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## Single-Axis Lift Direct-Drive Nanopositioning Stage **ANT130V-5**

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### Precise, Dynamic Vertical Motion

ANT130V direct-drive lift stages are the premier solution for vertical motion challenges, delivering exceptional positioning precision and high-dynamic performance. Powered by our advanced ironless linear motor technology, these stages achieve ultra-smooth, cogless motion with outstanding accuracy, repeatability, speed and reliability. Designed for high-precision industrial and research applications, ANT130V stages ensure uncompromised performance and superior results.

### Key Applications

This compact, highly capable lift stage offers advantages in applications such as:

- ◆ Photonics assembly & inspection
- ◆ Fiber alignment & optimization
- ◆ Optics manufacturing, testing & inspection
- ◆ Focal height adjustment & autofocusing
- ◆ Semiconductor processing & inspection
- ◆ Research & laboratory applications

### KEY FEATURES:

- ◆ Delivers **NANOMETER-LEVEL POSITIONING PERFORMANCE** over 5 mm of vertical travel
- ◆ Ironless direct-drive linear motor **MAXIMIZES PROCESS THROUGHPUT** & provides **HIGH-DYNAMIC PERFORMANCE**
- ◆ Anti-creep crossed-roller bearings minimize geometric errors & provide **ULTRA-SMOOTH MOTION**
- ◆ Robust design ensures **EXCELLENT RELIABILITY** in both lab & production environments
- ◆ Integrates easily into **MULTI-AXIS ASSEMBLIES** & motion subsystems

## ANT130V-5 SERIES SPECIFICATIONS

Mechanical Specifications		ANT130V-5
Travel		5 mm
Accuracy <sup>(1)</sup>	Base Performance (-PL1)	±2 µm
	PLUS Performance (-PL2) <sup>(6)</sup>	±200 nm
Resolution (Minimum Incremental Motion)		2 nm
Repeatability (Bidirectional) <sup>(1)</sup>	Base Performance (-PL1)	±150 nm
	PLUS Performance (-PL2) <sup>(6)</sup>	±100 nm
Repeatability (Uni-Directional)		±75 nm
Straightness <sup>(2)</sup>		±1.0 µm
Pitch <sup>(1)</sup>		20 arc sec
Roll		10 arc sec
Yaw <sup>(1)</sup>		10 arc sec
Maximum Speed		75 mm/s
Maximum Acceleration		0.7 g (No Load)
Settling Time		See graphs for typical performance
In-Position Stability <sup>(3)</sup>		<2 nm
Maximum Force (Continuous)		100 N
Load Capacity <sup>(4)</sup>		3.0 kg
Moving Mass		1.8 kg
Stage Mass		3.1 kg
Material		Aluminum Body/Black Hardcoat Finish/Black Anodize Finish
MTBF (Mean Time Between Failure)		30,000 Hours

Notes:

1. Certified with each stage.
2. Measured perpendicular or parallel to wedge direction.
3. In-Position Stability listing is 3 sigma value.
4. Assumes loading along axis of travel.
5. Specifications are per axis, measured 25 mm above the tabletop. Performance of multi-axis systems is payload- and workpoint-dependent. Consult factory for multi-axis or non-standard applications.
6. -PLUS requires the use of an Aerotech controller

Electrical Specifications	ANT130V-5
Drive System	Brushless Linear Servomotor
Feedback	Noncontact Linear Encoder
Maximum Bus Voltage	-CN1: 80 VDC, -CN2: 160 VDC
Limit Switches	5 V, Normally Closed
Home Switch	Near Center

Note: To ensure the achievement and repeatability of specifications over an extended period of time, environmental temperature must be controlled to within 0.25°C/24 hours. If this is not possible, alternate products are available. Please consult Aerotech Application Engineering for more information.

## ANT130V-5 SERIES ORDERING INFORMATION

### Connector (Required)

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- CN1 Single connector, 25DU for motor/Fbk
- CN2 Two connectors, 4DU motor, 25DU Fbk

*Note: -CN1 option limits the maximum bus voltage to 80 V.*

### Mounting Plate (Optional)

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- MP Mounting plate

### Performance Grade (Required)

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- PL1 Base performance
- PL2 High-accuracy performance, PLUS

### Integration (Required)

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Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required or if you desire custom integration support with your system.

#### **-TAS Integration - Test as system**

Testing, integration and documentation of a group of components as a complete system that will be used together (ex: drive, controller and stage). This includes parameter file generation, system tuning and documentation of the system configuration.

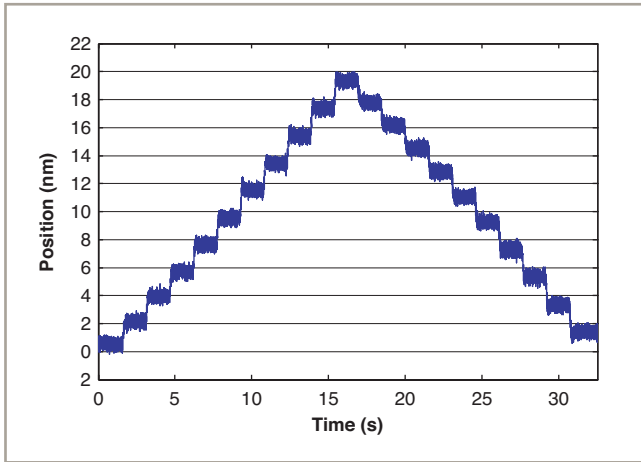
#### **-TAC Integration - Test as components**

Testing and integration of individual items as discrete components that ship together. This is typically used for spare parts, replacement parts or items that will not be used together. These components may or may not be part of a larger system.

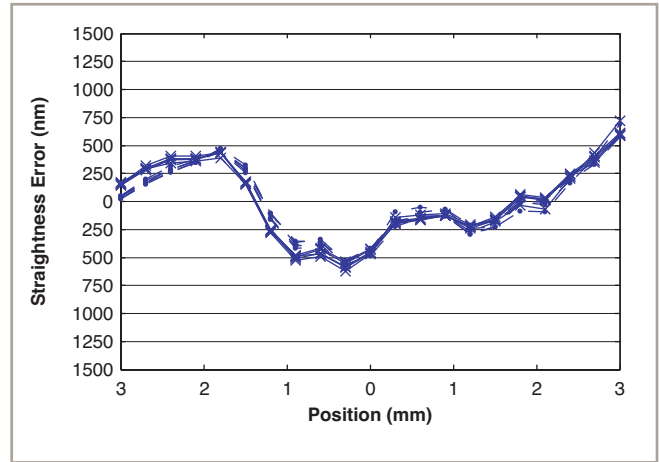


# ANT130V-5 SERIES SPECIFICATIONS

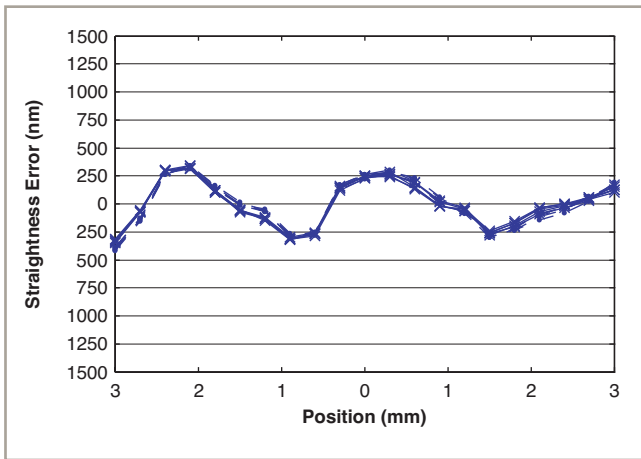
## ANT130V-5 SERIES PERFORMANCE



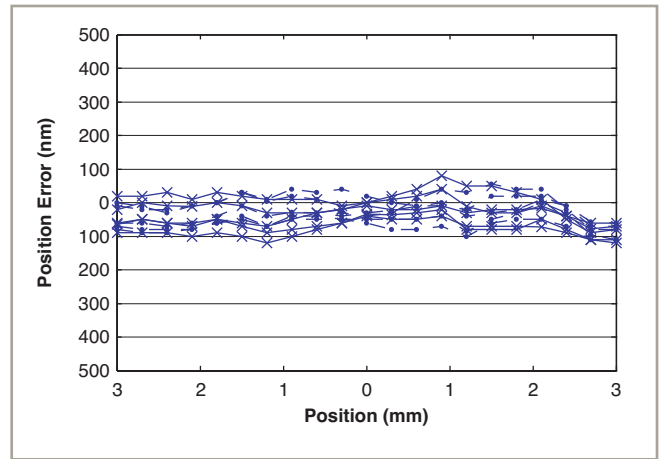
ANT130V-5-PLUS 2 nm step plot. Best-in-class resolution and exceptional in-position stability for vertical nanopositioning stages.



ANT130V-5-PLUS straightness error, five runs, bi-directional, parallel to the wedge.



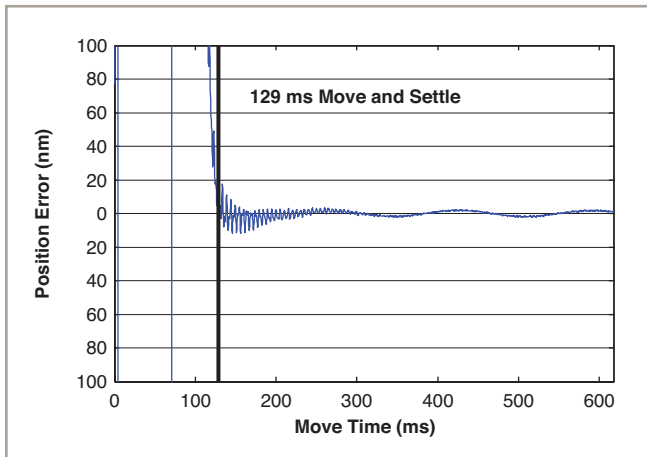
ANT130V-5-PLUS straightness error, five runs, bi-directional, perpendicular to the wedge.



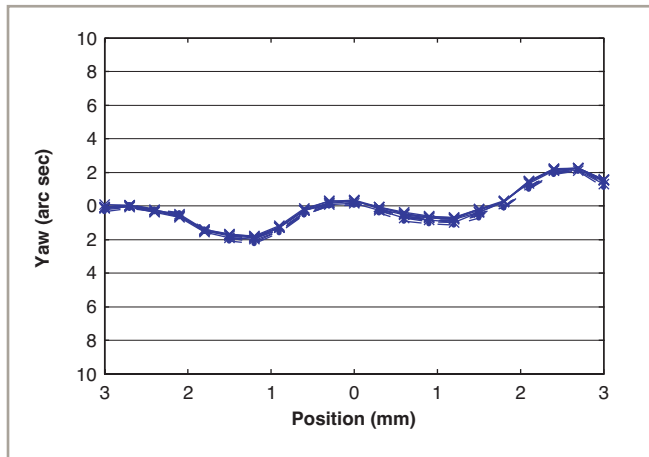
ANT130V-5-PLUS accuracy and repeatability. This multiple test run over an extended period of time shows the high level of system accuracy and repeatability.

# ANT130V-5 SERIES SPECIFICATIONS

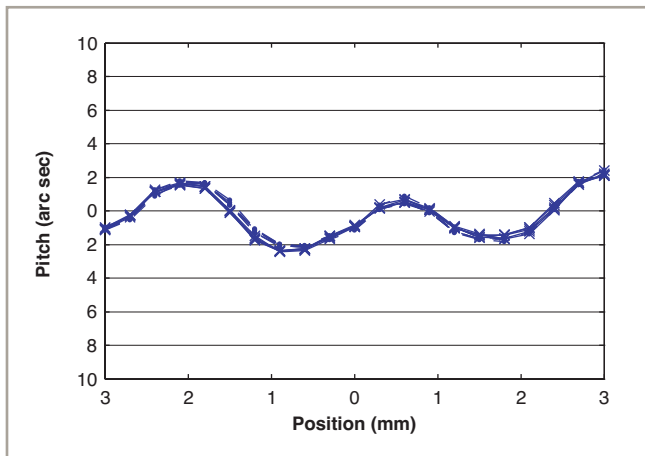
## ANT130V-5 SERIES PERFORMANCE



ANT130V-5-PLUS step and settle performance at 75 mm/s, with a settle spec of  $\pm 20$  nm and a step size of 5 mm. Outstanding settling time enhances throughput of most applications.

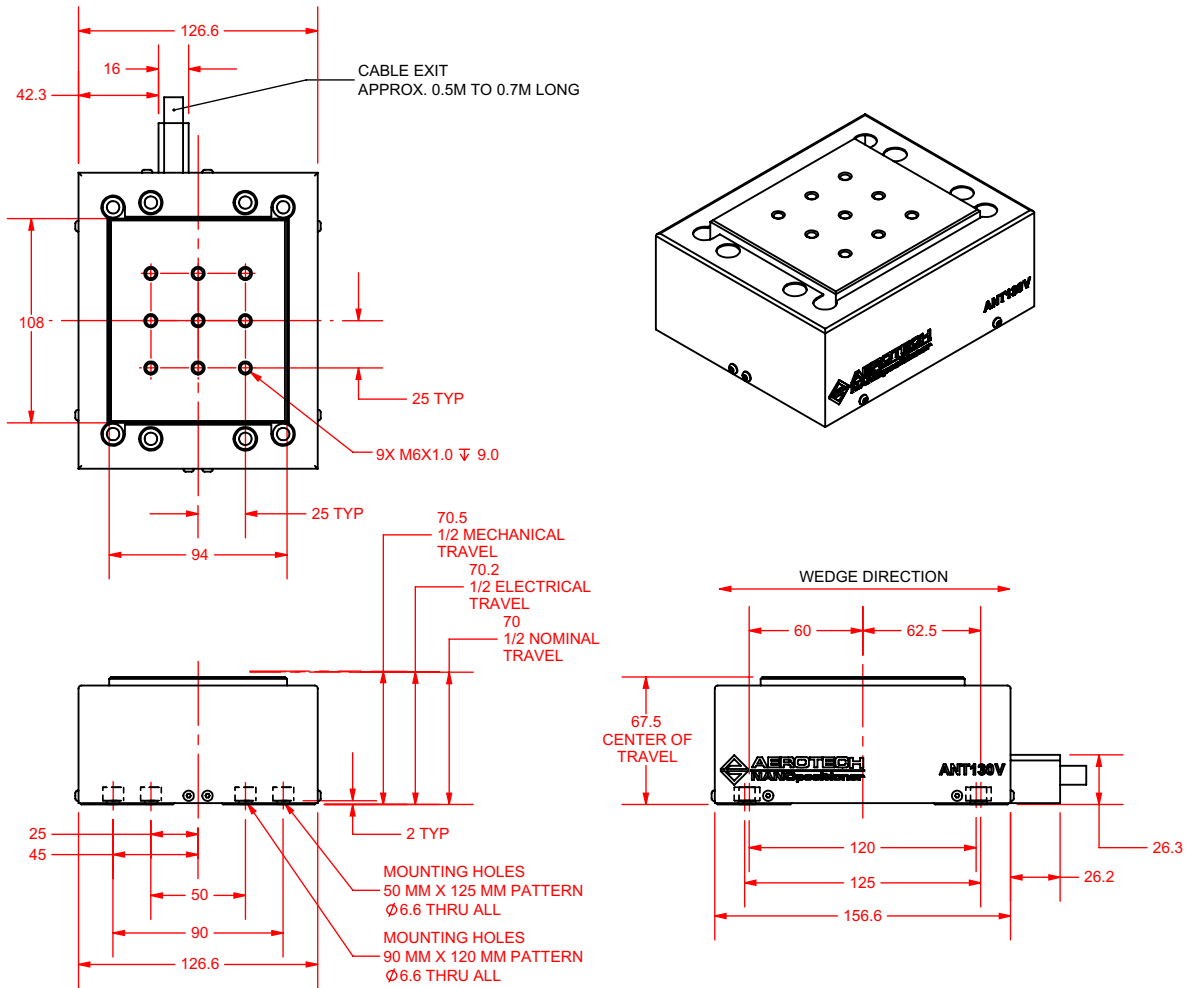


ANT130V-5-PLUS yaw, five runs, bi-directional. Highly repeatable, minimal yaw error enhances system positioning accuracy.



ANT130V-5-PLUS pitch, five runs, bi-directional. Excellent repeatability and accuracy contribute to improved processing.

# ANT130V-5 DIMENSIONS



**ANT130V-5 DIMENSIONS**  
ANT130V-5 MOUNTING PLATE

