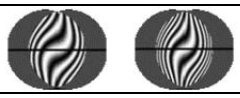
Applications

- Wavefront and collimation testing
- Test laser diodes at wavelengths from 180 to 1550 nm
- Test beams from 1-8 mm diameter, or smaller with beam expander
- Alignment and collimation of fiber optic systems
- Optical alignment of holographic storage & disk mastering systems
- OEM integration for real-time monitoring of laser collimation

Main Features & Benefits

- Measure collimation to better than 100-200 micro radians (wavelength dependent)
- Wavelengths from 180-1550 nm
- Small beam probe allows measurement between optical components
- Simple operation reduces alignment time to minutes
- Three models to choose from including fluorescent screen, camera, and 8x zoom systems

Option: ***SBSIsim™*** software, allows various Zernike wavefront aberrations to be entered by the user. The software then displays what the surface wavefront would look like on the SBSI screen. This allows the user to quickly determine the relationship between surface wavefront and slope wavefront, and thus use the SBSI for fast easy wavefront diagnostics and correction.

		Intellium™ SBSI **Images** Computer-generated images shown below simulate the ***Intellium™ SBSI*** display and illustrate the sensitivity of the ***Intellium™ SBSI*** to various aberrations in a beam.	
	**Laser Beam Diagnostics**		From left to right: no aberrations (perfect focus), .25 waves of defocus (diverging beam), and -.25 waves defocus (converging beam).
	**In line Beam Monitoring**		.25 waves of spherical and -.25 waves of spherical.
			.25 waves of coma at 0° and -.25 waves of coma at 0°.
	**Surface Diagnostics**		-.25 waves of coma at 90°, .25 waves of coma at -90°, -.25 waves of coma at -90°, and .25 waves of coma at 90°.
			.25 waves of astigmatism at -45°, .25 waves of astigmatism at 0°, .25 waves of astigmatism at 22.5°.
	**Lens Diagnostics**		.25 waves coma and .25 waves spherical at 0°, .5 waves coma and .5 waves spherical at 0°, and 1 wave of spherical.
			3 waves of spherical and 5 waves of spherical.

Surface & Wavefront Metrology Beyond Compare

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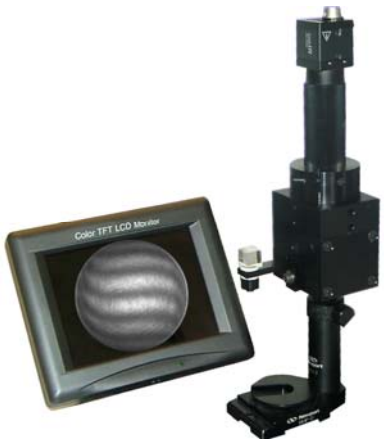
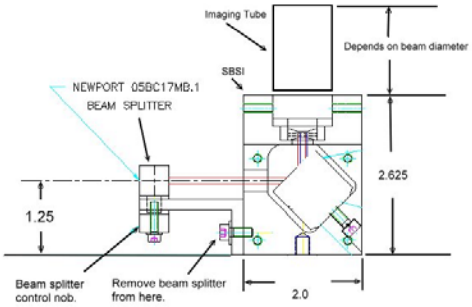


SBSI 1B with LCD Monitor

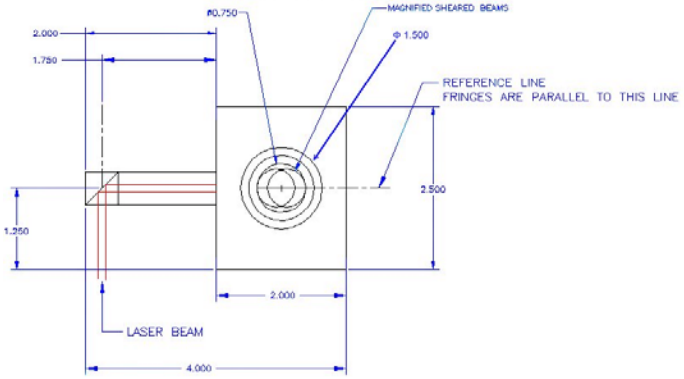
The patented ***Intellium™ SBSI*** is a small beam lateral shear interferometer that uses an air gap between glass plates to shear the beam and then projects a magnified interference fringe pattern on a camera or fluorescent viewing screen. Optical aberrations can be identified and corrected while viewing the ***Intellium™ SBSI*** fringe pattern in real-time. For example, coma can be corrected by changing the tilt of a collimating lens in an optical system so the fringes on the SBSI change from curved to straight. A reference line on the SBSI screen indicates the best focus (collimation) angle for the fringes. When the fringes are parallel to the ***Intellium™ SBSI*** reference line, all optical aberrations are minimized. Beams can be checked directly or in reflection using a rotating beam-splitter cube mounted on the front of the ***Intellium™ SBSI***.

Focus alignment sensitivity is approximately 130 micro radians of beam divergence, corresponding to 3° rotation of the fringes for 3½ fringes. Each ***Intellium™ SBSI*** is optimized for 3½ fringes for a specific wavelength and beam diameter, but every ***Intellium™ SBSI*** can be used to check beams over a certain range of wavelengths and diameters. Please inquire about special ***Intellium™ SBSI*** designs that are optimized for your application.

SBSI SIDE VIEW



SBSI TOP VIEW



Intellium™ SBSI Specifications

***Wavelength Coverage**

SBSI-1A	180 to 670 nm
SBSI-1B	340 to 1064 nm
SBSI-1B-NIR5	1550 nm
SBSI-1B-NIR7	1700 nm
SBSI-1B-UV	180 to 340 nm
SBSI-1BZ	180 to 1550 nm

Custom wavelength available.

Beam Diameter Coverage 1 mm to 8 mm diameter
Or smaller with a beam expander
Option: Zoom 1x – 8x

** Each instrument is custom built for a specific wavelength and beam diameter. Sensitivity and magnification will be maximized at these values.

****Sensitivity** 50 to 350 µrad (wavelength & beam size dependent)

Size *(main module)* 67 mm (2.625")H x 64 mm (2.5")W x 51 mm (2")D
(fluorescent screen tube) *** add from 25 mm (1") to 127 mm (5")H
(camera tube module) *** add from 38 mm (1.5") to 127 mm (5")H

Weight 1kg (2.25 lbs)

SBSI-1A
This model uses a fluorescent diffuse screen for 180 nm in the UV through the visible region. This unit is very portable, as it requires no power.

SBSI-1B
This model projects the sheared interferograms onto an integrated camera for wavelengths 340 nm to 1064 nm [1700 nm optional] (viewable with the 5.6" LCD display).
A battery pack is provided making the system completely portable.

Camera: 752x582 resolution **Monitor:** CCIR/EIA 5.6" TFT display

SBSI-1B-NIR5/7 & SBSI-1B-UV
These models are the same as the SBSI-1B except the camera has a phosphor coating to enhance the working wavelength to the specified NIR or UV wavelength. Light sensitivity allows use down to one (1) mW beams.

* SBSI 1A is used from 180 nm through the visible. SBSI 1B is used from 340 nm to 1064 nm. Below 340 nm requires SBSI-1A or SBSI-1B-UV. NIR wavelengths require SBSI-1B-NIR.
** When ordering, an optimum wavelength and beam diameter must be specified. Sensitivity and magnification will be maximized at these values.
*** Depends on magnification required. NIR and UV versions also have sensitivity in the visible.

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