

## Precision Linear Motion Platform

### FEATURES

- Compact Low-Profile Design
- 100mm Travel
- Zero backlash, precision ground ball screws
- 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.

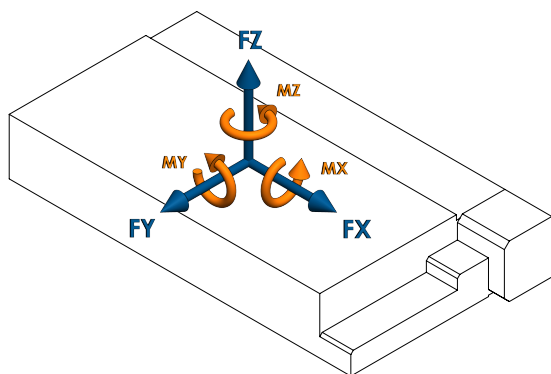


LNS-100-BS-A-M-S-0-00

## Motion Specifications

## Product Specifications

|   |                 |
|---|-----------------|
| Encoder Output                              | A quad B, index |
| Force X (N)                                 | 200             |
| Force Y (N)                                 | 250             |
| Force Z (N)                                 | 500             |
| Flatness ( $\mu\text{m}$ )                  | 5               |
| Height (mm)                                 | 45              |
| Length (mm)                                 | 235             |
| Limit Switches                              | Yes             |
| Linear Accuracy ( $\mu\text{m}$ )           | 8               |
| Linear Encoder Resolution ( $\mu\text{m}$ ) | 0.1             |
| Linear Repeatability ( $\mu\text{m}$ )      | 1               |
| Linear Velocity (mm/s)                      | 150             |
| Moment X (N-m)                              | 60              |
| Moment Y (N-m)                              | 275             |
| Moment Z (N-m)                              | 110             |
| Moving Mass X (kg)                          | 1.67            |
| Pitch +/- (arc-sec)                         | 10              |
| Screw Lead (mm)                             | 2               |
| Stage Mass (kg)                             | 3.67            |
| Straightness ( $\mu\text{m}$ )              | 5               |
| Width (mm)                                  | 155             |
| Yaw +/- (arc-sec)                           | 10              |



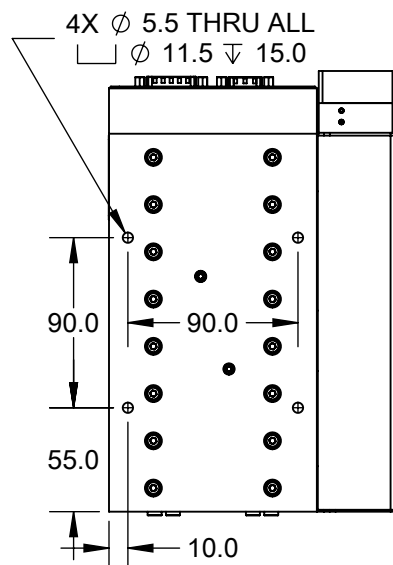
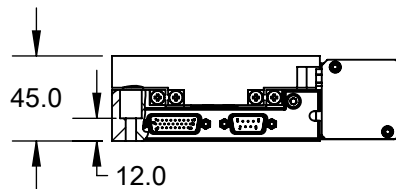
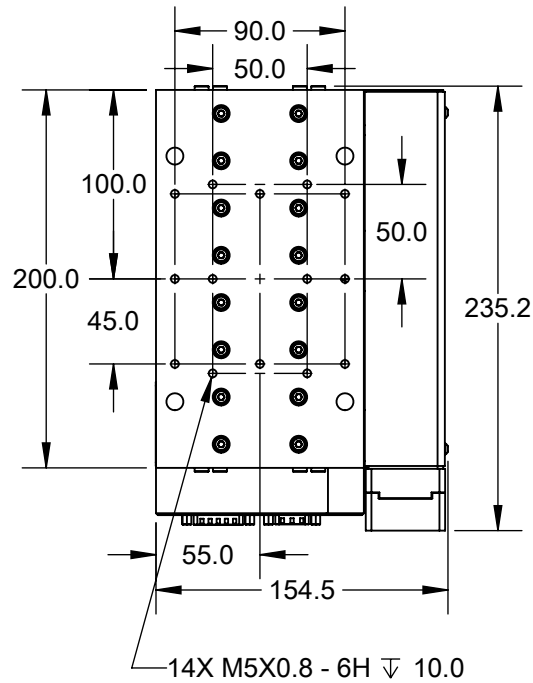
LOAD DIRECTIONS

## Part Number Description

|     |                                      |
|-----|--------------------------------------|
| LNS | LNS Series                           |
| 100 | 100mm Travel                         |
| BS  | Ball Screw Drive                     |
| A   | Brushless Servo Motor                |
| M   | 0.1 $\mu\text{m}$ Linear SS Scale    |
| S   | Standard Precision                   |
| 0   | No Additional Options                |
| 00  | Standar Product<br>(Call for custom) |

LNS-100-BS-A-M-S-0-00

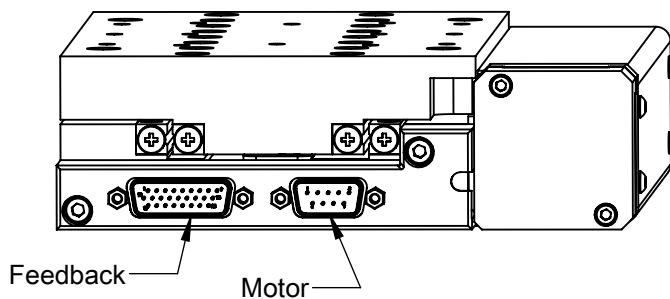
## Mechanical Specifications



LNS-100-BS-A-M-S-0-00

Rev 7

| 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-100-BS-A-M-S-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.