



X-LRQ300BL-DE51 Datasheet



- 75, 150, 300, 450, 600 mm travel
- Up to 13 μm accuracy over 600 mm travel
- 100 kg load capacity
- Up to 205 mm/s speed and up to 300 N thrust
- Built-in controller; daisy-chains with other Zaber products
- Integrated linear encoders with 50 nm resolution provide slip/stall detection and position correction
- Inline and parallel drive configurations
- Ball screw and lead screw configurations
- Custom versions available

X-LRQ-DE Series Overview

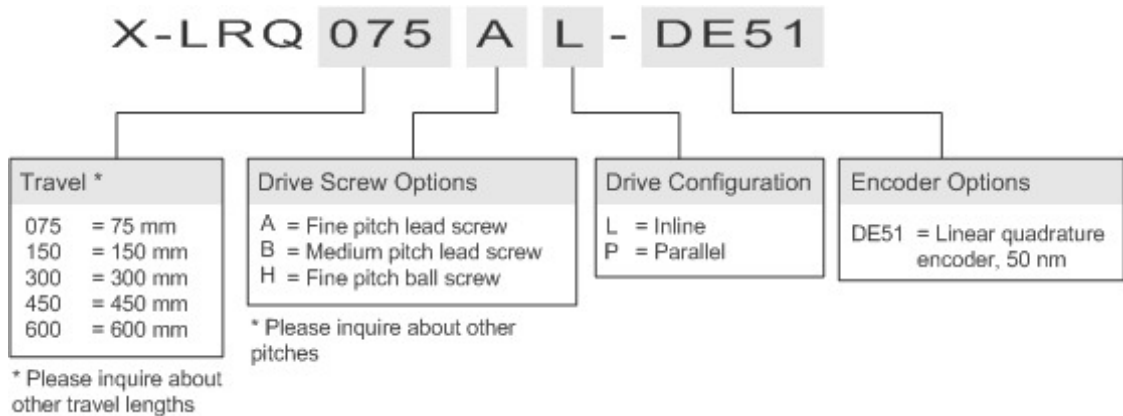
Zaber's X-LRQ-DE Series devices are computer-controlled, motorized linear stages with high stiffness, load, and lifetime capabilities in a compact size. An integrated linear encoder combined with stage calibration provides high accuracy positioning over the full travel of the device. Each device is available in either an inline or parallel drive configuration. They are stand-alone units requiring only a standard 24 V or 48 V power supply. An optional indexed knob provides convenient manual control for versatile operation even without a computer.

These stages connect to the RS-232 port or USB port of any computer, and they can be daisy-chained with any other Zaber products. The daisy-chain also shares power, making it possible for multiple X-Series products to share a single power supply. Convenient locking, 4-pin, M8 connectors on the unit allow for secure connection between units.

At only 36 mm high, these stages are excellent for applications where a low profile is required. The X-LRQ-DE's innovative design allows speeds up to 205 mm/s and loads up to 100 kg. Like all of Zaber's products, the X-LRQ-DE Series is designed to be 'plug and play' and very easy to set up and operate. These stages can bolt together into XY and XYZ systems. Some multi axis configurations may require additional accessories, please contact Zaber Technical Support to ensure the correct ones are selected.

For more information visit: <https://www.zaber.com/products/linear-stages/X-LRQ-DE/6>

X-LRQ-DE Series Part Numbering



X-LRQ300BL-DE51 Bundle Options

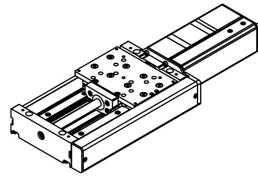
This device may be purchased stand-alone or bundled with one of the following accessory kits:

Products	Description
X-LRQ300BL-DE51	Motorized, lead-screw driven, linear stage, 300 mm travel, integrated linear encoder and controller, medium resolution, medium speed, inline drive
with KX14C accessory kit Power supply: North America, 48 V. Powers multiple X-Series devices	<ul style="list-style-type: none"> • 1 x PS14S-48V37: Power Supply, 48 V 3.75 A, Compatible with X-Series Products • 1 x X-DC06: Data Cable, 6 ft (2 m), for Use with all X-Series Products • 1 x X-USBDC: USB to Serial Converter Cable with M8 Female Plug for X-Series Products
with KX13C accessory kit Power supply: North America, 48 V. Powers one axis	<ul style="list-style-type: none"> • 1 x PS13S-48V12: Power Supply, 48 V 1.25 A, Compatible with X-Series Products • 1 x X-DC06: Data Cable, 6 ft (2 m), for Use with all X-Series Products • 1 x X-USBDC: USB to Serial Converter Cable with M8 Female Plug for X-Series Products
with PTB2 accessory Power Supply Not Included	<ul style="list-style-type: none"> • 1 x PTB2: Power Terminal Block, 2 Pin, 5 mm Pitch, for Use with X-Series Devices with Custom Power Supply

X-LRQ300BL-DE51 Drawings

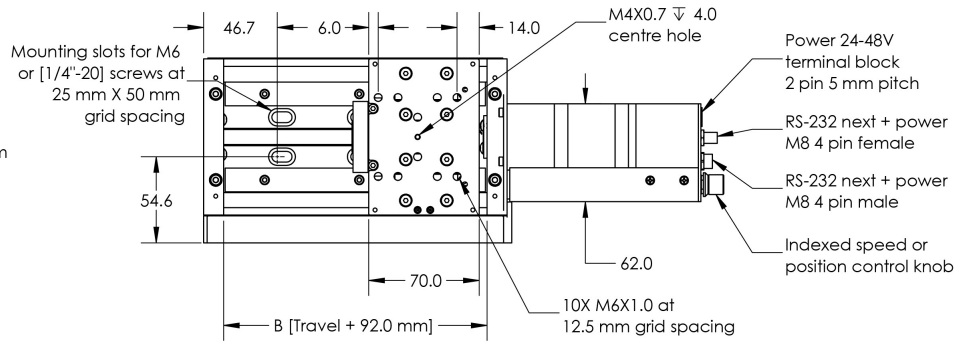
ZABER

X-LRQxL-DE Motorized Linear Stage
 dimensions in mm

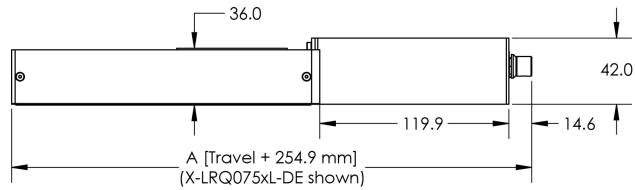
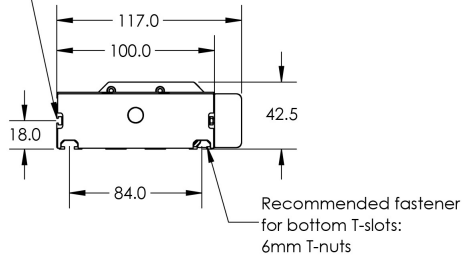


Model Number*	Travel	A	B
X-LRQ075xL-DE	75.0	329.9	167.0
X-LRQ150xL-DE	150.0	404.9	242.0
X-LRQ300xL-DE	300.0	554.9	392.0
X-LRQ450xL-DE	450.0	704.9	542.0
X-LRQ600xL-DE	600.0	854.9	692.0

*See product page for complete list of available models at www.zaber.com



Recommended fastener for side T-slots: standard M2.5 nuts
 Note: Do not mount stage using these side T-slots. For accessories only



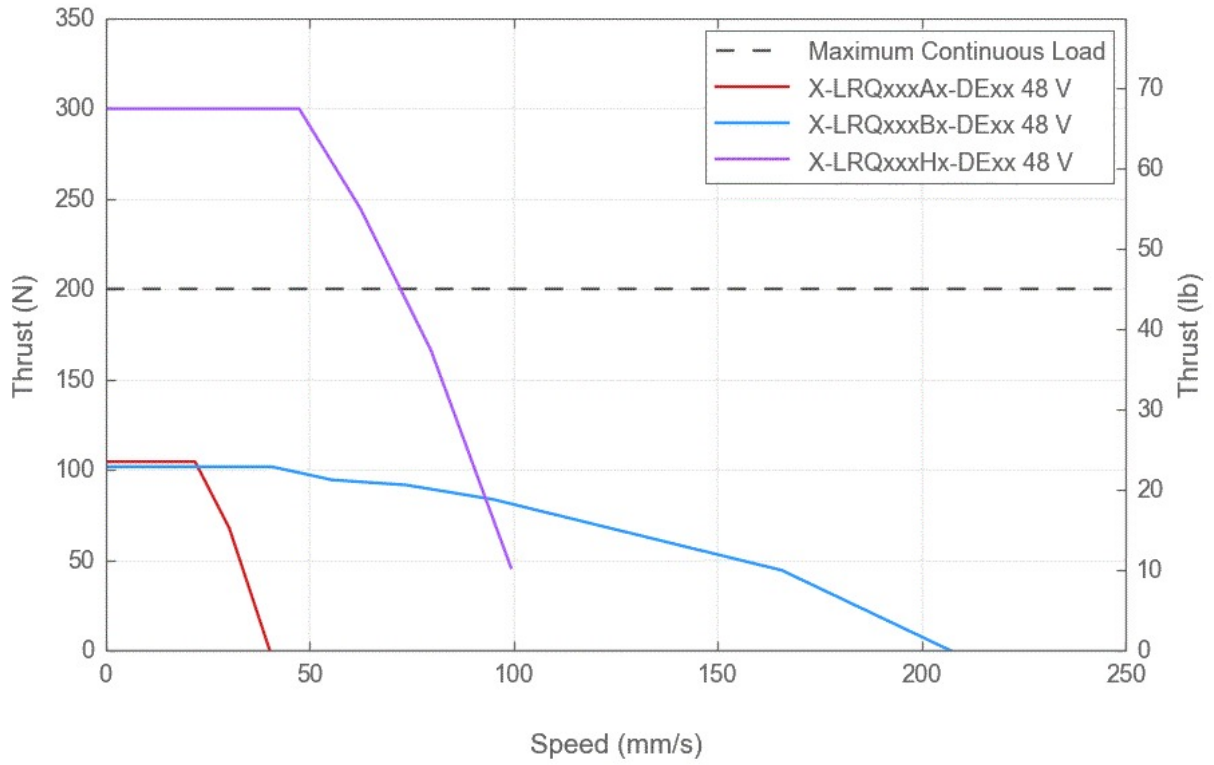
X-LRQ300BL-DE51 Specifications

Specification	Value	Alternate Unit
Microstep Size (Default Resolution)	0.49609375 μm	
Built-in Controller	Yes	
Travel Range	300 mm	11.811"
Accuracy (unidirectional)	15 μm	0.000591"
Repeatability	< 3.5 μm	< 0.000138"
Backlash	< 11 μm	< 0.000433"
Maximum Speed	205 mm/s	8.071"/s
Minimum Speed	0.000303 mm/s	0.000012"/s
Speed Resolution	0.000303 mm/s	0.000012"/s
Encoder Type	Linear quadrature encoder	
Encoder Resolution	50 nm	
Peak Thrust	100 N	22.4 lb
Back-driving Force	93 N ($\pm 30\%$)	20.9 lb ($\pm 30\%$)
Maximum Continuous Thrust	100 N	22.4 lb
Communication Interface	RS-232	
Communication Protocol	Zaber ASCII (Default), Zaber Binary	
Maximum Centered Load	1000 N	224.3 lb
Maximum Cantilever Load	3000 N-cm	4248.4 oz-in
Guide Type	Recirculating Ball Linear Guide	
Vertical Runout	< 35 μm	< 0.001378"
Horizontal Runout	< 30 μm	< 0.001181"
Pitch	0.034°	0.593 mrad
Roll	0.015°	0.262 mrad
Yaw	0.03°	0.523 mrad
Stiffness in Pitch	640 N-m/°	27 $\mu\text{rad/N-m}$
Stiffness in Roll	1850 N-m/°	9 $\mu\text{rad/N-m}$
Stiffness in Yaw	665 N-m/°	26 $\mu\text{rad/N-m}$
Maximum Current Draw	1200 mA	
Power Supply	24-48 VDC	
Power Plug	2-pin screw terminal	

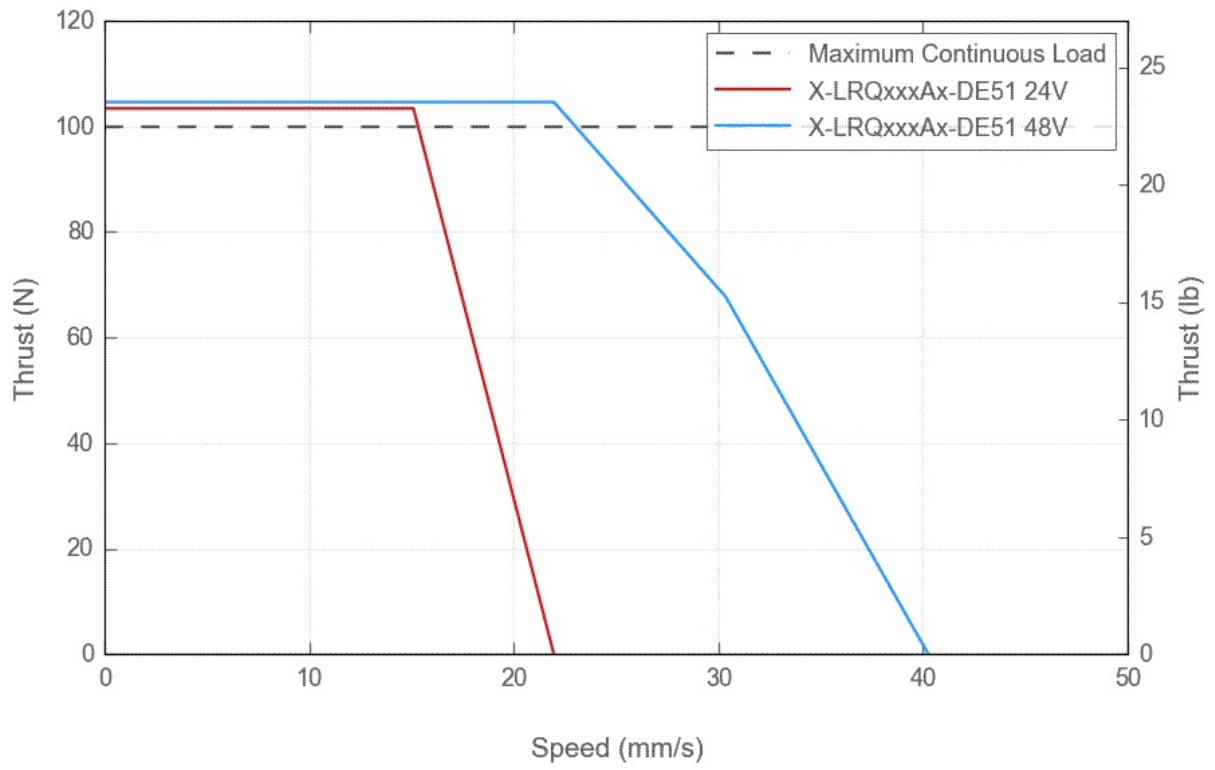
Specification	Value	Alternate Unit
Linear Motion Per Motor Rev	6.35 mm	0.250"
Motor Steps Per Rev	200	
Motor Type	Stepper (2 phase)	
Motor Rated Current	2300 mA/phase	
Inductance	2.8 mH/phase	
Default Resolution	1/64 of a step	
Data Cable Connection	Locking 4-pin M8	
Mechanical Drive System	Precision lead screw	
Limit or Home Sensing	Magnetic home sensor	
Manual Control	Indexed knob with push switch	
Axes of Motion	1	
LED Indicators	Yes	
Mounting Interface	M6 and M3 threaded holes	
Operating Temperature Range	0 to 50 °C	
Vacuum Compatible	No	
RoHS Compliant	Yes	
CE Compliant	Yes	
Weight	3.48 kg	7.672 lb

X-LRQ-DE Series Charts

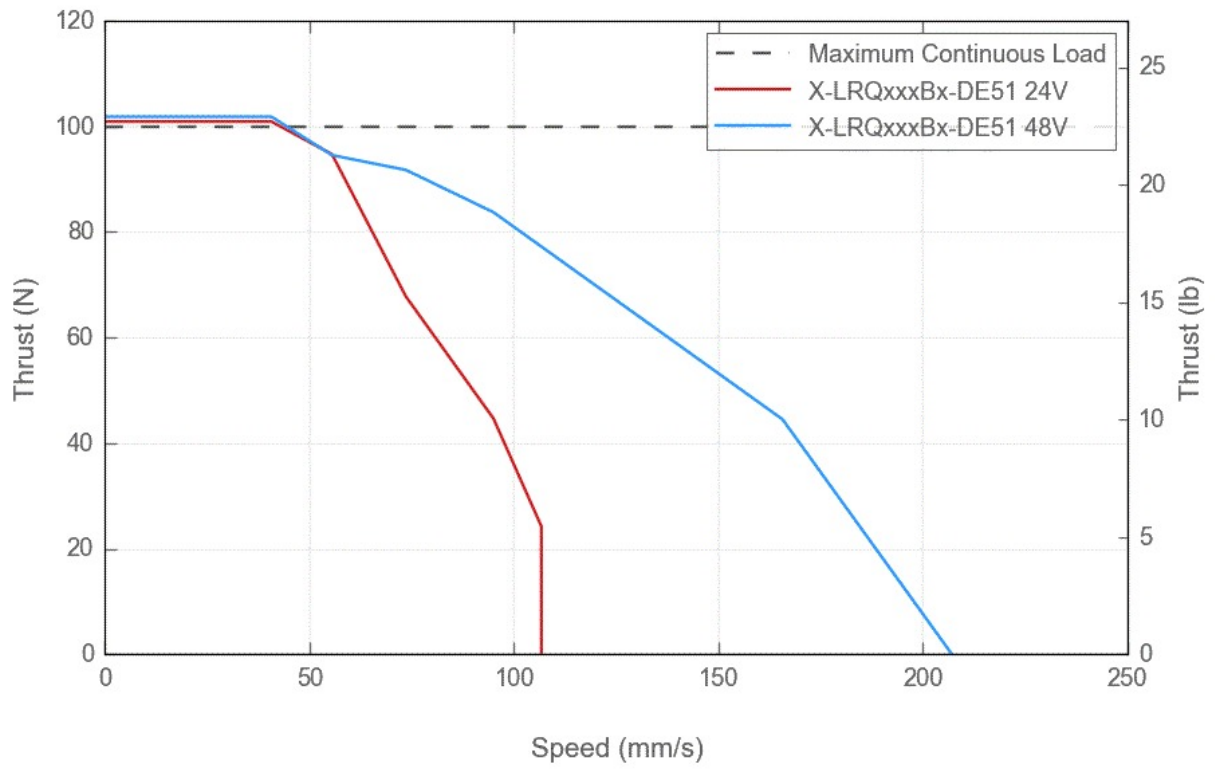
Thrust Speed Performance



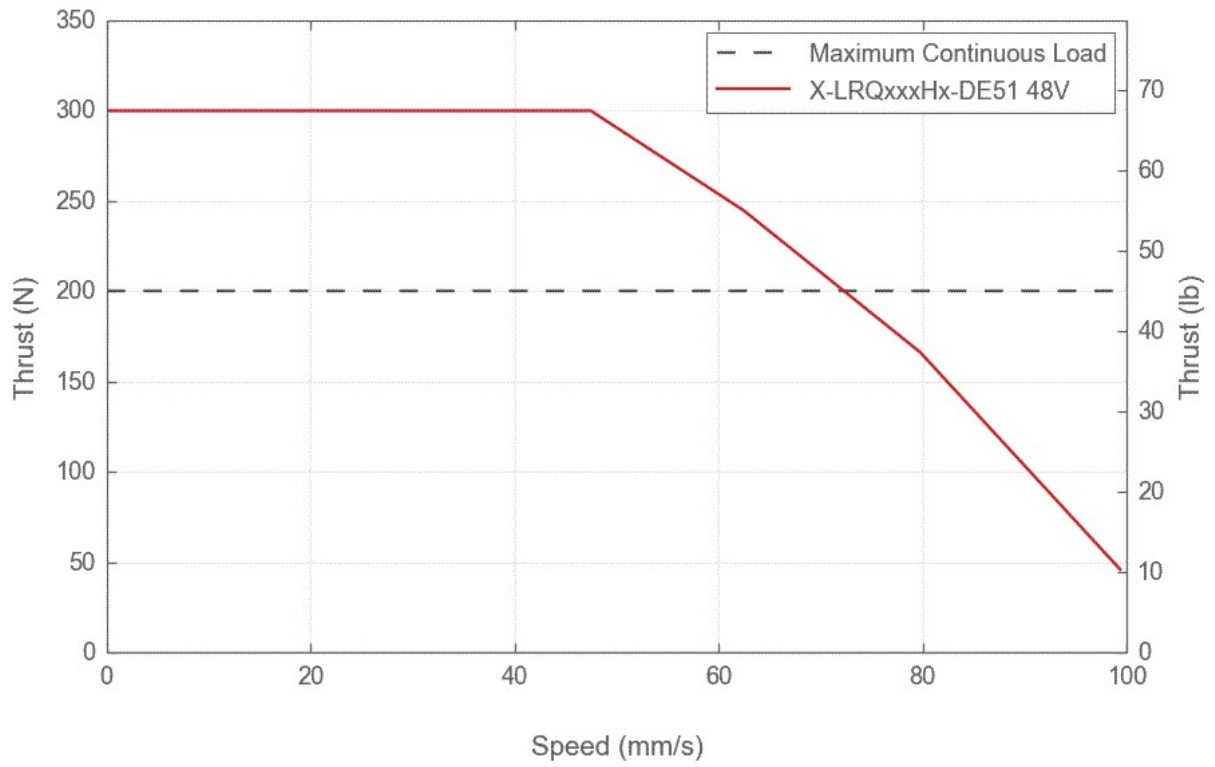
Thrust Speed Performance



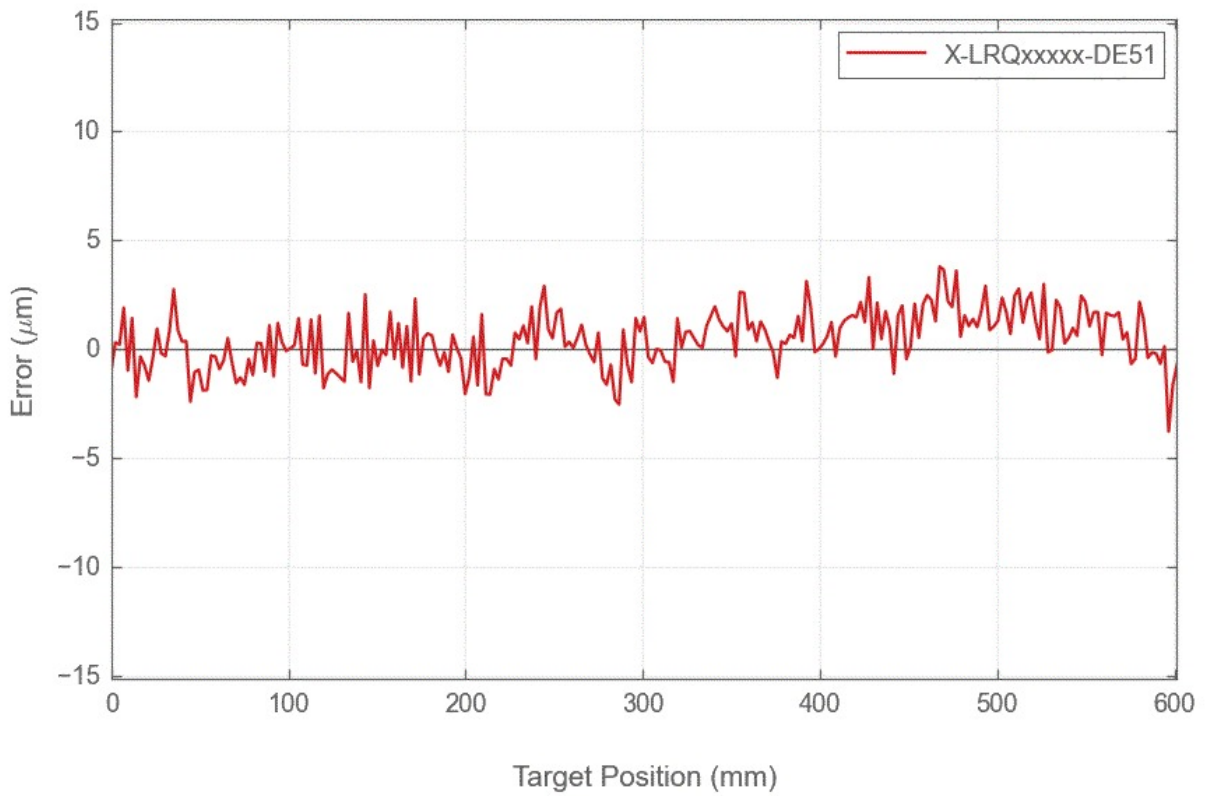
Thrust Speed Performance



Thrust Speed Performance



Typical Accuracy



LRQ Linear Bearing Lifetime

