InfiniteFocus G5

Optical micro coordinate measurement and surface finish measurements in one system

InfiniteFocus is a highly accurate, fast and flexible optical 3D measurement system. Users benefit from a 3D micro coordinate measurement machine and surface roughness measurement device combined in one system. The range of measurable surfaces is almost unlimited. All relevant surface features of micro precision components are measured using only one multifunctional measurement sensor. Users achieve traceable measurement results in a high repeatability and a vertical resolution of up to 10nm. The robust measurement principle of Focus-Variation in combination with a vibration-isolating hardware enables the form and roughness measurement of also large and heavy components. All axes of InfiniteFocus are equipped with highly accurate encoders ensuring precise stage movement. With an automation interface, InfiniteFocus is also applied for fully automatic measurement in production.

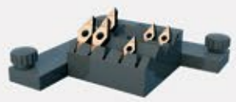
AdvancedReal3D RotationUnit G2

Real3D Rotation Unit G2

RotationGrip

RinglightHP

AdvancedInsertGrip



InsertGrip G2

ToolGrip

alicona

GENERAL SPECIFICATIONS

Positioning volume (X x Y x Z)	100 mm x 100 mm x 100 mm = 1000000 mm^3 200 mm x 200 mm x 100 mm = 4000000 mm^3 200 mm x 200 mm x 200 mm = 8000000 mm^3
Max. specimen weight	30 kg; more on request

OBJECTIVE SPECIFIC FEATURES

Objective magnification (*)		**2.5x**	**5x**	**10x HX (**)**	**10x**	**20x HX(**)**	**20x**	**50x**	**100x**
Numerical aperture		0.075	0.15	0.2	0.3	0.3	0.4	0.6	0.8
Working distance	mm	8.8	23.5	37	17.5	30	19.0	11	4.5
Lateral measurement range (X,Y) (X x Y)	mm	5.63	2.82	1.62	1.62	0.7	0.81	0.32	0.16
	mm^2	31.7	7.95	2.62	2.62	0.49	0.66	0.10	0.03
Extended lateral measurement range (X x Y)	mm^2	6195.26	1548.42	387.30	387.30	96.83	96.83	15.49	3.87
Measurement point distance	µm	3.52	1.76	0.88	0.88	0.44	0.44	0.18	0.09
Calculated lateral optical limiting resolution	µm	4.35	2.18	1.64	1.09	1.09	0.82	0.54	0.41
Finest lateral topographic resolution	µm	7.04	3.51	1.76	1.76	1.17	0.88	0.64	0.44
Measurement noise	nm	800	120	75	30	20	10	3	1
Vertical resolution	nm	2300	410	250	100	80	50	20	10
Vertical measurement range	mm	8	22.5	36	16.5	29	18	10	4
Vertical scanning speed	µm/s	3000	3000	1000 - 3000	1000 - 3000	500 - 3000	500 - 3000	200 - 2000	100 - 1000
Measurement speed	≤ 1.7 million measurement points/sec.								

(*) Objectives with longer working distance available upon request (**) Objective available in special objective configuration
(***) Larger measurement areas possible with data reduction (primarily limited by positioning volume)

RESOLUTION AND APPLICATION SPECIFICATIONS

Objective magnification		**2.5x**	**5x**	**10x HX**	**10x**	**20x HX**	**20x**	**50x**	**100x**
Min. measurable height	µm	2.3	0.41	0.25	0.1	0.08	0.05	0.02	0.01
Max. measurable height	mm	8	22.5	36	16.5	29	18	10	4
Height step accuracy (1 mm)	%	n.a.	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Max. measurable area Optional	mm^2	10000 40000	10000 40000	10000 40000	10000 40000	10000 24780	10000 24780	3965 3965	990 990
Max. measurable profile length Optional	mm	100 200							
Min. measurable roughness (Ra)	µm	7	1.2	0.75	0.3	0.24	0.15	0.06	0.03
Min. measurable roughness (Sa)	µm	3.5	0.6	0.375	0.15	0.12	0.075	0.03	0.015
Min. measurable radius	µm	20	10	5	5	3	3	2	1
Min. measurable wedge angle	°	20							
Max. measurable slope angle	°	87							

ACCURACY

Flatness deviation	1.6 mm x 1.6 mm with 10x objective	U = 0.1 µm
Max. deviation of a height stepmeasurement	height step 10000µm height step 1000µm height step 100µm height step 10µm height step 1µm	$E_{Uni: St: ODS, MPE}$ = 0.8 µm, σ = 0.4 µm $E_{Uni: St: ODS, MPE}$ = 0.5 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 = 0.1 µm Ra = 0.5 µm	U = 0.025 µm, σ = 0.002 µm U = 0.04 µm, σ = 0.002 µm
Area roughness	Sa = 0.1 µm Sa = 0.5 µm	U = 0.02 µm, σ = 0.002 µm U = 0.03 µm, σ = 0.002 µm
Distance measurement	XY up to 1 mm XY up to 10 mm XY up to 20 mm	$E_{Bi: Tr: ODS, MPE}$ = 0.7 µm $E_{Bi: Tr: ODS, MPE}$ = 1.0 µm $E_{Bi: Tr: ODS, MPE}$ = 2.0 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.