

Semiconductor Wafer Handling Robot SEMISTAR-MR124

Prealigner: SEMISTAR-PVR1130
Controller: SR100

Advanced form of the SEMISTAR-M Series Industry-leading Performance!

Features

Throughput **50% UP**

- ◆ Robot arm optimum design
Lightweight and low inertia moment
- ◆ Velocity composition functionality
Optimized for standalone operation and combined operation
- ◆ Shortest path generation functionality
Determines the shortest path with the starting and ending points

Wafer placement repeatability **50% UP**

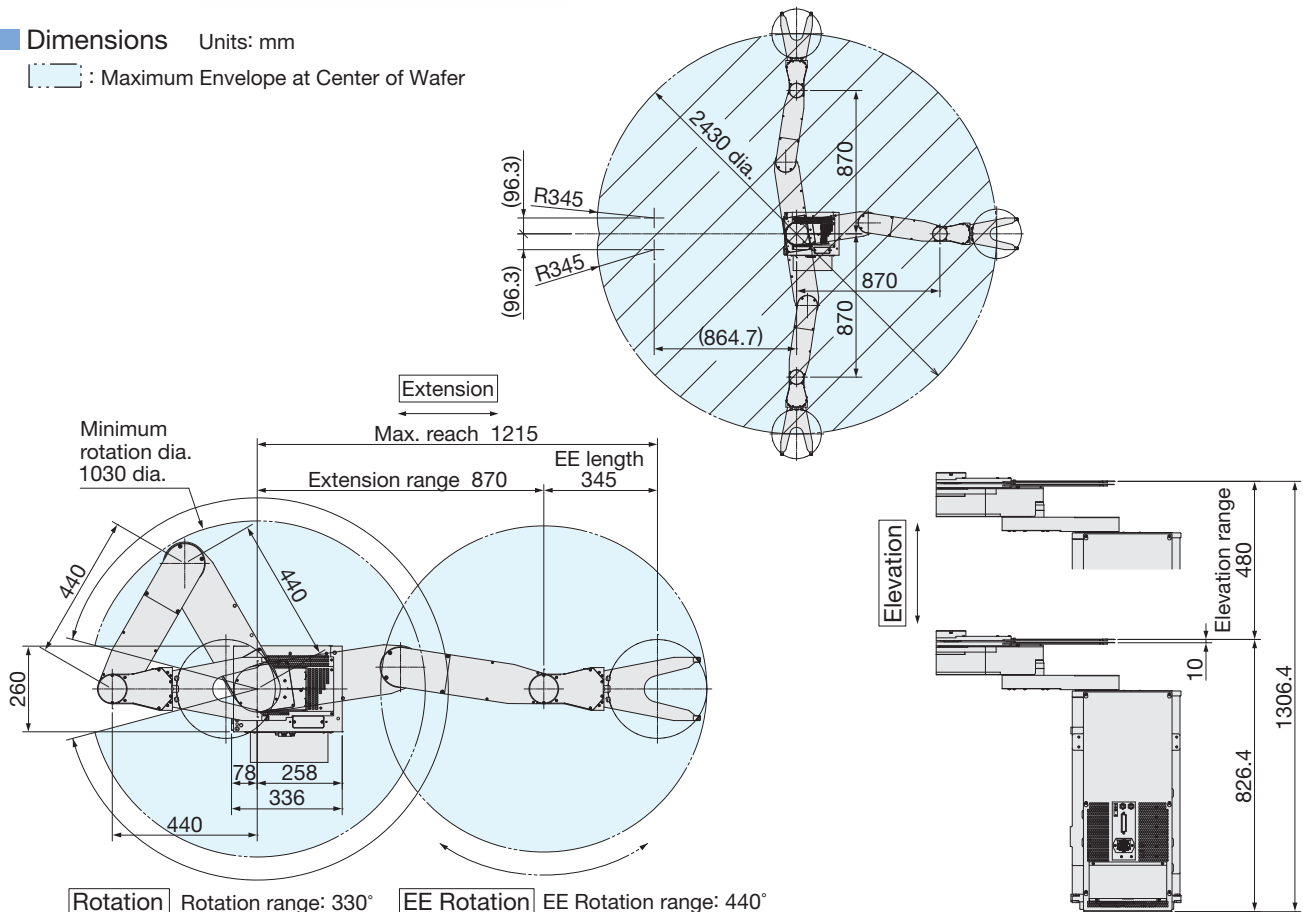
Motion range **30% UP**

- ◆ Covers a wide range of applications with a single base robot



Dimensions Units: mm

□ : Maximum Envelope at Center of Wafer



SEMISTAR-MR124

■ Manipulator & Preamplifier Specifications

Items		Specifications	
Manipulator	Applicable Wafer Size	300 mm (450 mm)*1	
	Applicable Wafer Grip System	Vacuum or edge grip	
	Length of Standard EE*2	345 mm for 300-mm wafer	
	Number of Axis	5 axes	
	Arm Type	Single	
	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		
Preamplifier	Applicable Wafer Size	300 mm	
	Applicable Wafer Grip System	Vacuum	
	Detection Target	Notch	
	Material of Wafer	Silicon*4	
	Wafer Edge Detection Sensor	LED + CCD line sensor	
	Motion Range	Rotation	No limit
		Max. Speed (Acc/Dec Time)	Rotation 1000°/s (0.1 s/0.1 s)
	Alignment Accuracy	±0.03°	
	Alignment Time	1.7 s or less	
	Mass	5.8 kg	
	Clean Class*5	ISO class 1	
Ambient Conditions	Operating Environment	Temperature: 20°C – 30°C Humidity: 35% – 55%RH (non-condensing)	
	Storage Environment	Temperature: 0°C – 40°C Humidity: 20% – 80%RH (non-condensing)	
	Altitude	1000 m or below	
	Atmosphere	Free from explosive, inflammable, and corrosive gas	
	MCBF	15 M cycles or more	

- *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 : Center of manipulator rotation to center of wafer when using Yaskawa's standard 300-mm EE.
 *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 (supports vertical and horizontal)/ Forced air cooling (Air inlet on the front, side, top, and bottom panel, and air outlet on the rear panel)
	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°C – +40°C, 90%RH max. (non-condensing)
Storage Temperature /Humidity	– 10°C – +60°C, 90%RH max. (non-condensing)
Altitude	1000 m or below (Derated if over than 1000 m)
Atmosphere	Free from explosive, inflammable, and corrosive gas
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 100 Ω 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 communications (absolute encoder)
Acceleration and Deceleration Control	Software servo control
Applicable Motor	YASKAWA Σ -V AC servomotors
Battery	For CPU memory backup
Stop Functionality when Turning Off the Power	Dynamic brake stop
Instantaneous Power Interruption Capability	20 ms
SEMI F47	Supported software (subject to limitations)
Safety Function	Design according to ISO 13849-1, category 3 (PL = d)
Preamplifier Interface	Compatible with 1-axis prealigner (Preamplifier board is already installed.)
Teaching Pendant	Optional parts (Dummy connector is attached on controller)
MTBF	More than 100,000 hours (calculation), MCBF defined for robot system

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