YiNGUAN 隐冠半导体

◆ Maglev Polar Stage

Features

- ■ Highly modularization, 3-axis, orthogonality design
- ■ Global flatness and straightness up to to sub-μm level
- ■ X-axis
  - High stiffness linear guide
  - Non-contact direct-drive linear motor drive for high dynamic response
  - Active air/water cooling design
- ■ Z-axis
  - Maglev gravity compensation technology in vertical for high positioning accuracy
  - High stiffness, high precision guide
  - Ultra-thin, lightweight design
  - Modularization design
  - Vertical mechanical travel up to 30mm
- ■ T-axis
  - 360° rotation, no tubing wrapping
  - 12', 8', 6' wafer applicable
  - Active air/water cooling design
  - Wafer warpage up to 0.7mm
 - Rotation velocity up to 150rpm

Description

The stage adopts highly modularization, ultra-thin design. High-precision and high-stiffness linear and rotary motions with 3 degrees of freedom in X, Z and T axes.

The vertical uses the large-stroke maglev gravity compensation technology, which has the function of reducing the load of the vertical motor and greatly improving the vertical motion performance and lifetime.

Applications

- ■ Wafer production control applications, such as: thin film metrology, critical dimension metrology, etc.

Interface Definition
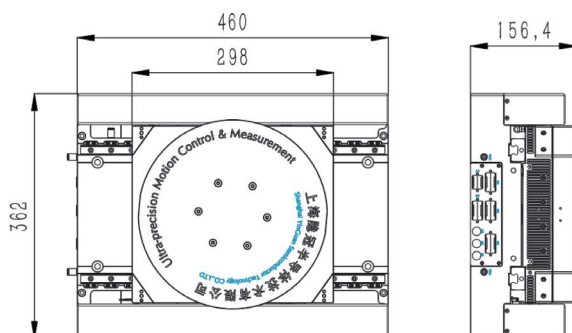
*Interface dimensions from PS150 in the lower limit

Technical Specifications

PS150-155			
Axes name	X	Z	T
Travel range	155mm	25 mm	360°, Infinite
Max. velocity	400 mm/s	40 mm/s	900 °/s
Max. acceleration	4 m/s^2	1 m/s^2	6280 °/s^2
Accuracy	±1 μm	±0.4 μm	±3 arcsec
Bidirectional repeatability	±0.5 μm	±0.2 μm/1mm	±2 arcsec
Straightness	6 μm	NA	NA
Pitch	±20 μrad (4.5 arcsec)	NA	NA
Roll	±20 μrad (4.5 arcsec)	NA	NA
Yaw	±20 μrad (4.5 arcsec)	NA	NA
Axial runout	NA	NA	±2 μm
Radial runout	NA	NA	±2 μm
Mechanical properties			
Moving mass (without payload)	12 Kg	5.4 Kg	NA
Inertia (No load)	0.00401 Kg·m^2		
Max. load	2 Kg（customizable)		
Stage mass	44 Kg		
Dimensions	460 mmX362 mmX156.4 mm (vertical lower limit)		
Material	Aviation aluminum,anodized		

Customization Information

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

Table 1 Encoder Options

-S1	Incremental analog optical linear encoder, 1Vpp, 20μm Pitch
-S2	Incremental digital optical linear encoder, TTL, 20μm Pitch
-S3	Absolute optical linear encoder, BISS-C, 20μm Pitch

Table 2 Vertical Mechanical Stroke Options

-10	with vertical mechanical stroke of 10mm
-20	with vertical mechanical stroke of 20mm
-25	with vertical mechanical stroke of 25mm