

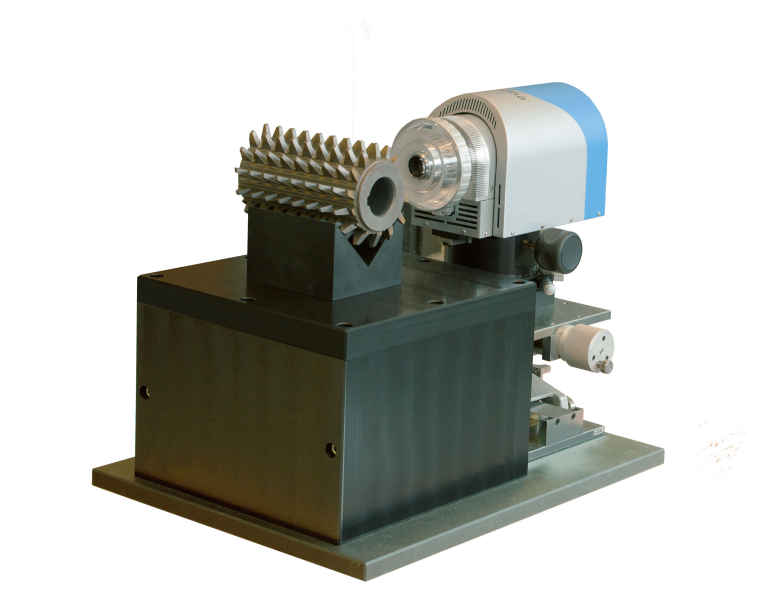


EdgeMasterHOB G2

Version a

Technical Specifications EN

March 22, 2017



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Chapter 1

Technical specifications

The following specifications conform to the guidelines of the *Initiative Fair Datasheet*. Specifications in blue mark Alicona specific values.



1.1 General specifications

Measurement principle	non-contact, optical, three-dimensional, based on Focus-Variation
Max. number of measurement points in a single measurement	X: 2040, Y: 2040, X x Y: 4.16 million
Positioning volume	Z: 25 mm (mot.), 92 mm (man.) Lifting table: 120 mm (man.) Rotation table: +/- 30 ° (man.)
Ring light illumination	white high-power LED ring light, 24 segments

1.1.1 Dimensions and environmental conditions

Dimensions (W x D x H)	measurement instrument: 555 x 400 x 502 mm; ControlServerHP: 200 x 490 x 440 mm
Mass	measurement instrument: 30 kg, depending on set-up; ControlServerHP: 16.9 kg
Ambient temperature range	measurement instrument: possible: 18-28 °C; calibrated for: 18-22 °C (can be calibrated for other temperature ranges); ControlServerHP: possible: 0-30 °C
Permissible temperature gradient	less than 1 °C/h
Permissible relative humidity	recommended: 45 % (+/-5 %), possible: 45 % (+/-15 %)
Supply voltage and current	ControlServerHP: 100-240 VAC, 50-60 Hz; measurement instrument: 24 VDC
Electric power	ControlServerHP: 700 W; measurement instrument: 250 W

1.1.2 ControlServerHP

CPU	4 Core, 3.4 GHz
RAM	32 GB DDR4
HDD memory	2 TB
Operating system	Windows 10 IoT Enterprise, 64bit
Monitor	24" Full HD LED monitor with integrated USB hub

1.2 Measurement object

Surface texture	surface topography Ra above 0.009 μm with λ_c 2 μm ; depending on surface structure
Diameter	25 mm - 300 mm
Max. weight	30 kg; more on request

1.3 Objective specific features

Objective magnification		5x AX	10x AX	20x AX
Numerical aperture		0.14	0.28	0.42
Working distance	mm	34	33.5	20
Lateral measurement range (X,Y)	mm	3.61	2	1
(X x Y)	mm ²	13.03	4	1
Measurement point distance	μm	2	1	0.5
Calculated lateral optical limiting resolution	μm	2.33	1.17	0.78
Finest lateral topographic resolution	μm	4	2	1
Measurement noise	nm	165	45	25
Vertical resolution	nm	460	130	70
Vertical measurement range	mm	25	25	19
Accessibility	°	51	51	39

1.4 Resolution and application limits

Objective magnification		5x AX	10x AX	20x AX
Min. measurable roughness (Ra)	μm	n.a.	0.45	0.25
Min. measurable roughness (Sa)	μm	n.a.	0.25	0.1
Min. measurable radius	μm	10	5	3
Min. measurable wedge angle	$^{\circ}$	20		
Max. measurable slope angle	$^{\circ}$	87		
Max. bevel length	μm	2000	800	400

1.5 Accuracy

Wedge angle	$\beta = 70^{\circ} - 110^{\circ}$	$U = 0.15^{\circ}, \sigma = 0.02^{\circ}$
Edge radius	$R = 5 \mu\text{m} - 20 \mu\text{m}$ $R > 20 \mu\text{m}$	$U = 1.5 \mu\text{m}, \sigma = 0.15 \mu\text{m}$ $U = 2 \mu\text{m}, \sigma = 0.3 \mu\text{m}$

1.6 Software

Measurement modules	Standard: automatic edge measurement (edge radius, form, contour, form deviation) Optional: chipping, roughness, edge break
Automation	integrated scripting language; LabVIEW framework; .NET remoting interface
Languages	German, English, French, Korean, Japanese, Chinese
Export formats	3D-data (e.g.: AL3D, STL, G3D, Open GPS, CSV, QDAS); image formats (e.g.: BMP, JPG, PNG)
Import formats	3D-data (e.g.: AL3D, STL, G3D); image formats (e.g.: BMP, JPG, PNG)

Chapter 2

Technical Drawings

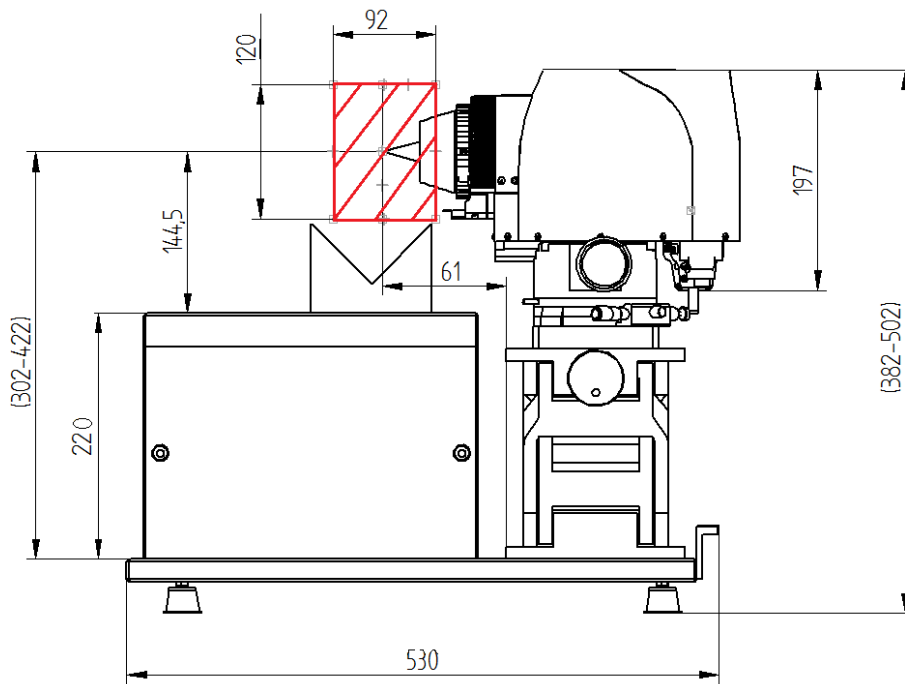
2.1 Working area EdgeMasterHOB G2

Note: The following technical drawings visualize the dimensions as well as the working area (red-shaded area) of the EdgeMasterHOB G2. The sensor is in the top position in all drawings.

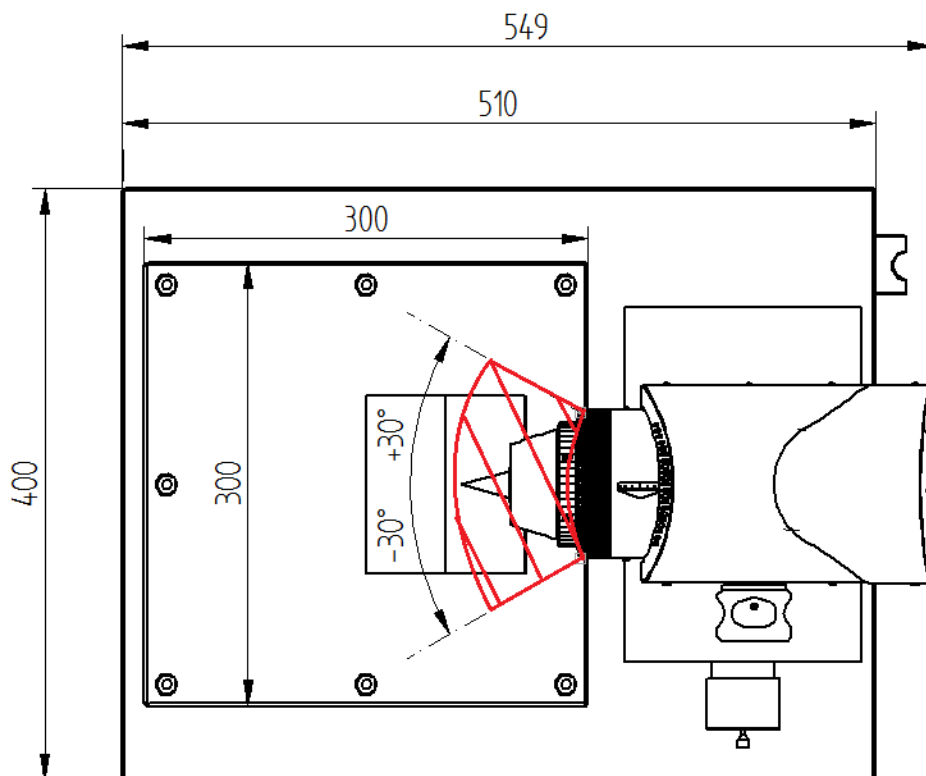


The working area is the area where fine focus, automatic positioning and measurement are possible. The sample has to be inside this working area - use the knob on the lifting table to move the working area up or down.

All dimensions are indicated in mm.



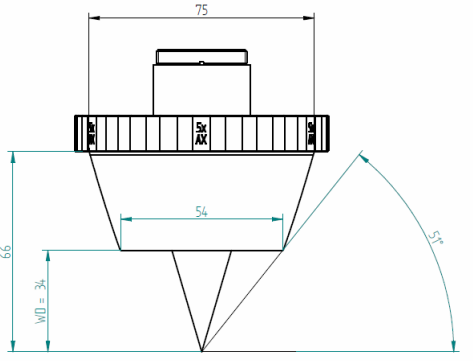
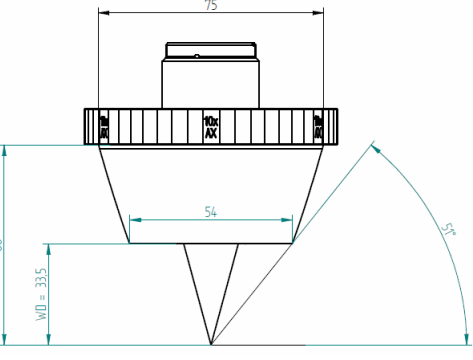
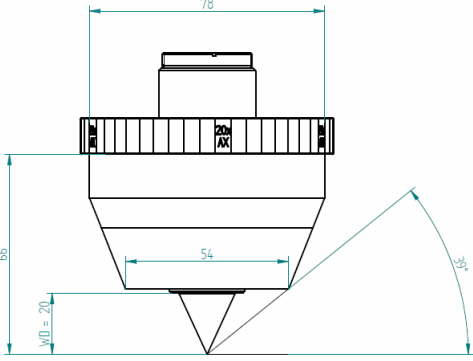
EdgeMasterHOB G2: 10x AX objective, side view



EdgeMasterHOB G2: 10x AX objective, top view

2.2 AX Objectives

All dimensions are indicated in mm.

5x	 <p>Technical drawing of a 5x objective lens. The drawing shows a top view and a side view. The top view is a circle with a diameter of 75 mm. The side view shows a lens with a height of 66 mm and a bottom diameter of 54 mm. The working distance (WD) is indicated as 34 mm. A 37-degree angle is shown between the lens surface and the horizontal axis.</p>
10x	 <p>Technical drawing of a 10x objective lens. The drawing shows a top view and a side view. The top view is a circle with a diameter of 75 mm. The side view shows a lens with a height of 66 mm and a bottom diameter of 54 mm. The working distance (WD) is indicated as 33.5 mm. A 37-degree angle is shown between the lens surface and the horizontal axis.</p>
20x	 <p>Technical drawing of a 20x objective lens. The drawing shows a top view and a side view. The top view is a circle with a diameter of 78 mm. The side view shows a lens with a height of 66 mm and a bottom diameter of 54 mm. The working distance (WD) is indicated as 20 mm. A 37-degree angle is shown between the lens surface and the horizontal axis.</p>

Chapter 3

Warranty and Copyrights

3.1 Warranty

ALICONA IMAGING GMBH AND ITS SUPPLIERS ACCEPT NO LIABILITY FOR ANY PROBLEMS THAT OCCUR AS A RESULT OF ANY OPERATIONS CARRIED OUT OTHER THAN THOSE STATED IN THE MANUAL THAT COMES WITH THIS PRODUCT. FURTHERMORE WE TAKE NO WARRANTY AT ALL HARDWARE DAMAGES ON UPGRADED MEASUREMENT SYSTEMS THAT RESULT FROM IMPROPER OPTICS, WRONG OR INCOMPLETE CALIBRATION, NOT SUITABLE SPECIMEN OR INCOMPATIBLE HARDWARE COMPONENTS.

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3.2 Copyrights

This document contains know-how, ideas and development achievements of Alicona Imaging GmbH and its subcontractors. You are not allowed to copy or modify this document without given permission of Alicona Imaging GmbH.

3.3 EU Declaration of Conformity



In compliance with EU directive

- Machinery Directive 2006 / 42 / EC (Appendix II A)
- Measuring Instruments Directive 2014 / 32 / EU
- Low Voltage Directive 2014 / 35 / EU
- Electromagnetic Compatibility 2014 / 30 / EU

Following harmonized standards were applied:

- EN 61010-1:2010

The Manufacturer

Alicona Imaging GmbH

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hereby declares that the following machine:

Type: EdgeMasterHOB G2 Version a

complies with the above listed directives and fulfills the national and international standards and statutory provisions that implement the directives.

A technical documentation is available and is present in the original version. The technical documentation is part of this declaration.

This declaration loses its validity as soon as modifications are made to the machine.

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Raaba, March 22, 2017

Place, Date

Seal

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