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µsurf solar

- Up to 12 area measurements in 1 minute
- Nanometre accuracy
- Simple and intuitive automation
- Exact measurement of isolation channels
- Alkaline textured surfaces
- Finger measurement with and without lights traps

The optical 3D surface measurement system, µsurf solar by NanoFocus, is a business solution for all mono- and polycrystalline solar applications.

µsurf solar is a high precision optical measurement solution for the broad range of solar applications in laboratory and production. The optimum flexibility allows all measurement tasks to be performed with nanometer accuracy using the confocal technology. This extensive evolution delivers highest stability of data – with highest dynamic and intuitive handling.

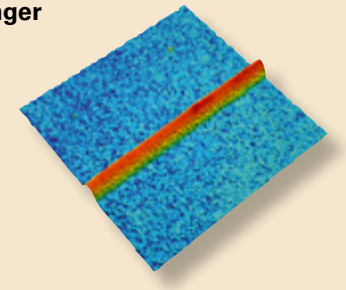
As a business solution, the µsurf solar is adapted to the requirements of solar industry from hard- to software. For instance the positioning tables are available up to the metre range which is required to measure whole solar modules. A vacuum chuck with a bearing area of 210×210 mm^2 guarantees the safe fixture of the solar cell while moving the stages without damaging it.

µsurf solar by NanoFocus enables non-destructive analyses without preparation of the samples. For the 3D inspection system, it doesn't matter if the surfaces possess etched structures or an anti-reflective coating. Also for samples with awkward characteristics such as steep slopes, complex geometries and structures in the nanometre range, µsurf solar delivers exact and repeatable 3D measurement data within a few seconds. For more efficiency during the measurement process, the measurement system can be equipped with a straightforward and industry-sector-specific automation.

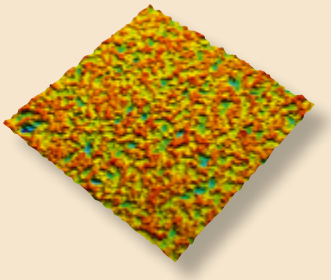
Application

- Structured surface
- Finger measurement
- Sawmarks
- Isolation channels
- Metallization
- Deflection and waviness
- Laserscribes

Finger



Structured surface



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Specifications

Measuring head

Image aquisition module megapixel	Fast digital camera with progressive scan technology, up to 90 fps (Binning), 984 × 984 pixel, 12 bit, firewire
Light source	High efficiency LED (lambda = 505 nm), MTBF: 50,000 h
z-axis module (piezo)	Fast precision scanning module, measuring range: 500 µm
z-axis positioning module	Precision scanning module, range: 100 mm, resolution: 0.1 µm
Off-axis-camera*	Color-off-axis camera with 8×6 mm², field of view for 1×, zoom function up to 10×, ring light
Collision stop	Automatic switch-off in case of collision

* optional

Bridge

Granit measuring stand, dimensions, weight	900×750 mm² (l×w)
Sub-construction	available with active and passive absorbance
Container dimensions	550×660×600 mm³ (l×w×h)
x,y-axis positioning module	motorized x,y-axis positioning table, 200×200 mm², maximum movement speed: 40 mm/s
Sample fixture	Sample fixture with vacuum chuck for solar wafers

Optic modules

	1600 S	800S	800XS***	320S	160S
Magnification	10×	20×	20×	50×	100×
Measuring field (µm)	1600×1600	800×800	800×800	320×320	160×160
Numerical aperture	0.3	0.45	0.6	0.8	0.9
Working distance (mm)	11	3.1	0.9	1	1
Resolution in z-direction (nm)*	20	5	4	2	1
Resolution in x,y-direction (µm)**	1.6 (3.1)	0.8 (1.6)	0.8 (1.6)	0.3 (0.7)	0.2 (0.3)
(Binning mode)	* Noise level, ** pixel resolution, *** included in standard S: normal working distance, XS: short working distance				

Software

µsoft control	NanoFocus measurement and analysis software, profile and topography representation, roughness calculation compilant with DIN EN ISO
µsoft analysis Standard	Software to analyse 3D measurement data, layout function, templates for series measurement and analysis
µsoft automation solar	Software for automated measurement and analysis, including analysis of solar specific measuring tasks

General

PC	High performance industrial PC with Raid system, 19“ TFT monitor
Interfaces	2× Front-USB, 4× USB, 2× LAN
File formats	NMS, OMS, ASCII, SDF, TIF, BMP, MNT, SUR
File size	Single measurement approx. 3 MB, binning 0.8 MB
Typical measuring time	2-10 seconds
Sample properties	High reflectivity differences, alkaline textured surfaces, etched, mono- and polycrystalline , coated, uncoated, reflective to diffuse
Protection class	IP 52
Power supply	100-240 V, 50-60 Hz, input: 550 VA
Accessories	Flatness and calibration standard, working table, housing

Are you interested in other NanoFocus-Technology?
Please call +49 208 62 000-0 or write an email to sales@nanofocus.de

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