alicona

IF-SensorR25

Version c

Technical Specifications EN

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Alicona Imaging GmbH • info@alicona.com
www.alicona.com • Dr.-Auner-Straße 21a • A-8074 Raaba/Graz
Tel: +43 (316) 403010 700 • Fax: +43 (316) 403010 711

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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
Positioning volume (Z)	25 mm (mot.)
Maintenance	maintenance free
Ring light illumination	white LED high-power ring light, 24 segments
Positioning help	coaxial laser beam

1.1.1 Dimensions and environmental conditions

Dimensions (W x D x H)	measurement instrument: 134 mm x 153 mm x 220 mm; ControlServerHP: 200 mm x 490 mm x 440 mm
Mass	measurement instrument: 4 kg, ControlServerHP: 16.9 kg
Ambient temperature range	measurement instrument: possible: 18°C - 28°C; calibrated for: 18°C - 22°C (can be calibrated for other temperature ranges), ControlServerHP: possible: 0°C - 30°C
Permissible temperature range	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

1.1.3 Measurement object

Surface texture	surface topography Ra above 0.009 μm with λ_c 2 μm; depending on surface structure

1.2 Objective specific features

Objective magnification (*)		**10x**	**20x**	**50x**	**2xSX**	**5xAX**	**10xAX**	**20xAX**	**50xSX**
Numerical aperture		0.3	0.4	0.6	0.055	0.14	0.28	0.42	0.55
Working distance	mm	17.5	16	10.1	34	34	33.5	20	13
Lateral measurement area (X, Y) (X x Y)	 mm mm^2	 2 4	 1 1	 0.4 0.16	 10 100	 3.61 13.03	 2 4	 1 1	 0.4 0.16
Measurement point distance	μm	1	0.5	0.2	5	2	1	0.5	0.2
Calculated lateral optical limiting resolution	μm	1.09	0.82	0.54	5.93	2.33	1.17	0.78	0.59
Finest lateral topographic resolution	μm	2	1	0.64	10	4	2	1	0.64
Measurement noise	nm	40	20	10	1240	165	45	25	15
Vertical resolution	nm	100	50	20	3500	460	130	70	45
Vertical measurement range	mm	16	15	9	25	25	25	19	12
Measurement speed	$\leq$ 1.7 million measurement points/sec.								
Accessibility	°	31	29	19	40	51	51	39	26

(*) Objectives with longer working distance available upon request

1.2.1 Resolution and application limits

Objective magnification		**10x**	**20x**	**50x**	**2xSX**	**5xAX**	**10xAX**	**20xAX**	**50SX**
Height step accuracy (1 mm)	%	0.1							
Min. measurable roughness (Ra)	μm	0.3	0.15	0.08	n.a.	n.a.	0.45	0.25	0.15
Min. measurable roughness (Sa)	μm	0.15	0.075	0.05	n.a.	n.a.	0.25	0.1	0.08
Min. measurable radius	μm	5	3	2	20	10	5	3	2
Min. measurable wedge angle	°	20							
Max. measurable slope angle	°	87							

1.2.2 Accuracy

Flatness deviation	2 mm x 2 mm with 10x objective	U = 0.1 μm
Max. deviation of a height step measurement	height step 1000 μm height step 100 μm height step 10 μm height step 1 μm	$E_{Uni:St:ODS,MPE}$ = 1 μm, σ = 0.1 μm $E_{Uni:St:ODS,MPE}$ = 0.4 μm, σ = 0.05 μm $E_{Uni:St:ODS,MPE}$ = 0.3 μm, σ = 0.025 μm $E_{Uni:St:ODS,MPE}$ = 0.15 μm, σ = 0.01 μm
Profile roughness	Ra = 0.5 μm	U = 0.04 μm, σ = 0.002 μm
Area roughness	Sa = 0.5 μm	U = 0.03 μm, σ = 0.002 μm
Distance measurement	XY up to 2 mm	$E_{Bi:Tr:ODS,MPE}$ = 0.8 μm
Wedge angle	β = 70° - 110 °	U = 0.15 °, σ = 0.02 °
Edge radius	R = 5 μm - 20 μm R > 20 μm	U = 1.5 μm, σ = 0.15 μm U = 2 μm, σ = 0.3 μm

$E_{Uni:St:ODS,MPE}$ & $E_{Bi:Tr:ODS,MPE}$ conform to ISO 10360-8

1.3 Software

Automation	integrated scripting language; labview framework; .NET Remoting interface, AliconaInspectProfessional (enables GD&T measurement)

1.4 Application specific features

1.4.1 Calibration standards

Calibration standards	CalibrationTool, RoughnessTool, VerificationTool

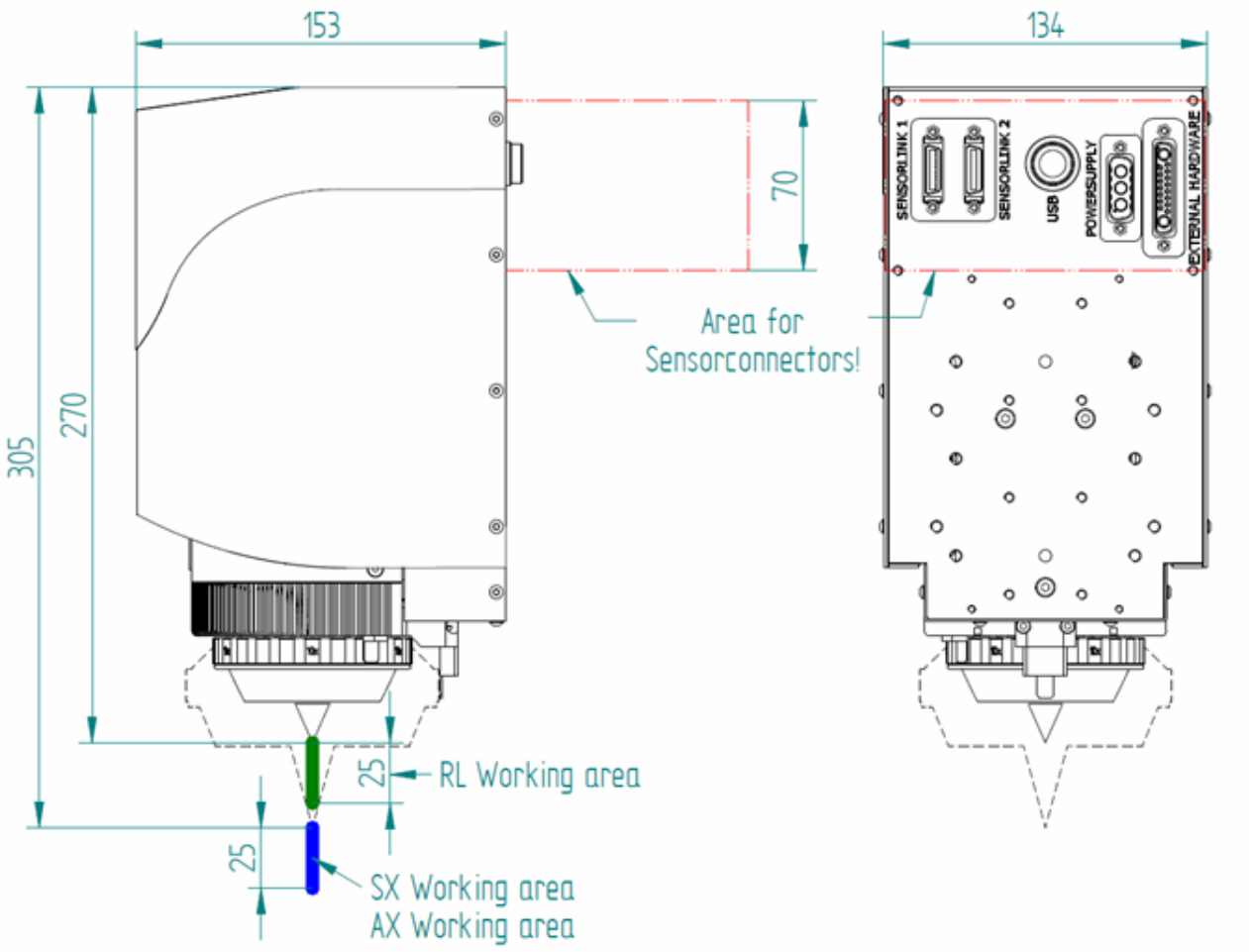
Chapter 2

Technical Drawings

2.1 Working area IF-SensorR25

Note: The sensor is in the top position in all drawings. The measurement range is the area where fine focus, automatic positioning and measurement are possible. Make sure that your sample is inside the measurement area.

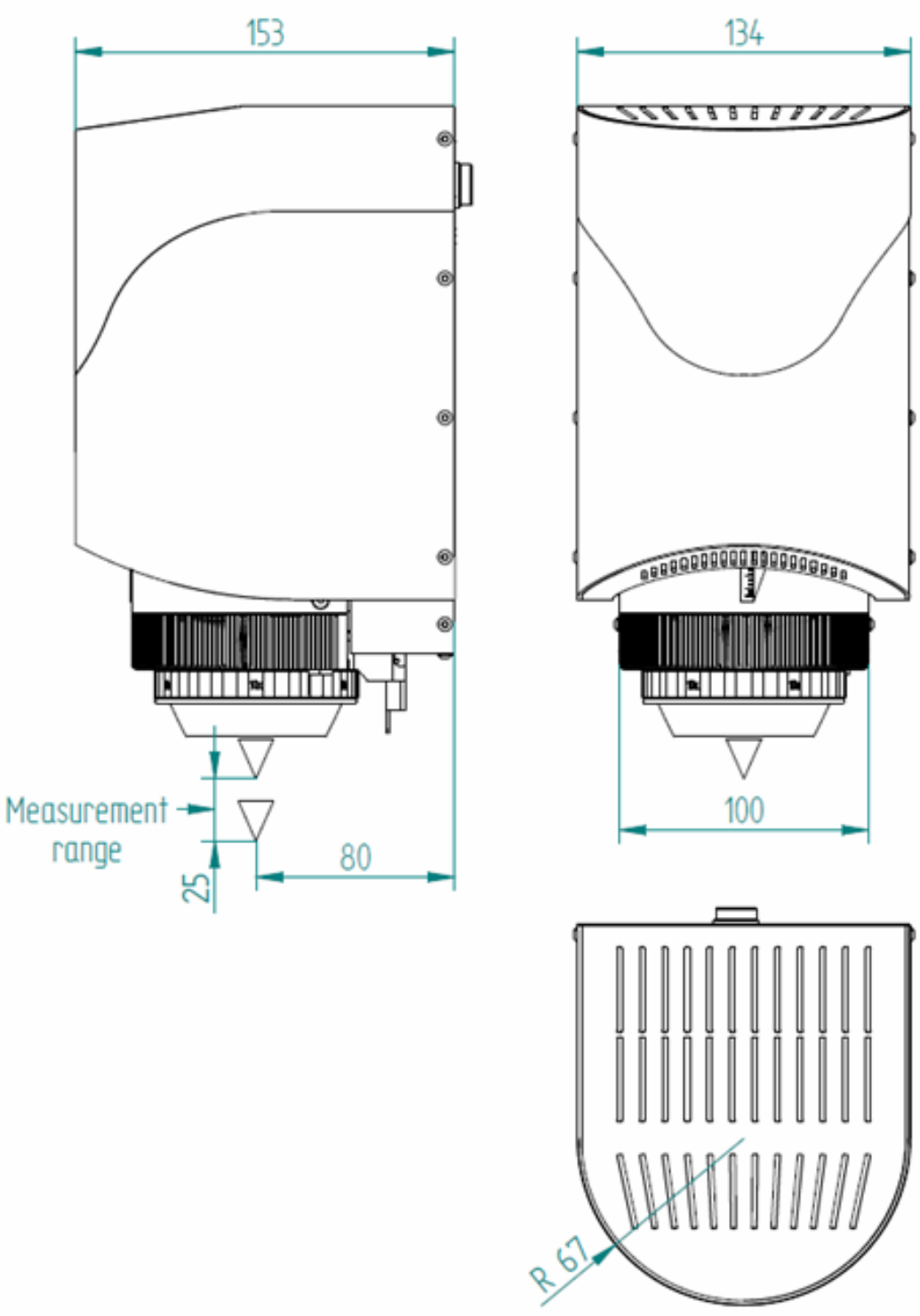
All dimensions are indicated in mm.



IF-SensorR25 head mounting

Required screws for mounting the sensor head:
Socket cap screws DIN 912 M5, 4 pieces; drive style: hex socket
Please observe the maximum screw-in depth of 6mm!

All dimensions are indicated in mm.



Front, top and side view

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.

Compatibility with other Products

Alicona Imaging GmbH does not guarantee that this product is compatible with any software or hardware product that was not obtained from Alicona Imaging GmbH.

3.2 Copyrights

3.3 EU Declaration of Conformity

CE

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

Dr. Auner-Straße 21a

A-8074 Raaba / Graz

hereby declares that the following machine:

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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.

alicona
imaging
Alicona Imaging GmbH
Dr. Auner-Straße 21a, A – 8074 Raaba
Tel.: +43 (316) 40 30 10 – 700
Fax: +43 (316) 40 30 10 – 711

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Place, Date	Seal	Dr Stefan Scherer, CEO