X-RSB-E Series Datasheet

- Speeds up to 1,200 rpm
- Continuous 360° rotation stage
- Multiple motor configurations
- Encoder position feedback with slip/stall detection and automatic recovery
- Built-in controller; daisy-chains with other Zaber products
- Optional integrated power-off brake

X-RSB-E Series Overview

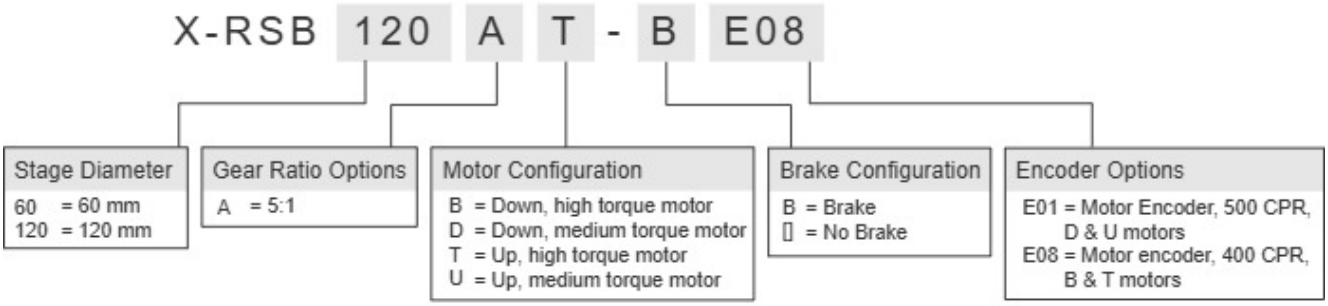
Zaber's X-RSB-E Series rotation stages feature a compact footprint, low profile, and a load capability of up to 50 kg. With a maximum speed of 1,200 rpm, these rotation stages are ideal for the rapid positioning of light loads to within a fraction of a degree.

They are stand-alone units requiring either a standard 24 V or 48 V power supply. A built-in motor encoder allows for closed-loop operation and slip/stall recovery features. There are two motor configurations available: up and down. Motor up configurations allow flush mounting of the device to a flat surface, and motor down configurations allow for a full 360° movement of loads that extend past the edge of the stage top. An indexed knob provides convenient manual control for versatile operation even without a computer. An optional power-off brake is available to protect the payload from unintended motion in the event of power loss.

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. Like all of Zaber's products, the X-RSB-E Series is designed to be 'plug and play' and very easy to set up and operate.

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

X-RSB-E Series Part Numbering & Options



X-RSB-E Series Drawings

- X-RSB060-E.png (Drawing for the X-RSB060-E)
- X-RSB120-E_B&T_configs.png (Drawing for the X-RSB120-E B&T configs)
- X-RSB120-BE_B&T_configs.png (Drawing for the X-RSB120-BE_B&T_configs)
- X-RSB120-E_D&U_configs.png (Drawing for the X-RSB120-E D&U configs)

X-RSB-E Series Specifications

Microstep Size (Default Resolution)	**0.005625° (98.173 µrad)**
Built-in Controller	Yes
Range	360°
Repeatability	< 0.001° (< 0.017 mrad)
Minimum Speed	0.003434°/s (59.934 µrad/s)
Speed Resolution	0.003434°/s (59.934 µrad/s)
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
Angular Motion Per Motor Rev	72°
Motor Steps Per Rev	200
Motor Type	Stepper (2-phase)
Default Resolution	1/64 of a step
Mechanical Drive System	Synchronous belt
Limit or Home Sensing	Magnetic home sensor
Manual Control	Yes
Axes of Motion	1
LED Indicators	Yes
Operating Temperature Range	0 - 50 °C
CE Compliant	Yes
Vacuum Compatible	No

Part Number	**Accuracy (unidirectional)**	**Backlash**	**Maximum Speed**	**Encoder Resolution**
X-RSB060AD-E01	0.2° (3.490000 mrad)	< 0.1° (< 1.745 mrad)	7200°/s (1200 rpm)	500 CPR (2000 states/rev)
X-RSB060AU-E01	0.2° (3.490000 mrad)	< 0.1° (< 1.745 mrad)	7200°/s (1200 rpm)	500 CPR (2000 states/rev)
X-RSB120AB-E08	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	5400°/s (900 rpm)	400 CPR (1600 states/rev)
	0.28°	< 0.25°	3600°/s	400 CPR

Part Number	Accuracy (unidirectional)	Backlash	Maximum Speed	Encoder Resolution
X-RSB120AB-BE08	(4.886000 mrad)	(< 4.362 mrad)	(600 rpm)	(1600 states/rev)
X-RSB120AD-E01	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	3000°/s (500 rpm)	500 CPR (2000 states/rev)
X-RSB120AT-E08	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	5400°/s (900 rpm)	400 CPR (1600 states/rev)
X-RSB120AT-BE08	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	3600°/s (600 rpm)	400 CPR (1600 states/rev)
X-RSB120AU-E01	0.28° (4.886000 mrad)	< 0.25° (< 4.362 mrad)	3000°/s (500 rpm)	500 CPR (2000 states/rev)

Part Number	Maximum Continuous Torque	Maximum Brake Torque	Maximum Centered Load	Maximum Moment (Transverse)
X-RSB060AD-E01	230 N-cm (325.7 oz-in)		200 N (44.9 lb)	410 N-cm (580.6 oz-in)
X-RSB060AU-E01	230 N-cm (325.7 oz-in)		200 N (44.9 lb)	410 N-cm (580.6 oz-in)
X-RSB120AB-E08	750 N-cm (1062.1 oz-in)		500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)
X-RSB120AB-BE08	750 N-cm (1062.1 oz-in)	750 N-cm (1062.1 oz-in)	500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)
X-RSB120AD-E01	250 N-cm (354.0 oz-in)		500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)
X-RSB120AT-E08	750 N-cm (1062.1 oz-in)		500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)
X-RSB120AT-BE08	750 N-cm (1062.1 oz-in)	750 N-cm (1062.1 oz-in)	500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)
X-RSB120AU-E01	250 N-cm (354.0 oz-in)		500 N (112.1 lb)	2000 N-cm (2832.2 oz-in)

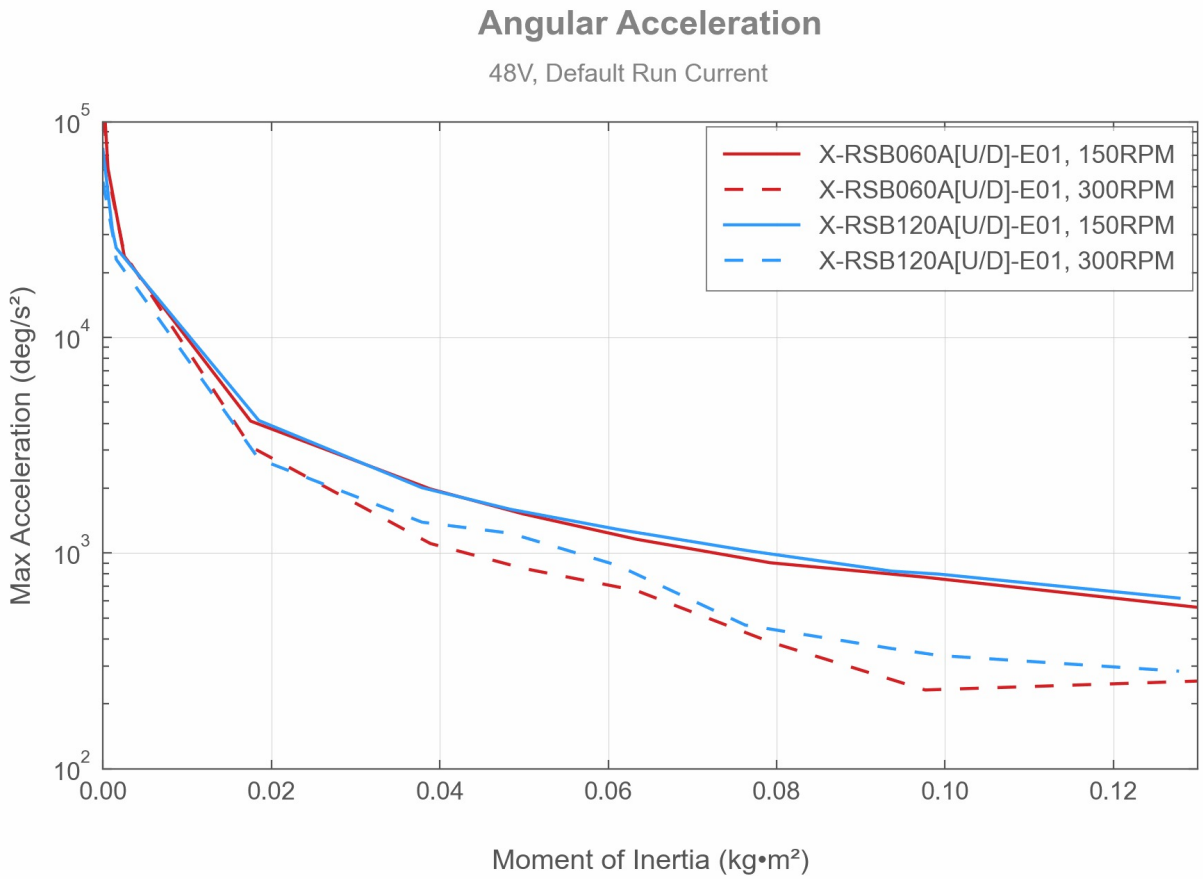
Part Number	Stage Top Dimension	Radial Error Motion	Axial Error Motion	Tilt Error Motion
X-RSB060AD-E01	60 mm (2.362")	+/- 4 µm (+/- 0.000157")	< 4 µm (< 0.000157")	+/- 0.0033° (+/- 57.60 µrad)
X-RSB060AU-E01	60 mm (2.362")	+/- 4 µm (+/- 0.000157")	< 4 µm (< 0.000157")	+/- 0.0033° (+/- 57.60 µrad)
X-RSB120AB-E08	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)
X-RSB120AB-BE08	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)
X-RSB120AD-E01	120 mm (4.724")	+/- 3 µm	< 3 µm	+/- 0.0014°

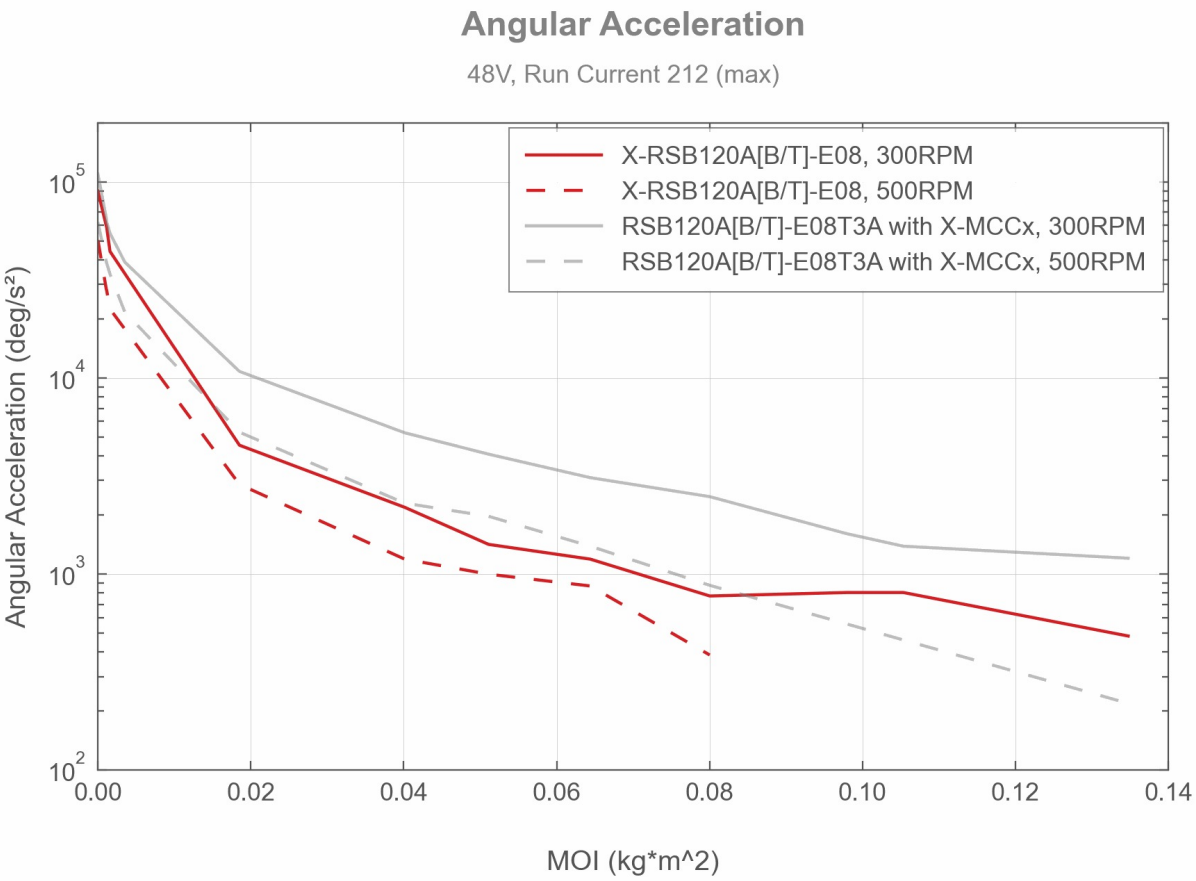
Part Number	Stage Top Dimension	Radial Error Motion	Axial Error Motion	Tilt Error Motion
		(+/- 0.000118")	(< 0.000118")	(+/- 24.43 µrad)
X-RSB120AT-E08	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)
X-RSB120AT-BE08	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)
X-RSB120AU-E01	120 mm (4.724")	+/- 3 µm (+/- 0.000118")	< 3 µm (< 0.000118")	+/- 0.0014° (+/- 24.43 µrad)

Part Number	Bearing Plane Offset	Maximum Current Draw	Motor Rated Current	Inductance
X-RSB060AD-E01	16.37 mm (0.644")	2000 mA	2300 mA/phase	2.8 mH/phase
X-RSB060AU-E01	16.37 mm (0.644")	2000 mA	2300 mA/phase	2.8 mH/phase
X-RSB120AB-E08	20 mm (0.787")	3600 mA	3000 mA/phase	2 mH/phase
X-RSB120AB-BE08	20 mm (0.787")	3600 mA	3000 mA/phase	2 mH/phase
X-RSB120AD-E01	20 mm (0.787")	2000 mA	2100 mA/phase	7.2 mH/phase
X-RSB120AT-E08	20 mm (0.787")	3600 mA	3000 mA/phase	2 mH/phase
X-RSB120AT-BE08	20 mm (0.787")	3600 mA	3000 mA/phase	2 mH/phase
X-RSB120AU-E01	20 mm (0.787")	2000 mA	2100 mA/phase	7.2 mH/phase

Part Number	Mounting Interface	Weight
X-RSB060AD-E01	M6 and #8-32 threaded holes	0.88 kg (1.940 lb)
X-RSB060AU-E01	M6 and #8-32 threaded holes	0.88 kg (1.940 lb)
X-RSB120AB-E08	Kinematic with M2.5 and M6 threaded holes	2.14 kg (4.718 lb)
X-RSB120AB-BE08	Kinematic with M2.5 and M6 threaded holes	2.766 kg (6.098 lb)
X-RSB120AD-E01	Kinematic with M2.5 and M6 threaded holes	2.14 kg (4.718 lb)
X-RSB120AT-E08	Kinematic with M2.5 and M6 threaded holes	2.14 kg (4.718 lb)
X-RSB120AT-BE08	Kinematic with M2.5 and M6 threaded holes	2.766 kg (6.098 lb)
X-RSB120AU-E01	Kinematic with M2.5 and M6 threaded holes	2.14 kg (4.718 lb)

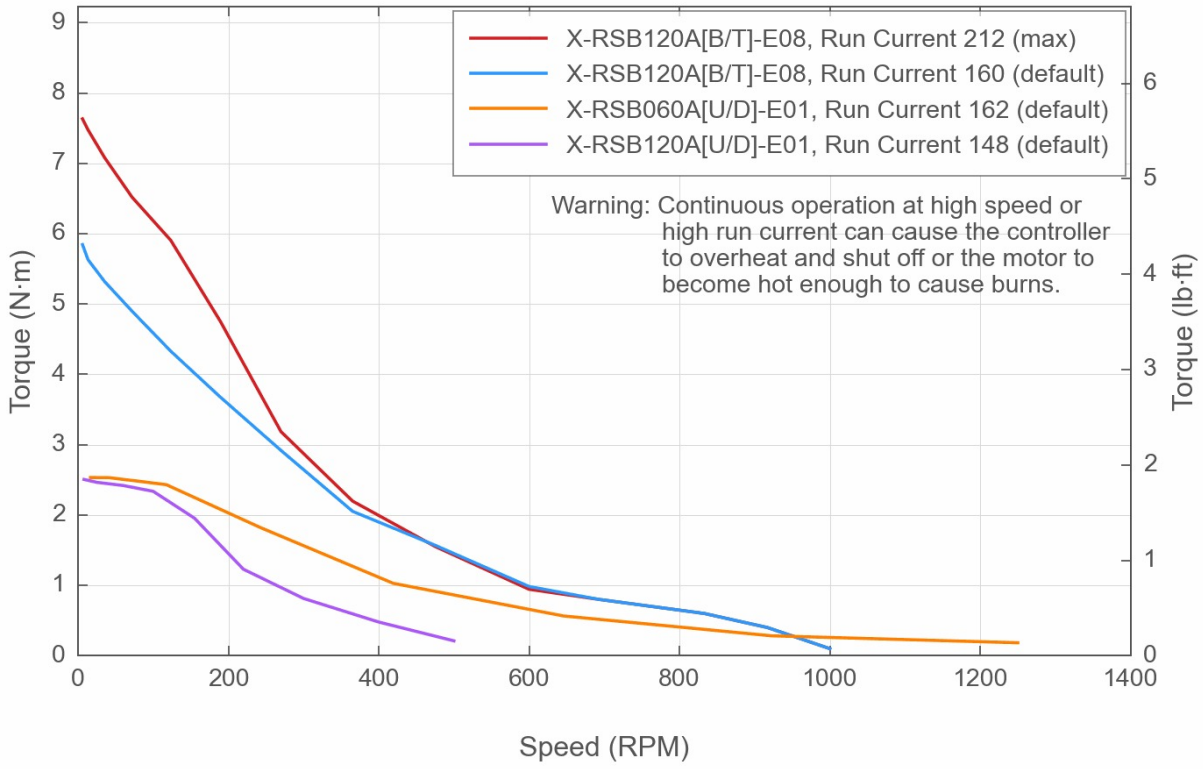
X-RSB-E Series Charts

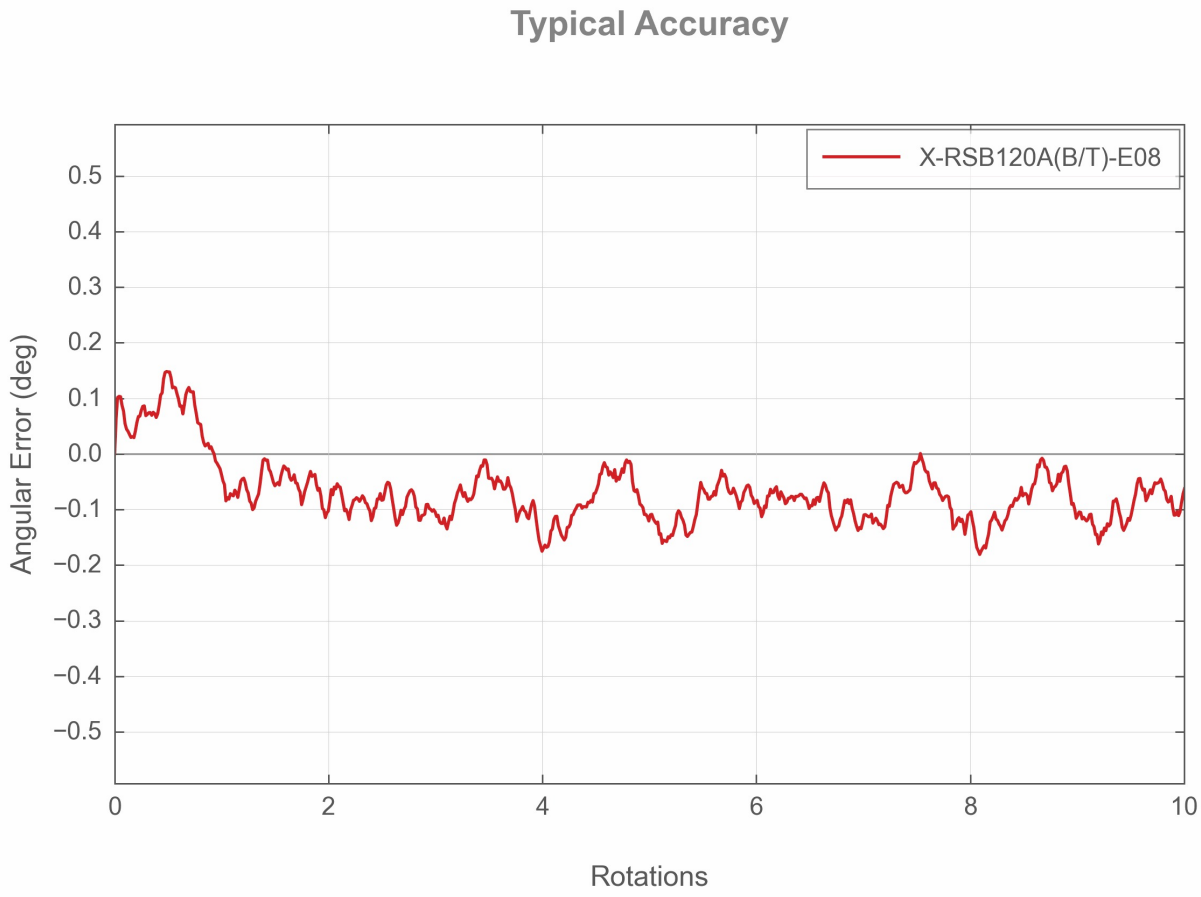



Angular Acceleration
48V, Run Current 212 (max)
X-RSB120A[B/T]-E08, 300RPM
X-RSB120A[B/T]-E08, 500RPM
RSB120A[B/T]-E08T3A with X-MCCx, 300RPM
RSB120A[B/T]-E08T3A with X-MCCx, 500RPM
Angular Acceleration (deg/s²)
10^5
10^4
10^3
10^2
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
MOI (kg*m^2)

Torque Speed Performance

48V





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