MicroFinish Topographer (MFT)

Overview

Surface roughness is a critical parameter to measure and control during optical manufacture. Optical Perspective's unique new MFT is a simple, low cost solution to surface roughness measurement.

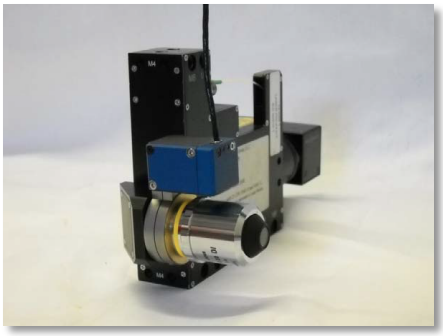
The MFT has three unique configurations: Measurement sensor, and its large and small optics configurations.

The measurement sensor is a modified PSM, also made by Optical Perspectives Group. The sensor (pictured at right) is designed for on machine metrology, integration into custom fixturing or a multi-axis test stand.

The large optic configuration (pictured below) sets directly on an optical surface larger than 100 mm diameter. Ease of use is assured by design. Simply place the MicroFinish Topographer on the surface to be measured. Its three nylon support balls gently contact the surface. Simple tip/tilt and focus controls adjust the instrument for high contrast fringes. The next time you place the MFT on the surface it is ready to measure again.

The small optic configuration (pictured below) is upward looking with a self-aligning fixture. Simply place the optic on the fixture and test.

All units utilize phase shifting interferometry for data acquisition and 10X or 20X Mirau objectives for surface imaging.



MFT Sensor Head with Right Angle Attachment

Specifications

Large Optic Configuration

- Measures surface ≥120 mm diameter
- Size: 150 mm diameter X 240 mm height
- Weight: 1.6 Kg

MFT placed on large optic

Small Optic Configuration

- Measures surface <120 mm diameter
- Size: 200 mm X 280 mm height
- Weight: 3.2 Kg

MFT in small optics configuration

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Remote Sensor Head

The specifications for the sensor head is common to all configurations

System Description

- Video camera Point Grey Flea 1024 x 768 pixels, 8 bit mono, 30 fps via Firewire
- PZT Data Acquisition Translation Stage
- Laptop computer with Firewire and Windows 7
- USB based control for light sources

Physical Parameters

- Working Distance: > 20 mm with select Nikon objectives
- Dimensions: 189 x 107 x 31 mm (LHW)
- Weight 600 grams including Nikon 10x SLWD objective
- Mounting M6, M4, 1/4-20, and 8-32 tapped and labeled holes, M8 stud for CMM use
- Objective mounts RMS (standard), RMS right angle, Mitutoyo, C-mount, Thorlabs SM1 and universal right angle adapter
- C/CS mount cameras 1/3" format

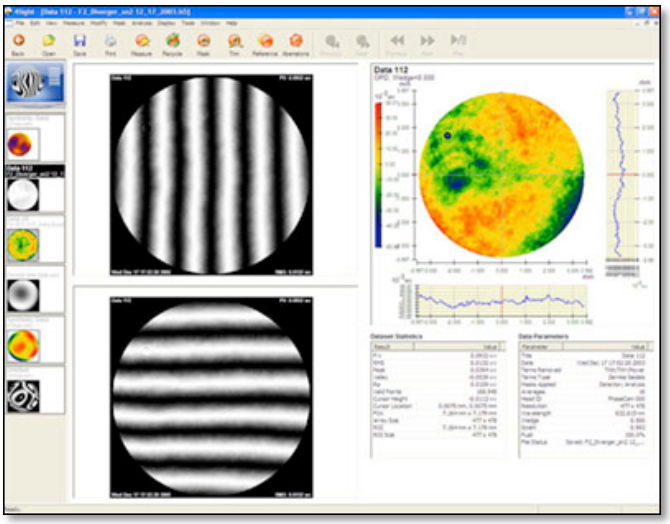
Internal Solid Sate Light Sources

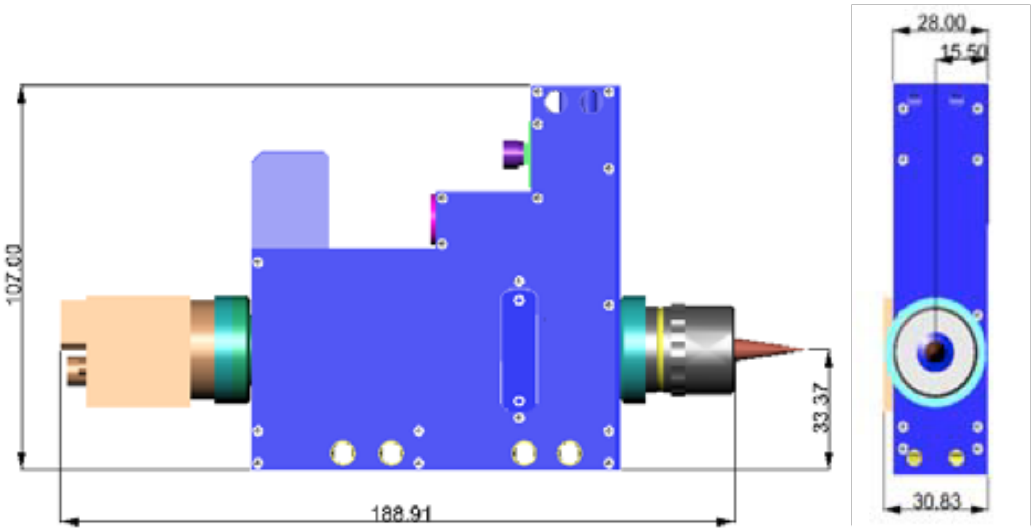
- Laser diode point source, under software control
- Bright setting of laser diode for room light initial alignment
- LED source for imaging and roughness

Software Description

4Sight™ software developed by 4D Technologies, Tucson AZ.

4Sight™ software sets the standard for easy and accurate data analysis. 4Sight is designed with features that make life easy: Microsoft Windows interface, open data file format, extensive 2D and 3D displays, filtering, data masking, fiducial alignment, diffraction analysis and much more. With simple data exchange capability you can read and analyze data from almost any analysis package.





MFT Sensor Head without the PZT Data Acquisition Translation Stage (PSM)

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