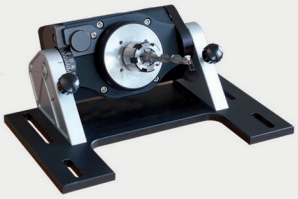
InfiniteFocusSL

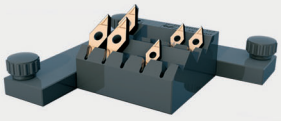
As fast and intuitive as 3D surface measurement can be

InfiniteFocusSL is a cost efficient optical 3D measurement system for easy, fast and traceable measurement of form and finish on micro structured surfaces. Users measure both form and roughness of components with only one system. In addition, color images with high contrast and depth of focus are achieved. The long working distance of up to 33mm in combination with its measurement field of 50mm x 50mm allows a wide range of applications. Measurements are achieved in seconds and features, such as a coaxial laser for quick and easy focusing, further increase usability. With an automation interface, InfiniteFocusSL is also applied for fully automatic measurement in production.



Real3D Rotation Unit G2

AdvancedInsertGrip



InsertGrip G2

ToolGrip

GENERAL SPECIFICATIONS

Positioning volume (X x Y x Z)	RL objectives: mot.: 50 mm x 50 mm x 155 mm (Z: 25 mm mot., 130 mm man.) = 387500 mm³ SXRL/AXRL objectives: mot.: 50 mm x 50 mm x 120 mm (Z: 25 mm mot., 95 mm man.) = 300000 mm³
Max. specimen weight	4 kg; more on request

OBJECTIVE SPECIFIC FEATURES

Objective magnification (*)		**10x**	**20x**	**50x**	**2xSX**	**4xAX (**)**	**5xAX**	**10xAX**	**20xAX**	**50xSX**
Numerical aperture		0.3	0.4	0.6	0.055	0.135	0.14	0.28	0.42	0.55
Working distance	mm	17.5	16	10.1	34	30	34	33.5	20	13
Lateral measurement area (X,Y) **(X x Y)**	mm mm²	2 4	1 1	0.4 0.16	10 100	4.87 23.72	3.61 13.03	2 4	1 1	0.4 0.16
Ext. lat. measurement area (X,Y) **(X x Y)**	mm mm²	50 2500								
Measurement point distance	µm	1	0.5	0.2	5	2.44	2	1	0.5	0.2
Calculated lateral optical limiting resolution	µm	1.09	0.82	0.54	5.93	2.42	2.33	1.17	0.78	0.59
Finest lateral topographic resolution	µm	2	1	0.64	10	4.88	4	2	1	0.64
Measurement noise	nm	40	20	10	1240	220	165	45	25	15
Vertical resolution	nm	100	50	20	3500	620	460	130	70	45
Vertical measurement range	mm	16	15	9	25	25	25	25	19	12
Measurement speed	≤ 1.7 million measurement points/sec.									
Accessibility	°	31	29	19	40	48	51	51	39	26

(*) Objectives with longer working distance available on request. (**) Available from Q2 2021.

RESOLUTION AND APPLICATION SPECIFICATIONS

Objective magnification		**10x**	**20x**	**50x**	**2xSX**	**4xAX (*)**	**5xAX**	**10xAX**	**20xAX**	**50SX**
Min. measurable height	nm	100	50	20	3500	620	460	130	70	45
Max. measurable height	mm	16	15	9	25	25	25	25	19	12
Height step accuracy (1 mm)	%	0.1								
Max. measurable area	mm²	2500								
Max. measurable profile length	mm	50								
Min. measurable roughness (Ra)	µm	0.3	0.15	0.08	n.a.	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.	n.a	0.25	0.1	0.08
Min. measurable radius	µm	5	3	2	20	12	10	5	3	2
Min. measurable wedge angle	°	20								
Max. measurable slope angle	°	87								

(*) Available from Q2 2021.

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

Initiative Fair Data Sheet

Specifications in blue mark Alicona specific values.