Fine (Piezo) Stages (high stiffness type)
XY Piezo Stages Aperture Type

SFS-H
SFS-120XY(WA)

RoHS CE
RoHS CE

## Nanometer resolution high stiffness flexure stages.

SFS-H

- These compact piezo stages offer high precision and high resolution positioning by utilizing full closed loop control with digital frequency based sensors.
- Using piezo element actuators, open loop travel between 90μm – 100μm is available, with minimum incremental motion as small as 1nm. Compared to the open-loop control, the maximum travel of closed-loop control will be less about 10%.
- Closed loop travel is 80% of the open loop maximum and closed loop resolution is 10nm.
- Recommended controllers are the FINE series controllers. **Reference** G129 Both digital and analog inputs are available.
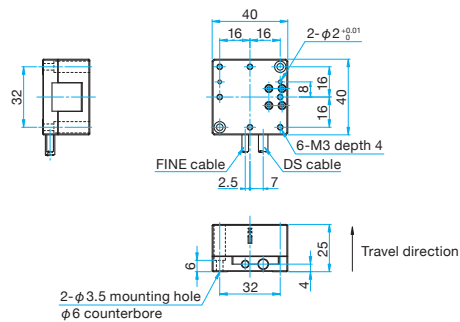
2D CAD 3D CAD
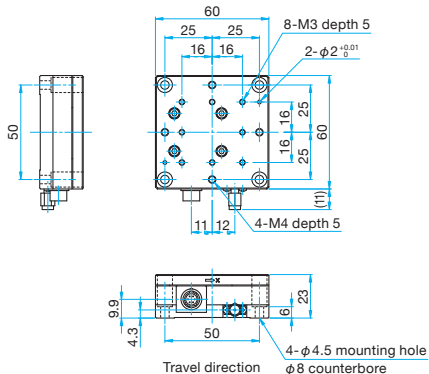
Outline Drawing

SFS-H40X(CL)   Hexagon socket head cap screw M3×10…2 screws
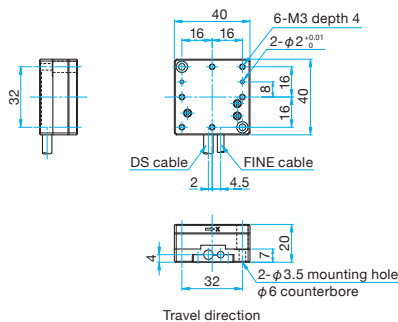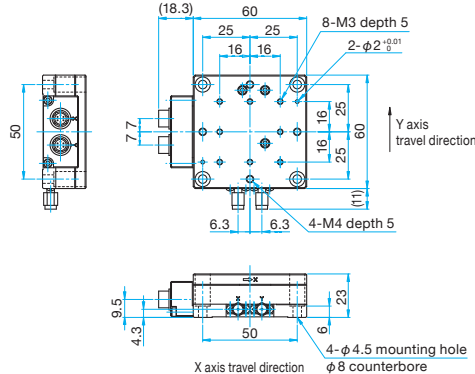

SFS-H40Z(CL)   Hexagon socket head cap screw M3×10…2 screws

SFS-H60X(CL)   Hexagon socket head cap screw M4×10…4 screws

SFS-H60XY(CL)   Hexagon socket head cap screw M4×10…4 screws

Specifications

Part Number	SFS-H40X(CL)	SFS-H40Z(CL)	SFS-H60X(CL)	SFS-H60XY(CL)
Travel (at open-loop control)	90μm±15%	100μm±15%	100μm±15%	100μm±15%
Stage Size [mm]	40×40	40×40	60×60	60×60
Actuator	Piezo actuator	Piezo actuator	Piezo actuator	Piezo actuator
Weight [kg]	0.28	0.28	0.4	0.43
Theoretical Resolution (open-loop) [nm]	1	1	1	1
Resolution (closed-loop) [nm]	10	10	10	10
Linearity [%]	0.3 or lower	0.3 or lower	0.3 or lower	0.3 or lower
Perpendicularity (Horizontal Direction) [μm]	1	1	1	1
Positional Repeatability [μm]	0.1 or lower	0.1 or lower	0.1 or lower	0.1 or lower
Load Capacity [N]	9.8 (1.0kgf)	6.7 (0.7kgf)	19.6 (2.0kgf)	14.7 (1.5kgf)
Micro-displacement Sensor	Digital Sensor	Digital Sensor	Digital Sensor	Digital Sensor
Compatible Cable	Attached cable (2m)	Attached cable (2m)	FINE-CA-3: For piezo DS1-CA-3: For digital sensor	FINE-CA-3: For piezo DS1-CA-3: For digital sensor

HOURS
www.hours-web.com

2D CAD 3D CAD

Outline Drawing

SFS-H60Z(CL) 🔧 Hexagon socket head cap screw M4×10…4 screws

SFS-H60XYZ(CL) 🔧 Hexagon socket head cap screw M4×10…4 screws

SFS-120XY(WA)

Two Axis Nanometer resolution high stiffness flexure stages with central aperture.

- High precision XY piezo stages offer high precision and high resolution positioning by utilizing full closed loop control with digital frequency based sensors.
- 50mm x 50mm aperture makes these stages ideal for microscopy applications
- Using piezo element actuators, open loop travel between 90µm – 100µm is available, with minimum incremental motion as small as 1nm.
- Closed loop travel is 80% of the open loop maximum and closed loop resolution is 10nm.
- Recommended controller is the FINE-503(∗∗). ▶WEB Reference Catalog Code W9057
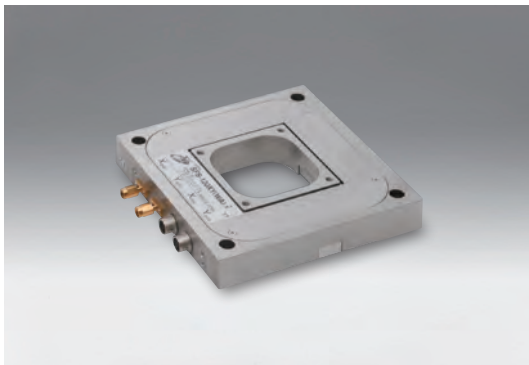
Outline Drawing

SFS-120XY(WA) 🔧 Hexagon socket head cap screw M4×8…4 screws

2D CAD 3D CAD
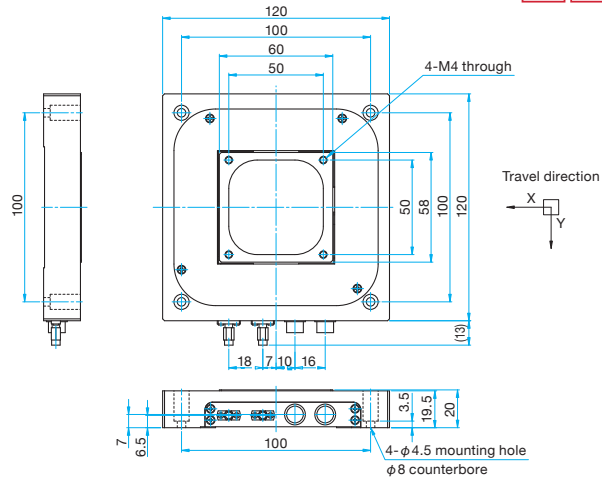
Specifications

Part Number	SFS-H60Z(CL)	SFS-H60XYZ(CL)	SFS-120XY(WA)
Travel (at open-loop control)	100µm±15%	100µm±15%	100µm±10%
Stage Size [mm]	60×60	60×60	120×120
Actuator	Piezo actuator	Piezo actuator	Piezo actuator
Weight [kg]	0.33	0.63	1.2
Theoretical Resolution (open-loop) [nm]	1	1	1
Resolution (closed-loop) [nm]	10	10	10
Linearity [%]	0.3 or lower	0.5 or lower	—
Perpendicularity (Horizontal Direction) [µm]	1	1	1 or lower
Positional Repeatability [µm]	0.1 or lower	0.15 or lower	0.1 or lower
Load Capacity [N]	9.8 (1.0kgf)	9.8 (1.0kgf)	19.6 (2.0kgf)
Micro-displacement Sensor	Digital sensor	Digital sensor	Digital sensor
Compatible Cable	FINE-CA-3: For piezo DS1-CA-3: For digital sensor	FINE-CA-3: For piezo DS1-CA-3: For digital sensor	FINE-CA-3: For piezo DS1-CA-3: For digital sensor

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

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Controllers/Drivers

Softwares

Stepping Motor

AC Servo Motor

Cables

Piezo

X Translation

Theta Rotation

Goniometer

Vacuum

Options

40 × 40 mm

60 × 60 mm
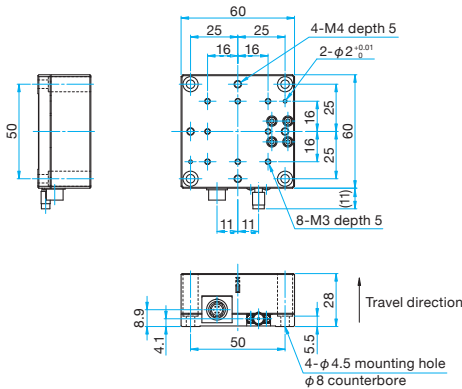
80 × 80 mm

85 × 85 mm

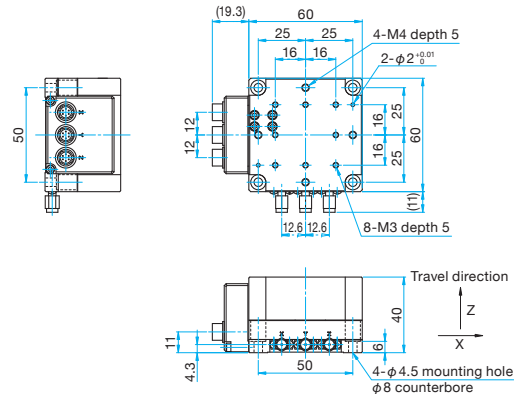100 × 100 mm

120 × 120 mm

Others

RoHS Catalog Code W9057
(FINE-01γ only)

Single axis and three axis controllers for SFS series Piezo actuators.

FINE-01γ

FINE-503(CL)

- Closed loop control with built in error compensation to correct hysteresis curve unique to each piezo.
- External control using a PC and manual operation with dedicated controller (CJ-200A).
- In addition to PC control and manual operation, the FINE-01γ includes an analog signal input for high-speed analog control.

Part Name	Part Number
1 axis SFS Controller with Analog Input Function	**FINE-01γ(**✳✳**)**
3 axes SFS Controller	**FINE-503(**✳✳**)**
Control Pad	**CJ-200A**
FINE Cable	**FINE-CA-3**
DS Cable	**DS1-CA-3**
BNC-BNC Cable	**SKBNC-BNC-3.0**

■Primary Functions

Part Number	FINE-01γ(✳✳)	FINE-503(✳✳)
Controller Function	○	
Number of Control Axes	1	3
Stored Program Control	○	
Feedback Control	Digital sensor	

■General Specifications

Power Voltage	(CL) AC100V ±10% (UL) AC120V ±10% (CE) AC230V ±10% 50/60Hz	
Power Consumption	50VA	
Operating Temperature	10 – 30°C	
Storage Temperature	–20 – 60°C	
Ambient Humidity	20 – 80%RH (without condensation)	
External Dimensions (W×H×Dmm)	225×118×250	270×118×297
Weight (kg)	3.5	5.3

■Interface

GP-IB	—	○
RS232C	○	
USB	○	
Analog input	○	—

■Optional

CJ-200A	○	
SKBNC-BNC-3.0	○	—

■Performance Specifications

Coordinate Indication Range	±999,999nm
Max. Travel to Set	±999,999nm

■Control Command

Machine Origin Return	○
Theoretical Origin Setting	○
Relative Position Drive	○
Absolute Position Drive	○
Jog Operation	○
Position Appointment	—
Circular Interpolation Control	—
Linear Interpolation Control	—
Drive	○
Deceleration Stop	—
Emergency Stop	—
Speed Setting	○
Motor Free/Hold	—
Port Input	—
Port Output	—

SFS Software

Free Software │ SG Sample (for RS232C) Windows® Version

Free software is available to operate your controller easily from a PC. Each axis of a connected motorized stage can be moved using buttons on the screen. The software can be downloaded from our website.
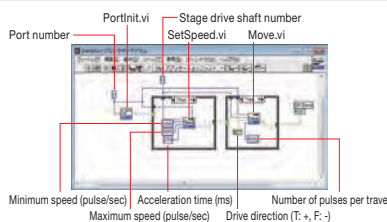
(1) Speed specification   (2) Homing control   (3) Travel control
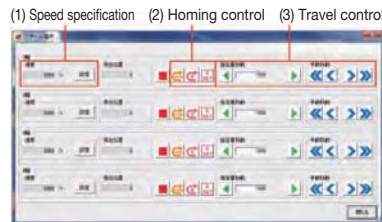
Simple operations are possible such as travel by specifying an axis, homing or jog operation.

Controllers such as SHOT-30*/702 and FINE-**, which have a built-in program function, allow editing of programs from a PC. Since data can be downloaded/uploaded from/to Excel sheets, it is easy to edit programs. In addition, upload of memory switch or download mode is available.

Free Application
LabVIEW (for v.5.1/v.6i/v.7.1/v.8.6/v.2010/v.2012/v.2013/v.2014/v.2015) RS232C/GP-IB

LabVIEW application is available for LabVIEW users.

Port number   PortInit.vi   Stage drive shaft number
SetSpeed.vi   Move.vi

Minimum speed (pulse/sec)   Acceleration time (ms)   Number of pulses per travel
Maximum speed (pulse/sec)   Drive direction (T: +, F: -)

Other: 30 Day Trial Version (SGADVANCEE)

Trial Version

Using SGADVANCEE makes it is possible to easily build measurement and control systems for a wide variety of measurement environments.
Installing the trial version will require entering a serial number. The serial number for the trial version is shown on the download page.
▶ WEB Reference http://www.global-optosigma.com/en_jp/software/product-download_en.html

SG ADVANCE for Windows
SIGMAKOKI

HOURS
www.hours-web.com