SPECIAL WAFER HANDLING

By Quartet Mechanics

Quartet MECHANICS

Wafer Sorter/EFEM

This versatile sorter/EFEM features handling wafers of 4" ~12" in size (with little to no change over required) and 50~1700 μm in thickness. Special intelligence is designed to safely pick, map, align and capture ID for special wafers of wide range.

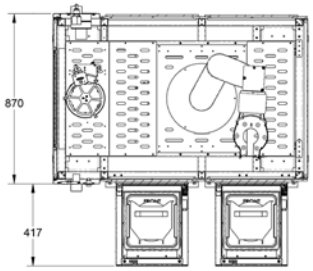
Feature

- 200/300mm wafer bridging, or 50~1700 μm in one, without changeover
- SoftTouch endeffector and aligner, degree of repeatability: 30 μm / 0.03°
- Multiple upgrade options: front side pick, flipper, transfer special wafer (glass, perforated, or other highly fragile)

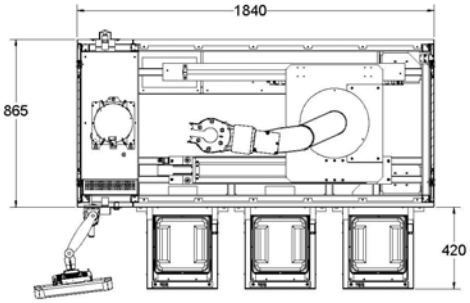
Specification

Standard Configuration		THIN WAFER	MULTI-SIZE	HIGH SPEED
Model #		SX50-TN	SX50-MS	SX00
Wafer size	Diameter	200 & 300mm	200 & 300mm	300mm
	Thickness	50~1700μm (warpage up to 5mm)		Standard
Carrier		cassette/ SMIF Pod	FOUP & SEMI-Std FOSB/ cassette	FOUP & SEMI-Std FOSB
Platform	Auto Port #	2 ~4	2~4	2~4
	Specification	Auto port with RFID & mapper; class 10 cleanliness, ESD		
Placement	Position Repeatability	0.1mm		
	Angle Repeatability	0.03º (optional 0.01º)		0.03º
Speed	Throughput	100~200	100~200	300~1500
Component	Robot	SCARA/ single arm		Dual Wrist/ Dual Arm
	End Effector	Vacuum, optional edge grip (1 ea)		Vacuum, optional edge grip (2 ea)
	Aligner	Vacuum, optional edge grip (1 ea)		Vacuum, optional edge grip (2 ea)
	OCR	1 or 2 ea		2ea
Software	OS	Manufacturer's standard operation system		
	User Interface	English or/and Chinese GUI		
	Equipment Interface	TCP/IP or RS232		
	Factory Interface	SECS/GEM communication		

Configuration



S250-TN
2-port / Thin Wafer



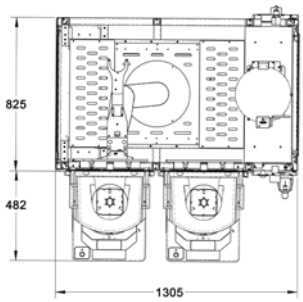
S350-TN
3-port / Thin Wafer

50~1200 μ m thin 5mm warpage

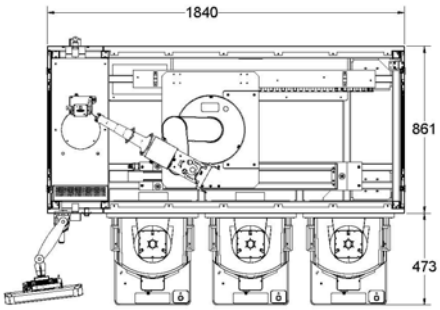
Non-contact vortex end effecter with built in mapper

SMIF with cassette adapter or open cassette

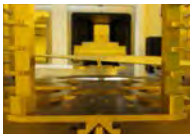
Optional flipping



S250-MS
2-port / Multi Size



S350-MS
3-port / Multi Size

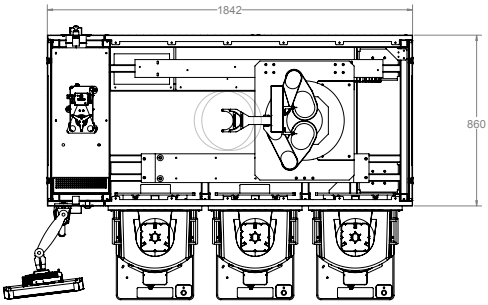


300~1700 μ m, thick 8mm wafer distortion

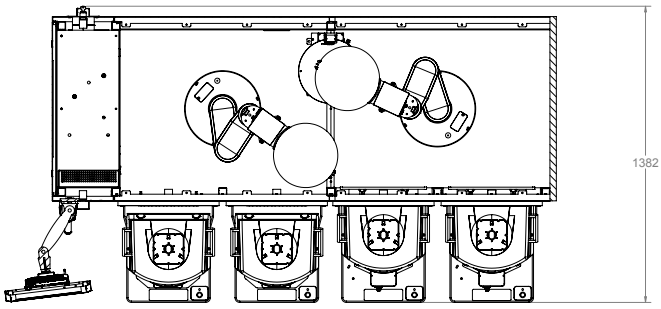
Non-contact edge gripper for 8&12" wafers

8"/12" loadport with cassette adapter

User friendly GUI



S300
3-port / High Speed



S400
4-port / High Speed

Wafer Packer

Prelude AWP family of wafer packing systems provides superior performance at an affordable price. The AWS platform has been optimized to provide a uniform solution for the transfer of wafers of most sizes and thicknesses.

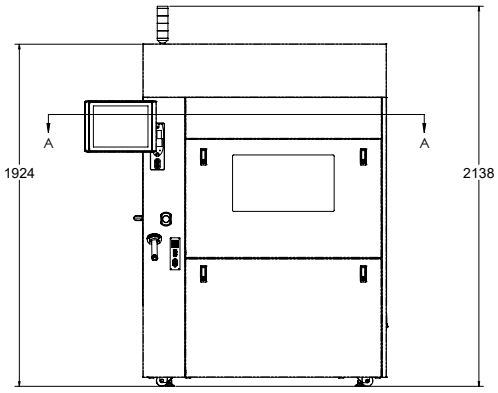
Feature

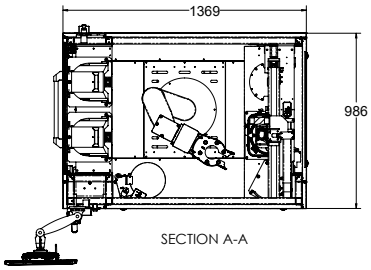
- Compatible for multi wafer sizes
- For special wafer: thin or thick, glass, perforated, warpage
- Non-contact handle wafer facing down or up

Specification

Standard Configuration		Non-Contact	High Speed
Wafer size	Diameter	150&200mm	150&200mm
	Thickness	50~1700μm	
Carrier	Cassette	13, 25 slots cassette	
	Canister	Zero-movement, standard, cake compatible	
Platform	Auto Port #	2 ~4	2~4
	Specification	Canister pack/unpack device. SCARA/R-Theta Robot with variety of endeffector and build in mapper. Variety of Aligner option	
Placement	Position Repeatability	0.1mm	
	Angle Repeatability	0.03º	
Speed	Throughput	80 unpacking, 100 packing	150 unpacking, 120 packing
Component	Robot	4 axis SCARA	3 axis R-θ
	End Effector	Non-contact vortex endeffector	Contact vortex endeffector
	Aligner	Vacuum/Edge grip	
	Packing Head	Non-contact packing Head	Contact packing head
	OCR	1 ea	
Software	OS	Manufacturer's standard operation system	
	User Interface	English or/and Chinese GUI	
	Equipment Interface	TCP/IP or RS232	
	Factory Interface	SECS/GEM communication	

Configuration

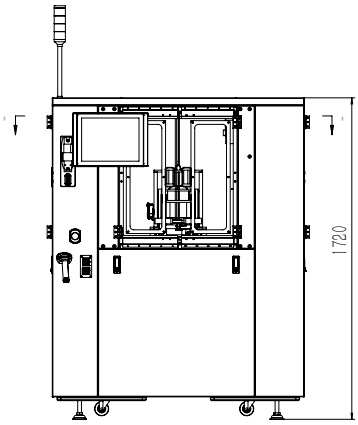


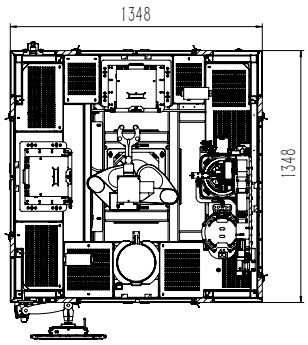


Non-contact model

For taiko thin wafer

Non-contact endeffector and aligner





High speed model

High speed packer's appearance

Zero thickness wafer presence(ZTWP) sensor for endeffector

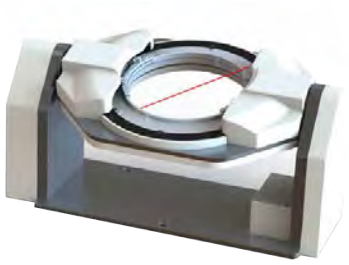
Microscope Auto Loader

This loader employes the most advanced handling technology, featured by a versatile platform that accommodates all sorts of carriers and wafers.

Feature

・Adjustable 6"/8" and 8"/12" wafers, for FOUP, FOSB, SMIF and cassette

・245° self-tilting function for a complete macro inspection of the top and back surface, even for ultra thin wafer



Specification

Standard Configuration		WL200-A	WL200-B	W300-A	W300-B
Wafer size	Diameter	200mm	200mm	300mm	300mm
	Thickness	50~1700μm		Standard Wafer	
Carrier		SMIF/cassette		FOUP/FOSB	
Platform	Auto Port #	1~2			
	Specification	Auto Port with RFID & Mapper			
Placement	Position Repeatability	0.2mm	0.1mm	0.2mm	0.1mm
	Angle Repeatability	0.03°			
Component	Robot	3 axis R-θ	4 axis SCARA	3 axis R-θ	4 axis SCARA
	End Effector	Vacuum/Edge grip /Vortex			
	Aligner	Vacuum/Edge grip			
	Marco Inspection Station	360 rotate degree Wafer inspection, 45 Tilt degree 2 side easy inspection			
Software	OS	Manufacturer's standard operation system			
	User Interface	English or/and Chinese GUI			
	Equipment Interface	TCP/IP or RS232			
	Factory Interface	SECS/GEM communication			

Laser ID Marker

This ID marker is equipped with a 3-axis simultaneous laser control system that creates precise marking and improves the accuracy of marks on large flat surfaces.

Feature

- For fine-line standard or custom font, image, bar code/2D matrix & scribing
- For glass, thin or thick wafer

Specification

Standard Configuration	DM-200/DM-300
Marking area	300*300mm
Marking resolution	5μm
Scan speed	6000mm/s
Character type	Std or custom font, bar code, 2D-code, GS1 DataBar, bmp/jpg image
Scribing/cutting	Line, dot, circle, oval etc.
Laser type	CO_2 laser, class 4 laser product
Supply	100 to 120 VAC / 200 to 240 VAC 50 / 60 Hz 1500 VA
Cleanliness	Class 10 cleanliness
Control Logic	ASCII command string
Communication	RS232, RS422, RS485, Ethernet

Robot

4-axis dual arm robot

Wafer Size	100~300mm		
Robot Model Type	Cylindrical coordinate type		
Operating Range	From the robot center to the wafer center	Rotation Angle (Theta-axis)	Vertical Stroke (Z-axis)
	575mm	340deg	300mm
Carrying Speed (Ave.)	Arm (R-axis)	Rotation Angle (Theta-axis)	Vertical Stroke (Z-axis)
	570mm/sec	220deg/sec	200mm/sec
Carrying Speed (Max.)	Arm (R-axis)	Rotation Angle (Theta-axis)	Vertical Stroke (Z-axis)
	1140mm/sec	270deg/sec	250mm/sec
Carrying Speed (Max.)	Arm (R-axis)	Rotation Angle (Theta-axis)	Vertical Stroke (Z-axis)
	Below 10.0μm	0.0015deg	2.0μm
Repeatability	Within ±0.1mm		
Cleanliness	ISO Class 2 driving part		

4~5-axis SCARA robot

Wafer Size	100~300mm	
Robot Model Type	SCARA	
Speed	Z-axis full stop to full stop	Z-axis maximum speed
	328 mm in 1.5 sec	285mm/s
Joint Angular	180° /sec	
Shoulder Joint	±320°	
Max Joint	320° /sec 7.3" arm	
Velocity	300° /sec 10.7" arm and dual wrist	
MTBF	43,000 hours, 17,000,000 cycles	
MTTR	Less than 2 hours	
Repeatability	± 50μm	
Cleanliness	ISO Class 1	
Interface	Ethernet or RS232	

Loadport

Auto Loadport modules provide realiable performance for multi size wafer.

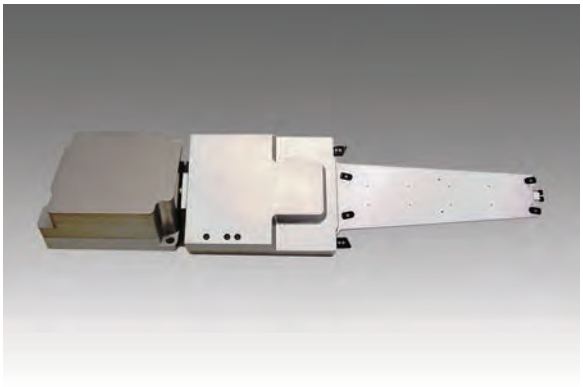
Feature

- Compatible for 8" and 12" wafers
- Compatible for FOUP, FOSB and cassette (with adpater)
- Auto detect different type of FOUP
- RS485/ Ethernet communication
- Optional RFID reader, mapping sensor, E84

Specification

External Dimensions and Weight	Full Height		1359mm	
	Full Width		475mm	
	Depth		485.5mm (from BOLTS plane)	
	Weight		35kg (excluding options)	
Operation Times	Without mapping	Load	Max. 8sec	
		Unload	Max. 8sec	
	With mapping	Load	Max. 11sec	
		Unload	Max. 8sec	
Docking Mechanism	FOUP/FOSB/cassette clamp		Front retaining feature (Air driven)	
	FOUP/FOSB/cassette door lock		Vacuum suction	
	Docking stroke		70mm	
	Repetition accuracy		±0.1mm	
Utilities	Clean dry air	Pressure	0.40~0.60Mpa (G)	6mm outer-diameter air tube
		Flow	30L/min (ANR)	
	Vacuum	Pressure	-61±10kPa (G)	6mm outer-diameter air tube
		Flow	10L/min (ANR)	
	Power Source		24VDC±5%, 3A(2-A at full load) Breaking	

EndEffector



Edge Grip Endeffector (SoftTouch)

The slightest contact between gripper tips and the wafer edge sends a signal to the device's control mechanism, which in turn calculates and applies the applicable pre-programmed gripping force. This feature prevents particle generation and enables secure hold with constant gripping force.

Vortex Endeffector

This vortex type end effector is contactless: the compressed air arrives at the vortex cup tangent to the circumference and creates an area of very low pressure in the center of the cup. The gripper's minimal airflow require-ments and our edge grip SoftTouch feature clearly distinguishes it from other wafer han-dling products.

Specification

Standard Configuration	Edge Grip
Wafer Size	200/300mm
Gripping Force	0.3~9N
Contact zone	<0.5mm
Robot	3~6 axis robot
Static Discharge	E78 level compliant
Placement Accuracy	Linear<50μm, Angular <0.10°
Allowance of Wafer diameter	300mm ±2mm 200mm±2mm
Allowance Wafer displacement	3mm ~ 5mm
Gripping speed	0.1~0.3 sec
Cleanliness	ISO class 1
Operating Environment	Ambient, or special for wet, harsh environment
Power	0.35A/24V
Control Logic	ASCII command string
Communication	I/O, serial or CAN

Standard Configuration	Vortex
Wafer Size	100~300mm
Wafer Thickness	50~800μm
Gripper Blade Thickness	<3.5mm
Wafer Space to End Effector	~100μm
Compressed Air	2~5 bar
Power	24 VDC, 350mA
Control Logic	ASCII command string or Digital I/O
Communication	I/O, serial or CAN

Aligner

Edge Grip Aligner

Thin Wafer Aligner

Multi-size Aligner

Non-contact Centering Stage

Specification

Standard Configuration	CVP-200/300	GRA-200 GRA-300	CTR-200 CTR-300	EGP-200 EGP-300
Wafer Profile				
Size	8", 12" (diameter allowance +0.05mm/-2.0mm, max 3mm off center)			
Bridge	Automatic software driven		20-minute manual change over	
Thickness	250μm~1200μm	50μm~1700μm		
Warpage	<2mm	<8mm		
Material	Silicon/compound/glass, bare/polished, perforated			
Function				
Contact	Back side contact	Non contact(exclusion zone grip)		
Centering	SoftTouch edge grip	Tip assisted	SoftTouch edge grip	
Notch/Flat finding	Vacuum grip spin	Friction pad	None	Edge grip spin
Repeatability	±50μm/0.01°	±30μm/0.01°		
Avg Speed	4.5 sec		2 sec	10 sec
Buffer (option)	Yes	Yes	No	Yes

Robotics. Solutions. Intelligence.

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