

nanome|x

Ultra high-resolution semi-automatic nanofocus™ X-ray system for the inspection of high-end interconnection technology in the semiconductor and SMT industry, with the option of combined 2D/3D operation.



Main Specifications

System Magnification and Resolution

Geometric magnification	up to 2,130x
Total magnification	up to 13,300x
Detail detectability	down to 200 nm (0.2 microns) with nanofocus™ tube
Contrast resolution	down to 0.5 %

X-ray tube

Maximum tube voltage	up to 160kV
Maximum tube power	up to 50W
Dose rate stability	< 0.5 % / 8h

Manipulator

X-Y scanning area	610 mm x 510 mm (24" x 20")
Maximum sample weight	5 kg (11 lbs.)
ovhm - oblique view at highest magnification	view angle up to 70°, rotation 0° - 360°
Control	joystick control (manual mode) and CNC (automatic mode)
Axis speed (X-Y-Z)	10 micron/s to 80 mm/s
Manipulation aids	sample X-ray mapping, click'n-move-to function, click'n-zoom-to function, automatic isocentric manipulator movement, laser crosshair
ACS - Anti-Collision System	may be deactivated for maximum magnification

Image processing

quality assurance (for details see separate data sheet)	comprehensive X-ray inspection software comprising image enhancement functions, measuring functions and CNC inspection programming for semi-automatic inspection
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Radiation Safety

Safety Cabinet	steel with lead shield, lead glass, leakage radiation < 1 µSv/h
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X-ray system for the inspection of
high-end interconnection technology
in the semiconductor and SMT
industry.**

System Dimensions

Dimensions (W x H x D)	2020 mm x 1920 mm x 1860 mm (80" x 76" x 73") (without console, including 300 mm demountable back side extension)
Height adjustable control panel (D)	500 mm (19.5")
Weight	appr. 2600 kg (5720 lbs.)

Configurations

Unique options

X-ray performance monitoring	target check, focus check, resolution test
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Software options

bga module	for automatic BGA solder-joint evaluation incl. automatic wetting analysis
qfp module	for automatic QFP solder-joint evaluation incl. automatic wetting analysis
vc module	automatic voiding calculation software package
ws module	automatic wire sweep software module
repair module	visual interface for rework and failure indication

X-ray tube

General	
Type	open tube, transmission head, 170° cone angle, collimated
Target	tungsten on Be-free support
Filament	tungsten hairpin, pre-adjusted in plug-in cartridges
Vacuum system	oil-free turbo-molecular and roughing pump
High-power nanofocus™ tube	
Voltage/power	160 kV/50W
Detail detectability	200 - 300 nm
Dual-mode nanofocus™ tube	
Voltage/power	100 kV/160 kV/20W
Detail detectability	200 - 300 nm/100 kV - 1 µm/160 kV

Detector

Digital image chains for enhanced and superior resolution	full digital imaging with: highly resolving 4" dual-field image intensifier, 12-bit 1k x 1k digital camera and 17" TFT display
high-contrast set for superior contrast	16-bit digital a-Si diode array detector with Lanex® scintillator foil plus 16-bit quality assurance software for superior contrast resolution at 65,000 shades of grey

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Manipulation

ovhm module 70	0° - 70° oblique view at highest magnification
dual-ovhm module 70	oblique view at highest magnification 0° - 70° with both high-contrast detector and image chain, switching by software
Tilt/Rotate unit	tilt ± 30° and rotation n x 360° for samples up to 2 kg

CT ability (option)

	Upgrade package for combined 2D/3D (computed tomography) operation, comprising precision mechanics, high-contrast detector plus SIXTOS reconstruction software (see v tome x brochure)
Volume reconstruction/acquisition software	SIXTOS
Acquisition time	10 minutes for 500 projections (depending on selected detector integration time)
Reconstruction time	12 minutes (256³ Voxels) to 48 minutes (512³ Voxels), parallel to data acquisition
Algorithm	optimised filtered back-projection (Feldkamp type)
Resolution	down to 2 µm
Maximum geometric magnification (CT)	200 x
Visualisation software	Volume Graphics Studio Max, see brochure

Subject to change without further notice.

Technical Data Sheet nanome|x 1.2

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