Zaber Technologies Inc.
#2 - 605 West Kent Ave.
Vancouver, BC

1-604-569-3780 *Direct*
1-888-276-8033 *Toll Free*
1-604-648-8033 *Fax*

X-RST240B-AE56 Datasheet



- Speed up to 60°/s and torque up to 70 N m
- 300 kg centered load capacity
- 101.6 mm (4") aperture
- Direct reading encoder for position correction; stage accuracy to 0.008°
- 200 Nm tilting moment capacity
- Ultra-smooth crossed roller bearings provide long life and excellent tilt, axial and radial error motion specifications
- Custom versions available

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X-RST240B-AE56 Overview

Zaber's X-RST-AE Series products are motorized rotation stage devices with built-in controllers and direct reading encoders for high accuracy motion. Rated for a 300 kg centered load capacity and 70 N m of torque, they are ideal for high load, high precision, angular positioning applications. They have a large diameter 101.6 mm (4") aperture for a variety of thru-bore applications.

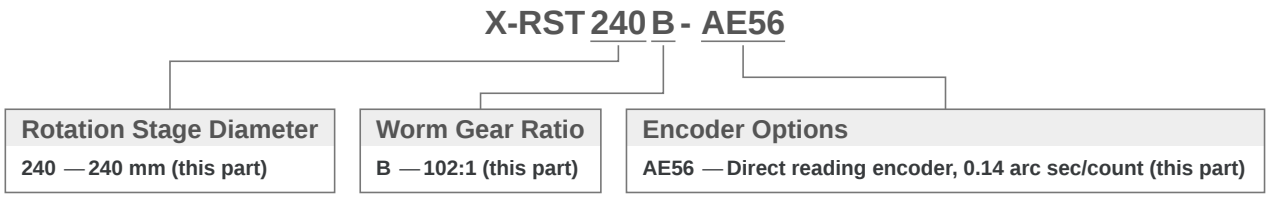
They are stand-alone units requiring only a standard 24-48 V power supply. An indexed knob provides smooth manual control at variable speeds in both directions for versatile operation even without a computer. Press and hold to switch between velocity mode and position mode, turn to move the stage, and 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-AE?part=X-RST240B-AE56

X-RST240B-AE56 Part Numbering & Options

Part number: X-RST240B-AE56



X-RST240B-AE56 Drawings

• View all drawings and documents at zaber.com

X-RST240B-AE56 Specifications

Overview

Specification	Value
Built-in Controller	Yes
Range	+/-360 °
Manual Control	Yes

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LED Indicators	Yes
Weight	15.6 kg (34.392 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.008 ° (0.1396 mrad)
Repeatability	<0.0015 ° (<0.026 mrad)
Backlash	<0.005 ° (<0.087 mrad)
Radial Error Motion	+/-2.5 µm (+/-0.000098 ")
Axial Error Motion	<4 µm (<0.000157 ")
Tilt Error Motion	+/-0.003 ° (+/-52.36 µrad)
Microstep Size (Default Resolution)	0.00027574 ° (4.812 µrad)
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Torque	70 N·m (51.66 lb·ft)
Maximum Continuous Torque	45 N·m (33.21 lb·ft)
Maximum Centered Load	3000 N (672.8 lb)
Maximum Moment (Tilt)	200 N·m (147.6 lb·ft)
Stiffness (Tilt)	8000 N·m/°

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Speed

Specification	Value
Maximum Speed	60 °/s (1 rpm)
Minimum Speed	0.000168 °/s (2.932 µrad/s)
Speed Resolution	0.000168 °/s (2.932 µrad/s)
Maximum Angular Momentum	1.6 kg·m2/s

Encoder & Sensing

Specification	Value
Encoder Type	Direct reading optical encoder
Encoder Count Size	0.00003814 °/count (0.137 arcseconds/count)
Encoder Resolution	23600 CPR (944 states/rev)
Limit or Home Sensing	Optical Index Mark

Motor

Specification	Value
Angular Motion Per Motor Rev	3.5294 °
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	3000 mA/phase
Motor Winding Inductance	2 mH/phase
Gear Ratio	102:1

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Power and Communication

Specification	Value
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
Maximum Current Draw	3600 mA

Mechanical

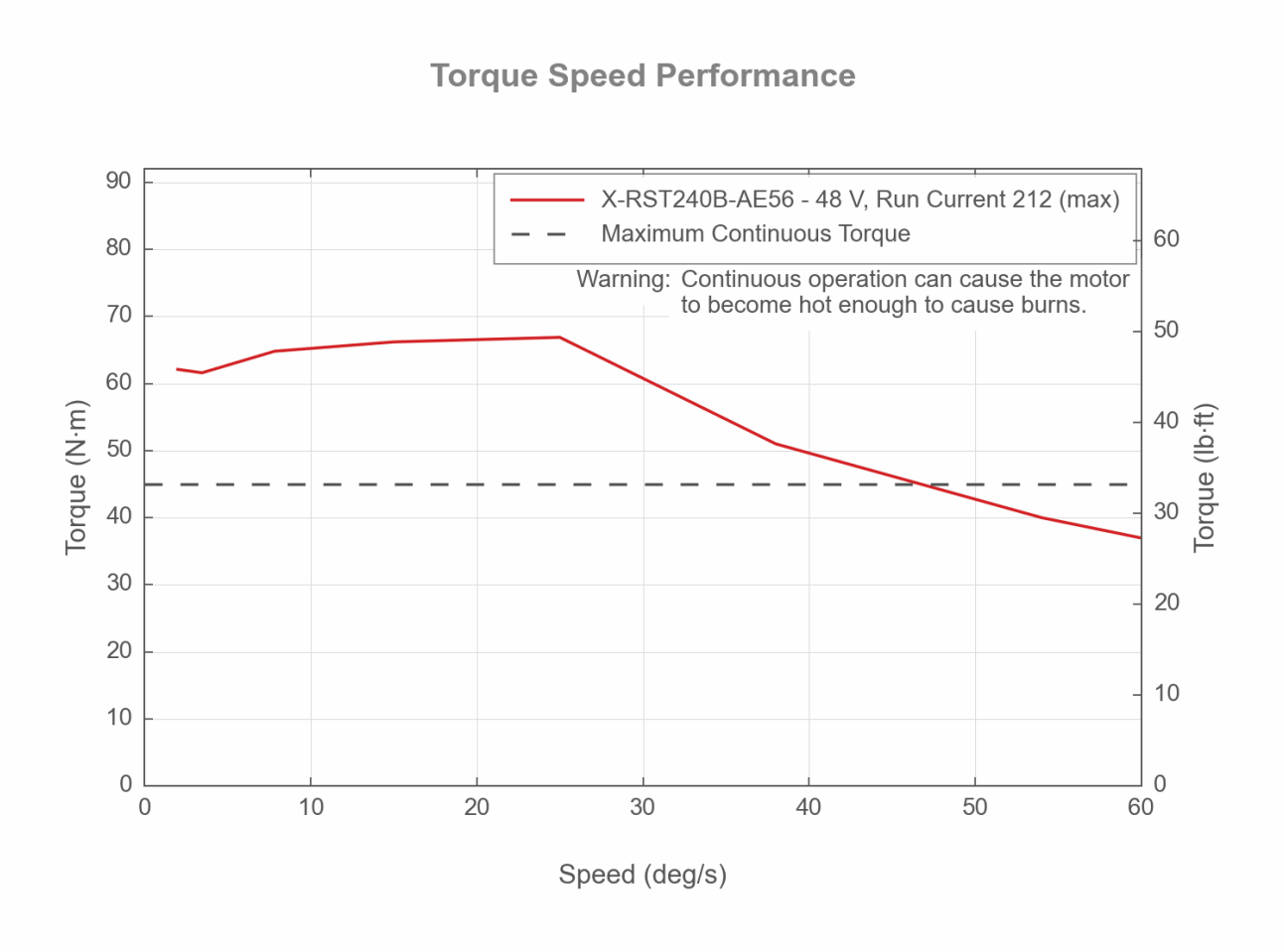
Specification	Value
Stage Top Dimension	240 mm (9.449 ")
Bearing Plane Offset	30.75 mm (1.211 ")
Guide Type	Crossed-Roller Bearing
Mechanical Drive System	Precision Worm Gear
Mounting Interface	M6 threaded holes and M8 mounting holes

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

X-RST240B-AE56 Charts

X RST240B AE56 Torque Speed



Contact

Email: contact@zaber.com

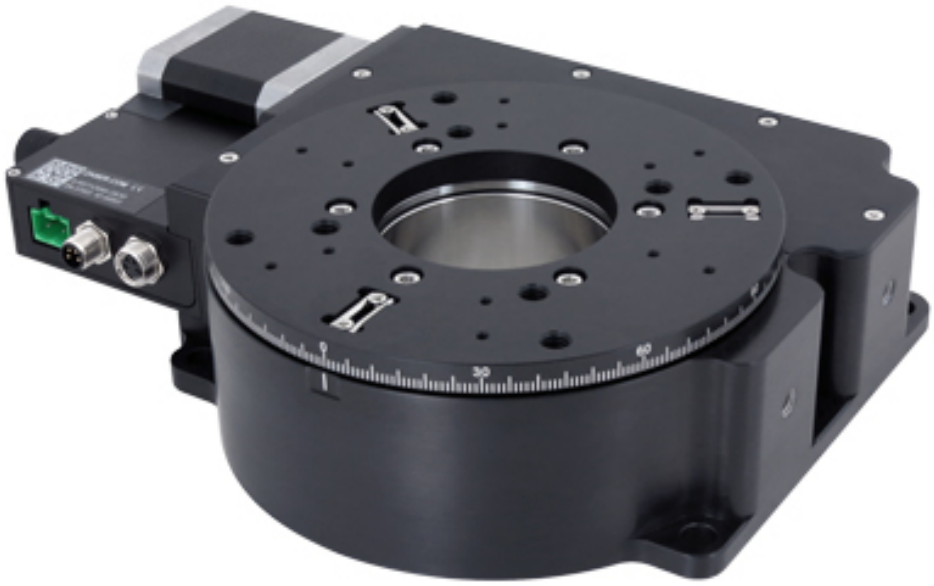
Zaber Technologies Inc.
#2 - 605 West Kent Avenue N.
Vancouver, BC V6P 6T7
Canada
Phone: +1-604-569-3780
Fax: +1-604-648-8033

https://www.zaber.com

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X-RST120AK-DE50 Datasheet



- Speed up to 24 °/s and torque up to 10 N m
- 50 kg centered load capacity
- 50.8 mm (2") aperture with kinematic mounting options for repeatability of assembly
- Direct reading encoder for position correction; stage accuracy to 0.01°
- Multiple X-Series products in a daisy-chain can share a single power supply
- Built-in controller; daisy-chains with other Zaber products
- Custom versions available

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X-RST120AK-DE50 Overview

Zaber's X-RST-DE Series products are motorized rotation stage devices with built-in controllers and direct reading encoders for high accuracy motion. Rated for a 50 kg centered load capacity and 10 N m of torque, they are ideal for high load, high precision, angular positioning applications.

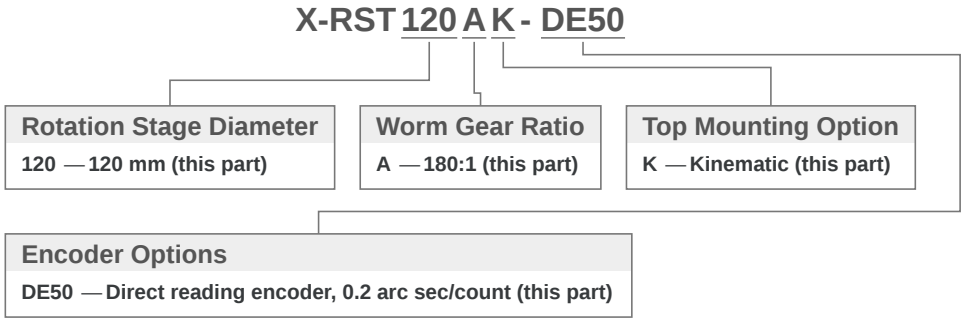
They are stand-alone units requiring only a standard 24-48 V power supply. An indexed knob provides smooth manual control at variable speeds in both directions for versatile operation even without a computer. Press and hold to switch between velocity mode and position mode, turn to move the stage, and 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-DE?part=X-RST120AK-DE50

X-RST120AK-DE50 Part Numbering & Options

Part number: X-RST120AK-DE50



X-RST120AK-DE50 Drawings

- X-RST-DE.png (Drawing for the X-RST-DE)
- View all drawings and documents at zaber.com

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X-RST120AK-DE50 Specifications

Overview

Specification	Value
Built-in Controller	Yes
Range	+/-360 °
Manual Control	Yes
Weight	2.46 kg (5.423 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.01 ° (0.1745 mrad)
Repeatability	<0.005 ° (<0.087 mrad)
Backlash	<0.005 ° (<0.087 mrad)
Microstep Size (Default Resolution)	0.00015625 ° (2.727 µrad)
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Continuous Torque	10 N·m (7.38 lb·ft)
Maximum Centered Load	500 N (112.1 lb)
Maximum Moment (Tilt)	2000 N·cm (2832.2 oz·in)

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Speed

Specification	Value
Maximum Speed	24 °/s (4 rpm)
Minimum Speed	0.000095 °/s (1.658 µrad/s)
Speed Resolution	0.000095 °/s (1.658 µrad/s)
Maximum Angular Momentum	0.4 kg·m2/s

Encoder & Sensing

Specification	Value
Encoder Type	Direct reading optical encoder
Encoder Count Size	0.00005556 °/count (0.2 arcseconds/count)
Encoder Resolution	6480000 CPR (2592 states/rev)
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Angular Motion Per Motor Rev	2 °
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	1500 mA/phase
Motor Winding Inductance	6.6 mH/phase

Power and Communication

Specification	Value
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Locking 4-pin M8

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Power Supply	24-48 VDC
Power Plug	2-pin Screw Terminal
Maximum Current Draw	1100 mA

Mechanical

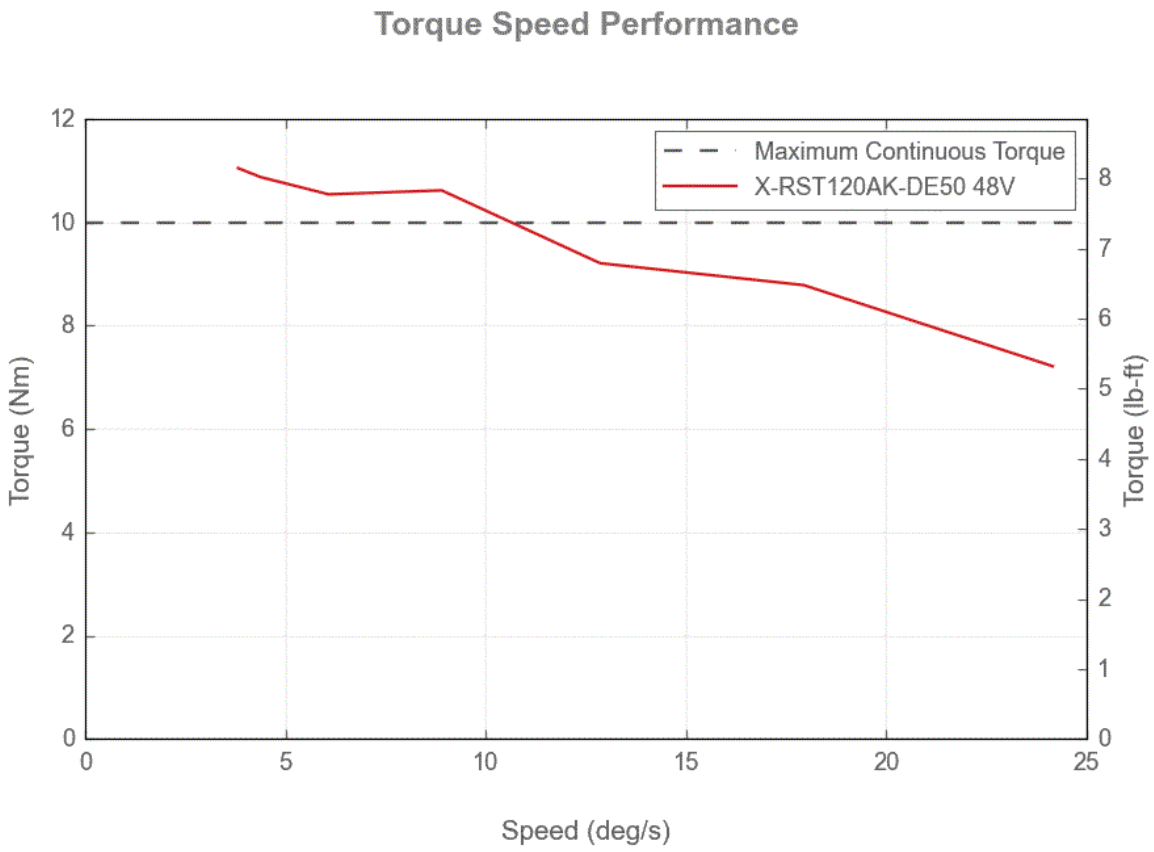
Specification	Value
Stage Top Dimension	120 mm (4.724 ")
Mechanical Drive System	Precision Worm Gear

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

X-RST120AK-DE50 Charts

X RST120AK DE50 Torque Speed



Contact

Email: contact@zaber.com

Zaber Technologies Inc.
#2 - 605 West Kent Avenue N.
Vancouver, BC V6P 6T7
Canada
Phone: +1-604-569-3780
Fax: +1-604-648-8033

https://www.zaber.com

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#2 - 605 West Kent Ave.
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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

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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 120 A K - E03

Rotation Stage Diameter	Worm Gear Ratio	Top Mounting Option	Encoder Options
120 — 120 mm	**A** — 180:1	**None** — Standard top	**E03** — Motor Encoder, 200 CPR
240 — 240 mm	**B** — 102:1	**K** — Kinematic (RST120)	**E08** — Motor Encoder, 400 CPR

X-RST-E Series Drawings

• View all drawings and documents at zaber.com

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X-RST-E Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Range	+/-360 °
Manual Control	Yes

Positioning Performance

Specification	Value
Backlash	<0.05 ° (<0.873 mrad)
Default Resolution	1/64 of a step

Encoder & Sensing

Specification	Value
Encoder Type	Rotary quadrature encoder (incremental)
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)

Power and Communication

Specification	Value
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Locking 4-pin M8

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Power Supply	24-48 VDC
Power Plug	2-pin Screw Terminal

Mechanical

Specification	Value
Mechanical Drive System	Precision Worm Gear

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

Part Number	Weight	Accuracy (unidirectional)	Repeatability	Radial Error Motion
X-RST120AK-E03	2.6 kg (5.732 lb)	0.16 ° (2.792 mrad)	<0.005 ° (<0.087 mrad)	+/-3 µm (+/-0.000118 ")
X-RST240B-E08	14.5 kg (31.967 lb)	0.075 ° (1.30875 mrad)	<0.0015 ° (<0.026 mrad)	+/-2.5 µm (+/-0.000098 ")

Part Number	Axial Error Motion	Tilt Error Motion	Microstep Size (Default Resolution)	Maximum Torque
X-RST120AK-E03	<3 µm (<0.000118 ")	+/-0.0014 ° (+/-24.43 µrad)	0.00015625 ° (2.727 µrad)	10 N·m (7.38 lb·ft)
X-RST240B-E08	<4 µm (<0.000157 ")	+/-0.003 ° (+/-52.36 µrad)	0.00027574 ° (4.812 µrad)	70 N·m (51.66 lb·ft)

Part Number	Maximum Continuous Torque	Maximum Centered Load	Maximum Moment (Tilt)	Stiffness (Tilt)

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X-RST120AK-E03	10 N·m (7.38 lb·ft)	500 N (112.1 lb)	20 N·m (14.76 lb·ft)	870 N·m/°
X-RST240B-E08	45 N·m (33.21 lb·ft)	3000 N (672.8 lb)	200 N·m (147.6 lb·ft)	8000 N·m/°

Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Maximum Angular Momentum
X-RST120AK-E03	24 °/s (4 rpm)	0.000095 °/s (1.658 µrad/s)	0.000095 °/s (1.658 µrad/s)	0.4 kg·m2/s
X-RST240B-E08	60 °/s (1 rpm)	0.000168 °/s (2.932 µrad/s)	0.000168 °/s (2.932 µrad/s)	1.6 kg·m2/s

Part Number	Encoder Resolution	Angular Motion Per Motor Rev	Motor Rated Current	Motor Winding Resistance
X-RST120AK-E03	200 CPR (8 states/rev)	2 °	1500 mA/phase	2.4 ohms/phase
X-RST240B-E08	400 CPR (16 states/rev)	3.5294 °	3000 mA/phase	0.53 ohms/phase

Part Number	Motor Winding Inductance	Motor Frame Size	Gear Ratio	Maximum Current Draw
X-RST120AK-E03	6.6 mH/phase	17	180:1	1100 mA
X-RST240B-E08	2 mH/phase	23	102:1	3600 mA

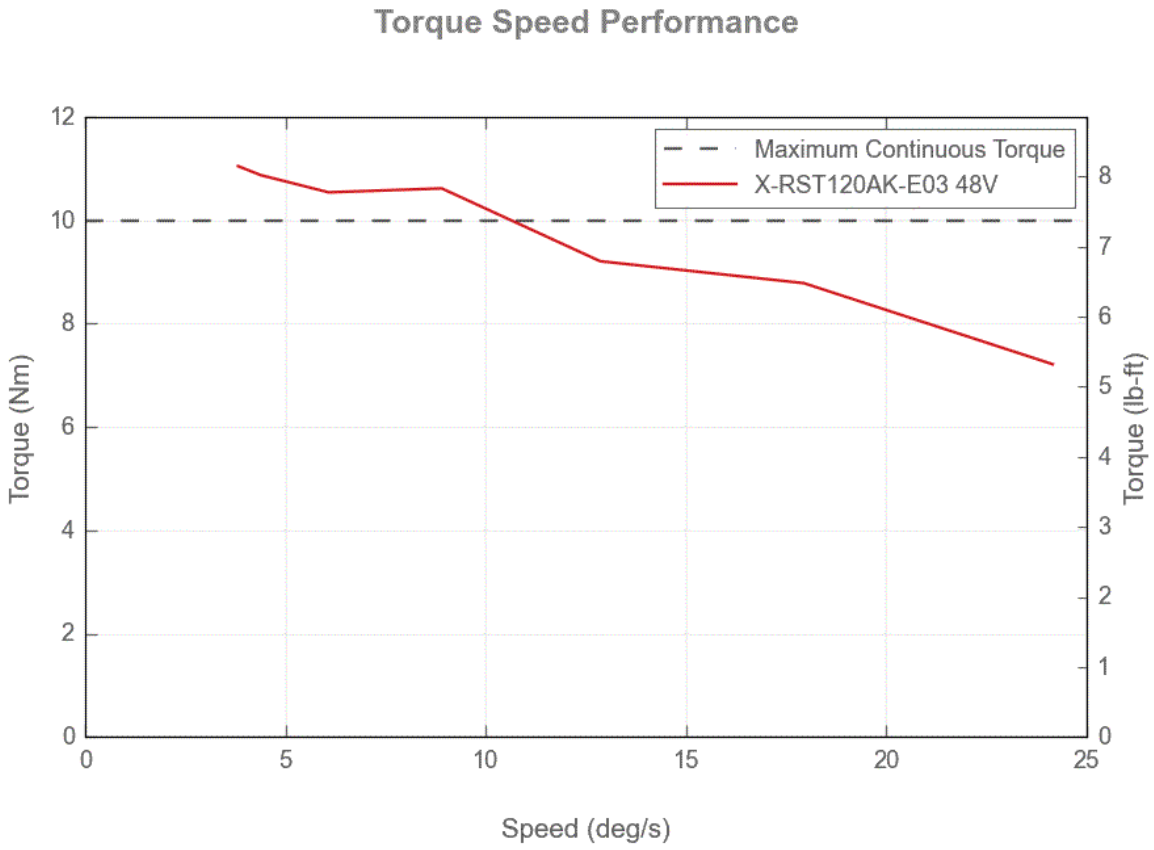
Part Number	Stage Top Dimension	Bearing Plane Offset	Guide Type	Mounting Interface
X-RST120AK-E03	120 mm (4.724 ")	27.1 mm (1.067 ")	Preloaded Ball Bearing	Kinematic with M2.5 and M6 threaded holes
X-RST240B-E08	240 mm (9.449 ")	30.75 mm (1.211 ")	Crossed-Roller Bearing	M6 threaded holes and M8 mounting holes

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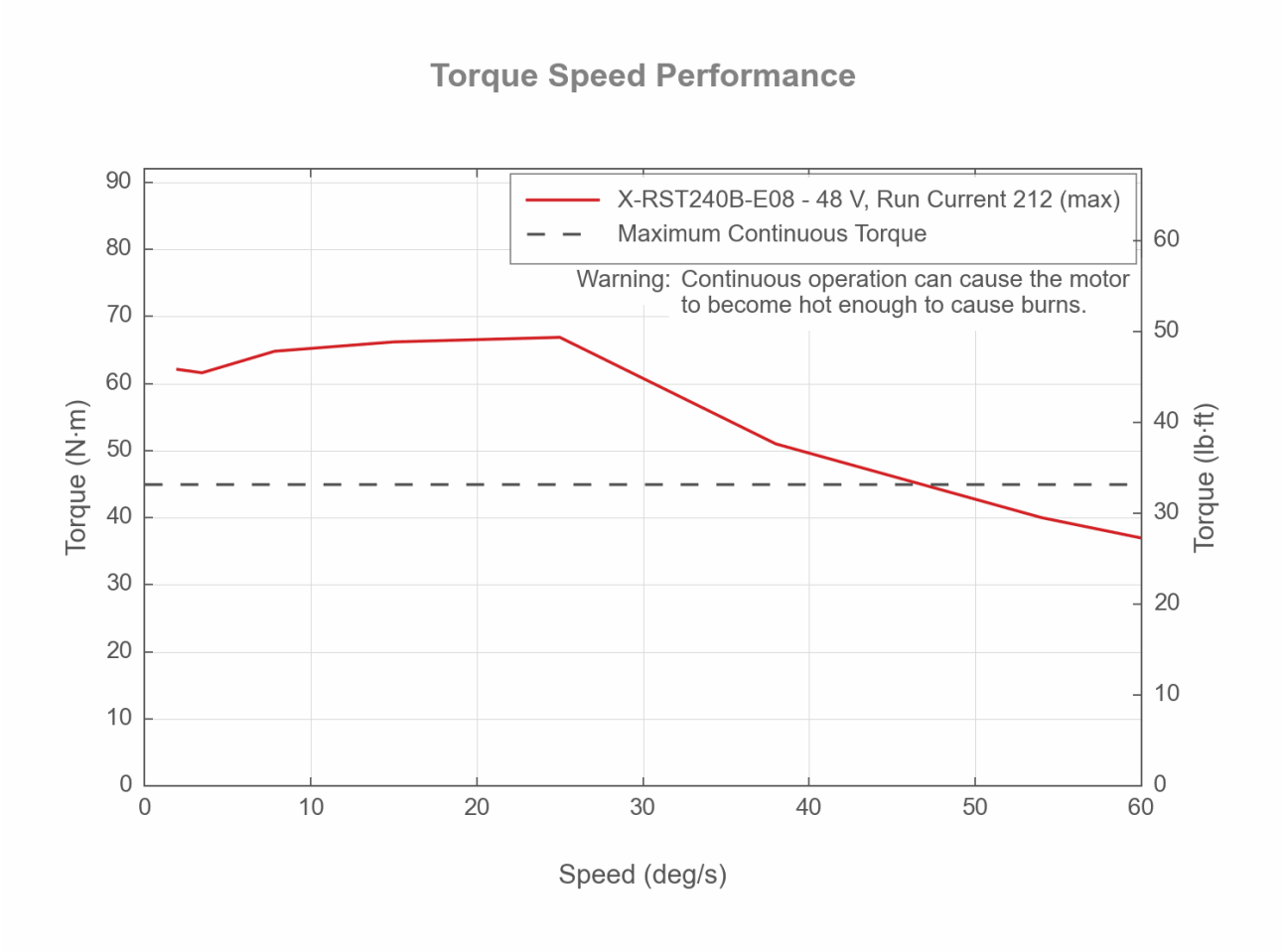
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X-RST-E Series Charts

X RST120AK E03 Torque Speed



X RST240B E08 Torque Speed



Contact

Email: contact@zaber.com

Zaber Technologies Inc.
#2 - 605 West Kent Avenue N.
Vancouver, BC V6P 6T7
Canada
Phone: +1-604-569-3780
Fax: +1-604-648-8033

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Vancouver, BC

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1-888-276-8033 *Toll Free*
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X-RST Series Datasheet



- Speed up to 60°/s and torque up to 70 N m
- Up to 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
- Built-in controller; daisy-chains with other Zaber products
- Custom versions available

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X-RST Series Overview

Zaber's X-RST Series products are motorized rotation stages with built-in controllers. 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

X-RST Series Part Numbering & Options

X-RST 120 A K

Rotation Stage Diameter	Worm Gear Ratio	Top Mounting Option
120 — 120 mm	**A** — 180:1	**None** — Standard top
240 — 240 mm	**B** — 102:1	**K** — Kinematic (RST120)

X-RST Series Drawings

• View all drawings and documents at zaber.com

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X-RST Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Range	+/-360 °
Manual Control	Yes

Positioning Performance

Specification	Value
Backlash	<0.05 ° (<0.873 mrad)
Default Resolution	1/64 of a step

Encoder & Sensing

Specification	Value
Encoder Type	None
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)

Power and Communication

Specification	Value
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Locking 4-pin M8
Power Supply	24-48 VDC

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Power Plug	2-pin Screw Terminal

Mechanical

Specification	Value
Mechanical Drive System	Precision Worm Gear

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

Part Number	Weight	Accuracy (unidirectional)	Repeatability	Radial Error Motion
X-RST120AK	2.6 kg (5.732 lb)	0.16 ° (2.792 mrad)	<0.005 ° (<0.087 mrad)	+/-3 µm (+/-0.000118 ")
X-RST240B	14.5 kg (31.967 lb)	0.075 ° (1.30875 mrad)	<0.0015 ° (<0.026 mrad)	+/-2.5 µm (+/-0.000098 ")

Part Number	Axial Error Motion	Tilt Error Motion	Microstep Size (Default Resolution)	Maximum Torque
X-RST120AK	<3 µm (<0.000118 ")	+/-0.0014 ° (+/-24.43 µrad)	0.00015625 ° (2.727 µrad)	10 N·m (7.38 lb·ft)
X-RST240B	<4 µm (<0.000157 ")	+/-0.003 ° (+/-52.36 µrad)	0.00027574 ° (4.812 µrad)	70 N·m (51.66 lb·ft)

Part Number	Maximum Continuous Torque	Maximum Centered Load	Maximum Moment (Tilt)	Stiffness (Tilt)
X-RST120AK	10 N·m (7.38 lb·ft)	500 N (112.1 lb)	20 N·m (14.76 lb·ft)	870 N·m/°

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X-RST240B	45 N·m (33.21 lb·ft)	3000 N (672.8 lb)	200 N·m (147.6 lb·ft)	8000 N·m/°

Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Maximum Angular Momentum
X-RST120AK	24 °/s (4 rpm)	0.000095 °/s (1.658 µrad/s)	0.000095 °/s (1.658 µrad/s)	0.4 kg·m2/s
X-RST240B	60 °/s (1 rpm)	0.000168 °/s (2.932 µrad/s)	0.000168 °/s (2.932 µrad/s)	1.6 kg·m2/s

Part Number	Angular Motion Per Motor Rev	Motor Rated Current	Motor Winding Inductance	Motor Frame Size
X-RST120AK	2 °	1500 mA/phase	6.6 mH/phase	17
X-RST240B	3.5294 °	3000 mA/phase	2 mH/phase	23

Part Number	Gear Ratio	Maximum Current Draw	Stage Top Dimension	Bearing Plane Offset
X-RST120AK	180:1	1100 mA	120 mm (4.724 ")	27.1 mm (1.067 ")
X-RST240B	102:1	3600 mA	240 mm (9.449 ")	30.75 mm (1.211 ")

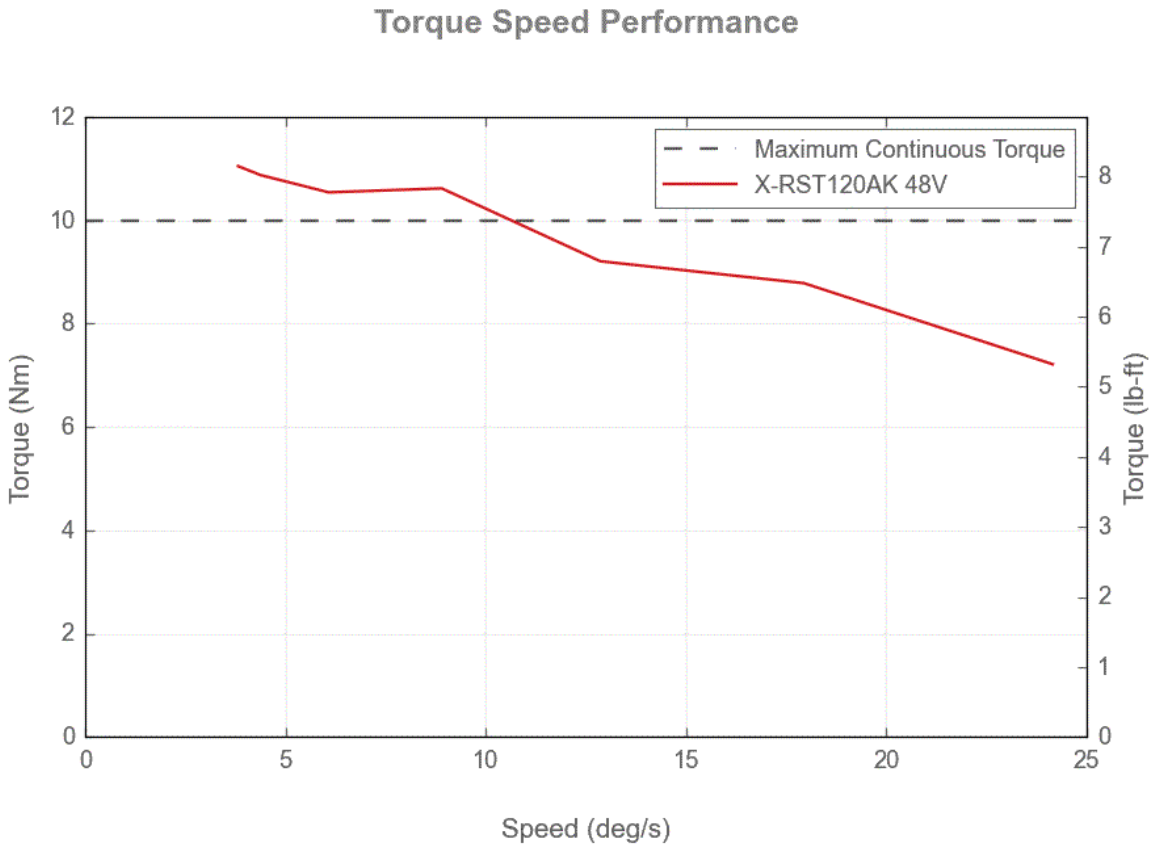
Part Number	Guide Type	Mounting Interface
X-RST120AK	Preloaded Ball Bearing	Kinematic with M2.5 and M6 threaded holes
X-RST240B	Crossed-Roller Bearing	M6 threaded holes and M8 mounting holes

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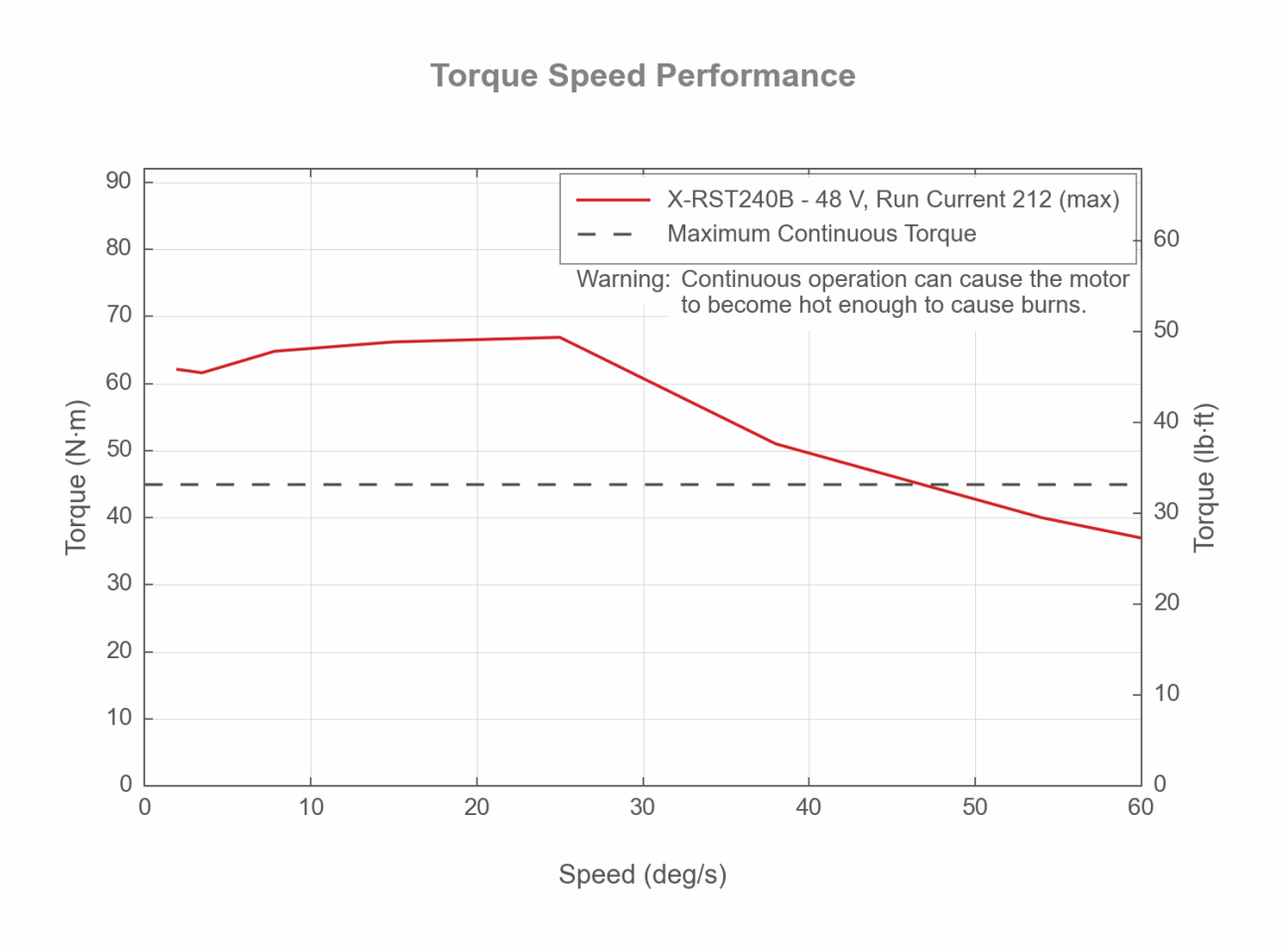
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X-RST Series Charts

X RST120AK Torque Speed



X RST240B Torque Speed



Contact

Email: contact@zaber.com

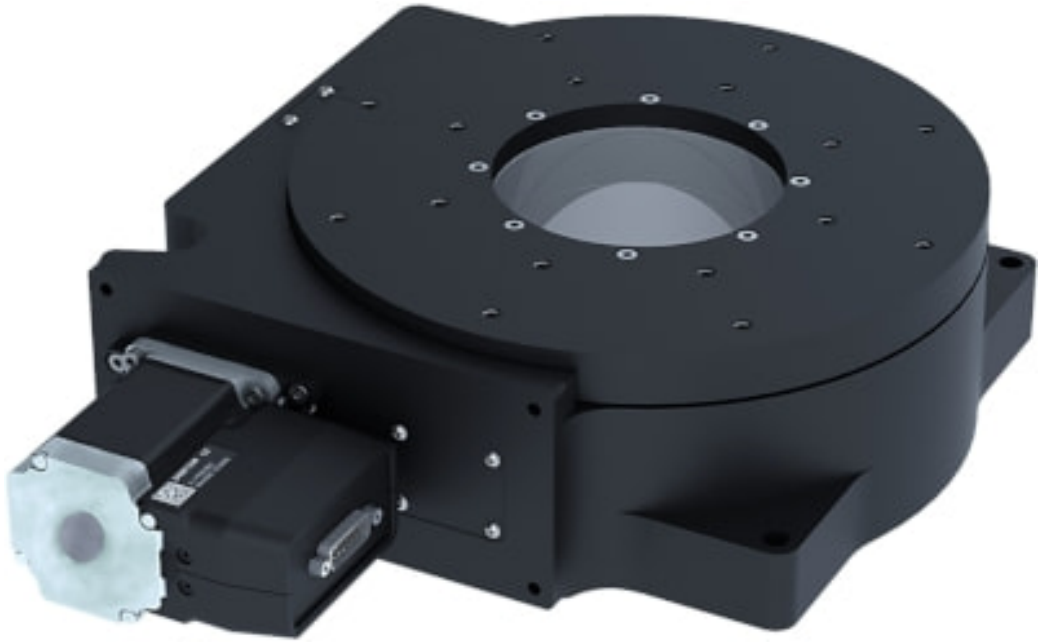
Zaber Technologies Inc.
#2 - 605 West Kent Avenue N.
Vancouver, BC V6P 6T7
Canada
Phone: +1-604-569-3780
Fax: +1-604-648-8033

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RST240B-AE56T10A Datasheet



- Speed up to 60°/s and torque up to 70 N m
- 300 kg centered load capacity
- 101.6 mm (4") aperture
- Direct reading encoder for position correction; stage accuracy to 0.008°
- 200 Nm tilting moment capacity
- Ultra-smooth crossed roller bearings provide long life and excellent tilt, axial and radial error motion specifications

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RST240B-AE56T10A Overview

Zaber's RST-AE Series products are motorized rotation stage devices with built-in direct reading encoders for high accuracy motion. Rated for a 300 kg centered load capacity and 70 N m of torque, they are ideal for high load, high precision, angular positioning applications. They have a large diameter 101.6 mm (4") aperture for a variety of thru-bore applications.

RST-AE stages are designed for plug-and-play use with any of Zaber's controllers. Set up is easy with AutoDetect. Once connected, the MCC controller will automatically detect and configure the RST-AE.

For more information visit: https://www.zaber.com/products/rotary-stages/RST-AE?part=RST240B-AE56T10A

RST240B-AE56T10A Part Numbering & Options

Part number: RST240B-AE56T10A

RST 240 B - AE56 T10A

Rotation Stage Diameter
240 — 240 mm (this part)

Worm Gear Ratio
B — 102:1 (this part)

Encoder Options
AE56 — Direct reading encoder, 0.14 arc sec/count (this part)

Connector
T10A — D-sub 26 panel mount connector with Auto Detect (this part)

RST240B-AE56T10A Drawings

• View all drawings and documents at zaber.com

RST240B-AE56T10A Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Range	+/-360 °
LED Indicators	No

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Weight	15.6 kg (34.392 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.008 ° (0.1396 mrad)
Repeatability	<0.0015 ° (<0.026 mrad)
Backlash	<0.005 ° (<0.087 mrad)
Radial Error Motion	+/-2.5 µm (+/-0.000098 ")
Axial Error Motion	<4 µm (<0.000157 ")
Tilt Error Motion	+/-0.003 ° (+/-52.36 µrad)
Microstep Size (Default Resolution)	0.00027574 ° (4.812 µrad)
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Torque	70 N·m (51.66 lb·ft)
Maximum Continuous Torque	45 N·m (33.21 lb·ft)
Maximum Centered Load	3000 N (672.8 lb)
Maximum Moment (Tilt)	200 N·m (147.6 lb·ft)
Stiffness (Tilt)	8000 N·m/°

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Speed

Specification	Value
Maximum Speed	60 °/s (1 rpm)
Minimum Speed	0.000168 °/s (2.932 µrad/s)
Speed Resolution	0.000168 °/s (2.932 µrad/s)
Maximum Angular Momentum	1.6 kg·m2/s

Encoder & Sensing

Specification	Value
Encoder Type	Direct reading optical encoder
Encoder Count Size	0.00003814 °/count (0.137 arcseconds/count)
Encoder Resolution	23600 CPR (944 states/rev)
Limit or Home Sensing	Optical Index Mark

Motor

Specification	Value
Angular Motion Per Motor Rev	3.5294 °
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	3000 mA/phase
Motor Winding Resistance	0.53 ohms/phase
Motor Winding Inductance	2 mH/phase
Motor Connection	D-sub 26
Motor Frame Size	23
Gear Ratio	102:1

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Mechanical

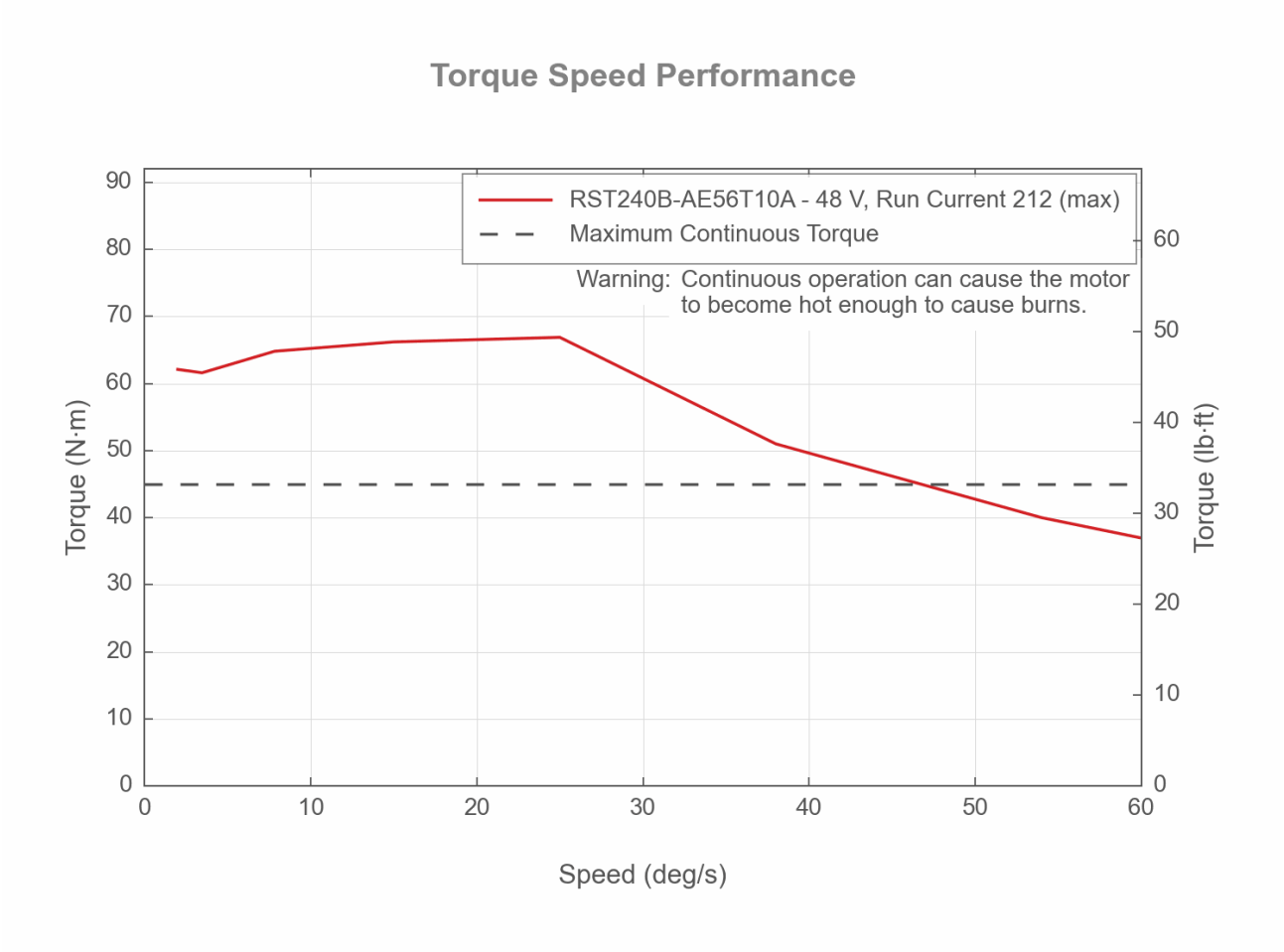
Specification	Value
Stage Top Dimension	240 mm (9.449 ")
Bearing Plane Offset	30.75 mm (1.211 ")
Guide Type	Crossed-Roller Bearing
Mechanical Drive System	Precision Worm Gear
Mounting Interface	M6 threaded holes and M8 mounting holes

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

RST240B-AE56T10A Charts

RST240B AE56T10A Torque Speed



Contact

Email: contact@zaber.com

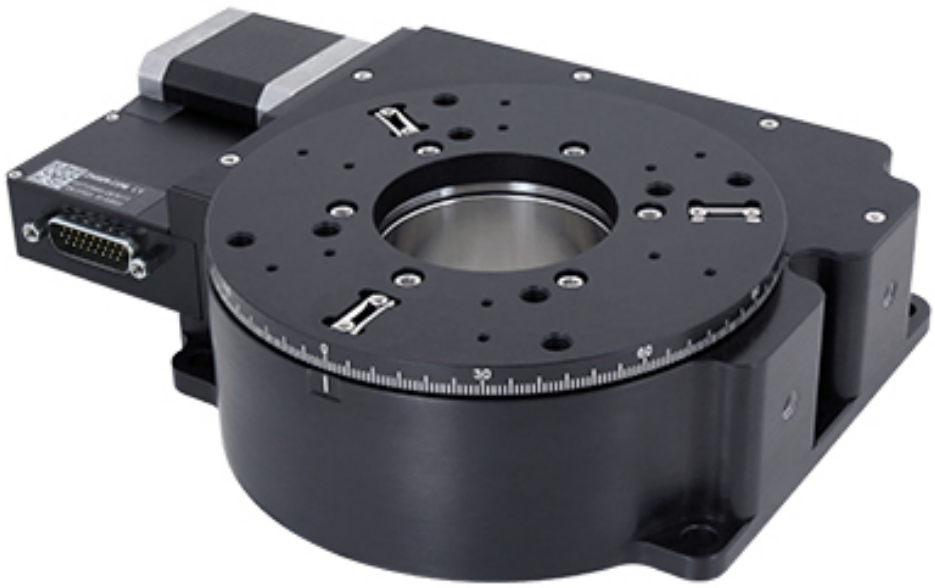
Zaber Technologies Inc.
#2 - 605 West Kent Avenue N.
Vancouver, BC V6P 6T7
Canada
Phone: +1-604-569-3780
Fax: +1-604-648-8033

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RST120AK-DE50T10A Datasheet



- Speed up to 24 °/s and torque up to 10 N m
- 50.8 mm (2 inch) aperture with kinematic mounting options for repeatability of assembly
- 50 kg centered load capacity
- Continuous 360° rotation stage
- Direct reading encoder for position correction; stage accuracy to 0.01°
- Designed for use with MCC Family controllers or any 2-phase stepper motor controller
- With AutoDetect, Zaber controllers automatically configure settings for the connected peripheral
- Custom versions available

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RST120AK-DE50T10A Overview

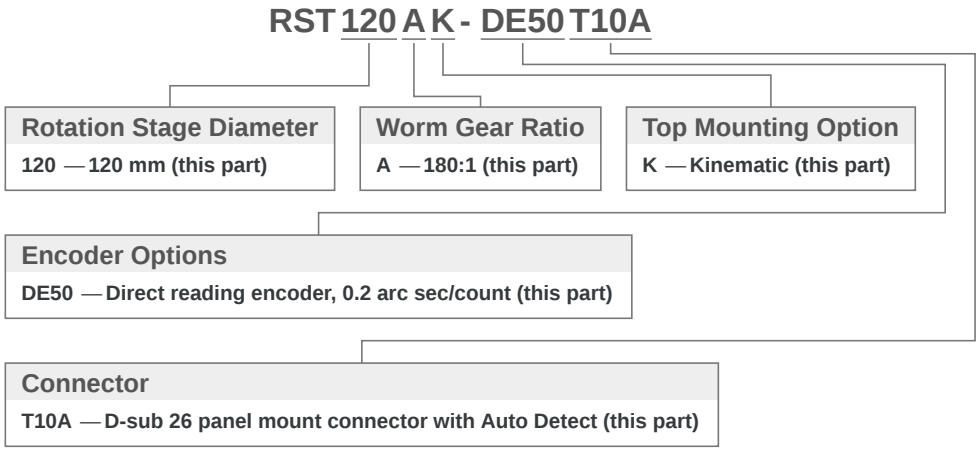
Zaber's RST-DE Series products are motorized rotation stages with built-in direct reading encoders for high accuracy motion. Rated for a 50 kg centered load capacity and 10 N m of torque, they are ideal for high load, angular positioning applications.

RST-DE stages are designed for plug-and-play use with any of Zaber's controllers. Set up is easy with AutoDetect. Once connected, the MCC controller will automatically detect and configure the RST-DE.

For more information visit: https://www.zaber.com/products/rotary-stages/RST-DE?part=RST120AK-DE50T10A

RST120AK-DE50T10A Part Numbering & Options

Part number: RST120AK-DE50T10A



RST120AK-DE50T10A Drawings

- RST-DE50T10A.png (Drawing for the RST-DE50T10A)
- View all drawings and documents at zaber.com

RST120AK-DE50T10A Specifications

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Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Range	+/-360 °
Weight	2.6 kg (5.732 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.01 ° (0.1745 mrad)
Repeatability	<0.005 ° (<0.087 mrad)
Backlash	<0.005 ° (<0.087 mrad)
Radial Error Motion	+/-3 µm (+/-0.000118 ")
Axial Error Motion	<3 µm (<0.000118 ")
Tilt Error Motion	+/-0.0014 ° (+/-24.43 µrad)
Microstep Size (Default Resolution)	0.00015625 ° (2.727 µrad)
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Torque	10 N·m (7.38 lb·ft)
Maximum Continuous Torque	10 N·m (7.38 lb·ft)
Maximum Centered Load	500 N (112.1 lb)

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Maximum Moment (Tilt)	20 N·m (14.76 lb·ft)
Stiffness (Tilt)	870 N·m/°

Speed

Specification	Value
Maximum Speed	24 °/s (4 rpm)
Minimum Speed	0.000095 °/s (1.658 µrad/s)
Speed Resolution	0.000095 °/s (1.658 µrad/s)
Maximum Angular Momentum	0.4 kg·m2/s

Encoder & Sensing

Specification	Value
Encoder Type	Direct Reading Optical Encoder
Encoder Count Size	0.00005556 °/count (0.2 arcseconds/count)
Encoder Resolution	1620000 CPR (648 states/rev)
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Angular Motion Per Motor Rev	2 °
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	1500 mA/phase
Motor Winding Resistance	2.4 ohms/phase
Motor Winding Inductance	6.6 mH/phase
Motor Connection	D-sub 26

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Mechanical

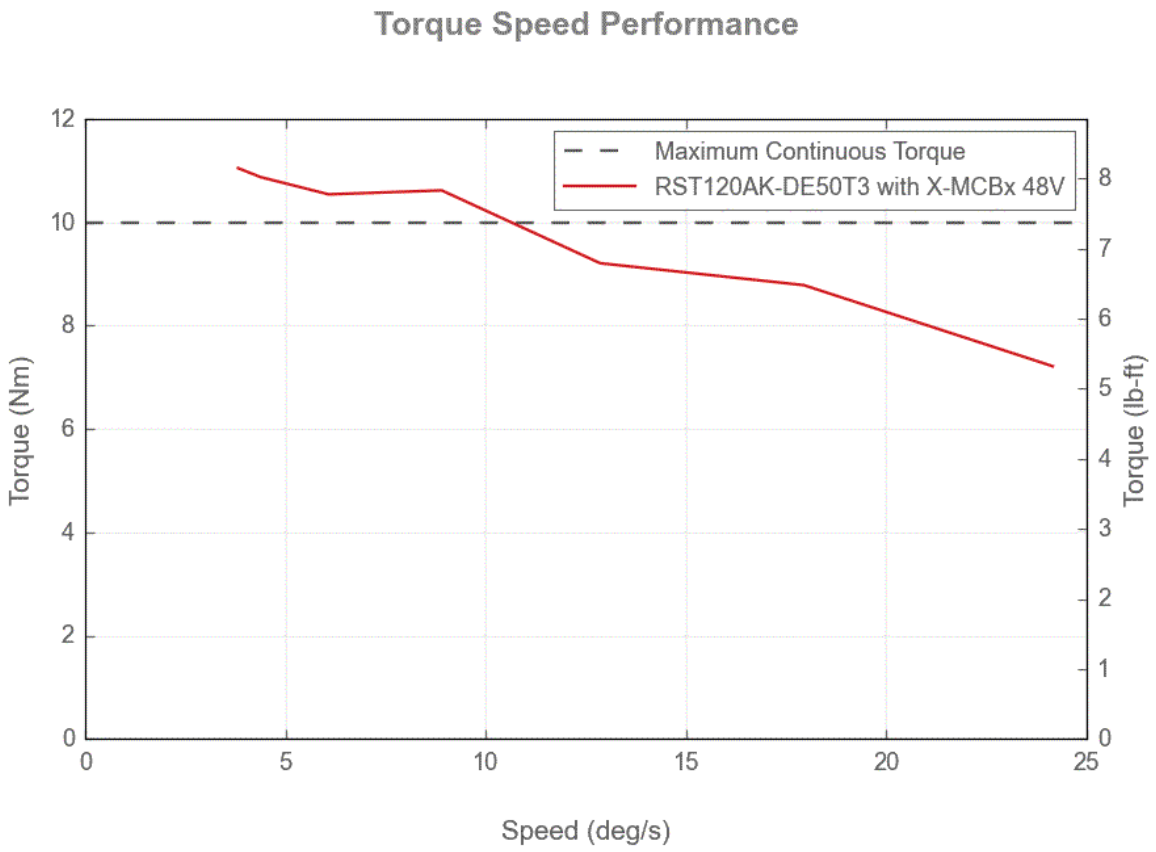
Specification	Value
Stage Top Dimension	120 mm (4.724 ")
Bearing Plane Offset	27.11 mm (1.067 ")
Mechanical Drive System	Precision Worm Gear

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

RST120AK-DE50T10A Charts

RST120AK DE50T3 Torque Speed



Contact

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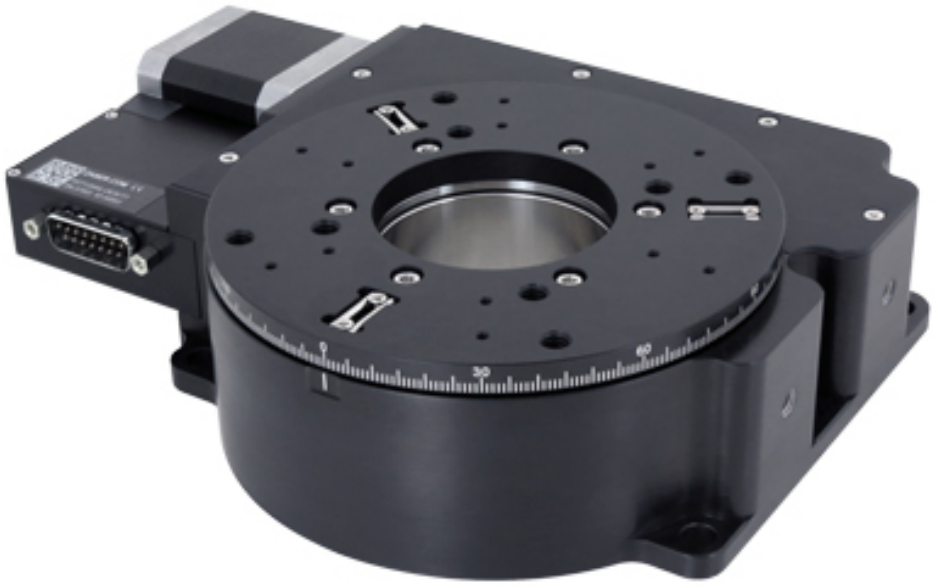
Zaber Technologies Inc.
#2 - 605 West Kent Avenue N.
Vancouver, BC V6P 6T7
Canada
Phone: +1-604-569-3780
Fax: +1-604-648-8033

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#2 - 605 West Kent Ave.
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RST-E Series Datasheet



- Speed up to 60 °/s and torque up to 70 N m
- Continuous 360° rotation stage
- Up to 300 kg centered load capacity
- 50.8 mm (2") or 101.6 mm (4") aperture
- Encoder position feedback with slip/stall detection and automatic recovery
- Designed for use with MCC Family controllers or any 2-phase stepper motor controller
- Custom versions available

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RST-E Series Overview

Zaber's RST-E Series products are motorized rotation stages with built-in motor encoders. Rated for up to 300 kg centered load capacity and up to 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. RST-E stages are designed for plug-and-play use with any of Zaber's controllers.

The stages are designed to connect directly to our MCC Family universal motor controllers, or they can be used with any 2-phase stepper motor controller through the panel mount DB15 connector. Set up is easy with AutoDetect. Once connected, the controller will automatically detect and configure the RST-E.

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

RST-E Series Part Numbering & Options

RST 120 A K - E03 T3A

Rotation Stage Diameter
- **120** — 120 mm
- **240** — 240 mm

Worm Gear Ratio
- **A** — 180:1
- **B** — 102:1

Top Mounting Option
- **None** — Standard top
- **K** — Kinematic (RST120)

Encoder Options
- **E03** — Motor Encoder, 200 CPR
- **E08** — Motor Encoder, 400 CPR

Connector
- **T3A** — D-sub 15 panel mount connector with Auto Detect

RST-E Series Drawings

• View all drawings and documents at zaber.com

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RST-E Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Range	+/-360 °

Positioning Performance

Specification	Value
Backlash	<0.05 ° (<0.873 mrad)
Default Resolution	1/64 of a step

Encoder & Sensing

Specification	Value
Encoder Type	Rotary quadrature encoder (incremental)
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Connection	D-sub 15

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Mechanical

Specification	Value
Mechanical Drive System	Precision Worm Gear

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

Part Number	Weight	Accuracy (unidirectional)	Repeatability	Radial Error Motion
RST120AK-E03T3A	2.6 kg (5.732 lb)	0.16 ° (2.792 mrad)	<0.005 ° (<0.087 mrad)	+/-3 µm (+/-0.000118 ")
RST240B-E08T3A	14.5 kg (31.967 lb)	0.075 ° (1.30875 mrad)	<0.0015 ° (<0.026 mrad)	+/-2.5 µm (+/-0.000098 ")

Part Number	Axial Error Motion	Tilt Error Motion	Microstep Size (Default Resolution)	Maximum Torque
RST120AK-E03T3A	<3 µm (<0.000118 ")	+/-0.0014 ° (+/-24.43 µrad)	0.00015625 ° (2.727 µrad)	10 N·m (7.38 lb·ft)
RST240B-E08T3A	<4 µm (<0.000157 ")	+/-0.003 ° (+/-52.36 µrad)	0.00027574 ° (4.812 µrad)	70 N·m (51.66 lb·ft)

Part Number	Maximum Continuous Torque	Maximum Centered Load	Maximum Moment (Tilt)	Stiffness (Tilt)
RST120AK-E03T3A	10 N·m (7.38 lb·ft)	500 N (112.1 lb)	20 N·m (14.76 lb·ft)	870 N·m/°
RST240B-E08T3A	45 N·m (33.21 lb·ft)	3000 N (672.8 lb)	200 N·m (147.6 lb·ft)	8000 N·m/°

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Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Maximum Angular Momentum
RST120AK-E03T3A	24 °/s (4 rpm)	0.000095 °/s (1.658 µrad/s)	0.000095 °/s (1.658 µrad/s)	0.4 kg·m2/s
RST240B-E08T3A	60 °/s (1 rpm)	0.000168 °/s (2.932 µrad/s)	0.000168 °/s (2.932 µrad/s)	1.6 kg·m2/s

Part Number	Encoder Resolution	Angular Motion Per Motor Rev	Motor Rated Current	Motor Winding Resistance
RST120AK-E03T3A	200 CPR (8 states/rev)	2 °	1500 mA/phase	2.4 ohms/phase
RST240B-E08T3A	400 CPR (16 states/rev)	3.5294 °	3000 mA/phase	0.53 ohms/phase

Part Number	Motor Winding Inductance	Motor Frame Size	Gear Ratio	Stage Top Dimension
RST120AK-E03T3A	6.6 mH/phase	17	180:1	120 mm (4.724 ")
RST240B-E08T3A	2 mH/phase	23	102:1	240 mm (9.449 ")

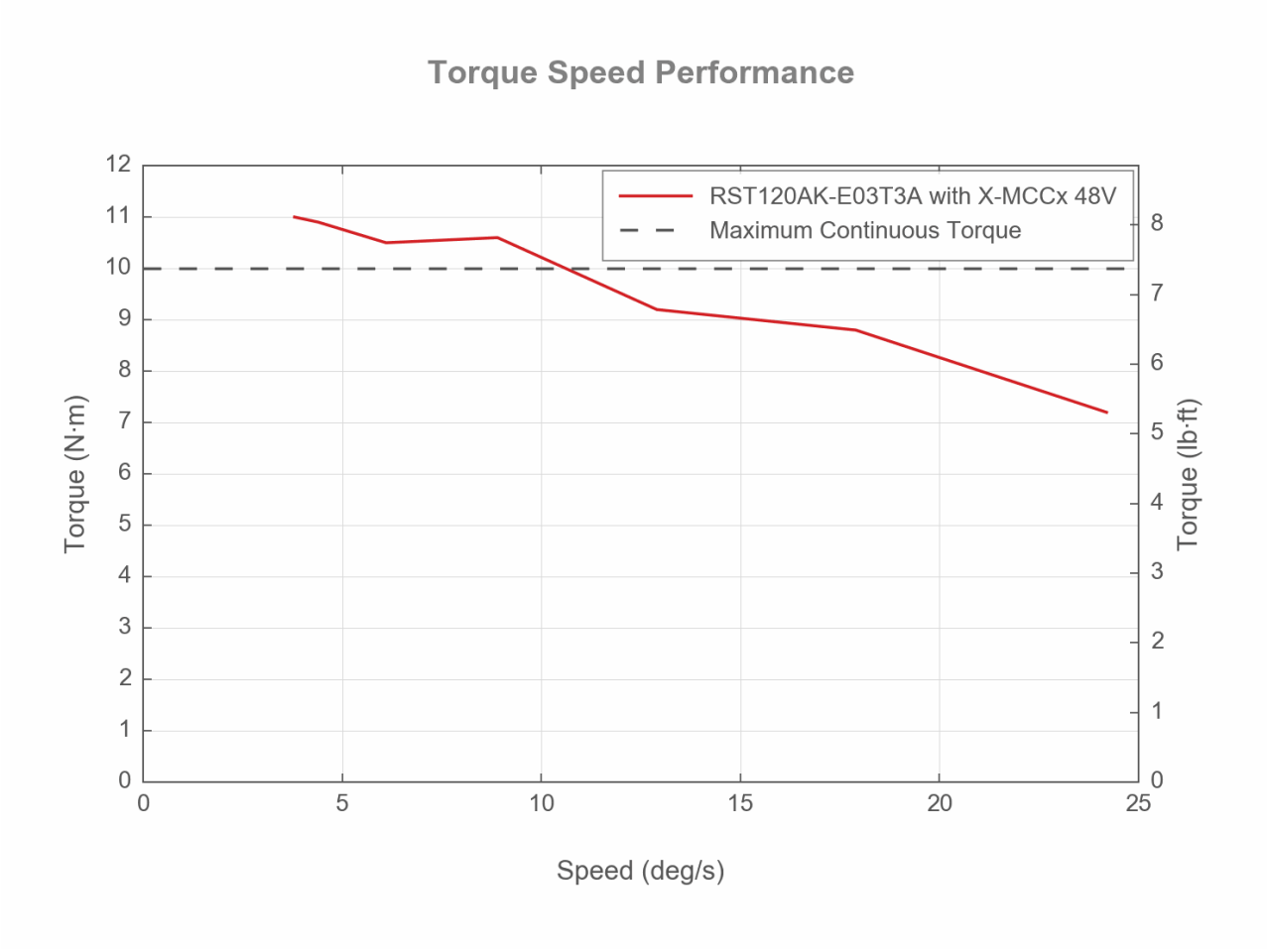
Part Number	Bearing Plane Offset	Guide Type	Mounting Interface
RST120AK-E03T3A	27.1 mm (1.067 ")	Preloaded Ball Bearing	Kinematic with M2.5 and M6 threaded holes
RST240B-E08T3A	30.75 mm (1.211 ")	Crossed-Roller Bearing	M6 threaded holes and M8 mounting holes

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RST-E Series Charts

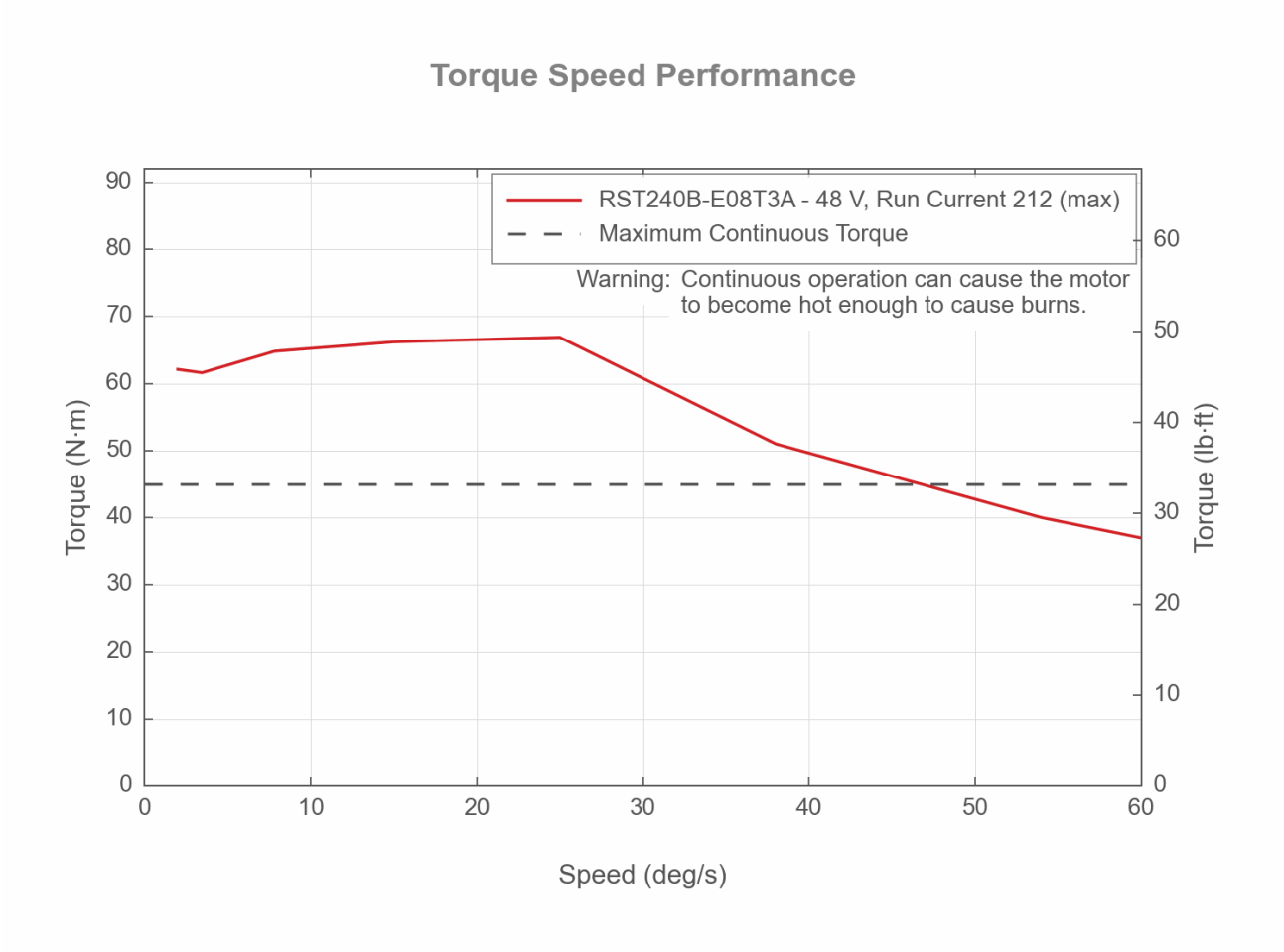
RST120AK E03T3A TORQUE SPEED



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RST240B E08T3A Torque Speed



Contact

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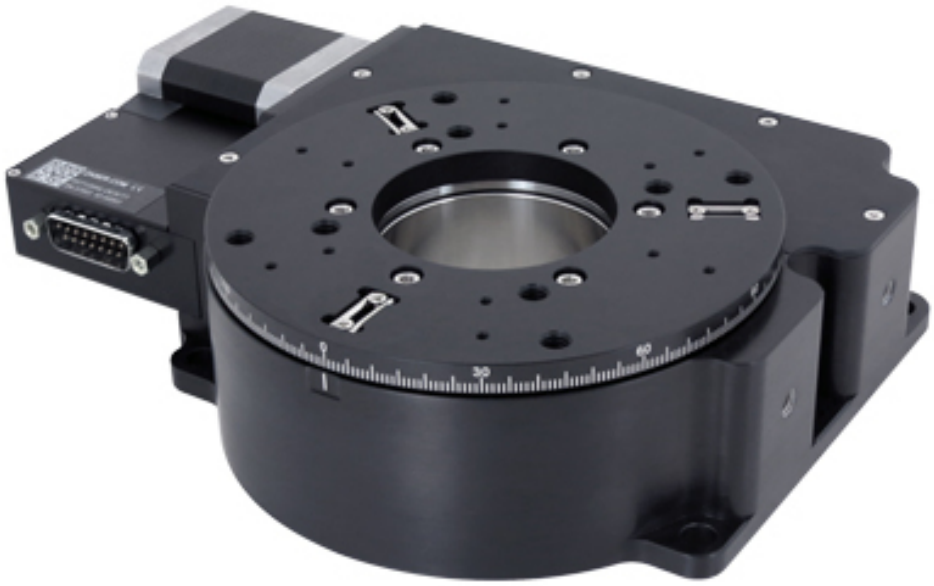
Zaber Technologies Inc.
#2 - 605 West Kent Avenue N.
Vancouver, BC V6P 6T7
Canada
Phone: +1-604-569-3780
Fax: +1-604-648-8033

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#2 - 605 West Kent Ave.
Vancouver, BC

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RST Series Datasheet



- Speed up to 60°/s and torque up to 70 N⋅m
- Continuous 360° rotation stage
- Up to 300 kg centered load capacity
- 50.8 mm (2") or 101.6 mm (4") aperture
- Designed for use with MCC Family controllers or any 2-phase stepper motor controller
- With AutoDetect, Zaber controllers automatically configure settings for the connected peripheral
- Custom versions available

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RST Series Overview

Zaber's RST Series products are motorized rotation stage devices. Rated for up to 300 kg centered load capacity and up to 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. RST stages are designed for plug-and-play use with any of Zaber's controllers.

The stages are designed to connect directly to our MCC Family universal motor controllers, or they can be used with any 2-phase stepper motor controller through the panel mount DB15 connector. Set up is easy with AutoDetect. Once connected, the controller will automatically detect and configure the RST.

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

RST Series Part Numbering & Options

RST 120 A K - T3A

Rotation Stage Diameter
- **120** — 120 mm
- **240** — 240 mm

Worm Gear Ratio
- **A** — 180:1
- **B** — 102:1

Top Mounting Option
- **None** — Standard top
- **K** — Kinematic (RST120)

Connector
- **T3A** — D-sub 15 panel mount connector with Auto Detect

RST Series Drawings

• View all drawings and documents at zaber.com

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RST Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Range	+/-360 °

Positioning Performance

Specification	Value
Backlash	<0.05 ° (<0.873 mrad)
Default Resolution	1/64 of a step

Encoder & Sensing

Specification	Value
Encoder Type	None
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Connection	D-sub 15

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Mechanical

Specification	Value
Mechanical Drive System	Precision Worm Gear

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

Part Number	Weight	Accuracy (unidirectional)	Repeatability	Radial Error Motion
RST120AK-T3A	2.6 kg (5.732 lb)	0.16 ° (2.792 mrad)	<0.005 ° (<0.087 mrad)	+/-3 µm (+/-0.000118 ")
RST240B-T3A	14.5 kg (31.967 lb)	0.075 ° (1.30875 mrad)	<0.0015 ° (<0.026 mrad)	+/-2.5 µm (+/-0.000098 ")

Part Number	Axial Error Motion	Tilt Error Motion	Microstep Size (Default Resolution)	Maximum Torque
RST120AK-T3A	<3 µm (<0.000118 ")	+/-0.0014 ° (+/-24.43 µrad)	0.00015625 ° (2.727 µrad)	10 N·m (7.38 lb·ft)
RST240B-T3A	<4 µm (<0.000157 ")	+/-0.003 ° (+/-52.36 µrad)	0.00027574 ° (4.812 µrad)	70 N·m (51.66 lb·ft)

Part Number	Maximum Continuous Torque	Maximum Centered Load	Maximum Moment (Tilt)	Stiffness (Tilt)
RST120AK-T3A	10 N·m (7.38 lb·ft)	500 N (112.1 lb)	20 N·m (14.76 lb·ft)	870 N·m/°
RST240B-T3A	45 N·m (33.21 lb·ft)	3000 N (672.8 lb)	200 N·m (147.6 lb·ft)	8000 N·m/°

Zaber Technologies Inc.
#2 - 605 West Kent Ave.
Vancouver, BC

1-604-569-3780 *Direct*
1-888-276-8033 *Toll Free*
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Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Maximum Angular Momentum
RST120AK-T3A	24 °/s (4 rpm)	0.000095 °/s (1.658 µrad/s)	0.000095 °/s (1.658 µrad/s)	0.4 kg·m2/s
RST240B-T3A	60 °/s (1 rpm)	0.000168 °/s (2.932 µrad/s)	0.000168 °/s (2.932 µrad/s)	1.6 kg·m2/s

Part Number	Angular Motion Per Motor Rev	Motor Rated Current	Motor Winding Resistance	Motor Winding Inductance
RST120AK-T3A	2 °	1500 mA/phase	2.4 ohms/phase	6.6 mH/phase
RST240B-T3A	3.5294 °	3000 mA/phase	0.53 ohms/phase	2 mH/phase

Part Number	Motor Frame Size	Gear Ratio	Stage Top Dimension	Bearing Plane Offset
RST120AK-T3A	17	180:1	120 mm (4.724 ")	27.1 mm (1.067 ")
RST240B-T3A	23	102:1	240 mm (9.449 ")	30.75 mm (1.211 ")

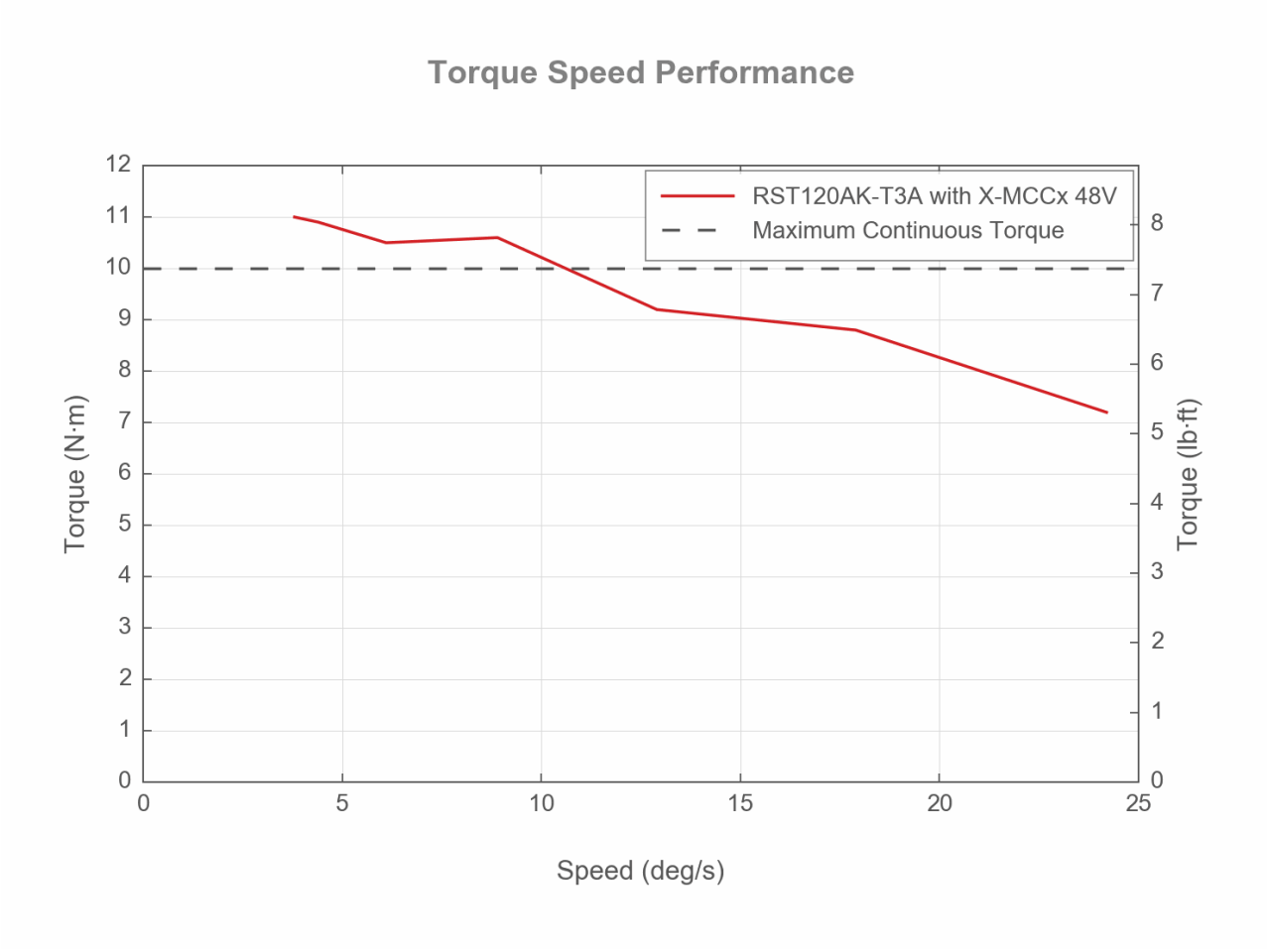
Part Number	Guide Type	Mounting Interface
RST120AK-T3A	Preloaded Ball Bearing	Kinematic with M2.5 and M6 threaded holes
RST240B-T3A	Crossed-Roller Bearing	M6 threaded holes and M8 mounting holes

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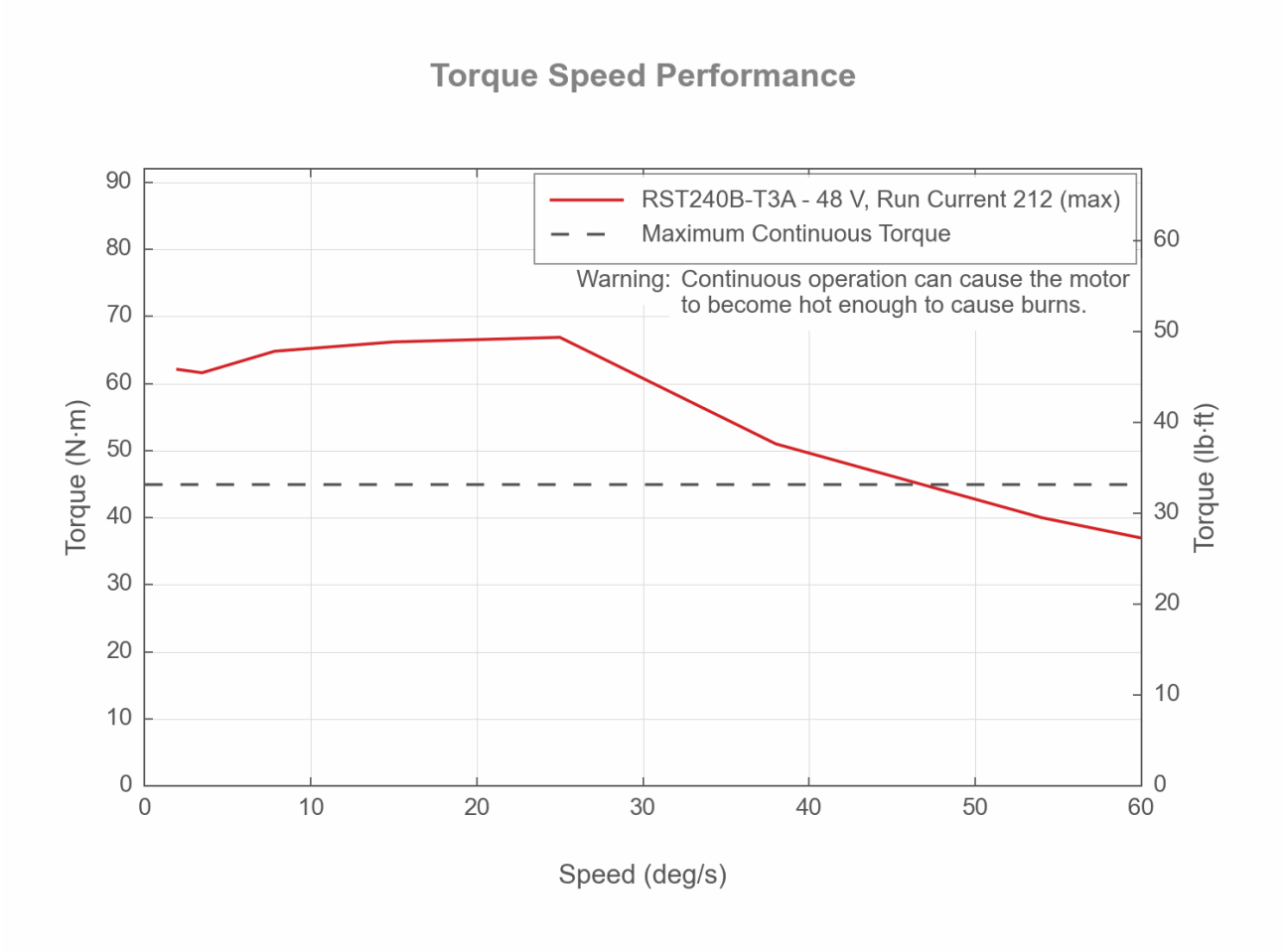
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RST Series Charts

RST120AK T3A TORQUE SPEED



RST240B T3A Torque Speed



Contact

Email: contact@zaber.com

Zaber Technologies Inc.
#2 - 605 West Kent Avenue N.
Vancouver, BC V6P 6T7
Canada
Phone: +1-604-569-3780
Fax: +1-604-648-8033

https://www.zaber.com