

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

**FPS-H**  
**FPS-120XY(WA)**



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### Piezo Stage

Precision Linear MS

High Speed MS

Motorized Goniometer

Motorized Rotation

Multiaxis Motorized

Industrial Robot

Controller & Driver & Cable

Custom-Built MS

These piezo stages achieved fine movement of theoretical resolution of 1nm, offering high precision, high stiffness and high speed with adoption of digital sensors.

### FPS-H



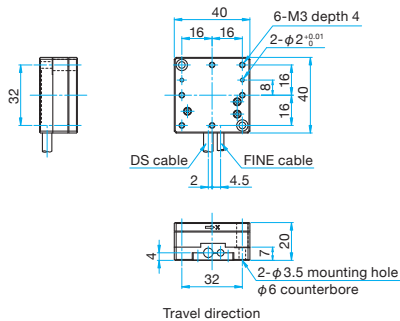
- These piezo stages offer high precision and high resolution positioning because full closed loop control is possible with digital sensors.
- With piezo elements used as actuators, travel between 90 $\mu$ m – 100 $\mu$ m in open loop control, and fine movement of theoretical resolution of 1nm are possible.
- Readable resolution of 10nm is achieved during full closed loop control with adoption of a digital sensor (micro-displacement sensor based on the frequency digital conversion method) used as position detection sensors.
- Sigma Koki controller FINE series offers high speed. **Reference** I109 Regarding pulse rate, SFS-H (linear) achieved 10 – 15Hz, or 25Hz when the current FINE-01y analog input is used.



### Outline Drawing

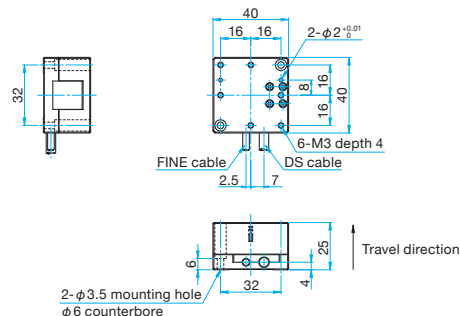
#### FPS-H40X

Hexagon socket head cap screw M3x10...2 screws



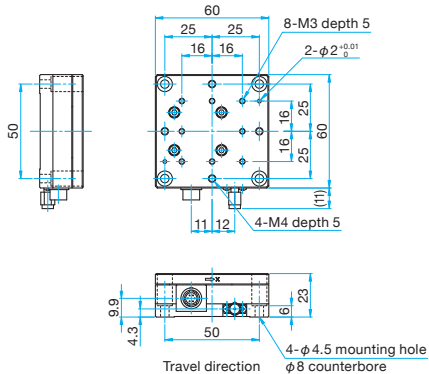
#### FPS-H40Z

Hexagon socket head cap screw M3x10...2 screws



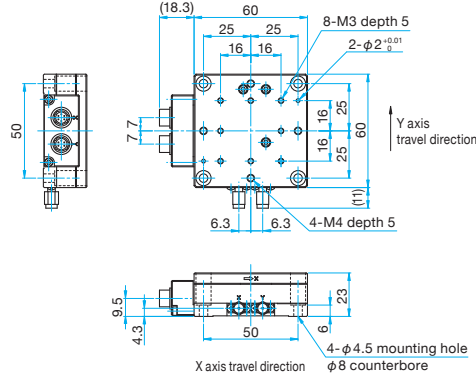
#### FPS-H60X

Hexagon socket head cap screw M4x10...4 screws



#### FPS-H60XY

Hexagon socket head cap screw M4x10...4 screws



### Specifications

Part Number	FPS-H40X	FPS-H40Z	FPS-H60X	FPS-H60XY
Travel	90 $\mu$ m $\pm$ 15%	100 $\mu$ m $\pm$ 15%	100 $\mu$ m $\pm$ 15%	100 $\mu$ m $\pm$ 15%
Table Size [mm]	40x40	40x40	60x60	60x60
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) [ $\mu$ m]	1	1	1	1
Positional Repeatability [ $\mu$ m]	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

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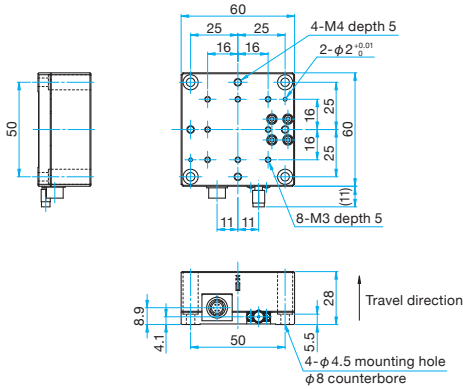
**FPS-H**  
**FPS-120XY(WA)**



## Outline Drawing

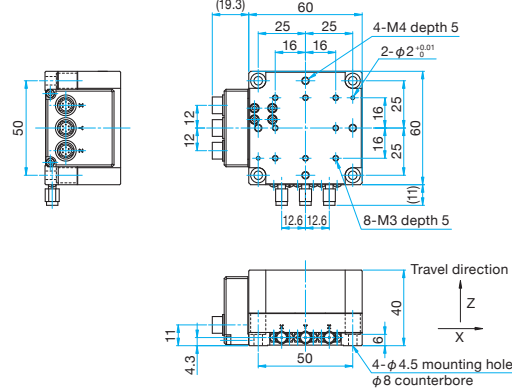
### FPS-H60Z

Hexagon socket head cap screw M4x10...4 screws



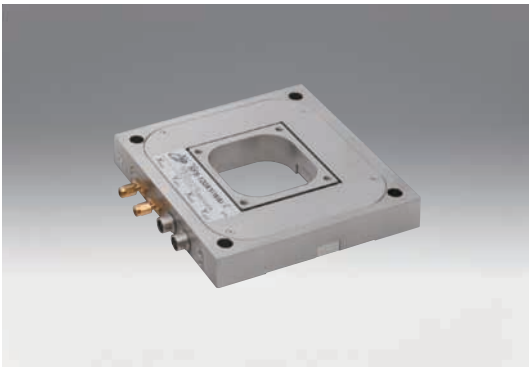
### FPS-H60XYZ

Hexagon socket head cap screw M4x10...4 screws



## FPS-120XY(WA)

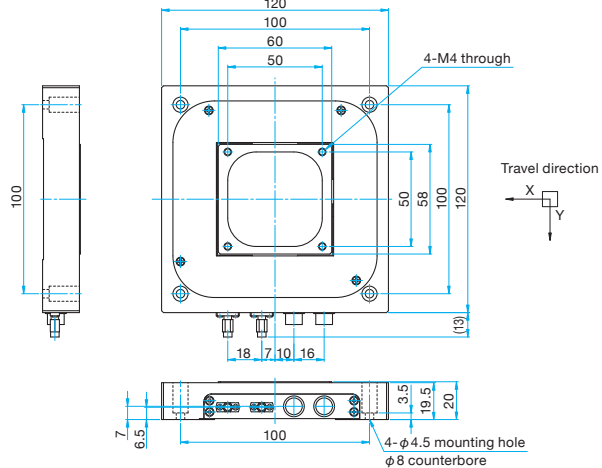
- A high precision positioning XY axis stage with 50x50mm aperture fitted with a piezo element as an actuator and digital sensor for position feedback, suitable for fine movement of samples under a microscope.
- Can be driven with the Sigma fine stage controller FPSC-503. Since the controller supports RS232C, GP-IB (FINE-503 only) and USB interfaces, position control can be performed easily from a PC using the software for positioning & measurement SGEMCSE, SGTERME and SGSFSXE.
- Ideal for applications such as incorporation into various types of microscopes, precision measurement, semiconductor test equipment, high-precision mask alignment, scanning interferometer, image processor, and biotechnology systems.



## Outline Drawing

### FPS-120XY(WA)

Hexagon socket head cap screw M4x8...4 screws



## Specifications

Part Number	FPS-H60Z(CL)	FPS-H60XYZ	FPS-120XY(WA)
Travel	100μm±15%	100μm±15%	100μm±10%
Table 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

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