

Z-Theta™ Vertical Motion Units



Features

- :: Low profile with no cantilevering
- :: 0.5" and 1" travel versions
- :: Excellent straightness and repeatability
- :: Anti-backlash friction nuts

Vertical Motion Stages

Our Z-Elevator Stages provide a very compact, accurate means of achieving vertical motion. Precision, non-recirculating ways in each of the four corners keep pitch and yaw below 15 arc-seconds over full travel. This way configuration provides very straight, smooth, and repeatable motion which is needed to satisfy demanding wafer inspection, scanning, and probing applications. Both 0.5 inch and 1.0 inch travel versions are available with collapsed heights of only 2.874 inches and 3.150 inches respectively. The users load is not cantilevered; it is fully supported by an 8" x 8" top plate. Our Z-Elevator Stages incorporate

a 23 frame motor (either stepper or servo), coupled to a leadscrew which drives a cam-follower along a wedge. The wedge ratio is 2.5:1 for the ZE-5 and 1.25:1 for the ZE-10. This design provides high resolution, while our anti-backlash friction nut ensures excellent repeatability. Each stage includes precision Hall-effect limit switches, which terminate on convenient, locking D sub-mini connectors. The pitch of the leadscrew, the ratio of the wedge mechanism, the motor, and the controller together determine the resolution in our Z-Elevator stages. Please see page 55 for calculation details.

SPECIFICATIONS		ZE-5™ Z-Elevator	ZE-10™ Z-Elevator
Travel		0.5	1.0
Positional Accuracy (μm)		15	20
Bidirectional Repeatability (μm)			3
Flatness & Straightness (μm)		5	10
Pitch & Yaw (arc-seconds)			15
Load Capacity (kg)			10
Maximum Leadscrew Speed (rps)			15
Mass (kg)	Moving	2.3	2.7
	Total	7.4	9.1

CONFIGURATIONS (Apply to both of the above axes) ²							
Leadscrew	Lead (inch)		0.50	0.40	0.20	0.10	0.02
	Z Resolution (inch x 10 ⁻⁶) ³		100	80	40	20	4
	Lead (mm)		3	2	1.4		
	Z Resolution (μm) ³		0.6	0.4	0.28		
Motor	Stepper (oz-in)	400 step/rev.	118				others available
		200 step/rev.	53	100			others available
	Servo		brush	brushless			

OPTIONS			
Encoder	Rotary (counts/rev.)	2000	4000

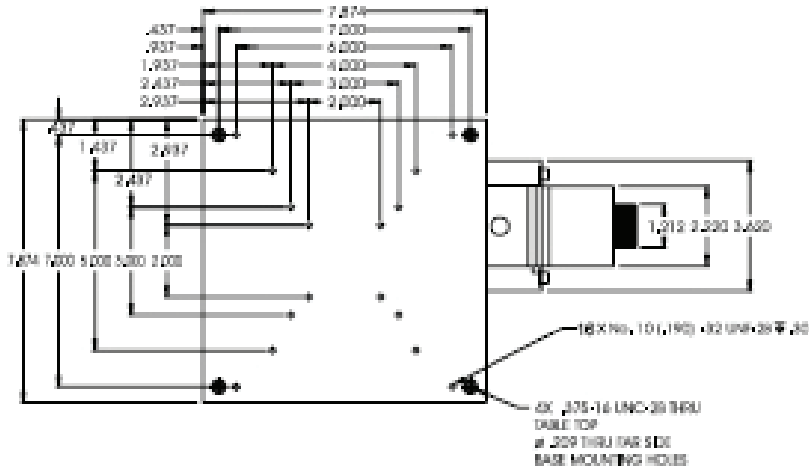
¹With 2 point slope correction.

²Standard configuration is highlighted.

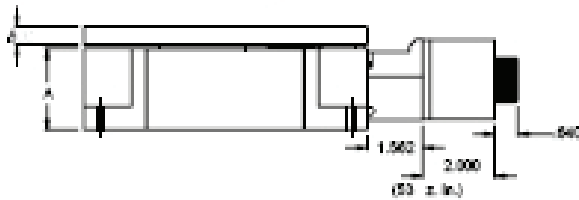
³Z resolution assuming ÷ 10 microstep drive and standard 200 step/rev. stepping motor.

Z-Elevator Vertical Motion Units

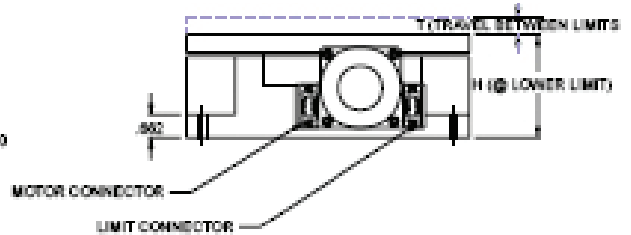
Top View



Side View



End View



Third Angle Projection
 Note: All Dimensions in Inches

MODEL	LENGTH	
	T	L
ZE-050-SM	0.50	2.874
ZE-100-SM	1.00	3.150

Note: All dimensions are in inches.