

X-LRQ450AL-E01 Datasheet



- 75, 150, 300, 450, 600 mm travel
- Up to 840 mm/s speed and up to 300 N thrust
- 100 kg load capacity
- Ball screw and lead screw configurations
- Inline and parallel drive configurations
- Integrated, 500 CPR, motor mounted encoder provides slip/stall detection and recovery
- Built-in controller; daisy-chains with other Zaber products
- Custom versions available

X-LRQ-E Series Overview

Zaber's X-LRQ-E Series devices are computer-controlled, motorized linear stages with high stiffness, load, and lifetime capabilities in a compact size. 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. The built-in motor encoder allows closed-loop operation and slip/stall recovery features. 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-E's innovative design allows speeds up to 840 mm/s and loads up to 100 kg. Like all of Zaber's products, the X-LRQ-E 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-E>

X-LRQ-E Series Part Numbering & Options



X-LRQ450AL-E01 Drawings

- [X-LRQxL-E.png \(Dimension Drawing for the X-LRQxL-E\)](#)

X-LRQ450AL-E01 Specifications

| | |
|--|--|
| Microstep Size (Default Resolution) | 0.09921875 μm |
| Built-in Controller | Yes |
| Travel Range | 450 mm (17.716") |
| Accuracy (unidirectional) | 135 μm (0.005315") |
| Repeatability | < 2.5 μm (< 0.000098") |
| Backlash | < 8 μm (< 0.000315") |
| Maximum Speed | 54 mm/s (2.126"/s) |
| Minimum Speed | 0.000061 mm/s (0.000002"/s) |
| Speed Resolution | 0.000061 mm/s (0.000002"/s) |
| Encoder Resolution | 500 CPR (2000 states/rev) |
| Encoder Type | Rotary quadrature encoder |
| Peak Thrust | 230 N (51.6 lb) |
| Back-driving Force* | Non-back-driving |
| Maximum Continuous Thrust | 100 N (22.4 lb) |
| Communication Interface | RS-232 |
| Communication Protocol | Zaber ASCII (Default), Zaber Binary |
| Data Cable Connection | Locking 4-pin M8 |
| Maximum Centered Load | 1000 N (224.3 lb) |
| Maximum Moment (Pitch) | 30 N-m (22.1 ft-lb) |
| Maximum Moment (Roll) | 30 N-m (22.1 ft-lb) |
| Maximum Moment (Yaw) | 30 N-m (22.1 ft-lb) |
| Vertical Runout | < 45 μm (< 0.001772") |
| Horizontal Runout | < 40 μm (< 0.001575") |
| Pitch | 0.04° (0.698 mrad) |
| Roll | 0.025° (0.436 mrad) |
| Yaw | 0.04° (0.698 mrad) |
| Stiffness in Pitch | 500 N-m/° (35 $\mu\text{rad/N-m}$) |
| Stiffness in Roll | 1180 N-m/° (15 $\mu\text{rad/N-m}$) |

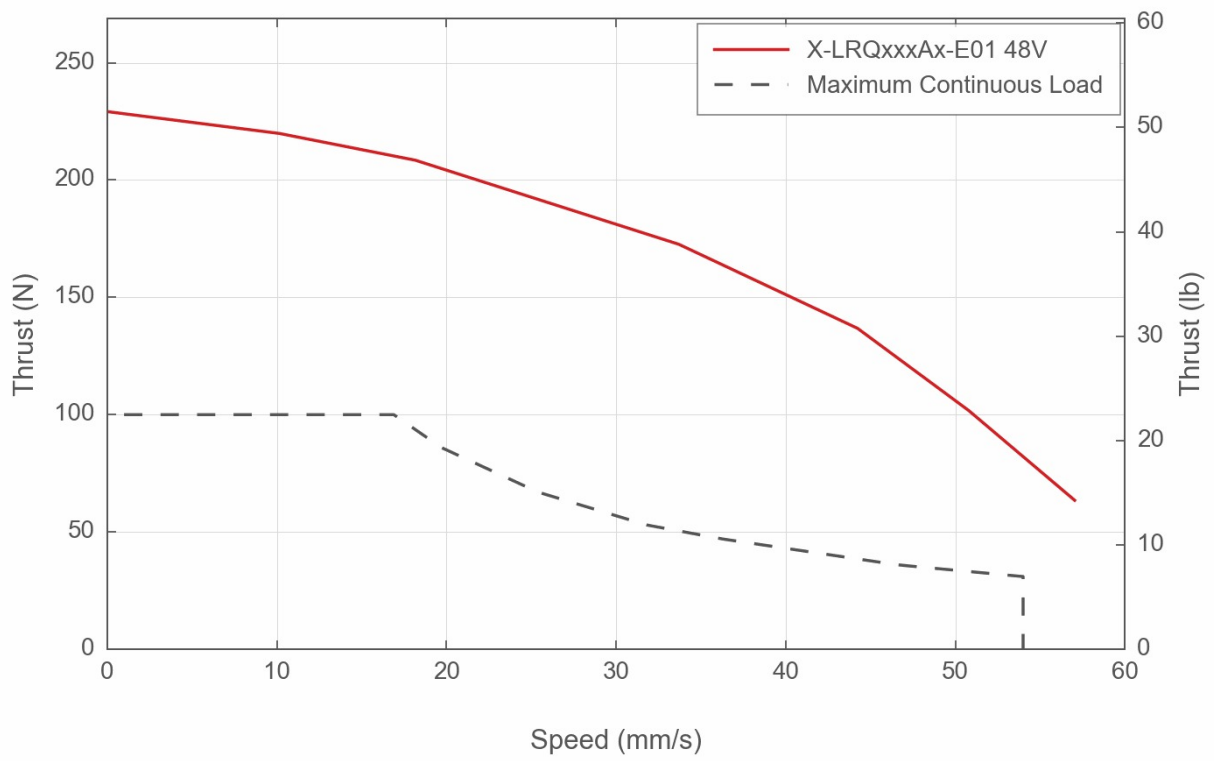
| | |
|--|---|
| Microstep Size (Default Resolution) | 0.09921875 μm |
| Stiffness in Yaw | 450 N-m/ $^\circ$ (39 $\mu\text{rad/N-m}$) |
| Power Supply | 24-48 VDC |
| Power Plug | 2-pin screw terminal |
| Maximum Current Draw | 1900 mA |
| Linear Motion Per Motor Rev | 1.27 mm (0.050") |
| Motor Steps 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 |
| Guide Type | Recirculating Ball Linear Guide |
| 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 $^\circ\text{C}$ |
| CE Compliant | Yes |
| Vacuum Compatible | No |
| Weight | 4.07 kg (8.973 lb) |

X-LRQ-E Series Charts

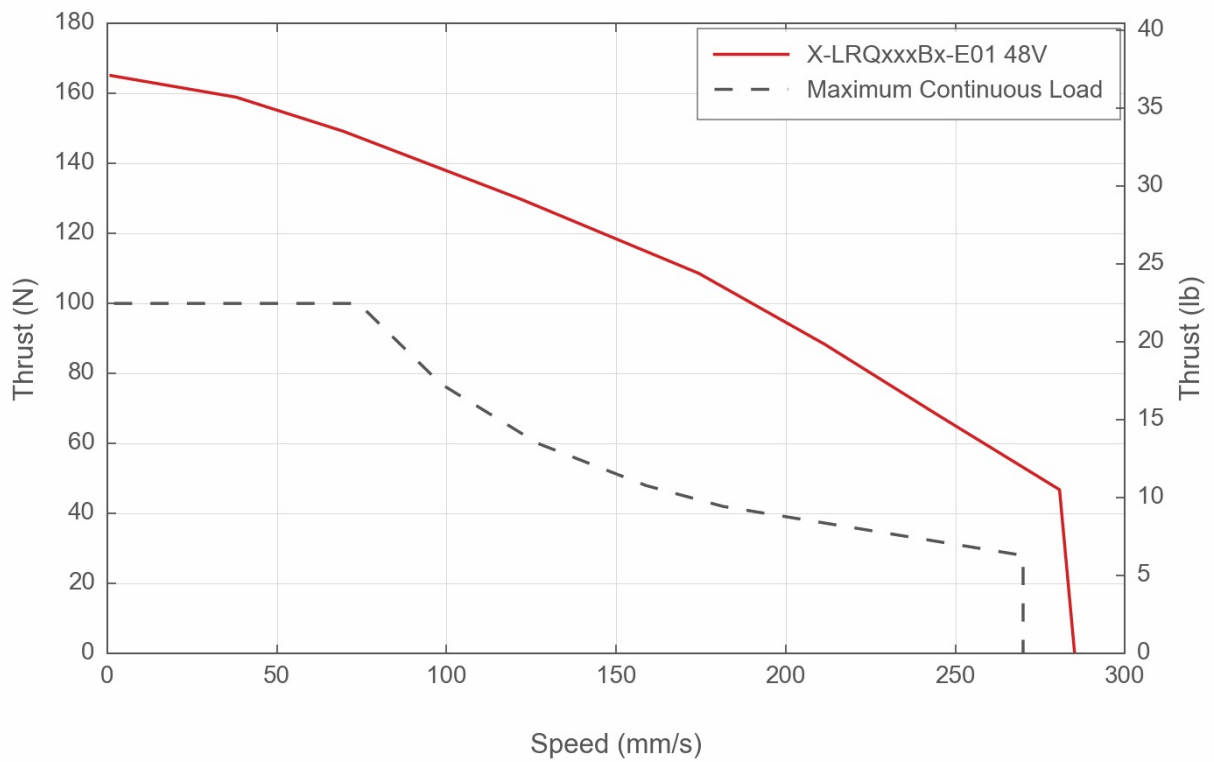
Thrust Speed Performance



Thrust Speed Performance



Thrust Speed Performance



Thrust Speed Performance



Thrust Speed Performance



LRQ Linear Bearing Lifetime



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