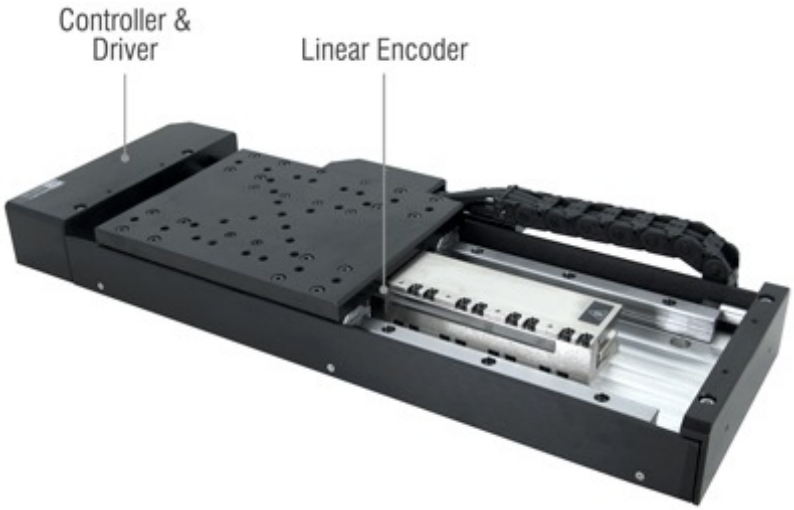
# X-LDQ1000C-AE53D12 Datasheet




- 75, 150, 300, 450, 600 and 1000 mm travel
- Up to 1.5 m/s speed and up to 2 g acceleration
- Up to 2.5 µm accuracy over 1000 mm travel
- Minimum incremental move of 50 nm
- Zero backlash
- One digital input and two digital outputs
- Integrated linear encoder provides high accuracy closed loop servo positioning
- Built-in controller; daisy-chains with other Zaber products
- Technical Article - Linear Motors: Overview and Selection Process

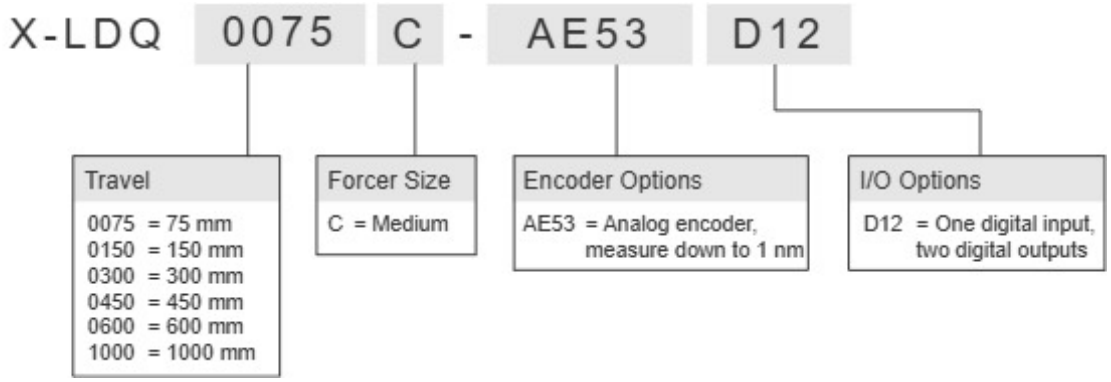
## X-LDQ-AE Series Overview

Zaber's X-LDQ-AE Series devices are computer-controlled, motorized linear motor stages with high precision and speed capabilities. They are stand-alone units requiring only a standard 48 V power supply. The built-in controller and linear encoder allows pre-tuned closed-loop servo positioning with adjustable tuning parameters. 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. The X-LDQ-AE's innovative design allows speeds up to 1.5 m/s and minimum incremental move of 50 nm. Like all of Zaber's products, the X-LDQ-AE Series is designed to be 'plug and play' and very easy to set up and operate. X-LDQ-AE devices also include a digital input and two digital outputs for interfacing with external systems. An event-driven trigger system allows devices to be programmed for stand-alone operation based on I/O, time, or movement stimuli.

*For more information visit: [https://www.zaber.com/products/linear-stages/X-LDQ-AE](https://www.zaber.com/products/linear-stages/X-LDQ-AE)*

## X-LDQ-AE Series Part Numbering & Options



## X-LDQ1000C-AE53D12 Drawings

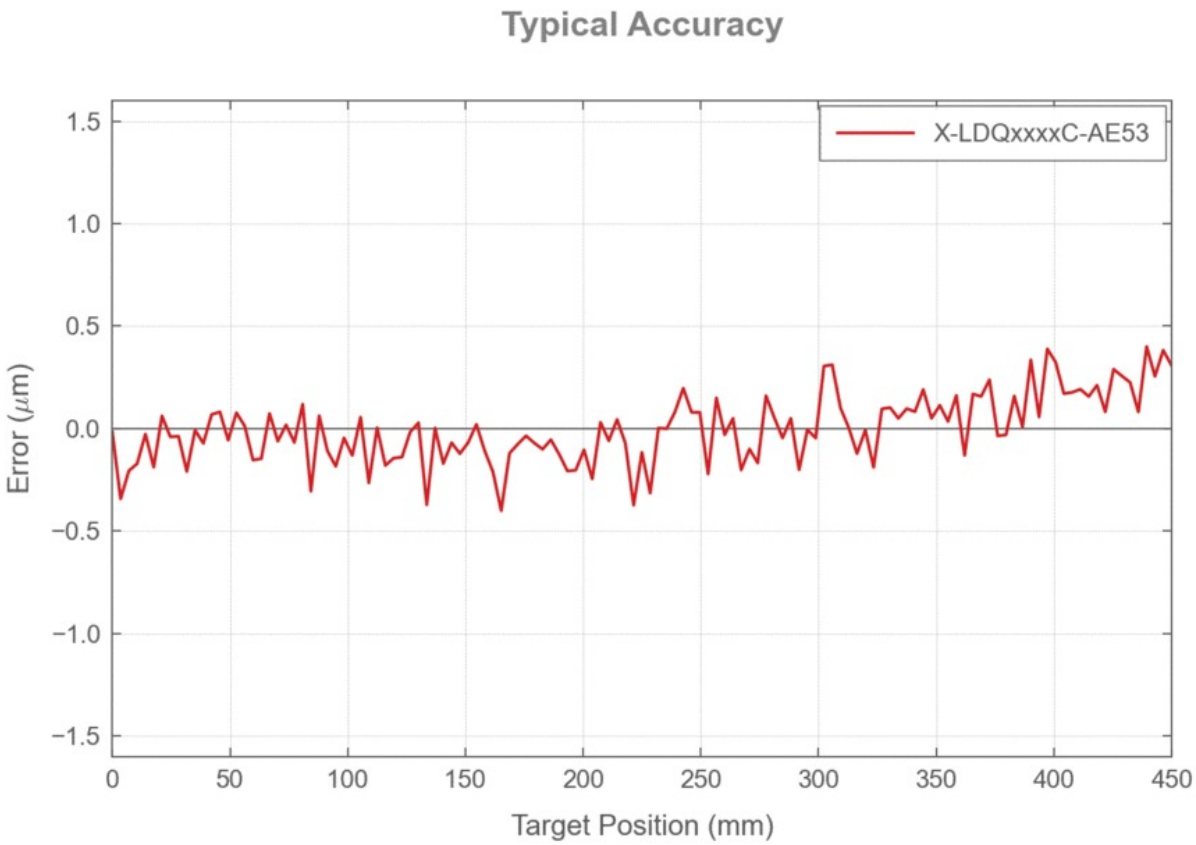
- X-LDQ-AE (Drawing for the X-LDQ-AE)

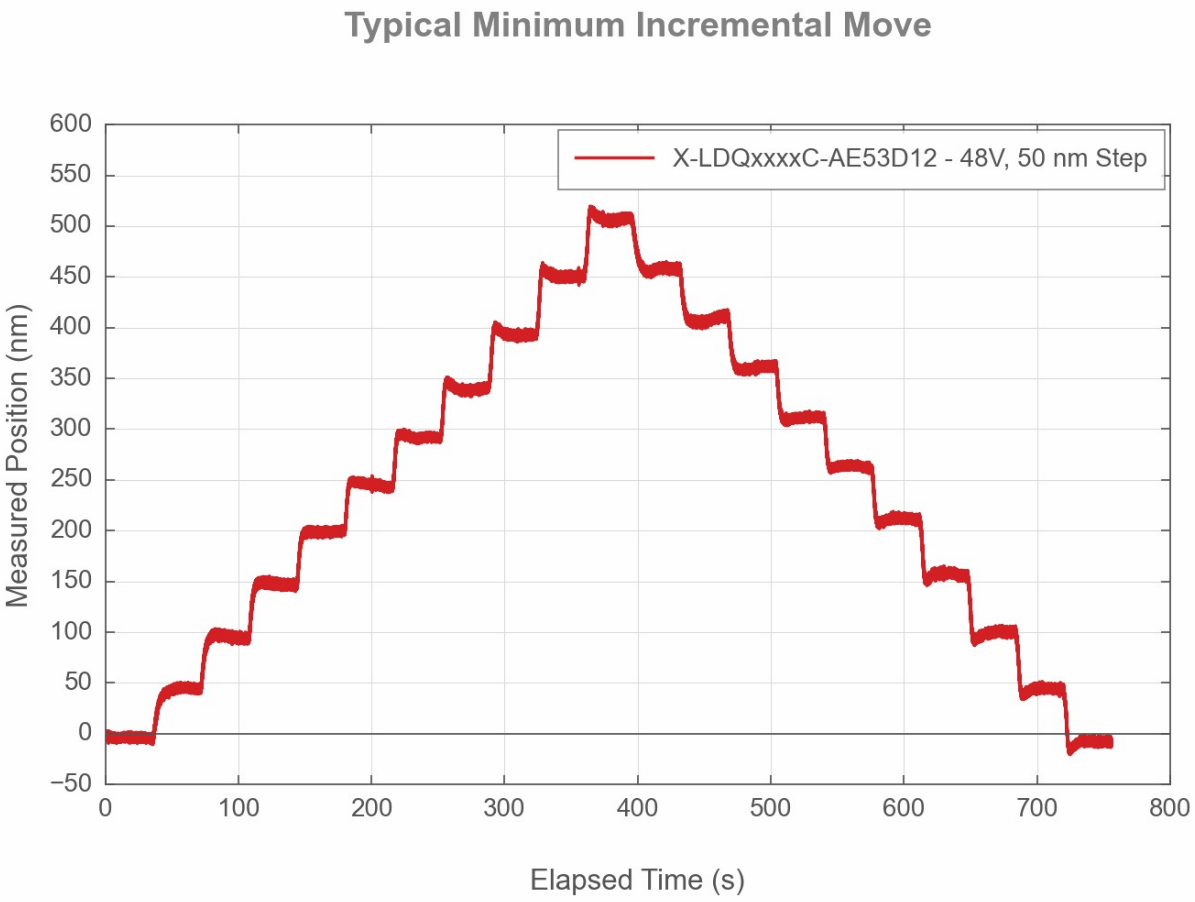
## X-LDQ1000C-AE53D12 Specifications

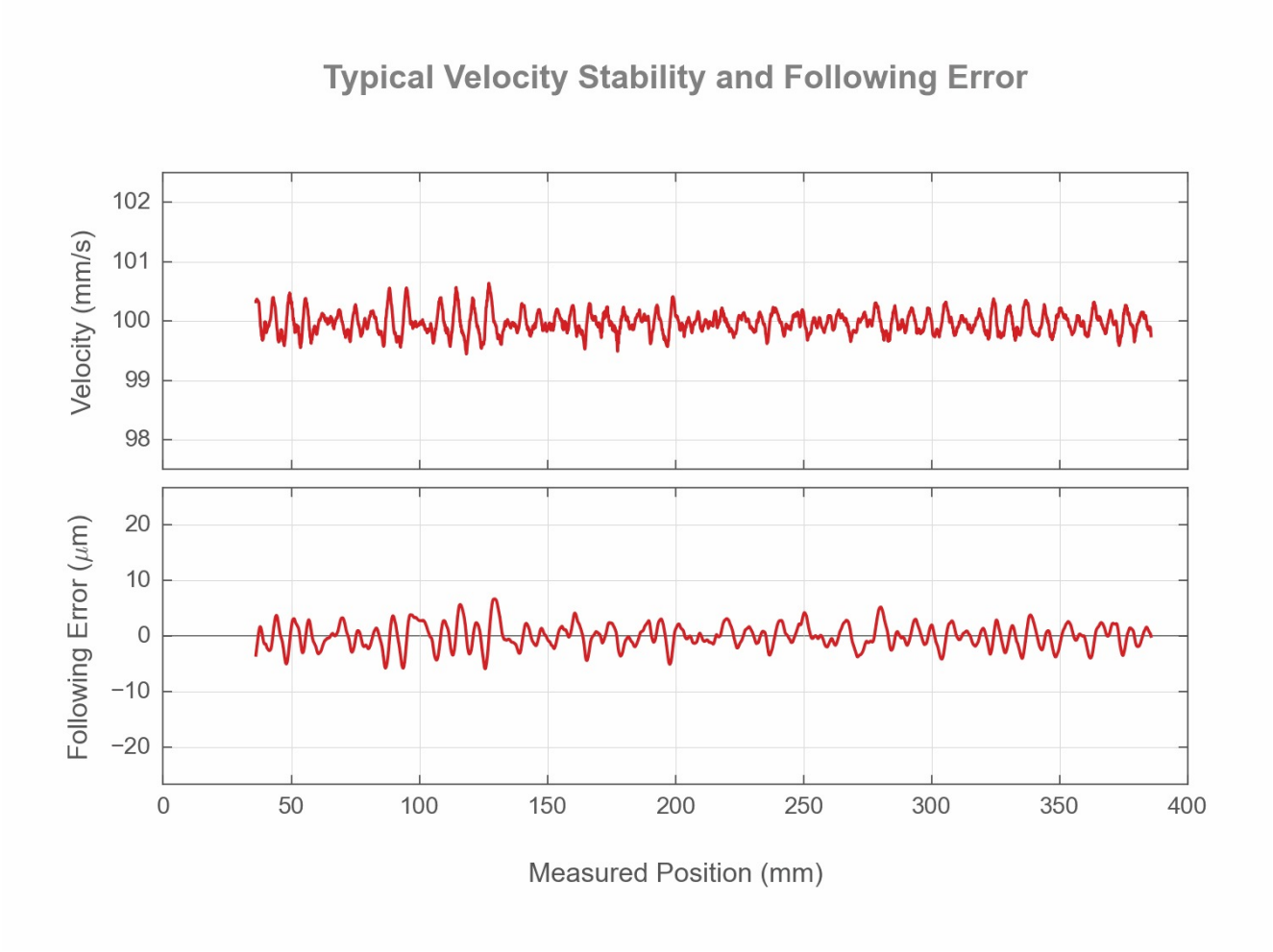
| **Built-in Controller** | |
|---|---|
| Travel Range | 1000 mm (39.370") |
| Accuracy (unidirectional) | 2.5 µm (0.000098") |
| Repeatability | < 0.3 µm (< 0.000012") |
| Minimum Incremental Move | 50 nm |
| Maximum Acceleration | 39.24 m/s2 (4.00 g) |
| Maximum Speed | 1500 mm/s (59.055"/s) |
| Minimum Speed | 0.61 nm/s |
| Speed Resolution | 0.61 nm/s |
| Encoder Type | Linear analog encoder |
| Encoder Count Size | 1 nm |
| Peak Thrust | 40 N (9.0 lb) |
| Maximum Continuous Thrust | 35 N (7.8 lb) |
| Communication Interface | RS-232 |
| Communication Protocol | Zaber ASCII (Default) |
| Data Cable Connection | Locking 4-pin M8 |
| Maximum Centered Load | 200 N (44.9 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 | < 70 µm (< 0.002756") |
| Horizontal Runout | < 70 µm (< 0.002756") |
| Typical Velocity Stability | ± 0.54% at 100 mm/s with a 5 kg payload |
| Pitch | 0.06° (1.047 mrad) |
| Roll | 0.06° (1.047 mrad) |
| Yaw | 0.06° (1.047 mrad) |
| Stiffness in Pitch | 8000 N-m/° (2 µrad/N-m) |
| Stiffness in Roll | 3800 N-m/° (5 µrad/N-m) |

| Built-in Controller | |
|---|---|
| Stiffness in Yaw | 4000 N-m/° (4 µrad/N-m) |
| Power Supply | 24-48 VDC |
| Power Plug | 2-pin screw terminal |
| Maximum Current Draw | 3000 mA |
| Motor Type | Moving Coil Linear Motor |
| Force Constant | 15.8 N/A (3.5 lbs/A) |
| Guide Type | Recirculating Ball Linear Guide |
| Limit or Home Sensing | Optical Index Mark |
| Manual Control | Indexed knob with push switch |
| Axes of Motion | 1 |
| LED Indicators | Yes |
| Mounting Interface | M6 threaded holes |
| Moving Mass | 1.5 kg (3.300 lbs) |
| Digital Input | 1 |
| Digital Output | 2 |
| Operating Temperature Range | 0 to 50 °C |
| CE Compliant | Yes |
| Vacuum Compatible | No |
| Weight | 18.6 kg (41.006 lb) |

## X-LDQ-AE Series Charts




Typical Minimum Incremental Move
X-LDQxxxxC-AE53D12 - 48V, 50 nm Step
Measured Position (nm)
600
550
500
450
400
350
300
250
200
150
100
50
0
−50
0
100
200
300
400
500
600
700
800
Elapsed Time (s)

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