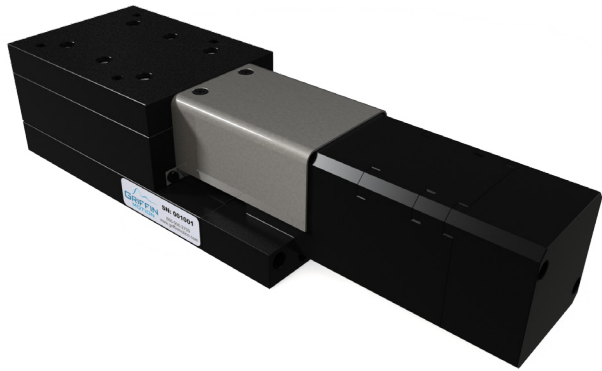


## Precision Linear Motion Platform

### FEATURES

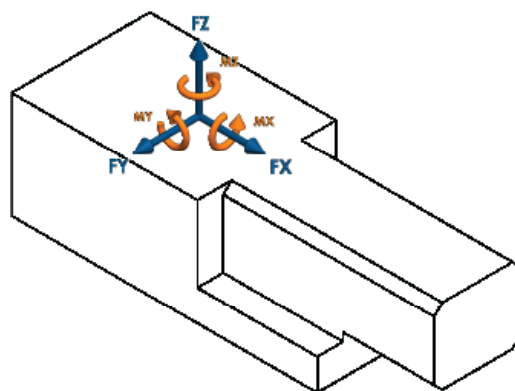
- Compact Low-Profile Design
- 50mm Travel
- Zero backlash, precision ground ball screws
- Optical limit switches with home
- High resolution rotary encoder
- Brushless servo motor drive
- Crossed Roller Bearings
- Power-Off Brake



The MLS-BS Series stages are designed for a variety of applications. This compact low profile ball screw stage is built for high duty cycles and long life for laboratory, factory automation and semiconductor processing equipment. This stage has exceptional levels of accuracy, repeatability, flatness and straightness. The crossed roller bearings and a precision ground ball screw offer extremely smooth operation and velocity control. The MLS-BS Series stages can be stacked to create X, Y and Z motion. The stage can operate in any orientation and has a brake for added safety and the optional tooling plate is easily customized for different mounting options.

## Product Specifications

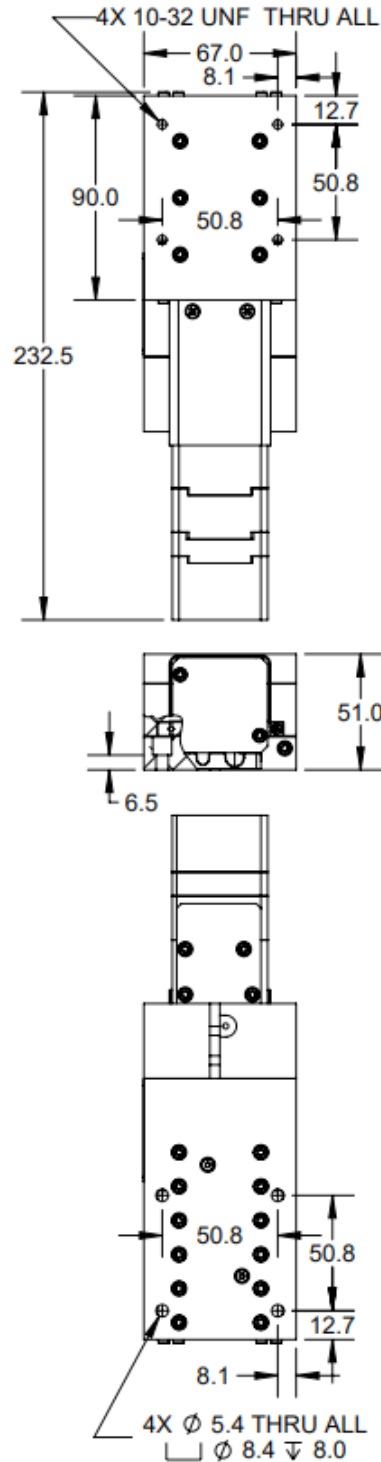
Encoder Output	A quad B, index
Force X (N)	75
Force Y (N)	75
Force Z (N)	75
Flatness ( $\mu\text{m}$ )	4
Height (mm)	51
Length (mm)	233
Limit Switches	Yes
Linear Accuracy ( $\mu\text{m}$ )	10
Linear Encoder Resolution ( $\mu\text{m}$ )	0.1
Linear Repeatability ( $\mu\text{m}$ )	2
Linear Velocity (mm/s)	50
Moment X (N·m)	2
Moment Y (N·m)	2
Moment Z (N·m)	2
Moving Mass X (kg)	0.54
Pitch +/- (arc-sec)	12
Screw Lead (mm)	2
Stage Mass (kg)	1.3
Straightness ( $\mu\text{m}$ )	4
Width (mm)	67
Yaw +/- (arc-sec)	10



LOAD DIRECTIONS

## Part Number Description

MLS	MLS Series
050	50mm Travel
BS	Ball Screw Drive
A	Brushless Servo Motor
H	0.125 $\mu\text{m}$ Rotary
S	Standard Precision
D	Power-Off Brake
00	Standard Product (Call for custom)

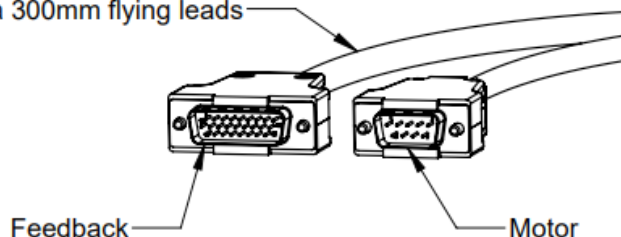


MLS-050-BS-A-M-S-D-00

## Electrical Pinout

Feedback Connector (DSUB26HD MALE)	
PIN	NAME
1	+5V
2	A+
3	B+
4	RI+
5	LIM+
6	*
7	*
8	*
9	*
10	*
11	A-
12	B-
13	RI-
14	LIM-
15	*
16	*
17	*
18	*
19	GND
20	HALL A
21	HALL B
22	HALL C
23	*
24	*
25	*
26	*
* Reserved	

Motor and Feedback connections provided via 300mm flying leads



Motor Connector (DSUB9 MALE)	
PIN	NAME
1	*
2	*
3	*
4	BRAKE+
5	BRAKE-
6	PHASE A
7	PHASE B
8	PHASE C
9	*
* Reserved	



MLS-050-BS-A-M-S-D-00

## Electrical Specifications

Motor Specifications	
Motor Type	3 $\Phi$ Brushless DC
BEMF Constant (V/KRPM)	1.88
Electrical Time Constant (ms)	0.38
Max Bus Voltage (VDC)	40
Max Continuous Current (A)	3.0
Motor Force Constant (N/A)	50.8
Peak Current (A)	10.0
Pin to Pin Inductance (mH)	0.55
Pin to Pin Resistance (ohm)	1.51
Poles per Revolution	6

Feedback Specifications	
Supply Voltage (V)	5.0 $\pm$ 10%
Supply Current (mA)	200
Encoder Feedback	Yes
Encoder Type	Incremental
Encoder Output	Square Wave Quadrature, RS-422 compatible, A,B,Z, Differential Pairs
Encoder Resolution	10000 cts/mm
Hall Switch Output	Open-collector, no internal pullup resistor
Hall Switch max current (mA)	-20
Limit Switches	Yes
Limit Switch Output Type	Open-collector, no internal pullup resistor
Limit Switch Output current (mA)	-20.0
Limit Switch Output Low (V)	0.8

The encoder will output one index pulse near center travel. This pulse is highly repeatable and can be used upon power-up to find an absolute position to use for further measurements.

Two limit switches are provided at the ends of travel. The limit switches will be pulled low throughout the travel range of the stage. The output will swing to high-impedance at the end of travel and remain high-impedance until the mechanical limit of the stage is reached.