DIAMOND H5 TECHNICAL SPECIFICATION

Technical Details

Servo Axes	Range of Motions	Maximum Velocity	Maximum Acceleration	Axis Repeatability
T - Arm rotation	> 500° (Optional – Infinite rotation)	180 °/sec	360 °/sec²	+/- 0.01°
R - Arm extension	+/- 19.883" (505mm) hard stop to hard stop of 2-Links arm 2 x 10.039" (2 x 255mm) +/- 19.685" (500mm) usable span with software limits	25 inch/sec	90 inch/sec²	+/- 0.001" (0.025mm)
Z - Vertical travel	1.456" (37mm) hard stop to hard stop 1.377" (35mm) usable span with software limits	4 inch/sec	12 inch/ sec²	+/- 0.001" (0.025mm)

Wafer Size	2" (50mm) to 12" (300mm)	
Payload (including end effector)	1.2 kg (2.65 lbs)	
Weight	29.5 kg (65 lbs) without an end-effector	
Motor Type	Brushless, low inertia high response	
Encoders Type	Absolute, 32768 counts/rev on motor shaft	
Facility Requirements	Voltage range: 100-120 VAC, 200-240 VAC	
Control Interface	Serial communication via RS-232 and Ethernet (Telnet),	
	Teach pendant terminal serial interface;	
	RS232 interface for slave devices;	
	General purpose digital I/O .	
Cleanliness	Class 1	
Vacuum Rate	Base Vacuum	Up to $1x10^{-9}$ Torr
	Leak Rate	< $1x10^{-9}$ std.cc/sec He
Materials exposed to Vacuum	Aluminum, Stainless Steel , Bellows (AM-350 SST Annealed), Ferro-magnetic sealing fluid, Viton, Lubricant (Fomblin/Krytox Blend)	
Operating Temperature	In vacuum (flange, arm, end effector)	Up to 50°C (122°F)
	In atmosphere (robot body)	10°C - 40°C (50°F - 104°F)
Mounting Configuration	Customizable flange with top or bottom mounting bolts	
	(Shown with 11" Top mounting flange)	
Arm Size	2 Links,	
	2 x 10.0394" (2 x 255mm)	
Body Dimensions with a built-in controller and power supply. (No external controller required)	Length	17.894" (454.5mm) without Mounting Flange
	Diameter	9.41" (239mm)
Mounting Hole Diameter (for Top Mounting)	Recommended	9.50" (242mm)
	Maximum	Flange dependable
Min. Working Envelope	24" diameter (with 15.65" long end effector, holding 300mm wafer and 12mm safety gap)	

DIAMOND SERIES

DIAMOND H5 - IN VACUUM WAFER HANDLING ROBOTS

The Diamond H5 series vacuum robots represent a significant engineering advancement in the design and reliability of wafer handling equipment.

Benefiting from technologically superior components, the robots utilize ultra low inertia, high-response brushless servomotors coupled with zero-backlash Harmonic Drive® gears to achieve greatly enhanced dexterity and precision.

The innovative, all-in-one design incorporates the motion controller, servo amplifiers, and power supply within the robot's industry standard footprint.

High-strength structural members enable mounting on either top or bottom surface of flange without compromising system rigidity.

Networkable RS-485 and Ethernet interfaces complement the standard RS-232 and teach pendant connections.

Powerful native wafer handling and scripting languages facilitate rapid software development for embedding the robots into an OEM application environment.

Comprehensive emulation of legacy robot "macro" commands offers a drop-in compatibility with a wide variety of existing semiconductor tools.

FEATURES

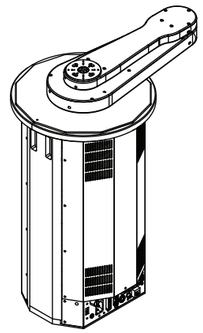
- Modular and highly customizable design
- Fully integrated motion controller, servo amplifiers and power supply
- High response brushless motors and precise zero-backlash Harmonic Drive® gears
- Standard RS-232 interface and Ethernet (Telnet) interfaces to the host computer
- Advanced 32-bit real-time motion control kernel
- Powerful wafer handling firmware
- Comprehensive software tools and utilities
- Software emulation for legacy robot macro commands
- Optional teach pendant terminal
- General purpose digital inputs and outputs for custom use
- Reliability – MTBF > 60,000 hours

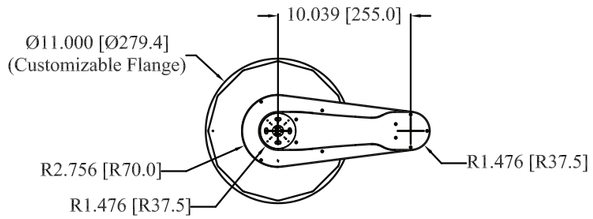
Made in USA by Milara, Inc. (www.milara.net) • Designed by Logosol, Inc. (www.logosolinc.com)
Contact: Milara, Inc. 4 Marc Road Medway MA, 02053 USA Ph: (508) 533-5322 diamond@milara.net

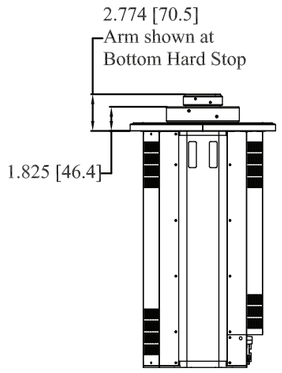
DIAMOND H5 - IN VACUUM WAFER HANDLING ROBOTS

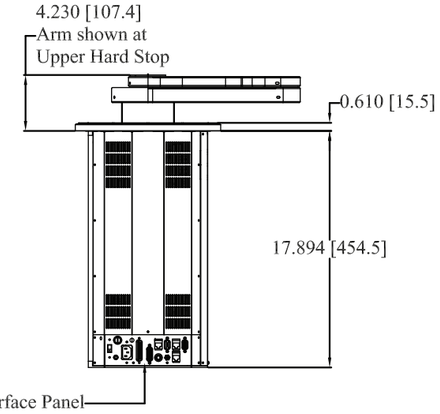
DIMENSIONS AND RANGE OF MOTION

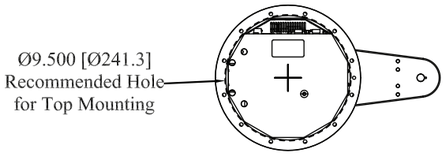
General Dimensions

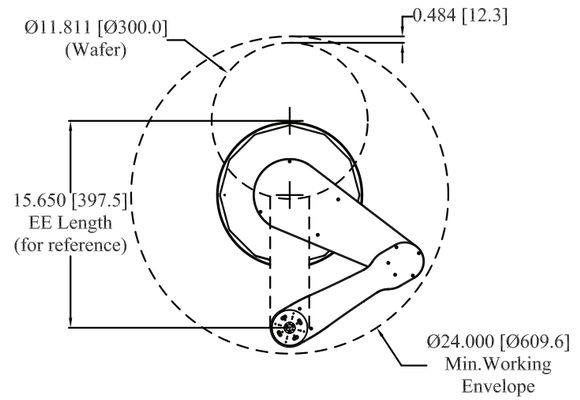


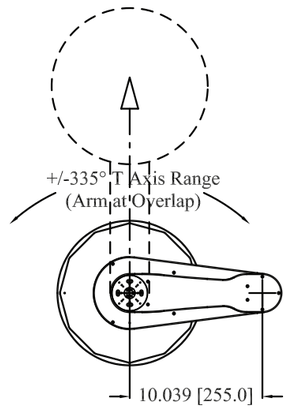


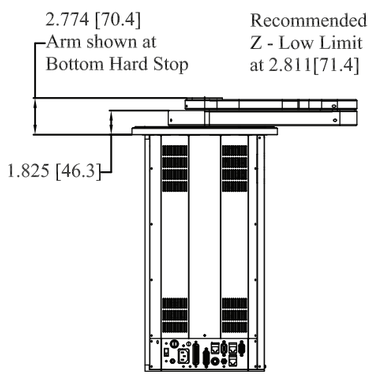












Range of Motion