Stacked XYZT Stage

Features

- Stacked 4-axis stage with orthogonality design
- Global flatness and straightness up to to sub-μm level
- X/Y axis
  - High stiffness, high precision guide
  - Consistent design of cable disturbing force
- Z-axis
  - Vertical magnetic levitation gravity compensation for high positioning accuracy
  - High stiffness, high precision guide
  - Vertical incremental encoder for up to 5nm resolution
  - Ultra-thin, lightweight design
  - Vertical mechanical travel up to 30mm
- T-axis
  - 360°rotation, no tubing wrapping, 12', 8' wafer applicable
  - Wafer warpage up to 0.7mm
  - Rotation velocity up to 150rpm

Description

The stage adopts modularization, ultra-thin, orthogonality design to integrate the MZT90 standard module on the cross platform L2S125 for high-precision, high-stiffness motion of X, Y, Z and T axes with 4 degrees of freedom.

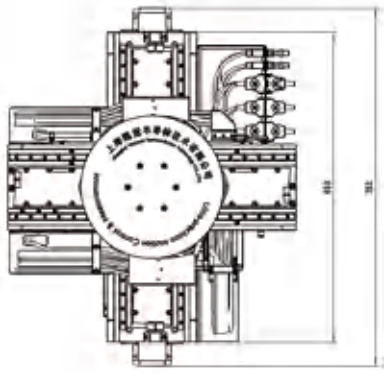
The MZT90 adopts innovative dual-axis coupling design with extremely compact profile. High precision, high stiffness motion with 2 degrees of freedom in vertical and rotary axes.

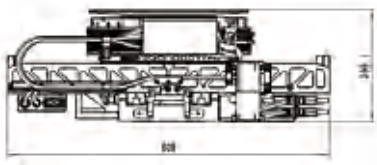
The L2S125 adopts integration, orthogonality design with a compact, low-profile. High-precision, high-stiffness linear motion in horizontal X/Y axis with 2 degrees of freedom.

Applications

- Wafer production control applications such as: thin film metrology, critical dimension metrology
- Wafer scribing
- Wafer laser thermal annealing

Interface Definition





Technical Specifications

	L4S210-350			
Axes name	X	Y	Z	T
Travel range	350 mm	350 mm	10 mm	360 °, Infinite
Max. velocity	1 m/s	1 m/s	0.1 m/s	900 °/s
Max. acceleration	10 m/s^2	10m/s^2	2 m/s^2	6280 °/s^2
Accuracy_indicative value	±10 μm	±10 μm		
Accuracy_calibration value	±1 μm	±1 μm	0.03 μm	±3 arcsec
Bidirectional repeatability	±0.5 μm	±0.5 μm	±0.2 μm	±2 arcsec
Position stability (3σ) *	±2 nm*	±2 nm*	±15 nm*	±0.072 arcsec
Straightness	±2 μm over range	±2 μm over range	1 μm	
Pitch	±5 arcsec	±5 arcsec		
Roll	±5 arcsec	±5 arcsec		
Yaw	±10 arcsec	±10 arcsec		
Orthogonality	±15 arcsec			
Axial & Radial runout	NA		NA	±2 μm
Mechanical properties				
Moving mass (without payload)	27 Kg	45 Kg	7 Kg	0.00336 Kg•m^2
Max. load	2 Kg (customizable)			
Stage mass	40 Kg (Aluminum alloy)			
Dimensions	752 mmX606 mmX209.1 mm (middle of stroke)			

*Technical data specified with 8μm pitch encoder and under active vibration isolation environment.

Customization Information

The series is configured with options that can be selected based on the user's actual application. Options include encoders, Coarse Z strokes, and more.

Table 1 Encoder Options

-S1	Incremental analog optical linear encoder, 1Vpp
-S2	Incremental digital optical linear encoder, TTL
-S3	Absolute optical linear encoder, BISS

Table 2 Vertical guide Options

-G1	High-precision air-bearing guide with a vertical mechanical stroke of 6mm
-G2	High-precision cross roller guide with a vertical mechanical stroke of 24mm
-G3	High-precision anti-creep cross roller guide with vertical mechanical travel of 13mm