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X-VSR Series Datasheet



- 20 mm or 40 mm travel
- Up to 48 mm/s speed and up to 200 N thrust
- 10 kg load capacity
- 55 or 85 mm retracted height
- Built-in controller; daisy-chains with other Zaber products

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X-VSR Series Overview

Zaber's X-VSR Series vertical lift stages are computer-controlled, stepper actuator driven platforms capable of moving 10 kg loads. They are stand-alone units requiring only a standard 48 V power supply.

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-VSR stages deliver exceptional travel and load capacity for their compact sizes, measuring only 55 mm (X-VSR20) or 85 mm (X-VSR40) tall when closed. With small footprints these stages can also mount directly onto Zaber's X-LRT-C and X-LSQ series linear stages. Like all of Zaber's products, the X-VSR 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/vertical-stages/X-VSR

X-VSR Series Part Numbering & Options

X-VSR 20 A

Travel	Lead Screw Options
20 — 20 mm	**A** — Fine pitch lead screw
40 — 40 mm	

X-VSR Series Drawings

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

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X-VSR Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	Yes
Axes of Motion	1

Positioning Performance

Specification	Value
Repeatability	<1 µm (<0.000039 ")
Loaded Backlash (10 N)	<10 µm (<0.000394 ")
Backlash	<35 µm (<0.001378 ")
Pitch Error	0.08 ° (1.396 mrad)
Roll Error	0.08 ° (1.396 mrad)
Yaw Error	0.08 ° (1.396 mrad)
Microstep Size (Default Resolution)	0.09525 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	200 N (44.9 lb)
Maximum Continuous Thrust	100 N (22.4 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	3 N·m (2.2 lb·ft)

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Maximum Moment (Roll)	3 N·m (2.214 lb·ft)
Maximum Moment (Yaw)	3 N·m (2.214 lb·ft)

Speed

Specification	Value
Maximum Speed	48 mm/s (1.89 "/s)
Minimum Speed	0.000058 mm/s (0.000002 "/s)
Speed Resolution	0.000058 mm/s (0.000002 "/s)

Encoder & Sensing

Specification	Value
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Linear Motion Per Motor Rev	1.2192 mm (0.048 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	1500 mA/phase
Motor Winding Inductance	1.9 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
Power Supply	24-48 VDC

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Power Plug	2-pin Screw Terminal
Maximum Current Draw	950 mA

Mechanical

Specification	Value
Mechanical Drive System	Precision Lead Screw
Mounting Interface	M6 and M3 threaded holes

Environmental & Compliance

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

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Loaded Accuracy (10 N)
X-VSR20A	20 mm (0.787 ")	0.573 kg (1.263 lb)	50 µm (0.001968 ")	35 µm (0.001378 ")
X-VSR40A	40 mm (1.575 ")	0.813 kg (1.792 lb)	35 µm (0.001378 ")	20 µm (0.000787 ")

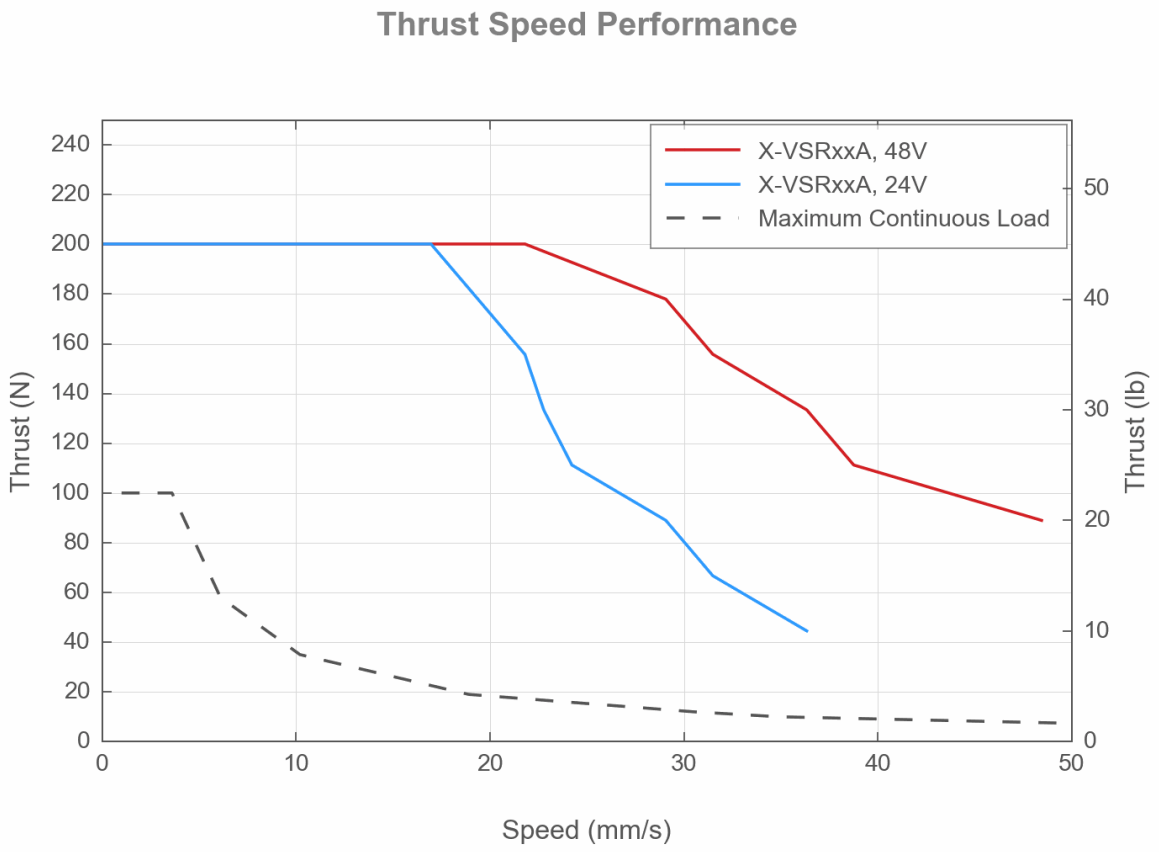
Part Number	Straightness of Travel	Guide Type
X-VSR20A	<30 µm (<0.001181 ")	Ball Bearing
X-VSR40A	<35 µm (<0.001378 ")	Crossed-Roller Bearing

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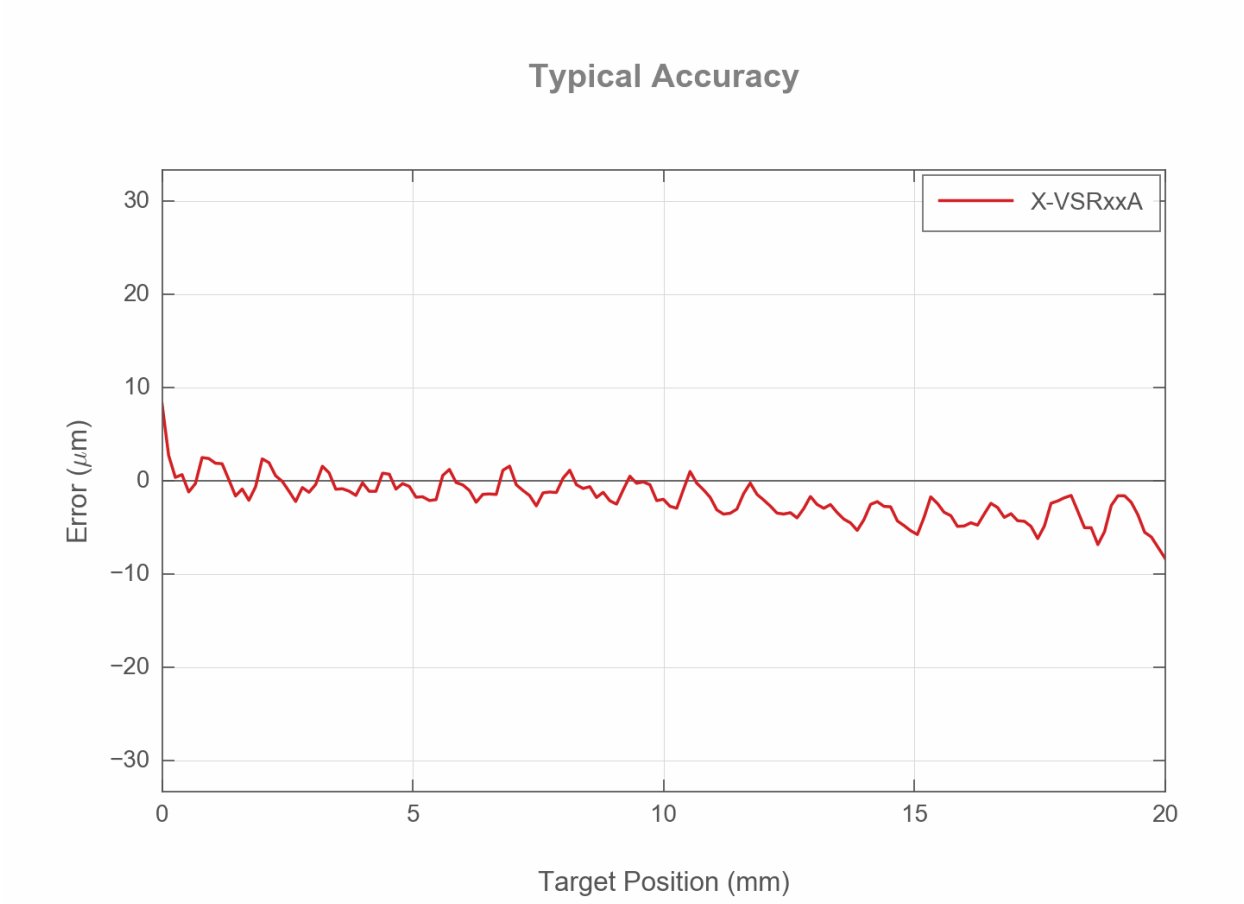
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X-VSR Series Charts

Speed



POSITION



Contact

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X-VSR20A-E01 Datasheet



- 20 mm travel
- Up to 48 mm/s speed and up to 200 N thrust
- 10 kg load capacity
- Built-in, 500 CPR, motor encoder provides slip/stall detection and recovery
- 73 mm retracted height
- Built-in controller; daisy-chains with other Zaber products

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X-VSR20A-E01 Overview

Zaber's X-VSR-E Series vertical lift stages are computer-controlled, stepper actuator driven platforms capable of moving 10 kg loads. They are stand-alone units requiring only a standard 48 V power supply.

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-VSR-E stages deliver exceptional travel and load capacity for their compact sizes, measuring only 73 mm tall when closed. With small footprints these stages can also mount directly onto Zaber's X-LRT-EC and X-LRQ-E series linear stages. Like all of Zaber's products, the X-VSR-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/vertical-stages/X-VSR-E?part=X-VSR20A-E01

X-VSR20A-E01 Part Numbering & Options

Part number: X-VSR20A-E01

X-VSR 20 A - E01

Travel	Lead Screw Options	Encoder Options
20 — 20 mm (this part)	**A — Fine pitch lead screw (this part)**	**E01 — Motor Encoder, 500 CPR (this part)**

X-VSR20A-E01 Drawings

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

X-VSR20A-E01 Specifications

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Overview

Specification	Value
Built-in Controller	Yes
Travel Range	20 mm (0.787 ")
Manual Control	Yes
Axes of Motion	1
Weight	0.609 kg (1.343 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	50 µm (0.001968 ")
Loaded Accuracy (10 N)	35 µm (0.001378 ")
Repeatability	<1 µm (<0.000039 ")
Loaded Backlash (10 N)	<10 µm (<0.000394 ")
Backlash	<35 µm (<0.001378 ")
Straightness of Travel	<30 µm (<0.001181 ")
Pitch Error	0.12 ° (2.094 mrad)
Roll Error	0.12 ° (2.094 mrad)
Yaw Error	0.12 ° (2.094 mrad)
Microstep Size (Default Resolution)	0.09525 µm
Default Resolution	1/64 of a step

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Load Performance

Specification	Value
Peak Thrust	200 N (44.9 lb)
Maximum Continuous Thrust	100 N (22.4 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	3 N·m (2.2 lb·ft)
Maximum Moment (Roll)	3 N·m (2.214 lb·ft)
Maximum Moment (Yaw)	3 N·m (2.214 lb·ft)

Speed

Specification	Value
Maximum Speed	48 mm/s (1.89 "/s)
Minimum Speed	0.000058 mm/s (0.000002 "/s)
Speed Resolution	0.000058 mm/s (0.000002 "/s)

Encoder & Sensing

Specification	Value
Encoder Type	Rotary quadrature encoder (incremental)
Encoder Resolution	500 CPR (2 states/rev)
Limit or Home Sensing	Magnetic home sensor

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Motor

Specification	Value
Linear Motion Per Motor Rev	1.2192 mm (0.048 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	1500 mA/phase
Motor Winding Inductance	2.2 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
Power Supply	24-48 VDC
Power Plug	2-pin Screw Terminal
Maximum Current Draw	950 mA

Mechanical

Specification	Value
Guide Type	Ball Bearing
Mechanical Drive System	Precision Lead Screw
Mounting Interface	M6 and M3 threaded holes

Environmental & Compliance

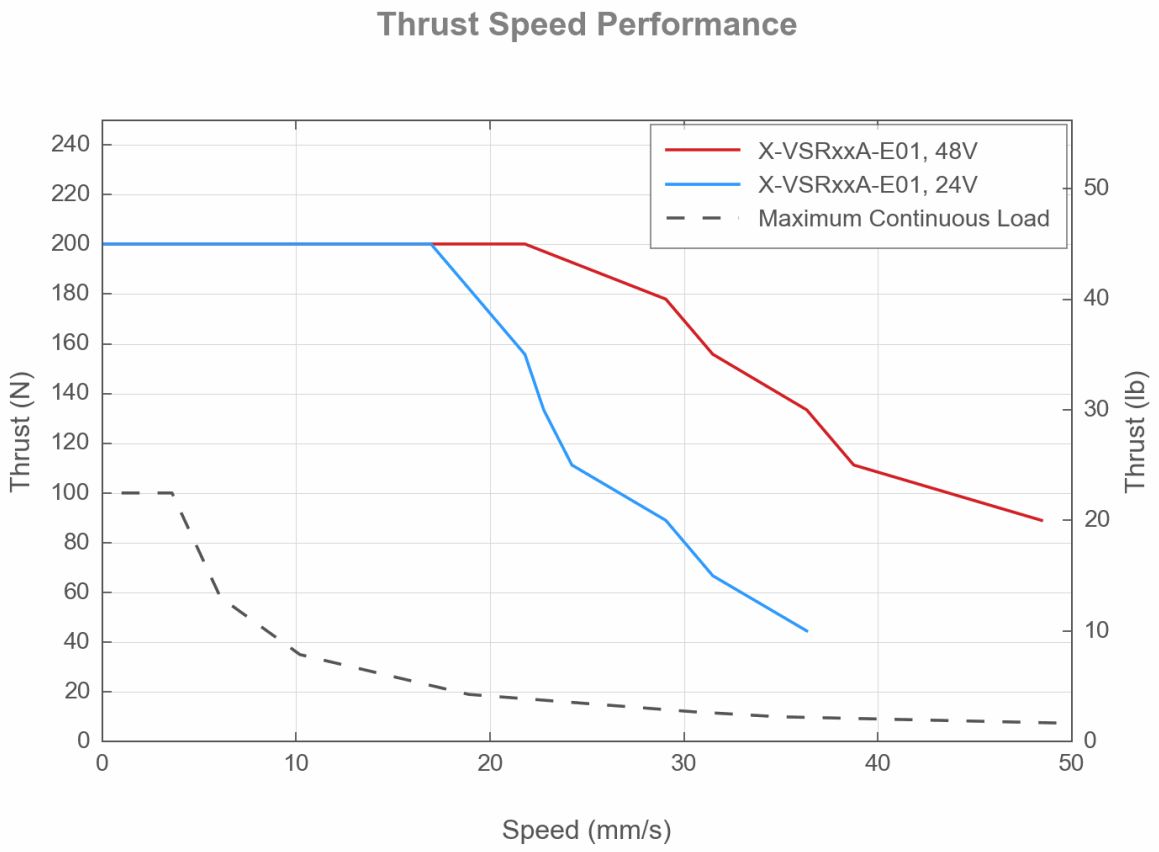
Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

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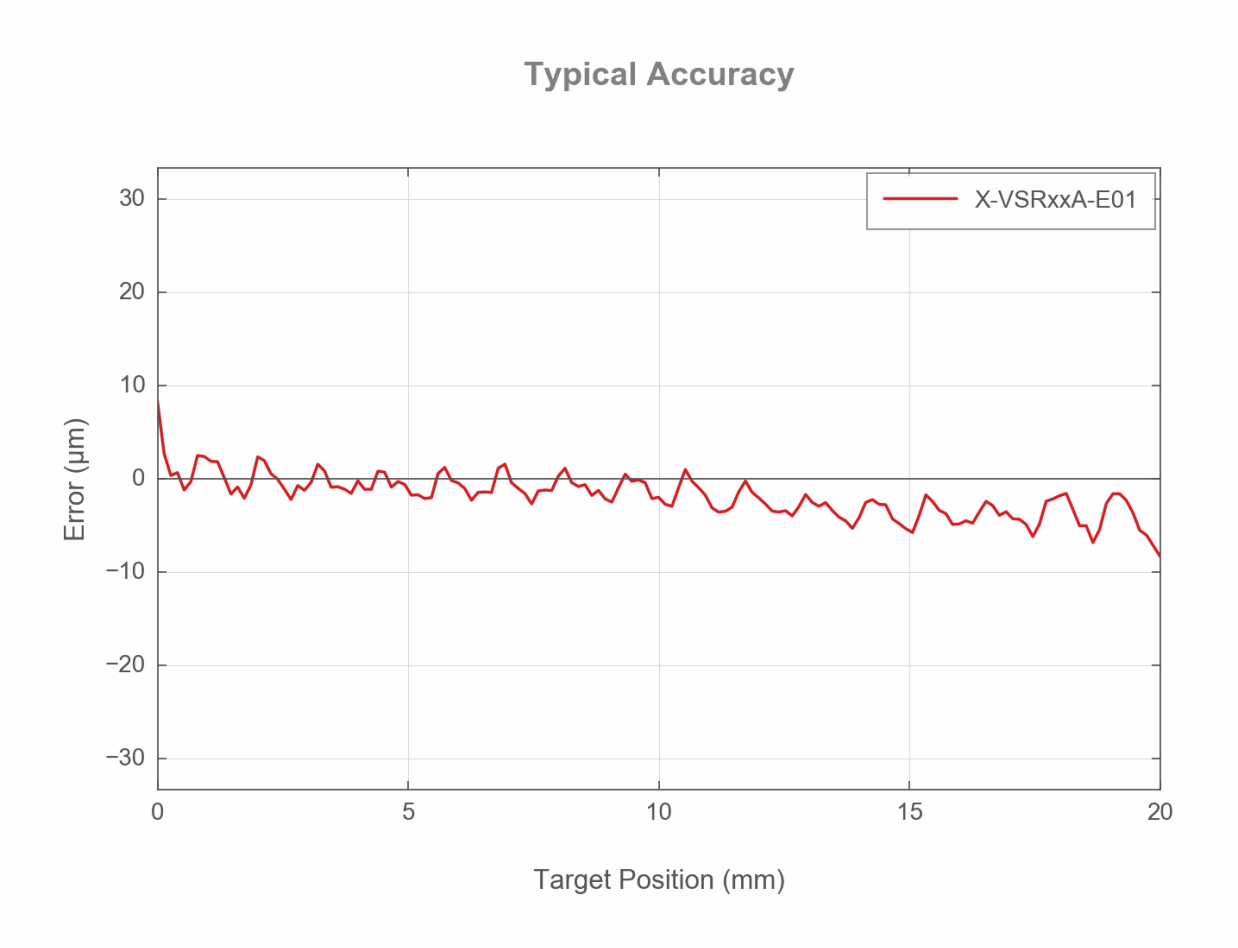
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X-VSR20A-E01 Charts

THRUST SPEED



ACCURACY



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VSR Series Datasheet



- 20 mm or 40 mm of travel
- Up to 55 mm/s speed and up to 200 N thrust
- 10 kg load capacity
- 55 or 85 mm retracted height
- 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

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VSR Series Overview

Zaber's VSR vertical lift stages are stepper actuator driven platforms capable of moving 10 kg loads. They deliver exceptional travel and load capacity for their compact sizes, measuring only 55 mm (VSR20) or 85 mm (VSR40) tall when closed. With small footprints these stages can also mount directly onto Zaber's LRT-C and LSQ series of linear stages.

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 VSR.

For more information visit: https://www.zaber.com/products/vertical-stages/VSR

VSR Series Part Numbering & Options

VSR 20 A - T3A

Travel	Lead Screw Options	Connector
20 — 20 mm **40** — 40 mm	**A** — Fine pitch lead screw	**T3A** — D-sub 15 panel mount connector with Auto Detect

VSR Series Drawings

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

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VSR Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Axes of Motion	1

Positioning Performance

Specification	Value
Repeatability	<1 µm (<0.000039 ")
Loaded Backlash (10 N)	<10 µm (<0.000394 ")
Backlash	<35 µm (<0.001378 ")
Pitch Error	0.08 ° (1.396 mrad)
Roll Error	0.08 ° (1.396 mrad)
Yaw Error	0.08 ° (1.396 mrad)
Microstep Size (Default Resolution)	0.09525 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	200 N (44.9 lb)
Maximum Continuous Thrust	100 N (22.4 lb)
Maximum Centered Load	100 N (22.4 lb)

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Maximum Moment (Pitch)	3 N·m (2.2 lb·ft)
Maximum Moment (Roll)	3 N·m (2.214 lb·ft)
Maximum Moment (Yaw)	3 N·m (2.214 lb·ft)

Speed

Specification	Value
Maximum Speed	55 mm/s (2.165 "/s)
Minimum Speed	0.000058 mm/s (0.000002 "/s)
Speed Resolution	0.000058 mm/s (0.000002 "/s)

Encoder & Sensing

Specification	Value
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Linear Motion Per Motor Rev	1.2192 mm (0.048 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	1500 mA/phase
Motor Winding Inductance	1.9 mH/phase
Motor Connection	D-sub 15

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Mechanical

Specification	Value
Mechanical Drive System	Precision Lead Screw
Mounting Interface	M6 and M3 threaded holes

Environmental & Compliance

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

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Loaded Accuracy (10 N)
VSR20A-T3A	20 mm (0.787 ")	0.55 kg (1.213 lb)	50 µm (0.001968 ")	35 µm (0.001378 ")
VSR40A-T3A	40 mm (1.575 ")	0.765 kg (1.687 lb)	35 µm (0.001378 ")	20 µm (0.000787 ")

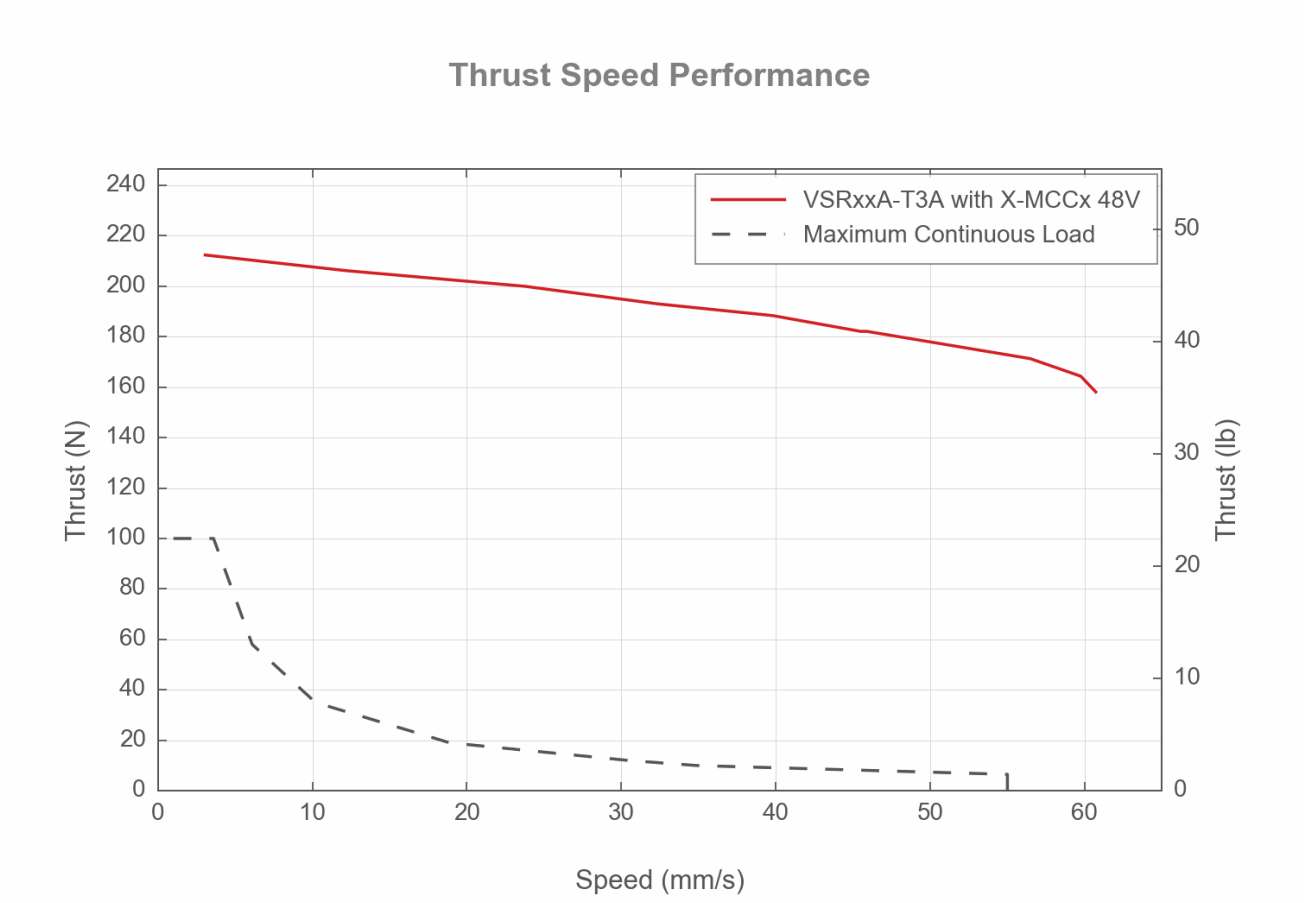
Part Number	Guide Type
VSR20A-T3A	Ball Bearing
VSR40A-T3A	Crossed-Roller Bearing

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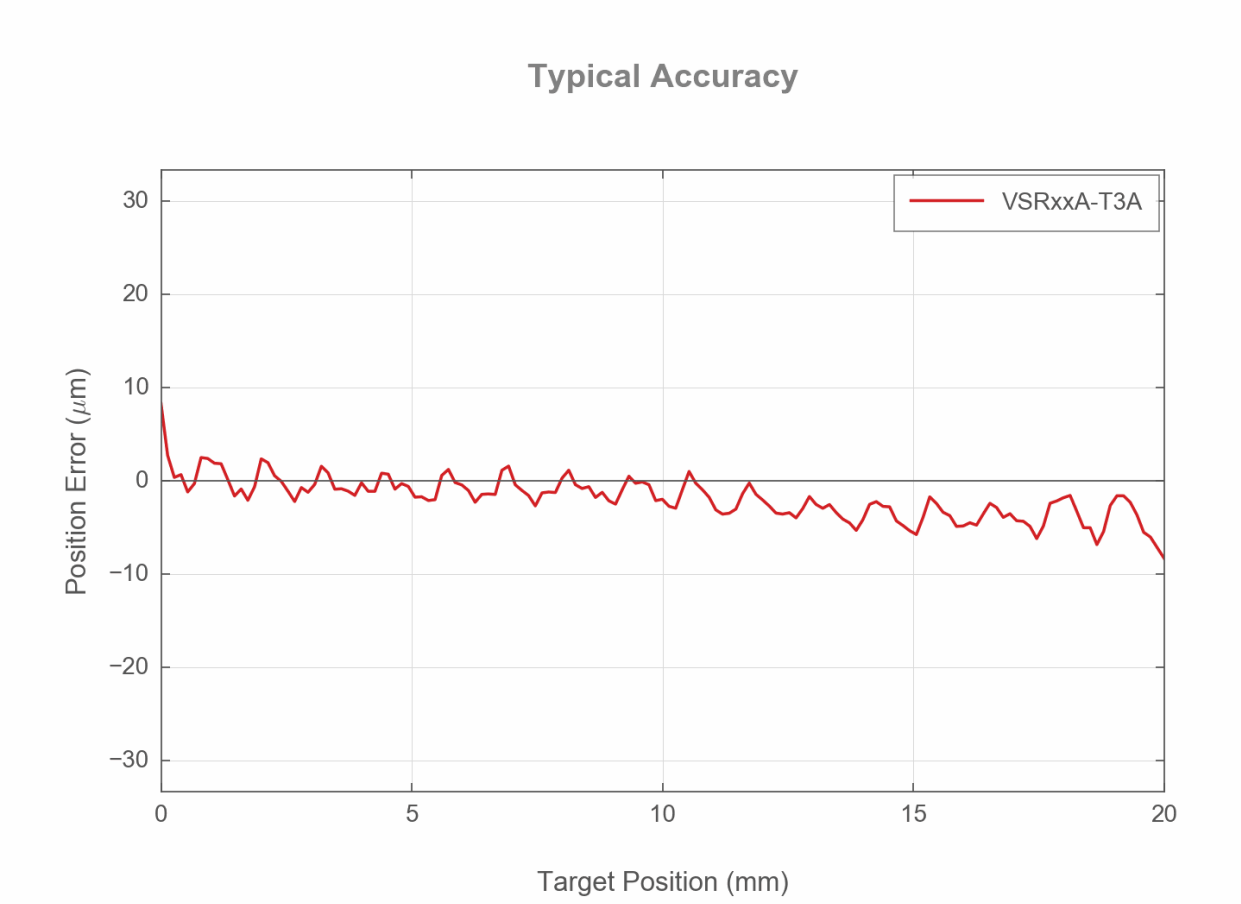
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VSR Series Charts

VSRxxA T3A THRUST SPEED



VSRxxA T3A ACCURACY



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VSR20A-E01T3A Datasheet



- 20 mm travel
- Up to 55 mm/s speed and up to 200 N thrust
- 10 kg load capacity
- 73 mm retracted height
- Built-in, 500 CPR, motor encoder provides slip/stall detection and recovery
- 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

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VSR20A-E01T3A Overview

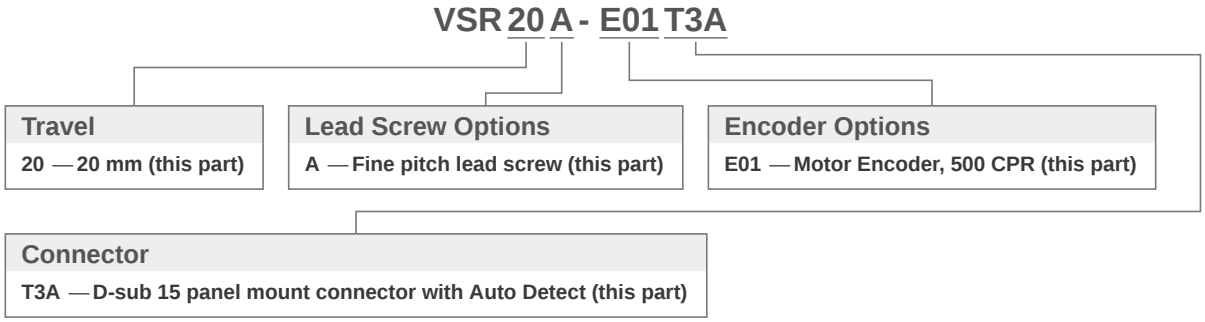
Zaber's VSR-E vertical lift stages are stepper actuator driven platforms capable of moving 10 kg loads. They deliver exceptional travel and load capacity for their compact sizes, measuring only 73 mm tall when closed. With small footprints these stages can also mount directly onto Zaber's LRT-EC and LSQ-E series of linear stages.

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 VSR-E.

For more information visit: https://www.zaber.com/products/vertical-stages/VSR-E?part=VSR20A-E01T3A

VSR20A-E01T3A Part Numbering & Options

Part number: VSR20A-E01T3A



VSR20A-E01T3A Drawings

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

VSR20A-E01T3A Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Travel Range	20 mm (0.787 ")

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Axes of Motion	1
Weight	0.57 kg (1.257 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	50 µm (0.001968 ")
Loaded Accuracy (10 N)	35 µm (0.001378 ")
Repeatability	<1 µm (<0.000039 ")
Loaded Backlash (10 N)	<10 µm (<0.000394 ")
Backlash	<35 µm (<0.001378 ")
Straightness of Travel	<30 µm (<0.001181 ")
Pitch Error	0.12 ° (2.094 mrad)
Roll Error	0.12 ° (2.094 mrad)
Yaw Error	0.12 ° (2.094 mrad)
Microstep Size (Default Resolution)	0.09525 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	200 N (44.9 lb)
Maximum Continuous Thrust	100 N (22.4 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	3 N·m (2.2 lb·ft)

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Maximum Moment (Roll)	3 N·m (2.214 lb·ft)
Maximum Moment (Yaw)	3 N·m (2.214 lb·ft)

Speed

Specification	Value
Maximum Speed	55 mm/s (2.165 "/s)
Minimum Speed	0.000058 mm/s (0.000002 "/s)
Speed Resolution	0.000058 mm/s (0.000002 "/s)

Encoder & Sensing

Specification	Value
Encoder Type	Rotary quadrature encoder (incremental)
Encoder Resolution	500 CPR (2 states/rev)
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Linear Motion Per Motor Rev	1.2192 mm (0.048 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	1500 mA/phase
Motor Winding Inductance	2.2 mH/phase
Motor Connection	D-sub 15

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Mechanical

Specification	Value
Guide Type	Ball Bearing
Mechanical Drive System	Precision Lead Screw
Mounting Interface	M6 and M3 threaded holes

Environmental & Compliance

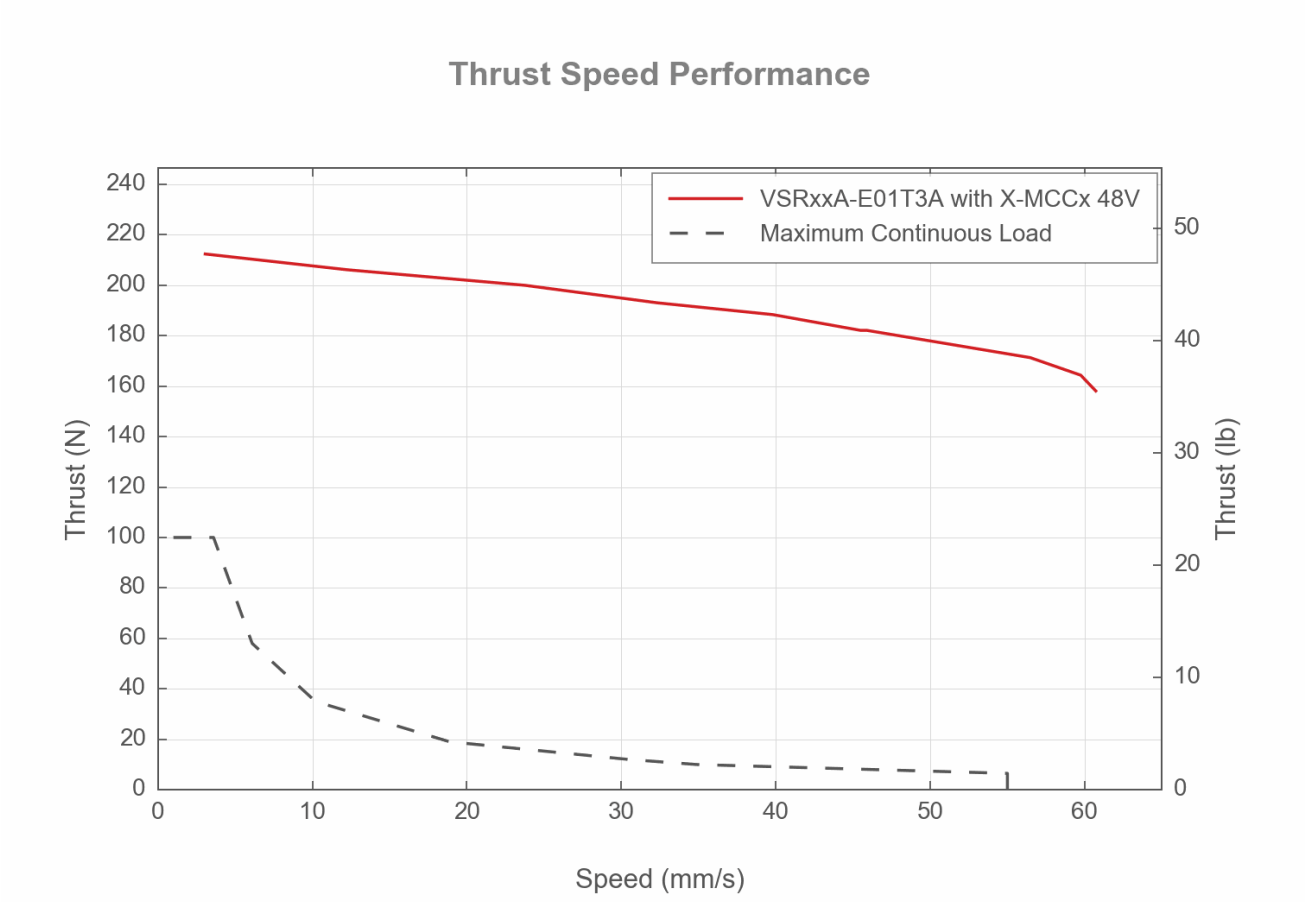
Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	No

VSR20A-E01T3A Charts

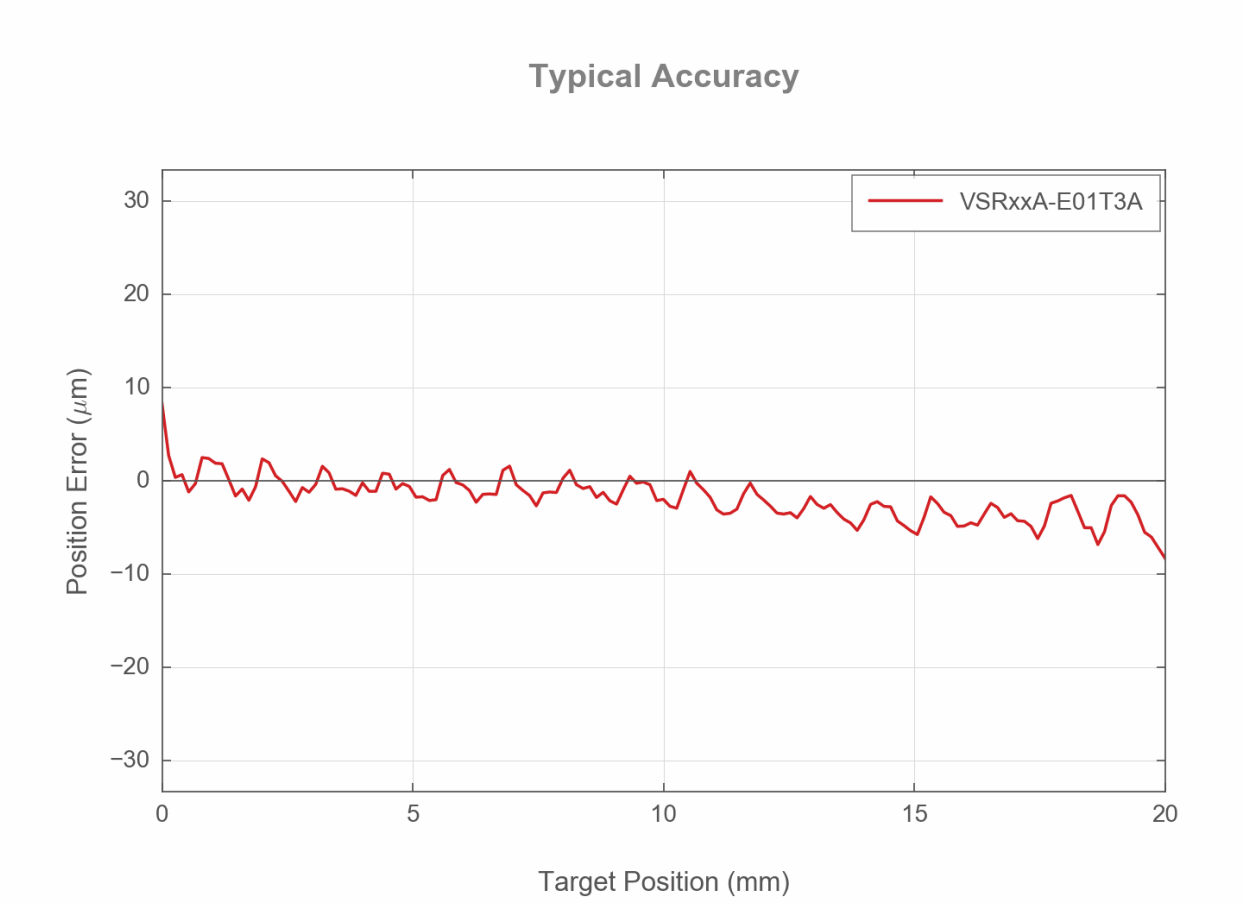
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VSRxxA E01T3A THRUST SPEED



VSRxxA E01T3A ACCURACY



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X-VSR-SV2 Series Datasheet



- Vacuum compatible to 10-6 Torr
- 20 mm or 40 mm travel
- Up to 48 mm/s speed and up to 200 N thrust
- 10 kg load capacity
- 55 or 85 mm retracted height
- Built-in controller; daisy-chains with other Zaber products
- Only 4 feedthrough wires required to control all units in the daisy-chain via serial port (with an X-PIB adaptor)

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X-VSR-SV2 Series Overview

For more information about the basics of a vacuum system and considerations to keep in mind when gathering requirements for your application, read our technical article, "Motion Device Design Considerations for Vacuum Applications".

Zaber's X-VSR-SV2 Series devices are high-vacuum compatible, computer-controlled, motorized vertical lift stages capable of moving 10 kg loads. They are stand-alone units requiring only a standard 24 V or 48 V power supply.

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.

Like all of Zaber's products, the X-VSR-SV2 Series is designed to be 'plug and play' and very easy to set up and operate. If you are considering a multi-axis system, with Z-axis, these lift stages make an excellent platform.

For more information visit: https://www.zaber.com/products/vacuum-compatible-stages/X-VSR-SV2

X-VSR-SV2 Series Part Numbering & Options

X-VSR 20 A -SV2

Travel	Lead Screw Options	Options
20 — 20 mm **40** — 40 mm	**A** — Fine pitch lead screw	**-SV2** — High-vacuum compatible: 10-6 Torr

X-VSR-SV2 Series Drawings

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

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X-VSR-SV2 Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	No
Axes of Motion	1

Positioning Performance

Specification	Value
Repeatability	<1 µm (<0.000039 ")
Loaded Backlash (10 N)	<10 µm (<0.000394 ")
Backlash	<35 µm (<0.001378 ")
Pitch Error	0.08 ° (1.396 mrad)
Roll Error	0.08 ° (1.396 mrad)
Yaw Error	0.08 ° (1.396 mrad)
Microstep Size (Default Resolution)	0.09525 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	200 N (44.9 lb)
Maximum Continuous Thrust	100 N (22.4 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	3 N·m (2.2 lb·ft)

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Maximum Moment (Roll)	3 N·m (2.214 lb·ft)
Maximum Moment (Yaw)	3 N·m (2.214 lb·ft)

Speed

Specification	Value
Maximum Speed	28 mm/s (1.102 "/s)
Minimum Speed	0.000058 mm/s (0.000002 "/s)
Speed Resolution	0.000058 mm/s (0.000002 "/s)

Encoder & Sensing

Specification	Value
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Linear Motion Per Motor Rev	1.2192 mm (0.048 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	700 mA/phase
Motor Winding Inductance	8.7 mH/phase

Power and Communication

Specification	Value
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Teflon flying leads with M8 4 pin M/F
Power Supply	24-48 VDC

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Power Plug	None, use X-PIB
Maximum Current Draw	950 mA

Mechanical

Specification	Value
Mechanical Drive System	Precision Lead Screw
Mounting Interface	M6 and M3 threaded holes

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	High vacuum (10-6 Torr)

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Loaded Accuracy (10 N)
X-VSR20A-SV2	20 mm (0.787 ")	0.56 kg (1.235 lb)	50 µm (0.001968 ")	35 µm (0.001378 ")
X-VSR40A-SV2	40 mm (1.575 ")	0.77 kg (1.698 lb)	35 µm (0.001378 ")	20 µm (0.000787 ")

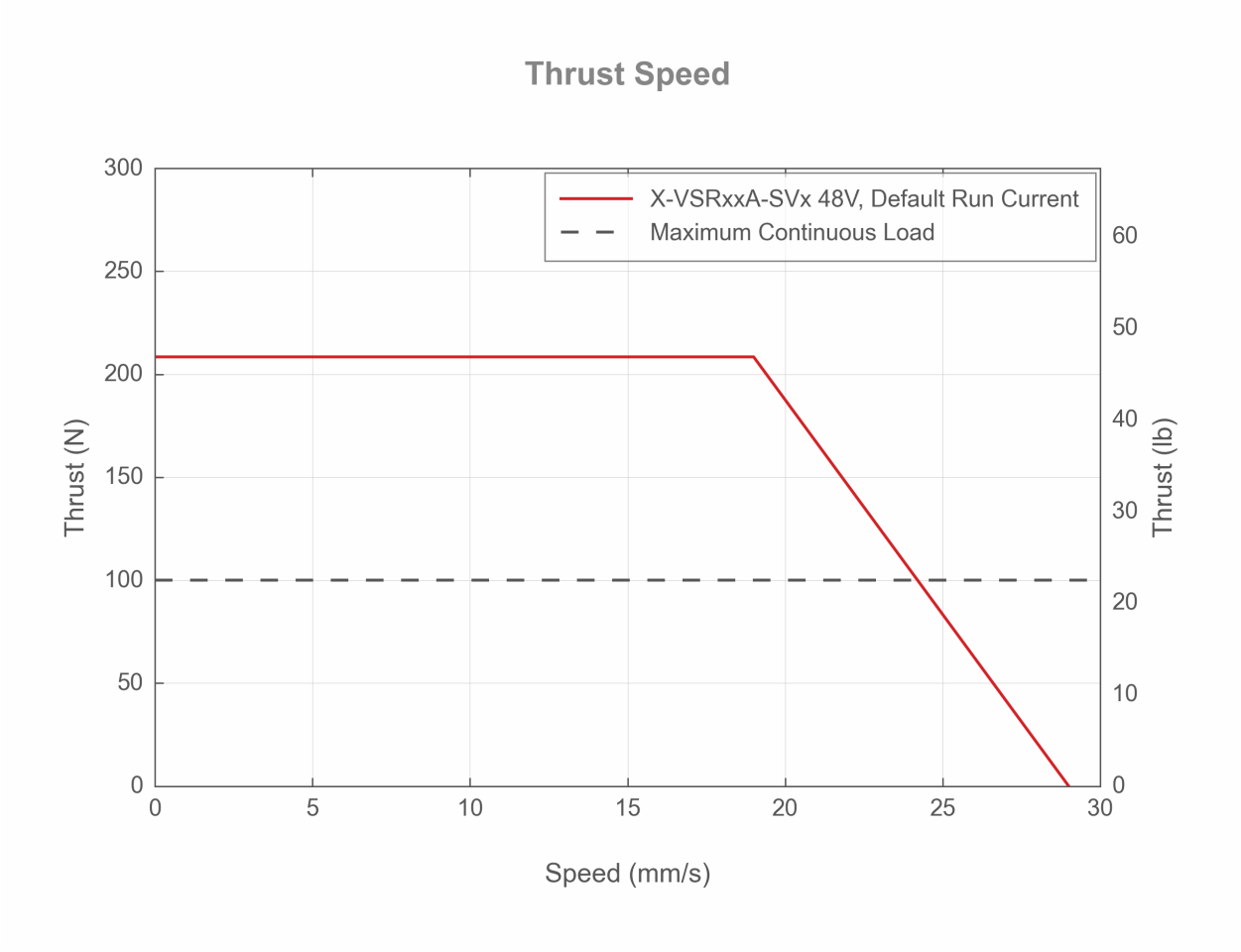
Part Number	Straightness of Travel	Guide Type
X-VSR20A-SV2	<30 µm (<0.001181 ")	Ball Bearing
X-VSR40A-SV2	<35 µm (<0.001378 ")	Crossed-Roller Bearing

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X-VSR-SV2 Series Charts

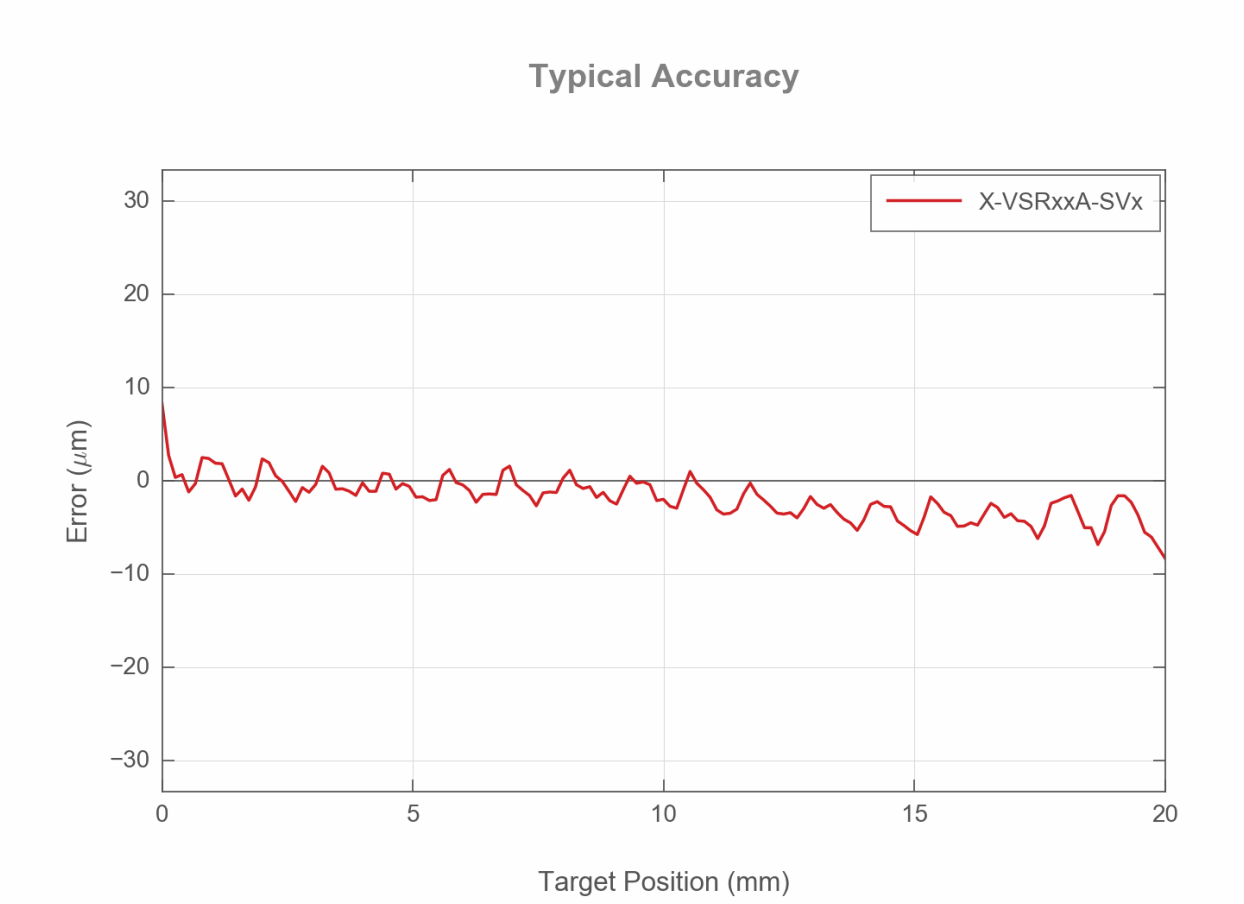
Thrust Speed Performance



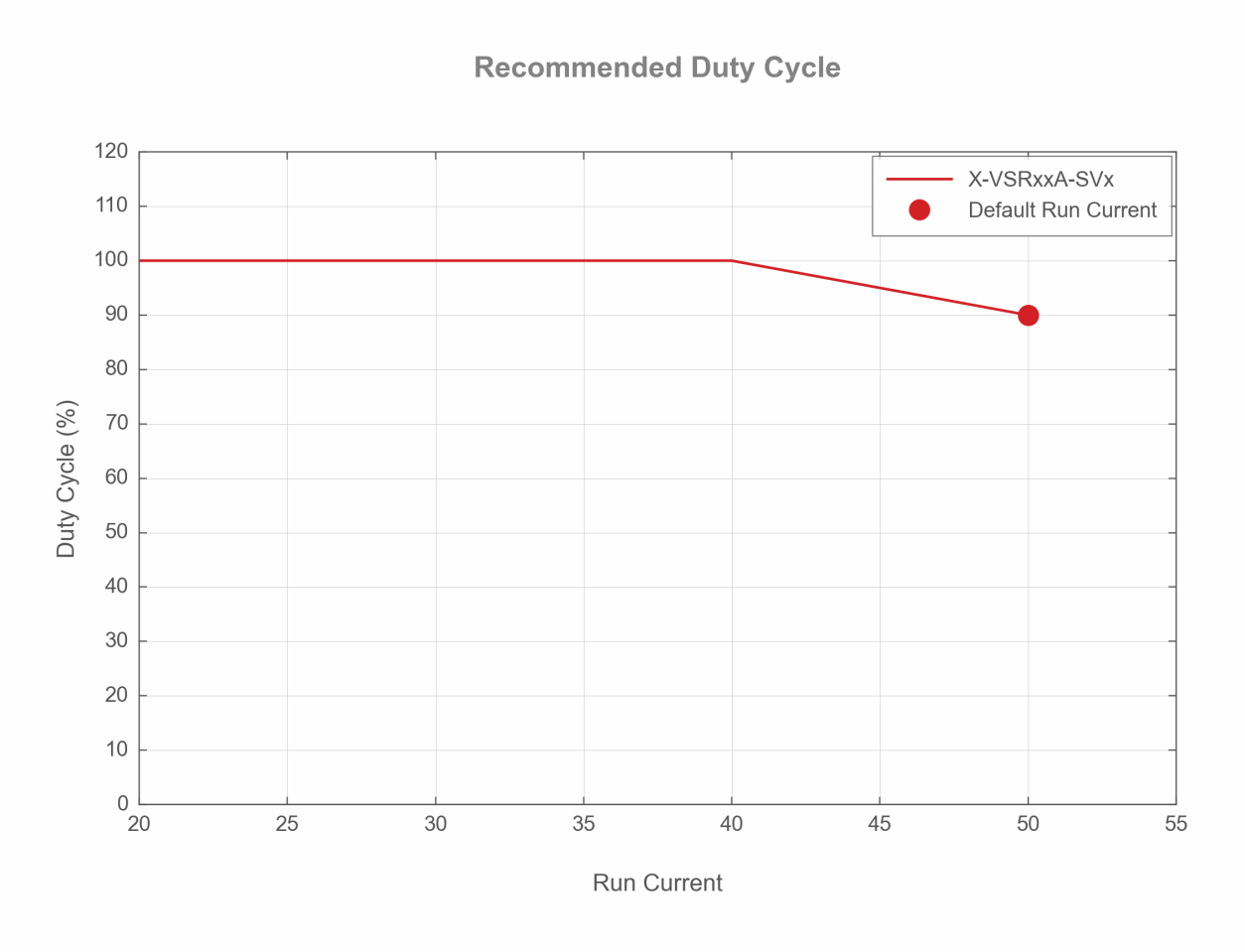
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ERROR POSITION



Run Current Duty Cycle



Contact

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VSR-V2 Series Datasheet



- Vacuum compatible to 10-6 Torr
- 20 mm or 40 mm travel
- Up to 48 mm/s speed and up to 200 N thrust
- 10 kg load capacity
- 55 or 85 mm retracted height
- Only 7 feedthrough wires required to control these units
- Designed for use with an X-MCC Series stepper motor controller or any 2-phase stepper motor controller

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VSR-V2 Series Overview

For more information about the basics of a vacuum system and considerations to keep in mind when gathering requirements for your application, read our technical article, "Motion Device Design Considerations for Vacuum Applications".

Zaber's VSR-V2 Series devices are high-vacuum compatible, computer-controlled, motorized vertical lift stages capable of moving 10 kg loads.

Like all of Zaber's products, the VSR-V2 Series is designed to be very easy to set up and operate. If you are considering a multi-axis system, with Z-axis, these lift stages make an excellent platform.

These stages are wired with a male D-sub 15 connector for plug-and-play use with our X-MCC Series stepper motor controllers. Simply cut the connector off for flying leads in vacuum and match the wire connections outside of the vacuum for an easy connection. Our handy kits include free software, and all of the accessories that you will need to get the stage running right out of the box.

For more information visit: https://www.zaber.com/products/vacuum-compatible-stages/VSR-V2

VSR-V2 Series Part Numbering & Options

VSR 20 A -V2 T4

Travel	Lead Screw Options	Options	Connector
20 — 20 mm **40** — 40 mm	**A** — Fine pitch lead screw	**-V2** — High-vacuum compatible: 10-6 Torr	**T4** — D-sub 15 inline connector

VSR-V2 Series Drawings

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

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VSR-V2 Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	No
Manual Control	No
Axes of Motion	1

Positioning Performance

Specification	Value
Repeatability	<1 µm (<0.000039 ")
Loaded Backlash (10 N)	<10 µm (<0.000394 ")
Backlash	<35 µm (<0.001378 ")
Pitch Error	0.08 ° (1.396 mrad)
Roll Error	0.08 ° (1.396 mrad)
Yaw Error	0.08 ° (1.396 mrad)
Microstep Size (Default Resolution)	0.09525 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	200 N (44.9 lb)
Maximum Continuous Thrust	100 N (22.4 lb)

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Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	300 N·cm (424.8 oz·in)
Maximum Moment (Roll)	300 N·cm (424.8 oz·in)
Maximum Moment (Yaw)	300 N·cm (424.8 oz·in)

Speed

Specification	Value
Maximum Speed	48 mm/s (1.89 "/s)
Minimum Speed	0.000058 mm/s (0.000002 "/s)
Speed Resolution	0.000058 mm/s (0.000002 "/s)

Encoder & Sensing

Specification	Value
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Linear Motion Per Motor Rev	1.2192 mm (0.048 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	700 mA/phase
Motor Winding Inductance	8.7 mH/phase
Motor Connection	Teflon flying leads with D-sub15 connector

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Mechanical

Specification	Value
Mechanical Drive System	Precision Lead Screw
Mounting Interface	M6 and M3 threaded holes

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	High vacuum (10-6 Torr)

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Loaded Accuracy (10 N)
VSR20A-V2T4	20 mm (0.787 ")	0.56 kg (1.235 lb)	50 µm (0.001968 ")	35 µm (0.001378 ")
VSR40A-V2T4	40 mm (1.575 ")	0.77 kg (1.698 lb)	35 µm (0.001378 ")	20 µm (0.000787 ")

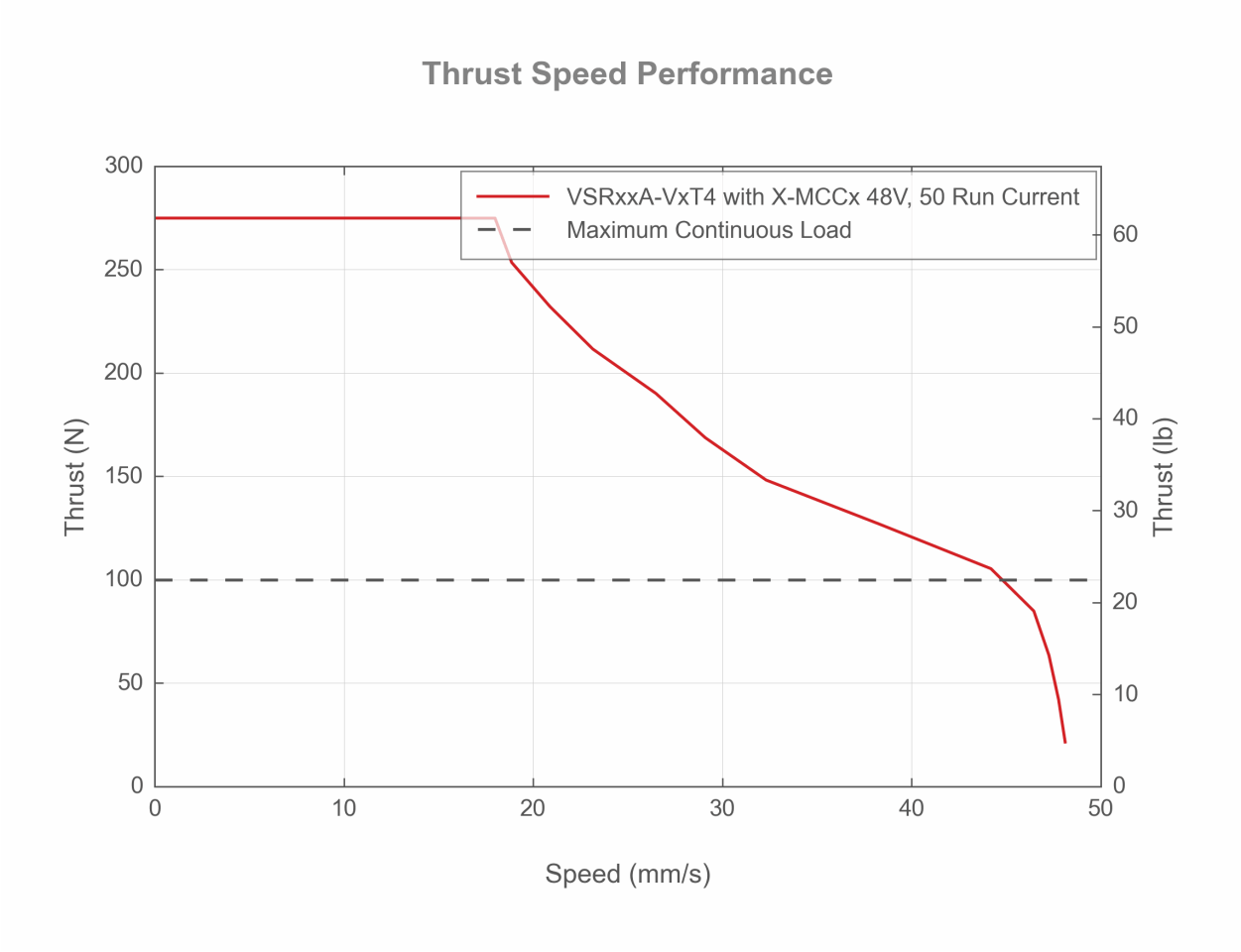
Part Number	Straightness of Travel	Guide Type
VSR20A-V2T4	<30 µm (<0.001181 ")	Ball Bearing
VSR40A-V2T4	<35 µm (<0.001378 ")	Crossed-Roller Bearing

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VSR-V2 Series Charts

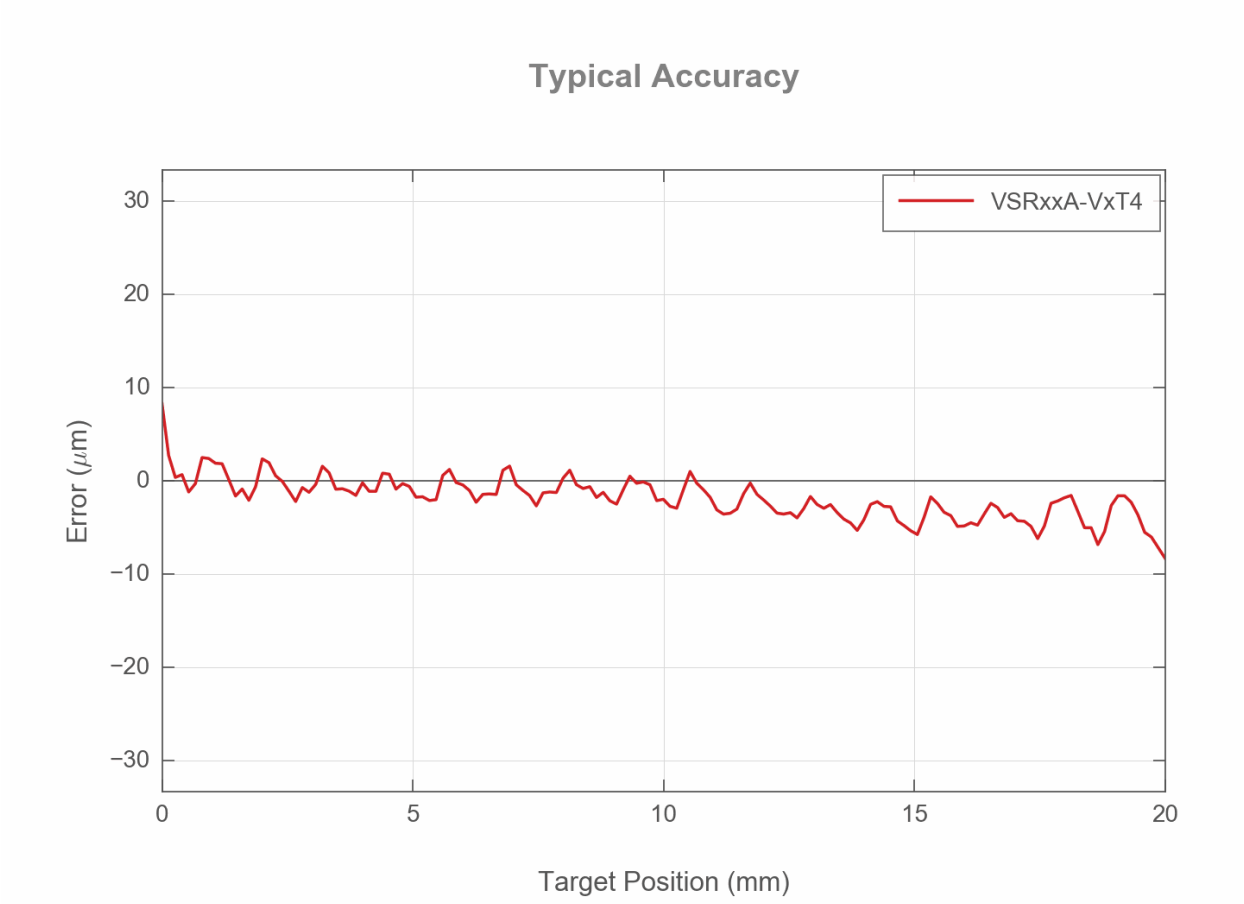
VSRxxA VxT4 Thrust Speed Performance



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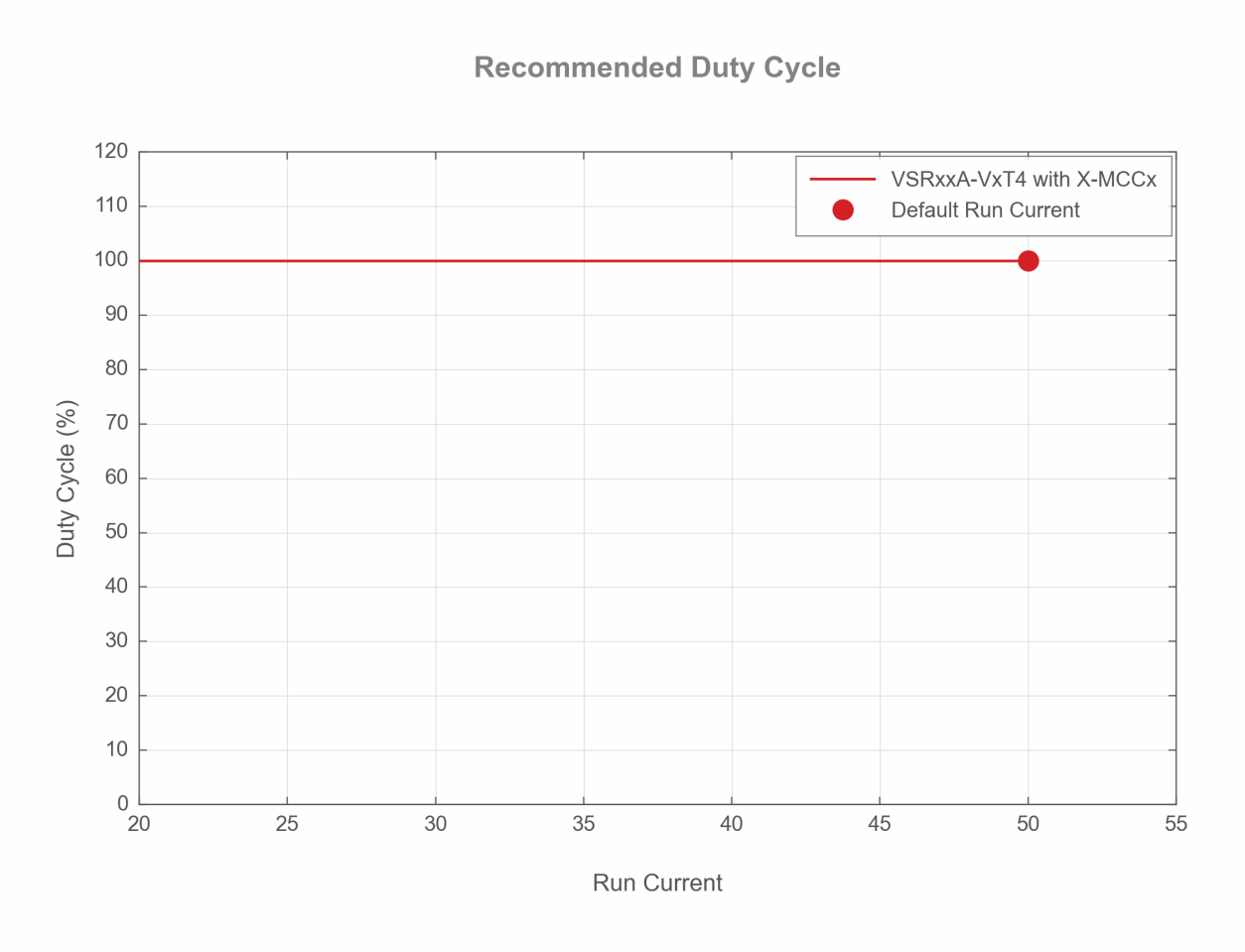
VSRxxA VxT4 ERROR POSITION



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VSRxxA Vx Run Current Duty Cycle



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X-VSR-SV1 Series Datasheet



- Vacuum compatible to 10-3 Torr
- 20 mm or 40 mm travel
- Up to 48 mm/s speed and up to 200 N thrust
- 10 kg load capacity
- 55 or 85 mm retracted height
- Only 4 feedthrough wires required to control all units in the daisy-chain via serial port (with an X-PIB adaptor)
- Built-in controller; daisy-chains with other Zaber products

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X-VSR-SV1 Series Overview

For more information about the basics of a vacuum system and considerations to keep in mind when gathering requirements for your application, read our technical article, "Motion Device Design Considerations for Vacuum Applications".

Zaber's X-VSR-SV1 Series devices are low-vacuum compatible, computer-controlled, motorized vertical lift stages capable of moving 10 kg loads. They are stand-alone units requiring only a standard 24 V or 48 V power supply.

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.

Like all of Zaber's products, the X-VSR-SV1 Series is designed to be 'plug and play' and very easy to set up and operate. If you are considering a multi-axis system, with Z-axis, these lift stages make an excellent platform.

For more information visit: https://www.zaber.com/products/vacuum-compatible-stages/X-VSR-SV1

X-VSR-SV1 Series Part Numbering & Options

X-VSR 20 A -SV1

Travel	Lead Screw Options	Options
20 — 20 mm **40** — 40 mm	**A** — Fine pitch lead screw	**-SV1** — Low-vacuum compatible: 10-3 Torr

X-VSR-SV1 Series Drawings

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

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X-VSR-SV1 Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	No
Axes of Motion	1

Positioning Performance

Specification	Value
Repeatability	<1 µm (<0.000039 ")
Loaded Backlash (10 N)	<10 µm (<0.000394 ")
Backlash	<35 µm (<0.001378 ")
Pitch Error	0.08 ° (1.396 mrad)
Roll Error	0.08 ° (1.396 mrad)
Yaw Error	0.08 ° (1.396 mrad)
Microstep Size (Default Resolution)	0.09525 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	200 N (44.9 lb)
Maximum Continuous Thrust	100 N (22.4 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	3 N·m (2.2 lb·ft)

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Maximum Moment (Roll)	3 N·m (2.214 lb·ft)
Maximum Moment (Yaw)	3 N·m (2.214 lb·ft)

Speed

Specification	Value
Maximum Speed	28 mm/s (1.102 "/s)
Minimum Speed	0.000058 mm/s (0.000002 "/s)
Speed Resolution	0.000058 mm/s (0.000002 "/s)

Encoder & Sensing

Specification	Value
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Linear Motion Per Motor Rev	1.2192 mm (0.048 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	700 mA/phase
Motor Winding Inductance	8.7 mH/phase

Power and Communication

Specification	Value
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Teflon flying leads with M8 4 pin M/F
Power Supply	24-48 VDC

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Power Plug	None, use X-PIB
Maximum Current Draw	950 mA

Mechanical

Specification	Value
Mechanical Drive System	Precision Lead Screw
Mounting Interface	M6 and M3 threaded holes

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	Low vacuum (10-3 Torr)

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Loaded Accuracy (10 N)
X-VSR20A-SV1	20 mm (0.787 ")	0.56 kg (1.235 lb)	50 µm (0.001968 ")	35 µm (0.001378 ")
X-VSR40A-SV1	40 mm (1.575 ")	0.77 kg (1.698 lb)	35 µm (0.001378 ")	20 µm (0.000787 ")

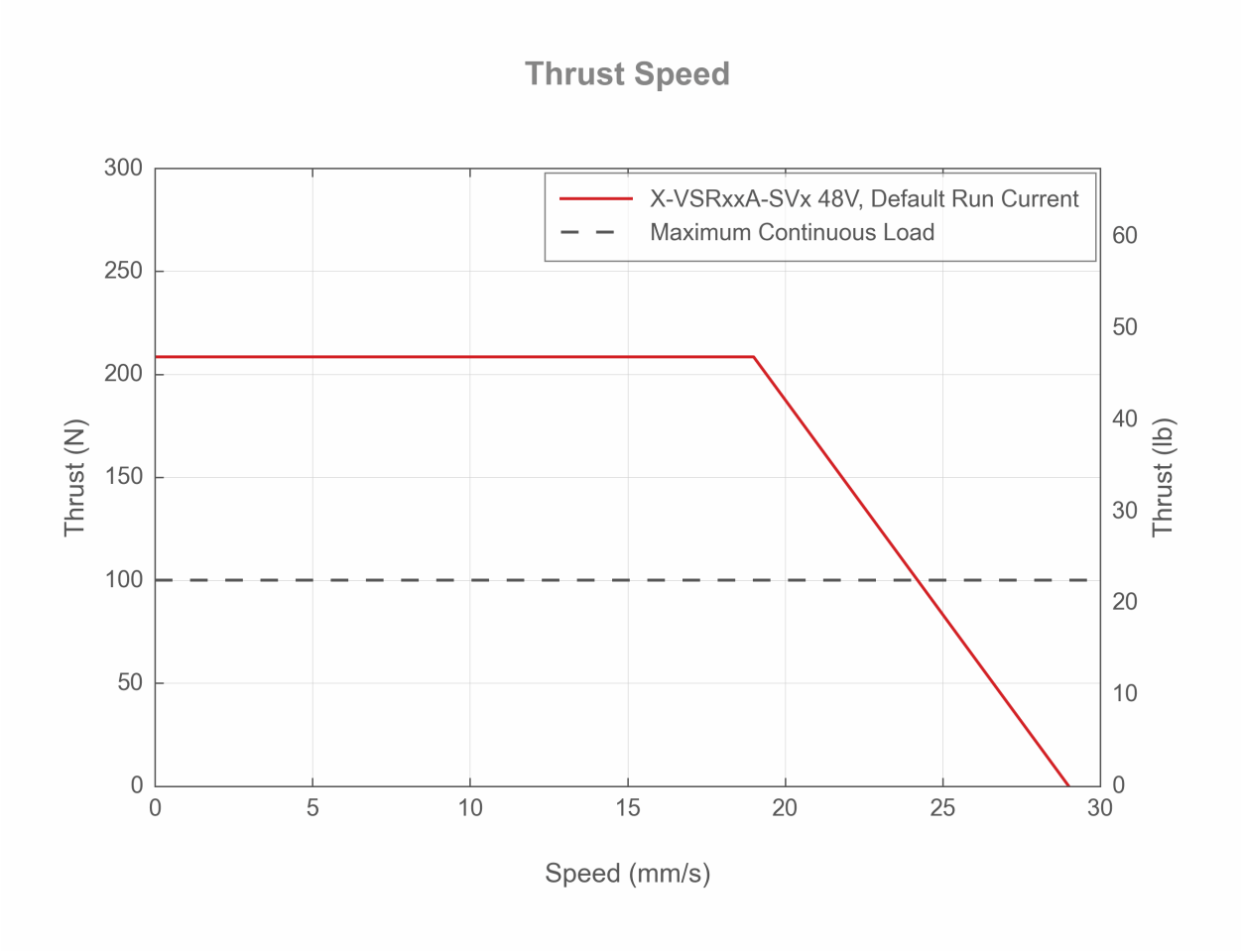
Part Number	Straightness of Travel	Guide Type
X-VSR20A-SV1	<30 µm (<0.001181 ")	Ball Bearing
X-VSR40A-SV1	<35 µm (<0.001378 ")	Crossed-Roller Bearing

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X-VSR-SV1 Series Charts

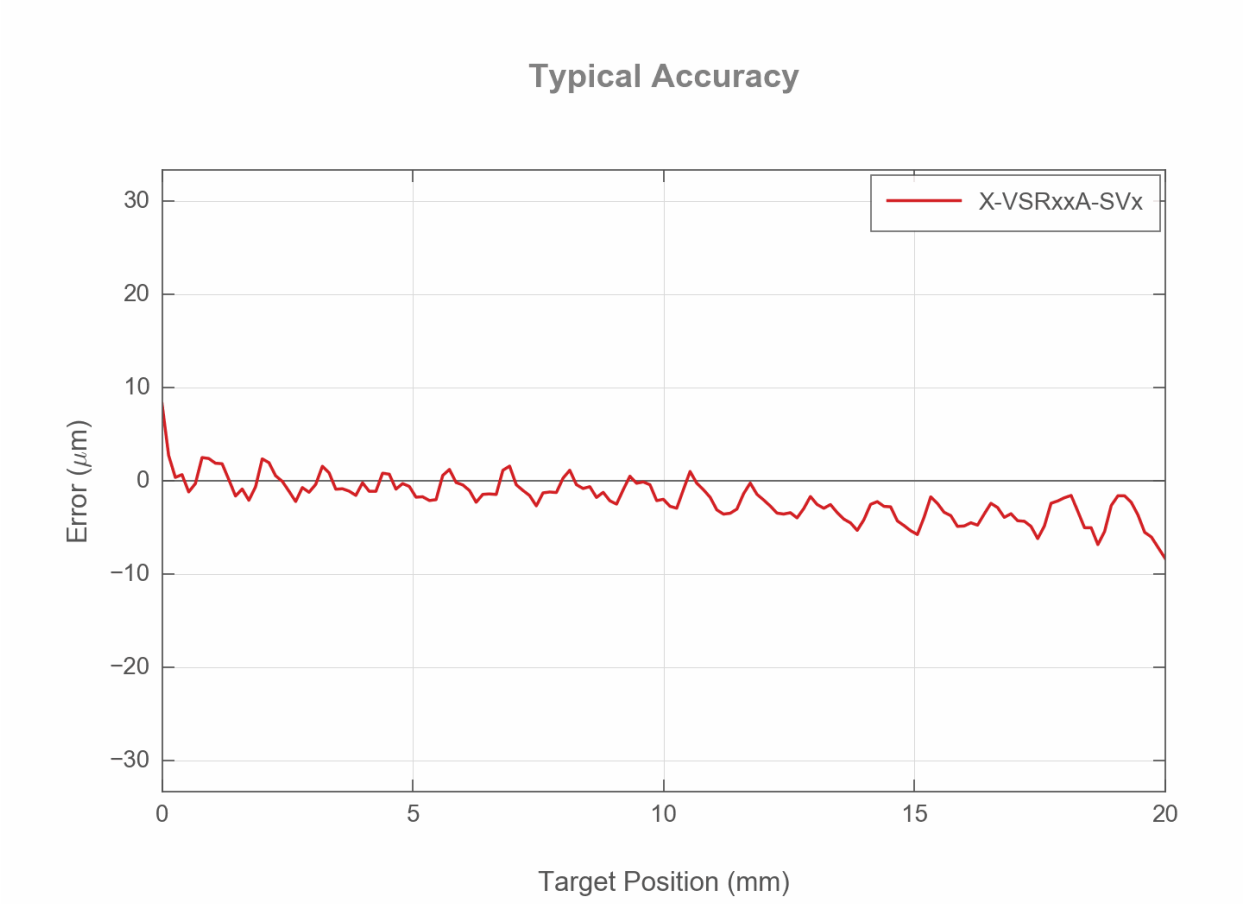
Thrust Speed Performance



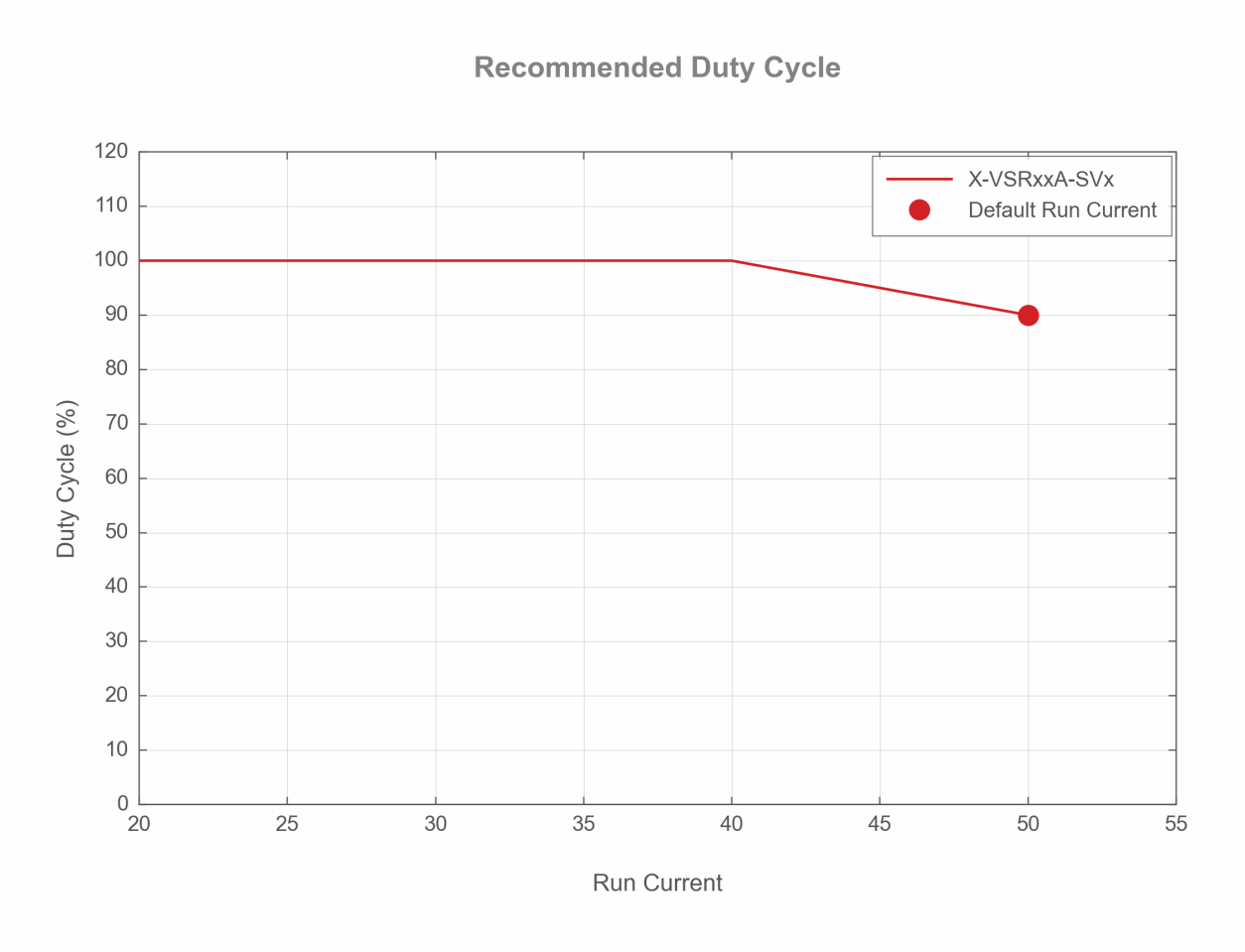
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ERROR POSITION



Run Current Duty Cycle



Contact

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VSR-V1 Series Datasheet



- Vacuum compatible to 10-3 Torr
- 20 mm or 40 mm travel
- Up to 48 mm/s speed and up to 200 N thrust
- 10 kg load capacity
- 55 or 85 mm retracted height
- Only 7 feedthrough wires required to control these units
- Designed for use with an X-MCC Series stepper motor controller or any 2-phase stepper motor controller

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VSR-V1 Series Overview

For more information about the basics of a vacuum system and considerations to keep in mind when gathering requirements for your application, read our technical article, "Motion Device Design Considerations for Vacuum Applications".

Zaber's VSR-V1 Series devices are low-vacuum compatible, computer-controlled, motorized vertical lift stages capable of moving 10 kg loads.

Like all of Zaber's products, the VSR-V1 Series is designed to be very easy to set up and operate. If you are considering a multi-axis system, with Z-axis, these lift stages make an excellent platform.

These stages are wired with a male D-sub 15 connector for plug-and-play use with our X-MCC Series stepper motor controllers. Simply cut the connector off for flying leads in vacuum and match the wire connections outside of the vacuum for an easy connection. Our handy kits include free software, and all of the accessories that you will need to get the stage running right out of the box.

For more information visit: https://www.zaber.com/products/vacuum-compatible-stages/VSR-V1

VSR-V1 Series Part Numbering & Options

VSR 20 A -V1 T4

Travel	Lead Screw Options	Options	Connector
20 — 20 mm **40** — 40 mm	**A** — Fine pitch lead screw	**-V1** — Low-vacuum compatible: 10-3 Torr	**T4** — D-sub 15 inline connector

VSR-V1 Series Drawings

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

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VSR-V1 Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	No
Manual Control	No
Axes of Motion	1

Positioning Performance

Specification	Value
Repeatability	<1 µm (<0.000039 ")
Loaded Backlash (10 N)	<10 µm (<0.000394 ")
Backlash	<35 µm (<0.001378 ")
Pitch Error	0.08 ° (1.396 mrad)
Roll Error	0.08 ° (1.396 mrad)
Yaw Error	0.08 ° (1.396 mrad)
Microstep Size (Default Resolution)	0.09525 µm
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Peak Thrust	200 N (44.9 lb)
Maximum Continuous Thrust	100 N (22.4 lb)

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Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	300 N·cm (424.8 oz·in)
Maximum Moment (Roll)	300 N·cm (424.8 oz·in)
Maximum Moment (Yaw)	300 N·cm (424.8 oz·in)

Speed

Specification	Value
Maximum Speed	48 mm/s (1.89 "/s)
Minimum Speed	0.000058 mm/s (0.000002 "/s)
Speed Resolution	0.000058 mm/s (0.000002 "/s)

Encoder & Sensing

Specification	Value
Limit or Home Sensing	Magnetic home sensor

Motor

Specification	Value
Linear Motion Per Motor Rev	1.2192 mm (0.048 ")
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	700 mA/phase
Motor Winding Inductance	8.7 mH/phase
Motor Connection	Teflon flying leads with D-sub15 connector

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Mechanical

Specification	Value
Mechanical Drive System	Precision Lead Screw
Mounting Interface	M6 and M3 threaded holes

Environmental & Compliance

Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	Low vacuum (10-3 Torr)

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Loaded Accuracy (10 N)
VSR20A-V1T4	20 mm (0.787 ")	0.56 kg (1.235 lb)	50 µm (0.001968 ")	35 µm (0.001378 ")
VSR40A-V1T4	40 mm (1.575 ")	0.77 kg (1.698 lb)	35 µm (0.001378 ")	20 µm (0.000787 ")

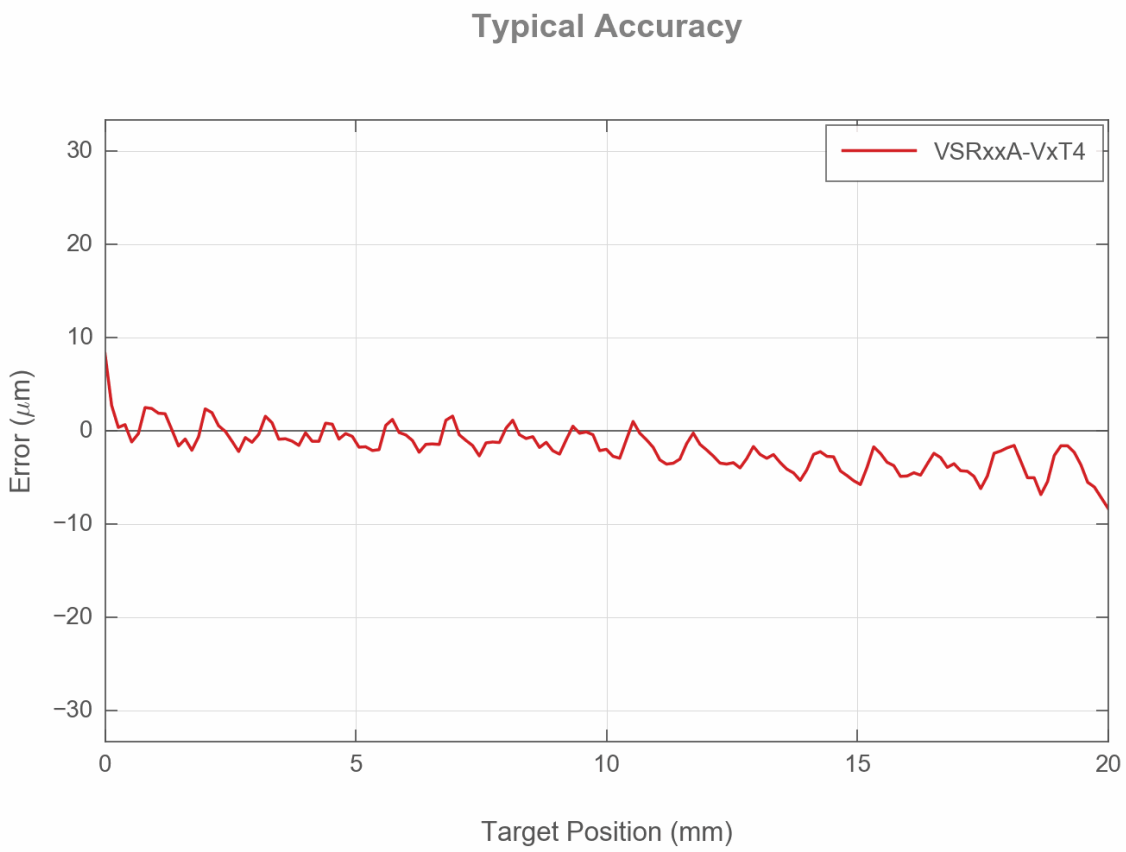
Part Number	Straightness of Travel	Guide Type
VSR20A-V1T4	<30 µm (<0.001181 ")	Ball Bearing
VSR40A-V1T4	<35 µm (<0.001378 ")	Crossed-Roller Bearing

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VSR-V1 Series Charts

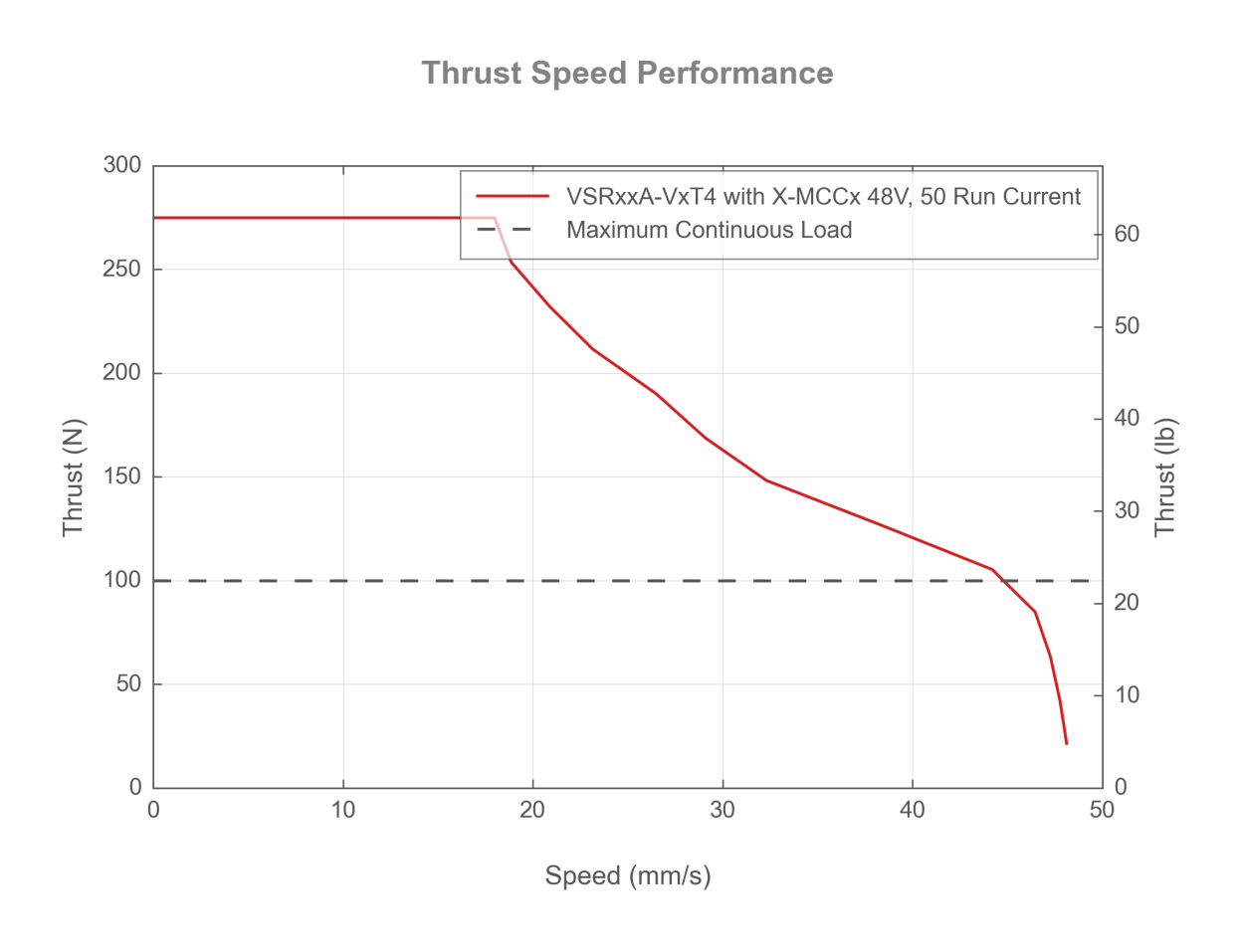
VSRxxA VxT4 ERROR POSITION



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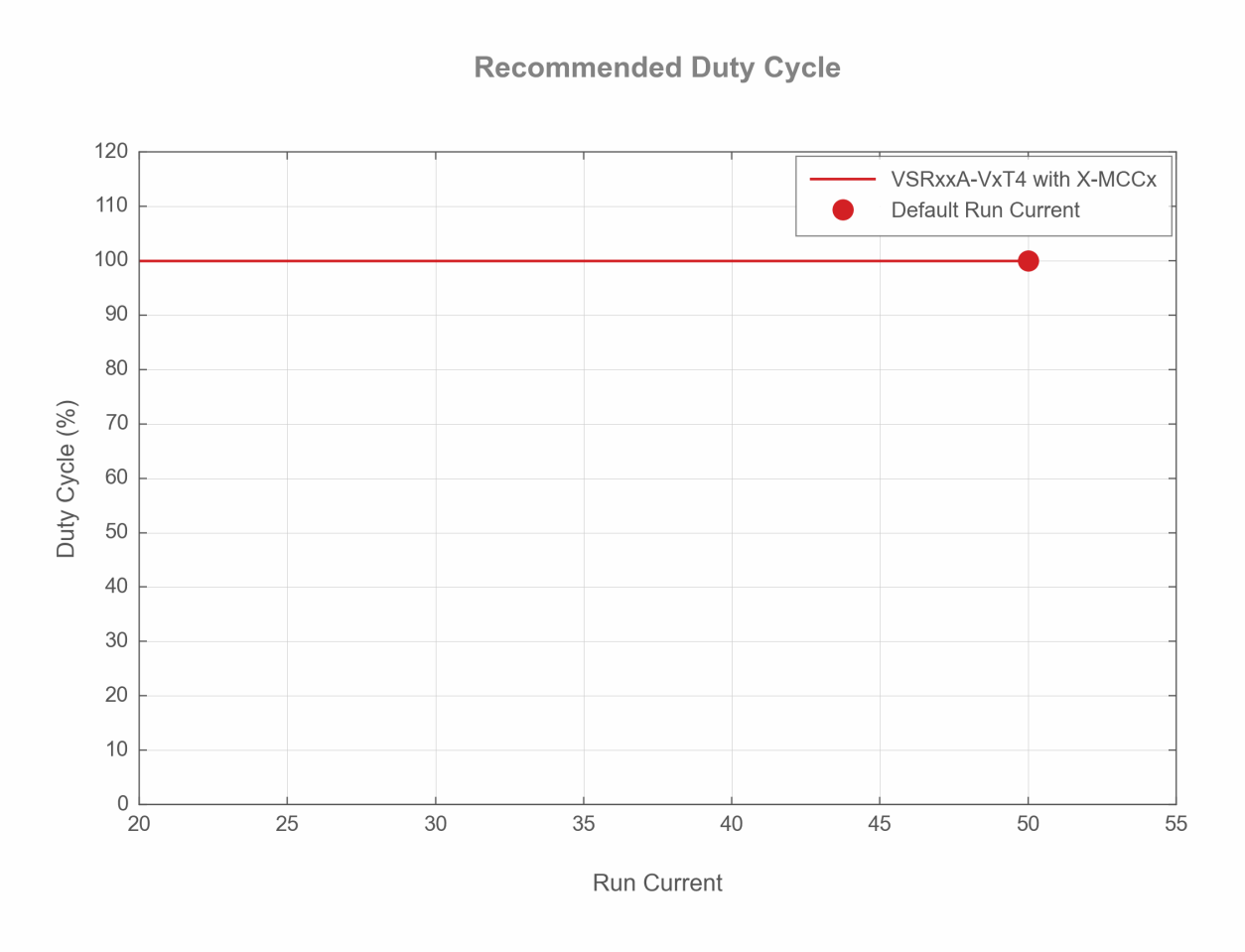
VSRxxA VxT4 Thrust Speed Performance



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VSRxxA Vx Run Current Duty Cycle



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