

X-LRM100A Datasheet



- 25, 50, 100, 150, 200 mm travel options
- Up to 8 μm accuracy and 50 nm resolution
- 50 kg load capacity
- Hardened steel construction and integrated recirculating ball bearing guide provide exceptional stiffness and thermal stability
- Built-in controller, daisy-chains with other Zaber products

X-LRM Series Overview

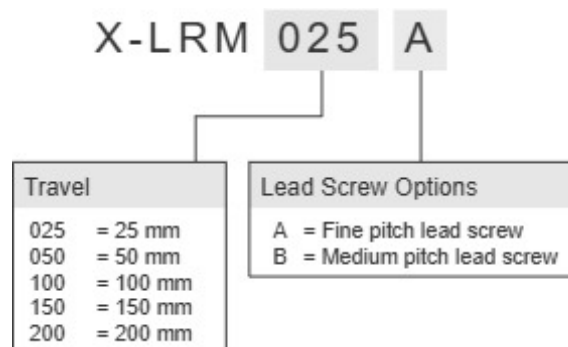
Zaber's X-LRM Series products are motorized linear stages with integrated controllers. The X-LRM's hardened steel construction and recirculating ball bearing guide provide exceptional rigidity and thermal stability. High stiffness makes the X-LRM ideal for multi-axis configurations or applications where excellent stability under moment loads is required.

The X-LRM stages are stand-alone units requiring only a standard 24-48 V power supply. An indexed knob at the end of the unit permits manual control - press and hold to switch between velocity mode and position mode, turn to move the stage, and press to stop.

The stages connect to the USB 2.0 or RS-232 port of any computer and can be chained with several units per chain. They can be chained with any other Zaber products. Convenient locking, 4-pin, M8 connectors on the unit allow for easy and secure connection between products. The chain also shares power, so multiple X-Series products can use a single power supply.

For more information visit: <https://www.zaber.com/products/linear-stages/X-LRM>

X-LRM Series Part Numbering & Options



X-LRM100A Drawings

- [X-LRM.png \(Drawing for the X-LRM\)](#)

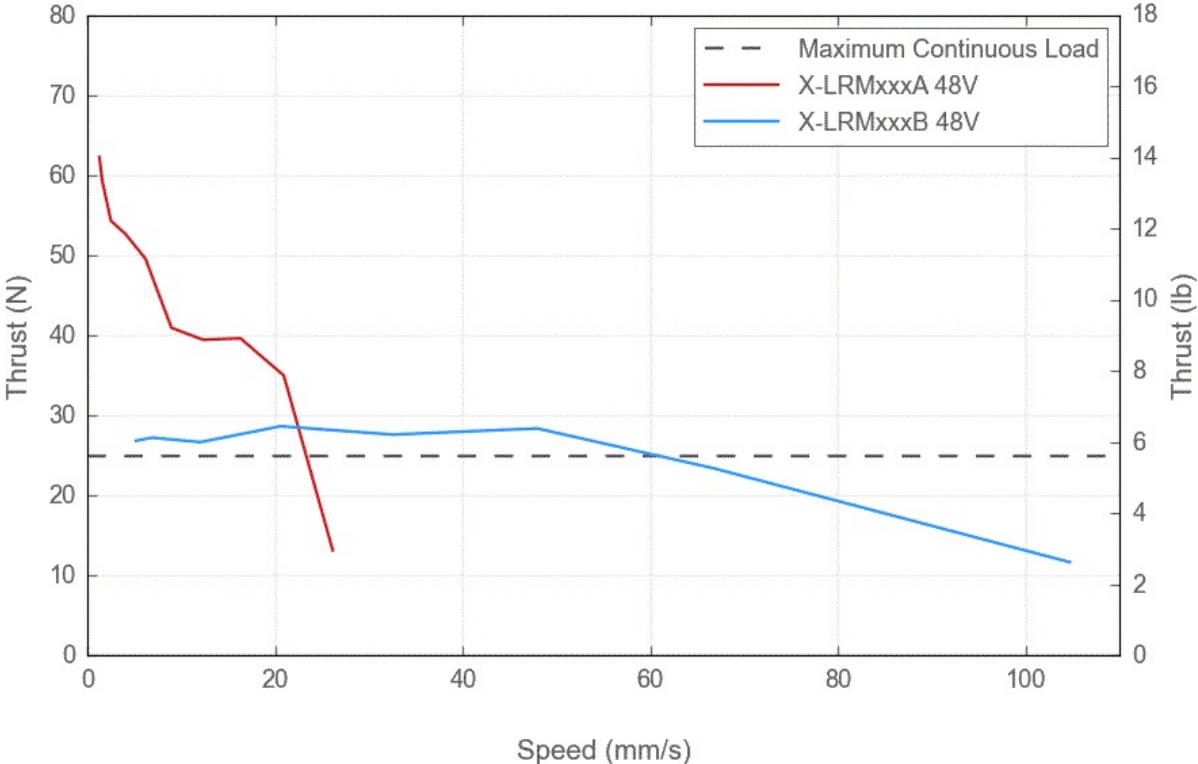
X-LRM100A Specifications

| | |
|--|--|
| Microstep Size (Default Resolution) | 0.047625 μm |
| Built-in Controller | Yes |
| Travel Range | 100.0 mm (3.937") |
| Accuracy (unidirectional) | 30 μm (0.001181") |
| Repeatability | < 4 μm (< 0.000157") |
| Backlash | < 5 μm (< 0.000197") |
| Maximum Speed | 25 mm/s (0.984"/s) |
| Minimum Speed | 0.000029 mm/s (0.000001"/s) |
| Speed Resolution | 0.000029 mm/s (0.000001"/s) |
| Encoder Type | No |
| Peak Thrust | 50 N (11.2 lb) |
| Maximum Continuous Thrust | 25 N (5.6 lb) |
| Communication Interface | RS-232, USB 2.0 |
| Communication Protocol | Zaber ASCII (Default), Zaber Binary |
| Data Cable Connection | Locking 4-pin M8 |
| Maximum Centered Load | 500 N (112.1 lb) |
| Maximum Moment (Pitch) | 6 N-m (4.4 ft-lb) |
| Maximum Moment (Roll) | 15 N-m (11.1 ft-lb) |
| Maximum Moment (Yaw) | 6 N-m (4.4 ft-lb) |
| Vertical Runout | < 8 μm (< 0.000315") |
| Horizontal Runout | < 12 μm (< 0.000472") |
| Pitch | 0.02° (0.349 mrad) |
| Roll | 0.02° (0.349 mrad) |
| Yaw | 0.02° (0.349 mrad) |
| Stiffness in Pitch | 550 N-m/° (32 $\mu\text{rad/N-m}$) |
| Stiffness in Roll | 550 N-m/° (32 $\mu\text{rad/N-m}$) |
| Stiffness in Yaw | 550 N-m/° (32 $\mu\text{rad/N-m}$) |
| Power Supply | 24-48 VDC |

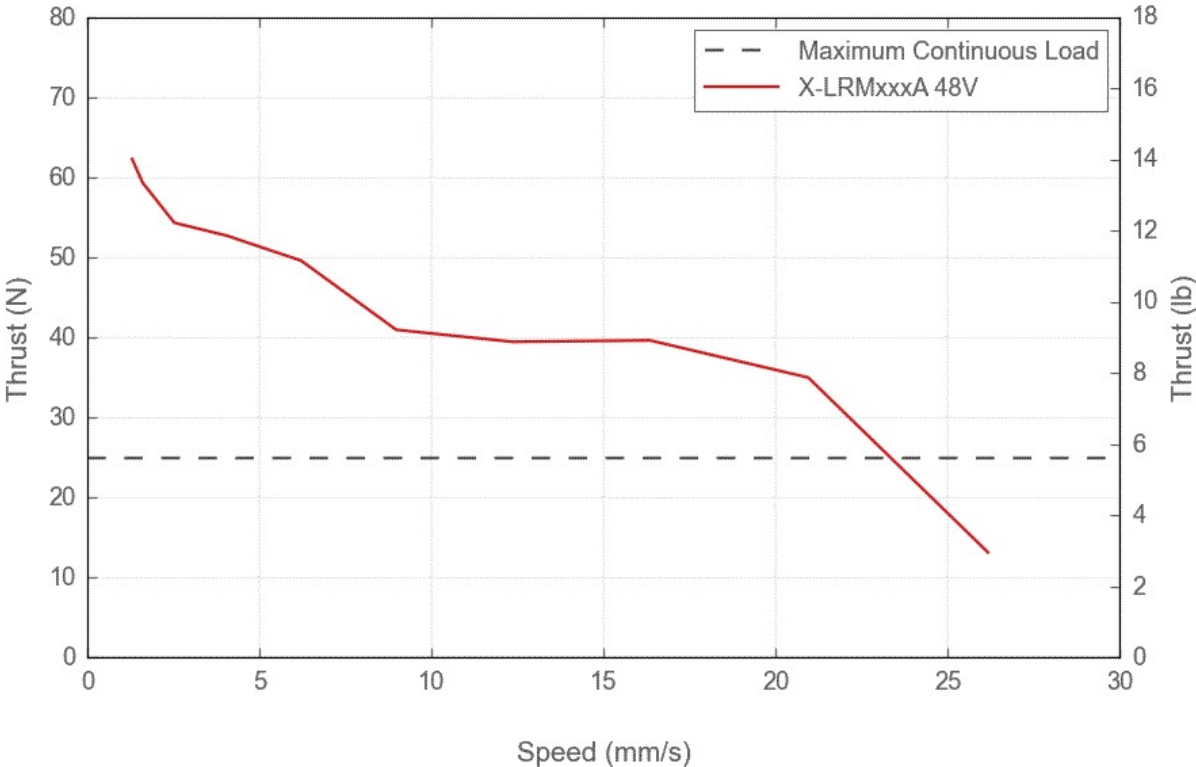
| | |
|--|--|
| Microstep Size (Default Resolution) | 0.047625 μm |
| Power Plug | 2-pin Screw Terminal |
| Maximum Current Draw | 350 mA |
| Linear Motion Per Motor Rev | 0.6096 mm (0.024") |
| Motor Steps Per Rev | 200 |
| Motor Type | Stepper (2 phase) |
| Motor Rated Current | 600 mA/phase |
| Inductance | 3.5 mH/phase |
| Default Resolution | 1/64 of a step |
| Guide Type | Recirculating ball bearing |
| Mechanical Drive System | Precision lead screw |
| Limit or Home Sensing | Magnetic hall sensor |
| Manual Control | Yes |
| Axes of Motion | 1 |
| Mounting Interface | M3 and M6 threaded holes |
| Stage Parallelism | < 10 μm (< 0.000394") |
| Operating Temperature Range | 0 to 50 °C |
| CE Compliant | Yes |
| Vacuum Compatible | No |
| Weight | 0.95 kg (2.094 lb) |

X-LRM Series Charts

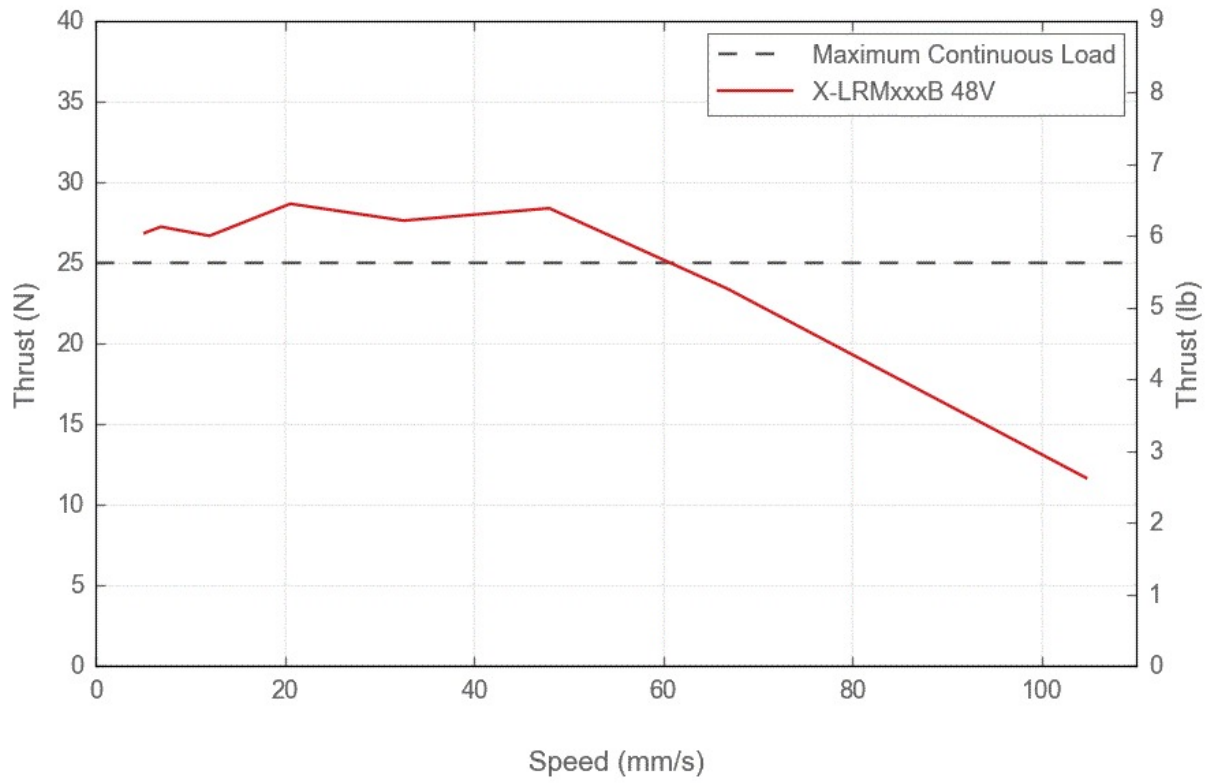
Thrust Speed Performance



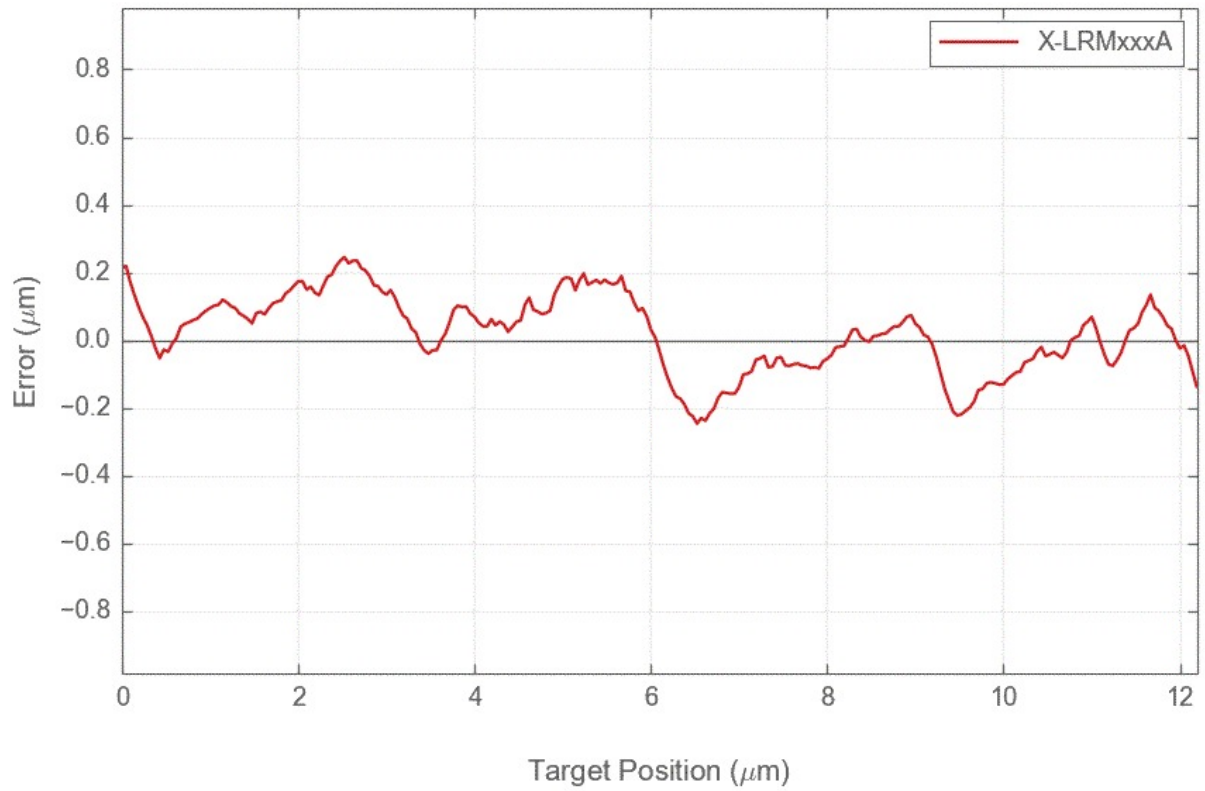
Thrust Speed Performance



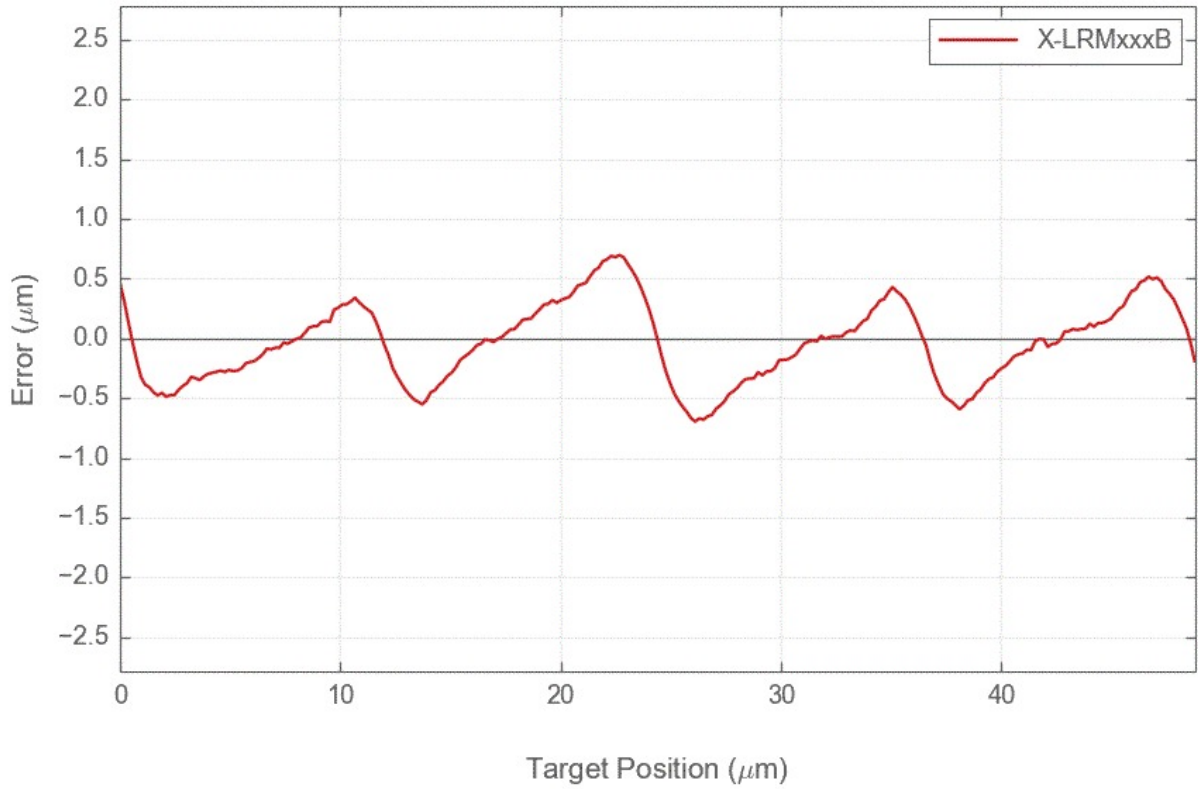
Thrust Speed Performance



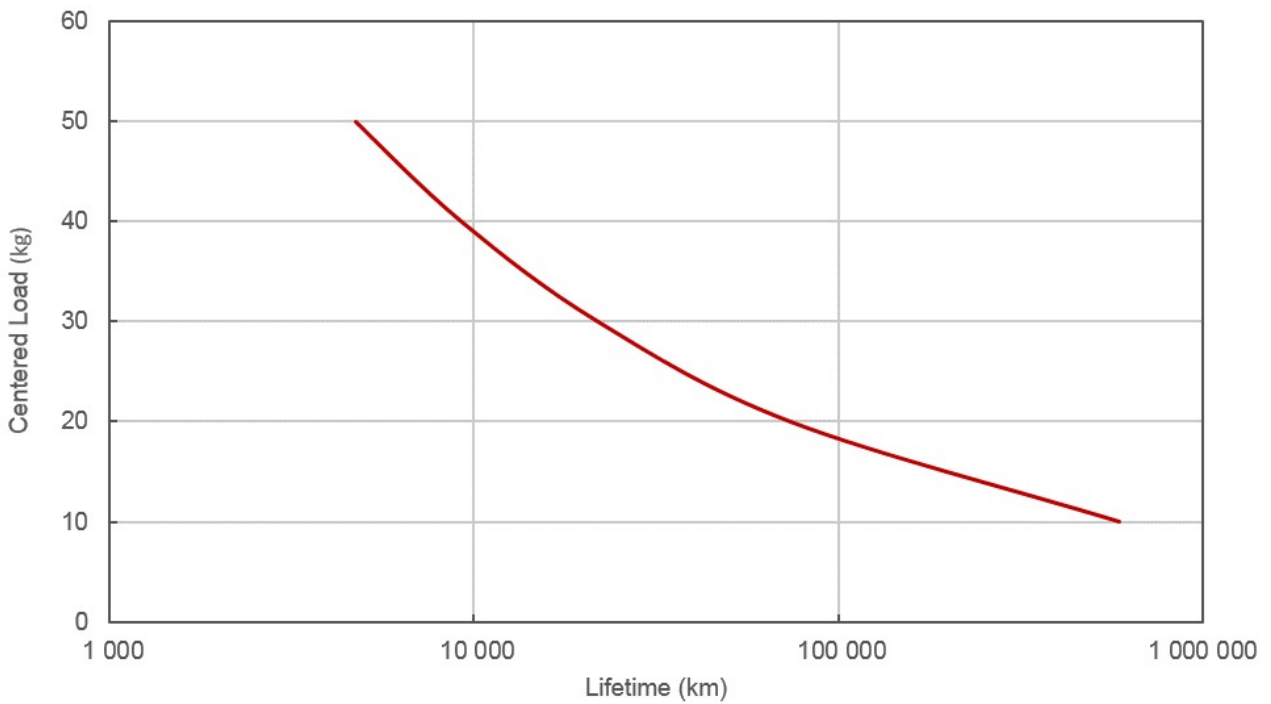
Typical Microstepping Accuracy



Typical Microstepping Accuracy



LRM Linear Bearing Lifetime



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