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1-604-648-8033 *Fax*

GSM Series Datasheet



• 40 mm and 60 mm centre of rotation options allow for two axes of motion about a common centre of rotation
• 30 N load capacity
• Low profile, small footprint
• 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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GSM Series Overview

Zaber's GSM Series devices are motorized goniometers with high thrust and speed capabilities in a compact package. They are stepper motor driven positioning goniometers designed to interface with our MCC controllers, offering high resolution daisy-chainable operation.

Set up is easy with AutoDetect. Once connected, the controller will automatically detect and configure the GSM. These stages are excellent for applications where a small profile is required. They can mount to a flat surface or stack together to share a common centre of rotation for two axes of angular motion.

For more information visit: https://www.zaber.com/products/goniometer-stages/GSM

GSM Series Part Numbering & Options

GSM 40 - T4A

Goniometer Height of Rotation

40 — 40 mm above top surface
60 — 60 mm above top surface

Connector

T4A — D-sub 15 inline connector with Auto Detect

GSM Series Drawings

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

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GSM Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Manual Control	Yes
Axes of Motion	1
Weight	0.225 kg (0.496 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.06 ° (1.047 mrad)
Repeatability	<0.005 ° (<0.087 mrad)
Backlash	<0.01 ° (<0.174 mrad)
Rotation Centre Accuracy	<0.1 mm (<0.004 ")
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Centered Load	30 N (6.7 lb)

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Speed

Specification	Value
Maximum Speed	30 °/s (5 rpm)

Encoder & Sensing

Specification	Value
Encoder Type	None
Limit or Home Sensing	Magnetic home and away sensors

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	600 mA/phase
Motor Winding Resistance	6.5 ohms/phase
Motor Winding Inductance	3.5 mH/phase
Motor Connection	D-sub 15
Motor Frame Size	NEMA 08

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision Worm Gear
Mounting Interface	M2 and M3 mounting holes

Environmental & Compliance

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

Part Number	Range	Microstep Size (Default Resolution)	Minimum Speed	Speed Resolution
GSM40-T4A	+/-10 °	0.0001625794173 ° (2.837 µrad)	0.000099 °/s (1.728 µrad/s)	0.000099 °/s (1.728 µrad/s)
GSM60-T4A	+/-7 °	0.0001131413171 ° (1.975 µrad)	0.000069 °/s (1.204 µrad/s)	0.000069 °/s (1.204 µrad/s)

Part Number	Angular Motion Per Motor Rev	Rotation Centre Height
GSM40-T4A	2.08101654144 °	40 mm (1.575 ")
GSM60-T4A	1.44820885888 °	60 mm (2.362 ")

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GSM-E Series Datasheet



• 40 mm and 60 mm centre of rotation options allow for two axes of motion about a common centre of rotation
• 30 N load capacity
• Low profile, small footprint
• Encoder position feedback with slip/stall detection and automatic 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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GSM-E Series Overview

Zaber's GSM-E Series devices are motorized goniometers with high thrust and speed capabilities in a compact package. They are stepper motor driven positioning goniometers designed to interface with our MCC controllers, offering high resolution daisy-chainable operation.

Set up is easy with AutoDetect. Once connected, the controller will automatically detect and configure the GSM-E. These stages are excellent for applications where a small profile is required. They can mount to a flat surface or stack together to share a common centre of rotation for two axes of angular motion.

For more information visit: https://www.zaber.com/products/goniometer-stages/GSM-E

GSM-E Series Part Numbering & Options

GSM 40 - E03 T4A

Goniometer Height of Rotation	Encoder Options	Connector
40 — 40 mm above top surface **60** — 60 mm above top surface	**E03** — Motor Encoder, 200 CPR	**T4A** — D-sub 15 inline connector with Auto Detect

GSM-E Series Drawings

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

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GSM-E Series Specifications

Overview

Specification	Value
Built-in Controller	No
Recommended Controller	MCC (48 V) Recommended
AutoDetect	Yes
Manual Control	Yes
Axes of Motion	1
Weight	0.24 kg (0.529 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.06 ° (1.047 mrad)
Repeatability	<0.005 ° (<0.087 mrad)
Backlash	<0.01 ° (<0.174 mrad)
Rotation Centre Accuracy	<0.1 mm (<0.004 ")
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Centered Load	30 N (6.7 lb)

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Speed

Specification	Value
Maximum Speed	30 °/s (5 rpm)

Encoder & Sensing

Specification	Value
Encoder Type	Rotary quadrature encoder (incremental)
Encoder Resolution	200 CPR (8 states/rev)
Limit or Home Sensing	Magnetic home and away sensors

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	600 mA/phase
Motor Winding Resistance	6.5 ohms/phase
Motor Winding Inductance	3.5 mH/phase
Motor Connection	D-sub 15
Motor Frame Size	NEMA 08

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision Worm Gear
Mounting Interface	M2 and M3 mounting holes

Environmental & Compliance

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

Part Number	Range	Microstep Size (Default Resolution)	Minimum Speed	Speed Resolution
GSM40-E03T4A	+/-10 °	0.0001625794173 ° (2.837 µrad)	0.000099 °/s (1.728 µrad/s)	0.000099 °/s (1.728 µrad/s)
GSM60-E03T4A	+/-7 °	0.0001131413171 ° (1.975 µrad)	0.000069 °/s (1.204 µrad/s)	0.000069 °/s (1.204 µrad/s)

Part Number	Angular Motion Per Motor Rev	Rotation Centre Height
GSM40-E03T4A	2.08101654144 °	40 mm (1.575 ")
GSM60-E03T4A	1.44820885888 °	60 mm (2.362 ")

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X-GSM Series Datasheet



- Built-in controller; daisy-chains with other Zaber products
- 40 mm and 60 mm centre of rotation options allow for two axes of motion about a common centre of rotation
- Low profile, small footprint
- 30 N load capacity

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X-GSM Series Overview

Zaber's X-GSM Series devices are computer-controlled, motorized goniometers with a compact size and built-in controller. They are stand-alone units requiring only a standard 48 V power supply. An 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. These stages are excellent for applications where a small profile is required. They can mount to a flat surface or stack together to share a common centre of rotation for two axes of angular motion. Like all of Zaber's products, the X-GSM 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/goniometer-stages/X-GSM

X-GSM Series Part Numbering & Options

X-GSM 40

Goniometer Height of Rotation
40 — 40 mm above top surface
60 — 60 mm above top surface

X-GSM Series Drawings

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

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X-GSM Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	Yes
Axes of Motion	1
Weight	0.259 kg (0.571 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.06 ° (1.047 mrad)
Repeatability	<0.005 ° (<0.087 mrad)
Backlash	<0.01 ° (<0.174 mrad)
Rotation Centre Accuracy	<0.1 mm (<0.004 ")
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Centered Load	30 N (6.7 lb)

Speed

Specification	Value
Maximum Speed	30 °/s (5 rpm)

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Encoder & Sensing

Specification	Value
Encoder Type	None
Limit or Home Sensing	Magnetic home and away sensors

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Winding Inductance	3.5 mH/phase
Motor Frame Size	NEMA 08

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	350 mA

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision Worm Gear
Mounting Interface	M2 and M3 mounting holes

Environmental & Compliance

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

Part Number	Range	Microstep Size (Default Resolution)	Minimum Speed	Speed Resolution
X-GSM40	+/-10 °	0.0001625794173 ° (2.837 µrad)	0.000099 °/s (1.728 µrad/s)	0.000099 °/s (1.728 µrad/s)
X-GSM60	+/-7 °	0.0001131413171 ° (1.975 µrad)	0.000069 °/s (1.204 µrad/s)	0.000069 °/s (1.204 µrad/s)

Part Number	Angular Motion Per Motor Rev	Rotation Centre Height
X-GSM40	2.08101654144 °	40 mm (1.575 ")
X-GSM60	1.44820885888 °	60 mm (2.362 ")

Contact

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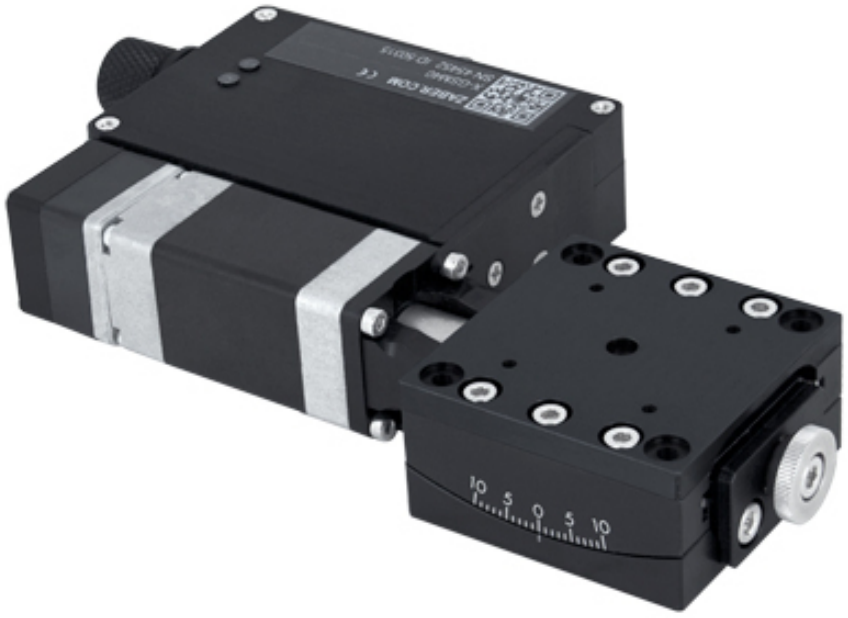
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X-GSM-E Series Datasheet



- 30 N load capacity
- Low profile, small footprint
- 40 mm and 60 mm centre of rotation options allow for two axes of motion about a common centre of rotation
- Encoder position feedback with slip/stall detection and automatic recovery
- Built-in controller; daisy-chains with other Zaber products

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X-GSM-E Series Overview

Zaber's X-GSM-E Series devices are computer-controlled, motorized goniometers with a compact size and built-in controller and motor encoder. They are stand-alone units requiring only a standard 48 V power supply. An 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. These stages are excellent for applications where a small profile is required. They can mount to a flat surface or stack together to share a common centre of rotation for two axes of angular motion. Like all of Zaber's products, the X-GSM-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/goniometer-stages/X-GSM-E

X-GSM-E Series Part Numbering & Options

X-GSM 40 - E03

Goniometer Height of Rotation	Encoder Options
40 — 40 mm above top surface **60** — 60 mm above top surface	**E03** — Motor Encoder, 200 CPR

X-GSM-E Series Drawings

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

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X-GSM-E Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	Yes
Axes of Motion	1
Weight	0.274 kg (0.604 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.06 ° (1.047 mrad)
Repeatability	<0.005 ° (<0.087 mrad)
Backlash	<0.01 ° (<0.174 mrad)
Rotation Centre Accuracy	<0.1 mm (<0.004 ")
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Centered Load	30 N (6.7 lb)

Speed

Specification	Value
Maximum Speed	30 °/s (5 rpm)

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Encoder & Sensing

Specification	Value
Encoder Type	Rotary quadrature encoder (incremental)
Encoder Resolution	200 CPR (8 states/rev)
Limit or Home Sensing	Magnetic home and away sensors

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Winding Inductance	3.5 mH/phase
Motor Frame Size	NEMA 08

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	350 mA

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision Worm Gear
Mounting Interface	M2 and M3 mounting holes

Environmental & Compliance

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

Part Number	Range	Microstep Size (Default Resolution)	Minimum Speed	Speed Resolution
X-GSM40-E03	+/-10 °	0.0001625794173 ° (2.837 µrad)	0.000099 °/s (1.728 µrad/s)	0.000099 °/s (1.728 µrad/s)
X-GSM60-E03	+/-7 °	0.0001131413171 ° (1.975 µrad)	0.000069 °/s (1.204 µrad/s)	0.000069 °/s (1.204 µrad/s)

Part Number	Angular Motion Per Motor Rev	Rotation Centre Height
X-GSM40-E03	2.08101654144 °	40 mm (1.575 ")
X-GSM60-E03	1.44820885888 °	60 mm (2.362 ")

Contact

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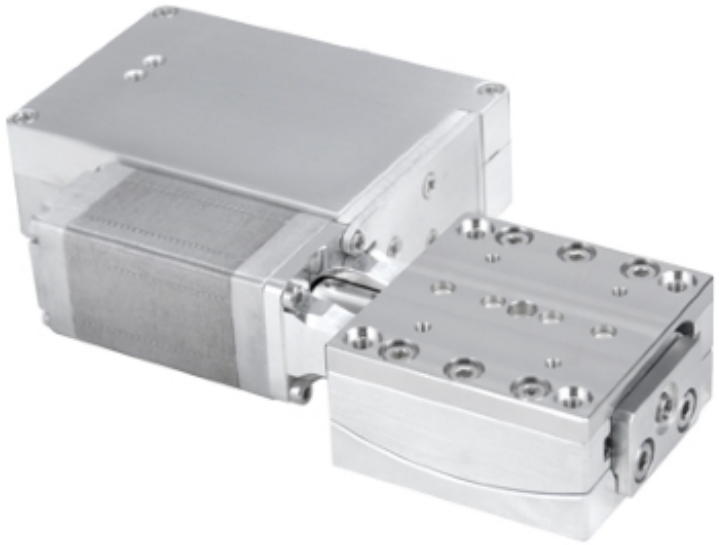
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X-GSM-SV2 Series Datasheet



• Vacuum compatible to 10-6 Torr
• 40 mm and 60 mm centre of rotation options allow for two axes of motion about a common centre of rotation
• Crossed roller bearings for smooth motion and high stiffness
• 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-GSM-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-GSM-SV2 Series devices are high-vacuum compatible, computer-controlled, motorized goniometers with a compact size and built-in controller. 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-GSM-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, in the XY configuration, these stages are designed to stack with mounting alignment features in the stage top and base.

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

X-GSM-SV2 Series Part Numbering & Options

X-GSM 40 -SV2

Goniometer Height of Rotation	Options
40 — 40 mm above top surface **60** — 60 mm above top surface	**-SV2** — High-vacuum compatible: 10-6 Torr

X-GSM-SV2 Series Drawings

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

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X-GSM-SV2 Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	No
Axes of Motion	1
Weight	0.32 kg (0.705 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.06 ° (1.047 mrad)
Repeatability	<0.005 ° (<0.087 mrad)
Backlash	<0.01 ° (<0.174 mrad)
Rotation Centre Accuracy	<0.1 mm (<0.004 ")
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Centered Load	30 N (6.7 lb)

Speed

Specification	Value
Maximum Speed	30 °/s (5 rpm)

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Encoder & Sensing

Specification	Value
Encoder Type	None
Limit or Home Sensing	Magnetic home and away sensors

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	800 mA/phase
Motor Winding Inductance	3.5 mH/phase
Motor Frame Size	NEMA 08

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
Power Plug	None, use X-PIB
Maximum Current Draw	350 mA

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision Worm Gear
Mounting Interface	M2 and M3 mounting holes

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Environmental & Compliance

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

Part Number	Range	Microstep Size (Default Resolution)	Minimum Speed	Speed Resolution
X-GSM40-SV2	+/-10 °	0.0001625794173 ° (2.837 µrad)	0.000099 °/s (1.728 µrad/s)	0.000099 °/s (1.728 µrad/s)
X-GSM60-SV2	+/-7 °	0.0001131413171 ° (1.975 µrad)	0.000069 °/s (1.204 µrad/s)	0.000069 °/s (1.204 µrad/s)

Part Number	Angular Motion Per Motor Rev	Rotation Centre Height
X-GSM40-SV2	2.08101654144 °	40 mm (1.575 ")
X-GSM60-SV2	1.44820885888 °	60 mm (2.362 ")

Contact

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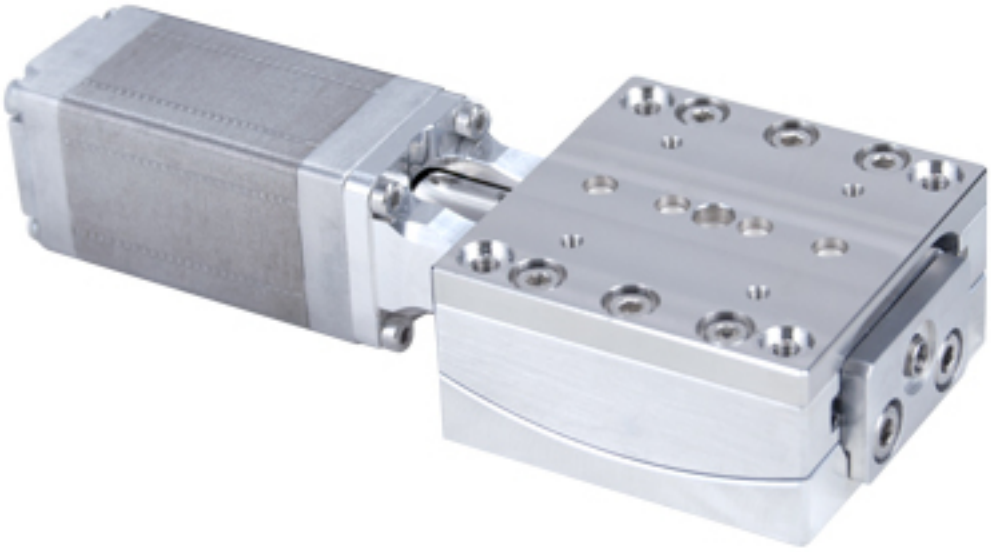
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GSM-V2 Series Datasheet



• Vacuum compatible to 10-6 Torr
• 40 mm and 60 mm centre of rotation options allow for two axes of motion about a common centre of rotation
• Crossed roller bearings for smooth motion and high stiffness
• Designed for use with an X-MCC Series stepper motor controller or any 2-phase stepper motor controller
• Only 7 feedthrough wires required to control these units

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GSM-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 GSM-V2 Series devices are high-vacuum compatible, computer-controlled, motorized goniometers with a compact size.

Like all of Zaber's products, the GSM-V2 Series is designed to be very easy to set up and operate. If you are considering a multi-axis system, in the XY configuration, these stages are designed to stack with mounting alignment features in the stage top and base.

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/GSM-V2

GSM-V2 Series Part Numbering & Options

GSM 40 -V2 T4

Goniometer Height of Rotation	Options	Connector
40 — 40 mm above top surface **60** — 60 mm above top surface	**-V2** — High-vacuum compatible: 10-6 Torr	**T4** — D-sub 15 inline connector

GSM-V2 Series Drawings

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

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GSM-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
Weight	0.32 kg (0.705 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.06 ° (1.047 mrad)
Repeatability	<0.005 ° (<0.087 mrad)
Backlash	<0.01 ° (<0.174 mrad)
Rotation Centre Accuracy	<0.1 mm (<0.004 ")
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Centered Load	30 N (6.7 lb)

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Speed

Specification	Value
Maximum Speed	30 °/s (5 rpm)

Encoder & Sensing

Specification	Value
Encoder Type	None
Limit or Home Sensing	Magnetic home and away sensors

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	800 mA/phase
Motor Winding Inductance	3.5 mH/phase
Motor Connection	Teflon flying leads with D-sub15 connector
Motor Frame Size	NEMA 08

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision Worm Gear
Mounting Interface	M2 and M3 mounting holes

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Environmental & Compliance

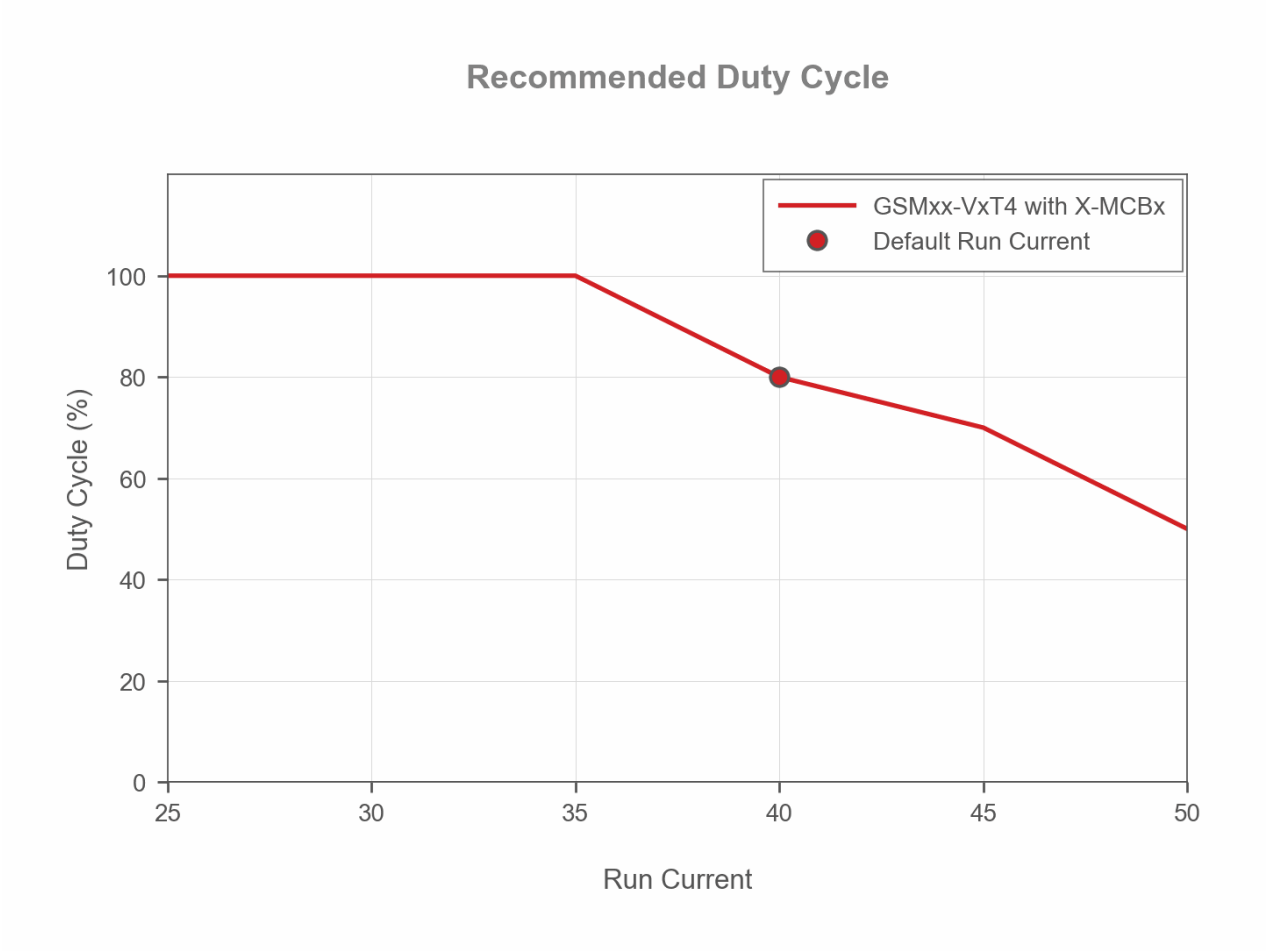
Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	High vacuum (10-6 Torr)

Part Number	Range	Microstep Size (Default Resolution)	Minimum Speed	Speed Resolution
GSM40-V2T4	+/-10 °	0.0001625794173 ° (2.837 µrad)	0.000099 °/s (1.728 µrad/s)	0.000099 °/s (1.728 µrad/s)
GSM60-V2T4	+/-7 °	0.0001131413171 ° (1.975 µrad)	0.000069 °/s (1.204 µrad/s)	0.000069 °/s (1.204 µrad/s)

Part Number	Angular Motion Per Motor Rev	Rotation Centre Height
GSM40-V2T4	2.08101654144 °	40 mm (1.575 ")
GSM60-V2T4	1.44820885888 °	60 mm (2.362 ")

GSM-V2 Series Charts

GSMxx VxT4 With X MCBx Duty Cycle Vs Run Current



Contact

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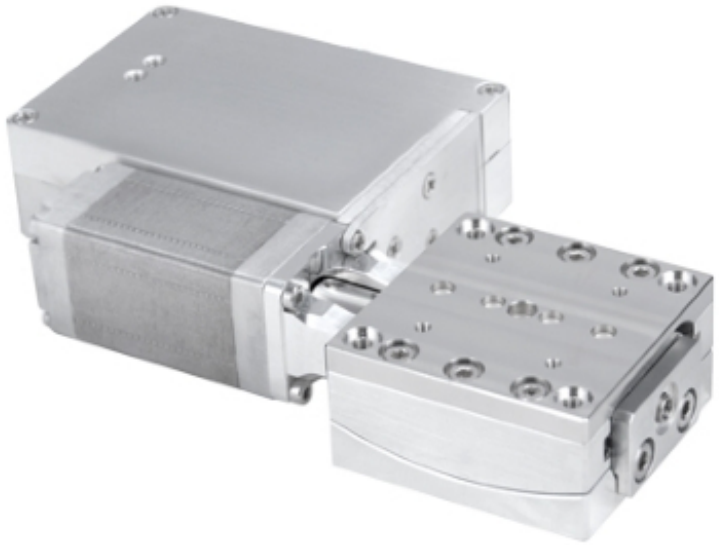
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X-GSM-SV1 Series Datasheet



• Vacuum compatible to 10-3 Torr
• 40 mm and 60 mm centre of rotation options allow for two axes of motion about a common centre of rotation
• Crossed roller bearings for smooth motion and high stiffness
• 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-GSM-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-GSM-SV1 Series devices are low-vacuum compatible, computer-controlled, motorized goniometers with a compact size and built-in controller. 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-GSM-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, in the XY configuration, these stages are designed to stack with mounting alignment features in the stage top and base.

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

X-GSM-SV1 Series Part Numbering & Options

X-GSM 40 -SV1

Goniometer Height of Rotation	Options
40 — 40 mm above top surface **60** — 60 mm above top surface	**-SV1** — Low-vacuum compatible: 10-3 Torr

X-GSM-SV1 Series Drawings

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

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X-GSM-SV1 Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	No
Axes of Motion	1
Weight	0.32 kg (0.705 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.06 ° (1.047 mrad)
Repeatability	<0.005 ° (<0.087 mrad)
Backlash	<0.01 ° (<0.174 mrad)
Rotation Centre Accuracy	<0.1 mm (<0.004 ")
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Centered Load	30 N (6.7 lb)

Speed

Specification	Value
Maximum Speed	30 °/s (5 rpm)

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Encoder & Sensing

Specification	Value
Encoder Type	None
Limit or Home Sensing	Magnetic home and away sensors

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	800 mA/phase
Motor Winding Inductance	3.5 mH/phase
Motor Frame Size	NEMA 08

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
Power Plug	None, use X-PIB
Maximum Current Draw	350 mA

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision Worm Gear
Mounting Interface	M2 and M3 mounting holes

Environmental & Compliance

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

Part Number	Range	Microstep Size (Default Resolution)	Minimum Speed	Speed Resolution
X-GSM40-SV1	+/-10 °	0.0001625794173 ° (2.837 µrad)	0.000099 °/s (1.728 µrad/s)	0.000099 °/s (1.728 µrad/s)
X-GSM60-SV1	+/-7 °	0.0001131413171 ° (1.975 µrad)	0.000069 °/s (1.204 µrad/s)	0.000069 °/s (1.204 µrad/s)

Part Number	Angular Motion Per Motor Rev	Rotation Centre Height
X-GSM40-SV1	2.08101654144 °	40 mm (1.575 ")
X-GSM60-SV1	1.44820885888 °	60 mm (2.362 ")

Contact

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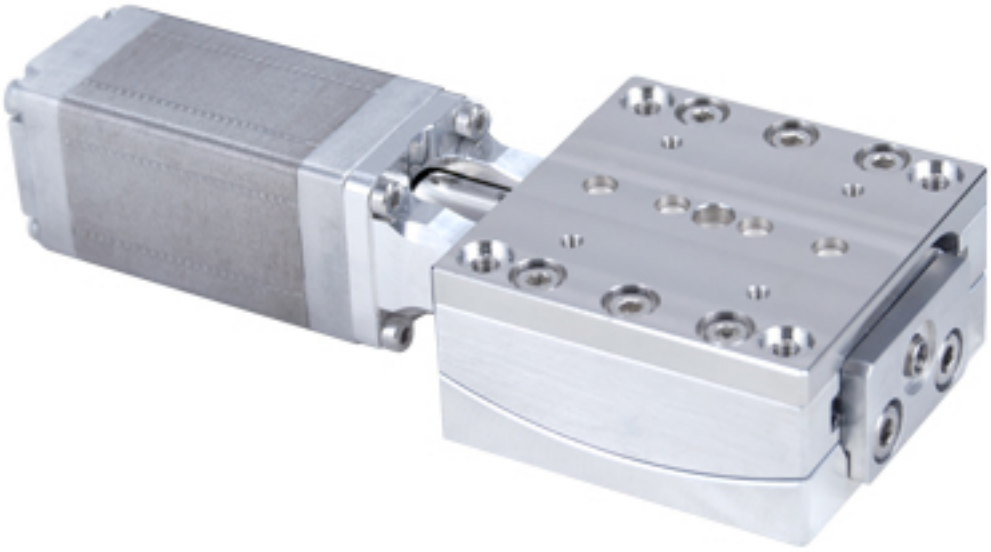
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GSM-V1 Series Datasheet



- Vacuum compatible to 10-3 Torr
- 40 mm and 60 mm centre of rotation options allow for two axes of motion about a common centre of rotation
- Crossed roller bearings for smooth motion and high stiffness
- Designed for use with an X-MCC Series stepper motor controller or any 2-phase stepper motor controller
- Only 7 feedthrough wires required to control these units

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GSM-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 GSM-V1 Series devices are low-vacuum compatible, computer-controlled, motorized goniometers with a compact size.

Like all of Zaber's products, the GSM-V1 Series is designed to be very easy to set up and operate. If you are considering a multi-axis system, in the XY configuration, these stages are designed to stack with mounting alignment features in the stage top and base.

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/GSM-V1

GSM-V1 Series Part Numbering & Options

GSM 40 -V1 T4

Goniometer Height of Rotation	Options	Connector
40 — 40 mm above top surface **60** — 60 mm above top surface	**-V1** — Low-vacuum compatible: 10-3 Torr	**T4** — D-sub 15 inline connector

GSM-V1 Series Drawings

- GSM-V.png (Drawing for the GSM-V)
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GSM-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
Weight	0.32 kg (0.705 lb)

Positioning Performance

Specification	Value
Accuracy (unidirectional)	0.06 ° (1.047 mrad)
Repeatability	<0.005 ° (<0.087 mrad)
Backlash	<0.01 ° (<0.174 mrad)
Rotation Centre Accuracy	<0.1 mm (<0.004 ")
Default Resolution	1/64 of a step

Load Performance

Specification	Value
Maximum Centered Load	30 N (6.7 lb)

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Speed

Specification	Value
Maximum Speed	30 °/s (5 rpm)

Encoder & Sensing

Specification	Value
Encoder Type	None
Limit or Home Sensing	Magnetic home and away sensors

Motor

Specification	Value
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	800 mA/phase
Motor Winding Inductance	3.5 mH/phase
Motor Connection	Teflon flying leads with D-sub15 connector
Motor Frame Size	NEMA 08

Mechanical

Specification	Value
Guide Type	Crossed roller bearing
Mechanical Drive System	Precision Worm Gear
Mounting Interface	M2 and M3 mounting holes

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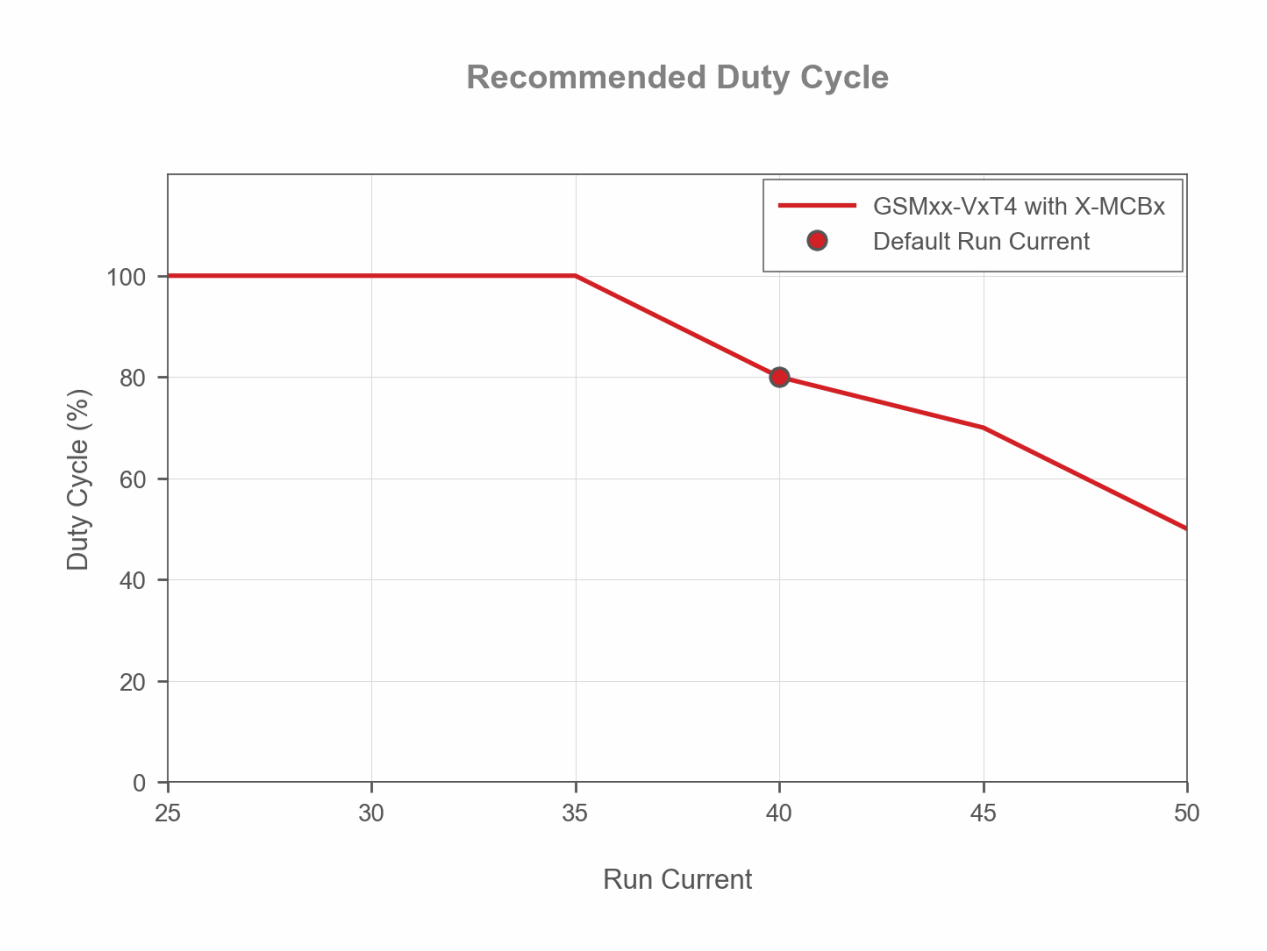
Specification	Value
Operating Temperature Range	0-50 °C
CE Compliant	Yes
Vacuum Compatible	Low vacuum (10-3 Torr)

Part Number	Range	Microstep Size (Default Resolution)	Minimum Speed	Speed Resolution
GSM40-V1T4	+/-10 °	0.0001625794173 ° (2.837 µrad)	0.00009923 °/s (1.732 µrad/s)	0.00009923 °/s (1.732 µrad/s)
GSM60-V1T4	+/-7 °	0.0001131413171 ° (1.975 µrad)	0.00006906 °/s (1.205 µrad/s)	0.00006906 °/s (1.205 µrad/s)

Part Number	Angular Motion Per Motor Rev	Rotation Centre Height
GSM40-V1T4	2.08101654144 °	40 mm (1.575 ")
GSM60-V1T4	1.44820885888 °	60 mm (2.362 ")

GSM-V1 Series Charts

GSMxx VxT4 With X MCBx Duty Cycle Vs Run Current



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