



## Low-Profile Z Nanopositioning Stages **ANT130LZS**

### Superior Vertical Motion, Compact Form Factor

ANT130LZS stages represent the pinnacle of vertical motion performance with an ultra-low profile. Featuring dual side-mounted pneumatic counterbalances with extremely low frictional characteristics, they superbly combine accuracy, repeatability, speed and reliability. With their impressive dynamic capabilities and ample load-carrying capacity, ANT130LZS stages are the ideal choice when you need superior vertical motion in a compact form factor.

### Key Applications

ANT130LZS stages are ideal for high-precision and high-dynamic vertical positioning applications with minimal footprint requirements, including:

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



### KEY FEATURES:

- ◆ Enhanced second-generation design
- ◆ Achieves **MINIMUM INCREMENTAL MOTION TO 1 nm - NEW**
- ◆ Delivers **NANOMETER-LEVEL POSITIONING PERFORMANCE** over travel lengths up to 160 mm
- ◆ Provides **ULTRA-LOW PROFILE** with dual side-mounted counterbalances capable of offsetting up to 14 kg payload for ultra-precise performance in the vertical direction
- ◆ Features high-precision crossed-roller bearings for **EXCELLENT DYNAMIC PERFORMANCE & AMPLE LOAD CAPACITY**
- ◆ **MAXIMIZES PROCESS THROUGHPUT & RELIABILITY** with ironless direct-drive linear motor
- ◆ **INTEGRATES EASILY** into multi-axis motion systems

## ANT130LZS SERIES SPECIFICATIONS

Mechanical Specifications		ANT130LZS-035	ANT130LZS-060	ANT130LZS-110	ANT130LZS-160
Travel		35 mm	60 mm	110 mm	160 mm
Accuracy <sup>(1)</sup>	Base Performance (-PL1)	± 2.5 µm		± 3.0 µm	± 4.0 µm
	Plus Performance (-PL2)	± 275 nm (-E1, -E2) ± 175 nm (-E4)		± 300 nm (-E1, -E2) ± 200 nm (-E4)	
Repeatability (Bidirectional) <sup>(1)</sup>		±75 nm			
Resolution (Minimum Incremental Motion)		2 nm (-E1) 1 nm (-E4)			
Straightness <sup>(1)</sup>		± 1.5 µm			± 2.0 µm
Flatness <sup>(1)</sup>		± 1.5 µm			± 2.0 µm
Pitch		10 arc sec			
Roll		10 arc sec			
Yaw		5 arc sec			
Maximum Speed <sup>(2)</sup>		200 mm/s (-E1, -E4) 145 mm/s (-E2)			
Maximum Acceleration (No Load) <sup>(2)</sup>		1 g			
In-Position Stability <sup>(3)</sup>		<2 nm (-E1) <1 nm (-E4)			
Load Capacity <sup>(4)</sup>	Vertical	14 kg			
Moving Mass		1.5 kg	1.6 kg	2.1 kg	2.5 kg
Stage Mass		3.2 kg	3.6 kg	4.5 kg	5.3 kg
Material		Anodized Aluminum			
MTBF (Mean Time Between Failure)		30,000 Hours			

**Notes:**

1. Certified with each stage.
2. Requires the selection of an appropriate amplifier with sufficient voltage and current.
3. In-position stability is reported as 3-sigma value. Requires a 1 Vpp encoder.
4. Payload specifications assume payload is centered on-axis.
5. 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.
6. PLUS performance requires the use of an Aerotech controller.
7. To ensure the achievement and repeatability of specifications over an extended period of time, environmental temperature must be controlled to within 0.25°C per 24 hours. Consult factory for more information.
8. Air supply for pneumatic counterbalance must be clean, dry to 0°F dewpoint, and filtered to 0.25  $\mu\text{m}$  or better. Aerotech recommends using nitrogen at 99.9% purity. Supply pressure is determined by the amount of payload carried by the stage.

Electrical Specifications	ANT130LZS-035	ANT130LZS-060	ANT130LZS-110	ANT130LZS-160
Drive System	Brushless Linear Servomotor			
Feedback	Noncontact Linear Encoder 1 Vpp with 20 $\mu\text{m}$ signal period (-E1) Digital RS422 (-E2) 1 Vpp with 4 $\mu\text{m}$ signal period (-E4)			
Maximum Bus Voltage	-CN1: 80 VDC -CN2: 160 VDC			
Limit Switches	5 V, Normally Closed			
Home Switch	Near Center			

## ANT130LZS SERIES ORDERING INFORMATION

### Travel (Required)

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-035	35 mm travel
-060	60 mm travel
-110	110 mm travel
-160	160 mm travel

### Feedback (Required)

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-E1	Incremental linear encoder, 1 Vpp amplified sine output
-E2	Incremental linear encoder, digital RS422 output, 5 nm electrical resolution
-E4	Incremental linear encoder, 1 Vpp amplified sine output, high-performance

### Connectors (Required)

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-CN1	Single 25-pin D connector, 25DU
-CN2	Two connectors, 4-pin HPD and 25-pin D, 4DU-25DU

*Note: The -CN1 option is limited to a maximum bus voltage of 80 V. The -CN2 option is required for higher bus voltages.*

### Mounting Plate (Optional)

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-MP	Mounting plate
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### 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**

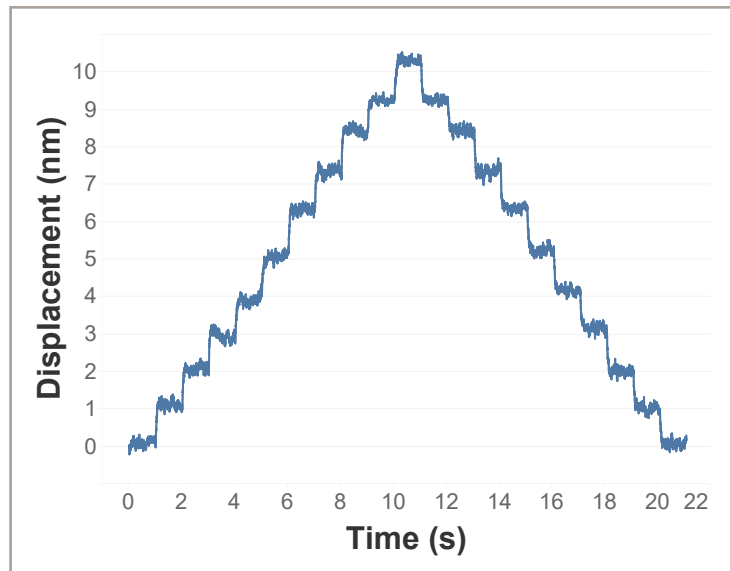
Testing, integration, and documentation of a group of components as a complete system that will be used together (ex: drive, controller, and stage). This includes parameter file generation, system tuning, and documentation of the system configuration.

#### **-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.

## ANT130LZS SERIES SPECIFICATIONS

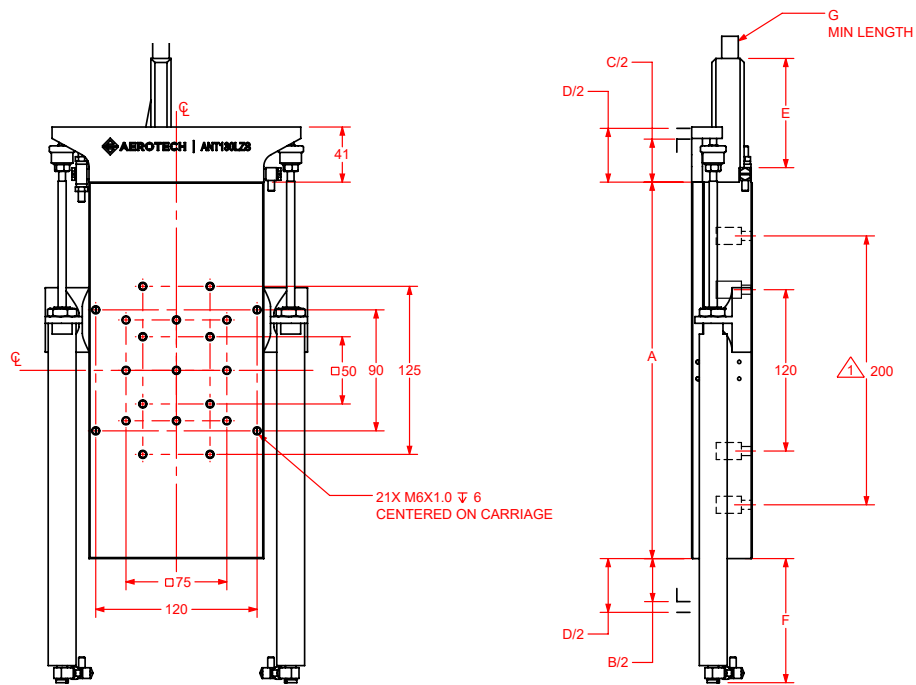
### ANT130LZS SERIES PERFORMANCE



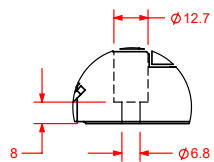
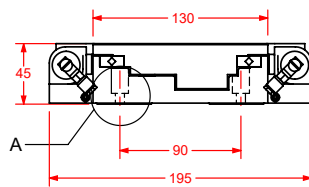
ANT130LZS-060-E4-PL2 step plot showing 1 nm minimum incremental motion. Best-in-class resolution and exceptional in-position stability for large travel stages.



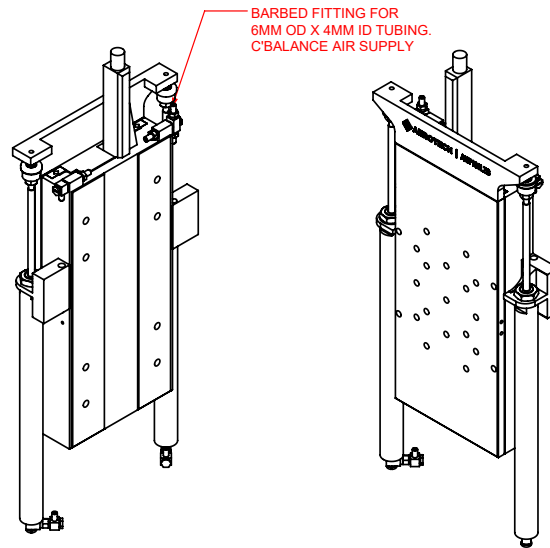
## ANT130LZS DIMENSIONS



$\triangle$  ANT130LZS-110 AND ANT130LZS-160 ONLY

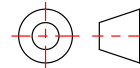


DETAIL A  
SCALE 2 : 5  
MOUNTING HOLES TYP.

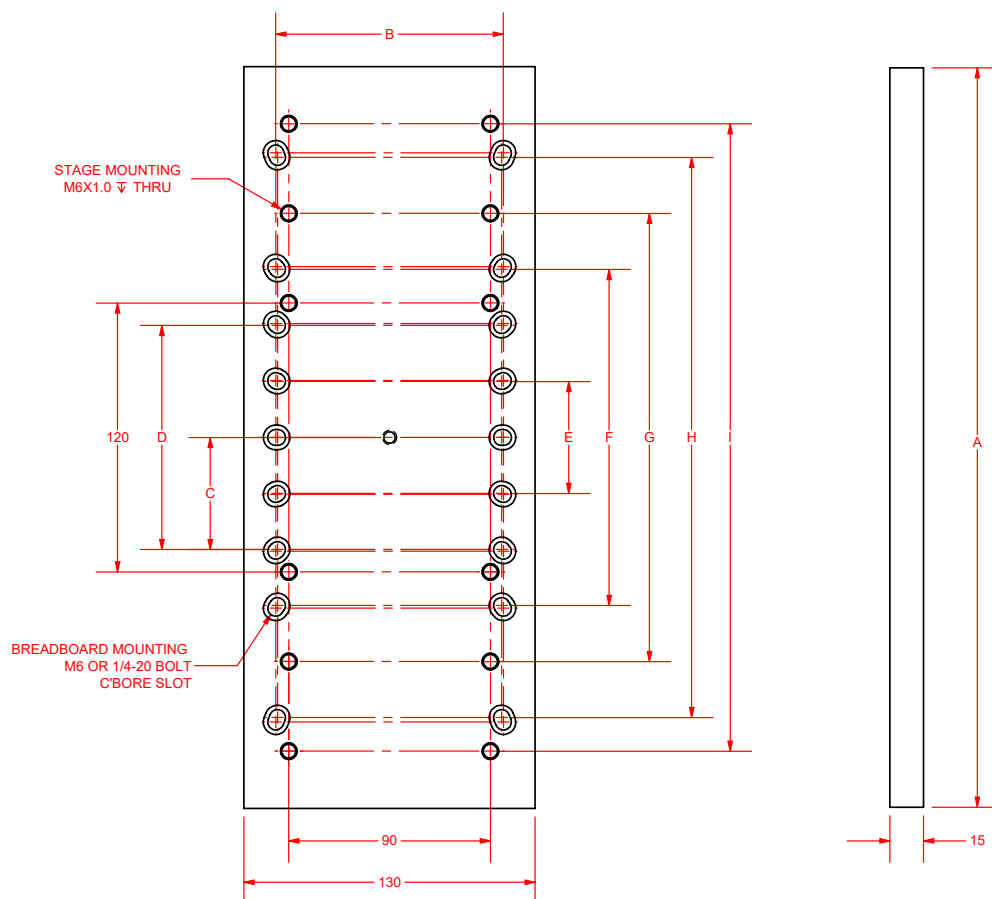


TRAVEL OPTION	A = STAGE LENGTH	B = NOMINAL TRAVEL	C = LIMIT TRAVEL	D = HARDSTOP TRAVEL	E	F	G
-035	155	35	41	50	27	35	373
-060	180	60	66	75	42	42	358
-110	230	110	116	125	67	78	333
-160	280	160	166	175	92	93	308

DIMENSIONS: MILLIMETERS



# ANT130LZS DIMENSIONS ANT130LZS MOUNTING PLATE



TRAVEL OPTION	LENGTH	MOUNTING							
	A	B	C	D	E	F	G	H	I
-035	155	100 [4.0]	50 [2.0]	100 [4.0]	--	--	--	--	--
-060	180	100 [4.0]	--	--	50 [2.0]	150 [6.0]	--	--	--
-110	230	100 [4.0]	--	--	50 [2.0]	150 [6.0]	200	--	--
-160	280	100 [4.0]	--	--	50 [2.0]	150 [6.0]	200	250 [10.0]	--

DIMENSIONS: MILLIMETERS

