

# IF-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.



Measurement on a Racetrack



MobilityCase



Battery pack

### GENERAL SPECIFICATIONS

Positioning volume (X x Y x Z)	50 mm x 50 mm x 25 mm = 62500mm <sup>3</sup>
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### 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 <sup>2</sup>	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	60	30	20	1240	165	60	30	25
Vertical resolution	nm	150	75	50	3500	460	170	90	70
Vertical measurement range	mm	16	15	9	25	25	25	19	12
Measurement speed		≤ 1.7 million measurement points/sec.							
Accessibility	°	31	29	19	40	51	51	39	26

(\*) Objectives with longer working distance available upon request

### RESOLUTION AND APPLICATION SPECIFICATIONS

Objective magnification		10x	20x	50x	2xSX	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.	0.65	0.3	0.25
Min. measurable roughness (Sa)	µm	0.30	0.15	0.1	n.a.	n.a.	0.35	0.15	0.13
Min. measurable radius	µm	5	3	2	20	10	5	3	2
Min. measurable wedge angle	°	20							
Max. measurable slope angle	°	87							

### 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 <sub>Unit: St: ODS, MPE</sub> = 1 µm, σ = 0.1 µm E <sub>Unit: St: ODS, MPE</sub> = 0.4 µm, σ = 0.05 µm E <sub>Unit: St: ODS, MPE</sub> = 0.3 µm, σ = 0.025 µm E <sub>Unit: St: ODS, MPE</sub> = 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 <sub>Bi: Tr: ODS, MPE</sub> = 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<sub>Unit: St: ODS, MPE</sub> & E<sub>Bi: Tr: ODS, MPE</sub> conform to ISO 10360-8

For Sales, Service & Spares contact:

**Optimax**  
Imaging Inspection Measurement

Michael Francis House • 3 Trimbush Way  
Market Harborough • Leicestershire • LE16 7XY  
Registered in England No. 5562754  
VAT No. 780 4974 94

T +44 [0]1858 436940 F +44 [0]1858 436941  
E info@optimaxonline.com www.optimaxonline.com

Fair Data Sheet  
Specifications in blue mark Alicon specific values.