



## Norland GL16-AiO Interferometer

End Face Geometry Measurement Instrument

Tech Optics Ltd



Using the latest technology in precision optics, high-speed cameras, programming and display, Norland Products has developed the GL16 – AiO End Face Geometry Measurement Instrument. This instrument is designed as the ultimate tool for analysing the end face geometry of single and multi-fibre connectors, and includes support for recent industry developments such as 16 and 32 fibre MT product and Geometry Limit parameter.

The Norland GL16 system achieves accuracy, repeatability, reliability and ease of use that far exceeds the requirements of the industry for this type of quality control instrument.



Everything has been fully automated in this compact system. All electronics and software for calculation and control is contained within the instrument, so an external computer system is no longer required. With an internal Linux operating system, there is no need for constant updates or virus protection software resulting in a much more stable and reliable system. An Ethernet connection is provided for access to the system measurement data as well as for remote diagnosis and software updates. A USB 3.0 port allows for external mouse, keyboard or barcode scanner use. There are no operator adjustments necessary or knowledge of interferometry needed. NIST traceable standards provide confirmed calibration of magnification and tilt stage operation, insuring accuracy of all measurements. Our patented True Angle™ connector mounts with integral aperture plate and pins allow easy insertion of the connectors into the mount and provide for highest accuracy, specifically, of surface angle results.

### Features:

- ✦ Fully automated interferometric system for analysing multi-fibre and single fibre connectors
- ✦ Non-contact closed-loop piezo Scanning White Light Interferometry (SWLI) measurement
- ✦ Compliant with Industry Specifications for measurement process and Pass/Fail determination
- ✦ Embedded computer system with Linux OS
- ✦ Browser-based application supporting local (via front panel 7" touch screen display) and remote (via Ethernet connection) operation
- ✦ High-resolution, high-speed camera for fast, accurate, and repeatable measurements
- ✦ Software-controlled tilt stage (for toggling between 0 and 8 degree angle)
- ✦ NIST traceable standards for calibration of system magnification and tilt stage
- ✦ No focusing required prior to scanning
- ✦ Analyse up to 72 fibres in one scan
- ✦ Supports 16/32 fibre MT product
- ✦ Measures MT-12 connector within 8 seconds
- ✦ Concise measurement result display, showing only which end face parameters, if any, have not passed
- ✦ Full scan information available on screen, as export to CSV file, in SQL database, or as a scan report
- ✦ 3D graphical representation of end face
- ✦ No vibration damping table required

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Example scans

**Scan Result** CREATE REPORT

**PASS**

MEASUREMENTS 2D IMAGING 3D IMAGING

Pass/Fail Parameters

PARAMETER	MIN	MAX	VAL	RESULT
Radius of Curvature (µm)	5	30	14.865	Pass
Fiber Height (µm)	115.421	100	34.258	Pass
Apex Offset (µm)	0	70	40.535	Pass

Related Measurements

PARAMETER	VAL
Apex Offset X (µm)	35.554
Apex Offset Y (µm)	10.490

CONNECTOR ID: SFT8-11 AUTO: ON PRODUCT ID: Eval

CONNECTOR TYPE: SF MF

TILT STAGE: 0° 8°

SCAN TYPE: IEC

Start

LIVE VIEW

SCAN LOG

**Scan Result** CREATE REPORT

**FAIL**

MEASUREMENTS 2D IMAGING 3D IMAGING

Pass/Fail Limits

PARAMETER	MIN	MAX	VAL	RESULT
X ROC (µm)	2000		2897.588	Pass
Y ROC (µm)	8		813.178	Pass
X Endface Angle (deg)	-0.2	0.2	0.075	Pass
Y Endface Angle (deg)	-0.2	0.2	0.034	Pass
Fiber Flare Angle X (deg)	0.2	0.2	0.046	Pass
Fiber Flare Angle Y (deg)	-0.2	0.2	-0.033	Pass
Minus Coplanarity (µm)		0.25	0.267	Pass
Geometry Limit		17.4	N/A	Pass

Fiber Measurements

NO.	HEIGHT (µM)		CORE DIA (µM)		BOC (µM)		ADJACENT FIBER HEIGHT DIFFERENTIAL (µM)	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
1	1.618	2.042	0.542	1.708	0.012			
2	1.679	2.047	0.457		0.012			
3	1.639	2.048	0.307		0.01			
4	1.634	2.038	2.117		0.068			
5	1.637	2.067	2.155		0.037			

CONNECTOR TYPE: SF MF

TILT STAGE: 0° 8°

Start

CONNECTOR ID: MT12-T2-2 AUTO: ON PRODUCT ID: Eval

SCAN TYPE: MT-72

LIVE VIEW





Scan Result CREATE REPORT

**PASS**

MEASUREMENTS      2D IMAGING      3D IMAGING

Pass/Fail Limits

PARAMETER	MIN	MAX	VAL	RESULT
X ROC (mm)	2000		5781.309	Pass
Y ROC (mm)	5		147.189	Pass
X Endface Angle (deg)	-0.2	0.2	0.009	Pass
Y Endface Angle (deg)	-0.2	0.2	-0.002	Pass
Fiber Plane Angle X (deg)	-0.2	0.2	0.046	Pass
Fiber Plane Angle Y (deg)	-0.2	0.2	-0.002	Pass
Minus Coplanarity (um)		0.35	0.058	Pass
Geometry Limit		17.4	N/A	Pass

Fiber Measurements

NO.	HEIGHT (UM) MIN   MAX 3.5	CORE DIP (UM) MIN   MAX	ROC (MM) MIN   MAX	ADJACENT FIBER HEIGHT DIFFERENTIAL(UM) MIN 0   MAX 0.3
1	1.573	0.097	5.832	0.007
2	1.567	0.104	5.478	0.007
3	1.564	0.099	5.789	0.01
4	1.555	0.097	5.647	0.052
5	1.503	0.096	5.978	0.052

Date & Time: 2016-02-24 12:51:23  
User: admin  
Connector ID: MT12-T2-1  
Product ID: Eval  
Product Type: Standard Connector  
Scan Name: MT-12  
Sample Name: MT-12  
Ruleset Name: MT-12  
Tilt Stage Angle: 0

SCAN    CALIBRATE      SCAN LOG

CONNECTOR TYPE: SF MF

TILT STAGE: 0° 8°

CONNECTOR ID: MT12-T2-1    AUTO: ON

PRODUCT ID: Eva

SCAN TYPE: MT-12

Start

LIVE VIEW

SCAN    CALIBRATE      SCAN LOG

CONNECTOR TYPE: SF MF

TILT STAGE: 0° 8°

CONNECTOR ID: CF2RR-14    AUTO: ON

PRODUCT ID: 022716 Eva

SCAN TYPE: MT-16

Start

**FAIL**

Connector ID: CF2RR-13

LIVE VIEW    SCAN DETAILS

FAILED PARAMETER	MIN	MAX	VALUE
X Endface Angle (deg)	-0.2	0.2	-0.231
Fiber ROC (mm)			See Details





**Specifications**

Optical resolution: 2.2 microns  
 Field of View: 4.2mm wide by 2.4mm high  
 Scan range: 80 microns  
 Instrument Dimensions (W x H x D): 25 x 28 x 48 cm  
 Power Requirements: 120/240VAC, 50/60 Hz @ 1A  
 Weight: 10.5 kg  
 Total Measurement Time (Single-fibre): 3 seconds typical  
 Total Measurement Time (Multi-fibre): 8 seconds typical

**Measurement Performance:**

	Parameter	Range	Measurement Specifications	
			Repeatability <sup>1</sup>	Reproducibility <sup>2</sup>
Single Fibre	Radius of curvature	3.0 to flat (mm)	0.15%	0.15%
	Fibre Height	-35 to 35µm	0.5nm	1.0nm
	Apex Offset	0 to 500µm	0.3µm	0.7µm
Multi-Fibre	Ferrule Surface Angle (X/Y)	0 to 0.5°	0.001°	0.0015°
	Fibre Height	0 to 35µm	0.005µm	0.01µm
	Minus Co-planarity	0 to 35µm	0.003µm	0.005µm

1. Repeatability - product undisturbed for 50 consecutive measurements - 1 sigma values
2. Reproducibility - product reinserted for 50 consecutive measurements - 1 sigma values

*TURNKEY SYSTEM – The Norland GL16 - AiO is a complete “all-in-one” system, fully integrated with a high speed computer and touch panel display.*

For further information and to discuss your application please contact:-

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ISO 9001:2008 for distribution of fibre optic products and manufactured assemblies.



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Specifications subject to change without notice.

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