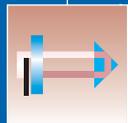
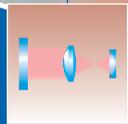
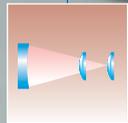
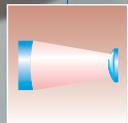
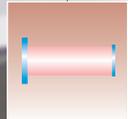




INTERFEROMETER VI *vario/direct*

*Universal Interferometers
for Workshop and Production*



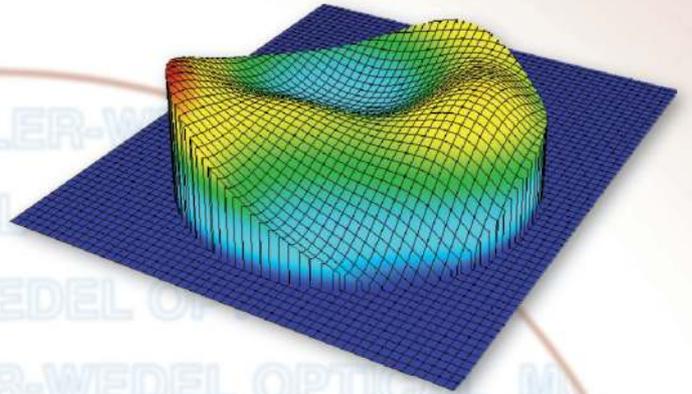
INTERFEROMETER

UNIVERSAL FOR WORKSHOP AND PRODUCTION

Interferometers are an indispensable measurement tool in optical production and quality control. They are used for a wide variety of applications. Examples are testing of flatness and sphericity of optical surfaces, radius measurement and the testing of the wavefront of optical systems.

The sixth generation – Interferometer VI – of the Interferometers developed by MOELLER-WEDEL OPTICAL has the following features:

- Working principle: Fizeau-interferometer
- Test field diameter 10, 16, 28, 50 and 100 mm depending on the chosen objective tube.
- Usable in vertical, horizontal, or under oblique directions. This makes the instrument extreme versatile for use in customer specific applications.
- Cost effective alternative to conventional interferometers.



The interferometers of the VI series are available in two versions: as Interferometer VI-*vario* and as Interferometer VI-*direct*. Both versions differ in the type of camera used in the instrument.

The Interferometer VI-*vario* contains an analog camera which allows the connection of a tv-monitor.

The Interferometer VI-*direct* comes with an USB-based digital camera. This camera has a higher lateral resolution compared to the analogue camera. It allows a three times digital zoom of the interference image and therefore the testing of smaller parts. An additional advantage is the reduced sensitivity to external disturbances like e.g. vibrations.

As an additional option the interferometers can be equipped with a frequency stabilized laser (*SL-Version*). The *SL-version* is recommended, when the interferometer is utilized for the testing of parts with spherical surfaces, since the use of the stabilized laser results in an improved interference contrast for spherical optics.

Application areas:

Due to the compact design the device is easy to integrate in customers set-ups. The pictures below illustrate some examples for the application of the interferometers of the VI-series.

Vertical set-up for testing of flat surfaces up to 100 mm diameter.



Vertical set-up for testing of flat surfaces with phase shifting.



Vertical set-up for testing of flat and spherical surfaces and radius measurement.



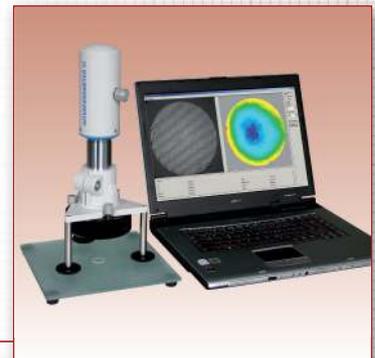
Workstation for testing of prism surfaces.



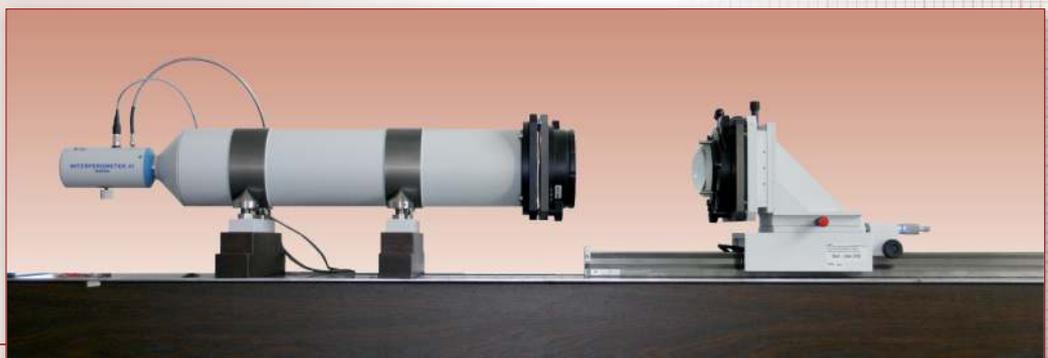
Inverted set-up for testing of flat and spherical surfaces as well as radii.



Workstation for quick testing of small plane optical components.

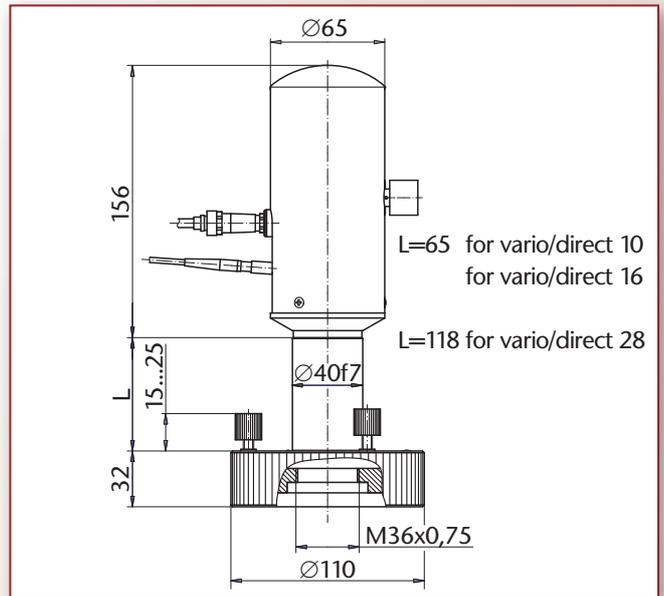
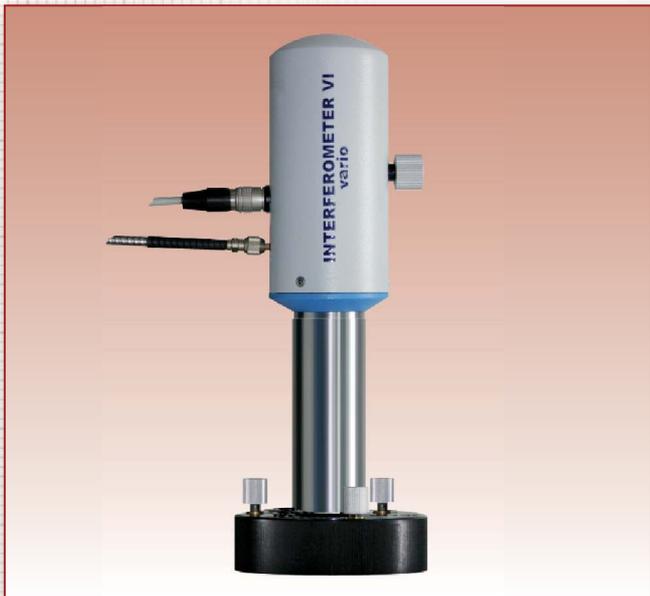


Horizontal set-up for radius measurement and for testing of flat and spherical surfaces and wavefront deformation.



INTERFEROMETER VI-vario/direct

WITH FREE APERTURES 10, 16, AND 28 MM



| Ord.-No. | Description | Test field diameter | CCD-camera | Laser | TV-monitor |
|----------|--------------------------------|---------------------|------------|----------------|------------|
| 244 311 | Interferometer VI-vario 10 | 5-10 mm | analog | not stabilized | + |
| 244 306 | Interferometer VI-direct 10 | 3-10 mm | digital | not stabilized | - |
| 244 301 | Interferometer VI-direct SL 10 | 3-10 mm | digital | stabilized | - |
| 244 312 | Interferometer VI-vario 16 | 8-16 mm | analog | not stabilized | + |
| 244 307 | Interferometer VI-direct 16 | 4-16 mm | digital | not stabilized | - |
| 244 302 | Interferometer VI-direct SL 16 | 4-16 mm | digital | stabilized | - |
| 244 313 | Interferometer VI-vario 28 | 14-28 mm | analog | not stabilized | + |
| 244 308 | Interferometer VI-direct 28 | 7-28 mm | digital | not stabilized | - |
| 244 303 | Interferometer VI-direct SL 28 | 7-28 mm | digital | stabilized | - |

A detailed description of the features of the different interferometer versions is given on page 2.

Selection criteria:

- For a visual evaluation of the interferograms at TV-monitor the instruments of the *vario* line are suited best.
- For a software based evaluation of the interferograms we recommend the interferometers of the *direct* or *direct-SL* product line.
- For the testing of spherical surfaces the use of the *SL-version* is recommended.
- For the testing of parts that are smaller than half the test field diameter we recommend the interferometer *direct* oder *direct-SL* due to their higher lateral resolution.

Scope of delivery:

| Description | Ord.-No. |
|---|----------|
| He-Ne-laser with fiber output, not stabilized | 244 330 |
| He-Ne-laser with fiber output, stabilized | 244 332 |



| Description | Ord.-No. |
|-------------------------------------|------------|
| TV-monitor (only <i>vario</i> line) | 773 000 14 |



OPTICAL ACCESSORIES

| Description | Ord.-No. |
|--------------------|----------|
| Reference flat D50 | 244 353 |



| Description | Ord.-No. |
|---------------|----------|
| Objective R25 | 244 361 |



Info:

Objectives with other radii on demand. The interferometer can be equipped with reference optics from other suppliers. For this purpose the adapter shown on the right is required.

| Description | Ord.-No. |
|---|----------|
| Adapter M36 x 0,75 (compatible to Zygo-bayonet) | 244 358 |



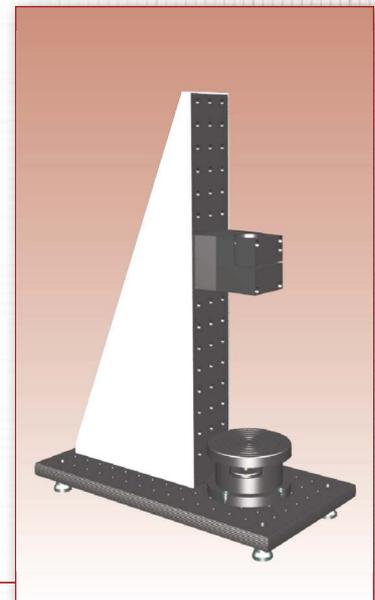
MECHANICAL ACCESSORIES

| Description: |
|--|
| Vertical stand D40 with tiltable table |
| Ord.-No.: 223 151 |



| Description: |
|--|
| Vertical stand D40 with XY- and tiltable table |
| Ord.-No.: 223 155 |

| Description: |
|--|
| Vertical stand D40 with tiltable table |
| Ord.-No.: 223 108 |



| Description: |
|---|
| Vertical stand D40 with XY-, tiltable table and phase shifter |
| Ord.-No.: 223 159 |

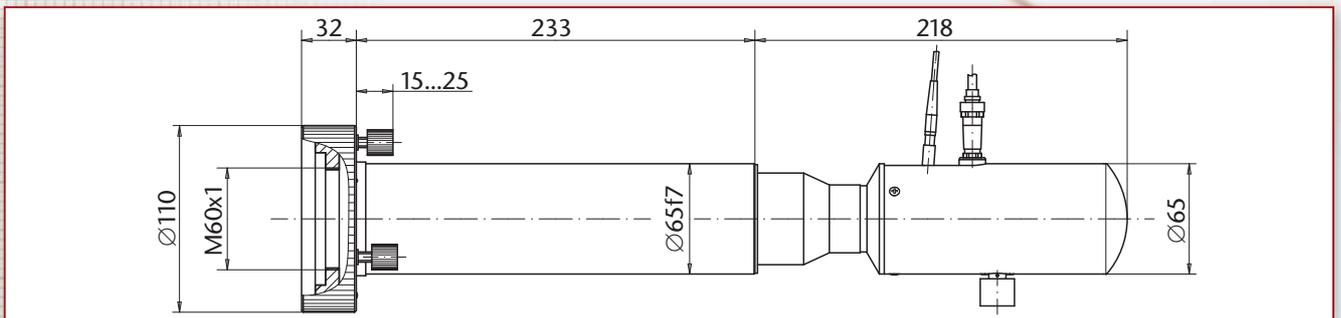
| Description: |
|--|
| Vertical stand D40 with tiltable table and phase shifter |
| Ord.-No.: 223 165 |

| Description: |
|-------------------|
| Tripod stand D40 |
| Ord.-No.: 223 081 |



INTERFEROMETER VI-vario/direct

WITH FREE APERTURE 50 MM



| Ord.-No. | Description | Test field diameter | CCD-camera | Laser | TV-monitor |
|----------|--------------------------------|---------------------|------------|----------------|------------|
| 244 314 | Interferometer VI-vario 50 | 25-50 mm | analog | not stabilized | + |
| 244 309 | Interferometer VI-direct 50 | 12-50 mm | digital | not stabilized | - |
| 244 304 | Interferometer VI-direct SL 50 | 12-50 mm | digital | stabilized | - |

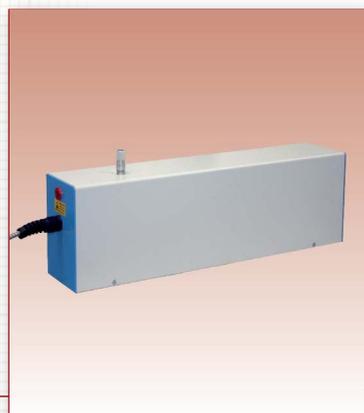
A detailed description of the features of the different interferometer versions is given on page 2.

Selection criteria:

- For a visual evaluation of the interferograms at TV-monitor the instruments of the **vario** line are suited best.
- For a software based evaluation of the interferograms we recommend the interferometers of the **direct** or **direct-SL** product line.
- For the testing of spherical surfaces the use of the **SL-version** is recommended.
- For the testing of parts that are smaller than half the test field diameter we recommend the interferometer **direct** oder **direct-SL** due to their higher lateral resolution.

Scope of delivery:

Description:
He-Ne-laser
with fiber output,
not stabilized
Ord.-No.: 244 330



Description:
He-Ne-laser
with fiber output,
stabilized
Ord.-No.: 224 332

Description:
TV-Monitor
(only **vario** line)
Ord.-No.: 773 000 14



OPTICAL ACCESSORIES

| Description | Ord.-No. |
|--------------------|----------|
| Reference flat D50 | 244 353 |



| Description | Ord.-No. |
|----------------|----------|
| Objective R40 | 244 365 |
| Objective R80 | 244 369 |
| Objective R120 | 244 377 |
| Objective R300 | 244 745 |



Info:

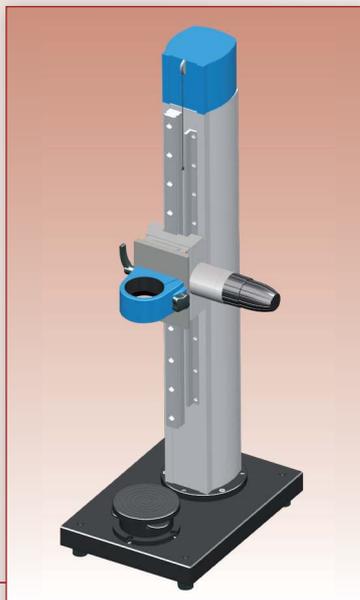
Objectives with other radii on demand. The interferometer can be equipped with reference optics from other suppliers. For this purpose the adapter shown on the right is required.

| Description | Ord.-No. |
|--|----------|
| Adapter M60 x 1,0 (compatible to Zygo-bayonet) | 244 358 |



MECHANICAL ACCESSORIES

| Description: |
|--|
| Vertical stand D65 with tiltable table |
| Ord.-No.: 223 153 |



| Description: |
|--|
| Vertical stand D65 with XY- and tiltable table |
| Ord.-No.: 223 157 |

| Description: |
|--|
| Vertical stand D65 with tiltable table |
| Ord.-No.: 223 107 |



| Description: |
|---|
| Vertical stand D65 with XY-, tiltable table and phase shifter |
| Ord.-No.: 223 161 |

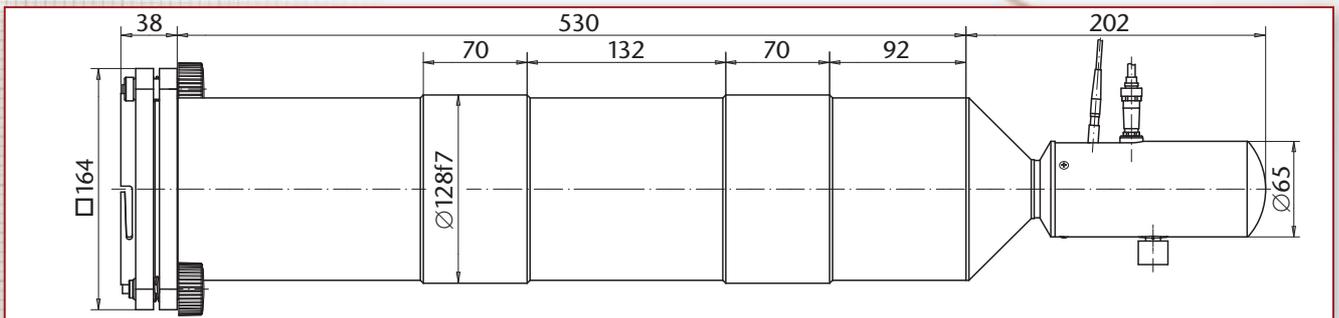
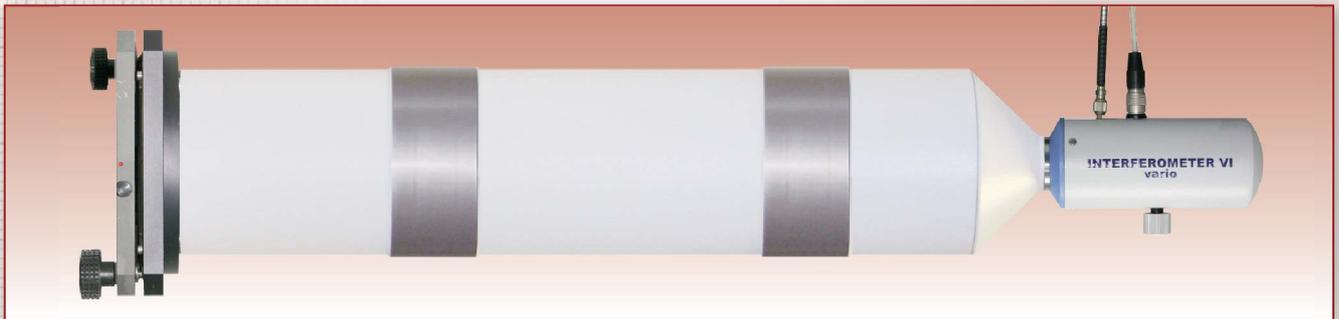
| Description: |
|--|
| Vertical stand D65 with tiltable table and phase shifter |
| Ord.-No.: 223 167 |

| Description: |
|-------------------|
| Tripod stand D65 |
| Ord.-No.: 223 081 |



INTERFEROMETER VI-vario/direct

WITH FREE APERTURE 100 MM



| Ord.-No. | Description | Test field diameter | CCD-camera | laser | TV-monitor |
|----------|---------------------------------|---------------------|------------|----------------|------------|
| 244 315 | Interferometer VI-vario 100 | 50-100 mm | analog | not stabilized | + |
| 244 310 | Interferometer VI-direct 100 | 25-100 mm | digital | not stabilized | - |
| 244 305 | Interferometer VI-direct SL 100 | 25-100 mm | digital | stabilized | - |

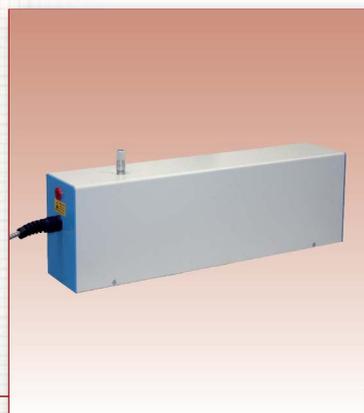
A detailed description of the features of the different interferometer versions is given on page 2.

Selection criteria:

- For a visual evaluation of the interferograms at TV-monitor the instruments of the **vario** line are suited best.
- For a software based evaluation of the interferograms we recommend the interferometers of the **direct** or **direct-SL** product line.
- For the testing of spherical surfaces the use of the **SL-version** is recommended.
- For the testing of parts that are smaller than half the test field diameter we recommend the interferometer **direct** oder **direct-SL** due to their higher lateral resolution.

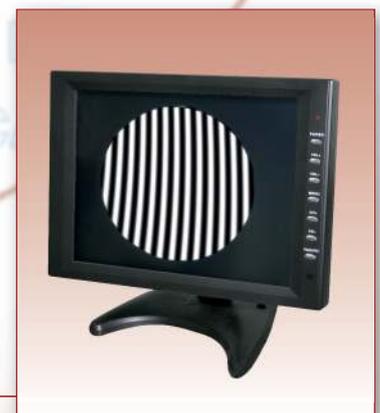
Scope of delivery:

| |
|---|
| Description: |
| He-Ne-laser with fiber output, not stabilized |
| Ord.-No.: 244 330 |



| |
|---|
| Description: |
| He-Ne-laser with fiber output, stabilized |
| Ord.-No.: 244 332 |

| |
|-------------------------------------|
| Description: |
| TV-monitor (only vario line) |
| Ord.-No.: 773 000 14 |



OPTICAL ACCESSORIES

| Description | Ord.-No. |
|---------------------|----------|
| Reference flat D100 | 244 475 |
| Reference flat D150 | 244 491 |



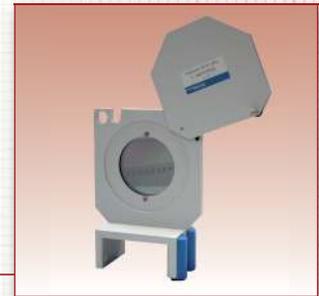
| Description | Ord.-No. |
|------------------|----------|
| Objective R80 | 244 730 |
| Objective R120 | 244 735 |
| Objective R300 | 244 740 |
| Objective R600 | 244 745 |
| Objective R1000 | 244 750 |
| Objective R-1500 | 244 755 |



| Description | Ord.-No. |
|--------------------------|----------|
| Optical expansion system | 244 626 |

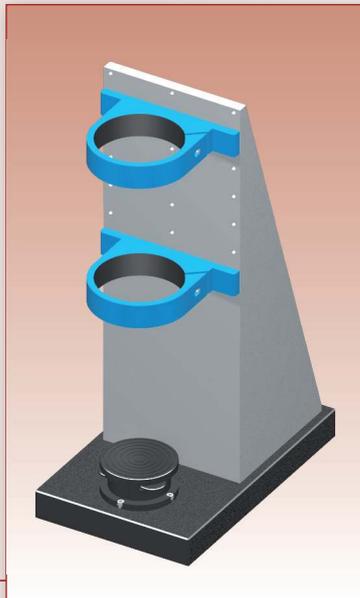


| Description | Ord.-No. |
|-----------------|----------|
| Attenuator D100 | 244 237 |
| Attenuator D150 | 244 238 |
| Base 84 | 244 259 |



MECHANICAL ACCESSORIES

| Description: |
|---|
| Vertical stand D128 with tiltable table |
| Ord.-No.: 223 110 |



| Description: | Ord.-No. |
|--------------|----------|
| Fixture D128 | 223 112 |



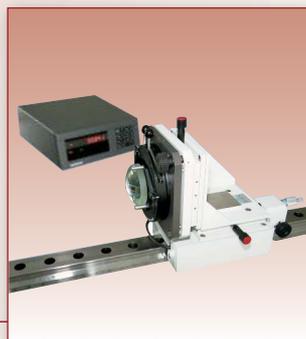
| Description: |
|---|
| Vertical stand D128 with XY- and tiltable table |
| Ord.-No.: 223 171 |

| Description: |
|--|
| Vertical stand D128 with XY-, tiltable table and phase shifter |
| Ord.-No.: 223 173 |

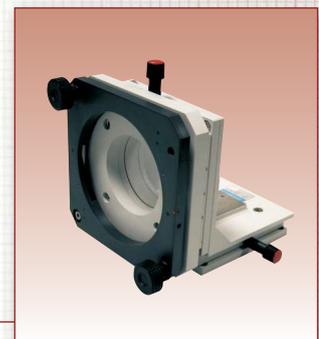
| Description: | Ord.-No. |
|------------------------|----------|
| Adjustable holder D128 | 223 058 |



| Description: | Ord.-No. |
|--------------------------------|----------|
| Radius measurement unit 400mm | 244 285 |
| Radius measurement unit 600mm | 244 286 |
| Radius measurement unit 1000mm | 244 236 |
| Radius measurement unit 1400mm | 244 287 |



| Description: | Ord.-No. |
|-------------------------|----------|
| 4-axes adjustable mount | 244 243 |
| 2-axes adjustable mount | 244 246 |

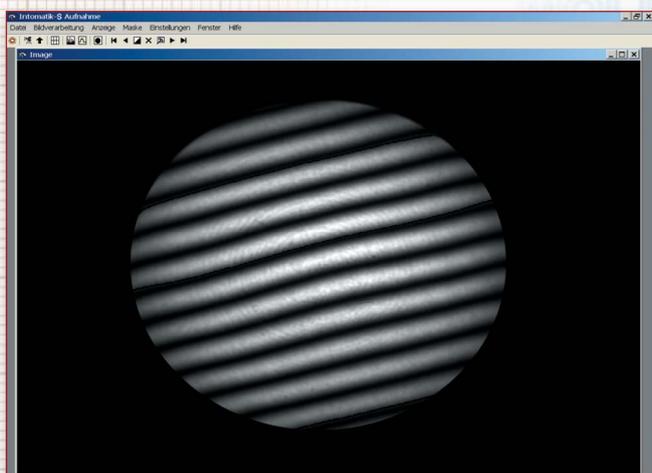
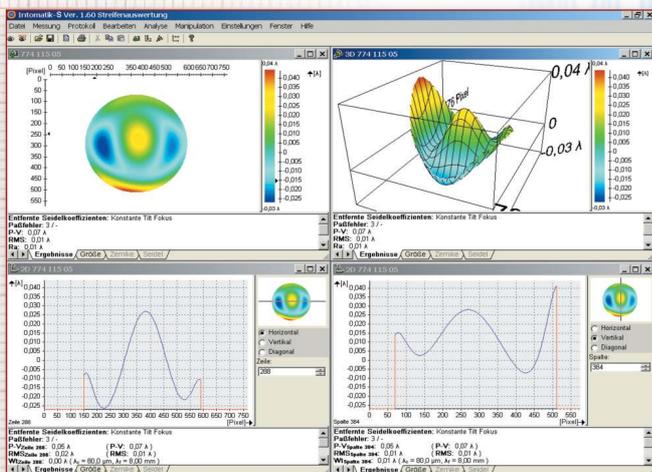
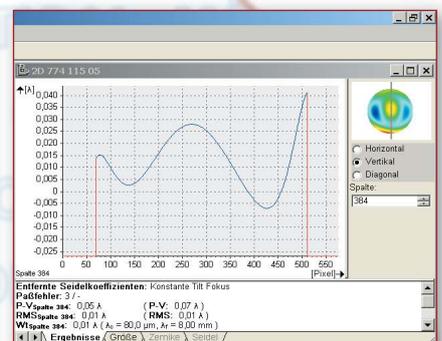
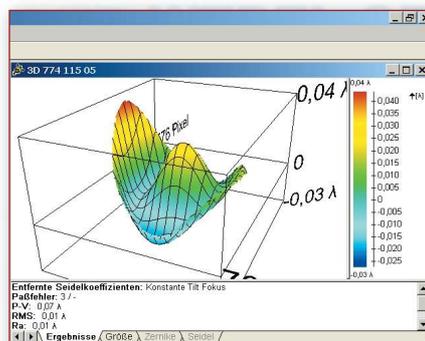
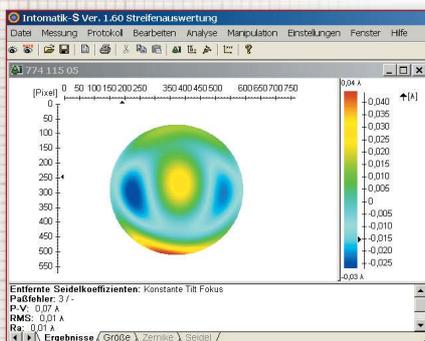


INTOMATIK-S

SOFTWARE FOR FRINGE PROCESSING

Overview

- Evaluation of the single-shot interferograms with open fringes according to the ISO 10110-5 standard
- No phase shifter required
- In comparison to phase shifting evaluation the determination of the sign of the surface form deviation is not possible
- Operating system Windows® NT/2000/XP/7
- Large measuring area by use of the full camera resolution
- Coordinate representation in pixel, mm or inches
- Automatic protocol generation
- Export of the results in *.opd-format or as raw data for further processing



Evaluation

- Display of the results as contour, 3D- and 2D-plot
- Extensive manipulation options like averaging, filtering, fitting of the phase distribution

Recording module

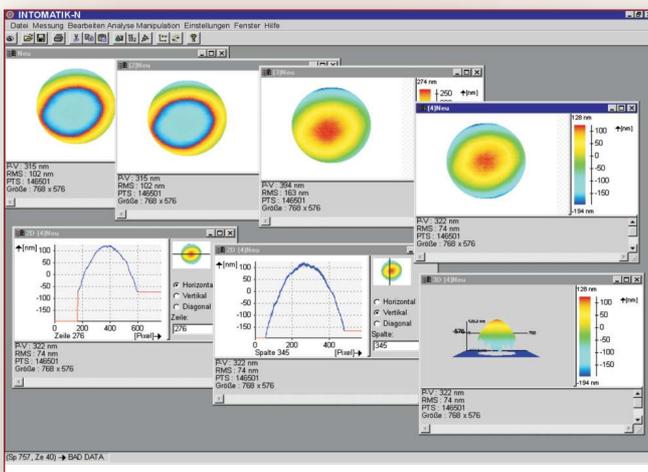
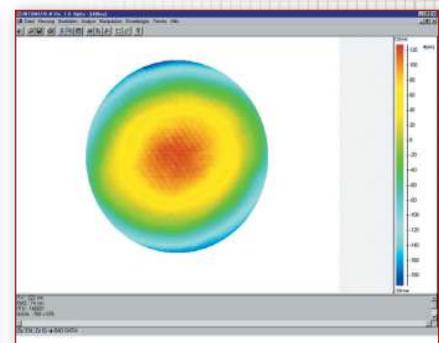
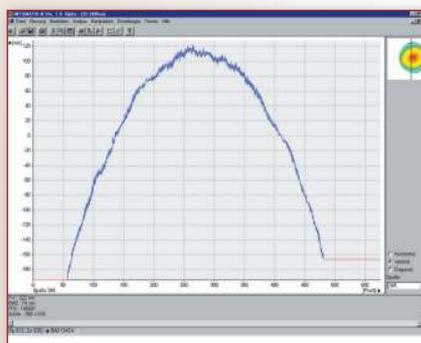
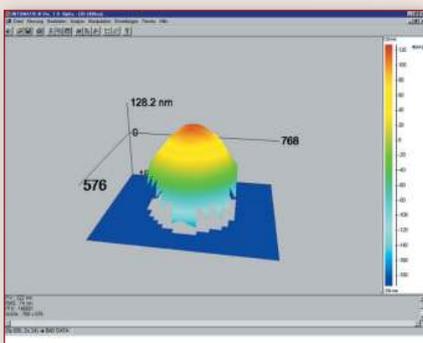
- Permanent live-interferogram display, colored overmodulation display in live-image
- Extensive masking options
- Histogram function
- Save of intensity distribution as *.bmp-file

INTOMATIK-N

SOFTWARE FOR PHASE EVALUATION

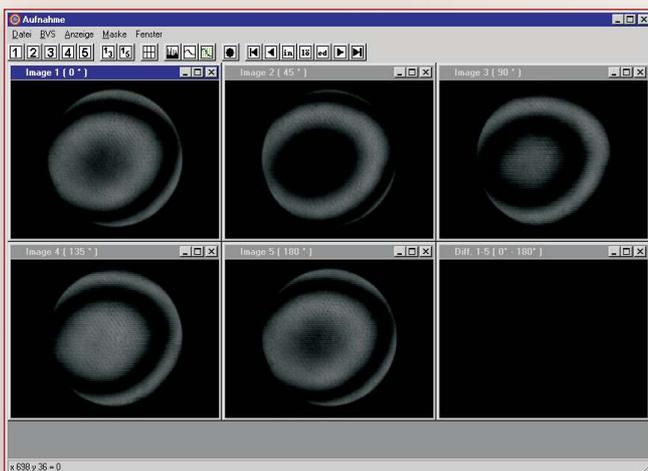
OVERVIEW

- Evaluation of phase shifted interferograms according to ISO 10110-5 standard
- Operating system Windows® XP, Windows 2000 or Windows® NT
- Large measuring area by use of the full camera resolution
- Coordinate representation in pixel, mm or inches
- Manual and automatic calibration of the phase shifting unit
- Automatic protocol generation
- Export of the results in *.opd-format or as raw data for further processing



Evaluation module

- Display of the results as contour, 3D- and 2D-plot
- Extensive manipulation options like averaging, filtering, fitting of the phase distribution
- Besides the measurement of flat and spherical surfaces measurements of 90°-prisms, corner cubes and homogeneity as well as absolute testing and three flat test are also included



Recording module

- Permanent live-interferogram display, colored overmodulation display in live-image
- Extensive masking options
- Histogram function
- Save of intensity distribution as *.bmp-file

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Fax: +49 - 41 03 - 9 37 76 60

www.moeller-wedel-optical.com

e-mail: info@moeller-wedel-optical.com

TECHNICAL DATA

| Interferometer | Test field diameter | CCD-camera No. of pixels | He-Ne Laser | Connection | Power supply | Dimensions mm | Weight kg | Ord.-No. |
|------------------|---------------------|--------------------------|----------------|------------|------------------|---------------|-----------|----------|
| VI-vario 10 | 5-10 | analog 768x576 | not stabilized | TV | 12V Power supply | Ø110x254 | 1,5 | 244 311 |
| VI-direct 10 | 3-10 | digital 1600x1200 | not stabilized | USB | via PC | Ø110x254 | 1,5 | 244 306 |
| VI-direct SL 10 | 3-10 | digital 1600x1200 | stabilized | USB | via PC | Ø110x254 | 1,5 | 244 301 |
| VI-vario 16 | 8-16 | analog 768x576 | not stabilized | TV | 12V Power supply | Ø110x254 | 1,5 | 244 312 |
| VI-direct 16 | 4-16 | digital 1600x1200 | not stabilized | USB | via PC | Ø110x254 | 1,5 | 244 307 |
| VI-direct SL 16 | 4-16 | digital 1600x1200 | stabilized | USB | via PC | Ø110x254 | 1,5 | 244 302 |
| VI-vario 28 | 14-28 | analog 768x576 | not stabilized | TV | 12V Power supply | Ø110x306 | 1,7 | 244 313 |
| VI-direct 28 | 7-28 | digital 1600x1200 | not stabilized | USB | via PC | Ø110x306 | 1,7 | 244 308 |
| VI-direct SL 28 | 7-28 | digital 1600x1200 | stabilized | USB | via PC | Ø110x306 | 1,7 | 244 303 |
| VI-vario 50 | 25-50 | analog 768x576 | not stabilized | TV | 12V Power supply | Ø110x484 | 3,0 | 244 314 |
| VI-direct 50 | 12-50 | digital 1600x1200 | not stabilized | USB | via PC | Ø110x484 | 3,0 | 244 309 |
| VI-direct SL 50 | 12-50 | digital 1600x1200 | stabilized | USB | via PC | Ø110x484 | 3,0 | 244 304 |
| VI-vario 100 | 50-100 | analog 768x576 | not stabilized | TV | 12V Power supply | □164x732 | 9,7 | 244 315 |
| VI-direct 100 | 25-100 | digital 1600x1200 | not stabilized | USB | via PC | □164x732 | 9,7 | 244 310 |
| VI-direct SL 100 | 25-100 | digital 1600x1200 | stabilized | USB | via PC | □164x732 | 9,7 | 244 305 |

| | | | | |
|----------------------|-------------------|------|---------------------|------|
| Measurement accuracy | visual evaluation | λ/10 | PC-based evaluation | λ/20 |
|----------------------|-------------------|------|---------------------|------|