

X-TRIM PRECISION COMPACT STAGE



PRODUCT SUMMARY

X-TRIM series stages feature an advanced technology design and are available as single axis, or in a compound dual axis configuration. *X-TRIM*, used for high accuracy and high speed positioning tasks, where compact size is required.

- 10 nanometer resolution non-contact linear encoder system
- Dual drive option: linear servo or Piezo
- High density crossed-roller guide for added stability
- Super compact single and dual axis stage
- Small footprint - compact envelope

High Precision X-TRIM

X-TRIM Features & Benefits

The X-TRIM features an ironless, direct drive linear motor with the drive axis located on the stages center line. This configuration avoids and yawing introduced in side drive stages and eliminates cogging, backlash and stiction by using an ironless motor.

An Integrated high resolution (12.5 nm) non-contacting linear encoder provides precision feedback for closed loop operation servo system operation. This standard configuration is capable of reliable Nanometer positioning

A select precision roller guide system is used for high accuracy performance and superior trajectory control.

The modular design allows stacking to create compact multi-axis multi-element systems. The design construction and material selected make the X-TRIM ideal for use in high vacuum and non-magnetic positioning system applications.

Only a non-contact direct-drive technology can offer the robust, accurate, and high-speed positioning necessary for mass production of precision devices. X-Trim stages utilize advanced ironless linear motor direct-drive technology pioneered by NUTEC to achieve the highest level of positioning performance.

This technology provides high-performance, non-cogging, non-contact, high-speed, high-resolution, and high-accuracy. This unique drive technology offers a significant (several times higher) throughput advantage over conventional either screw or piezo drive-based systems.

Applications

X-Trim™, very versatile positioning platform, designed for today's precision fabricating applications in photonics, optics, semiconductor, micro machining, precision assembly, biomedical and many other advanced technology uses.

	X-Trim-SP
Travel Length (mm)	25 and 50 mm Single or dual axis
Drive Systems	Ironless Linear Motor Ceramic Servo Motor
Maximum Acceleration	Payload Dependent
Maximum Speed	Unladen 200mm/s
Maximum Thrust	24 N
Recommended Maximum Load	
L1 Parallel to base	2 kg
L2 Tension Perpendicular to base	2 kg
L3 Compression Perpendicular to base	2 kg
Feedback	Non contacting linear encoder
Accuracy	+/- 1 μm/25mm
TTL resolution	1 — 100nm/pulse
Repeatability	5x Resolution
Construction	Aluminum Alloy Body Hard Coat Gray Anodize
Repeatability	5x Resolution

X-TRIM Specifications

	<i>XT 25</i>	<i>XT 50</i>	<i>XT 2525</i>	<i>XT 5050</i>
Travel Length (mm)	25 mm	50 mm	25 x 25 mm	50x 50 mm
Trajectory Control				
Accuracy				
<i>Linear Encoder</i>	± 1.0 µm	± 2.0 µm	± 2.0 µm	± 4.0 µm
<i>Straightness/Flatness</i>	± 1.0 µm	± 1.0 µm	± 2.0 µm	± 2.0 µm
<i>Yaw/Pitch/Roll</i>	5 arc-sec	5 arc-sec	10 arc-sec	10 arc-sec
2 axis system				
<i>Orthogonality</i>				
<i>Standard Grade</i>	NA	NA	5 arc-sec	5 arc-sec
<i>High Precision</i>	NA	NA	2 arc-sec	2 arc-sec
<i>Extra High Precision</i>	NA	NA	1 arc-sec	1 arc-sec

NOTES:

- All trajectory data based on axis uniformly supported over full length on precision mounting surface with vibration isolation.
- Payload capacities are recommended values to achieve maximum lifetime in the worst-case scenario featuring maximum dynamic operation and off-center loading.
- Force, acceleration and speed performance are based on operations with NUTEC ELECTRONIC controls.