

# ATS3600 Series

## *Mechanical Bearing, Screw-Driven Linear Stage with Aperture*

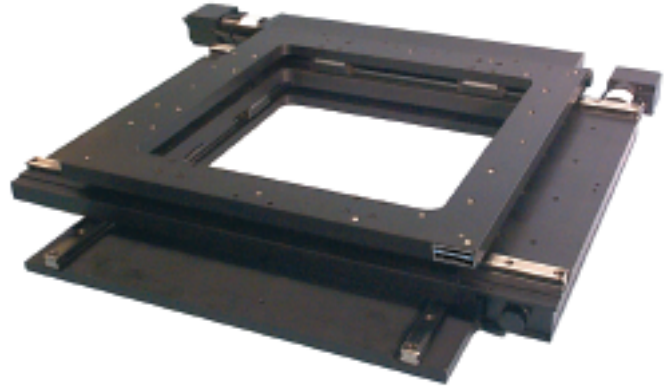
**Large, clear aperture**

**Travel range from 100 mm x 100 mm to 400 mm x 400 mm**

**High-performance linear motion guides**

**15 arc sec orthogonality**

**Noncontact linear encoder for high accuracy**



The demand for a high accuracy, robust, open-frame stage is met with the ATS3600. This dual-axis, large aperture, open-frame stage addresses the unique needs of scanning microscopy, wafer and printed circuit board inspection, and automated assembly.

### **Design and Construction**

Unlike other designs that are assembled from several discrete pieces, the ATS3600 is a three-piece design. This allows critical components such as orthogonality, straightness, and flatness to be controlled during the initial machining, resulting in a stage with exceptional geometrical tolerances and inherent orthogonality.

The ATS3600 utilizes high-precision linear motion guide (LMG) bearings, with a total of four trucks per axis. These make the ATS3600 ideal for fast, repetitive operations. The LMG bearings also exhibit exceptional stiffness, high load capacity, and extremely low friction.

The high stiffness inherent in this stage allows it to be side-driven, yet still retain excellent performance characteristics. The ATS3600 represents a major upgrade in performance over typical side-drive stages.

### **Motors and Drives**

The ATS3600 includes two high-performance NEMA 23 BMS series brushless, slotless motors, and a SM60 stepper motor. This motor has all of the advantages of a brushless motor – high acceleration, no brushes to wear, and lower heating – yet has zero cogging for the ultimate in smooth motion.

### **Optional Linear Encoder Feedback**

A high-resolution, noncontact linear encoder is available as an option. This noncontact encoder offers exceptional repeatability and stability over a range of operating conditions. Both digital and analog output versions are available. The digital version has a resolution of 0.1  $\mu\text{m}$ , while the analog version, can be coupled to achieve  $\mu\text{m}$ -level resolutions.

### **Alternate Configurations**

All stage travels offer both single- and dual-axis designs, as well as the option for a solid tabletop.

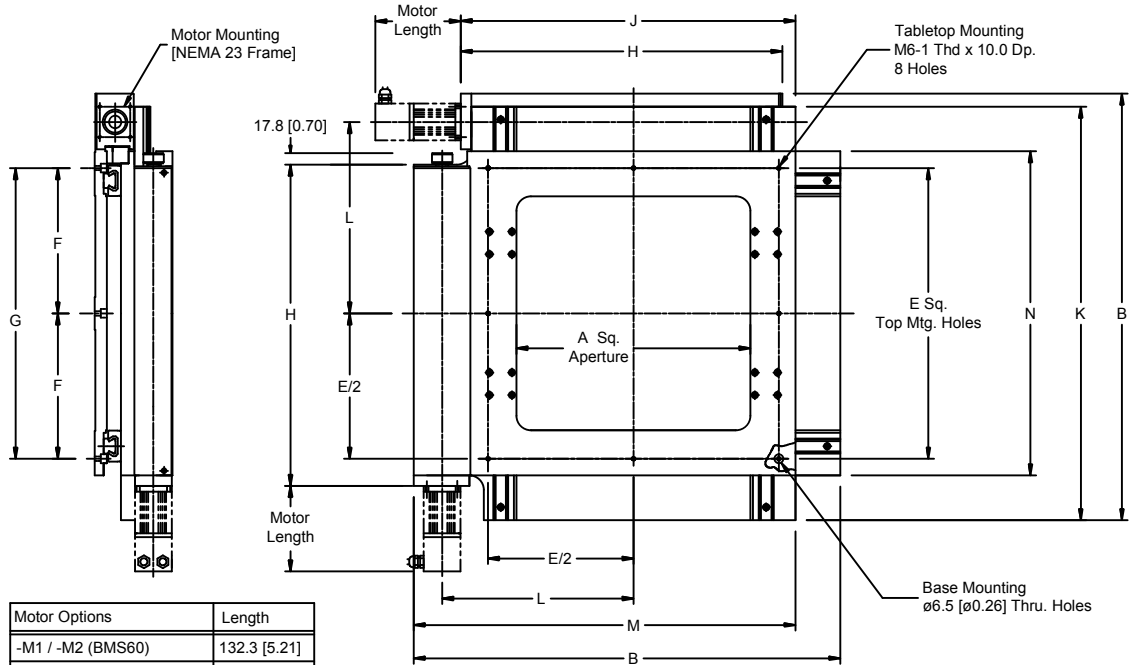
## ATS3600 Series SPECIFICATIONS

Basic Model		ATS3600-100XY	ATS3600-200XY	ATS3600-300XY	ATS3600-400XY
Total Travel		100 mm (4 in)	200 mm (8 in)	300 mm (12 in)	400 mm (16 in)
Bus Voltage		Up to 160 VDC			
Maximum Travel Speed <sup>(1)</sup>		200 mm/s (8 in/s)			
Maximum Load <sup>(2)</sup>		90.0 kg (198.4 lb)			
Accuracy	LT	Calibrated <sup>(3)</sup>	± 2.0 µm (±80.0 µin)		
		Standard	±4.0 µm (±160.0 µin)	±8.0 µm (±320.0 µin)	±12.0 µm (±480.0 µin)
Repeatability (Bidirectional)	Super-Precision Ball Screw		±1.5 µm (±60 µin)		
	Precision Ball Screw		±2.0 µm (±80 µin)		
	LT		±1.0 µm (±40 µin)		
Straightness and Flatness	Differential		1.0 µm / 25 mm (40 µin/in)		
	Maximum Deviation		±2.0 µm (±80 µin)	±4.0 µm (±160 µin)	±6.0 µm (±240 µin)
Pitch and Yaw		10 arc sec	15 arc sec	18 arc sec	20 arc sec
Nominal Stage Weight	Less Motor	22.8 kg (50.3 lb)	34.2 kg (75.4 lb)	44.4 kg (97.9 lb)	60.3 kg (133.0 lb)
	With Motor	26.4 kg (58.2 lb)	37.8 kg (83.3 lb)	48.0 kg (105.8 lb)	63.9 kg (140.9 lb)
Construction		Aluminum Body; Black Anodize Finish			

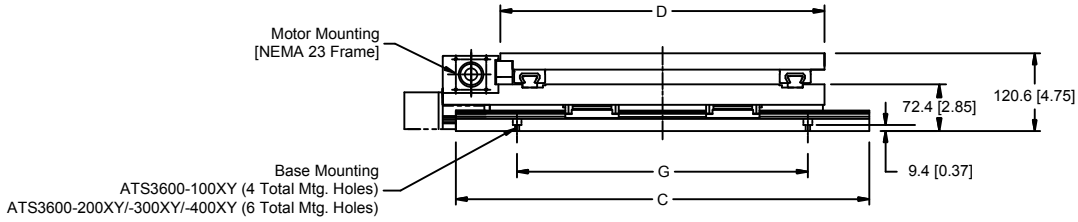
Notes:

- Excessive duty cycle may impact stage accuracy
- Payload specifications are based on ball screw and bearing life of 2500 km (100 million inches) of travel.
- Available with Aerotech controllers.
- Specifications are for single-axis systems, 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.

# ATS3600 Series DIMENSIONS



Motor Options	Length
-M1 / -M2 (BMS60)	132.3 [5.21]
-M3 (SM60)	110.9 [4.37]
*See Motor Section for Alternate Motors and More Details.	



Basic Model	Total Travel	Dimensions - Millimeters [Inches]					
		A	B	C	D	E	F
ATS3600-100XY	100.0 [4.00]	158.8 [6.25]	416.4 [16.40]	355.6 [14.00]	298.5 [11.75]	250.0 [9.84]	-
ATS3600-200XY	200.0 [8.00]	260.4 [10.25]	547.6 [21.56]	516.4 [20.33]	400.0 [15.75]	350.0 [13.78]	175.0 [6.89]
ATS3600-300XY	300.0 [12.00]	362.0 [14.25]	660.2 [26.00]	640.0 [25.20]	501.7 [19.75]	450.0 [17.72]	225.0 [8.86]
ATS3600-400XY	400.0 [16.00]	463.6 [18.25]	800.1 [31.50]	800.0 [31.50]	603.3 [23.75]	550.0 [21.65]	275.0 [10.83]
	G	H	J	K	L	M	N
ATS3600-100XY	250.0 [9.84]	294.0 [11.60]	314.9 [12.40]	355.60 [14.00]	194.7 [7.67]	387.9 [15.27]	301.0 [11.85]
ATS3600-200XY	350.0 [13.78]	396.2 [15.60]	416.5 [16.40]	516.4 [20.33]	245.5 [9.67]	489.5 [19.27]	400.0 [15.75]
ATS3600-300XY	450.0 [17.72]	497.8 [19.60]	518.1 [20.40]	640.0 [25.20]	296.3 [11.67]	591.1 [23.27]	501.7 [19.75]
ATS3600-400XY	550.0 [21.65]	599.4 [23.60]	619.7 [24.40]	800.0 [31.50]	347.1 [13.67]	692.7 [27.27]	603.3 [23.75]

## ATS3600 Series ORDERING INFORMATION

### ATS3600 Series Mechanical-Bearing Screw-Driven Linear Stage with Aperture

ATS3600-100XY	ATS3600-100XY mechanical-bearing screw-driven linear stage with aperture, 100 x 100 mm travel
ATS3600-200XY	ATS3600-200XY mechanical-bearing screw-driven linear stage with aperture, 200 x 200 mm travel
ATS3600-300XY	ATS3600-300XY mechanical-bearing screw-driven linear stage with aperture, 300 x 300 mm travel
ATS3600-400XY	ATS3600-400XY mechanical-bearing screw-driven linear stage with aperture, 400 x 400 mm travel

### Motor (Optional)

-M1	BMS60 brushless servomotor with 2500-line TTL encoder
-M2	BMS60 brushless servomotor with 1000-line 1 Vpp encoder
-M3	SM60 stepper motor

### Limits (Required)

-LI1	Normally-closed limit switches, 9-pin D connector
-LI2	Normally-closed limit switches, flying leads
-LI3	Normally-open limit switches, 9-pin D connector
-LI4	Normally-open limit switches, flying leads

### Direct Linear Feedback (Optional)

-E1	Incremental linear encoder, 1 Vpp
-E2	Incremental linear encoder, 0.1 $\mu$ m digital TTL output

### Coupling (Optional)

-CP1	Coupling for 0.250 inch diameter shaft
-CP2	Coupling for 0.375 inch diameter shaft

### 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	<p><b>Integration - Test as system</b></p> <p>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.</p>
-TAC	<p><b>Integration - Test as components</b></p> <p>Testing and integration of individual items as discrete components. This is typically used for spare parts, replacement parts, or items that will not be used or shipped together (ex: stage only). These components may or may not be part of a larger system.</p>