

X-RDQ150-AE57D12 Datasheet



- Contactless direct drive motor for high speed silent operation and long lifetime applications
- 0.01 arc second encoder resolution for optimal accuracy and repeatability
- Top speed up to 450 RPM and peak torque up to 5.8 Nm
- Minimum step size down to 1 μ rad
- 50.8 mm (2") rotating aperture with 10 kg centered load capacity
- Built-in controller; daisy-chains with other Zaber products

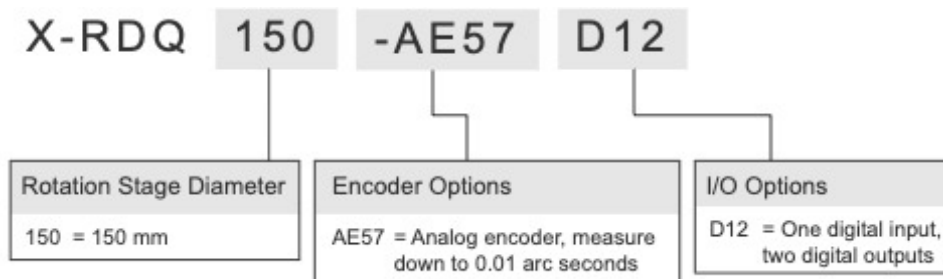
X-RDQ-AE Series Overview

Zaber's X-RDQ-AE Series products are motorized rotation stage devices suitable for high precision positioning and scanning applications. The integrated rotary encoder allows for top speeds of 450 RPM while maintaining consistent step sizes down to 1 μ rad. The ironless direct drive motor provides high acceleration and smooth motion while minimizing heat generation to improve repeatability. Both the drive and the encoder are non-contact and have no moving cables, resulting in a high lifetime system. Optional metric stage top provides convenient mounting and adjustable hard stops are available for limited travel applications to improve payload crash prevention.

These stages are stand-alone units requiring only a standard 48 V power supply. They connect to the 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. Like all of Zaber's products, the X-RDQ-AE Series is designed to be 'plug and play' and very easy to set up and operate. X-RDQ-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/rotary-stages/X-RDQ-AE>

X-RDQ-AE Series Part Numbering & Options



X-RDQ150-AE57D12 Drawings

- [Drawing for the X-RDQ150-AE.pdf \(Drawing for the X-RDQ150-AE\)](#)

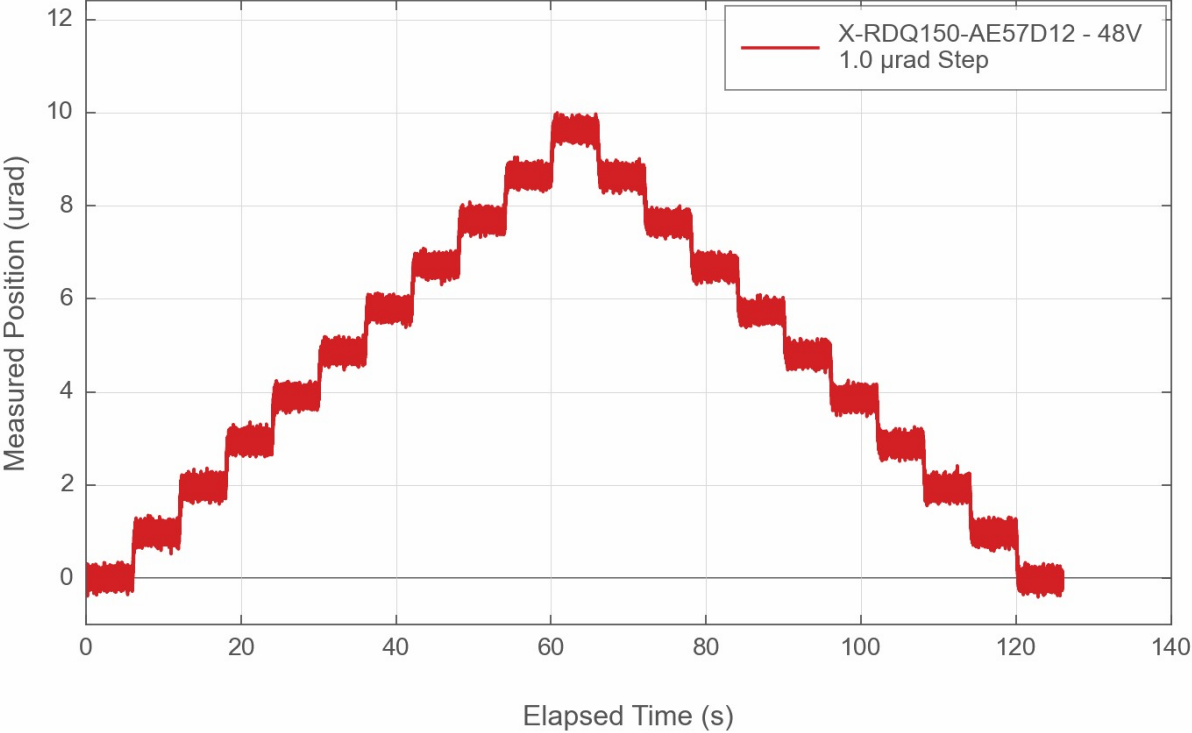
X-RDQ150-AE57D12 Specifications

Built-in Controller	
Range	360°
Accuracy (unidirectional)	0.006° (0.104700 mrad)
Minimum Incremental Move	0.0000573° (1.00 µrad)
Repeatability	< 0.0001° (< 0.002 mrad)
Maximum Speed	2700°/s (450 rpm)
Encoder Count Size	0.0000027778°/count (0.010000 arcseconds/count)
Minimum Speed	0.0000027778°/s (0.048 µrad/s)
Encoder Resolution	129600000 CPR (518400000 states/rev)
Encoder Type	Direct Reading Optical Encoder
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default)
Data Cable Connection	Locking 4-pin M8
Maximum Torque	580 N-cm (821.3 oz-in)
Maximum Continuous Torque	200 N-cm (283.2 oz-in)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Tilt)	400 N-cm (566.4 oz-in)
Stage Top Dimension	70 mm (2.756")
Radial Error Motion	+/- 3 µm (+/- 0.000118")
Axial Error Motion	< 3 µm (< 0.000118")
Tilt Error Motion	+/- 0.0014° (+/- 24.43 µrad)
Bearing Plane Offset	16.5 mm (0.650")
Aperture Diameter	50.8 mm (2.000")
Stiffness (Tilt)	1300 N-m/° (13.4 µrad/N-m)
Power Supply	48 VDC
Power Plug	2-pin Screw Terminal
Maximum Current Draw	3750 mA
Motor Type	Moving Magnet Track Rotary Motor (3 phase)

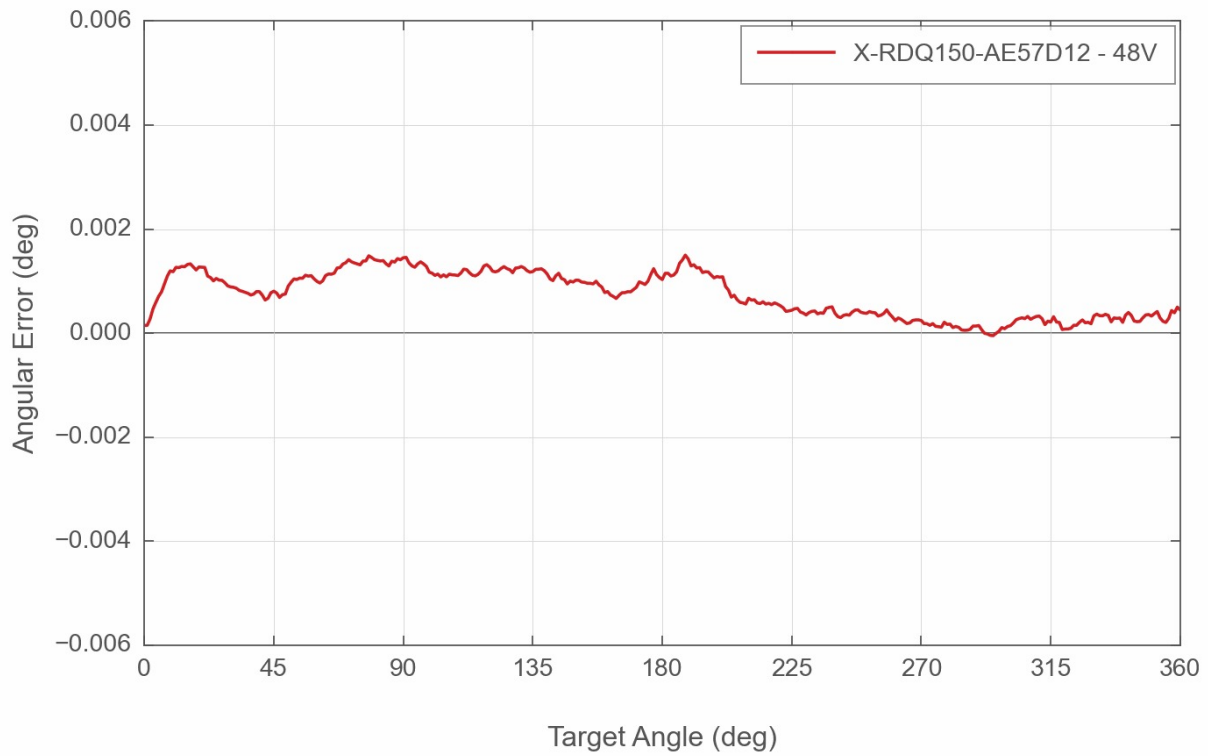
Built-in Controller	
Motor Rotor Inertia	51300 g-cm ²
Mechanical Drive System	Direct Drive
Limit or Home Sensing	Optical Index Mark
Manual Control	Yes
LED Indicators	Yes
Mounting Interface	M3 and M6 Threaded Holes and M6 Mounting Holes
Digital Input	1
Digital Output	2
Torque Constant	65 N-cm/A (92.0 oz-in/A)
Operating Temperature Range	0-40 °C
CE Compliant	Yes
Vacuum Compatible	No
Weight	3.225 kg (7.110 lb)

X-RDQ-AE Series Charts

Typical Minimum Incremental Move



Typical Accuracy



Contact

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