282x

Ultra Broadband Brightfield Patterned Wafer Inspection System

1. INTRODUCTION

The new 282x wafer inspection system is the next generation ultra broadband brightfield patterned wafer defect inspector with UV and DUV. This inspection technology incorporates a New Stage and Isolation System for lower noise floor characteristics. Re-designed Higher Powered Illumination System and new Sealed UV & DUV Illumination and Collection Optics provide resolution and contrast flexibility for detecting a wide variety of critical defect types of interest. At the heart of the system is the High-Numerical Aperture advanced Zeiss® optics providing high transmission over a wide range of wavelengths with low aberrations and high NA for improved resolution and sensitivities.

2. SYSTEM CONFIGURATION AND OPTIONS

System Configuration	Standard	Option
Windows 2000 based Operating System	X	
Modular Inspection Station	X	
Modular handler	X	
200 mm (8”)		
Dual Open		X
Dual SMIF		*On request*
300 mm (12”)		
Dual Open		X
Dual FIMS		X
6.4 GPPS Image Computer	X	
Pixels (0.23, 0.20, 0.16, 0.12, 0.09 & 0.08 μm)	X	
Small Pixels (0.065 & 0.50 μm)		
Array, Random and Mixed Modes	X	
Flexible Illumination Wavelength Bands (260-450nm)		
Broadband Illumination	X	
Broadband DUV, Blueband, GHI Lines	X	
Narrowband Illumination		
Deepband, I-Line, G-Line	X	
Midband	X	
Advanced Imaging Modes		
High Performance Edge Contract (HPEC), Varied Illumination Bright field (VIB) & Edge Contrast Plus	X	
Logic Imaging Modes		
Memory Imaging Modes		
Multi-Die Auto Threshold (MDAT)	X	
Low Contact Chuck	X	
Integrated ULPA Filter	X	
Data Transfer		
USB	X	
CD/DVD R/W	X	
Ethernet	X	
Wafer Pre-Aligner	X	
Network Communication	X	
User Interface	X	
In-Line Defect Organizer	X	
High Resolution Review Camera & Optics	X	

Defect Clustering and Review Sampling	X	
Mass Memory Edge Die, Mass Memory Edge Cell	X	
Earthquake Restraint	X	
KLA-Tencor Defect Standard Calibration Wafer	X	
Operations/Users Manual - Clean Room (1)	X	
Training		
Training credits to be used towards 2 Operation/Applications courses and 2 Equipment Maintenance courses	X	

282x Model Configuration Summary Continued

System Configuration	Standard	Option
Power Line Conditioner		X
Remote Power EMO		X
HSMS		X
GEM/SECS Automation Interface		X
SEMI E84 PIO for AGV, PGV, & OHT Interface		X
E84 PIO Hardware		X
Basic Automation Package – E39, E87, E90 (Carrier Management/Wafer Tracking)		X
Advanced Automation Package – E40, E94 (Process Job/Control Job Management)		X
Carrier I.D. Readers		X
Signal Light Tower		X
Inserts for 200mm Conversion		
Entegris F300		X
Asyst 9700		X
iDM		X

† ***282x System Specifications[1]***

System Configuration	Specification		
282x Inspection Performance			
BF Sensitivity (DSW Wafer)	**Pixel Size (µm)**	**Array (µm)**	**Random (µm)**
	0.23	0.105	0.160
	0.20	0.085	0.140
	0.16	0.070	0.095
	0.12	0.060	0.075
	0.09	0.050	0.065
	0.08	0.048	0.063
	0.065	0.04	0.058
	0.05	0.035	0.053

System Performance Specification			
Throughput	**Pixel Size (µm)**	**Scan Rate (sec/cm^2)**	
		Array	**Random**
	0.05	8.06	8.06
	0.065	4.91	4.95
	0.08	3.35	3.40
	0.09	2.71	2.77
	0.12	1.65	1.71
	0.16	1.05	1.11
	0.20	0.76	0.82
	0.23	0.72	0.78
Maximum number of die per row	The 282x, operating with v10.5 software supports a maximum of 200 die per row, based on 1.5mm minimum die x dimension, 300mm wafer		
Die Size	1.5mm to 40mm on a side		
Edge Exclusion	3mm		
False Defect Rate	< 1.5% for production worthy recipes.		
Defect Location Accuracy	± 2um radius		
Care Area Border Limits	X=1.5um Y=1.5um		
Backside Contamination	< 9.5 Defects/cm^2/wafer pass Defect Size ≥ 0.12 µm		
Frontside Contamination	< 0.01 Defects/cm^2/wafer pass Defect Size ≥ 0.1 µm		
Cleanliness	ISO Class 2 with Dual FIMS handler		
Repeatability	95% for production worthy recipes		

DSW Matching	90%
Product Wafer Matching	Please refer to separate Product Wafer Matching Specification and Methodology Documents.
Reliability Performance Specification	
Wafer Handling	Errors < 0.01% (1 in 10,000) of wafers inspected Damage < 0.001% (1 in 100,000) of wafers inspected
SEMI Guideline	The definitions of all reliability specifications are based on SEMI E10-0699.
Uptime	≥ 95%
MTBF (HW)	≥ 500 hours (1st 6 months from release, ≥ 650hrs after 6 months)
MTBA (SW)	≥ 50 hours (1st 6 months from release, ≥ 100hrs after 6 months)
MTTR	≤ 12 hours (1st 6 months from release, ≤ 8hrs after 6 months)

System Configuration	Specification
Safety Specification	
SEMI S2-0703	282x is third party certified compliant with SEMI S2-0703 Environmental, Health and Safety Guidelines for Semiconductor Manufacturing Equipment
SEMI S8-1103	282x is third party certified compliant with SEMI S8-1103 Safety Guidelines for Ergonomics Engineering of Semiconductor Manufacturing Equipment
SEMI S14	282x is third party certified compliant with SEMI S14 -1103 Safety Guideline for Fire Risk Assessment and Mitigation
CE Mark	282x is compliant with European Union CE Mark requirements
NFPA 79	282x is third party certified compliant with NFPA79 safety standard
Seismic Restraint Kit	Standard with tool

Quality Control	
ISO9002	The 282x manufacturing process is ISO 9002 registered
Software CMM	282x SW is currently Level 3 certification

General System Configuration/Capabilities	
Wafer Size and Thickness	200mm/8inch (M1.9-0699 & M1.10-0699) & 300mm/12inch (M1.15-0600) wafer size and thickness for silicon wafers conforming to SEMI Standard (M1-0600) dimensions

Cassette Boat/FOUP Compatibility	Various cassettes and FOUPs are compatible. Contact WIN Division representative for compatibility
Exterior Panel/Skins	Standard skins for 282x are painted with KLA-Tencor cool white paint
Software Version	Standard SW configuration for all 282x tools is currently v10.5, a Windows 2000 based GUI

System Configuration	**Specification**	
Facility Interface and Installation (Reference Site-Prep Manual for Full Details)		
System Dimensions	**System Configuration**	**Dimension (H, W, L) in meters**
	Inspection Station	2.328, 1.251, 1.876
	Dual Open Handler	1.915, 1.332, 0.874
	Dual SMIF Handler	1.881, 1.296, 1.051
	Dual FIMS Handler	1.872, 1.519, 1.219
	Image Computer	2.081, 0.740, 1.405
	Customer Interface	1.403, 0.889, 0.889
	Power Line Conditioner	0.762, 0.514, 0.864
	* Dimensions do not include required service clearance referenced in SPM.	
Electrical Input	208 VAC 3 phase WYE nominal With Power Line Conditioner: 208, 240, 380, 416, or 480 VAC	
System CDA	Please reference SPM	
Optics CDA	Please reference SPM	
Nitrogen	Please reference SPM	
Vacuum	Please reference SPM	
Vibration Pad Specifications	Please reference SPM	
Network	1 RJ45 10/100Base T network drop for 282x system, 1 for Satellite or Impact ADC Manager, 1 for ILM product. 1 shielded cable w/ 25 pin female DSUB connector for optional SECS II communication.	