



## X-LRM050B-E03 Datasheet



- Hardened steel construction and integrated recirculating ball bearing guide provide exceptional stiffness and thermal stability
- 25, 50, 100, 150, 200 mm travel
- Motor encoder position feedback with slip/stall detection and automatic recovery
- Up to 8  $\mu\text{m}$  accuracy and 50 nm resolution
- 50 kg load capacity
- Built-in controller, daisy-chains with other Zaber products

### X-LRM-E Series Overview

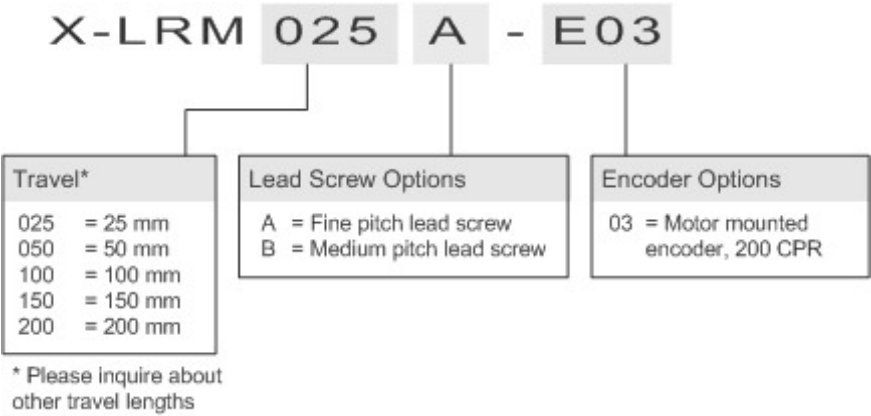
Zaber's X-LRM-E Series products are motorized linear stages with integrated controllers. The X-LRM-E's hardened steel construction and recirculating ball bearing guide provide exceptional rigidity and thermal stability. High stiffness makes the X-LRM-E ideal for multi-axis configurations or applications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

The X-LRM-E 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.

X-LRM-E Series Part Numbering



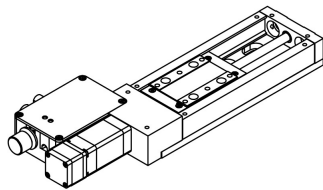
## X-LRM050B-E03 Bundle Options

*This device may be purchased stand-alone or bundled with one of the following accessory kits:*

Products	Description
X-LRM050B-E03	Motorized linear stage, integrated controller and motor encoder, 50 mm travel, medium resolution
with KX14A accessory kit Power supply: North America, 48 V. Powers multiple X-Series devices	<ul style="list-style-type: none"><li>• 1 x PS14S-48V37: Power Supply, 48 V 3.75 A, Compatible with X-Series Products</li><li>• 1 x X-DC02: Data Cable, 2 ft (0.6 m), for Use with all X-Series Products</li><li>• 1 x X-USBDC: USB to Serial Converter Cable with M8 Female Plug for X-Series Products</li></ul>
with KX13A accessory kit Power supply: North America, 48 V. Powers one axis	<ul style="list-style-type: none"><li>• 1 x PS13S-48V12: Power Supply, 48 V 1.25 A, Compatible with X-Series Products</li><li>• 1 x X-DC02: Data Cable, 2 ft (0.6 m), for Use with all X-Series Products</li><li>• 1 x X-USBDC: USB to Serial Converter Cable with M8 Female Plug for X-Series Products</li></ul>
with PTB2 accessory Power Supply Not Included	<ul style="list-style-type: none"><li>• 1 x PTB2: Power Terminal Block, 2 Pin, 5 mm Pitch, for Use with X-Series Devices with Custom Power Supply</li></ul>

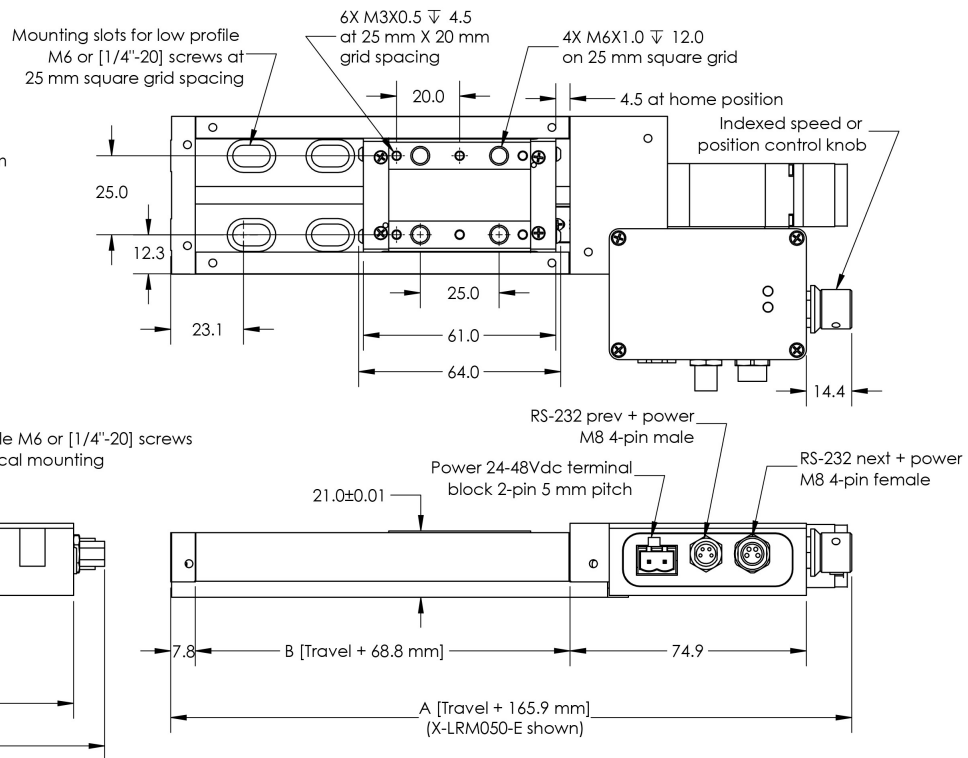
# X-LRM050B-E03 Drawings

**ZABER**  
X-LRM-E Motorized Linear Stage  
dimensions in mm



Model Number*	Travel	A	B
X-LRM025-E	25.0	190.9	93.8
X-LRM050-E	50.0	215.9	118.8
X-LRM100-E	100.0	265.9	168.8
X-LRM150-E	150.0	315.9	218.8
X-LRM200-E	200.0	365.9	268.8

\*See product page for complete list of available models at [www.zaber.com](http://www.zaber.com)



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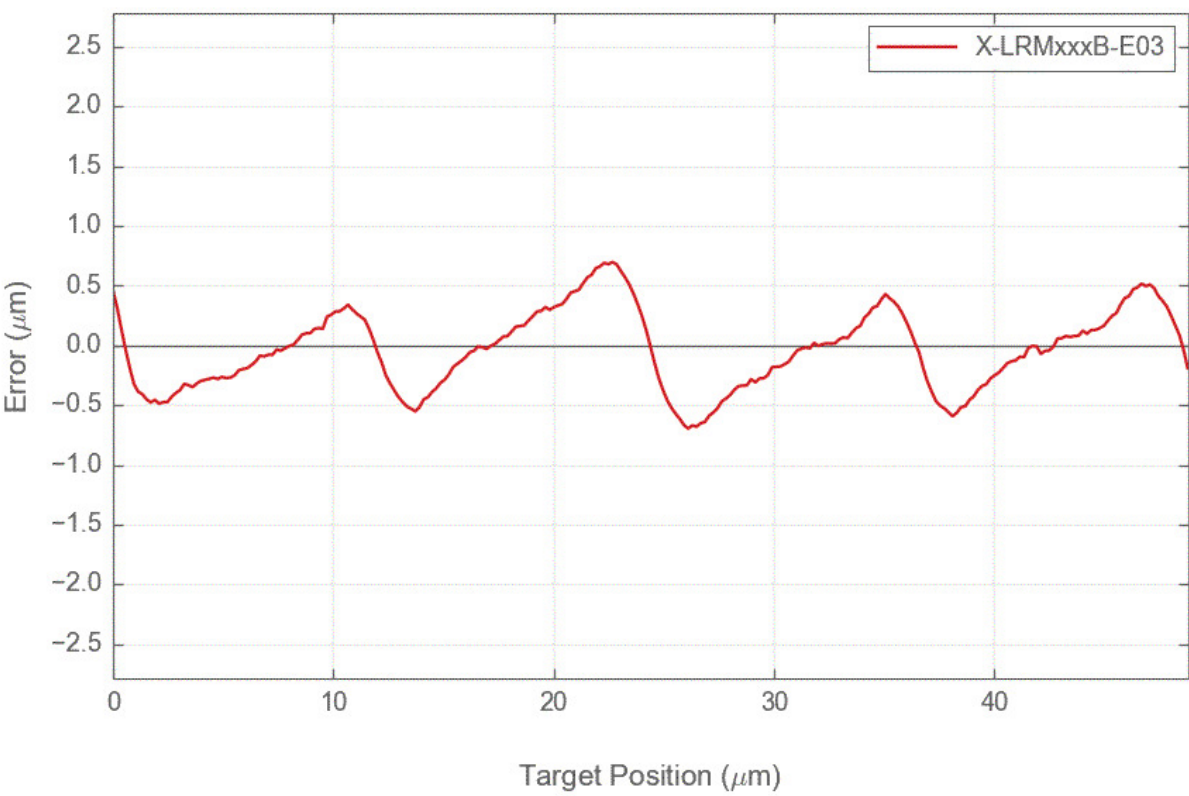
## X-LRM050B-E03 Specifications

Specification	Value	Alternate Unit
Microstep Size (Default Resolution)	0.1905 $\mu\text{m}$	
Built-in Controller	Yes	
Travel Range	50.0 mm	1.969"
Accuracy (unidirectional)	15 $\mu\text{m}$	0.000591"
Repeatability	< 3 $\mu\text{m}$	< 0.000118"
Backlash	< 12 $\mu\text{m}$	< 0.000472"
Maximum Speed	100 mm/s	3.937"/s
Minimum Speed	0.000116 mm/s	0.000005"/s
Speed Resolution	0.000116 mm/s	0.000005"/s
Encoder Resolution	200 CPR	800 states/rev
Encoder Type	Rotary quadrature encoder	
Peak Thrust	25 N	5.6 lb
Maximum Continuous Thrust	25 N	5.6 lb
Communication Interface	RS-232, USB 2.0	
Communication Protocol	Zaber ASCII (Default), Zaber Binary	
Maximum Centered Load	500 N	112.1 lb
Maximum Cantilever Load	1500 N-cm	2124.2 oz-in
Guide Type	Recirculating ball bearing	
Vertical Runout	< 8 $\mu\text{m}$	< 0.000315"
Horizontal Runout	< 12 $\mu\text{m}$	< 0.000472"
Pitch	0.02°	0.349 mrad
Roll	0.02°	0.349 mrad
Yaw	0.02°	0.349 mrad
Stiffness in Pitch	750 N-m/°	23 $\mu\text{rad/N-m}$
Stiffness in Roll	550 N-m/°	32 $\mu\text{rad/N-m}$
Stiffness in Yaw	400 N-m/°	44 $\mu\text{rad/N-m}$
Maximum Current Draw	350 mA	
Power Supply	24-48 VDC	
Power Plug	2-pin Screw Terminal	
Linear Motion Per Motor Rev	2.4384 mm	0.096"

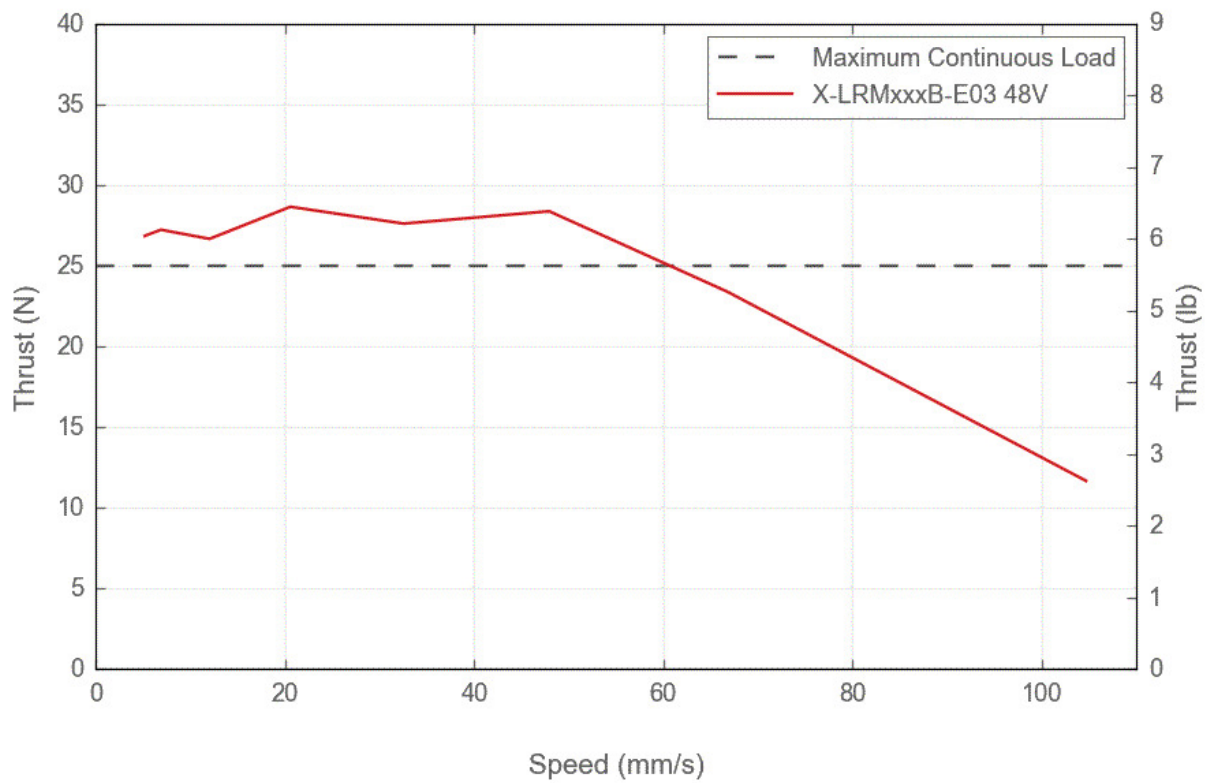
Specification	Value	Alternate Unit
Motor Steps Per Rev	200	
Motor Type	Stepper (2 phase)	
Motor Rated Current	600 mA/phase	
Inductance	3.5 mH/phase	
Default Resolution	1/64 of a step	
Data Cable Connection	Locking 4-pin M8	
Mechanical Drive System	Precision lead screw	
Limit or Home Sensing	Magnetic hall sensor	
Manual Control	Yes	
Axes of Motion	1	
Mounting Interface	M3 and M6 threaded holes	
Operating Temperature Range	0 to 50 °C	
Vacuum Compatible	No	
RoHS Compliant	Yes	
Stage Parallelism	< 10 µm	< 0.000394"
CE Compliant	Yes	
Weight	0.83 kg	1.830 lb

X-LRM-E Series Charts

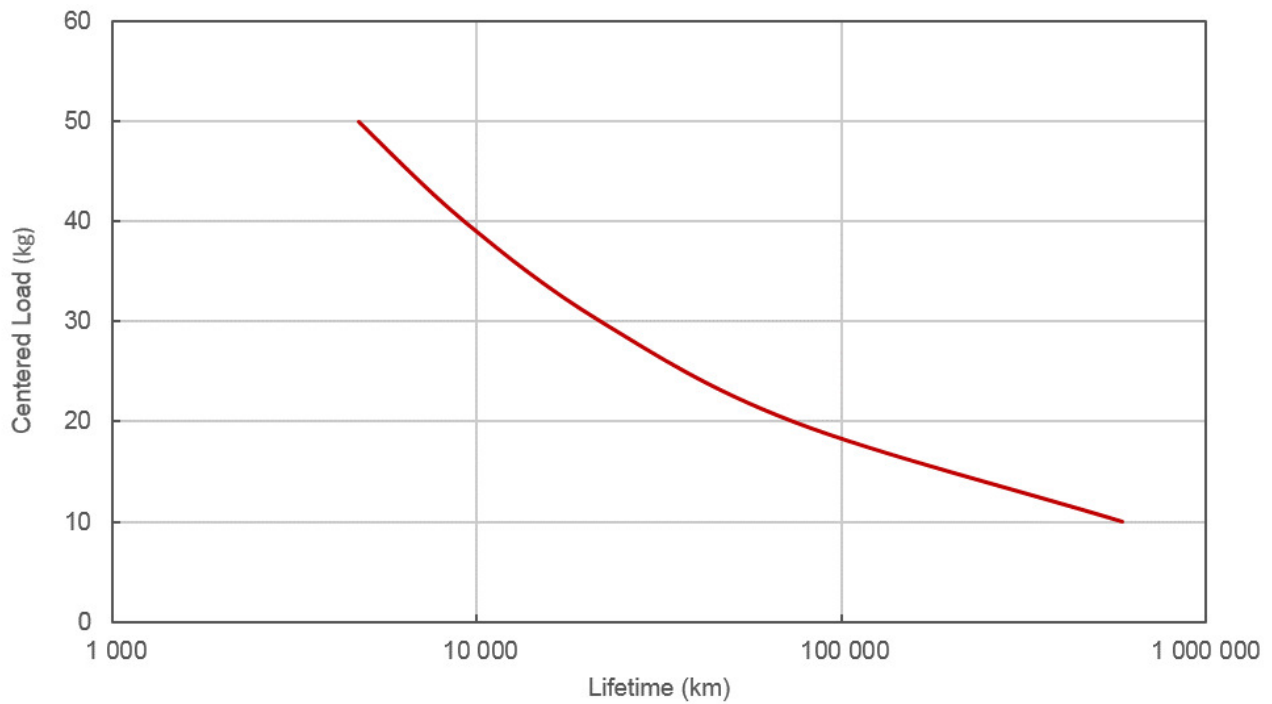
Typical Microstepping Accuracy



## Thrust Speed Performance

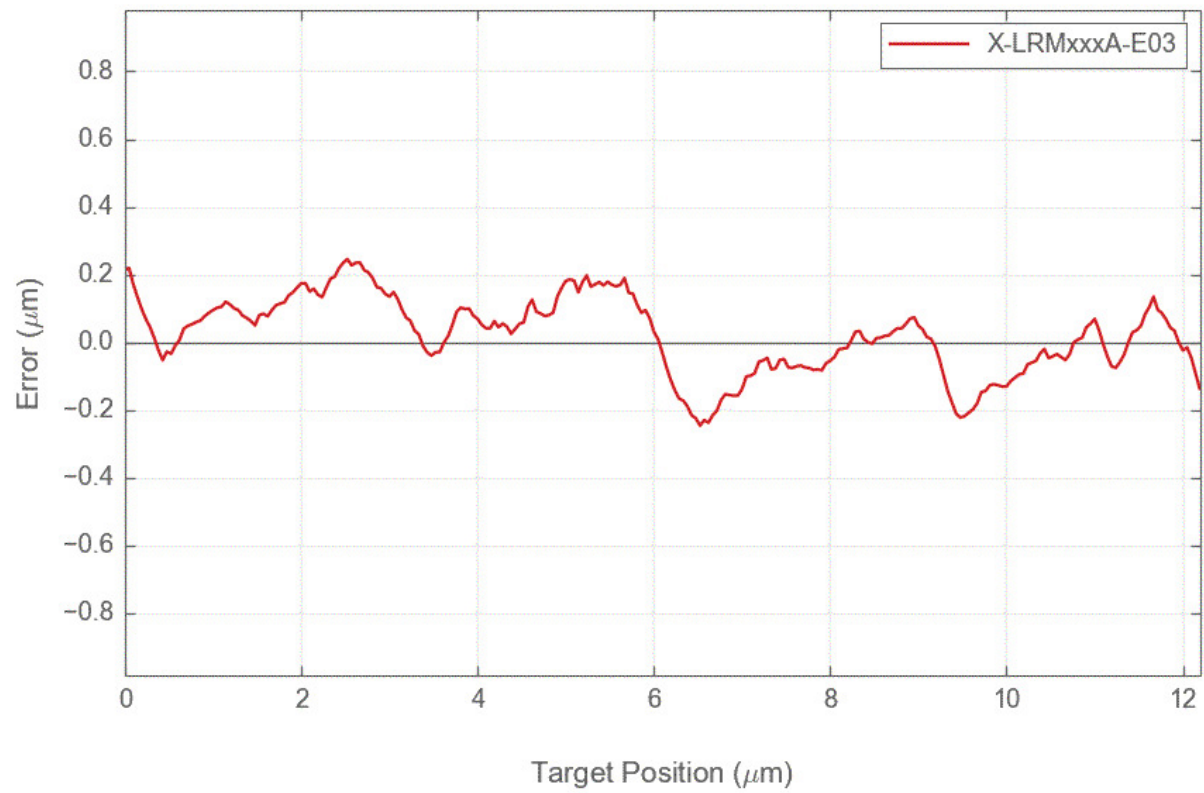


## LRM Linear Bearing Lifetime

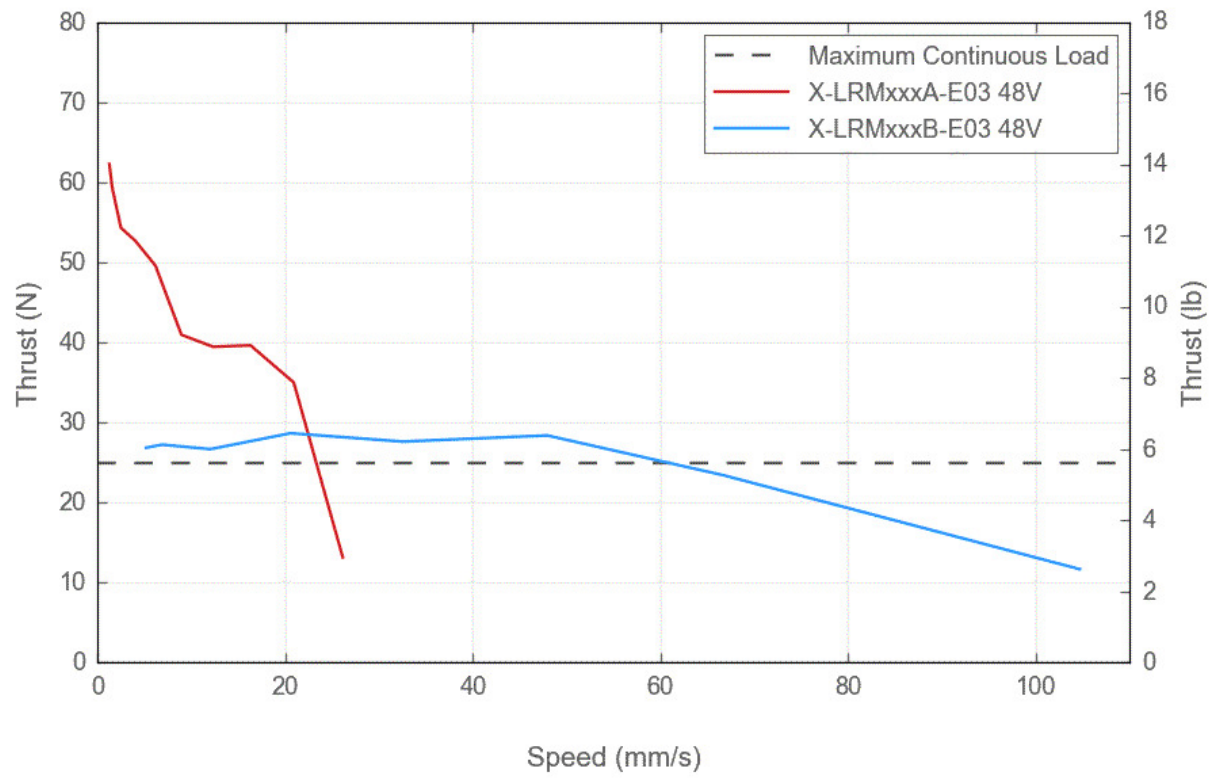




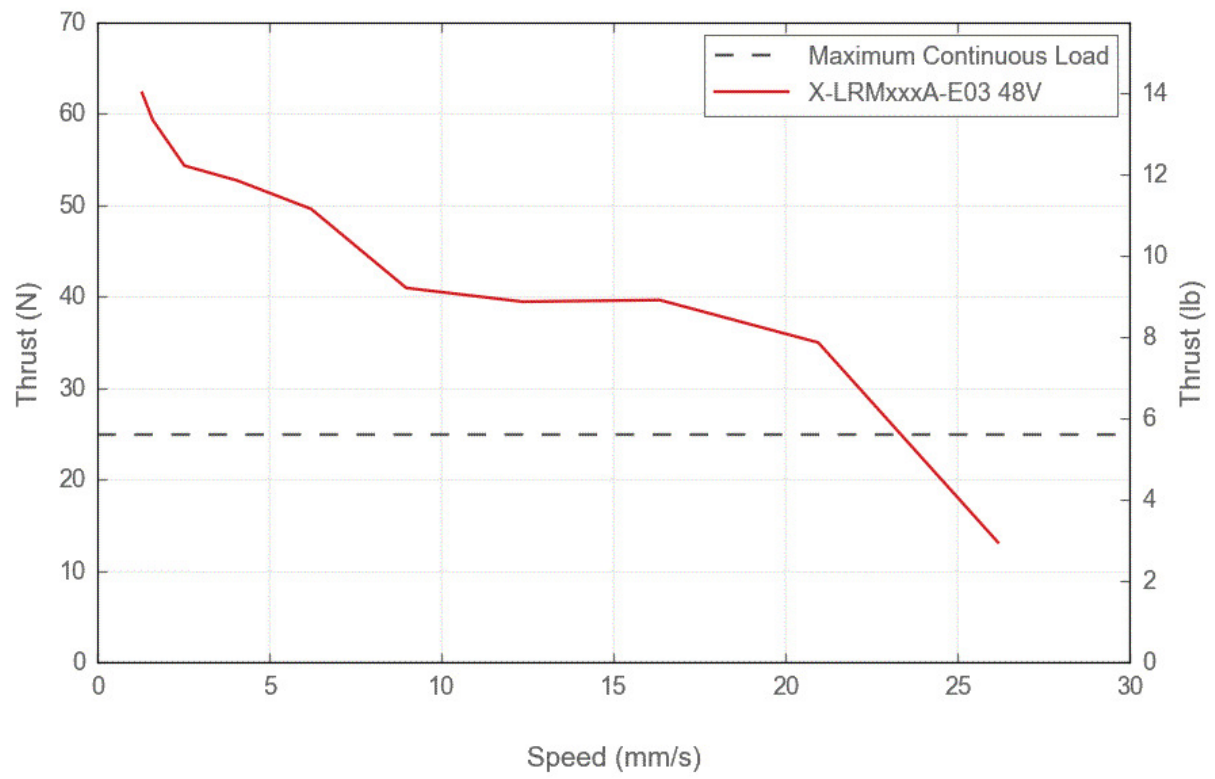
## Typical Microstepping Accuracy



## Thrust Speed Performance



## Thrust Speed Performance



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