



Single-Axis Direct-Drive Nanopositioning Stage **ANT180L**



Achieve Nanometer-Scale Performance with Longer Travel

ANT180L stages are the leading solution for addressing your nanometer-level motion and positioning needs. They deliver superior accuracy, repeatability and speed -- all with the utmost reliability. Compared to our smaller ANT130L and ANT95L models, ANT180L offers longer travel lengths and higher payload capacities. With impressive dynamic capabilities and ample load capacity, ANT180L stages are the preferred choice for integrating linear motion into high-precision industrial and research processes.

Key Applications

ANT180L stages are ideal for high-precision and high-dynamic positioning applications, including:

- ◆ Photonics assembly & inspection
- ◆ Fiber alignment & optimization
- ◆ Optics manufacturing, testing & inspection
- ◆ Sensor testing & qualification
- ◆ Semiconductor processing & inspection
- ◆ Research & laboratory applications

KEY FEATURES:

- ◆ Delivers **NANOMETER-LEVEL PERFORMANCE** over travel lengths up to 360 mm
- ◆ Capable of **MINIMUM INCREMENTAL MOTION TO 1 NM**
- ◆ High-precision crossed-roller bearings for **EXCELLENT DYNAMIC PERFORMANCE & AMPLE LOAD CAPACITY** up to 30 kg
- ◆ Ironless direct-drive motor **MAXIMIZES PROCESS THROUGHPUT & RELIABILITY**
- ◆ **INTEGRATES EASILY** into multi-axis assemblies with optional cable management system

ANT180L SERIES SPECIFICATIONS

Mechanical Specifications			ANT180L-160	ANT180L-210	ANT180L-260	ANT180L-360
Travel			160 mm	210 mm	260 mm	360 mm
Accuracy ⁽¹⁾	High-Accuracy Incremental Encoder (-E3)	PLUS	±150 nm	±150 nm	±200 nm	±200 nm
		Base	±2.0 µm	±2.5 µm	±3.0 µm	±3.5 µm
	Incremental Encoder (-E1)	PLUS	±300 nm	±300 nm	±350 nm	±350 nm
		Base	±4.0 µm	±5.0 µm	±6.0 µm	±7.0 µm
Resolution (Minimum Incremental Motion)	High-Accuracy Incremental Encoder (-E3)		1 nm	1 nm	1 nm	1 nm
	Incremental Encoder (-E1)		3 nm	3 nm	3 nm	3 nm
Repeatability (Bi-Directional) ⁽¹⁾	High-Accuracy Incremental Encoder (-E3)		±100 nm	±100 nm	±125 nm	±125 nm
	Incremental Encoder (-E1)		±150 nm	±150 nm	±175 nm	±175 nm
Straightness ⁽¹⁾			±1.0 µm	±1.25 µm	±1.5 µm	±1.75 µm
Flatness ⁽¹⁾			±1.0 µm	±1.25 µm	±1.5 µm	±1.75 µm
Pitch			14 arc sec	14 arc sec	16 arc sec	16 arc sec
Roll			14 arc sec	14 arc sec	16 arc sec	16 arc sec
Yaw			10 arc sec	10 arc sec	12 arc sec	12 arc sec
Maximum Speed			500 mm/s	500 mm/s	500 mm/s	500 mm/s
Maximum Acceleration			2 g - 20 m/s ² (No Load)	2 g - 20 m/s ² (No Load)	2 g - 20 m/s ² (No Load)	2 g - 20 m/s ² (No Load)
Speed Stability			See graph for typical performance			
Settling Time			See graph for typical performance			
Maximum Force (Continuous)			110.5 N	110.5 N	110.5 N	110.5 N
Load Capacity ⁽³⁾	Horizontal		30 kg	30 kg	30 kg	30 kg
	Side		20 kg	20 kg	20 kg	20 kg
Moving Mass			6.6 kg	7.8 kg	9.2 kg	11.7 kg
Stage Mass			12.8 kg	14.9 kg	17.6 kg	22.4 kg
Material			Aluminum Body/Black Hardcoat Finish			
MTBF (Mean Time Between Failure)			30,000 Hours			

Notes:

1. Certified with each stage.
2. Axis orientation for on-axis loading is listed.
3. Specifications are reported for a single axis measured 25 mm above the tabletop. Performance of multi-axis systems depends on the payload and workpoint. Consult factory for multi-axis or non-standard applications.
4. -PLUS requires the use of an Aerotech controller.
5. Specifications are -E1 and -E3 only. Consult factory for other options

Electrical Specifications	ANT180L-160	ANT180L-210	ANT180L-260	ANT180L-360
Drive System	Brushless Linear Servomotor			
Feedback	Noncontact Linear Encoder (see options on Order Information page)			
Maximum Bus Voltage ⁽¹⁾	340 VDC			
Limit Switches	5 V, Normally Open			
Home Switch	Near Center			

Notes:

1. For optimal performance, Aerotech recommends a bus voltage of 80 VDC or lower.

ANT180L SERIES ORDERING INFORMATION

Travel (Required)

-160	160 mm travel stage
-210	210 mm travel stage
-260	260 mm travel stage
-360	360 mm travel stage

Feedback (Required)

-E1	Incremental encoder, 1 Vpp
-E2	Incremental encoder, 0.1 μ m TTL output
-E3	High-accuracy incremental encoder, 1 Vpp

Cable Management (Optional)

-CMS1	Cable management system for XY assembly - order with lower-axis only
-CMS2	Cable management system for XY assembly w/6 mm air line - order with lower-axis only
-CMS3	Cable management system for XYZ assembly - order with lower-axis only
-CMS4	Cable management system for XYZ assembly w/6 mm air line - order with lower-axis only
-CMS5	Cable management system for XY assembly - order with upper-axis only
-CMS6	Cable management system for XY assembly w/6 mm air line - order with upper-axis only
-CMS7	Cable management system for XYZ assembly - order with upper-axis only
-CMS8	Cable management system for XYZ assembly w/6 mm air line - order with upper-axis only

Metrology (Required)

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

Integration (Required)

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

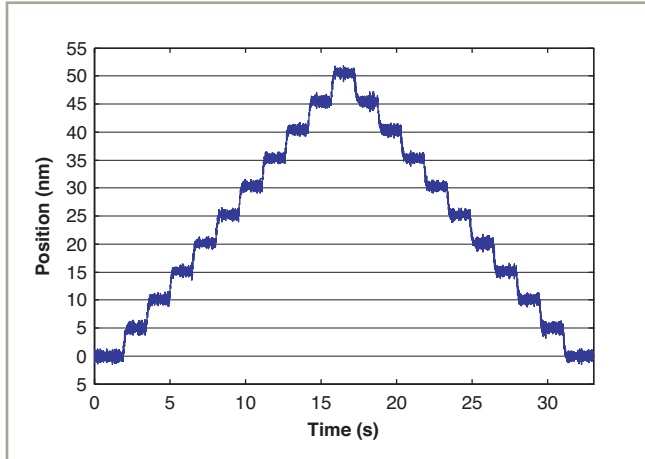
Testing and integration of individual items as discrete components that ship together. This is typically used for spare parts, replacement parts, or items that will not be used together. These components may or may not be part of a larger system.

Accessories (to be ordered as separate line item)

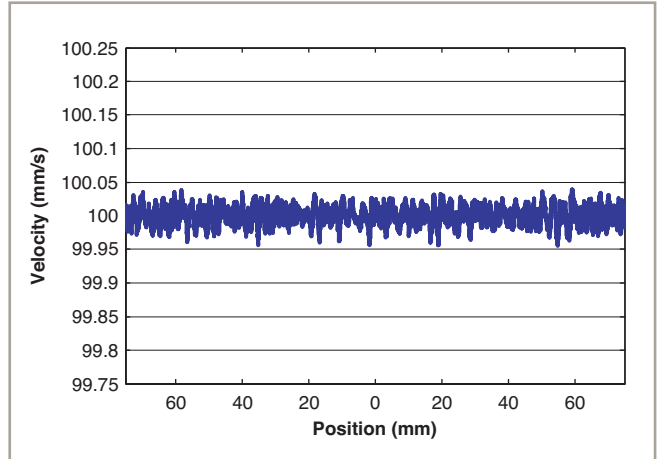
ALIGN-PA10	XY assembly; 10 arc sec orthogonality
ALIGN-PA5	XY assembly; 5 arc sec orthogonality

ANT180L SERIES SPECIFICATIONS

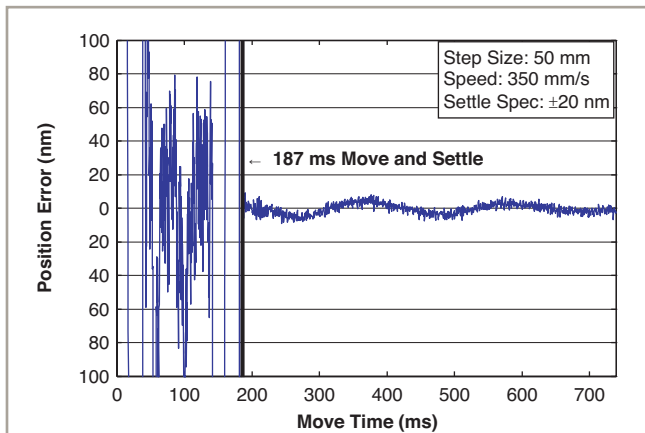
ANT180L SERIES PERFORMANCE



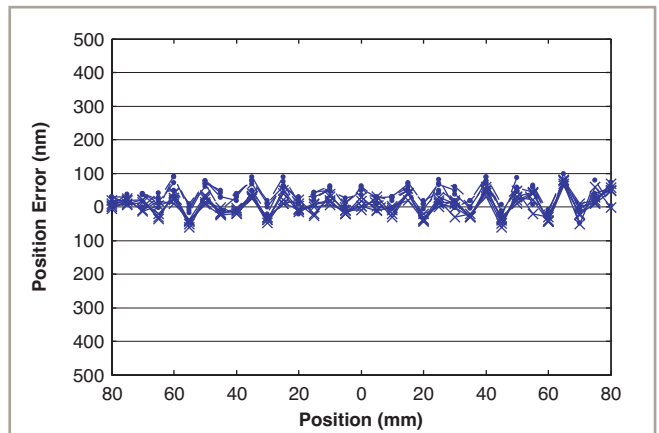
ANT180L 5 nm step plot. Best-in-class resolution and exceptional in-position stability for large travel stages. See additional performance graphs on the following pages.



ANT180L-160 velocity performance at 100 mm/s and 1 kg payload. Excellent speed stability is another feature of the ANT Series stages.



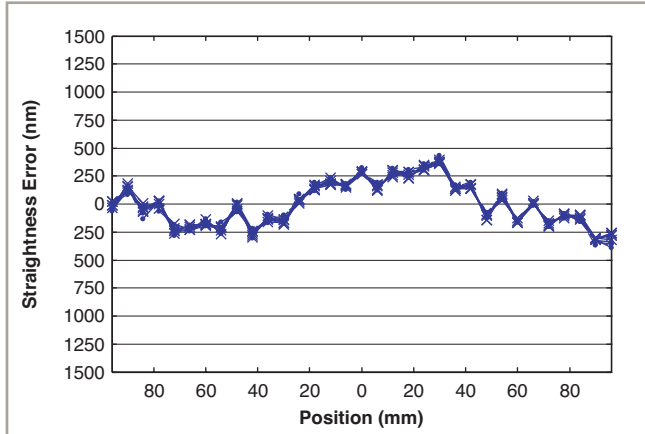
ANT180L-160 step and settle performance with 1 kg payload. Outstanding settling time enhances throughput of most applications.



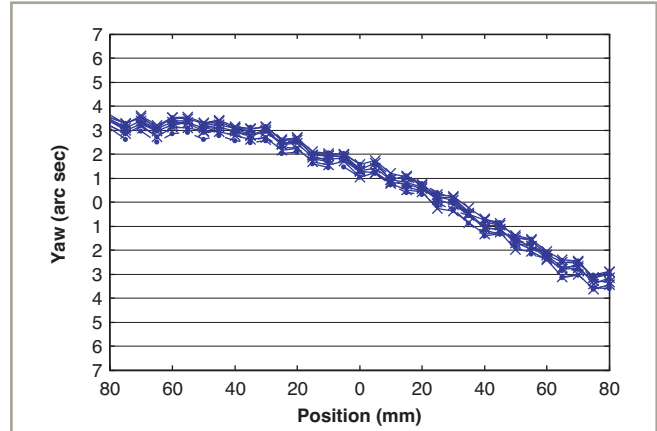
ANT180L-160 accuracy and repeatability, five runs, bi-directional over an extended period of time shows the high level of system accuracy and repeatability.

ANT180L SERIES SPECIFICATIONS

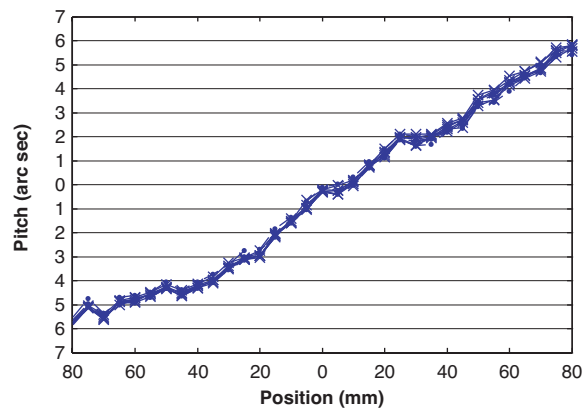
ANT180L SERIES PERFORMANCE



ANT180L-160 straightness error, one run, bi-directional. Exceptional and highly repeatable performance is assured with minimal straightness error.

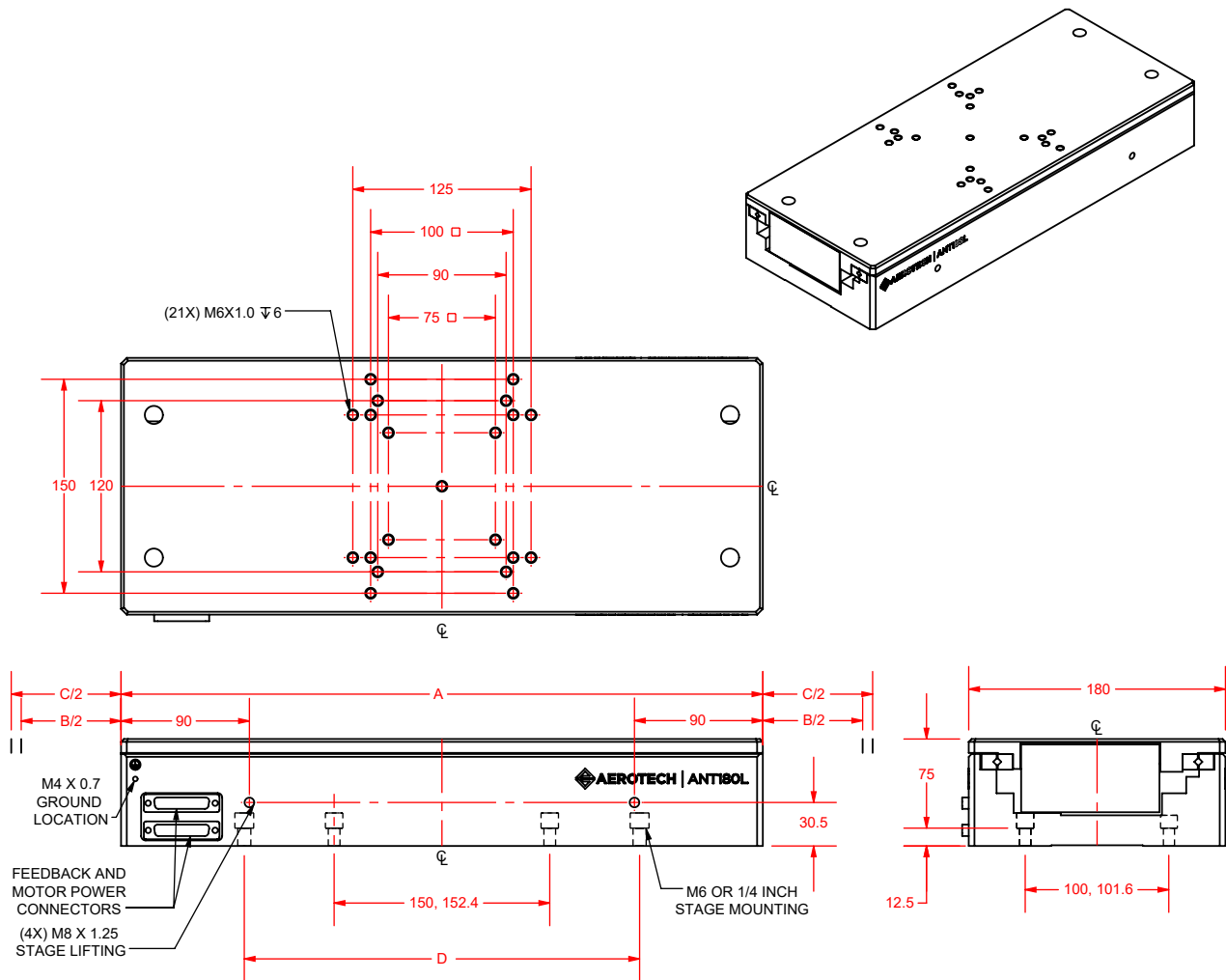


ANT180L-160 yaw, five runs, bi-directional. Highly repeatable, minimal yaw error enhances system positioning accuracy.



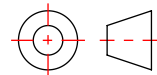
ANT180L-160 pitch, five runs, bi-directional. Excellent repeatability/accuracy contribute to improved processing.

ANT180L DIMENSIONS

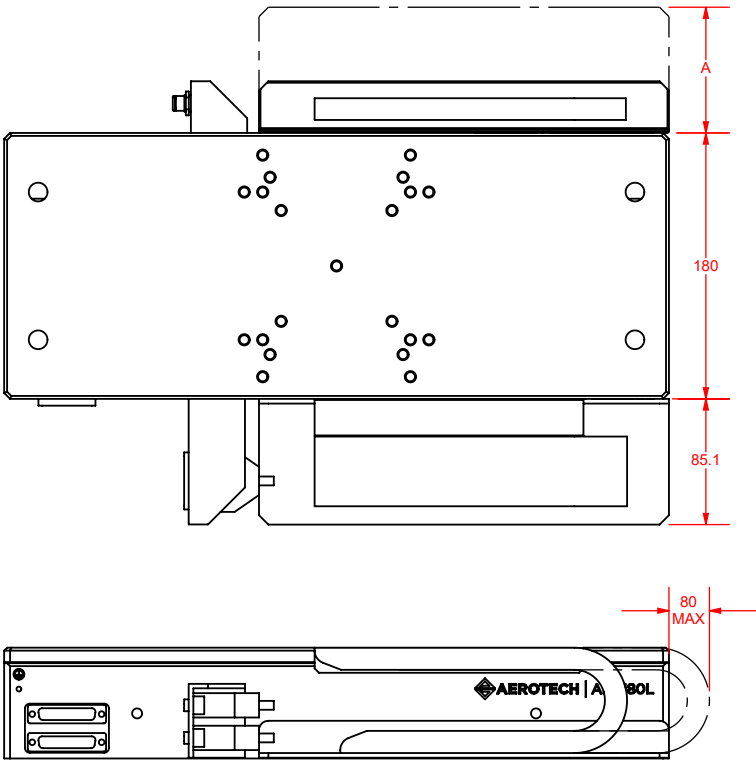


STAGE MODEL	A = STAGE LENGTH	B = NOMINAL TRAVEL	C = HARDSTOP TRAVEL	D = MOUNTING SPACING
ANT180L-160	325	160	174	-
ANT180L-210	375	210	224	225, 228.6
ANT180L-260	450	260	274	275, 279.4
ANT180L-360	575	360	374	350, 355.6

DIMENSIONS: MILLIMETERS



ANT180L DIMENSIONS



-CMS OPTION	A = CABLE TRAY WIDTH
-CMS1	-
-CMS2	35
-CMS3	85.1
-CMS4	85.1

DIMENSIONS: MILLIMETERS

