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As a leading company in the field of optical test equipment, TRIOPTICS took over the μPhase® line of interferometers from FISBA OPTIK AG, Switzerland, in 2010. μPhase® perfectly supplements the TRIOPTICS product portfolio and with TRIOPTICS worldwide subsidiaries and distributors μPhase® can now be offered to a wider customer base in optical and other industries.

Close partnership with FISBA OPTIK AG enables TRIOPTICS to supply μPhase® products in usual Swiss quality and to provide service for all μPhase® products. Furthermore, the acquisition of FISBA OPTIK Berlin at the same time guarantees continuity in the development of the μShape™ Interferometer software.

μPhase® Interferometers

Measuring with the Highest Accuracy

μPhase® interferometers offer objective and precise measurement results of surface and wavefront measurements - quickly and reliably.

μPhase® interferometers are compact, small and lightweight digital tools which can be used in almost any working environment. These measuring devices are perfectly complemented by the μShape™ measurement and analysis software to fulfill the highest expectations of quality management.

Measuring without Leaving Marks

The μPhase® Interferometer systems are used to measure specular high precision components made of glass, plastics, metal or ceramics etc. The non-contact measurement method prevents damage to the sample under test, and gives the most exact evaluation of the entire surface or wavefront.

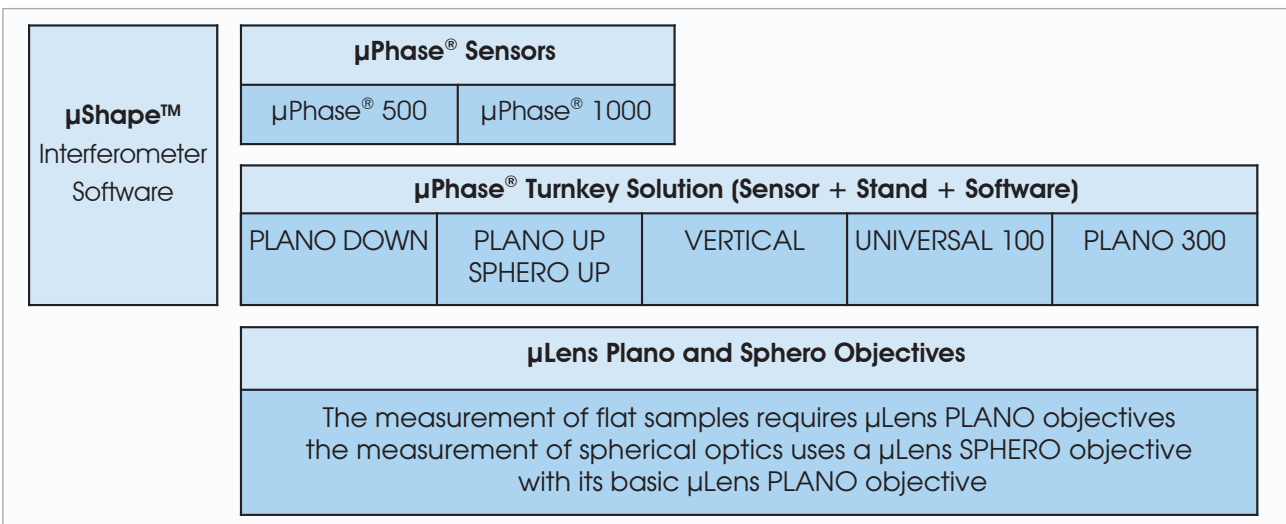
Strong Arguments for μPhase® Line of Interferometers

- Compact size and modularity enable adaptation to a variety of production and working environments
- Ultra wide measurement range of optics and surfaces with reflectivities from 0.3% to 100%
- Objective digital measurement prevents human errors
- Well structured and comprehensive software supports both production and laboratory use
- Unique combination of valuable features like Twyman-Green/Fizeau modes or the second camera for alignment of the lenses provide greatest convenience using μPhase®

Modular System providing Stand-alone Interferometers and Turnkey Solutions

TRIOPTICS offers μPhase® interferometers as self-contained modular parts as well as pre-defined turnkey solutions.

μPhase® customers especially appreciate the space saving and modular concept of the μPhase® product line as it allows for flexible and cost-effective utilization of the instruments. The different parts of the μPhase® interferometer line are all compatible and form powerful measurement devices.



Interferometry

In interferometry coherent wavefronts are superimposed. The result of this superposition is a fringe pattern, the so-called interferogram. In the case of two-beam interference each fringe represents a constant phase difference between both waves. Thus the interferogram is a kind of a contour map of the test sample. The standard design of an interferometer for

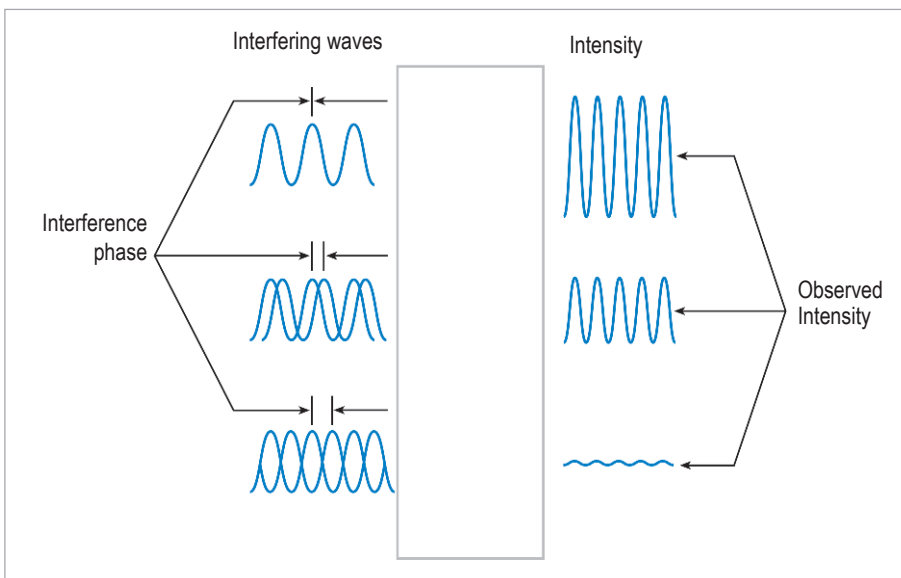
The space of both interferometer arms forms the test cavity. The interferometer measures the optical path difference (OPD) of this cavity for each point independently.

Fizeau Setup

The Most Commonly Used Interferometer Setup

The last surface of the beam shaping optics is the so-called Fizeau surface. It has to have the same shape as the sample to be tested

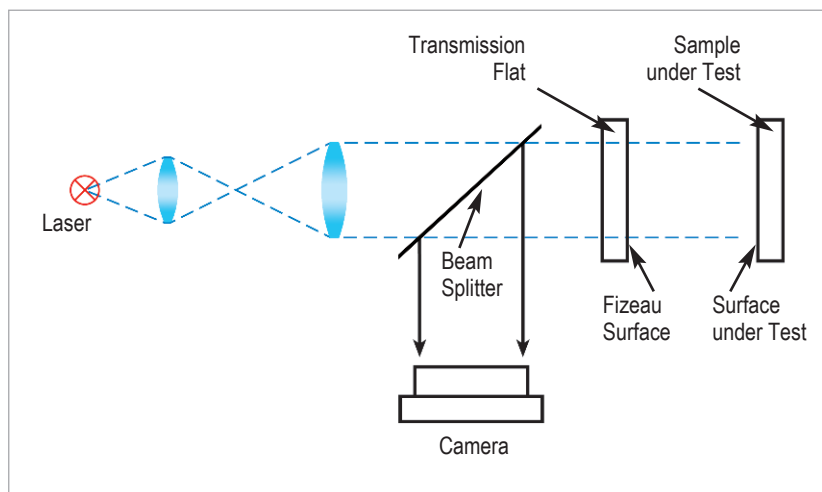
(commonly spherical or flat) and is placed concentrically into the optical path, so the individual rays intersect perpendicular to the Fizeau surface. The majority of the light passes the Fizeau surface and is reflected at the test surface. The returning light interferes with the part of the light reflected at the Fizeau surface. So the Fizeau surface acts as beam splitter as well as reference surface. The reference arm length is identical to zero, so the cavity



Interference principle

surface shape testing consists of a collimated coherent light source which is divided by a beam splitter into two beams. The test beam is transformed by a beam shaping optics into a wavefront of nearly the same shape as the sample (commonly flat or spherical). Thus the rays of the test beam intersect the sample under test perpendicularly, are reflected in themselves and transfer the shape errors to the test wavefront. The modified test wavefront is recombined by the beam splitter with the reference beam, reflected at the internal interferometer reference surface, and imaged to the camera sensor.

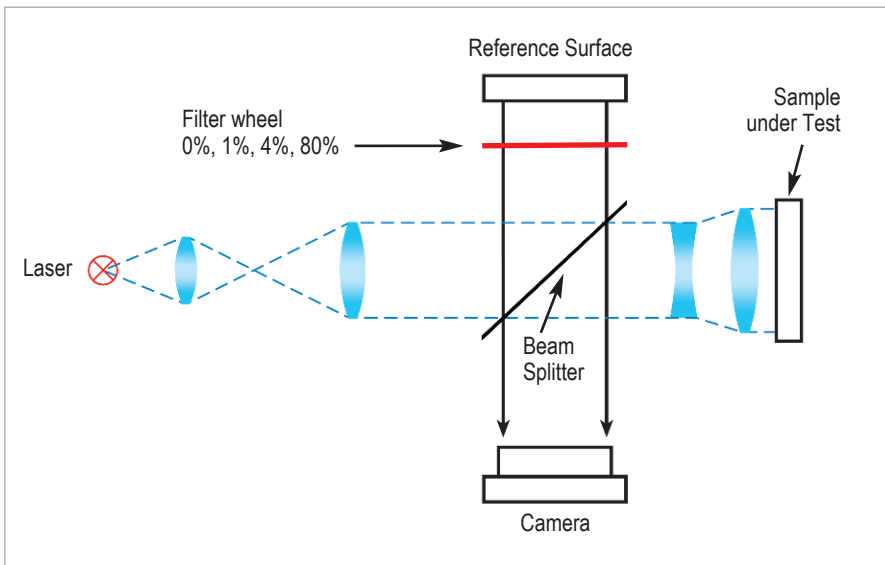
is formed by the gap between the Fizeau and the test surface. That is the reason why a Fizeau interferogram commonly directly



Fizeau Setup

shows the deviations of the test sample from the reference surface, i.e. Fizeau surface. The quality of the Fizeau surface determines the accuracy of the Fizeau interferometer. Fizeau surfaces are commonly available with a quality of $\lambda/10 - \lambda/20$ PV, or better on request.

Twyman-Green Setup



Twyman-Green Setup

The Most Flexible Interferometer Setup

A Twyman-Green interferometer is a modified Michelson interferometer. Here the beam splitter is separated from the reference surface. The advantage of this configuration is greater flexibility, because both interferometer arms can be modified independently of each other. So the intensity of the reference and test arm can be easily adapted to each other in order to get maximum fringe contrast. This is necessary for testing samples showing different reflectivities and increases the range of applications enormously. Only a maximum fringe contrast enables a maximum resolution in depth.

The reference surface can be a surface that is inexpensive and accurately producible regardless of the sample size. The adaption to the sample size is done by conventional beam shaping optics introduced to the test arm. Contrary to the beam shaping optics for Fizeau interferometers these optics do not require an expensive Fizeau surface as a final surface.

As a consequence of this flexibility, the interference patterns are not caused by the sample errors only but also by the aberrations of the additional optics in both interferometer arms. However, nowadays samples are no longer evaluated by visual inspection of the fringe pattern but by computer controlled analysis of the phase map causing the fringe pattern. During this analysis the aberrations of the additional optics can easily be taken into account. Finally, the software provides an objective digital measurement result.

tions of the additional optics can easily be taken into account. Finally, the software provides an objective digital measurement result.

μ Phase[®] 500 and μ Phase[®] 1000 Sensors

Most Flexible Interferometer Sensors

These highly integrated phase-shifting Twyman-Green interferometer sensors meet the toughest demands for modern quality management. In combination with the μ Shape[™] measuring and analysis software these high-performance precision measuring instruments provide information about the specimen's surface, wavefront or test objective aberration.

Advantages of μPhase® Sensors

- Compact size, modularity and arbitrary working orientation enable adaptation to different production and working environments
- Wide field of view alignment mode: Simple and fast alignment of the sample thanks to a second camera for alignment purposes
- High resolution cameras:
μPhase® 500 (500x500 pixels),
μPhase® 1000 (1000x1000 pixels)
- Measurement accuracy traceable to international standards
- High flexibility: convertible from Twyman-Green to Fizeau modes (on request)
- Standard measuring wavelength 632.8 nm; customized versions measuring at wavelengths from 355 nm to 1064 nm are also available upon request
- Simple and fast adaption to different reflectivities for optimal image contrast adjustment (μPhase® 1000)
- Object-plane focusing ability (μPhase® 1000 only)
- Robust, dust-proof housing



μPhase® Sensors are available in wavelengths 355 nm to 1064 nm

μPhase® Systems

A Variety of Complete Interferometer Systems

The μPhase® is available in various turnkey systems designed to cover the most common measurement tasks. They benefit from TRIOPTICS experience to design innovative, compact and user-friendly measurement systems.



μPhase® PLANO DOWN

All turnkey solutions are flexible and expandable due to their modular and compact design. A wide choice of test objectives from TRIOPTICS and third party manufacturers can be combined with the μPhase® interferometers and enable the perfect choice for each measurement task.

μPhase® PLANO DOWN

μPhase® PLANO UP & μPhase® SPHERO UP

The Perfect Interferometers for Use in Production

These extremely compact and cost effective turnkey interferometers are ideally suited for production. With their small footprint they can

be positioned next to the production machine and samples are measured directly after machining. These three interferometers differentiate in the position of the sample during the measurement process and the samples they can measure. μPhase® PLANO/SPHERO UP interferometers measure flat/spherical optics upwards; the sample is



μPhase® SPHERO UP and μPhase® PLANO UP

positioned on the top of the instrument. The μPhase® PLANO DOWN positions flat samples on the base of the instrument.

Advantages of μPhase® SPHERO UP, μPhase® PLANO UP, μPhase® PLANO DOWN

- For measuring various flat or spherical components
- Intuitive and easy handling enables usage by untrained personnel
- Measuring range:
 μPhase® PLANO DOWN: flat surfaces $\varnothing \leq 2 \text{ mm}$ to 150 mm
 μPhase® PLANO UP: flat surfaces $\varnothing \leq 2 \text{ mm}$ to 100 mm
 μPhase® SPHERO UP: spherical surfaces, radius of curvature (convex) from 2 mm to 225 mm and diameters up to 55 mm (convex), concave surfaces, radius of curvature -3 to -570; others on request
- Small footprint

- Compact table configuration for cost-effective testing of larger series components right next to the production machine
- Suitable for integration into automated production lines
- μPhase® SPHERO/PLANO UP systems are vibration insensitive

μPhase® VERTICAL

The Flexible and Compact Interferometer for Lab and Production

This fully equipped turnkey interferometer has a modular design and can be individually configured to the customer's requirements.

Advantages of μPhase® VERTICAL

- Universal interferometer system for production, workshop and laboratory
- Vertical setup
- Small footprint
- One motordriven moveable z-platform, second platform as an option
- Specimen support on tilt and X-Y translation table



μPhase® VERTICAL

- Transmission measurements possible
- Unique design for all kinds of reflection & transmission measurements
- Capability of transmission measurements in double-conjugate foci arrangement for spherical samples
- Measuring range for concave and convex spherical surfaces: Standard radius range from 1 mm to 225 mm, diameter up to 55 mm with μLens PLANO 50
- Integrated radius measuring unit
- Optional: Usage of CGHs for aspheric, toric or cylindrical surface measurement
- Motorized vertical z-axis
- Automatic radius measurement

μPhase® UNIVERSAL 100

Universal Horizontal Setup For All Kinds of Interferometric Measurements

Optimized for measurements in R&D, the μPhase® Universal 100 is the most flexible instrument of the μPhase® product line. The hor-



μPhase® UNIVERSAL 100

izontal design enables the measurement of a large variety of lenses and components differing in size, radius and material.

Advantages of μPhase® UNIVERSAL 100

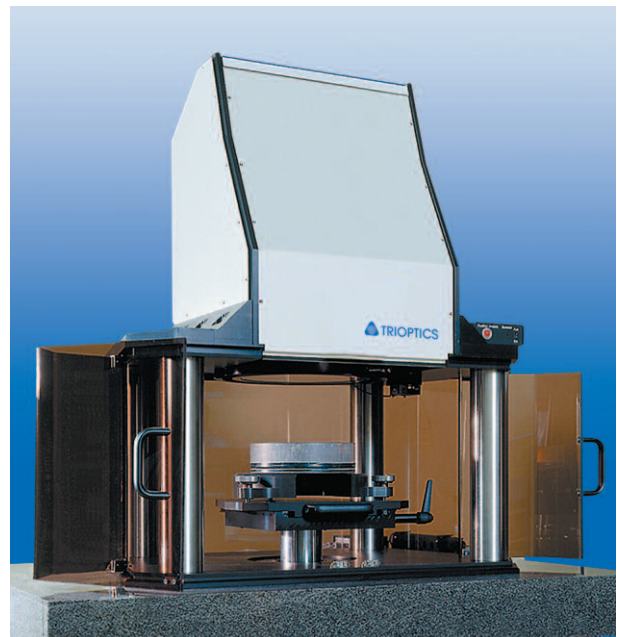
- The universal 4-inch measuring system for testing flat and spherical surfaces
- Measuring range for spherical and flat surfaces: Radii 10 mm, concave up to -3000 mm
- Diameter range up to 98 mm
- Radius measurement system integrated into sample support rail

- Horizontal design for long range of measurements
- Compatible with other commercially available 4" objectives
- Optional setup for measuring rotation-symmetrical aspheres in the diameter range from 10-80 mm, toric or cylindrical surfaces with CGH

μPhase® PLANO 300

Measuring Optics with Large Diameters

μPhase® PLANO 300 is ideally suited for use in R&D labs or production where optics or multi-part polishing plates need to be measured.



μPhase® PLANO 300

Advantages of μPhase® PLANO 300

- Ideal system for measuring large flat areas, thickness variation and homogeneity of optical materials
- Ideal for shape testing of multi-part polishing plates
- Measuring range: 60-300 mm
- Vertical design measures downward, other configurations on request
- Heavy duty sample support & alignment for handling of heavy test blocks or polishing plates

μPhase® Customized Customized Interferometer Systems

TRIOPTICS offers extensive support for specialized systems for applications beyond the scope of standard measuring systems. The μPhase® is very versatile with its high modularity and the compact design of the interferometer. This means that customized solutions for special measurement tasks can be implemented on the basis of standard components. The required components are selected and, if required, additional made-to-measure components and software modules are developed by our application and software engineers.

Applications

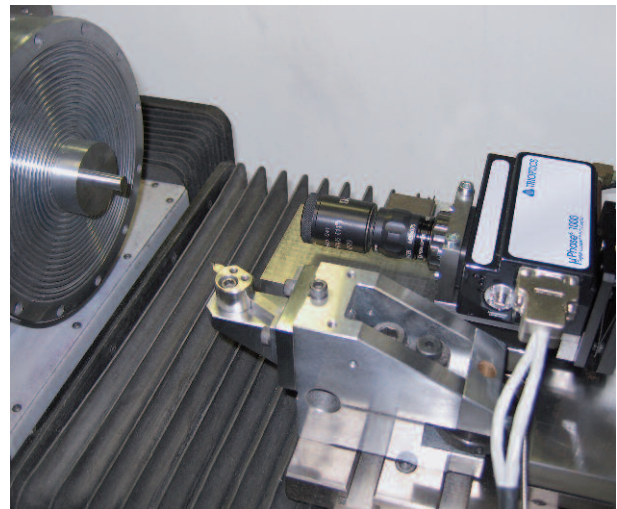
Surface Profiling in a Variety of Industries

μPhase® is the interferometer with the widest range of applications. With its modular concept, compact design and simple adaption to different reflectivities it allows not only for surface profiling of lenses but also of all kinds of components with reflectivities between 0.3% and 100%.

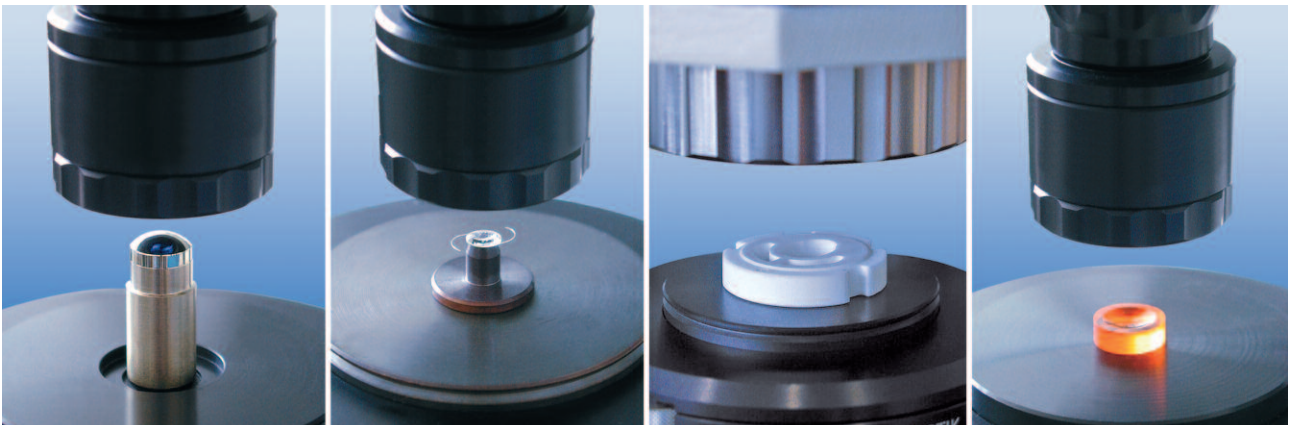
Components measured with μPhase® Interferometers

- Spherical, aspherical, cylindrical and toric optical surfaces

- Ophthalmology: Contact lenses, intraocular lenses and molds
- Adaptive mirrors
- Fiber endsurfaces
- Laser diode facettes
- Ball measurements of different materials
- Heat sinks
- Seal surfaces (e.g. metal, ceramic and synthetic materials)
- Automotive applications, e.g. fuel injection nozzles
- Medical applications, e.g. artificial hip-joints
- Ultra precision diamond turning machines with integrated μPhase® interferometer:
The sample is measured directly in the machine, no need for time consuming and error prone replacement and alignment of the sample.



μPhase® integrated into a turning machine



μPhase® measuring molding tools for contact lenses, IOL, ceramic seal surface and plastic molding tool

μShape™ Interferometer Software

Among the Most Favorite Interferometer Software on the Market

The μShape™ Interferometer Software was originally developed for the μPhase® compact interferometers. Today interferometers from other manufacturers work with μShape™, too.

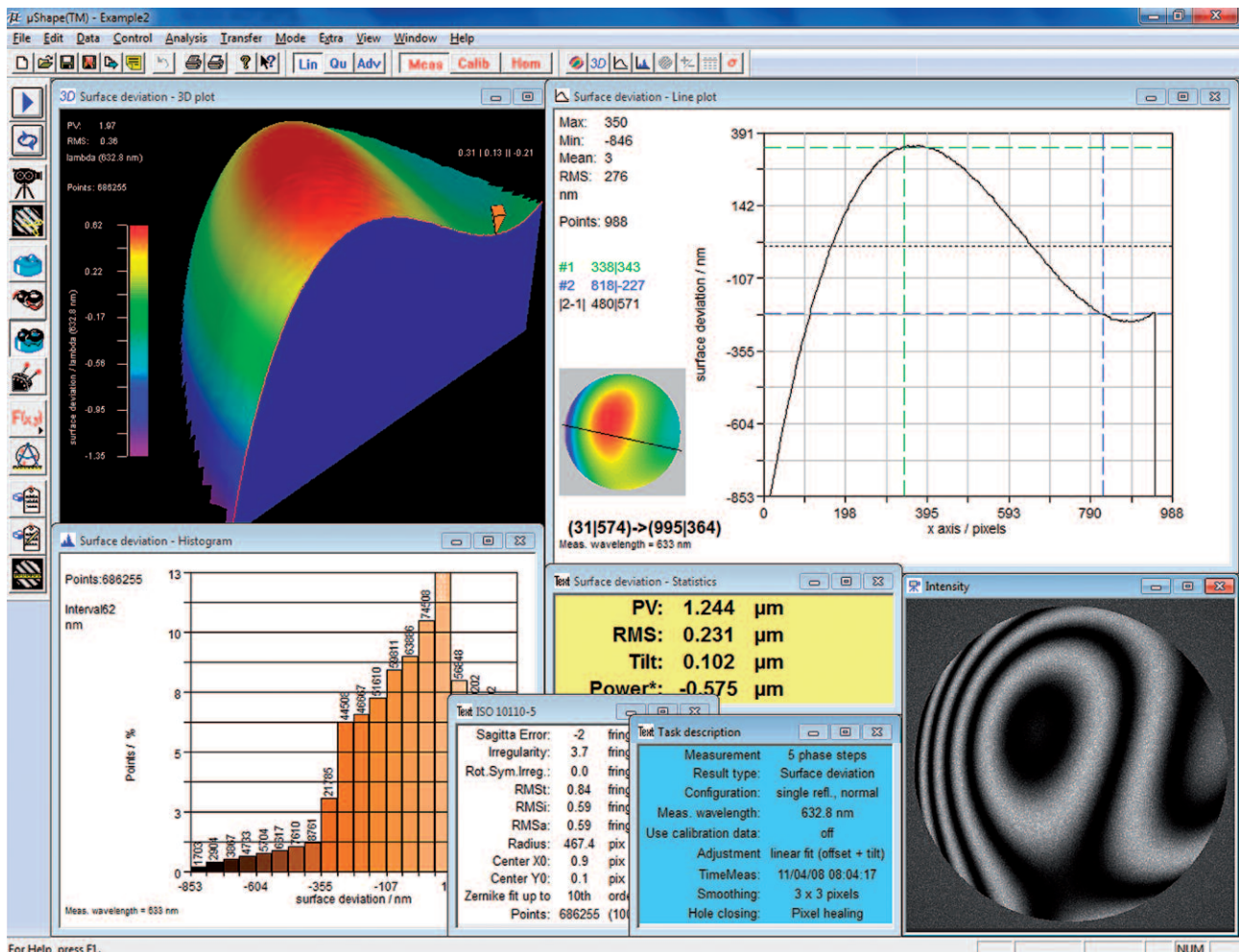
With its clear and menu-driven user interface, μShape™ perfectly deals with the variety of measurement requirements and provides several modules which expand the capabilities of μShape™. Here it pays off that the interferometer software development team from TRIOPTICS Berlin, formerly FISBA OPTIK

Berlin, has more than 20 years of experience in software development, especially in the field of optical metrology. The advanced level of the software is demonstrated each time the software is sold to support other interferometers on the market.

In general, μShape™ works with all Windows® systems including Windows® 7 and is designed for ease-of-use as well as full functionality. It controls and displays the measurement results, stores and documents all measurement raw data and ensures maximum transparency and traceability.

μShape™ Professional Software

The Professional version is the all-rounder amongst the μShape™ family. It is used for



Typical μShape™ Screen

measuring the topography of flat, spherical, cylindrical, toric and aspherical surfaces or wavefronts and is employed in production, laboratory and research. Add-on modules make it possible to adapt the software to custom specific demands. These modules can be added at any time even after purchase.

The μShape™ Professional software is pre-installed on a state-of-the-art PC, included with every TRIOPTICS' μPhase® interferometer system.

General Functions of the μShape™ Measuring and Analysis Software

- Different user levels with different access rights
- Shortcuts for the most used program functions
- Comprehensive context-sensitive online help
- Various program modes allow for the separate visualization of calibration and measuring processes and their parameters with an integrated live camera image
- Automatic updates of displays and images after every change of analysis parameters and new measurement
- Easily pre-configured templates for a wide range of measuring tasks and analyses
- Storage of all parameters and settings, including window size and position, with specimen data in μShape™ program file
- Graphic windows can be stored in several graphic formats (bmp, jpg...)
- Export of individual parameters or of selected data fields as text, binary or other common file formats (e.g. QED, Zygo XYZ, DigitalSurf) for external processing
- The measurement results are presented in parameters or graphically as a cross section, in 2D or 3D
- Printout of selected graphic displays or of the entire window
- Measurement log shows the results at a glance and can be widely configured including the customer's logo
- Access protection and configuration of add-on modules by dongle

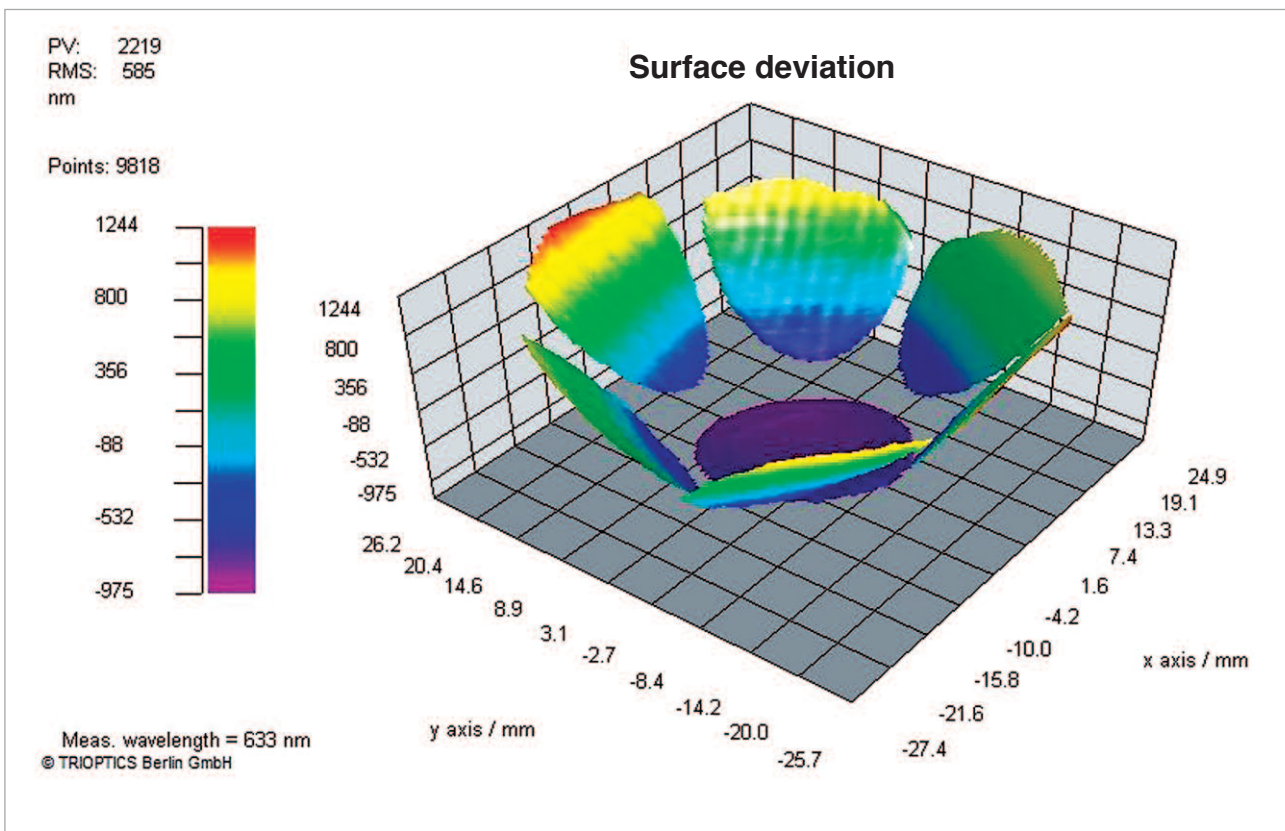
Basic Measuring and Calibration Settings of μShape™ Software

- **Measuring parameters**
Sets measuring parameters for any given measuring configuration: choice of phase measurement method, phase computation, and phase-shift wait times, separately for calibration and measurement of specimen.
- **Wavefront parameters**
This function sets all parameters necessary for the computation of wavefronts, such as subtraction of calibration data; activation of various smoothing and holeclosing methods; compensation of adjustment errors for flat, spherical, cylindrical, aspherical and toric specimens; and geometrical operations (rotation, mirroring and data-field shift).
- **Masks**
Sets geometrical elements (circles, ellipses, rectangles, squares and polygons) in any combination as transparent or opaque masks
- **Configuration**
Selects test setups, such as measurement of surfaces in perpendicular reflection, wavefronts in double transmission, automatic conversion of results and scaling of the measured field in units of length.
- **Visualization**
Graphic display of data fields (intensity, phase image, measured data) displayed as a cross-section, 2D or 3D image. All parameters and statistical values in table form. Display of statistics, DIN and ISO parameters, Zernike and Seidel coefficients is available.

μShape™ Add-On Modules

For extended measurement tasks and further analysis the μShape™ software offers a great variety of add-on modules which can be added by the user if needed. Among these are:

- Analysis of aspherical surfaces in spherical or CGH setups
- Analysis of cylindrical or toric surfaces
- External communication interface for controlling the interferometer by external programs, e.g. in an automated system
- Measuring the homogeneity of glass plates
- MTF analysis of focal or afocal optical components and systems
- Measuring multiple apertures in one shot, e.g. on polishing heads
- Statistical analysis of multiple sub-apertures at the same time
- Prism and wedge measurement and analysis
- Considering known sample deviations, e.g. deviations caused by the optical design
- Analysis of the tool offset of lathe machines
- Analysis of wafer plates
- Roughness and PSD analysis
- Static fringe analysis for fast measurements in instable environments



Multiple apertures

Special μShape™ Versions

In cases where the powerful μShape™ Professional software does not meet the customer's needs, TRIOPTICS offers special and customized software solutions.

μShape™ FastFringe Software

The FastFringe Software is designed for interferometers without phase-shifters. The measurement results are calculated by a static fringe analysis from a single interferogram. The analysis features are very similar to μShape™ Professional with only a few exceptions not useful for non-shifting setups.

μShape™ Customized Software

The Customized version is an individual version of the Professional Software, which is specifically designed and created for special customer needs. A variety of add-on modules are available, making it possible to extend the functions of the software.

Customized analysis and display functions, add-on modules or exclusive modules for customer specific measuring tasks are provided with the customized version of the software.

μShape™ Generic Package for Third-Party Interferometers

The μShape™ Generic Package can be used with the majority of commercial phase-measuring interferometers or individual interferometer setups.

Each package includes drivers for nearly all kinds of camera interfaces and optionally a piezo-element preamplifier. Contact TRIOPTICS for further details and an offer tailored to your needs.

μLens PLANO and SPHERO

The μLens PLANO collimated test objectives and the μLens SPHERO spherical objectives complement the μPhase® interferometry systems and allow for increased flexibility and modularity of the complete system.

The μLens PLANO objectives allow for measurements of flat surfaces or prisms in transmission from 2 mm - 150 mm. The μLens SPHERO spherical objectives make it possible to test spherical and aspherical surfaces with radii up to 225 mm (convex) and 98 mm diameter (convex), as well as optical systems in transmission.

Further Advantages:

- Existing μPhase® systems can be expanded easily and at low cost thanks to the modularity and compatibility of the objective design
- Testing of small samples with radii of curvature under 1 mm is possible
- High measuring accuracy through minimum wavefront aberration of μPhase® and μLens SPHERO objectives
- Field of view correction allows high measurement certainty and interferometry with high fringe densities

Select the Appropriate Objective from the Following Tables

Three Steps to Your Spherical Objective

1. From the "μLens SPHERO table" choose the spherical objective which meets the requirement:

$$CXMAX > ROC > CXMIN \text{ or } |ROC| > |CC Min|$$



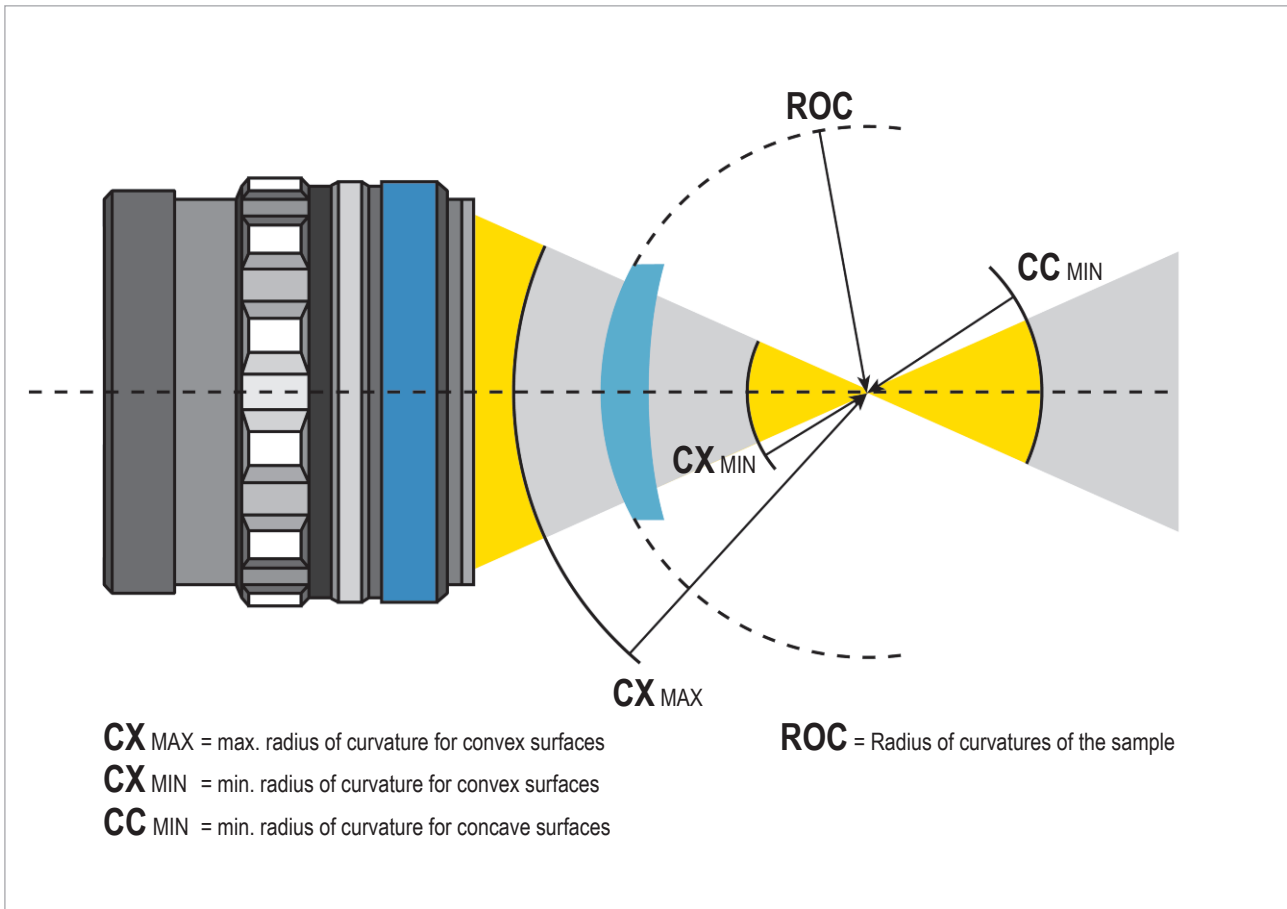
μPhase® objectives

2. Calculate the necessary f/# or max. diameter for the sample with

$$f/\# = \frac{\text{Radius of curvature of the sample (ROC)}}{\text{Diameter of the sample}}$$

and check if the objective is the right choice: check if the f/# of the chosen objective is smaller than the calculated value.

3. From the table "μLens PLANO" choose the appropriate plano objective corresponding to the spherical objective.



μPhase® objective focusing range for imaging of spherical surfaces

μLens® PLANO Table

μLens PLANO	∅ [mm/inch]	Sample diameter	Focusing Range [mm]*
μLens PLANO 2	2 / 0.079	0.2 - 2	0.6
μLens PLANO 10**	10 / 0.39	2 - 10	19
μLens PLANO 50	50.8 / 2	10 - 50.8	250
μLens PLANO 100***	101.6 / 4	20 - 101.6	900
μLens PLANO 150***	152.4 / 6	30 - 152.5	2100

* Internal focusing only possible with μPhase® 1000 with μLens objectives tested according to TRIOPTICS standards. Focusing range begins at the outer lens surface

** Concave testing spacer required

*** Technical specifications for matching spherical objectives available on request



μLens SPHERO Table

μLens SPHERO objectives for combination with μLens PLANO 10

Description	f/#	NA	α [°]	CXmax*	CXmin*	CCmin*/**
μLens SPHERO 10 f/0.7	0.7	0.71	90°	8.0	2.2	-3.1
μLens SPHERO 10 f/1	1	0.50	60°	13.0	4.4	-6.0
μLens SPHERO 10 f/1.5	1.5	0.34	40°	20.0	8.4	-15.3
μLens SPHERO 10 f/3	3.0	0.17	19°	43.0	24.7	-330.3
μLens SPHERO 10 f/5.2	5.2	0.10	11°	73.0	52.0	-266.0

* Internal focusing only possible with μPhase® 1000

** Concave testing spacer required

μLens SPHERO objectives for combination with μLens PLANO 50

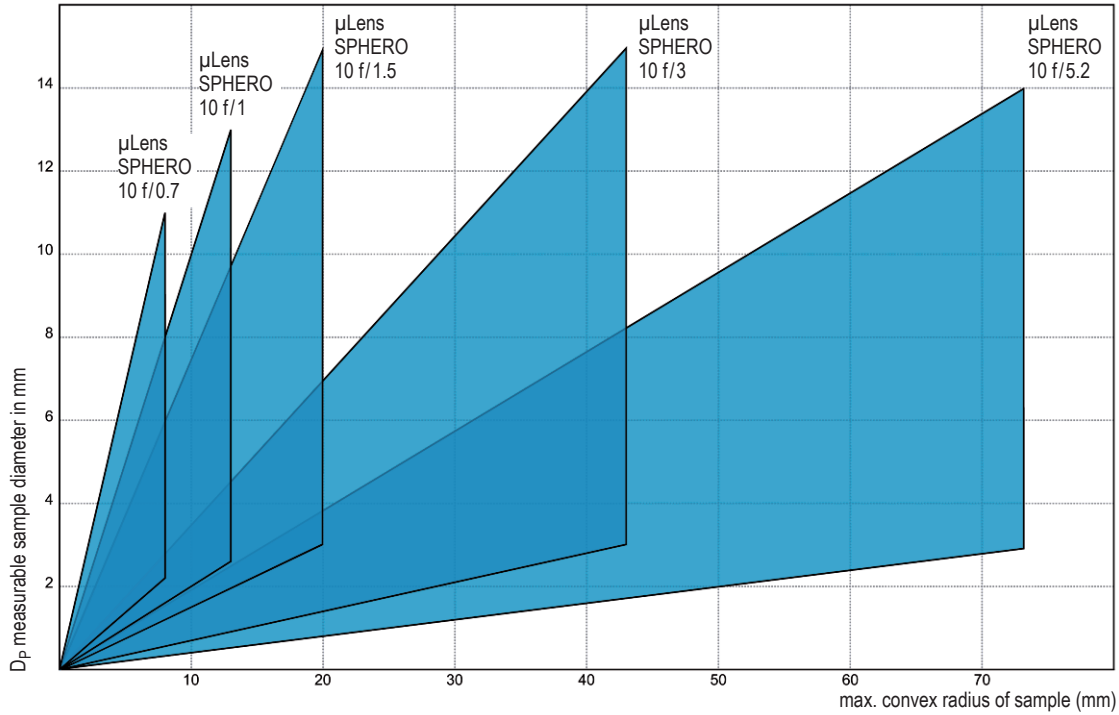
Description	f/#	NA	α [°]	CXmax*	CXmin*	CCmin*
μLens SPHERO 50 f/0.7	0.7	0.71	90°	26	5	-6
μLens SPHERO 50 f/1	1	0.56	60°	45	10	-13
μLens SPHERO 50 f/1.5	1.5	0.34	40°	70	19	-30
μLens SPHERO 50 f/2.4	2.4	0.21	24°	130	45	-102
μLens SPHERO 50 f/4.2	4.2	0.12	14°	225	106	-573

* Internal focusing only possible with μPhase® 1000

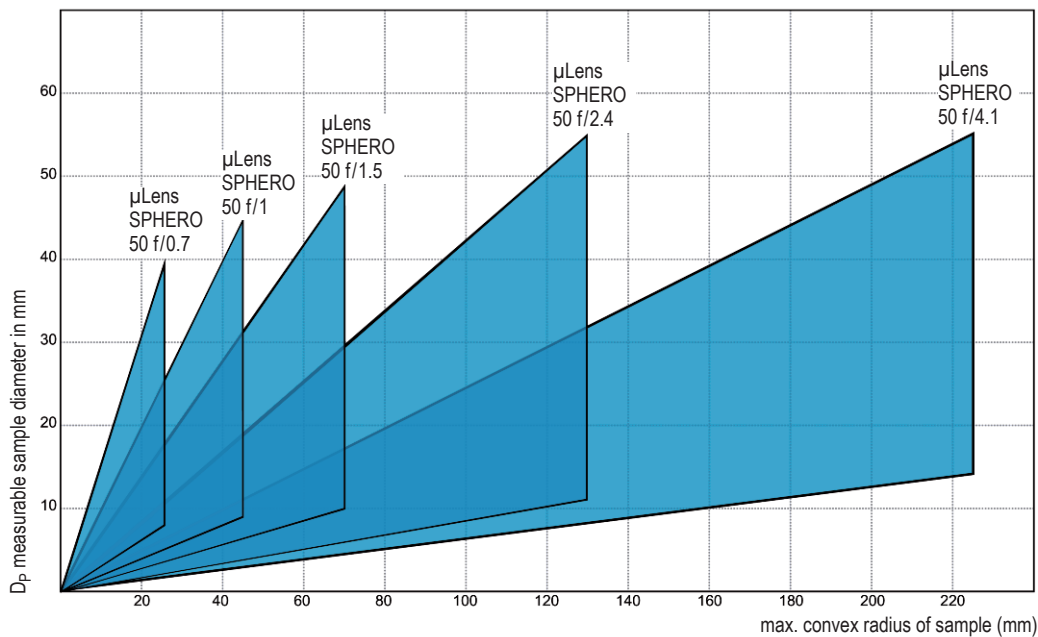
Information about objectives for combination with μLens PLANO 100 and 150 available on request.

Saw Tooth Diagram for Selecting the Objective

μLens SPHERO objectives for combination with μLens PLANO 10



μLens SPHERO objectives for combination with μLens PLANO 50



μLens SPHERO objectives for combination with μLens PLANO 100 and 150 available on request

Technical Data

μPhase® Sensors

Measurement Technique	Twyman-Green phase-shifting interferometer, convertible to Fizeau measurement mode
Measurement Capability	Measurement of surface topography of reflective surfaces and optics, and wavefronts of optical systems in transmission
Laser Wavelength	632.8 nm; option: any wavelength between 335 and 1064 nm upon request
PV Repeatability (1)	$\lambda / 400$ ($\lambda = 632.8$ nm)
RMS Repeatability (2)	$\lambda / 6500$ ($\lambda = 632.8$ nm)
Measurement Uncertainty (3)	$\lambda / 20$ ($\lambda = 632.8$ nm), on request
Camera Resolution	μPhase® 500: 500 × 500 pixel μPhase® 1000: 1000 × 1000 pixel
Digitalization	8 bit
Laser Specifications	μPhase 500/1000 for 632.8 nm
Type of Laser	Frequency-stabilized HeNe laser
Laser Protection Class	μPhase® 500/1000: 2; Laser itself: 3A

(1) Measured PV-Repeatability of the quoted statistic is for 100 consecutive measurements of the same cavity, measured over 96% clear aperture with 16 phase averages per data set. The specification represents the 2σ value of each statistic.

(2) Measured RMS-Repeatability of the quoted statistic is for 100 consecutive measurements of the same cavity, measured over 96% clear aperture with 16 phase averages per data set. The specification represents the 2σ value of each statistic.

(3) The measurement uncertainty equals the surface of the calibration surface used for the interferometer calibration up to the specified value. TRIOPTICS supplies standard calibration surfaces with a certified accuracy of $\lambda/20$ (surface shape deformation). Higher qualities on request.

All measurements were performed on a vibration-isolated optical table.

μPhase® Turnkey Solutions

Standard
 Option

	μPhase® PLANO DOWN	μPhase® PLANO UP/SPHERO UP	μPhase® VERTICAL	μPhase® UNIVERSAL 100	μPhase® PLANO 300
Testing of flat surfaces	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Testing of spherical surfaces		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Testing of aspheric, toric or cylindrical surfaces			<input type="checkbox"/>	<input type="checkbox"/>	
Testing of wavefronts in transmission			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Absolute radius measurement			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Relative radius measurement		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Low vibration sensitivity		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Production use	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Quality management use	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
R&D department use			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Vertical measurement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Horizontal measurement				<input checked="" type="checkbox"/>	<input type="checkbox"/>
Long radii measurement				<input checked="" type="checkbox"/>	
Modular / upgradeability	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Motorized / manual stage					
Manual			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Motorized			<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Special Features					
Encoder for radius/position measurement			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Data read-in from encoder to μShape™ evaluation software			<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Second movable platform for transmission measurement			<input type="checkbox"/>	<input type="checkbox"/>	
Usage of CGHs for aspheres, cylinders or torics			<input type="checkbox"/>	<input type="checkbox"/>	
Stitching ability for large diameters				<input type="checkbox"/>	<input type="checkbox"/>
Integrated calibration flat					<input type="checkbox"/>
Stand-alone setup (no optical table needed)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>



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