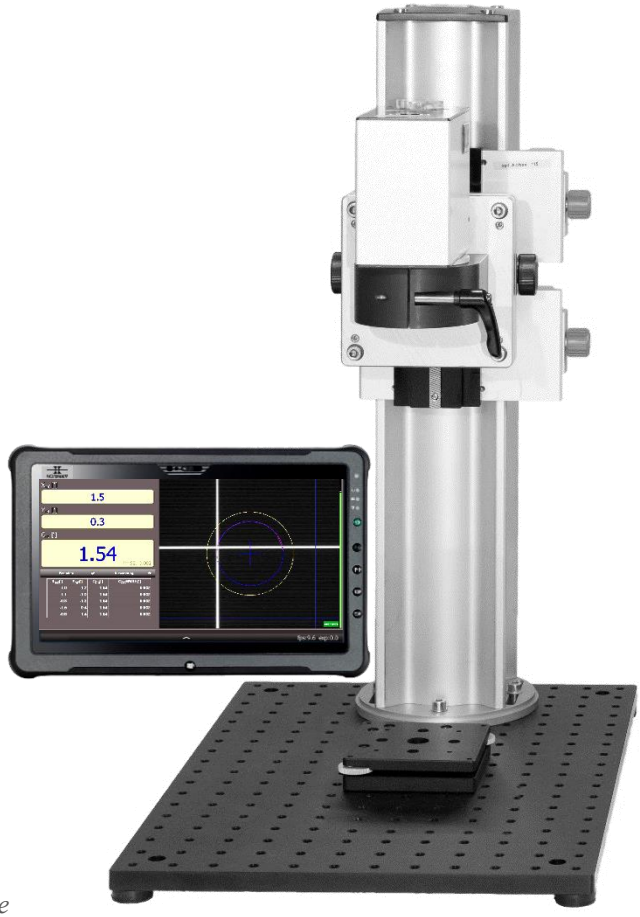
Precision wedge angle & parallel plate measuring device

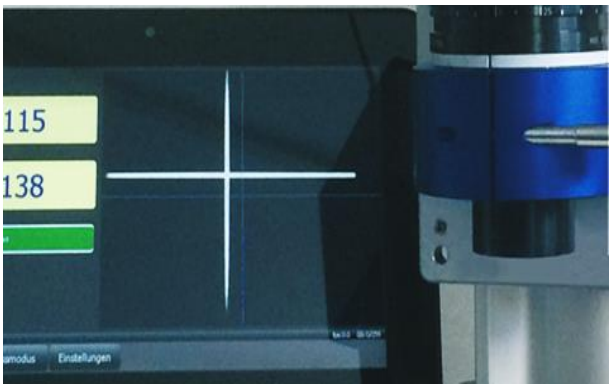
Quality assurance in optical production metrology

From the practice for the practice



Benefits and advantages:

- Safety in measurement technology
- Manageable tolerances
- Shorter measurement / test and throughput times
- High linearity, minimal deviations
- Intuitive ELWISOFT software
- Subpixel evaluation with ELWISOFT-Base
- ELWISOFT - high accuracy and linearity with mapping
- Scalable system with additional accessories

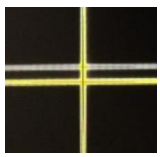


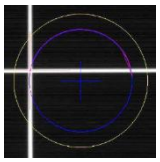
Available as PC and rugged stand-alone version with touch module

Fields of Applications

- Angle measurement of optical and mechanical assemblies from 0.0001 ° to 6 °
- Adjustment of opto-mechanical components
- Radius measurement on short radii
- Radius measurement on long radii
- Angular deviation on 90 ° prisms, 45 ° prisms
- Wedge measurement on optical components
- Radii and wedge angle cylindrical lenses
- Measurement monitoring and documentation
- Industry 4.0

Measurement principles





For the measurement of wedges with angles of more than 20 arc seconds, it is recommended to measure in one pass using the reflection on both sides of the substrate with a double cross image. For smaller angles even on crystal elements for Lasers the use of double pass in transmission is the better choice. The **ELWISOFT-Wedge-R** software provides both and calculates and evaluates the wedge angle according to refractive index. The values are saved in a table for documentation. The operator is able to start a process routine for process control in mass production.

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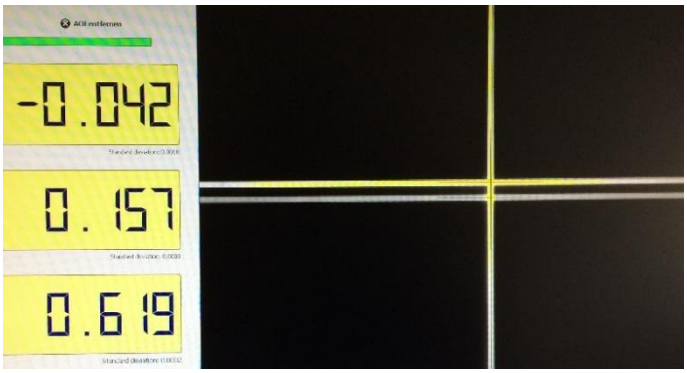

Fig. 1: Wedge angle measurement in reflection via double cross; measured wedge angle is 0.619 wmin = 37.14 wsec.

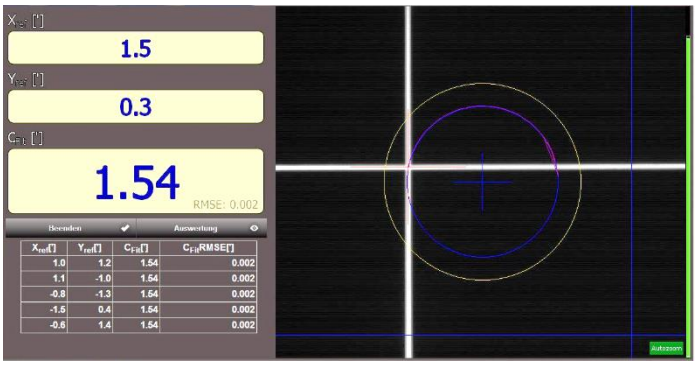

Fig 2: Centering software module also for calibration check and micro wedge measurement < 10 wsec.

Various focal lengths are available for wedge angles of different sizes (see table). A 4x angle converter is available for very large wedges (up to 6°). The same setup with the corresponding software module is recommended for measuring 90° prisms.

Measurement in transmission

A special measuring method implemented in the ELWISOFT-Wedge-T software is available for measuring very small wedges, e.g. plane-parallel plates with < 10 arc seconds

Fast calibration check for autocollimators

In the same way as with the measurement in transmission, ELWISOFT enables the calibration of auto-collimators to be checked using a reference wedge and a rotary table.

Accessories for different applications

- Vertical stand with column
- Tilting table
- Turntable
- Certified wedge for calibration test
- Angle / beam converter 0.25x / 4x

Additional Software Modules ELWISOFT

- Bevel angle -R in reflection
- Wedge angle -T in gear
- Centering software module
- Calibration check software module
- High-precision mapping of linearity

Technische Daten für Standardausführungen

Brennweite/ Durchmesser	**50/40**	**80/40**	**100/40**	**140/40**	**200/40**	**300/40**	**200/65**	**300/65**
Number of Measurement Axes	2	2	2	2	2	2	2	2
Measurement range 2w[1]/ °	4,0°	2,2°	1,8°	1,2°	0,9°	0,6°	0,9°	0,6°
Pixel resolution/ arcsec[2]	10“	6“	4,4“	3,6“	2,4“	1,8“	2,4“	1,8“
Resolution recommended[3] / arcsec	0,1“	0,1“	0,1“	0,1“	0,1“	0,01“	0,01“	0,01“
Reproducibility R[3] / arcsec	0,5“	0,3“	0,2“	0,2“	0,15“	0,1“	0,15“	0,1“
Wavelength of LED / nm	405 / 480 / 530 / 630 / 880 / 905							
Clear Aperture / mm	9,6	28	20	28	28	28	48	48
min. Reflector Ø/ mm @R > 60%	1	2	2	3	4	6	4	6
min. Reflector Ø/ mm @R = 4%	4	8	8	12	16	24	16	24
Weight AC-Sensor / kg	0,7	0,8	0,7	0,8	0,9	1	2,3	2,5
Dimensions AC-Sensor	Ø 40 f8; 107 x 62 x 110 mm³				Ø 65 f8; 107 x 62 x 110 mm³			
Interface	USB 3.0							
Scope of Delivery	Autocollimation sensor, Sensor cable, Camera drivers (Software, Mapping File is available)							
Acucracy, Linearity	< 1 % of the measured value + 2R / < 0.05 % of the measured value + 2R (with mapping)							
Order no.	801 10C	801 10A	801 10B	801 103	801 104	801 105	801 106	801 107
Scope of delivery	Autocollimation sensor, Sensor cable, rugged Touch-Modul (included Mapping file)							
Accuracy, Linearity / arcsec	2,5		1,5	1	0,7	0,6	0,7	0,6
Order no.	801 30C	801 30A	801 30B	801 303	801 304	801 305	801 306	801 307

1) In X-Direction; Y-dir. = 0,75 · X; dependent on working distance (applies up to a distance of about 1.5 to 3 times the focal length);
2) With supplied driver or with evaluation software and pixel resolution
3) Simple standard deviation of the deviation from the setpoint with subpixel evaluation with software ELWISOFT-Base

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