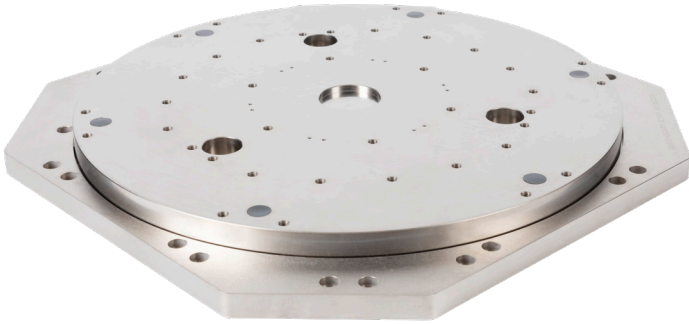


WP-Z-120A

Low Profile, High Load 300 mm (12") Wafer Stage



Millisecond response times and high bandwidth make the WP-Z-120A wafer positioning system ideal for applications where high throughput is essential. The stage is designed to hold 300 mm (12") wafers and delivers exceptional performance with loads of up to 8 kg suitable for heavy wafer chucks.

The stage uses capacitive positioning sensors to provide nanometer displacement measurement and closed-loop feedback. Flexure guidance offers friction-free, reliable motion over 120 μm closed loop range and achieves fast response and settle times with Queensgate's digital closed-loop controllers.



Typical applications

- Wafer and mask inspection
- Electron microscopes SEM/TEM
- Interferometry and metrology
- Microscopy
- Materials inspection
- Mirror positioning

Custom solutions:

- Vacuum (HV) compatible version ideal for use in a vacuum chamber of an electron microscope
- Ultra high vacuum (UHV) and UHV-RAD rad hard versions with low outgassing Kapton cabling
- High load custom version for use up to 14 kg
- Tip tilt Z custom version for platform levelling and scanning
- 160 μm extended range
- 200 mm wafer
- Adaptor plate for use with Prior Scientific stage H112

Technical Specification

Parameter	Value			Unit
Material		Aluminum		
Finish		Non Magnetic Nickel		
Size		375 L X 375 W x 30 H		mm
Platform Size		350 Diameter		mm
	Min	Typical	Max	
Open Loop Range		140		µm
Calibrated Range	120			µm
Resonant Frequency 0 kg		320		Hz
Resonant Frequency 5.2 kg		190		Hz
Resonant Frequency 8 kg		155		Hz
Linearity Error		0.1	0.3	%
Dynamic (typical values)				
Test Load	0	5.2	8	kg
Step Settle 1 µm	9	13	14	ms
Step Settle 30 µm	16	22	24	ms
Noise	1.2	1.5	1.8	nm
Repeatability, 60 µm step		5.5		nm
3 dB Servo Loop Bandwidth	65	45	40	Hz

NPC-D-6110 Controller



Ultra-low noise digital controller with market-leading 20 µs update rate allows resolution to be maintained for high servo loop bandwidths and high loads. Motion control algorithms with acceleration/deceleration control reduce overshoot, providing the best step settle times. The system is provided with up to three factory set selectable tuning presets optimized for step settle and sample mass. Five additional custom presets are available for custom tuning. New velocity control algorithms give ultra-smooth ramps for applications such as focus stacking or focus bracketing.

Interfacing:

Analog command input and position output -10 to $+10$ V or $0 - 10$ V. Digital commands are available over USB, RS232C or digital quadrature/ step and directions commands. An optional high-speed RS422C digital interface for sample-accurate control and position feedback is available.

A DLL interface is provided to allow easy integration with the customer's software. Playback of custom-programmed waveforms such as raster scans or constant-velocity profiles are standard features. Separate digital trigger outputs can be activated at custom-defined points to control external equipment such as camera imaging.

Information for ordering and accessories

Part number	Description
QGWP120A-D1	300 mm (12") high speed low profile wafer piezo stage 120 µm Z with NPC-D-6100 digital controller
QGWP120A-UHV-D1	300 mm (12") high speed low profile wafer piezo stage 120µm Z high vacuum compatible with NPC-D-6100 digital controller
Accessories	
QGWPADAPT1	H112 to WP120A adapter plate kit
QGWP30	150, 200 and 300 mm (6, 8 & 12") wafer chuck
QGWP30V	150, 200 & 300 mm (6, 8 & 12") vacuum hold wafer chuck