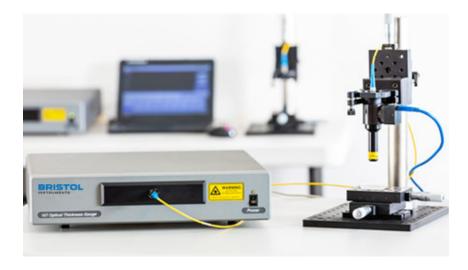


OPTICAL THICKNESS GAUGE





Non-contact thickness measurement for R&D and production applications.

Thickness information is critical in the development and production of a variety of materials. To address this need, Bristol Instruments offers a family of thickness gauge products that employ proven optical technology to provide the most precise and reliable thickness measurement available. What's more, this level of performance is achieved with an unprecedented level of versatility and convenience. These instruments are ideal for applications such as:

- Optical Components and Lens Assemblies: measures individual components and multi-element stacks
- OLED, AMOLED, and LCD Displays: measures total and individual layer thickness including laminating adhesive
- Contact and Intraocular Lenses: measures center thickness and sagittal height
- Medical Balloon Catheters: measures wall thickness of body, neck, and cone
- Medical Tubing: measures wall thickness, outer diameter, and inner diameter

Key Features:

- Measures hard and soft materials without damage or deformation.
- Up to 31 layers can be measured simultaneously.
- Accuracy as high as $\pm 0.1 \, \mu m$.
- Long-term measurement repeatability up to ± 0.02 μm.
- Continuous calibration with a built-in standard of length.
- Traceable to NIST standards.
- Broad measurement range of 12 µm to 80 mm.
- Display software provided to control measurement parameters and report thickness data.
- APIs help with integration into a manufacturing process via USB or Ethernet.
- Optional fully integrated optical switch allows for up to eight test stations with a single instrument.

| SPECIFICATIONS | | | | | 157/1 | 37 Serie | |
|---|---|---|------------------------------|-----------|-------|-----------------|--|
| IODEL | 157 | 157LS | 157XLS | 137 | 137LS | 137XLS | |
| HICKNESS MEASUREMENT | | • | • | | • | • | |
| Method | Non-contact optical interferometry | | | | | | |
| Maximum Physical Thickness (Layer of air with index of refraction of 1.0) | 12 mm | 40 mm | 80 mm | 12 mm | 40 mm | 80 mm | |
| Maximum Physical Thickness (Material with index of refraction of 1.5) | 8 mm | 26 mm | 53 mm | 8 mm | 26 mm | 53 mm | |
| Minimum Physical Thickness ¹ (Material with index of refraction of 1.5) | 16 µm | 20 μm | 24 µm | 35 μm | | | |
| | 12 μm (± 1.0 μm accuracy) | 12 μm (± 1.0 μm accuracy) | 16 µm (± 1.0 µm accuracy) | | | | |
| Accuracy ² | ± 0.1 μm | | | ± 1.0 μm | | | |
| Repeatability ^{3, 4} | | ± 0.02 μm | | ± 0.05 μm | | | |
| Traceability | | Verified with NIST certified gauge blocks | | | | | |
| Units | mm, µm, mils | | | | | | |
| IEASUREMENT RATE | 20 Hz | 7 Hz | 4 Hz | 20 Hz | 7 Hz | 4 Hz | |
| NSTRUMENT INTERFACE | USB and Ethernet with Windows-based display program Ethernet can be used for network connection allowing instrument access to up to 8 clients Library of commands for LabVIEW, .NET, and custom programming | | | | | | |
| COMPUTER REQUIREMENTS 5 | PC running Windows 10, 1 GB available RAM, USB 2.0 (or later) port, monitor, pointing device | | | | | | |
| PTICAL SWITCH 6 | | | | | | | |
| Capacity | Integrated 1 x 8 fiber switch | | | | | | |
| Switch Time ⁷ | 1 ms | | | | | | |
| NVIRONMENTAL 8 | | | | | | | |
| Warm-Up Time | None | | | | | | |
| Temperature | 15°C to +30°C (-10°C to +70°C storage) | | | | | | |
| Pressure | 500 – 900 mm Hg | | | | | | |
| Humidity | ≤ 90% R.H. at + 40°C (no condensation) | | | | | | |
| DIMENSIONS AND WEIGHT | | | | | | | |
| Dimensions (H x W x D) | 3.5" x 17.0" x 15.0" (89 mm x 432 mm x 381 mm) | | | | | | |
| Weight | | 17 lbs (7.65 kg) | | | | | |
| OWER REQUIREMENTS | 90 - 264 VAC, 47 - 63 Hz, 80 VA max | | | | | | |
| VARRANTY | 3 Years (parts and labor) | | | | | | |

- (1) Measurements can be made down to 12 μm (157, 157LS) and 16 μm (157XLS), but with lower accuracy.
- (2) Defined as measurement uncertainty, or maximum thickness error, with a confidence level of \geq 99.7%. Accuracy is verified with NIST Traceable gauge blocks up to 50mm.
- (3) Standard deviation for a 60 minute measurement period.
- (4) Specification is given for 1 mm sample with an index of refraction of 1.5. Dependent on the reflectivity of the material under test at the probe wavelength of 1.3 µm. Specification is given at 4% reflectivity. When reflectivity is lower, repeatability is reduced to a worst case of about \pm 0.15 μm .
- (5) Required for initial optical probe alignment and use with the Windows-based display program. Not required for measurement.
- (6) Integrated fiber optic switch included with models 157-8, 157LS-8, 157XLS-8, 137-8, 137LS-8 and 137XLS-8.
- (7) Switch time has no effect on system's measurement rate.
- (8) Characteristic performance, but non-warranted.

Bristol Instruments reserves the right to change the specifications as may be required to permit improvements in the design of its products. Specifications are subject to change without notice.



