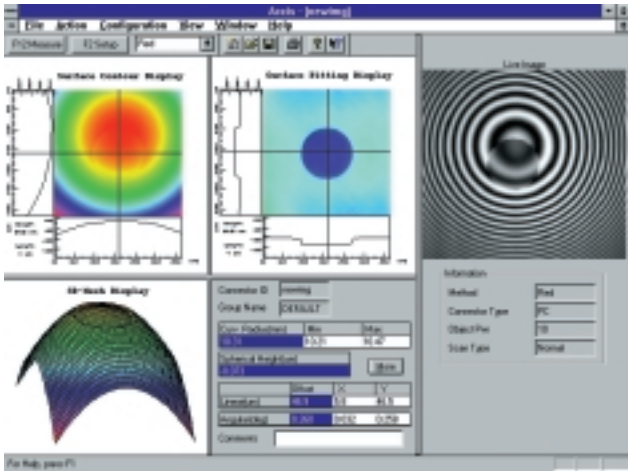
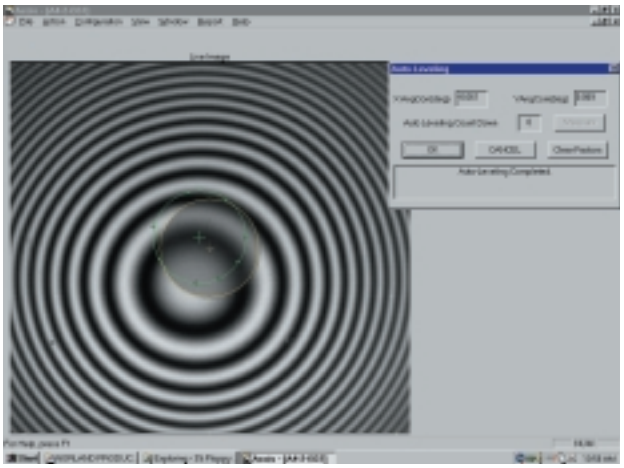
NORLAND PRODUCTS

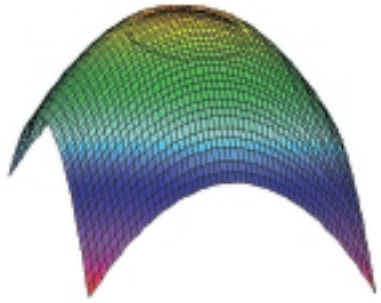
AC-3000

Automated Non-Contact Interferometer System





Auto leveling



3D MESH DISPLAY helps the user visualize the surface under inspection.

Report generating

The **Norland AC-3000** is a fully automated, non-contact interferometric microscope designed for measuring the endface geometry of fiber optic surfaces such as connector assemblies, ferrules, and optical fibers. Using a versatile inverted microscope with a built-in camera and a high-speed computer, the AC-3000 provides immediate 3D topographical information on the surface being inspected.

Specifically designed to measure the key parameters of PC polished connectors, the AC-3000 measures the radius of curvature, offset of polish, undercut, or protrusion on FC, ST®, SC, LC, and MU type connectors. In addition, this system can measure APC, flat polished connectors, bare ferrules, cleaved or polished fibers, and sections of multifiber connectors. The feedback from the AC-3000 provides the user with optimum control of the production process by quickly showing any variation in the polish quality.

The AC-3000 is a novel system that quickly switches between standard monochromatic phase shift interferometry (PSI) or white light (broadband scanning) interferometry to handle a wide range of surfaces. The monochromatic mode allows the system to quickly map smooth surfaces, while the white light mode uses the latest state-of-the-art technology to measure difficult, rough surfaces and eliminate ambiguities in step heights. This method provides the "True View" that the monochromatic mode cannot always measure. Together, the two modes provide extra versatility for analyzing all types of connectors, for trouble shooting or process development and for measuring fiber protrusion (undercut or push back) up to four microns above or below the ferrule.

Accurate

Designed for users needing extreme accuracy, the AC-3000 is capable of measuring fiber height to ±0.002 microns and radius of curvature and offset of polish to ±0.10 mm and ±1.0 microns respectively. Each unit is supplied with NIST traceable spherical calibration standards to allow the user to certify the accuracy of the measurements. No other system provides the customer with this ultimate assurance of performance.

Fast

In less than three seconds, the advanced technology of the AC-3000 can obtain the surface topology of a smooth connector. Coupled with a pass/fail function, the AC-3000 quickly converts from a valuable research tool to an indispensable part of a modern quality control system, giving the end user full control of fiber optic connector quality and performance.

Easy to Use

The AC-3000 with Windows NT operating system is by far the easiest, most user friendly system on the market today. Simply insert a connector into the unit, adjust the focus and analyze; the AC-3000 does the rest and results are clearly displayed on the monitor. Use either the keyboard or the mouse to activate pull down menus, shortcut icons and online and context-sensitive help. Fast print spooling and multiprocessing capabilities allow a hard copy print of the information through a standard ink jet or laser printer.

Data can be automatically saved, displayed or printed in Excel for statistical analysis. In addition, custom reports can be generated for each connector with user selectable images and measurement results (bar code labels and reports can be printed on one page). The pressure sensitive label can be affixed to the outside of a patch cord bag. All these data functions are accessed directly in the AC-3000 program.

The unit is designed on an extra stable, inverted microscope base for precision and ease of use. Switching from 2.5 mm connectors to 1.25 mm connectors is accomplished in seconds with only two thumb screws. Nothing is faster or simpler. With our new, user-friendly autolevel software, it only takes a minute to calibrate the mount for sub-micron accuracy in offset measurements. The software also prompts the user to replace the mount if wear becomes excessive. Our exclusive "Variable Tilt Stage" allows the instrument to be quickly adjusted for APC measurements. The stage has continuous variable angles from 0 to 13 degrees. A NIST traceable angle standard is available that guarantees accuracy to 0.01 degrees.

Features

Norland sets the standards for Fiber Optic Interferometry...

- NIST traceable calibration standards for radius of curvature and fiber height on 2.5 mm connectors and 1.25 mm connectors.
- NIST traceable standard for 0°-8° Angle Tilt Stage

Norland leads the way in Hardware....

- Rugged inverted microscope design for easy leveling and integration into a variety of production processes.
- World class, infinity corrected optics assure superior resolution and the ability to see scratches and surface imperfections even in the interferometric mode.
- Mireau type interferometer objective is factory calibrated and requires no field adjustment.
- A variable tilt mount with micrometer control between 0°–13° with accuracy of ±0.01°
- Patented "Locking V-Groove" mount adjusts for small variations in ferrule diameter.
- Accommodates PC/APC FC, SC & ST and E2000 connectors.
- Custom mounts for LC, MU, MT/MTRJ, D4 and other specialized connectors.
- Simple, three point leveling with thumbscrews requires no tools and assures perpendicularity of the stage to the optics.
- Red light, monochromatic, interferometry is fast (less than 3 seconds) for smooth surfaces, which have step heights of less than one half wave length.
- White light, broad band, interferometry gives the "True View" of rough surfaces with step heights of ±4 microns.
- Autolevel software corrects for sub-micron variations in stage level to give accurate and repeatable offset measurements.
- Mount wear checked automatically during autoleveling. Prompts to replace mount when appropriate.
- Change from red light to white light scan instantaneously with a mouse click.
- Windows NT/2000 software provides full, 32 bit multiprocessing with an easy to use, intuitive feel.
- NT/2000 offers security with network compatible, multilevel password protection.
- View, print and automatically save data in Excel without leaving the AC 3000 program.

- Easy to follow user menu offers selection of pass/fail standards conforming to IEC or Telcordia values by merely checking a box in the setup screen.
- Choose measurement data to be displayed in Excel and customize pass/fail standards that follow Telcordia formulas.
- Print custom reports with your company logo including pass/fail parameters, user selected results, selected graphics and bar code labels.
- An optional bar code scanner is available for reading connector identification data.
- Software offers the ability to measure the cleave and key angle of a bare fiber and sections of multifiber connectors.

REPRODUCIBILITY AND REPEATABILITY

Measured Parameter	Range	Reproducibility	Repeatability
Radius of Curvature	3mm–∞	0.20%	0.10%
Apex Offset	0–500 microns	1µ	0.2µ
Fiber Height	±3.0 microns	2.0nm	2.0nm

Reproducibility based on 100 measurements re-inserting connector between measurements.

Repeatability based on 100 measurements without disturbing the connector between measurements.

Reproducibility and repeatability reported are the full differential range of all measurements (max - min) with an AC-3000 on a vibration damping table, after autoleveling, using a connector with a 15 mm radius of curvature.

SPECIFICATIONS

Interferometer — Mireau

Light Source	White Light — Tungsten Halogen
Camera	CCTV with 8.8mm x 6.6mm Sensing Area
Image Frame Size	256 x 240 Pixels
Vertical Resolution	11 Angstroms
Magnification	175X
Lateral Resolution	1.2 microns
Field of View	500 microns wide

*CPU — Pentium IV**

Speed	1.7 GHz
Hard Disk	15 GB EIDE Drive
Graphics Adapter	Matrox Productiva
Bios	Phoenix 4.0
Operating System	Microsoft Windows NT 4.0
Frame Grabber	Matrox Meteor II
RAM	128MB SD RAM Installed

**Computer hardware subject to change.*

NORLAND PRODUCTS INC.

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