

X-RST-E Series Datasheet



- Speed up to 60°/s and torque up to 70 N-m
- 300 kg centered load capacity
- 50.8 mm (2") or 101.6 mm (4") aperture
- Multiple X-Series products in a daisy-chain can share a single power supply
- Encoder position feedback with slip/stall detection and automatic recovery
- Built-in controller; daisy-chains with other Zaber products
- Custom versions available

X-RST-E Series Overview

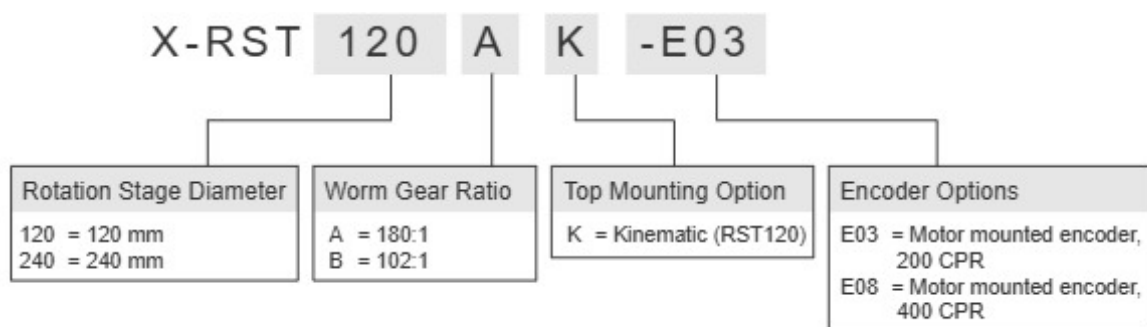
Zaber's X-RST-E Series products are motorized rotation stages with built-in controllers and motor encoders. Rated for up to 300 kg centered load capacity and 70 N-m of torque, they are ideal for high load, angular positioning applications. They have large diameter apertures for a variety of thru-bore applications.

They are stand-alone units requiring only a standard 24-48 V power supply. An indexed knob provides smooth manual control at variable speeds in both directions for versatile operation even without a computer. 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 an easy and secure connection. The chain also shares power, so multiple X-Series products can use a single power supply.

For more information visit: <https://www.zaber.com/products/rotary-stages/X-RST-E>

X-RST-E Series Part Numbering & Options



X-RST-E Series Drawings

- [X-RST120-E.png \(Drawing for the X-RST120-E\)](#)
- [X-RST240-E.png \(Drawing for the X-RST240-E\)](#)

X-RST-E Series Specifications

Built-in Controller	
Range	360°
Backlash	< 0.05° (< 0.873 mrad)
Encoder Type	Rotary quadrature encoder
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Locking 4-pin M8
Power Supply	24-48 VDC
Power Plug	2-pin Screw Terminal
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Default Resolution	1/64 of a step
Mechanical Drive System	Precision Worm Gear
Limit or Home Sensing	Magnetic home sensor
Manual Control	Yes
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

Part Number	Microstep Size (Default Resolution)	Accuracy (unidirectional)	Repeatability	Maximum Speed
X-RST120AK-E03	0.00015625° (2.727 µrad)	0.16° (2.792000 mrad)	< 0.005° (< 0.087 mrad)	24°/s (4 rpm)
X-RST240B-E08	0.00027574° (4.812 µrad)	0.075° (1.308750 mrad)	< 0.0015° (< 0.026 mrad)	60°/s (10 rpm)

Part Number	Minimum Speed	Speed Resolution	Encoder Resolution	Maximum Torque
X-RST120AK-E03	0.000095°/s (1.658 µrad/s)	0.000095°/s (1.658 µrad/s)	200 CPR (800 states/rev)	1000 N-cm (1416.1 oz-in)
X-RST240B-E08	0.000168°/s (2.932 µrad/s)	0.000168°/s (2.932 µrad/s)	400 CPR (1600 states/rev)	7000 N-cm (9912.8 oz-in)

Part Number	Maximum Continuous Torque	Maximum Centered Load	Maximum Moment (Transverse)	Stage Top Dimension
X-RST120AK-E03	1000 N-cm (1416.1 oz-in)	500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)	120 mm (4.724")
X-RST240B-E08	4500 N-cm (6372.5 oz-in)	3000 N (672.8 lb)	20000 N-cm (28322.4 oz-in)	240 mm (9.449")

Part Number	Radial Error Motion	Axial Error Motion	Tilt Error Motion	Bearing Plane Offset
X-RST120AK-E03	+/- 3 μ m (+/- 0.000118")	< 3 μ m (< 0.000118")	+/- 0.0014° (+/- 24.43 μ rad)	27.1 mm (1.067")
X-RST240B-E08	+/- 2.5 μ m (+/- 0.000098")	< 4 μ m (< 0.000157")	+/- 0.003° (+/- 52.36 μ rad)	30.75 mm (1.211")

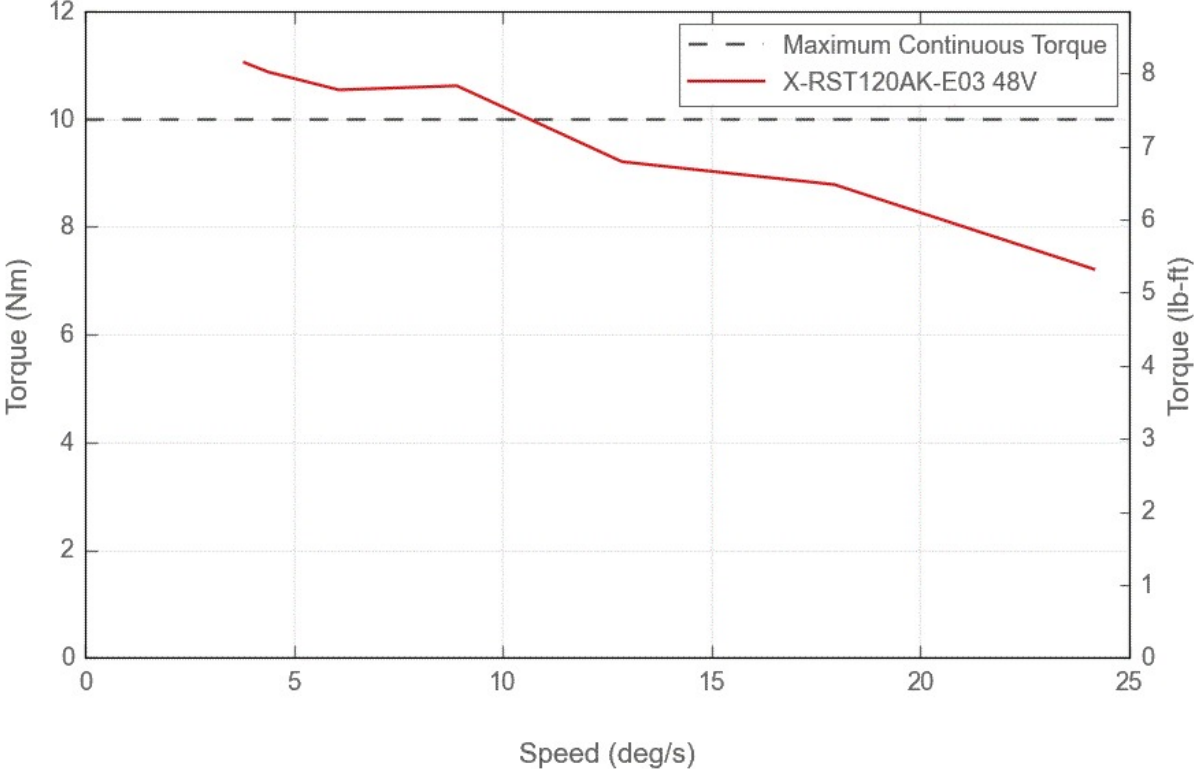
Part Number	Maximum Current Draw	Angular Motion Per Motor Rev	Motor Rated Current	Motor Winding Resistance
X-RST120AK-E03	1100 mA	2°	1500 mA/phase	2.4 ohms/phase
X-RST240B-E08	3600 mA	3.5294°	3000 mA/phase	0.53 ohms/phase

Part Number	Inductance	Maximum Angular Momentum	Motor Frame Size	Guide Type
X-RST120AK-E03	6.6 mH/phase	0.4 kg-m ² /s	17	Preloaded Ball Bearing
X-RST240B-E08	2 mH/phase	1.6 kg-m ² /s	23	Crossed-Roller Bearing

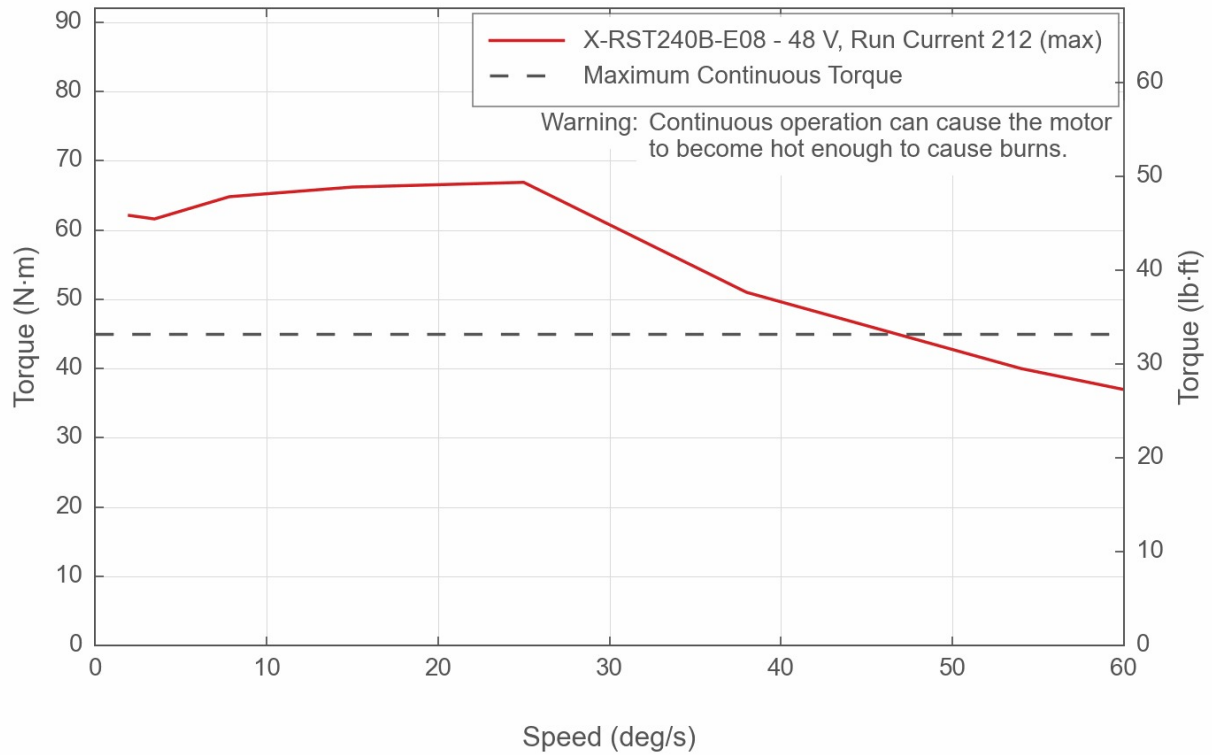
Part Number	Gear Ratio	Mounting Interface	Weight
X-RST120AK-E03	180:1	Kinematic with M2.5 and M6 threaded holes	2.41 kg (5.313 lb)
X-RST240B-E08	102:1	M6 threaded holes and M8 mounting holes	14.5 kg (31.967 lb)

X-RST-E Series Charts

Torque Speed Performance



Torque Speed Performance



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