

*Fully automatic Goniometers
with digital image evaluation*

GONIOMAT A GONIOMAT A-HR

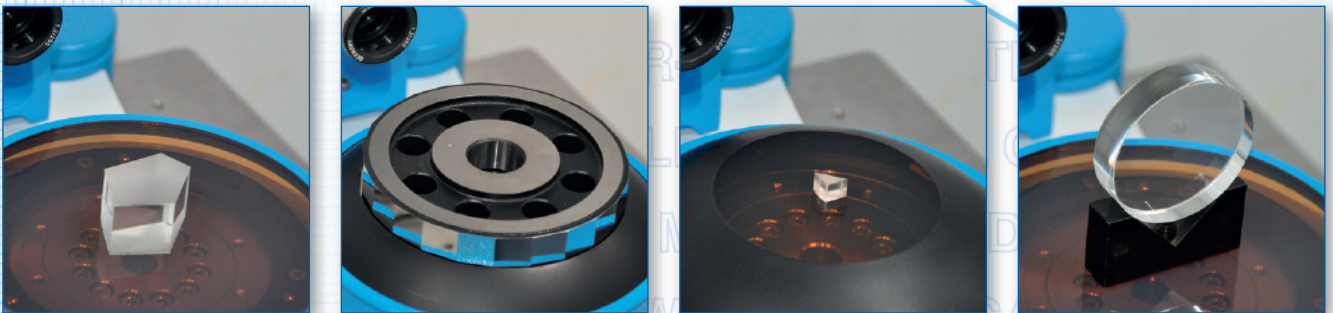
*objective, accurate and reliable
angle measurement*



OVERVIEW

The fully automatic **GONIOMAT A** series goniometers are capable of angle measurement and testing of optical prisms, polygons, wedges and angle gauges. Thus, the **GONIOMAT A/A-HR** finds its use in reception and final inspection, as well as in workshops and laboratories. The **GONIOMAT A/A-HR** is able to perform measure-

ments autonomously, reliably and without user intervention. Its reliability is ensured by an integrated optical raytracing analysis of the measurement data which is unique for devices of this type. The **GONIOMAT A** features an accuracy of 0.7 arcseconds, the **GONIOMAT A-HR** is specified with 0.4 arcseconds.



Measuring tasks:

- Measurement of the dihedral angle of prisms, in particular of 90°-prisms
- Angle measurement of polygons
- Measurement of wedge angles
- Determination of pyramidal angles
- Angle measurement of micro prisms
- Measurement of angle normals
- Gauging of deflection angles
- Determination of refraction indices to identify glass types

Innovative product features:

The **Goniomat A/A-HR** distinguish themselves from conventional goniometers by the following features:

- Three easily replaceable measurement tables on a three-point bearing
- Precision air bearing and maintenance-free belt drive
- Special high precision autocollimator with a large measurement range and a high resolution camera
- Three dimensional acquisition and analysis of the autocollimation images
- Integrated optical raytracing analysis of the measurement data

These features provide the following advantages over conventional devices:

- Quick adaptation to different heights of specimen
- High precision measurement of pyramidal angles
- Suppression of distracting retro reflections
- Potential for measuring extremely small surfaces
- Time saving by using a "virtual tilting table" (no need to adjust the measurement table)
- Low sensitivity to ambient light
- Measurement of deflection angles without any modifications to the set-up or hardware
- Measurement of refractive indices at the autocollimator's wavelength
- Autonomous and reliable image separation in case of multiple reflected images

GONIOMAT A series goniometers are easy to handle and generate objective and reproduceable measurement results. Automatic measurements are performed autonomously, reliably and without any user intervention, such as breathing on surfaces or manual selection of the correct signal in case of multiple reflected images. The results are output in form of clear protocols which can be integrated easily into existing documents (with e.g. Microsoft Office).

MEASURING SET-UP



A **GONIOMAT A/A-HR** consists of an air bearing round table, three interchangeable measurement-tables with three point support, an angle encoder, an electronic autocollimator with a USB port, a drive with control card and the **GONIOMATIK** software. The software calculates the exact surface positions from the autocollimation image and its corresponding encoder position automatically.

MEASURING PROCESS

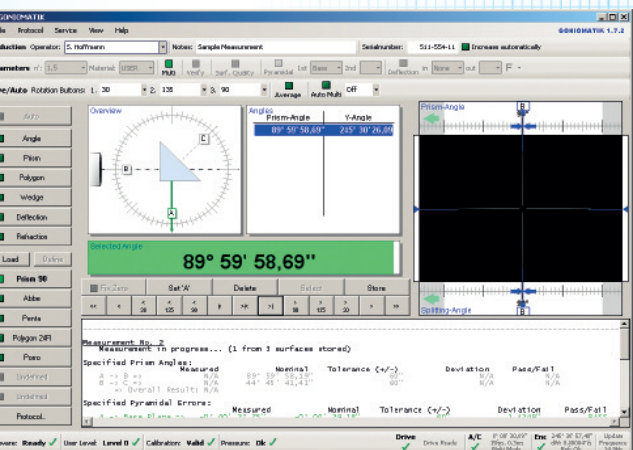
- The operator places the specimen on the measurement table
- The operator selects the type of specimen (prism, polygon, etc.) through the software menu
- The operator starts the automatic measurement process
- The software acquires all surface positions by rotating the measurement table automatically
- The software reconstructs the prism's geometry utilizing an optical raytracing analysis on the measurement data
- The software outputs the surface angles

SOFTWARE

The **GONIOMATIK** software is an essential part of the **GONIOMAT A/A-HR**.

It offers the following functions and features:

- Fully automatic measurement of all or individual dihedral angles of prisms
- Automatic testing of a polygon's absolute error by applying the rosette method
- Measurement of wedges and deflection angles
- Determination of refraction indices in order to identify glass types
- Measurement of pyramidal angles arbitrarily referring to the base plane, the average plane or to other surfaces
- Evaluation of measurement in coordination with the ISO 10110-1, VDI 2605 as well as the DIN 3140 standards
- Approaching surfaces in manual mode is greatly simplified by surface navigation features
- Teach-in, tolerance specification and verification (Go/NoGo)
- Self-test functionality to check calibration status
- Plausibility checks during the measurement
- Automatic separation in case of multiple reflected images
- Generation of protocols for measurement results.



Thanks to the clear user interface, the additional quick reference guide and the integrated video help feature, using the software is quite easy even without any special training.

TECHNICAL DATA

		GONIOMAT A Order-No.: 241 641	GONIOMAT A-HR Order-No.: 241 643
Measuring range	grad	360°	
Accuracy (multiple measurements) * **	arcsec	± 0.7	± 0.4
Accuracy (single measurement) *	arcsec	± 1.5	± 0.6
Accuracy (pyramidal angle) *	arcsec	± 2.0	± 1.0
Maximum pyramidal angle	arcmin	± 20	
Minimum specimen surface (Glas uncoated)	mm ²	2	
Maximum specimen diameter	mm	210	
Maximum Payloads	kg	10	
Table diameter	mm	160 / 122 / 85	
Autocollimator focal length	mm	200	
Autokollimator Apertur	mm	28	
Base dimension without PC	mm	600 x 300	
Base dimension with Measurement Cell	mm	700 x 700	
Environmental Conditions	°C	20 ± 1	
Air supply cleaned dry air, microfiltered ***)	Bar / l/min	5 / 20	

* according to DIN 1319

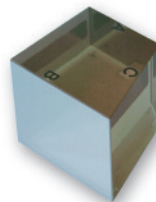
** four measurements on 90° rotated positions; sample surface Lambda/10 p.v., 30 x 30 mm

*** Treatment not included

ACCESSORIES

Angle Normal

A test piece is included to check the calibration status of the equipment on site.



Description	Order-No.
Angle Normal (included accessories)	280 620 10

Measurement Cell

To isolate the GONIOMAT from dust, drafts, and strong ambient light a measurement cell is included.



Description	Order-No.
Measurement Cell (included accessories)	241 659

Polygon

In order to maintain traceability of inspection equipment to international standards, as required by quality management systems, we offer certified 12-sided polygons.



Description	Order-No.
Polygon mirror 12 faces 2" (optional accessories)	205 313

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