ASI
APPLIED SCIENTIFIC
INSTRUMENTATION

3D/4D Stage

3D/4D Stage Features

ASI's compact 3D/4D stage is a precise motorized motion control system designed to move samples around fixed optics. It incorporates three ASI linear stages and an optional motorized rotating stage employed for a theta axis. The linear stages comprising the XYZ elements offer travel options of 25, 50, 100, or 200 mm and each axis can be chosen separately. The linear stages derive smooth and accurate motion from closed-loop DC servomotors, crossed-roller bearings, high-precision lead screws, and high-resolution encoders for positioning feedback. Like other ASI stages, these can move uniformly at extremely slow speeds for in-motion acquisition. All the stages offer various speed/accuracy options for a more customized 3D/4D system. The stage elements are rigidly attached together, and usually mounted to a breadboard via an adapter plate.

ASI offers a variety of controllers that are compatible with this stage, including the MS-2000 and the modular Tiger controller. All provide automatic backlash correction, and can communicate with a host computer by RS-232 or USB connection.

Specifications

Specifications	Dimensions
Encoder Resolution*	5.5 nm
with Linear Encoder	10 nm
RMS repeatability (Typical)*	< 0.7 µm
with Linear Encoder (Typical)	200 nm
Leadscrew Accuracy	0.25 µm/mm
with Linear Encoder	± 3 µm/length of scale
Maximum Velocity*	1.75 mm/sec
Range of Travel*	25 mm (1") to 100 mm (4")

* With 1.59 mm pitch (16 TPI) Lead screw

Leadscrew Options

Leadscrew Pitch Options	Rotary Encoder Resolution	Maximum Speed
25.40 mm (Ultra-coarse)	88 nm	28 mm/sec
12.70 mm (Super-coarse)	44 nm	14 mm/sec
6.35mm (Standard)	22 nm	7 mm/sec
1.59 mm (Fine)	5.5 nm	1.75 mm/sec
0.653 mm (Extra-Fine)	2.2 nm	0.7 mm/sec

*Shown with rotary encoder and 6.35 mm pitch lead screw