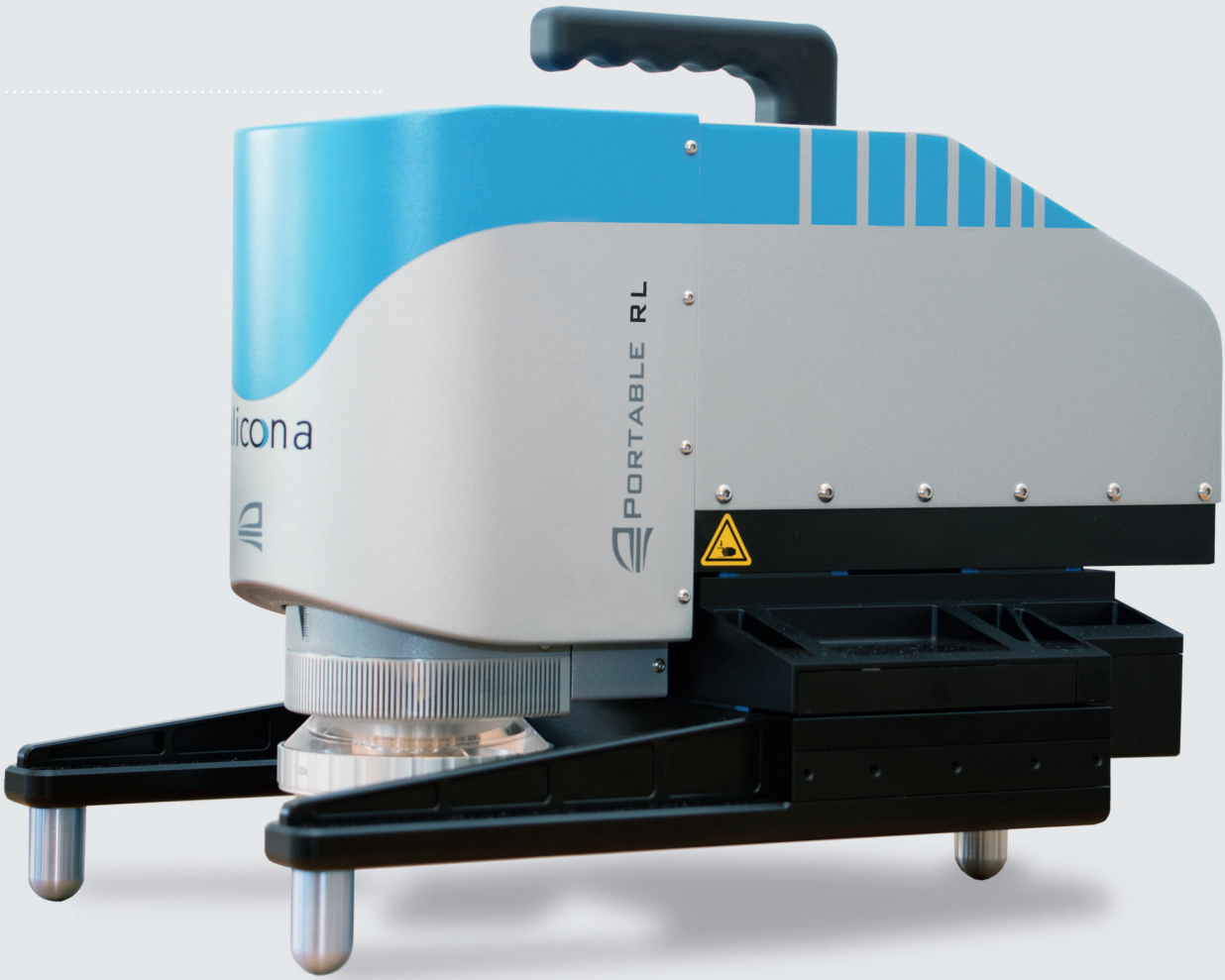
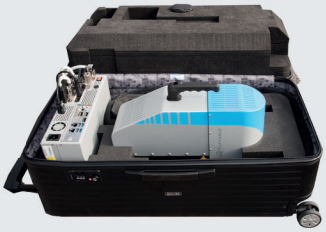
PortableRL

Mobile, high resolution measurement

IF-PortableRL is an optical 3D measurement system for quality assurance of micro structured surfaces. Users verify measurement fields of up to (mm) 50x50x26. The system is applied for both curved and flat components. A battery pack allows a flexible use and mobile positioning, enabling the use of the system wherever needed. A large vertical scanning range allows the measurement of various geometry types and forms. Amongst others, fields of use are platen inspection, asphalt measurement, quality assurance of turbine or rotor blades, 3D measurement of steel and body parts.



Mesurement on a Racetrack



MobilityCase

Battery pack

GENERAL SPECIFICATIONS

Positioning volume (X x Y x Z)	50 mm x 50 mm x 25 mm = 62500mm³

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 mm^2	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
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	60	30	20	1240	220	165	60	30	25
Vertical resolution	nm	150	75	50	3500	620	460	170	90	70
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**
Height step accuracy (1 mm)	%	0.1								
Min. measurable roughness (Ra)	µm	0.55	0.25	0.2	n.a.	n.a.	n.a.	0.65	0.3	0.25
Min. measurable roughness (Sa)	µm	0.30	0.15	0.1	n.a.	n.a.	n.a	0.35	0.15	0.15
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.