

OPTIK · MESS- UND PRÜFTECHNIK
VERTRIEB · BERATUNG · TRAINING

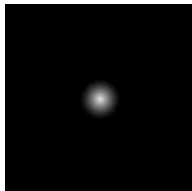


Preliminary

ELWIMAT-VFS® 2000

Large angle measuring device ,Vignetting Field Stop' VFS with high precision

The ELWIMAT-VFS according to the "vignetting field stop procedure" is a patented, compact, electronic measuring system with high-precision, low-distortion optics for large angle measuring ranges even at long working distances. Integrated camera and powerful LED illumination enable automated evaluation over a wide range of sensitivity and application.



Advantages:

- Absolutely new measuring principle for simultaneous angle and position measurement in 2D
- Virtually no limitation in measuring range and working distance
- High accuracy and linearity with documentation
- Subpixel accurate image processing with 1/60 pixel resolution
- Intuitively operable software under WINDOWS or LINUX
- Integration into existing architectures systems through IP Interface
- Real-time capability with trigger option
- Expandable to 6 DoF

For applications on optics with low reflectivity special contrast options are available.

Areas of application

- Detecting large angles even at long distances
- Angle measurement on optics and mechanics
- Adjustment of opto-mechanical components
- Wedge angle measurement up to 30°
- Center measurement on spheric and aspheric lenses
- Probing and measuring of free-form surfaces
- Form measurement on large mirrors with DaOS principle
- Radius measurement at long radii > 1 m
- Monitoring of assembly systems up to 6 DoF
- Roll angle measurement
- Z-distance and lateral X, Y position measurement
- Ready for Industry 4.0 application



Laboratory module for development environment

A laboratory module offers various interfaces such as RS232, USB 3.0, TCP-IP via RJ45 connector. It allows direct access to the control of the data acquisition and the connection to the own laboratory environment.

Process measurement sequence control

For production-related measuring systems, add-on software modules with process sequences and touch menus are available: analog and digital angle measurement, wedge angle measurement, centering, alignment and straightness measurement, monitoring up to 6 DoF.

Tolerance fields with color change

Tolerance fields can be defined, which are displayed in the camera window (circle, square, rectangle). The digit values are displayed in corresponding 'signal colors'. When the tolerance field is exceeded, the numeric field is switched to red.

Real-time capable via external trigger

The subpixel accurate measured values can be retrieved on demand in real time, saved in tables and exported as a csv file.

Expansion options and Additional sensors

The measuring principle of the vignetting method is suitable for carrying out absolute position measurements or alignment measurements. In addition, corresponding interfaces enable the connection of additional sensors such as leveling devices, laser interferometers and others. See our brochure ELWIMAT-VFS 4000 and ELWIMAT-VFS 6000 or ask our specialists.

Technical Data

| Focal length/ F-No. | 35-4,8 | 46-4,8 | 90-6,8 | 140-8 | 200-10 | 300-15 |
|---|---|---------|---------|---------|---------|---------|
| Number of measurement axis | 2 | 2 | 2 | 2 | 2 | 2 |
| Measurement range $2w^{1)}/ °$ | 11° | 6,5° | 3,4° | 2,2° | 1,5° | 1,0° |
| Field of View $2w^{1)}/ \text{arcsec}$ | 39.600 | 23.400" | 12.000" | 7.900" | 5.500" | 3.700" |
| Pixel resolution ²⁾ / arcsec | 26" | 20" | 10" | 7,2" | 4,8" | 3,6" |
| Resolution estimation ³⁾ / arcsec | 0,3" | 0,2" | 0,1" | 0,1" | 0,05" | 0,05" |
| Reproducibility $R^{3)}/ \text{arcsec}$ | 0,4" | 0,3" | 0,15" | 0,12" | 0,1" | 0,1" |
| Wavelength of LED / nm | 405 / 480 / 530 / 630 / 880 | | | | | |
| Free Aperture / mm | 7,3 | 9,6 | 13 | 20 | 20 | 20 |
| min. \varnothing mirror/ Reflector ⁴⁾ / mm | 27,5 | 30 | 33 | 37 | 40 | 40 |
| Weight AC-Sensor / kg | 0,7 | 0,7 | 0,7 | 0,8 | 0,9 | 1 |
| Dimensions AC-Sensor | \varnothing 40 f8; 107 x 62 x 110 mm ³ | | | | | |
| Interface / protocol | USB 3.0, TCP-IP / JSON | | | | | |
| Scope of delivery | Autocollimation sensor, Sensor cable, Software ELWISOFT-Base | | | | | |
| Accuracy, Linearity | < 1 % of measured value + 2R | | | | | |
| Order no. | 802 100 | 802 101 | 802 102 | 802 103 | 802 104 | 802 105 |
| Scope of delivery | Autocollimation sensor, Sensor cable, rugged Touch-Modul w. integrated Mapping File | | | | | |
| Accuracy, Linearity | < 0,1 % of measured value + 2R ⁵⁾ | | | | | |
| Order no. | 802 300 | 802 301 | 802 302 | 802 303 | 802 304 | 802 305 |

1) X-Direction, Y-Dir. = 0,75*X; working distance $s > 3$ -times of focal length 3 f'

3) with Software ELWISOFT-Base

5) with Compensation (mapping file)

2) for IDS-driver and software with pixel resolution

4) for max. measurement range and working distance $s = 3$ f'



Fig.: Centering with tolerance circle

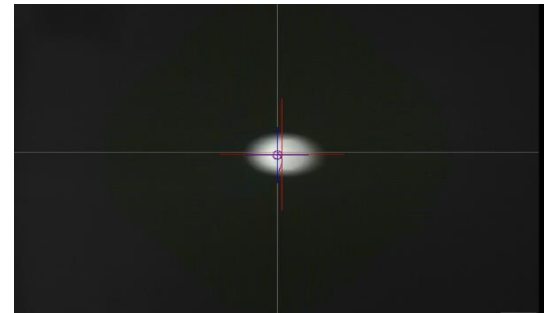


Fig.: Elliptical V-SPOT @spheres and freeforms



Fig.: Selection of additional sensors