

Semiconductor Wafer Handling Robot SEMISTAR-MR124

Pre-aligner : SEMISTAR-PVR1130
Controller : SR100

Evolved Robot from SEMISTAR-M Series Industry-leading Performance!

Features

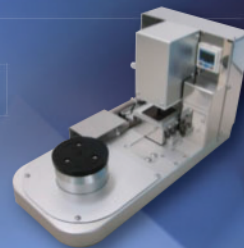
Throughput **50% UP**

- ◆ Robot arm optimum design
light weight and Low inertia moment
- ◆ Velocity composition functionality
Optimize single axis motion and composed axes motion
- ◆ Shortcut motion path generating functionality
Determines the shortest path with the starting and ending points.

Wafer placement repeatability **50% UP**

Motion range **30% UP**

One robot can cover excellently widely.



PVR1130



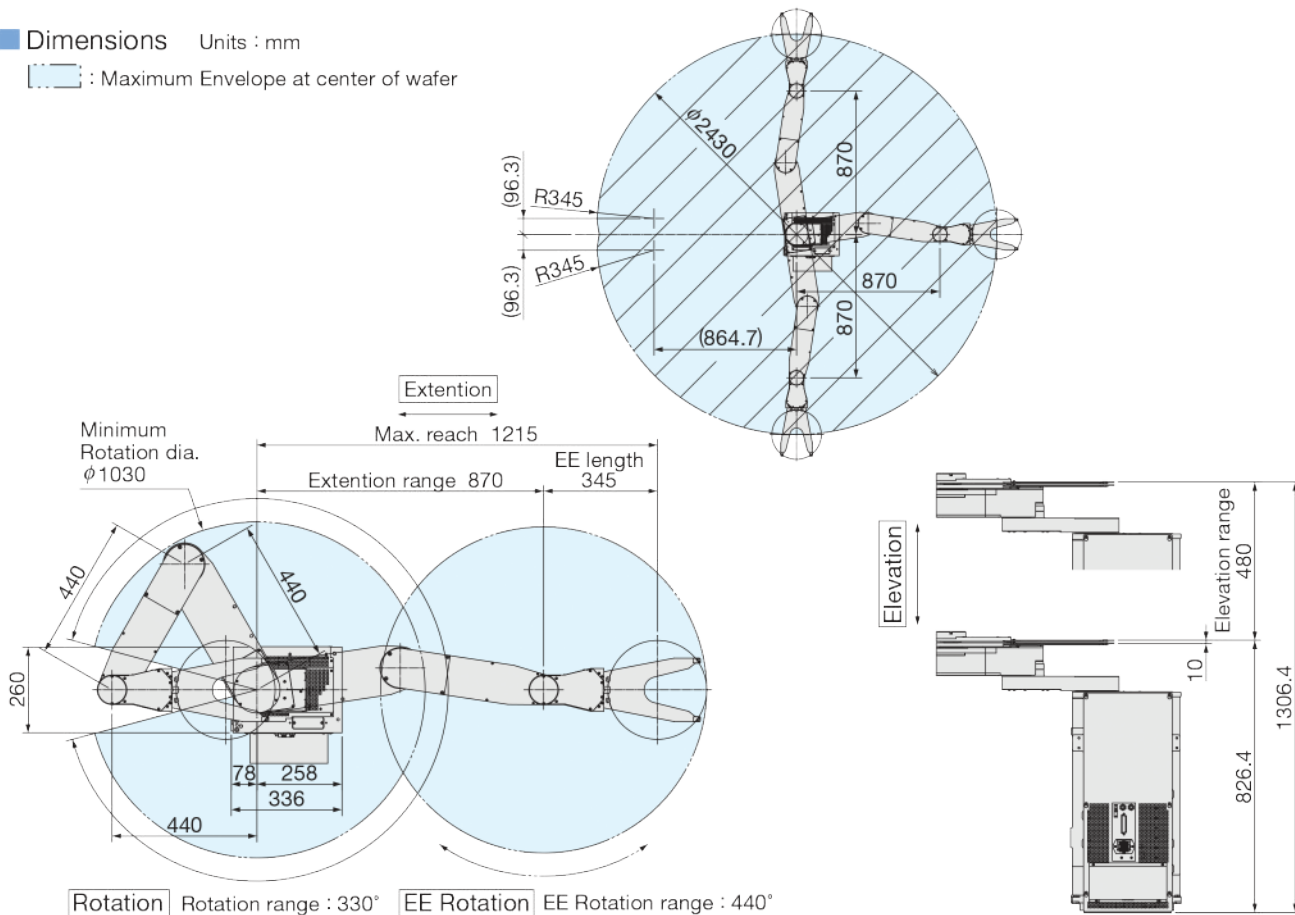
MR124



SR100

■ Dimensions Units : mm

□ : Maximum Envelope at center of wafer



SEMISTAR-MR124

■ Manipulator & Pre-aligner Specifications

Items		Specifications	
Applicable Wafer Size		300 mm (450 mm)*1	
Applicable Wafer Grip System		Vacuum or Edge grip	
The Length of Standard EE*2		345 mm for 300 mm wafer	
The Number of Axis		5 axes	
Arm Type		Single	
Manipulator	Motion Range	R-axis (Extend/Retract)*3	1215 mm
		θ -axis (Rotate)	330°
	Z-axis (Up/Down)		480 mm
		B-axis (EE rotation)	440°
		Minimum Rotation Radius*2	510 mm
Max. Speed*2	Extend/Retract	260°/s	
	Rotation	330°/s	
	Up/Down	550 mm/s	
	EE Rotation	350°/s	
	Linear Motion	2000 mm/s	
Position Repeatability*2		0.1 mm (P-P)	
Mass		66 kg	
Applicable Wafer Size		300 mm	
Applicable Wafer Grip System		Vacuum	
Detecting Subject		Notch	
Material of Wafer		Silicon*4	
Wafer Edge Detection Sensor		LED + CCD line sensor	
Pre-aligner	Motion Range	Rotation	No limit
	Max. Speed (Acc/Dec Time)	Rotation	1000°/s (0.1 s/0.1 s)
Alignment Accuracy		$\pm 0.03^\circ$	
Alignment Time		1.7 s or less	
Mass		5.8 kg	
Clean Class*5		ISO class 1	
Ambient Conditions	Operating Environment		Temperature : 20 – 30°C Humidity : 35 – 55%RH (no-condensing)
	Storage Environment		Temperature : 0 – 40°C Humidity : 20 – 80%RH (no-condensing)
	Altitude		1000 m or below
	Ambient		Free from explosive, inflammable, and corrosive gasses
	MCBF		15 M cycles

- *1 : Yaskawa's standard EE (300 mm : EG/VG, 450 mm : VG)
 *2 : 300 mm wafer (SEMI compliant), using Yaskawa's standard 300 mm EE
 *3 : From the 1st arm rotation center to Wafer center on the Yaskawa's standard EE (for 300 mm wafer)
 *4 : SEMI compliant wafer. If using special wafer, contact your Yaskawa representative. Quartz wafer might be applicable (We have experiences), but the parameter value depends on the Quartz specification. We need to evaluate and adjust the parameters.
 *5 : By Vacuum suction with 0.3 m/s down flow

■ Controller Specifications

Items	Specifications
Configuration	Self-stand/Forced air cooling (Air inlet on the front, top, bottom and right side panel, and air outlet on the rear panel)
External Dimensions	425 (W)×430 (D)×160 (H) mm (Volume 29.3 liters or less)
Approx. Mass	19.5 kg
Installation Direction	Horizontal/Vertical
Accessibility to Connector and Switch	Only front panel
Case Surface	Painted
Operating Temperature/Humidity	0 – +40°C, 90% max. (non-condensing)
Storage Temperature /Humidity	– 10°C – +60°C, 90% max. (non-condensing)
Altitude	1000 m or below (Derated if over than 1000 m)
Ambient	Free from explosive, inflammable, and corrosive gasses
Vibration Resistance /Shock Resistance	9.8 m/s ² / 49 m/s ²
Input Power Supply	3-phase 200 – 230 VAC, +10%/–15%, 50/60 Hz 1-phase 200 – 230 VAC, +10%/–15%, 50/60 Hz
Grounding	Ground resistance 100Ω or less
Communication (for HOST)	Ethernet 10BASE-T/100BASE-TX, 2 port (HUB) 2 slot capability
Optional Board Slot	· I/O board (32 inputs/32 outputs), (1 slot size) · RS-232C communication board (1 slot size)
AC Servo Driver	6 axes
Position Control	Serial communication (absolute encoder)
Acceleration and Deceleration Control	Software servo control
Applicable Motor	YASKAWA sigma V servomotors
Battery	For SRAM
Stop Functionality when Turning Off the Power	Dynamic brake stop
Instantaneous Power Interruption Capability	20 ms
SEMI F47	Met by software (Limitation)
Safety Function	Design in according to ISO 13849-1, category 3 (PL=d)
Pre-aligner Interface	1 Pre-aligner capability (Pre-aligner board is already installed.)
Teaching Pendant	Optional parts. (Dummy connector is attached on controller)
MTBF	More than 100,000 hours (calculation)

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