



kSA BandiT–Product Specifications

The kSA BandiT is a non-contact, non-invasive, real-time, absolute wafer temperature sensor. kSA BandiT provides a viable solution for low-temperature wafer monitoring where pyrometers cannot measure. BandiT is also insensitive to changing viewport transmission, stray light sources, and signal contribution from substrate heaters.

Diffusely scattered light from the wafer is detected to measure the bandgap absorption edge. From the absorption edge the temperature is accurately determined. The kSA BandiT can run in two modes: 1) transmission mode, whereby the substrate heater is used as the light source and a single detector port is required. 2) reflection mode,



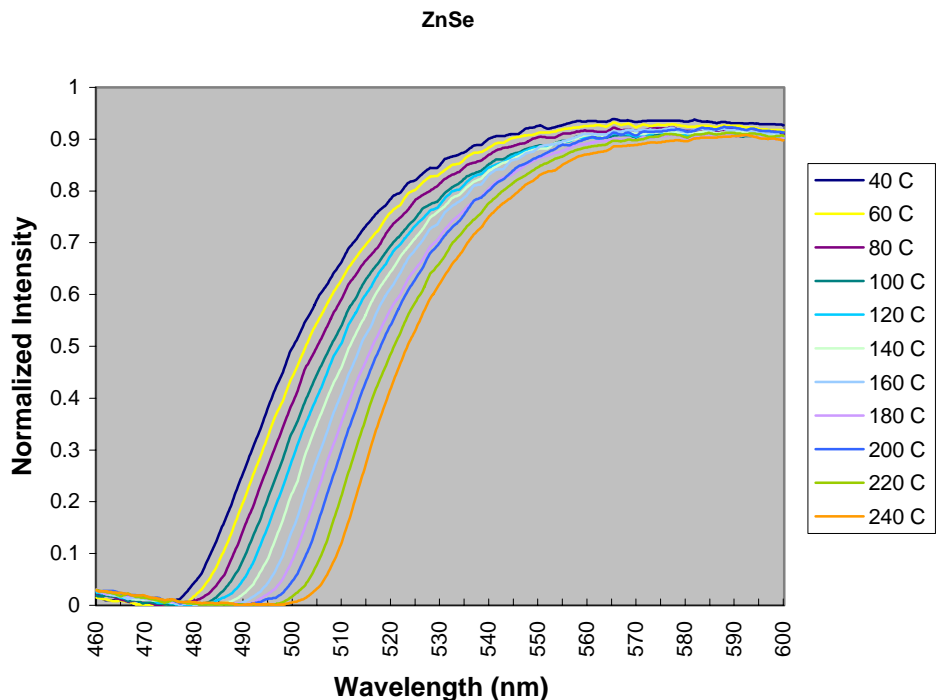
whereby the BandiT light source is mounted on one port, and the BandiT detector unit is mounted on a 2nd, non-specular port. The BandiT is available in two models covering the spectral range 380 nm – 1400 nm. Dual spectrometer units are also available for applications requiring the full spectral range. Typical substrate materials include GaAs, Si, SiC, InP, ZnSe, ZnTe, and GaN.

● Light Source

- 150W halogen lamp with gold coated parabolic reflector.
- Directly mounts to source port.
- Real-time output power control via BandiT software.
- Internal feedback control for stable intensity and spectral output.

● Detector

- 2” collection optics focusing to 400 um fiber.
- Micrometer-based single-axis pivot mount.
- Dual fiber for laser alignment.





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● Spectrometer

Visible Model (B-VIS1100):

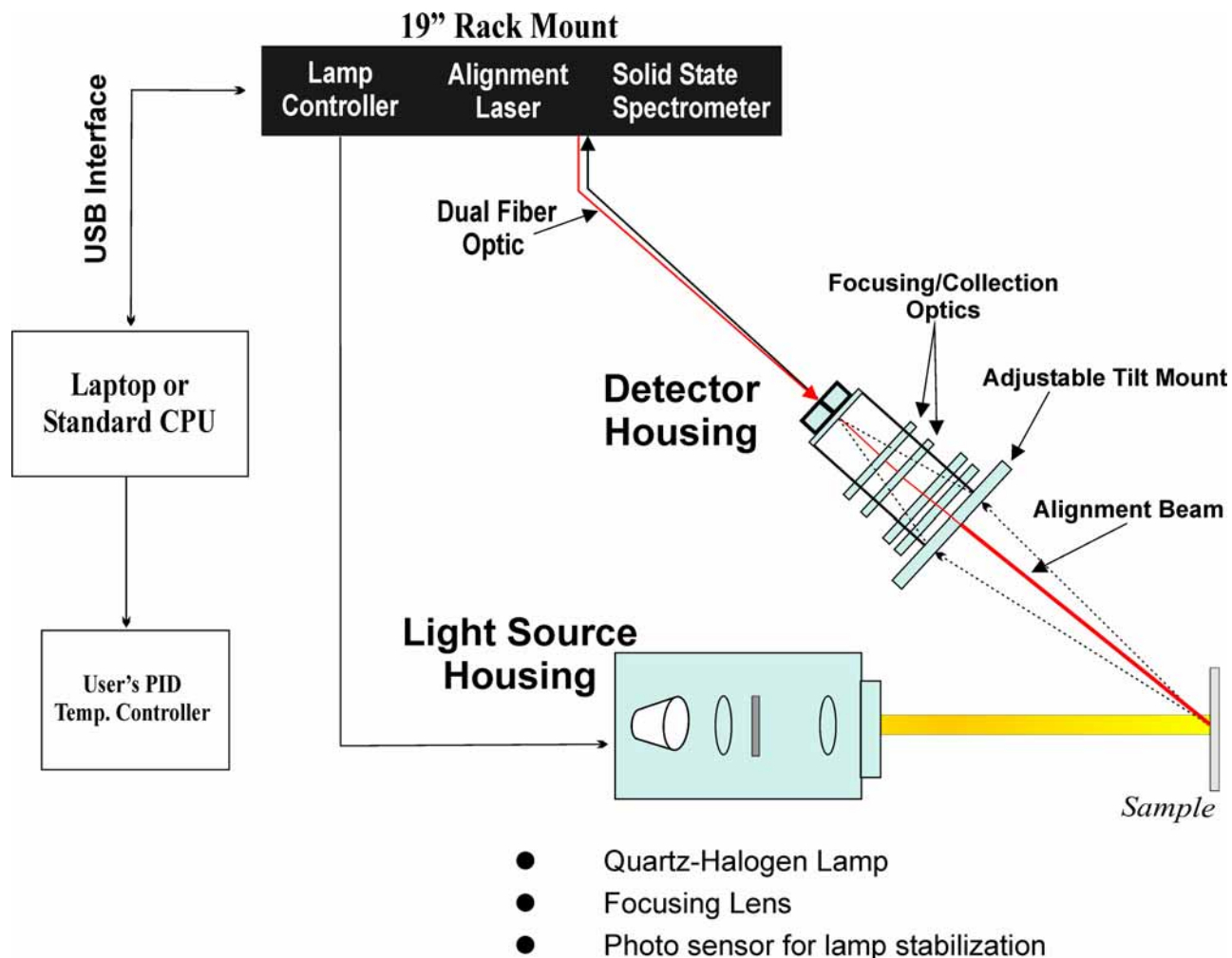
- 512 element, Peltier-cooled, CCD array
- Wavelength Range: 380 nm – 1100 nm

Visible Model (B-VIS536):

- 512 element, Peltier-cooled, CCD array
- Wavelength Range: 380 nm – 536 nm

NIR Model (B-NIR):

- 128 element InGaAs, temperature stabilized photodiode array
- Wavelength Range: 875 nm – 1400 nm





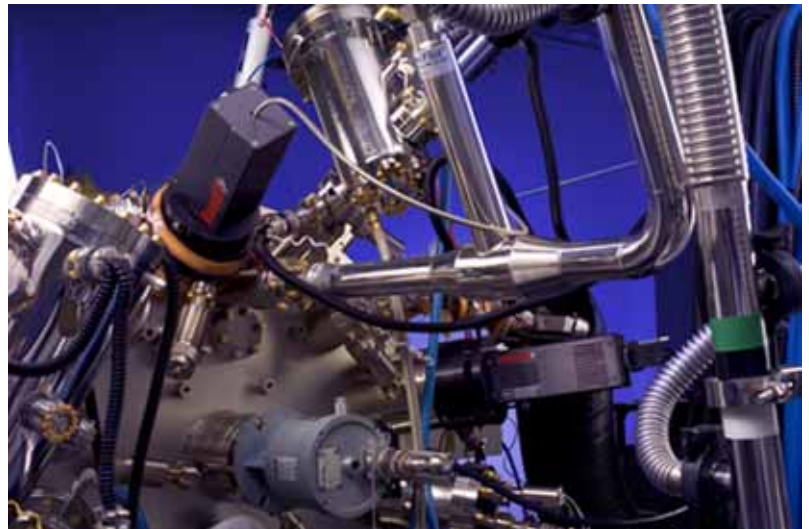
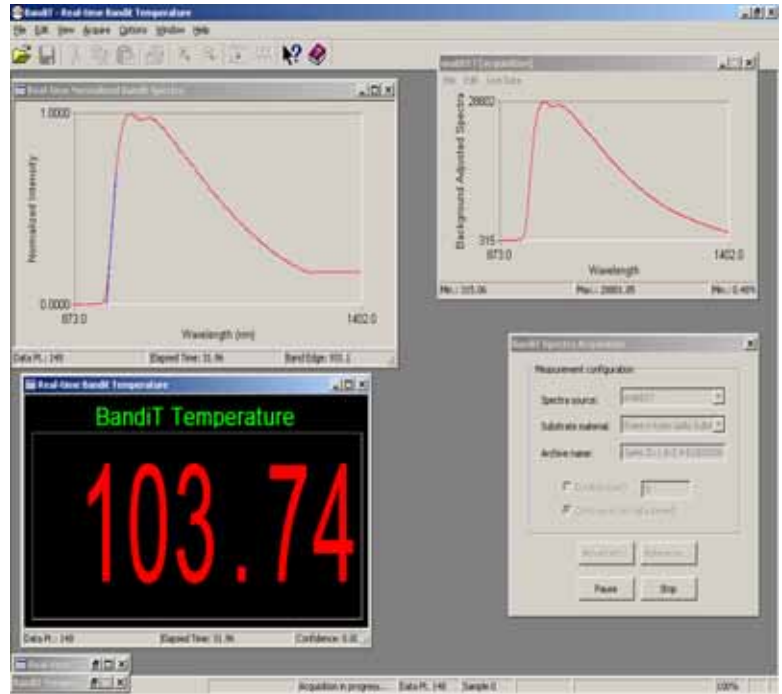
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● Software

The kSA BandiT software controls and monitors the light source, spectrometer, and data I/O. Real-time display of temperature as well as spectra and curve fitting is easily performed. A library of wafer bandgap/temperature look-up tables can be selected, and new look-up tables can be added to the library. The BandiT hardware is interfaced to the software via a single USB port and cable, and hence can be easily run using a laptop computer. The kSA BandiT software runs on Windows 2000 or Windows XP. GUI-based, easy-to-use software allows graphics export to common file formats (.tif, .bmp, .wmf), as well as data export to Excel spreadsheets and standard ASCII text files.

● Performance Specifications

Wavelength Ranges:	380-1100 nm ¹ 875-1400 nm ²
Temperature Update Rate:	20 Hz typical, 1 Hz minimum
Typical Temperature Ranges:	ZnSe: RT – 700 °C ¹ ZnTe: RT – 700 °C ¹ SiC: RT – 700 °C ¹ GaAs: RT -- 690 °C ² InP: RT -- 650 °C ² Si: RT – 600 °C ²
Temperature Resolution:	0.1 °C
Stability:	+/- 0.2 °C (4 hours)
Accuracy:	+/- 2 °C
Outputs:	<ul style="list-style-type: none"> • Real-time display • Thermocouple (selectable) • 10V analog (configurable)
Inputs:	Thermocouple, Analog



● Minimum System Requirements

Minimum System Requirements:

- Processor: Pentium IV
- Speed: 3.0 GHz
- Memory: 1 GB
- Video: 1024 x 768, 16-bit depth
- Hard Disk: 250 MB
- Bus: 1 PCI expansion slot and 1 available L-Bracket position
- OS: Windows™ 2000 or Windows™ XP ONLY

Requires one (1) USB port for BandiT interface.

¹ B-VIS model

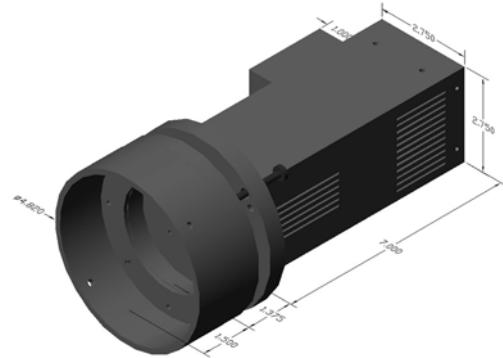
² B-NIR model



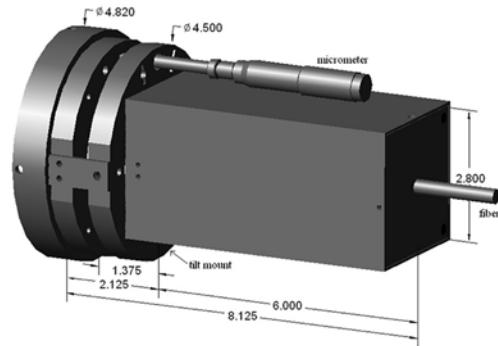
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● Product Dimensions

LIGHT SOURCE HOUSING



DETECTOR HOUSING



19" RACK MOUNT CONTROL UNIT

