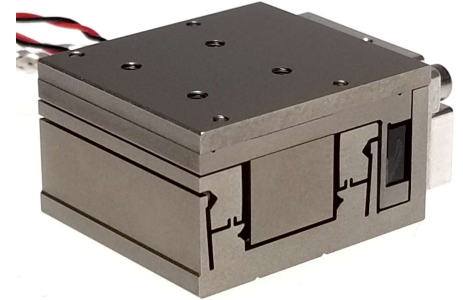


Piezomotor Stage Model I-20

DSM's I-20 linear piezo stage combines a high-precision step and repeat piezo motor, non-magnetic crossed roller bearings, and a high-resolution linear encoder. The I-20 can be used as a precision linear stage or as a linear actuator to move other devices. Multiple I-20's can be used create XY and XYZ stages. The internal step and repeat piezo motor offers smooth output motion and can push a load of up to 10 N. When idle, it can resist in-line loads of up to 15 N. The integrated low-friction crossed roller bearings allow the stage to carry very high off-axis loads, eliminating the need to design separate load-bearing elements.

DSM's **MD-90 controller** enhances the I-20 by adding closed loop positioning control, microstepping, and analog output modes. In the microstepping mode, the driver can vary the step size from the standard $\sim 5 \mu\text{m}$ down to $\sim 50 \text{ nm}$. In analog mode, the output stage varies using only the linear extension piezo to create smooth motion accurate to 20 nm.



Specifications

Total stroke	15 mm (0.6 in)
Maximum step size	5 μm
Analog stroke range	20 nm – 5 μm
Encoder resolution	10 nm
Axial drive stiffness	$>5 \text{ N}/\mu\text{m}$
Out of plane angular motion	$<100 \mu\text{rad}$
Motor max speed	1 mm/sec (with MD-90 motor driver)
Max drive force / power off hold	10 N / 15 N
Dimensions	25 mm x 33.9 mm x 16.1 mm (0.99 in x 1.33 in x 0.64 in)
Materials (not incl. encoder)	Titanium, ceramic, PZT, copper
Mass	45 g (incl. encoder)
Operating Voltage	-30V to +150V
Controller	DSM MD-90

Geometry and Dimensions

