

## Precision Linear Motion Platform

### FEATURES

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



The LNS-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 and can attain high velocities for 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 LNS-BS Series stages can be stacked to create X, Y and Z motion. The stage can operate in any orientation and has an optional brake for added safety.



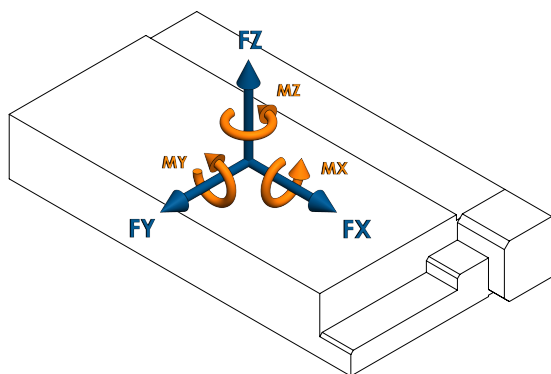
1040 CLASSIC ROAD | APEX, NC 27539  
P: 866.906.2709 | F: 919.882.1430  
www.griffinmotion.com

LNS-050-BS-A-M-P-0-00

## Motion Specifications

## Product Specifications

Encoder Output	A quad B, index
Force X (N)	200
Force Y (N)	250
Force Z (N)	500
Flatness ( $\mu\text{m}$ )	2
Height (mm)	45
Length (mm)	185
Limit Switches	Yes
Linear Accuracy ( $\mu\text{m}$ )	3
Linear Encoder Resolution ( $\mu\text{m}$ )	0.1
Linear Repeatability ( $\mu\text{m}$ )	0.5
Linear Velocity (mm/s)	150
Moment X (N-m)	50
Moment Y (N-m)	250
Moment Z (N-m)	150
Moving Mass X (kg)	1.14
Pitch +/- (arc-sec)	3
Screw Lead (mm)	2
Stage Mass (kg)	2.99
Straightness ( $\mu\text{m}$ )	2
Width (mm)	155
Yaw +/- (arc-sec)	3



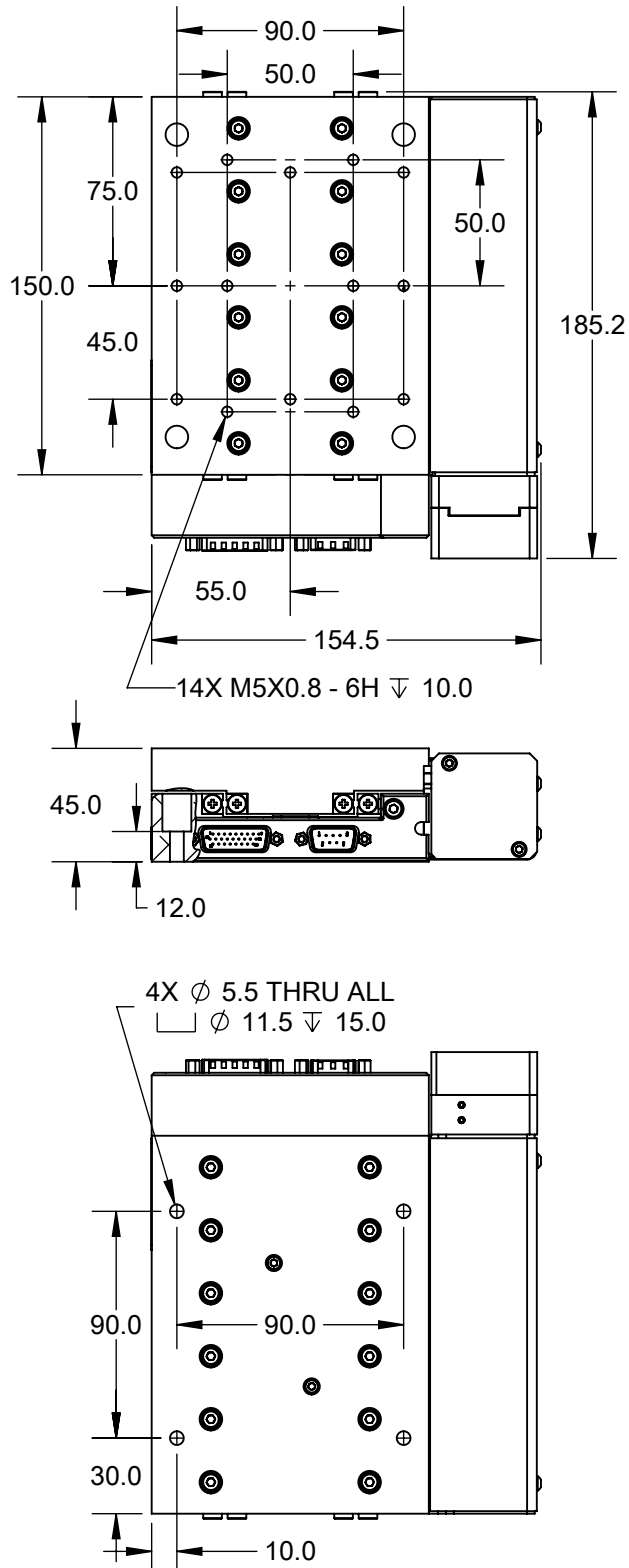
LOAD DIRECTIONS

## Part Number Description

LNS	LNS Series
050	50mm Travel
BS	Ball Screw Drive
A	Brushless Servo Motor
M	0.1 $\mu\text{m}$ Linear SS Scale
P	High Precision
0	No Additional Options
00	Standard Product (Call for custom)

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## Mechanical Specifications



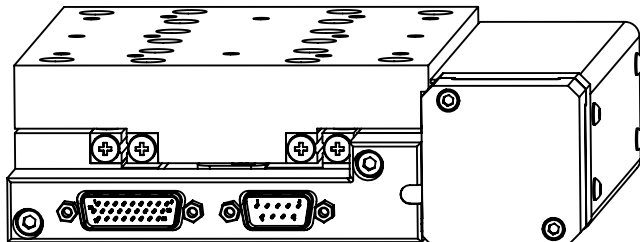
LNS-050-BS-A-M-P-0-00

Rev 8

LNS-050-BS-A-M-P-0-00

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



LNS-050-BS-A-M-P-0-00

## 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.