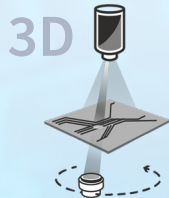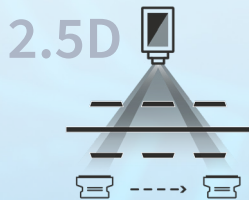**ACQUISITION MODES**
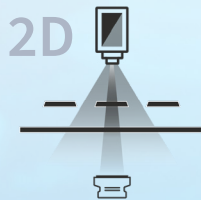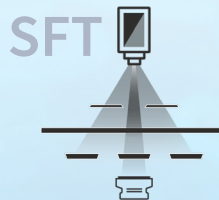
3D

Dynamic Planar CT
The next generation of high-quality 3D inspection, employing high-speed detector motion (3 sec/FoV)

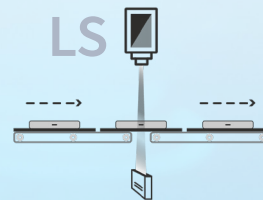## 2.5D

Off-Axis Oblique Angle
Off-axis inspection (≤30°) via detector movement for high performance, oblique angle imaging

2D

Transmission
Orthogonal two-dimensional imaging with moveable sample tray and a fixed detector position

SFT

Slice-Filter-Technique™
Patented inspection technique for golden sample comparison and background removal for analysis

LS

Line Scan
Continuous scanning using a line detector with real time stitching and analysis of large area X-ray images

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Solder Joint Inspection

Power Device Cooling Plates

PTH Inspection

Final Assembly Test Pack (FATP)

Sensor Inspection

LED Inspection

AXI

X3#

X# Series

Automated X-ray Inspection

The X# Series provide an inline or island automated X-ray system platform, covering a wide range of Automated X-ray Inspection (AXI) applications, with three dedicated system configurations to serve the Ultra-High Power (UHP), Surface Mount Technology (SMT) and Final Assembly, Test and Pack (FATP) markets.

UHP - Single DBC and multi-layer IGBT inspection
SMT - PCB Solder Joint inspection
FATP - Partially assembled, fully assembled or packaged electronic products inspection

The X# Series platform is available with up to 5 advanced image acquisition modes, ensuring you have the optimal setup for all your applications and inspection requirements.

Nordson
Test & Inspection

X# Series
Automated X-ray Inspection

Features & Benefits

Advanced Hardware Technologies
- Maintenance free, sealed microfocus X-ray source
- 5-axis programmable motion system
- High-resolution, high-speed digital Flat Panel Detector
- Low dose radiation filters for dose sensitive devices

MIPS Software & Inspection Tools
- 16-bit image processing
- Automatic grey-level and geometric calibration
- Teach&Go for fast and easy inspection creation
- Proprietary advanced algorithm library
- Machine learning based defect classification
- Multi-layer slice extraction and analysis
- Software based warpage compensation available

Traceability and Connectivity
- Automatic barcode read and inspection selection
- Full traceability via MES and SECS/GEM interfaces
- IPC-CFX-2591, IPC-Hermes-9852 and Industry 4.0 ready

Applications

Solder Joint Inspection

Our proprietary advanced algorithm library provides comprehensive solder joint inspection for all standard SMDs and a wide range of Power Hybrids including shunt resistors, capacitors, diodes and multi-layer IGBTs. These sophisticated inspections include solder coverage defect analysis for voiding, bridging, insufficient, missing, head-in-pillow, inside/outside meniscus, non-wetting, lifted lead, heal and toe, foreign material and shorting.

Final Assembly, Test and Pack

Final product checking to evaluate assembly condition, absence of foreign material, presence of all required items and correctness of packing. Including mobile phones, wearables, personal audio and portable computing devices (e.g. tablets and laptops).
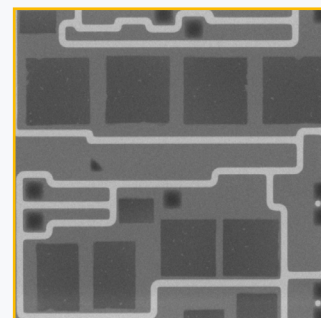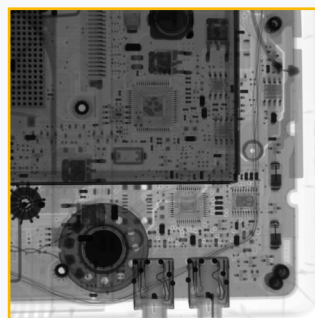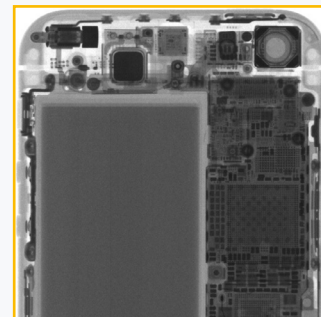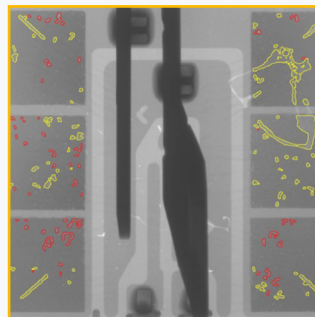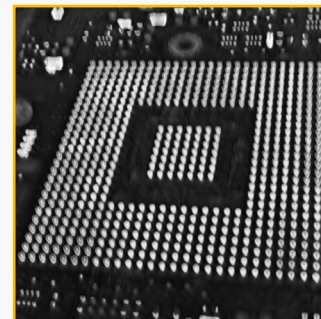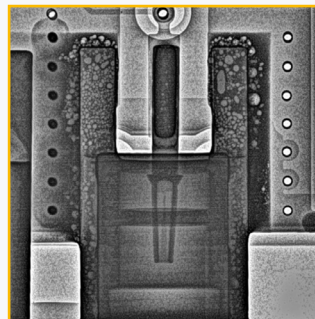
Installation		Installation	
System Dimensions (H, W, D)	1775 mm × 3100 mm × 1760 mm	Max. Power Consumption	2 kVA
Conveyor Height (SMEMA)	950 mm ± 30 mm	Air Supply	5-7 Bar, <2 l/min, filtered (30 μ), dry, oil free
System Mass	3100-3500 kg (config. dependant)	Line Voltage	400 VAC, 50/60 Hz 3 Phase, 16 A / 208 VAC, 50/60 Hz 3 Phase, 25 A
Safe Operating Temperature Range	15-28 °C, optimal 20-25 °C		

X-ray Imaging Chain	UHP	SMT	FATP
Microfocus X-ray Source (sealed tube)	180 kV, 90 W	130 kV, 39 W	130 kV, 39 W
Detector	Large Format FPD	Aspire CMOS FPD	Photon Counting TDI
Detector Pixel Pitch	124 μm	50 μm	48 μm
Detector Active Area	254 × 317 mm, 2560 × 2048 pix	120 × 140 mm, 2782 × 2400 pix	221 × 7.2 mm, 4608 x 150 pix
Detector Max. Frame Rate	22 fps (1× bin), 44 fps (2× bin)	35 fps	20 kHz (1× bin), 15 kHz (2× bin)
Detector Bit Depth	16-bit	14-bit / 16-bit	12-bit / 16-bit

Max. Inspection Speed	UHP	SMT	FATP
Transmission (2D)	3 views/sec	3 views/sec	3000 mm²/sec
Off-Axis (2.5D)	2 views/sec	2 views/sec	-
Dynamic Planar CT (3D)	3 sec/FoV	3 sec/FoV	-

Inspection Parameteres	UHP	SMT	FATP
Max. Sample Size (L × W)	510 mm × 415 mm	510 mm × 415 mm	510 mm × 415 mm
Max. Inspection Area (L × W)	480 mm × 400 mm	480 mm × 400 mm	480 mm × 400 mm
Min. Sample Size (L × W)	100 mm × 115 mm	100 mm × 115 mm	100 mm × 115 mm
Max. Sample Mass	10 kg	5 kg	10 kg
Max. Inspection Angle	25°	35°	-
Max. Resolution (2D, 3D)	15 μm/pix	6 μm/pix	15 μm/pix

Assembly Clearances	UHP	SMT	FATP
Top (incl. sample thickness)	100 mm	100 mm	100 mm
Bottom (excl. sample thickness)	40 mm	40 mm	40 mm
Min. Edge Clearance for Clamping	6.5 mm	3 mm	6.5 mm
Max. Assembly Thickness	-	10 mm	-

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