Motorized Stages

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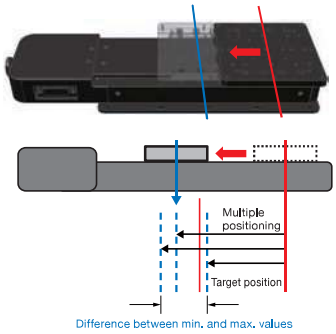
Motorized Stages Guide

Measurement of Linear Stage Accuracy

Positional Accuracy

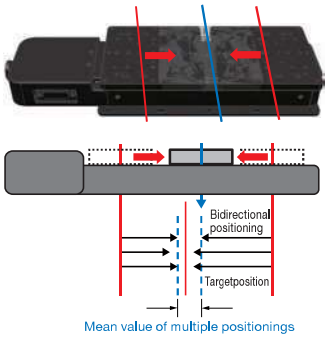
Positioning Accuracy

Positioning is performed successively from the reference position in one direction at a fixed interval across the range of travel. The difference between the target values and measured values at each of the positioning points is calculated, and the difference between the minimum and maximum values is taken to be the positioning accuracy.



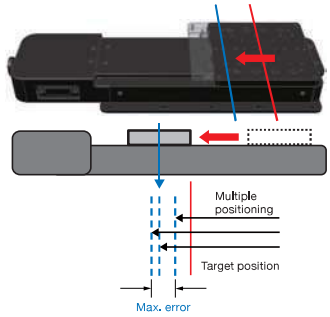
Lost Motion

Positioning is performed multiple times in the (+) forward and (–) backward directions on any position (e.g. both ends or center point) of the stage, and the mean value of the deviation amount with respect to the stop position is calculated.
The maximum of the numerical values is taken to be lost motion.



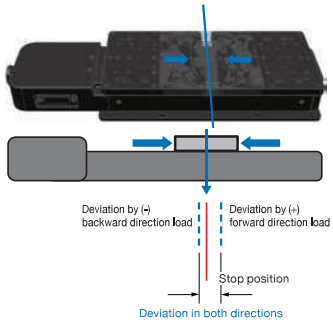
Positional Repeatability

Positioning is performed multiple times from the same direction on any position (e.g. both ends or center point) of the stage, and the maximum value of the deviation amount with respect to the stop position is calculated.
The maximum of those numerical values is taken to be positional repeatability.



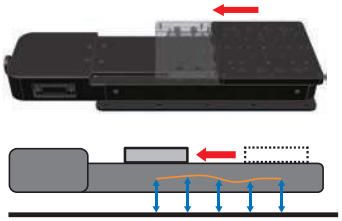
Backlash

A fixed load is applied to the (+) forward or (–) backward direction on any position (e.g. both ends or center point) of the stage.
The total deviation in the respective direction at that time is taken to be backlash.



Working Accuracy

Running Parallelism



This is the displacement in the height direction between the stage mounting surface and the travel guide of the stage.

The displacement in the vertical direction of the table during stage motion along the full stroke is taken to be the running parallelism.

Orthogonality of Motion

Measure the working displacement of the Y axis when referenced to the X axis of the XY axis stage with a square. The displacement at this time is taken to be the orthogonality of motion.

Perpendicularity of Motion

Place a dial gauge on the Z stage, and measure the displacement with respect to a vertical plate. The displacement at this time is taken to be the perpendicularity of motion.

(Reference) Measurement Result (HPS60-20X)

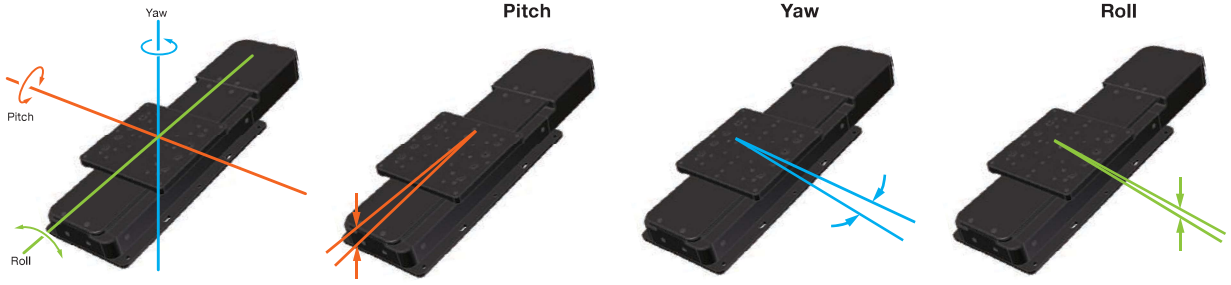
		1		2		3		4		5		6		7		8		9	
Target Position [µm]		0		2500		5000		7500		10000		12500		15000		17500		20000	
Positioning Direction		↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓
Position Deviation [µm]	1st time	0.0	–1.2	–0.1	–0.5	0.2	–0.8	–0.3	–0.5	–0.1	–1.4	–0.4	–1.1	–1.7	–2.3	0.3	0.1	–1.5	–1.8
(Measured Value – Target Position)	2nd time	–0.6	–1.2	–0.2	–0.4	0.1	–0.7	–0.2	–0.6	–0.3	–1.4	–0.8	–0.9	–1.7	–2.5	0.0	–0.1	–1.5	–1.9
	3rd time	–0.4	–0.9	–0.1	–0.8	0.2	–1.3	–0.4	–0.7	–0.1	–1.3	–0.8	–1.2	–1.5	–2.6	0.3	0.0	–1.5	–1.9
	4th time	–0.2	–1.6	–0.3	–0.6	–0.2	–0.9	–0.4	–0.6	–0.3	–1.2	–0.8	–1.2	–1.5	–2.5	0.3	–0.2	–1.5	–2.0
	5th time	–1.0	–1.2	–0.3	–0.6	0.0	–1.4	–0.5	–0.6	–0.2	–1.2	–0.6	–1.1	–1.6	–2.6	0.2	–0.1	–1.7	–2.0
Mean Position Deviation X		–0.44	–1.22	–0.20	–0.58	0.06	–1.02	–0.36	–0.60	–0.20	–1.30	–0.68	–1.10	–1.60	–2.50	0.22	–0.06	–1.54	–1.92
Standard Deviation X		0.38	0.25	0.10	0.15	0.17	0.31	0.11	0.07	0.10	0.10	0.18	0.12	0.10	0.12	0.13	0.11	0.09	0.08
X+S		–0.06	–0.97	–0.10	–0.43	0.23	–0.71	–0.25	–0.53	–0.10	–1.20	–0.50	–0.98	–1.50	–2.38	0.35	0.05	–1.45	–1.84
X–S		–0.82	–1.47	–0.30	–0.73	–0.11	–1.33	–0.47	–0.67	–0.30	–1.40	–0.86	–1.22	–1.70	–2.62	0.09	–0.17	–1.63	–2.00
Lost Motion B=X↑–X↓		0.78		0.38		1.08		0.24		1.10		0.42		0.90		0.28		0.38	
Maximum (Position Deviation) Value S↑+S↓+|B|		1.41		0.63		1.56		0.42		1.30		0.72		1.12		0.52		0.55	
Wobble per Rotation		1.00		0.80		0.80		0.90		0.70		1.60		2.60		1.90			

■Result

Maximum Lost Motion		1.10µm
Average Lost Motion		0.62µm
Positional Repeatability		
Unidirectional Positioning	↑	0.77µm
	↓	0.62µm
Positioning Accuracy		2.97µm

Moment Stiffness (Pitch/Yaw/Roll)

Moment stiffness is the stage strength against load exerted at a point away from the center of the table face.
(The center of the table face does not match the center of gravity of work.)
It indicates the degree of tilt of the table face (sec) when 1N load is exerted at a point 1cm away from the center of the stage face.



Angular Accuracy

Pitch

Pitch is the angle displacement of the table face in the pitch direction while the stage is in motion.
It indicates the maximum angle displacement during full travel.

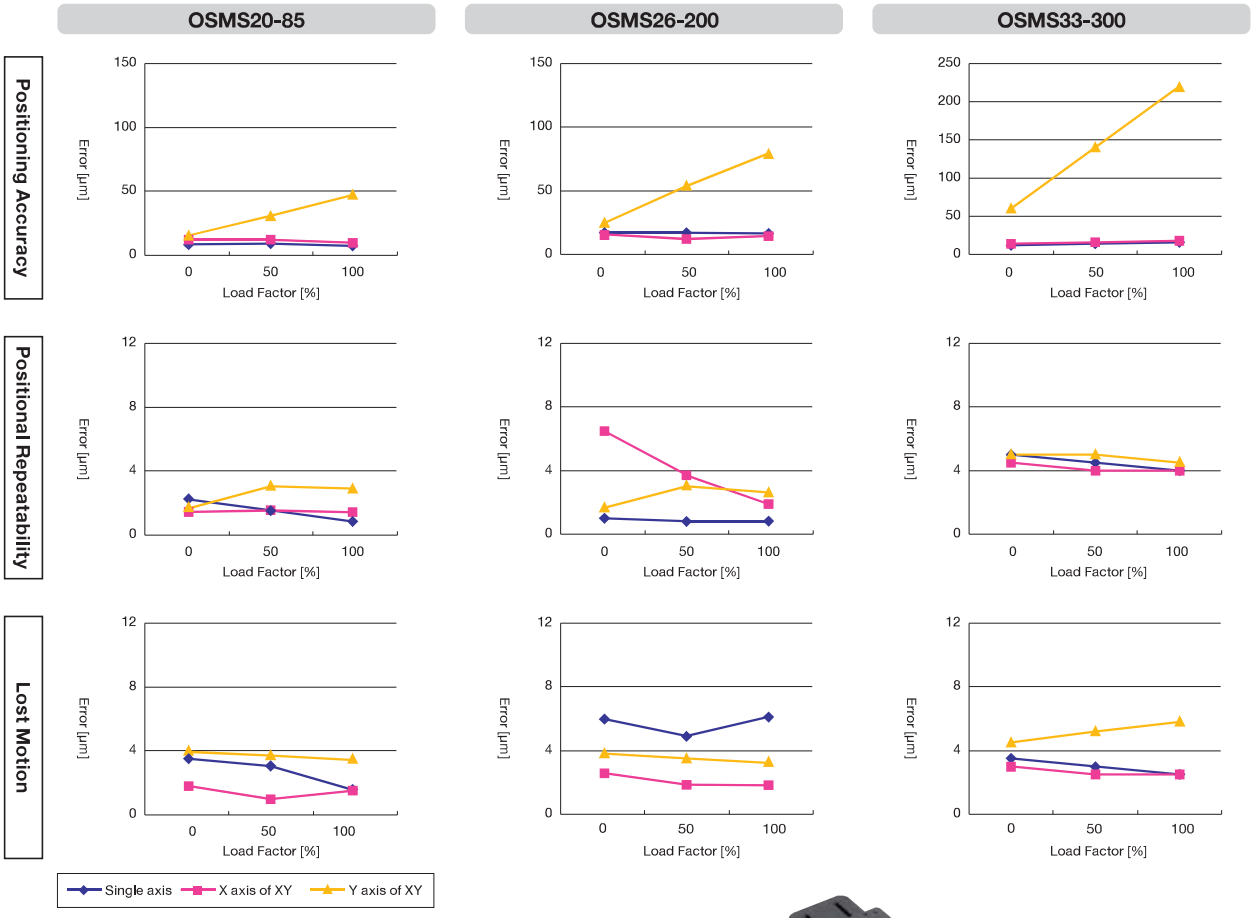
Parallelism

It indicates the parallelism of the table fixed on the stage against the base plane.

Yaw

Yaw is the angle displacement of the table face in the yaw direction while the stage is in motion.
It indicates the maximum angle displacement during full travel.

(Reference) Measurement of XY axis Stage Accuracy



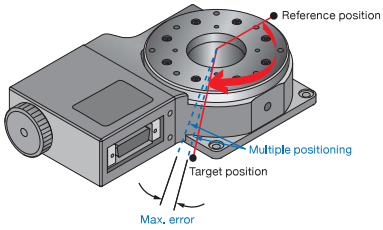
Higher load factor at the travel end of motorized stages increases the deflection on Y axis, resulting in extremely poor positioning accuracy.

Motorized Stages Guide

Measurement of Rotation Stage Accuracy

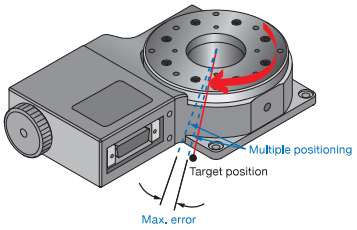
Positional Accuracy

Positioning Accuracy



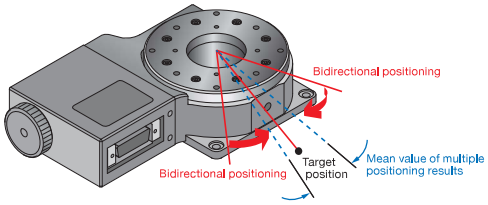
Positioning is performed successively from the reference position in one direction at a fixed interval across almost the entire range of travel. The difference between the target values and measured values at each of the positioning points is calculated, and the difference between the minimum and maximum values is taken to be the positioning accuracy.

Positional Repeatability



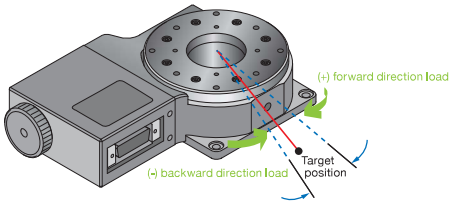
Positioning is performed multiple times from the same direction on any position of the stage, and the maximum value of the deviation amount with respect to the stop position is calculated.
The maximum of those numerical values is taken to be positional repeatability.

Lost Motion



Positioning is performed multiple times in the (+) forward and (–) backward directions on any position (e.g. both ends or center point) of the stage, and the mean value of the deviation amount with respect to the stop position is calculated.
The maximum of the numerical values is taken to be lost motion.

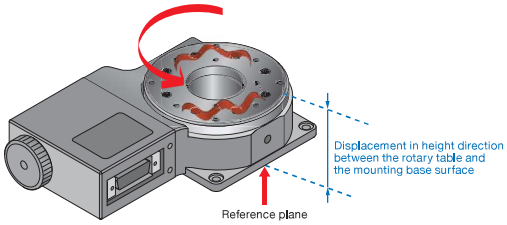
Backlash



A fixed load is applied to the (+) forward or (–) backward direction on any position of the stage.
The total deviation in the respective direction at that time is taken to be backlash.

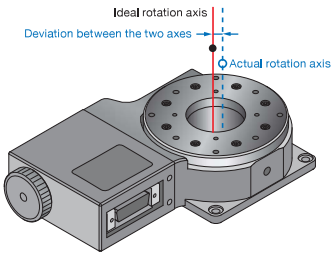
Working Accuracy

Wobble



Wobble is the maximum displacement in the height direction between the rotary table and the mounting base surface when the rotation stage is rotated once.

Concentricity



Concentricity is the difference between the ideal rotation center and the actual rotation center when the rotation stage is rotated once.

(Reference) Measurement Result (OSMS-60YAW)

		0		1		2		3		4		5		6		7		8		9		10		11		12	
Target Position [°]		0		29		58		87		116		145		174		203		232		261		290		319		348	
Positioning Direction		↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓	↑	↓
Position Deviation [°]	1st time	0.000	0.015	–0.009	0.003	–0.010	–0.001	–0.013	–0.004	–0.012	0.001	–0.007	0.009	–0.007	0.009	0.000	0.012	0.004	0.016	0.002	0.015	0.007	0.020	0.000	0.013	–0.001	0.010
(Measured Value – Target Position)	2nd time	0.002	0.015	–0.007	0.003	–0.009	–0.001	–0.012	–0.004	–0.012	0.001	–0.006	0.009	–0.007	0.009	–0.001	0.013	0.004	0.016	0.002	0.015	0.007	0.020	0.000	0.013	–0.001	0.011
	3rd time	0.003	0.015	–0.007	0.003	–0.009	–0.001	–0.012	–0.004	–0.012	0.001	–0.007	0.009	–0.007	0.009	–0.001	0.013	0.004	0.016	0.002	0.015	0.007	0.020	0.000	0.014	–0.001	0.011
	4th time	0.003	0.016	–0.007	0.003	–0.009	–0.001	–0.013	–0.004	–0.012	0.000	–0.006	0.009	–0.007	0.009	–0.001	0.013	0.004	0.016	0.002	0.015	0.007	0.020	–0.001	0.014	–0.001	0.011
	5th time	0.002	0.016	–0.007	0.004	–0.009	–0.001	–0.013	–0.004	–0.012	0.001	–0.007	0.009	–0.007	0.009	–0.001	0.014	0.003	0.016	0.002	0.015	0.007	0.020	–0.001	0.014	–0.001	0.011
Mean Position Deviation X		0.002	0.015	–0.007	0.003	–0.010	–0.001	–0.012	–0.004	–0.012	0.001	–0.007	0.009	–0.007	0.009	–0.001	0.013	0.004	0.016	0.002	0.015	0.007	0.020	0.000	0.014	–0.001	0.011
Standard Deviation X		0.001	0.000	–0.001	0.000	–0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X+S		0.003	0.016	–0.007	0.004	–0.009	–0.001	–0.012	–0.004	–0.012	0.001	–0.006	0.009	–0.007	0.009	0.000	0.013	0.004	0.016	0.002	0.015	0.007	0.020	0.000	0.014	–0.001	0.011
X–S		0.001	0.015	–0.008	0.003	–0.010	–0.001	–0.013	–0.004	–0.012	0.000	–0.007	0.009	–0.007	0.009	–0.001	0.013	0.003	0.016	0.002	0.015	0.007	0.020	–0.001	0.013	–0.001	0.010
Lost Motion B=X ↑ –X ↓		0.0135		0.0107		0.0084		0.0088		0.0125		0.0154		0.0163		0.0136		0.0122		0.0127		0.0130		0.0139		0.0120	
Maximum (Position Deviation) Value S ↑ +S ↓ + | B |		0.0148		0.0116		0.0091		0.0091		0.0129		0.0158		0.0168		0.0142		0.0127		0.0131		0.0133		0.0144		0.0125	

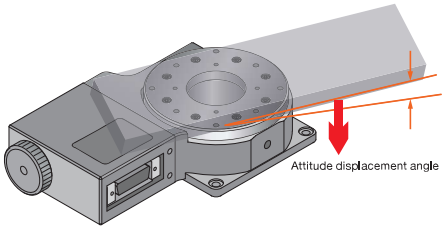
■Result

Maximum Lost Motion		0.0163°
Positional Repeatability		
Unidirectional Positioning	↑	0.0022°
	↓	0.0009°
Positioning Accuracy		0.0330°

Wobble Accuracy	12μm
Parallelism	27μm
Concentricity	8μm

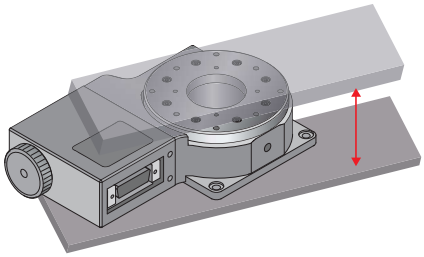
Angular Accuracy

Moment Stiffness



The angular displacement of the stage when unit moment load is applied.

Parallelism



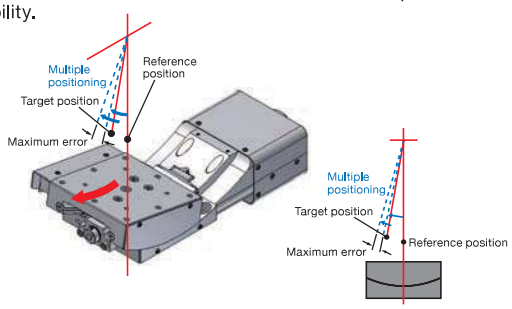
The parallelism of the table fixed on the stage against the base plane.

Measurement of Goniometer Stage Accuracy

Positional Accuracy

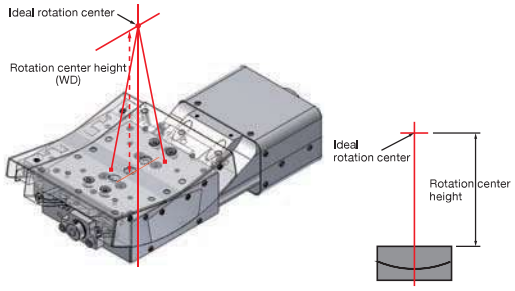
Positional Repeatability

Positioning is performed multiple times from the same direction on any position of the stage, and the maximum value of the deviation amount with respect to the stop position is calculated.
The maximum of those numerical values is taken to be positional repeatability.



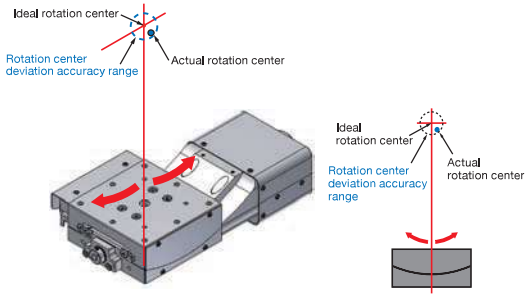
Rotation Center Height

The distance to the top surface of the table from the ideal rotation center.



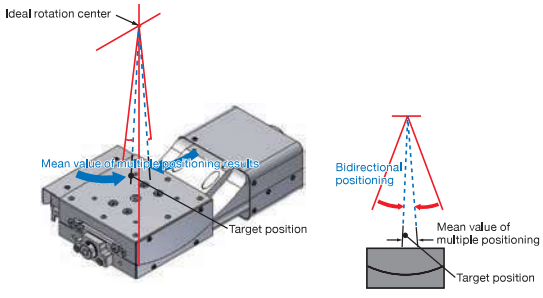
Rotation Center Deviation Accuracy

The maximum deviation range from the ideal rotation center position when a gonio stage is moved throughout the full travel.



Lost Motion

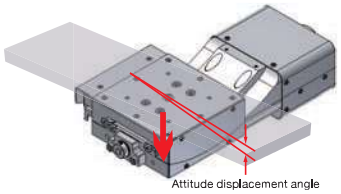
Positioning is performed multiple times in the (+) forward and (–) backward directions on any position (e.g. both ends or center point) of the stage, and the mean value of the deviation amount with respect to the stop position is calculated.
The maximum of the numerical values is taken to be lost motion.



Angular Accuracy

Moment Stiffness

The angular displacement of the stage when unit moment load is applied.



Quality Assurance

We verify the working accuracy when stage assembly is completed. All products we ship are compliant to JIS or have passed company regulations.

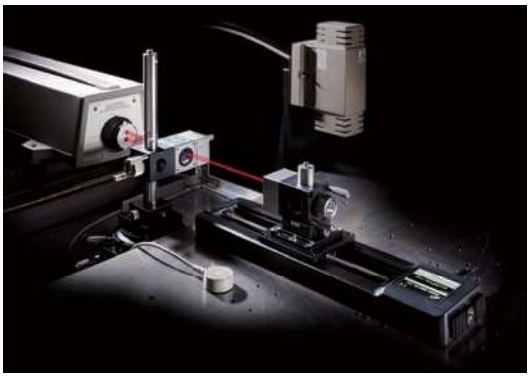
Serial Number

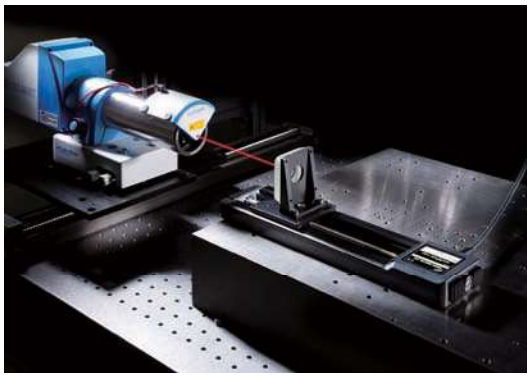
A sticker like the one shown in the picture is affixed onto Sigma Koki products. It shows information such as our company logo, part number, and serial number.

Motorized Stages Guide

Accuracy Verification

Motorized stage accuracy is, in principle, confirmed in compliance with the JIS test code for machine tools (JIS B 6190). In addition, all measuring instruments are traceable standard instruments compliant to the national standard.





Category	Measurement Item	Device Used	Standards
Linear Stage	Positioning Accuracy	Dynamic Calibrator (HP5529A)	JIS B 6190
	Positional Repeatability		
	Lost Motion		
	Running Parallelism	Dial Indicator	Company Standard
	Pitch/Yaw	Auto Collimator	Company Standard

It has to be guaranteed that measured values and indicated values are within the specification range of international standard values. In other words, traceability must be ensured. JIS defined this traceability as “the capacity to trace measurement results back to the domestic measurement standards, with the use of measuring instruments that have gone through a sequence of calibrations with high-ranking standards.”

Linear Stage Traceability System Diagram

State Institution	National Institute of Standards and Technology (NIST)
Manufacturer	Agilent Technologies, Inc.
Calibration Device	Dynamic Calibrator

Category	Measurement Item	Device Used	Standards
Rotation Stage	Positional Repeatability	Rotary Encoder	Company Standard
	Lost Motion		
	Wobble Accuracy	Dial Indicator	Company Standard
Goniometer Stage	Positional Repeatability	Rotary Encoder	Company Standard
	Lost Motion		
	Rotation Center Height	Three Dimensional Instrumentation	Company Standard
	Rotation Center Deviation Accuracy		

Accuracy Check in Assembled State

We check accuracy of motorized stages as a single unit. Regarding the accuracy check in assembled state, we need to confirm use conditions etc. Contact our International Sales Division separately.

Accuracy Check at Delivery Destination

We cannot conduct accuracy check at delivery destinations. We will request a check from organizations such as Japan Quality Assurance Organization as necessary. Contact our International Sales Division separately for more information.

Interpretation of the Specification Table

	Specifications			
1…	Part Number			**-**
2…	Opposite Model			**-**R
3…	Mechanical Specifications	Travel		**mm
4…		Stage Size		**×**mm
5…		Feed Screw		
6…		Positioning Slide		
7…		Stage Material		
8…		Weight		**kg
9…	Accuracy Specifications	Resolution	(Full)	**μm/pulse
			(Half)	**μm/pulse
10…		MAX Speed		**mm/sec
11…		Repeatability		**μm
12…		Positioning Accuracy		**μm
13…		Load Capacity		**N (**kgf)
14…		Moment Stiffness	Pitch	**″/N·cm
			Yaw	**″/N·cm
			Roll	**″/N·cm
15…		Lost Motion		**μm
16…		Backlash		**μm
17…		Parallelism		**μm
18…		Running Parallelism		**μm
19…		Orthogonality of Motion		**μm
20…		Perpendicularity of Motion		**μm
21…		Pitch / Yaw		**″/**″
22…	Sensor	Sensor Part Number		
23…		Limit Sensor		
24…		Origin Sensor		
25…		Proximity Origin Sensor		

	Motor / Sensor Specifications		
26…	Motor	Type	
27…		Motor Part Number	
28…		Step Angle	
29…	Sensor	Power Voltage	
30…		Current Consumption	
31…		Control Output	
32…		Output Logic	

	Compatible Driver / Controller		
33…	Control System	Compatible Driver	
34…		Compatible Controller	

1 Part Number
2 Opposite Model

[Mechanical Specifications]

3 Travel — Indicates the full travel.
4 Stage Size — Size of top table face.
5 Feed Screw — * Precision ground screws * Ball screw
6 Positioning Slide — * Crossed roller guide * Outer rail structure
7 Stage Material — Material used for the product.
8 Weight — Self weight of the product.

[Accuracy Specifications] — Refer to the accuracy verification page for more information. Reference G004 – G007

9 Resolution (Half) — Travel per pulse for half step
(Full) — Travel per pulse for full step
10 MAX Speed — MAX speed of the product (maximum travel speed).
11 Repeatability — Deviation between the measured value and the target value at the positioning point.
12 Positioning Accuracy — Deviation in stop positions when unidirectional positioning is performed multiple times.
13 Load Capacity — Load capacity at the center of the stage.
14 Moment Stiffness — Stage strength against a load exerted at a position away from the center of the table top (the table center and the center of gravity of a work does not match). It indicates the degree of tilt of the table top (″) when 1N load is exerted at the position 1cm away from the center of the stage surface.
Pitch — Stiffness in the direction of tilt around the axis in the horizontal plane perpendicular to the direction of travel when moving the stage for full travel.
Yaw — Stiffness in the direction of tilt around the axis in the vertical plane perpendicular to the direction of travel when moving the stage for full travel.
Roll — Stiffness in the direction of tilt around the axis in the horizontal plane parallel to the direction of travel when moving the stage for full travel.
15 Lost Motion — Deviation between the stop position of forward positioning and that of backward positioning.
16 Backlash — Deviation in each direction when a certain load is exerted in forward and backward directions at an arbitrary position on the stage.
17 Parallelism — The parallelism of the table fixed on the stage against the base plane. * Note that it is different from "Running Parallelism".
18 Running Parallelism — Displacement in the vertical direction of the table during stage motion along the full travel.
19 Orthogonality of Motion — Working displacement in the direction perpendicular to the Y axis when referenced to the X axis motion of the XY axis stage.
20 Perpendicularity of Motion — Displacement between the Z axis stage and the perpendicular optical breadboard when moving the stage for full travel.
21 Pitch — Maximum angle displacement in the direction of tilt around the axis in the horizontal plane perpendicular to the direction of travel when moving the stage for full travel.
Yaw — Maximum angle displacement in the direction of tilt around the axis in the vertical plane perpendicular to the direction of travel when moving the stage for full travel.

[Sensor]

22 Sensor Part Number — Sensor used for the product.
23 Limit Sensor — Indicates whether fitted with a limit sensor.
24 Origin Sensor — Indicates whether fitted with an origin sensor.
25 Proximity Origin Sensor — Indicates whether fitted with a proximity origin sensor.

[Motor Specifications]

26 Type — Type of motor.
27 Motor Part Number — Part number of motor used for the product.
28 Step Angle — Step angle of the motor.

[Sensor Specifications]

29 Power Voltage
30 Current Consumption — Specifications of the sensor.
31 Control Output
32 Output Logic

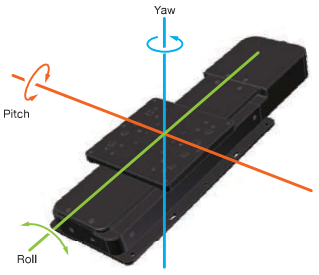
[Compatible Driver / Controller]

33 Compatible Driver — Driver/controller compatible with the product.
34 Compatible Controller

[Memo]

The drawing shows the types of tilt when a linear stage travels.
Towards the direction of travel...

Pitch Rotation around the axis in the horizontal plane perpendicular to the direction of travel
Yaw Rotation around the axis in the vertical plane perpendicular to the direction of travel
Roll Rotation around the axis in the horizontal plane parallel to the direction of travel



Stepping Motors Guide

Operating Environment of Motorized Stages

Use motorized positioning stages within the following operational environment temperature range.
Contact our International Sales Division separately if you desire to use the stages outside the operational environment temperature range.

***Operating environment**
Temperature: 5°C – 40°C
Humidity: 30% – 80% (without condensation)

***Recommended environment**
Temperature: 23°C ±5°
Humidity: 60±10% (without condensation)

Operational environment temperature changes depending on various conditions such as the type of motorized positioning stage, installation and operation conditions.
Avoid use of the stages in the following sites.

- Sites subject to water or oil
- Sites subject to direct sunlight or radiant heat
- Sites subject to dirt and dust
- Sites subject to vibration or impact
- Sites close to fire
- Sites subject to inflammable gas and corrosive gas

Life Cycle

Although the life cycle varies depending on intended use or application, 2,000 to 3,000 hours for linear systems and 1,000 to 1,500 hours/year (about 3 to 4 hours/day) for rotation/goniometer systems are assumed.
Note that the above assumption may not apply to repeated operations (high-speed drive or high-load drive).
Careful maintenance or supply of grease is important for using the products for a long time without a problem.
Reference G122 Maintenance / Cleanroom / Vacuum Grease

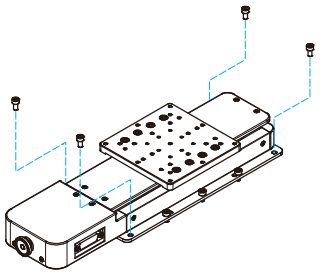
Storage

When not using motorized stages for a long time, store motorized stages wrapped with anti-rust paper, or store in a plastic bag with a desiccant.
Storage Temperature: 0°C – 40°C
Humidit: 10% – 85% (without condensation)

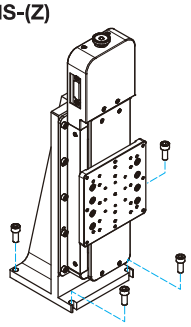
Example of Installation Procedure

Linear

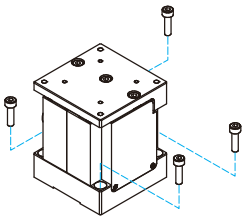
OSMS



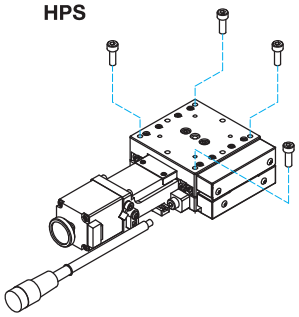
OSMS-(Z)



OSMS-ZF

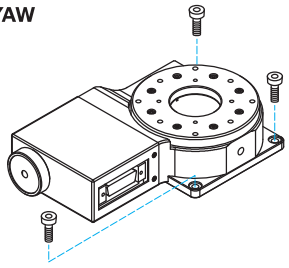


HPS



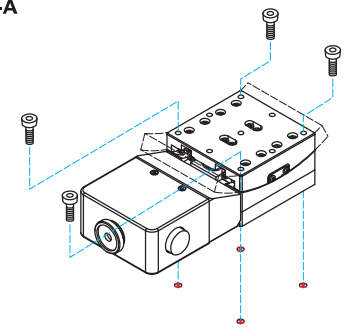
Rotation

OSMS-YAW



Goniometer

SGSP-A



Attention

- Recommended parallelism for stage mounting surface is 0.02 or lower. A product might be warped when it exceeds 0.02, causing abnormal operation.
- When mounting another product on the upper table of a motorized stage, make sure that the stage is not subjected to abnormal external force.
- Foreign substances in tapped holes on the upper table or on the side of the stage will cause malfunction.

Mounting Orientation

The values in the specifications of each product are based on installation on a level surface.
Note that load capacity and other precision values will significantly change for upside down, lateral horizontal and other installation orientations, because mounting on other than the horizontal surface require securing with screws.

Category	Series Name	Positioning Slide	Upside Down	Lateral Horizontal	Lateral Vertical
Linear	OSMS	Outer Rail	○	○	○
	HPS	Ball Guide	○	○	△
	TAMM, HST	Crossed Roller	○	○	△
Rotation	OSMS-YAW	Bearing (120YAW, 180YAW: Crossed Roller)	○	△	△
	HDS-YAW	Bearing	○	△	△
	HST-YAW	Crossed Roller	○	○	△
Goniometer	OSMS-A/B	Ball Guide	○	○	△
	SGSP-A/B	Crossed Roller	○	△	△

○: Possible with limits on load capacity and other accuracy.
△: Possible depending on the model, with limits on load capacity and other accuracy.
×: Not allowed

Please contact our Sales Division regarding other unclear points related to mounting orientation.

Selection Guide

Motorized stages are categorized in several different travel axes and types by the differences in structure or positioning slide.
Since precision, stiffness and price differ depending on the type, select a product ideal for the intended purpose.

Precision	Linear		Rotation		Goniometer	
	Series Name	Relevant Product	Series Name	Relevant Product	Series Name	Relevant Product
High ↓ Bottom	**HST** Crossed Roller Reference G068 –		**HST-YAW** Bearing Reference G086		**OSMS** Ball Guide Reference G090	
	TAMM Crossed Roller Reference G064		**HDS-YAW** Bearing Reference G088			
	HPS Ball Guide Reference G060		**OSMS-YAW** Bearing Reference G082 –		**SGSP** Crossed Roller Reference G096	
	OSMS Outer Rail Reference G032 –					

Stepping Motors Guide

Linear

HPS Series

RoHS CE

Durable linear stages with excellent cost performance.

Motor Variation Compatible with 2 phase stepping motor, α stepping motor and AC servo motor manufactured by Oriental Motor Co., Ltd. in addition to the standard 5 phase stepping motor.

Low Price Integration of the main unit and guide has reduced the number of parts and assembly man-hours, offering low price.

High Durability Ball screws are used for the feed mechanism to achieve both low price and durability.

OSMS Series

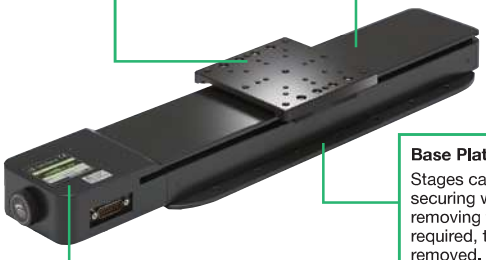
RoHS CE

Stepping motor stages compatible with versatile travel range between 35 to 500mm and can be used in any orientation.

Slim Body These stages are our standard CE-compliant motorized stages, covering motors neatly. These stages offer attractive range of travel by fully utilizing the features of the outer rails.

Line Up Full closed loop control for stage table positioning, and linear encoder version for coordinate counting are standard line up.

Option Various options are available according to the application. Geared motors and electromagnetic brakes are available for high-load specifications and Z axis specifications, respectively. Contact our International Sales Division for more information.



XY axis mounting becomes easier.

Two single axis stages can be assembled directly and used as an XY axis stage without the need of XY-axis mounting plates.

<Line Up>

Part Number	Stage Size [mm]	Wide [mm]	Height [mm]	Travel [mm]	Load Capacity [N]
OSMS20-35(X)	85×85	85	35.7	35	78.4
OSMS20-85(X)	85×85	85	35.7	85	78.4
OSMS26-50(X)	100×100	100	43	50	117
OSMS26-100(X)	100×100	100	43	100	117
OSMS26-200(X)	100×100	100	43	200	117
OSMS26-300(X)	100×100	100	43	300	117
OSMS33-300(X)	120×120	120	56.7	300	196
OSMS33-500(X)	120×120	120	56.7	500	196

Translation Motorized Stages, Flat Z axis - 5 Phase Stepping Motor

Motorized Extended Guide Goniometer

TAMM Series

RoHS CE

Motorized crossed roller stages that combine compactness, low-profile and high durability

High Durability	Line contact with rollers and V groove rail offers high stiffness, low friction and virtually no differential slip, suitable for minute feeding.
Compact/ Low-profile	"Ideal for space-saving and assembly of systems with low optical axis."
Sizes	40×40mm/60×60mm/100×100mm/100×175mm are available.

HST Series

RoHS CE

High Precision	High precision stages with steel body relatively strong against heat, and in which precision ball screws and crossed roller guide are arranged with highest precision.
High Load Capacity	Achieved the maximum load capacity of 392N (40.0kgf).
High Stability	Steel body fitted with large table face can mount anything.

Rotation

OSMS-YAW Series

RoHS CE

Stepping motor driven rotation stages fitted with bearing guide and worm gear feed mechanism

Low Price	Number of parts and assembly time were reduced to lower the price.
Compact/ Low-profile	Ideal for space-saving and assembly of systems with low optical axis.
Sizes	ϕ40/ϕ60/ϕ80/ϕ120/ϕ160mm are available.

HDS-YAW

RoHS CE

High durability rotation motorized stages for minute angle adjustment.

High Durability	Ball screws and steel belts used in the drive mechanism offer excellent durability in minute angles.
Isokinetic	Since it converts linear motion by the ball screw into rotational motion by the steel belt, there is no difference between traveling center and end by rotation speed and resolution.
Sizes	ϕ40/ϕ60/ϕ80/ϕ120/ϕ160mm are available.

Stepping Motors Guide

HST-YAW Series

RoHS CE

High precision and high stability rotation motorized stages fitted with bearing positioning slide

High Precision High repeatability stages fitted with bearing positioning slide.

High Load Capacity Achieved the maximum load capacity of 392N (40.0kgf).

High Stability Steel body fitted with large table face can mount anything.

Goniometer

OSMS Sereis

RoHS CE

High precision motorized goniometers with integrated bearing ways for superior stiffness, accuracy and durability

Their smooth movement is ideal for frequent angle adjustment.

Low Price Number of parts and assembly time were reduced to lower the price.

High Precision High Stiffness High Durability Integrated ball guide structure in which guides are directly processed on the main body minimized machining/assembly errors and improved rotation center accuracy.

SGSP-A/B Series

RoHS

Stepping motor driven motorized goniometer stages fitted with crossed roller guide

High Stiffness High stiffness goniometer stages fitted with excellent abrasion resistant crossed roller guide.

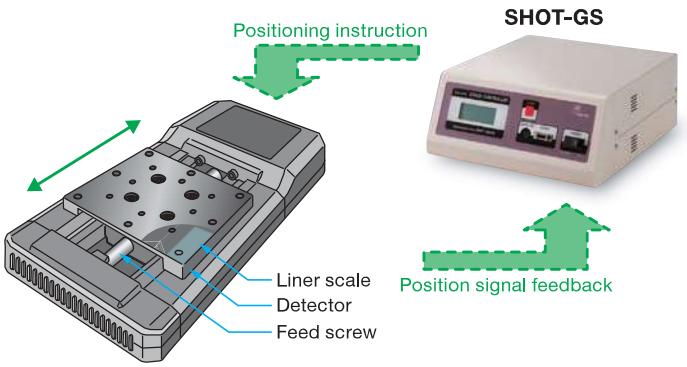
Operability Products with two axes combined offer further flexible alignment.

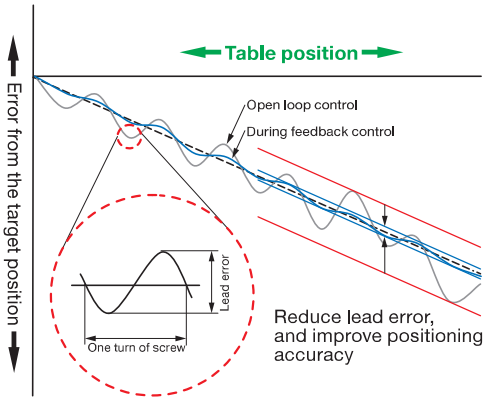
Lightweight Aluminum body offers lightweight.

Full closed loop control system that controls a motorized stage with built-in high resolution compact linear encoder using a special controller.

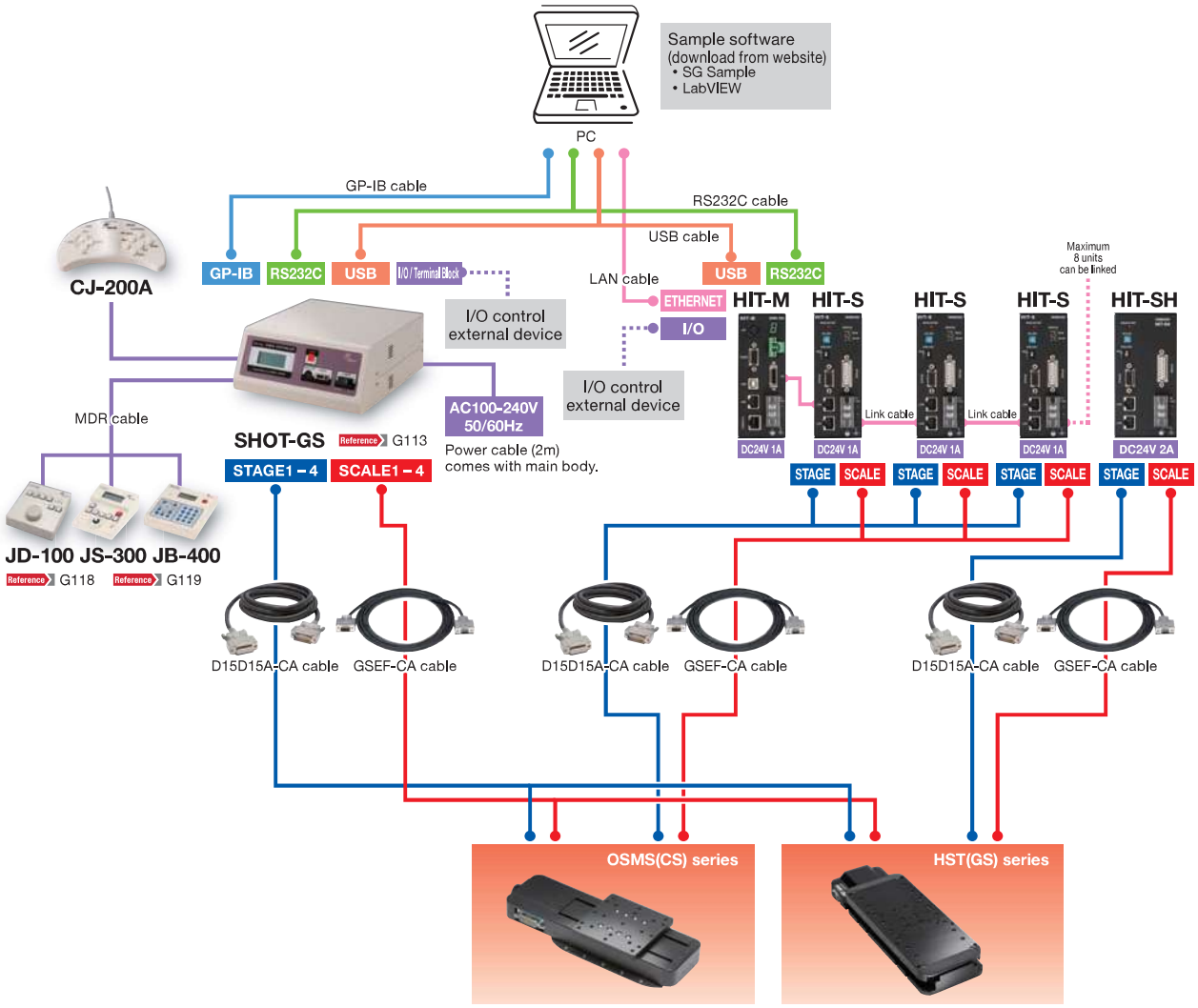
- Linear encoder signal feedback and micro-step drive can minimize lead error, which is inherent to feed screw mechanism.
- Small glass scale of linear expansion coefficient enabled a highly reliable positioning system stable against fluctuations in ambient environment.
- Ideal for use in positioning that requires precision in submicron units, and prolonged driving that is affected by reproducibility by temperature drift.

Full Closed Control System (Image diagram)





System Chart



SGMV series Translation Motorized Stages - AC servo Motor | SGMV

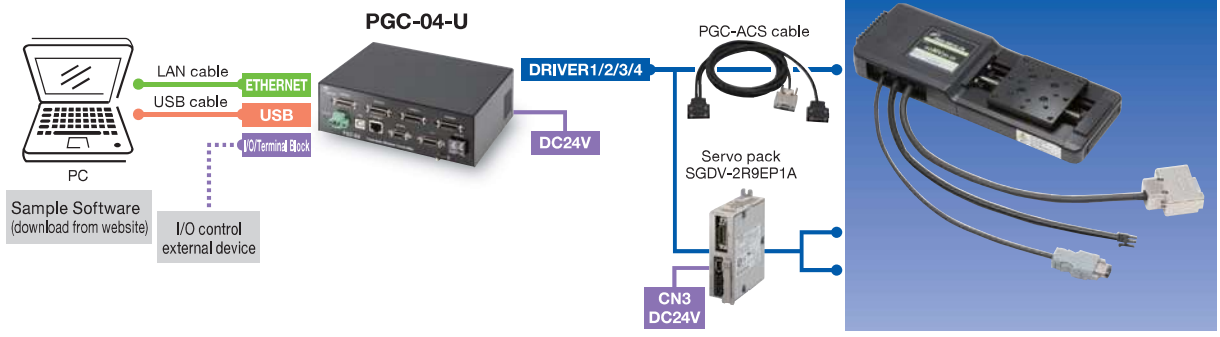
High precision/high stiffness stages driven by AC servo motor. The stage structure unifies the functions of precision linear guide and precision ball screw, places the linear guide, inner block (table) and drive ball screw at the same position, and uses high stiffness U-shape outer rail for the guide to offer small footprint with large load rating.

- AC servo motor stages are recommended for production equipment that runs at high speed accompanied by rapid acceleration/deceleration for reduction of takt time, because they generate sufficient torque in high-speed area and are less subject to position deviation.

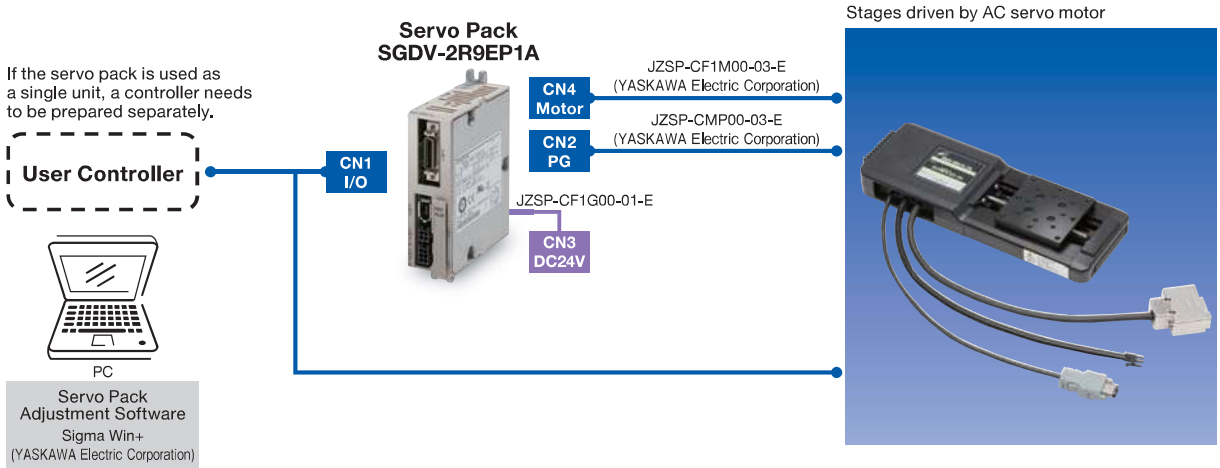
Motor Type	Stepping Motor	Servo Motor
Control Method	Open loop control	Semi-closed loop control
Torque Characteristic	Torque is large in low speed and small in high-speed area	Generate the same torque throughout the low-speed area to high-speed area
Stability at Rest	Very stable under normal conditions, but cannot detect position deviation caused by external force, etc.	Deviation may occur within the range of in position, but it returns to the original position by detecting position deviation due to external force, etc. with an encoder.
Recommended Application	Applications that exert light load and require stability at rest, such as positioning and measurement in optical systems or small areas	Applications that do not allow position deviation even during high-speed operation or load fluctuation, such as production lines

- U-shaped rail with integral ball screw offers light weight, and minimized deflection for high stiffness.

Configuration Example Using Stage Controller



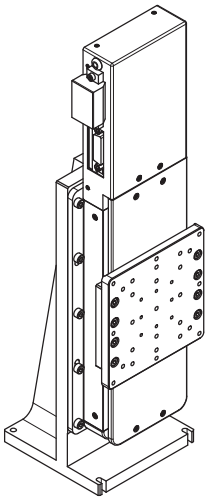
Configuration Example Using Servo Pack



Electromagnetic Brake Option

A normally closed type electromagnetic brake holds the motor stationary when the power is off. It is normally used to prevent the movable table from falling when the stage is mounted in a vertical configuration.

OSMS26-100(Z)
Example of electromagnetic brake assembly dimensions



- Ordering this option changes the stepping motor or servo motor used to an electromagnetic brake equipped motor.

Guide

- Contact our Sales Division for changing to electromagnetic brake. Or use the mortorized stage system question sheet. Reference G123 WEB Reference Catalog Code W9500
- To unlock the brake, 24VDC power is required.

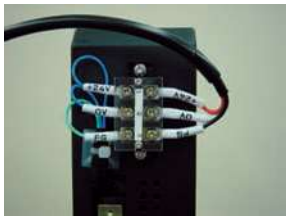
Attention

- The external dimensions of the stage will change as the electro-magnetic brake equipped motor is longer than the standard motor.

Wiring Example

Lead wire for brake of electromagnetic brake equipped motor

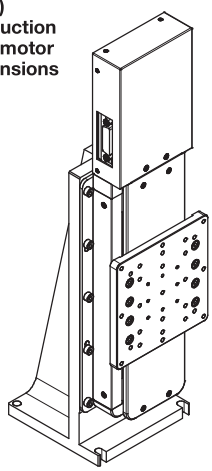
Stage controller side



Motorized stage side

Gearhead motor Option

OSMS26-100(Z)
Example of reduction gear equipped motor assembly dimensions



Deceleration, high torque and high resolution can be achieved by changing to reduction gear equipped motors. Effective for downsizing and weight saving of systems since it does not require power supply.

- Change 5-phase stepping motors or servo motors used for Z axis motorized stages to reduction gear equipped motors.

Guide

- Contact our Sales Division for changing motors. Or use the motorized stage system question sheet.
Reference G123 WEB Reference Catalog Code W9500

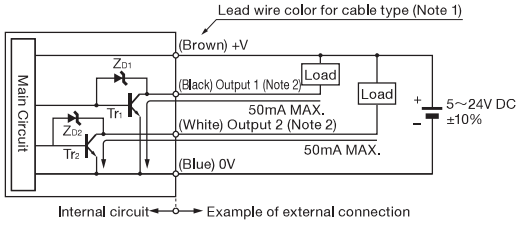
Attention

- Outline drawing may change because motors are changed with reduction gear equipped motors.

Limit Sensor

- Regarding the limit sensor used for motorized stages, refer to the specification of each product.
- We will change output operations or add a limit sensor on special orders.

■Input/Output Circuit Diagram (NPN output type)



■Output Operation

	Lead Wire Color	Output Operation
Output 1	Black	ON when light enters (NORMAL CLOSE)
Output 2	White	ON when shaded (NORMAL OPEN)

Controllers

	GSC-01	GSC-02	SHOT-702	GIP-101
				
	参照 G108	参照 G109	参照 G110	参照 G111
	Standard driver (full step/half step)			
	0.75A/phase rated motor or lower			
	Single axis	1 – 2 axes	1 – 2 axes	Single axis
Stepping Motor Stage: OSMS-ZF, OSMS-40/60YAW, SGSP-ACT-B0, OSMS-40 series	D15RP-CA cable	D15RP-CA cable	D15RP-CA cable	D15RP-CA cable OSMS-60/80ZF OSMS-40:Not compatible
Stepping Motor Stage: TAMM40/60, OSMS-60, HPS, HDS, OSMS20/26 series	D15RP-CA cable (OSMS20/26: D15D15A cable)	D15RP-CA cable (OSMS20/26: D15D15A cable)	D15RP-CA cable (OSMS20/26: D15D15A cable)	D15RP-CA cable (OSMS20/26: D15D15A cable)
Stepping Motor Stage: OSMS33, OSMS-80/120/160YAW, TAMM100, KLSA/KLSS series	Not compatible	Not compatible	D15D15A cable	Not compatible * OSMS-YAW compatible D15D15A cable
Stepping Motor Stage: HST series	Not compatible	Not compatible	Not compatible	Not compatible
Stages with built in Glass-scale Encoder: OSMS(CS) series	Not compatible	Not compatible	Not compatible	Not compatible
Stages with built in Glass-scale Encoder: HST(GS) series	Not compatible	Not compatible	Not compatible	Not compatible

Part Name		1 axis Stage Controller	2 axis Stage Controller	2 axis Stage Controller	Intelligent Positioning System
Part Number		**GSC-01**	**GSC-02**	**SHOT-702**	**GIP-101**
Primary Functions	Controller Function	○	○	○	○
	Number of Control Axes	1	2	2	1
	Stored Program Control	—	△	—	—
	Feedback Control	—	—	—	—
	Circular Interpolation Control	—	—	—	—
	Linear Interpolation Control	—	—	—	—
	Driver Function	Standard	Standard	Standard	Micro-step
	Micro-step (Max. Division)	2	2 (half step only)	250	250
	Driving Current (A/phase)	0.8	0.8	1.1	0.75
General Specifications	Power Voltage	DC24V 1.2A	DC24V 2A	AC100 — 240V 50/60Hz	AC100–240V 50/60Hz
	Power Consumption	30VA	48VA	50VA	100VA
	External Dimensions (W×H×Dmm)	47×90×125	180×40×125	260×70×280	145×205×81
	Weight (kg)	0.4	0.7	2.8	2.0
Interface	GP-IB	—	—	—	—
	RS232C	○	○	○	○
	USB	—	—	—	—
	Ethernet	—	—	—	—

HSC-103	SHOT-302GS	SHOT-304GS	HIT-M	HIT-S/HIT-SH	PGC-04-U
					
参照 G112	参照 G113	参照 G113	参照 G114	参照 G114	参照 G116
Micro-step driver					
0.75, 1.4A/phase rated motor or lower	1.4A/phase rated motor or lower		1.4A/phase rated motor or lower		
1 – 3 axes	1 – 2 axes	1 – 4 axes	1 – 8 axes		4 axes
D15RP-CA cable (OSMS-40ZF SGSP-ACT-B0 Not compatible)	D15RP-CA cable	D15RP-CA cable	D15RP-CA cable (*HIT-SH:Not compatible)		Driver/ MINI-CA-SG cable
D15RP-CA cable (OSMS20/26: D15D15A cable)	D15RP-CA cable (OSMS20/26: D15D15A cable)	D15RP-CA cable (OSMS20/26: D15D15A cable)	D15RP-CA cable (OSMS20/26: D15D15A cable) (*HIT-SH:Not compatible)		Driver/ MINI-CA-SG cable (OSMS20/26: DAC-SG cable)
D15D15A cable	D15D15A cable	D15D15A cable	D15D15A cable (*HIT-SH:Not compatible)		Driver/DAC-SG cable
D15D15A cable	D15D15A cable	D15D15A cable	D15D15A cable (*HIT-S:Not compatible)		Driver/DAC-SG cable
Not compatible	D15D15A/GSEF cable	D15D15A/GSEF cable	D15D15A/GSEF cable (*HIT-SH:Not compatible)		Not compatible
Not compatible	D15D15A/GSEF cable	D15D15A/GSEF cable	D15D15A/GSEF cable (*HIT-S:Not compatible)		Not compatible

3 axis Stage Controller	2 axis Stage Controller	4 axis Stage Controller	Extensible Stage Controller (Master)	Extensible Stage Controller (Slave)	Pulus Generating Controller
HSC-103	**SHOT-302GS**	**SHOT-304GS**	**HIT-M**	**HIT-S/HIT-SH**	**PGC-04-U**
○	○		○	–	○
3	2	4	1 – 8	–	4
○	○		○	–	○
–	Glass scale		*Glass scale		–
○	○		○	–	○
3 axes	2 axes		3 axes	–	3 axes
Standard	Micro-step		–	Micro-step	–
40	250		–	250	–
0.75/1.4	1.4		–	1.1/1.4	–
AC100–240V 50/60Hz	AC100–240V 50/60Hz		DC24V 1A (HIT-SH: 2A)		DC24V 1.4A
200VA	160VA	300VA	24VA		34VA
260×90×280	270×118×302		130×120×50 (HIT-SH: 130×120×65)		180×140×60
3.3	5.5	6.5	0.62	0.63/0.72	1.0
–	○	○	–	–	–
–	○	○	○	–	–
○	○	○	○	–	○
–	–	–	○	–	○

Drivers

Part Name		
Part Number		
Primary Functions	Driving Motor	
	Drive System	
	Driving Current (A/phase)	
	Excitation System	
	Number of Divisions	
	Input Signal	
	Input Logic	
	Max. Response Frequency	
	Auto Current Down OFF Input	
	Motor Excitation OFF Input	
	Micro-step Selection Input	
	Origin Excitation Timing Output	
General Specifications	Input Voltage	
	Operating Temperature Range	
	External Dimensions (W×H×Dmm)	
	Weight (kg)	

Stage	Motor Used	Basic Step Angle [°]	Phase Current [A/phase]	External Dimensions [W×H×Dmm] (excluding shaft)
OSMS40-5ZF-0B SGSP-ACT series	PK513PA-C21 PK513PB-C9	0.72	0.35	20×20×72
OSMS20-35 OSMS20-85 HDS-60 series	TS3664N4E10		0.75	24×24×31
OSMS-40/60YAW series	TS3664N4E10			24×24×31
OSMS26 OSMS60-ZF SGSP-60A/B TAMM OSMS-40/60 OSMS-80/120/160YAW HPS HDS-80/120 series	PK523HPB-C12			28×28×32
	PK525HPB-C4			28×28×51.5
OSMS80-20ZF-0B	A7177-90215KTG	0.036		28×28×61.3
OSMS33 series	TS3667N43E967	0.72		42×42×47
HST-120/160YAW series	PKP546N18B		1.4	60×60×56.5
HST-50 / HST(GS)-50 HST-100 / HST(GS)-100 HST-200 / HST(GS)-200 series	PKP544N18B PKP546N18B			60×60×46.5 60×60×57.5 60×60×87





Compact Driver	Compact Driver	Compact Micro-step Driver	Micro-step Driver	Micro-step Driver
SG-5MA	**SG-5M**	**MC-S0514ZU**	**SG-514MSC**	**MC-7514PCL**
5-phase stepping motor				
Bipolar constant current pentagon drive				
0.25 — 0.85	0.5 — 1.4	0.35 — 1.4	0.3 — 1.4	0.5 — 1.4
Full/Half step		Micro-step	Micro-step	Micro-step
Two types 1, 2		16 types*1 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250	16 types 1, 2, 2.5, 5, 8, 10, 20, 25, 40, 50, 80, 100, 125, 200, 250	16 types 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250
1 clock input method 2 clock input method		1 clock input method 2 clock input method	2 clock input method	1 clock input method 2 clock input method
Photocoupler input		Photocoupler input	C-MOS equivalent negative logic input*2	Photocoupler input
50kpps		500kpps	500kpps	500kpps
None		None	None	Equipped
Equipped		Equipped	Equipped	Equipped
None		Switching by the number of division setting switch	4 bit signal input	Switching by the number of division setting switch
None		Equipped	Equipped	Equipped
DC20 — 40V 1.5A Max	DC20 — 40V 3A Max	DC24 ±5% 3A Max	For motor drive: DC24 — 36V ±10% 2A or lower For logic: DC5V ±5% 0.1A or lower	AC100 — 230V±10% 50/60Hz 3.5A Max
0 — 40°C		0 — 40°C	0 — 40°C	0—40°C
77×32×45		99×28×47	91×36×70	170×130×39
0.1		0.1	0.2	0.75

*1: Dip switch can be used for switching 2 series/3 series
*2: PGC-14-U; Not compatible

○	×	○	○	×
○	○	○	○	○
○	○	○	○	○
○*	○	○	○	○
○*	○	○	○	○
○*	○	○	○	○
○*	○	○	○	○
×	○ * DC36V	○	○ * DC36V	○
×	○	○	○	○

* Can be used with 0.75A/phase.

Software

Software for checking operation of controllers and stages, automating measurements, and supporting program development.

Sample Softwares

SG Sample

RS232C interface
stage controller control software.
In addition to remote control from a PC,
simple program control using Excel is possible.

LabVIEW Sample Program

Sample module for controlling stages
using the graphical programming environment LabVIEW
of National Instruments Corporation

Compatible with LabVIEW 5.1/6i/7.1/8.6/2010/2012/2014/2015

Special Application Softwares

Software for Automatic Positioning and Measurement

SGADVANCEE Reference G024

Trial Version

SGADVANCE is software for making measurements and automatically collecting data by connecting to motorized positioning devices, measuring instruments, and controllers.
Designed to work with Excel, instructions for making the measurements, the resulting measurement data and additional analysis can all be incorporated into a single spreadsheet. Using SGADVANCE makes it is possible to easily build measurement and control systems for a wide variety of measurement environments.

WEB Reference Catalog Code W9088

Compatible with 32/64 bit version of Windows®Vista/7/8/8.1/10
* Refer to our website for the latest support status.

Software for Liquid Crystal Evaluation System

SGLCESE

Being compatible with major color luminance meters and spectroradiometers, this software packaged luminance, chromaticity, viewing angle characteristics and other functions required for flat panel evaluation.

Compatible with 64 bit version of Windows®XP/Vista/7
* Refer to our website for the latest support status.

Software for Positioning, Measurement & Analysis

SGMACSE

Trial Version

Software with enhanced functions such as real-time graphical display, analysis or correction of measurement data and RS232C binary data exchange.

Compatible with 32 bit version of Windows®XP/Vista/7
* Refer to our website for the latest support status.
* This is unavailable on Windows7.

Library for Program Development

Component Software for VB.NET

SGNETXE

RS232C/GP-IB/USB communication library enabling control programming for stage controller with VB.NET.

Compatible with 32/64 bit version of Windows®XP/Vista/7/8/8.1/10
* NET Framework3.5 or later version is required.

ActiveX for Positioning & Measurement

SGACTXE/SGPATXE/SGSFSXE

RS232C/GP-IB/USB communication library enabling control programming for stage controller with VB6.0 or VBA.

32 bit Windows®-only
* Windows®Vista/7 does not work with USB.

Guide

▶Contact our Sales Division for more information. Information is also available on WEB.

Part Name	Part Number
Software for Automatic Postioning and Measurement	SGADVANCEE
Software for Positioning, Measurement & Analysis	SGMACSE
Software for Liquid Crystal Evaluation System	SGLCESE

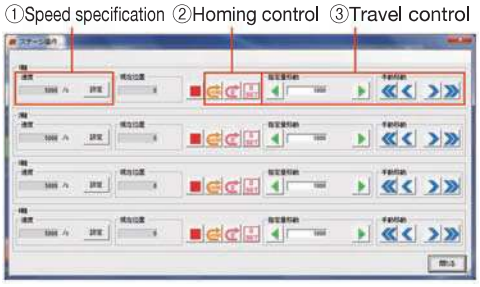
Part Name	Part Number
Component Software for VB.NET	SGNETXE
ActiveX for Positioning & Measurement	SGACTXE
	SGPATXE
	SGSFSXE

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

(SHOT-102/302GS/304GS/702, FINE-01γ/503, PKA-ID-02, OMEC-2BG/4BG, GIP-101, PGC-04-U, HIT-M, HSC-103)

WEB Reference **Home > Support > Software Information > Sample Software: SG Sample**

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.

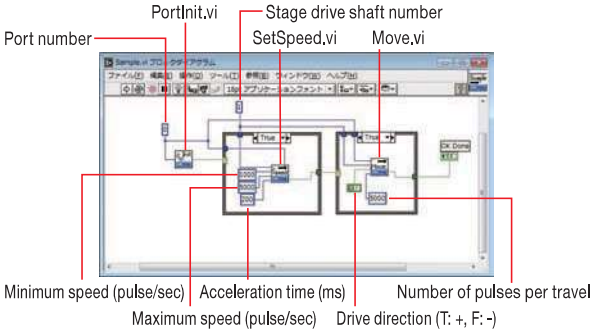


Simple operations are possible such as travel by specifying an axis (pulse instruction), homing or jog operation.

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) RS232C/GP-IB

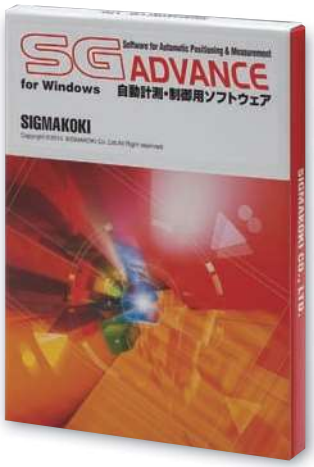
LabVIEW application is available for LabVIEW users.



Other: 30 Day Trial Version | SGADVANCEE

SGADVANCEE is software for collecting data or measuring using automatic positioning equipment, measuring instrument or controller, and is offered 30 days for free.
Using SGADVANCEE makes it is possible to easily build measurement and control systems for a wide variety of mea
WEB Reference http://www.global-optosigma.com/en_jp/software/product-download_en.html
Installing the trial version will require entering a serial number. The serial number for the trial version is shown on the download page.

Software for Automatic Positioning and Measurement | SGADVANCEE



Part Number	SGADVANCEE
	USBKEY-SGADVANCE

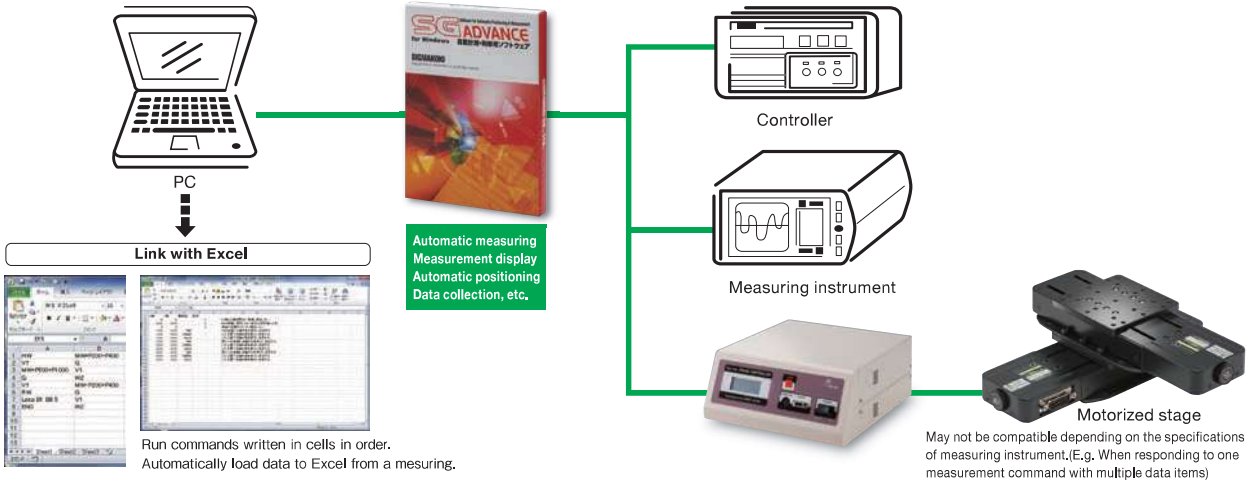
SGADVANCEE is software for making measurements and automatically collecting data by connecting to motorized positioning devices, measuring instruments, and controllers.
Designed to work with Excel, instructions for making the measurements, the resulting measurement data and additional analysis can all be incorporated into a single spreadsheet. Using SGADVANCEE makes it is possible to easily build measurement and control systems for a wide variety of measurement environments.

[Terminal Measurement Function]
- Positioning and measurement can be performed by listing and executing commands in an Excel sheet.
- Continuous process or step-by-step process can be selected.
- Use of SGTERM's custom control scripts, "If", "Jump", "Loop" and "Print" in an Excel worksheet simplifies processing control.
- High speed operation can be achieved with buffering sequences in the Excel sheet before operation.

[Program Measurement Function / Excel Instruction Measurement Function]
- Multiple repetition of positioning/measurement sequence is easily accomplished.
- Various functions are available such as manual or time-series measurement and count presetting.
- By creating Excel instruction files, both stage control and measurement with a measuring instrument can be performed simultaneously.
- Using this software in combination with motorized positioning devices offered by SIGMAKOKI, a positioning and measurement system can be easily configured.
- Measurement equipment or SIGMAKOKI motorized stage can be controlled separately with Excel Instruction Measurement Function.
- Program Measurement Function / Excel Instruction Measurement Function can operate multi-axis motorized stages.

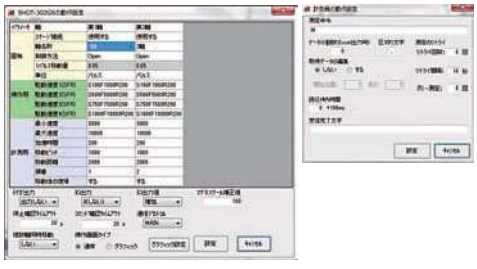
- Measurement results are output to an Excel sheet making it easy to analyze and manage measured data.
- System configuration data can be saved as a "*.SGA" file, which facilitates setting of the same process again.
- RS232C*1/GP-IB*2/USB*3/LAN interfaces are supported.
- Compatible with Windows® XP/Vista/7/8/8.1*4/10
- USB Key (Option) is a software key to activate SGADVANCEE on any PC.

*1 RS-232C ports are available from COM1 to COM8.
*2 As for GP-IB, only GP-IB of National Instruments Corporation is supported.
*3 USB is only supported for SHOT-302/304 series, HIT-M, FINE-01γ/503 series, and OMEC-2BG/4BG series.
*4 Conditions when used with Windows®7/8/8.1/10 are as follows.
• Administrative right is required for installation as well as execution.
• 32/64 bit versions are supported. Check on our website for the latest support status.

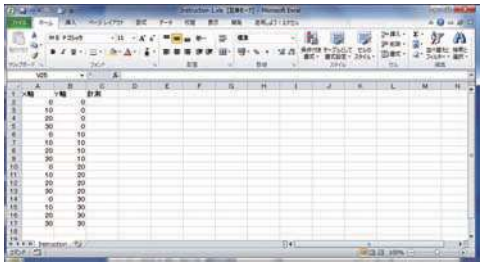


Register a device

Operation settings



Create an instruction file with Excel



Reasons to recommend dedicated software

Many people seem to use Excel for statistics or analyzing various kinds of data.
In analyzing from standpoint of engineering, multi-points measurements are necessary, so one of the commonly method is to use automated stages and measurement systems.
In most cases, engineering analysis calls for multi-points measurement, so one of the common method is to use motorized stages and measurement devises. However, sometimes dedicated software attached to such kind of devices cannot work well with an external devices.
Therefore, we think there are still many cases such as moving a device little by little, reading the value of the instrument and inputting manually in Excel cell in order to make a data base.
One solution for this is to develop a dedicated program from scratch, however, it takes too much time and cost.
Also, in some cases, it may be troublesome for many researchers to make those control programs.
SGADVANCEE is a software that is generalized by giving weight to the basic function such as “automated positioning” and “inputting data to Excel spreadsheet” so as to collect various data automatically.
Even thought you are novice at programming, you can easily collect data by selecting controller and interface and setting up measurement command.
For experts, it is possible to make flexible measurement patterns by using this software in combination with Excel macros expanded for measurement and control.
For programmers, it is possible to shorten coding and debugging time because you can confirm the control flow and understand specifics characteristics of equipment in developing dedicated software.

Motorized Stage/Controller/Cable Sets

RoHS

These sets include all components neccesary to operate the motorized stages they include.

X axis Set | HPS60-20X-SET

X axis Set/This set enables automatic positioning along one linear axis. The controller includes a manual Jog control.

- Stage Size : 60×60mm
- Travel : 20mm
- Load Capacity : 49N [5kgf]
- Cable lengh : 3m

Products Name	Part Number	Quantity	Reference
High Performance Motorized Stages	**HPS60-20X-M5**	1	G028
Single axis Stage Controller	**GSC-01**	1	G108
AC Adapter	**PAT-001-POW1**	1	–
D15RP Cable	**D15RP-CA-3**	1	G120

XY axis Set | HPS120-60XY-SET

XY axis Set/This set enables XY axis automatic alignment and program operation without using a PC.

- Stage Size : 120×120mm
- Travel : 60mm
- Load Capacity : 88.2N [9kgf]
- Cable lengh : 3m

Products Name	Part Number	Quantity	Reference
High Performance Motorized Stages	**HPS120-60X-M5**	2	G028
2 axis Stage Controller	**GSC-02**	1	G109
Joystick Terminal	**SJT-02**	1	G118
AC Adapter	**PAT-001-POW1**	1	–
D15RP Cable	**D15RP-CA-3**	2	G120

For easier positioning ... Manual stages which can be used in combination.

■Rotation Stages
KSP-606M

Reference E164

■Z Axis Steel Extended Contact Translation Stages-Footprints
TSD-603

Reference E090

Xyθ axis Set | HPS/HDS120-XYθ-SET

XYθ axis Set/Motorized stage system for minute positioning and angle adjustment such as for marking of semiconductor wafers.

- It can be controlled externally using Ethernet/RS232C/USB interface.Also, the number of axes is extendable by adding slave controllers (Part Number: HIT-S).
- Stage Size : ϕ120mm
- Travel : ±6° [θ axis]
  : 60mm [XY axis]
- Load Capacity : 58.8N [6kgf]
- Cable lengh : 3m

Products Name	Part Number	Part Number	Reference
High Performance Motorized Stages	**HPS120-60X-M5**	2	G028
High durability automatic rotation stage	**HDS-120YAW**	1	G088
Extensible Stage Controller (Master)	**HIT-M**	1	G114
Extensible Stage Controller (Slave)	**HIT-S**	3	G114
AC Adapter		1	–
D15RP Cable	**D15RP-CA-3**	3	G120

XYZ axis Set | OSMS20-XYZ-SET

XYZ axis Set/This set is best suited for measuring and inspection equipment and for XYZ axis automatic positioning of workpieces.

- It can be controlled externally using RS232C/GP-IB/USB interface, or manually using a joy stick (JS-300).
- Stage Size : 60×60mm
- Travel : 85mm [XY axis], 10mm [Z axis]
- Load Capacity : 29.4N [3kgf]
- Cable lengh : 3m

Products Name	Part Number	Part Number	Reference
OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor	**OSMS20-85(X)**	2	G032
Translation Motorized Stages, Flat Z axis - 5 Phase Stepping Motor	**OSMS60-10ZF**	1	G078
4 axis Stage Controllers	**SHOT-304GS**	1	G113
Joystick Terminal	**JS-300**	1	G119
D15RP Cable	**D15RP-CA-3**	1	G120
D15D15A Cable	**D15D15A-CA-3**	2	G120
MDR14-CA-2.5 Cable	**MDR14-CA-2.5**	1	G121

Make it more convenient ... Software for stage control

■Software for Automatic Positioning and Measurement SGADVANCEE

Reference G024

High Performance Motorized Stages
Stage Size 60 × 60 mm / 100 × 80 mm / 120 × 120 mm

HPS

RoHS CE

Motorized stages with ball screws and extended contact bearings offer mid to upper level performance at a low price.

- Ball screws improve durability compared to the existing lead screw driven TSDM series.
- Extended contact ball guides make it possible to offer a price lower than the crossed roller guide TAMM series.

Guide

- Please contact us when assembled into XYZ axis or mounted upside down on the ceiling or vertically on wall.
- Opposite model or various motor changes are optionally available. Reference G030

Specifications

Part Number			HPS60-20X-M5	HPS80-50X-M5	HPS120-60X-M5
Mechanical Specifications	Travel [mm]		20	50	60
	Stage Size [mm]		60×60	100×80	120×120
	Feed Screw		Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead
	Positioning Slide		Ball guide	Ball guide	Ball guide
	Stage Material		Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized
	Weight [kg]		0.6	1	1.5
Accuracy Specifications	Resolution	(Full) [μm/pulse]	2	2	2
		(Half) [μm/pulse]	1	1	1
	MAX Speed [mm/sec]		10	10	10
	Positioning Accuracy [μm]		15	25	25
	Positional Repeatability [μm]		±1	±2	±2
	Load Capacity [N]		49 (5kgf)	73.5 (7.5kgf)	98 (10kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.4	0.5	0.5
		Yaw [″/N·cm]	0.4	0.5	0.5
		Roll [″/N·cm]	0.3	0.2	0.2
	Lost Motion [μm]		1	2	2
	Backlash [μm]		1	2	2
	Parallelism [μm]		30	40	50
	Running Parallelism [μm]		10	10	10
	Pitch [″] / Yaw [″]		25/25	30/25	30/25
Sensor	Sensor Part Number		Micro photo sensor: GP1S097HCZ(Sharp Corporation)		
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK523HPB-C12 (□28mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V ±10%
	Current Consumption	60mA or lower (20mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA When load current is 16mA, the residual voltage is under 0.4V When load current is 50mA, the residual voltage is under 0.7V
	Output Logic	In the case of light shielded ,output transistor OFF (No conduction): Limit sensor In the case of light shielded ,output transistor ON (Conduction): Origin sensor

Compatible Driver / Controller

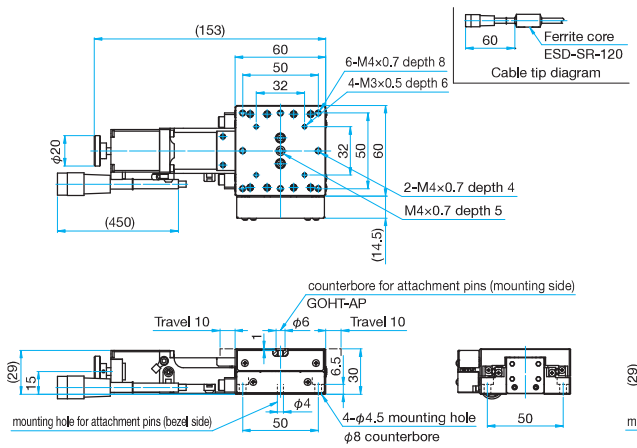
Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

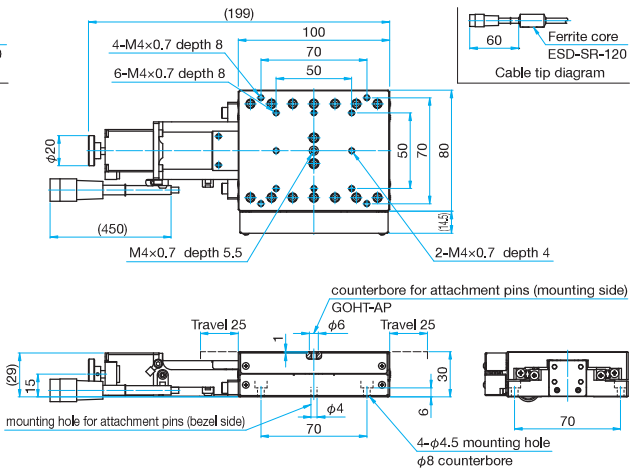
HPS60-20X-M5

Hexagon socket head cap screw M4×12…4 screws



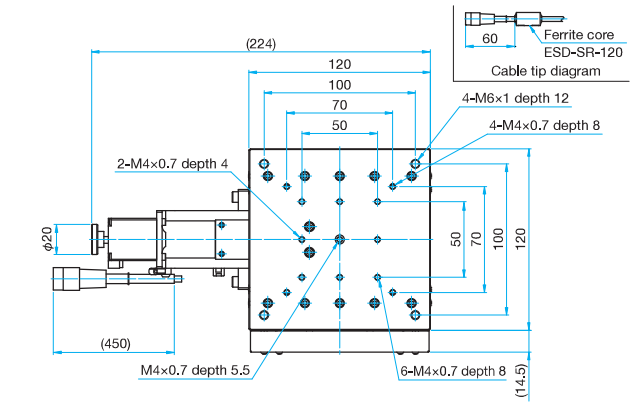
HPS80-50X-M5

Hexagon socket head cap screw M4×12…4 screws

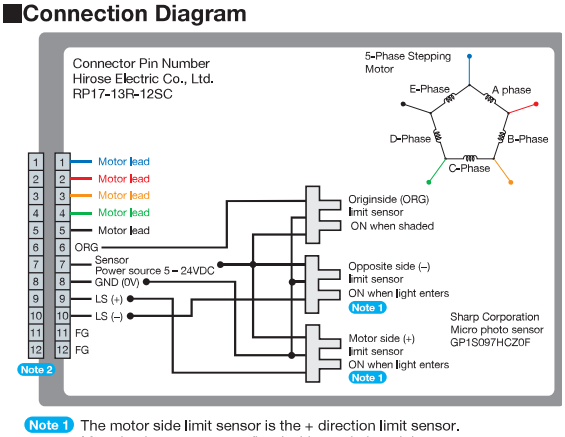


HPS120-60X-M5

Hexagon socket head cap screw M6×12…4 screws



■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with proximity origin sensors.

Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

■Compatible Controllers / Drivers and Cables

Controller

GSC-01	[1 axis]
GSC-02	[2 axes]
SHOT-702	[2 axes]
GIP-101	[1 axis]
HSC-103	[3 axes]
SHOT-302GS	[2 axes]
SHOT-304GS	[4 axes]
HIT-M·HIT-S	[8 axes]
PGC-04-U	[4 axes]

Reference G108 – G117

Cable

D15RP-CA

Reference G120

Stage

HPS60-20X-M5
HPS80-50X-M5
HPS120-60X-M5

Driver

Drivers

Reference G020 – G021

Cable

MINI-CA-SG

Reference G120

High Performance Motorized Stage Options | HPS Option RoHS

Specification Method of Option Code

Option Code

	Stage Size		Travel		Opposite Model		Motor option
HPS	60	-	20	X	None	- M	5
	80		50		R		2
	120		60				A
							L

None: Standerd model
R: Opposite model

5: 5 Phase Stepping Motor (Standerd model)
2: 2 Phase Motor with Driver
A: α-step Motor with Driver. Cable
L: No motor

Guide

- Please contact us when assembled into XYZ axis or use in reversion on the ceiling or vertical direction.
- Replacement with electromagnetic brakes or grease change is also available. Contact our Sales Division for more information.

Example of Code Specification

HPS60-20X□-M□

Features of Options

2 Phase Motor with Driver	It can reduce the total cost because a driver is equipped. On the other hand, precision is inferior to 5 phase motors.
α Stepping Motor with Driver	Can be replaced with an α stepping motor with driver which can move fast. The motor also has built-in encoder.
No Motor	No Motor Provide a stage without motor because the customer mounts own motor. Note that mounting and adjustment of a motor requires specialized skills.

HPS120-60X-MA

Specifications (ex. HPS60-20X)

Part Number			CE HPS60-20X-M2	CE HPS60-20X-MA	HPS60-20X-ML
Mechanical Specifications	Travel [mm]		20	20	20
	Stage Size [mm]		60×60	60×60	60×60
	Feed Screw		Ball screw diameter φ6mm, 1mm lead	Ball screw diameter φ6mm, 1mm lead	Ball screw diameter φ6mm, 1mm lead
	Positioning Slide		Ball guide	Ball guide	Ball guide
	Stage Material		Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized
	Weight [kg]		0.6	1	0.6
Accuracy Specifications	Resolution	(Full) [μm/pulse]	5	2 (500P/R)	—
		(Half) [μm/pulse]	2.5	1 (1000P/R)	—
	MAX Speed [mm/sec]		20	40	—
	Positioning Accuracy [μm]		15	15	—
	Positional Repeatability [μm]		±2	±0.5	—
	Load Capacity [N]		49 (5kgf)	49 (5kgf)	49 (5kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.4	0.4	0.4
		Yaw [″/N·cm]	0.4	0.4	0.4
		Roll [″/N·cm]	0.3	0.3	0.3
	Lost Motion [μm]		1	1	—
	Backlash [μm]		1	1	1
	Parallelism [μm]		30	30	30
	Running Parallelism [μm]		10	10	10
	Pitch [″] / Yaw [″]		25/25	25/25	25-25
Sensor	Sensor Part Number		Micro photo sensor: GP1S097HCZ (Sharp Corporation)	Micro photo sensor: GP1S097HCZ (Sharp Corporation)	Micro photo sensor: GP1S097HCZ (Sharp Corporation)
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	None	None

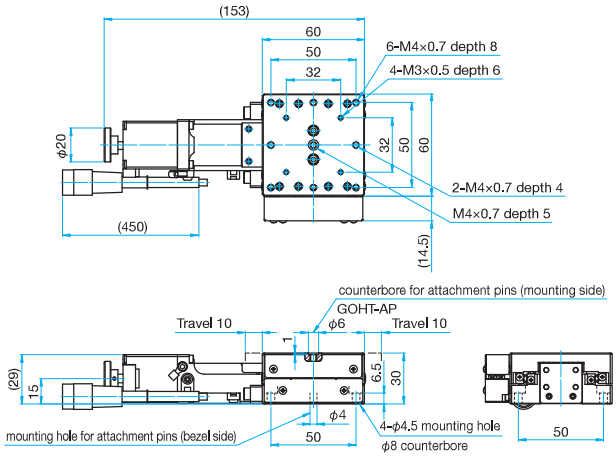
Motor / Sensor Specifications

Motor	Type	2-phase stepping motor (Oriental Motor Co., Ltd.)	α STEP motor (Oriental Motor Co., Ltd.)	(No motor)
	Motor Part Number	PKP223D15B (□28mm)	ARM26SBK (□28mm)	—
	Step Angle	1.8°	0.72°(500P/R)	—
Driver	Part Number	A8576-0415Y	ARD-K	—
	Power input	DC24V±10% 1A	DC24V ±10% 0.9A	—
Sensor	Power Voltage	DC5 – 24V ±10%		
	Current Consumption	60mA or lower (20mA or lower per sensor)		
	Control Output	NPN open collector output DC30V or lower, 50mA When load current is 16mA, the residual voltage is under 0.4V When load current is 50mA, the residual voltage is under 0.7V		
	Output Logic	In the case of light shielded ,output transistor OFF (No conduction): Limit sensor In the case of light shielded ,output transistor ON (Conduction): Origin sensor		

Outline Drawing

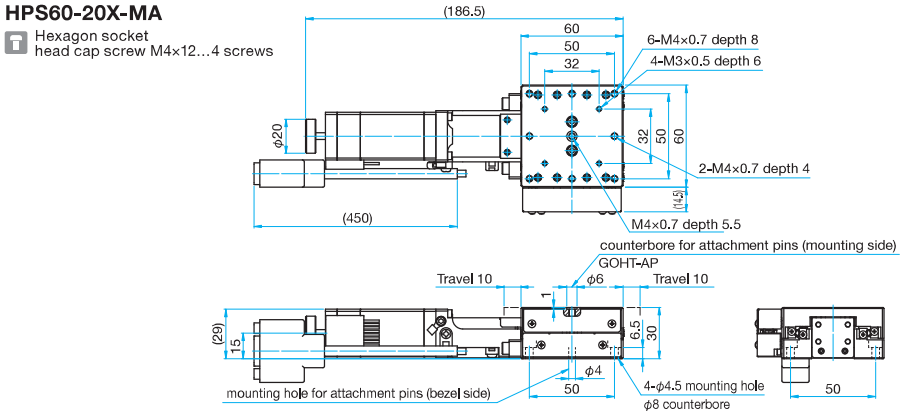
HPS60-20X-M2

Hexagon socket
head cap screw M4×12…4 screws



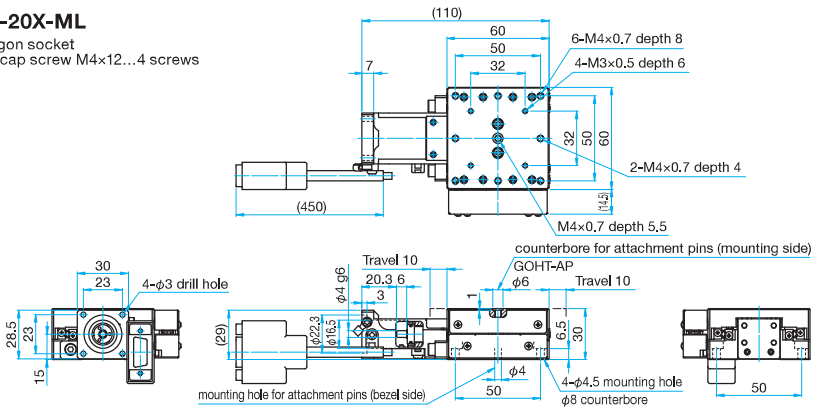
HPS60-20X-MA

Hexagon socket
head cap screw M4×12…4 screws

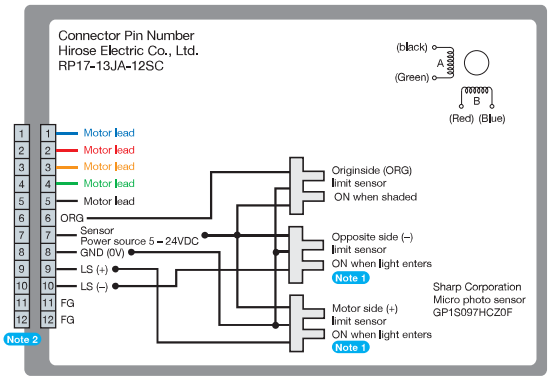


HPS60-20X-ML

Hexagon socket
head cap screw M4×12…4 screws

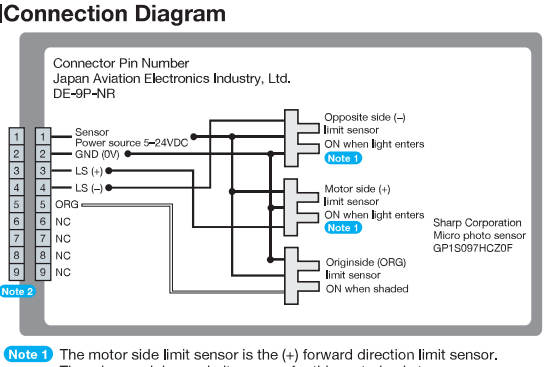


Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with proximity origin sensors.
Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

Connection Diagram



Note 1 The motor side limit sensor is the (+) forward direction limit sensor.
There is no origin proximity sensor for this motorized stage.
Note 2 Compatible cable connector: JAE Industry, Limited: DE-9P-NR

(Reference) Motor Comparison Table

Section	5 Phase Stepping Motor	2 Phase Stepping Motor	αSTEP Motor
Positioning Accuracy	○	○	◎
Minute Feed Accuracy	○	○	○
Speed Stability	○	△	◎
Heat Generation (Continuous Operation)	○	△	◎
Max. Speed	○	○	◎
Rising Responsiveness	○	○	◎

*Rough guide for when the motors are mounted on our motorized stage.
(◎ : goodness ○ : standard △ : inferior)

OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS20-(X) Stage Size 85 x 85 mm

RoHS CE

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools for which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- We will assemble your X axis stage with a newly purchased X axis stage at a separate cost.

Specifications

Part Number			OSMS20-35(X)	OSMS20-85(X)
Part Number (-M6)			OSMS20-35(X)-M6	OSMS20-85(X)-M6
Part Number (-INCH)			OSMS20-35(X)-INCH	OSMS20-85(X)-INCH
Mechanical Specifications	Travel [mm]		35	85
	Stage Size [mm]		85×85	85×85
	Feed Screw		Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		1.1	1.3
Accuracy Specifications	Resolution	(Full) [μm/pulse]	2	2
		(Half) [μm/pulse]	1	1
	MAX Speed [mm/sec]		25	25
	Positioning Accuracy [μm]		5	10
	Positional Repeatability [μm]		3	3
	Load Capacity [N]		78.4 (8.0kgf)	78.4 (8.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.4	0.4
		Yaw [″/N·cm]	0.25	0.25
		Roll [″/N·cm]	0.35	0.35
	Lost Motion [μm]		3	3
	Backlash [μm]		3	3
	Parallelism [μm]		30	30
	Running Parallelism [μm]		10	10
	Pitch [″] / Yaw [″]		30/20	30/20
Sensor	Sensor Part Number		Micro photo sensor : GP1S097HCZ0F (Sharp Corporation)	Micro photo sensor: GP1S092HCPIF (Sharp Corporation)
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)	
	Motor Part Number	TS3664N4E10 (□24mm)	
	Step Angle	0.72°	
Sensor	Power Voltage	DC5 – 24V±10%	
	Current Consumption	60mA or lower (20mA or lower per sensor)	80mA or lower (20mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower	
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor	

Compatible Driver / Controller

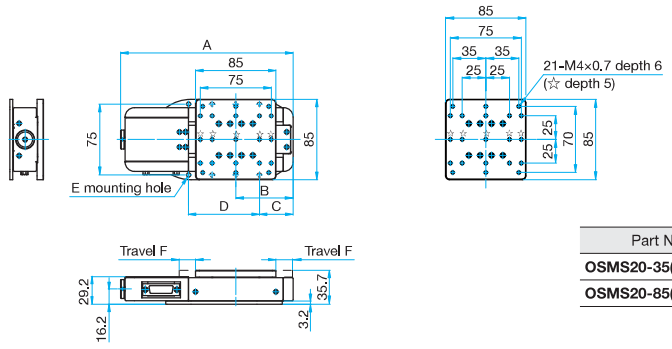
Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

OSMS20-∗∗(X)

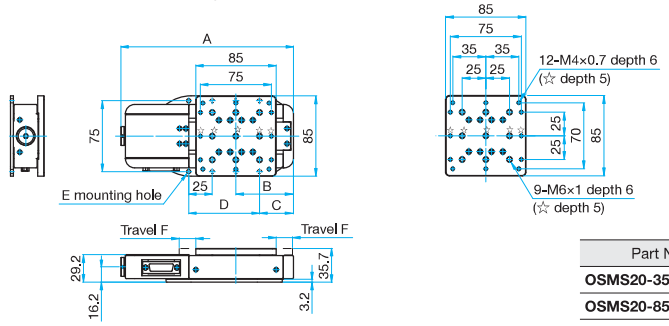
Hexagon socket head cap screw M4×8...8 screws (35)
Hexagon socket head cap screw M4×8...10 screws (85)



Part Number	A	B	C	D	E	F
OSMS20-35(X)	182.6	60.8	35.8	75 (25×3)	8-ϕ4.5	17.5
OSMS20-85(X)	232.6	85.8	35.8	100 (25×4)	10-ϕ4.5	42.5

OSMS20-∗∗(X)-M6

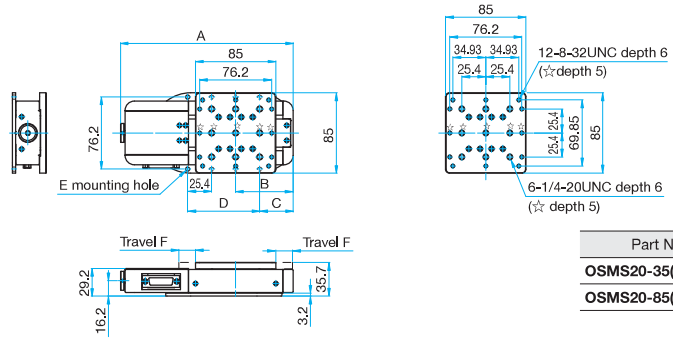
Hexagon socket head cap screw M4×8...8 screws (35)
Hexagon socket head cap screw M4×8...10 screws (85)



Part Number	A	B	C	D	E	F
OSMS20-35(X)-M6	182.6	60.8	35.8	75 (25×3)	8-ϕ4.5	17.5
OSMS20-85(X)-M6	232.3	85.8	35.8	100 (25×4)	10-ϕ4.5	42.5

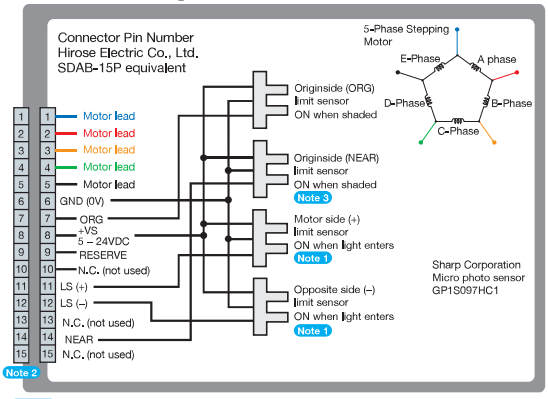
OSMS20-∗∗(X)-INCH

Hexagon socket head cap screw 8 / 32UNC×5 / 16...8 screws (35)
Hexagon socket head cap screw 8 / 32UNC×5 / 16...10 screws (85)



Part Number	A	B	C	D	E	F
OSMS20-35(X)-INCH	182.6	60.8	35.4	76.2(25.4×3)	8-ϕ4.5	17.5
OSMS20-85(X)-INCH	232.6	85.8	35	101.6(25.4×4)	10-ϕ4.5	42.5

■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150
Note 3 OSMS20-35 is not fitted with proximity origin sensor.
6 and 14P are short-circuited

■Compatible Controllers / Drivers and Cables

Controller

GSC-01 [1 axis]
GSC-02 [2 axes]
SHOT-702 [2 axes]
GIP-101 [1 axis]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G108 – G117

Cable

D15D15A-CA
Reference G120

Stage

OSMS20-35(X)
OSMS20-85(X)

Driver

Drivers
Reference G020 – G021

Cable

DAC-SG
Reference G120

OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS20-(XY) Stage Size 85 x 85 mm

RoHS CE

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools for which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- We will assemble your X axis stage with a newly purchased X axis stage at a separate cost.

Specifications

Part Number			OSMS20-35(XY)	OSMS20-85(XY)
Part Number (-M6)			OSMS20-35(XY)-M6	OSMS20-85(XY)-M6
Part Number (-INCH)			OSMS20-35(XY)-INCH	OSMS20-85(XY)-INCH
Mechanical Specifications	Travel [mm]		35	85
	Stage Size [mm]		85×85	85×85
	Feed Screw		Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		2.2	2.6
Accuracy Specifications	Resolution	(Full) [μm/pulse]	2	2
		(Half) [μm/pulse]	1	1
	MAX Speed [mm/sec]		25	25
	Load Capacity [N]		68.6(7.0kgf)	68.6(7.0kgf)
	Backlash [μm]		3	3
	Orthogonality of Motion [μm]		5	5
Sensor	Sensor Part Number		Micro photo sensor : GP1S097HCZ0F (Sharp Corporation)	Micro photo sensor: GP1S092HCPIF (Sharp Corporation)
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)	
	Motor Part Number	TS3664N4E10 (□24mm)	
	Step Angle	0.72°	
Sensor	Power Voltage	DC5 – 24V±10%	
	Current Consumption	120mA or lower (60mA or lower a per axis20mA or lower per a sensor)	160mA or lower (80mA or lower a per axis20mA or lower per a sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower	
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor	

(Reference) Precision Specifications of Single Axis Stage

Part Number			OSMS20-35(X)	OSMS20-85(X)
Accuracy Specifications	Positioning Accuracy [μm]		5	7
	Positional Repeatability [μm]		3	3
	Moment Stiffness	Pitch [″/N·cm]	0.4	0.4
		Yaw [″/N·cm]	0.25	0.25
		Roll [″/N·cm]	0.35	0.35
	Lost Motion [μm]		3	3
	Parallelism [μm]		30	30
	Running Parallelism [μm]		10	10

Compatible Driver / Controller

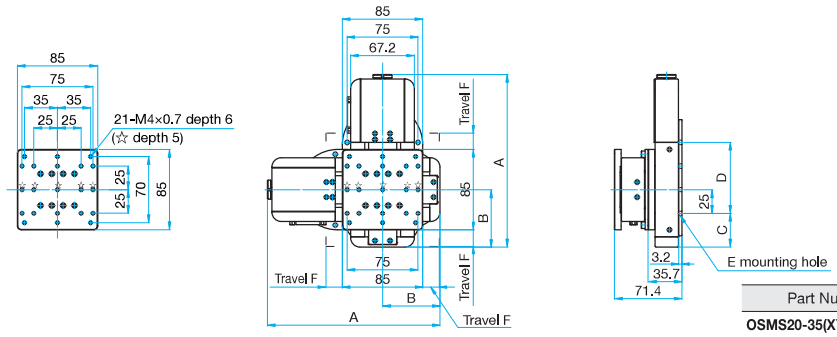
Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-02, SHOT-702, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

OSMS20-∗∗(XY)

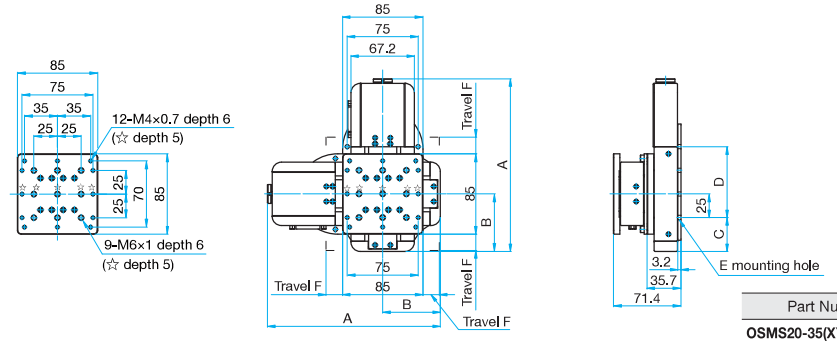
Hexagon socket head cap screw M4×8…8 screws (35)
Hexagon socket head cap screw M4×8…10 screws (85)



Part Number	A	B	C	D	E	F
OSMS20-35(XY)	182.6	60.8	35.8	75 (25×3)	8-ϕ4.5	17.5
OSMS20-85(XY)	232.6	85.8	35.8	100 (25×4)	10-ϕ4.5	42.5

OSMS20-∗∗(XY)-M6

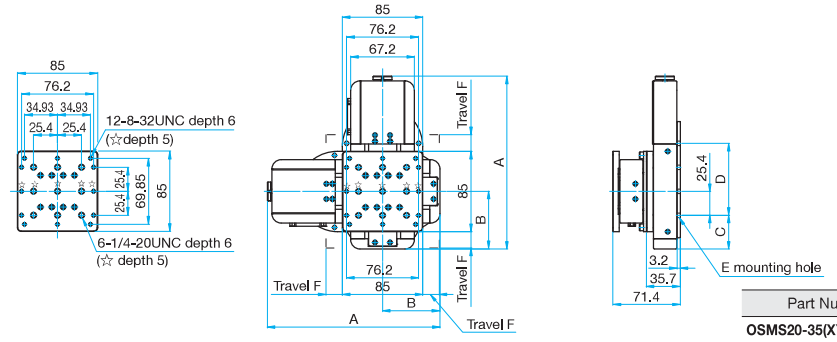
Hexagon socket head cap screw M4×8…8 screws (35)
Hexagon socket head cap screw M4×8…10 screws (85)



Part Number	A	B	C	D	E	F
OSMS20-35(XY)-M6	182.6	60.8	35.8	75 (25×3)	8-ϕ4.5	17.5
OSMS20-85(XY)-M6	232.6	85.8	35.8	100 (25×4)	10-ϕ4.5	42.5

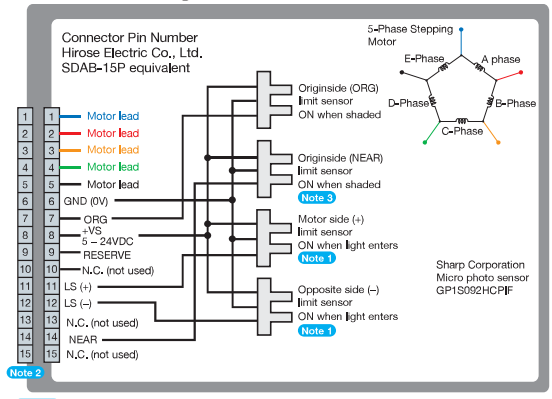
OSMS20-∗∗(XY)-INCH

Hexagon socket head cap screw 8/32UNC×5/16…8 screws (35)
Hexagon socket head cap screw 8/32UNC×5/16…10 screws (85)



Part Number	A	B	C	D	E	F
OSMS20-35(XY)-INCH	182.6	60.8	35.4	76.2(25.4×3)	8-ϕ4.5	17.5
OSMS20-85(XY)-INCH	232.6	85.8	35	101.6(25.4×4)	10-ϕ4.5	42.5

■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150
Note 3 OSMS20-35 is not fitted with proximity origin sensor.
6 and 14P are short-circuited

■Compatible Controllers / Drivers and Cables

Controller
GSC-02 [2 axes]
SHOT-702 [2 axes]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G108 – G117

Cable
D15D15A-CA
Reference G120

Stage
OSMS20-35(XY)
OSMS20-85(XY)

Driver
Drivers
Reference G020 – G021

Cable
DAC-SG
Reference G120

OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS20-(Z) Stage Size 85 x 85 mm

RoHS CE

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools for which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006

Specifications

Part Number			OSMS20-35(Z)	OSMS20-85(Z)
Part Number (-M6)			OSMS20-35(Z)-M6	OSMS20-85(Z))-M6
Part Number (-INCH)			OSMS20-35(Z)-INCH	OSMS20-85(Z)-INCH
Mechanical Specifications	Travel [mm]		35	85
	Stage Size [mm]		85×85	85×85
	Feed Screw		Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		2.3	2.5
Accuracy Specifications	Resolution	(Full) [μm/pulse]	2	2
		(Half) [μm/pulse]	1	1
	MAX Speed [mm/sec]		5	5
	Positioning Accuracy [μm]		10	20
	Positional Repeatability [μm]		3	5
	Load Capacity [N]		29.4 (3.0kgf)*1	29.4 (3.0kgf)*1
	Moment Stiffness	Pitch [″/N·cm]	0.8	0.8
		Yaw [″/N·cm]	0.5	0.5
		Roll [″/N·cm]	0.7	0.7
	Lost Motion [μm]		3	3
	Backlash [μm]		3	3
	Orthogonality of Motion [μm]		25	30
	Pitch [″] / Yaw [″]		45/20	45/20
Sensor	Sensor Part Number		Micro photo sensor : GP1S097HCZ0F (Sharp Corporation)	Micro photo sensor: GP1S092HCPIF (Sharp Corporation)
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	Equipped (NORMAL OPEN)

*1 If you use the controller of ②.

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)	
	Motor Part Number	TS3664N4E10(□24mm)	
	Step Angle	0.72°	
Sensor	Power Voltage	DC5 – 24V±10%	
	Current Consumption	60mA or lower a per axis (20mA or lower per a sensor)	80mA or lower a per axis (20mA or lower per a sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower	
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor	

Compatible Driver / Controller

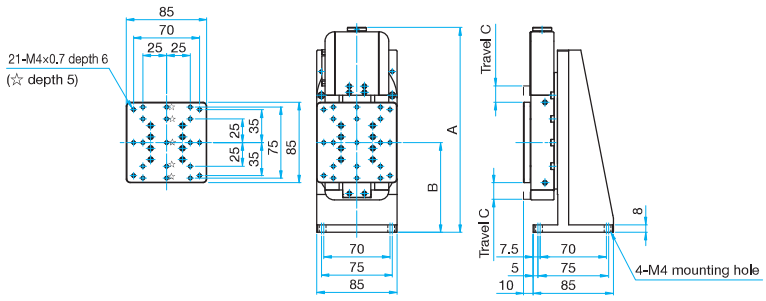
Control System	Compatible Driver	①: SG-5M, SG-5MA ②: MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	①: GSC-01, GSC-02 ②: SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

OSMS20-＊＊(Z)

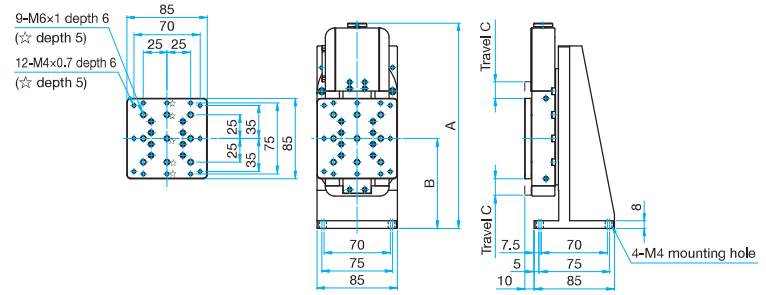
Hexagon socket head cap screw M4×12...4 screws



Part Number	A	B	C
OSMS20-35(Z)	216.8	95	17.5
OSMS20-85(Z)	266.8	120	42.5

OSMS20-＊＊(Z)-M6

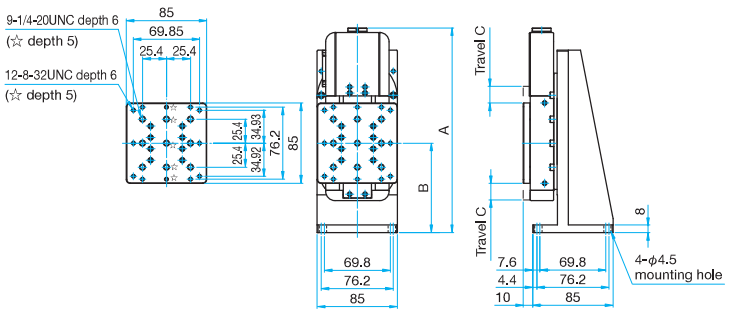
Hexagon socket head cap screw M4×12...4 screws



Part Number	A	B	C
OSMS20-35(Z)-M6	216.8	95	17.5
OSMS20-85(Z)-M6	266.8	120	42.5

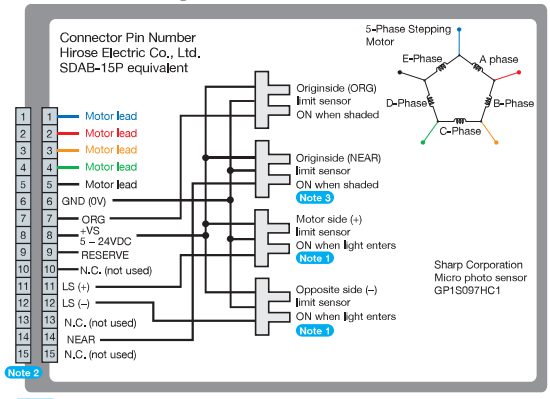
OSMS20-＊＊(Z)-INCH

Hexagon socket head cap screw 8/32UNC×1/2...4 screws



Part Number	A	B	C
OSMS20-35(Z)-INCH	216.8	94.6	17.5
OSMS20-85(Z)-INCH	266.8	120	42.5

■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150
Note 3 OSMS20-35 is not fitted with proximity origin sensor.
6 and 14P are short-circuited

■Compatible Controllers / Drivers and Cables

Controller

GSC-01 [1 axis]
GSC-02 [2 axes]
SHOT-702 [2 axes]
GIP-101 [1 axis]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M•HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G108 – G117

Cable

D15D15A-CA
Reference G120

Stage

OSMS20-35(Z)
OSMS20-85(Z)

Driver

Drivers
Reference G020 – G021

Cable

DAC-SG
Reference G120

OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS20-(XYZ) Stage Size 85 x 85 mm RoHS

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools for which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006

Specifications

Part Number			OSMS20-35(XYZ)	OSMS20-85(XYZ)
Part Number (-M6)			OSMS20-35(XYZ)-M6	OSMS20-85(XYZ)-M6
Part Number (-INCH)			OSMS20-35(XYZ)-INCH	OSMS20-85(XYZ)-INCH
Mechanical Specifications	Travel [mm]		35	85
	Stage Size [mm]		85×85	85×85
	Feed Screw		Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		4.5	5.1
Accuracy Specifications	Resolution	(Full) [µm/pulse]	2	2
		(Half) [µm/pulse]	1	1
	MAX Speed [mm/sec]		5	5
	Load Capacity [N]		29.4 (3.0kgf)*1	29.4 (3.0kgf)*1
	Backlash [µm]		3	3
	Orthogonality of Motion [µm]		5	5
	Straightness of Motion [µm]		25	30
Sensor	Sensor Part Number		Micro photo sensor : GP1S097HCZ0F (Sharp Corporation)	Micro photo sensor: GP1S092HCPIF (Sharp Corporation)
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	Equipped (NORMAL OPEN)

*1 If you use the Driver of ②.

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)
	Motor Part Number	TS3664N4E10(□24mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	180mA or lower (60mA or lower a per axis20mA or lower per a sensor) / 240mA or lower (80mA or lower a per axis20mA or lower per a sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor

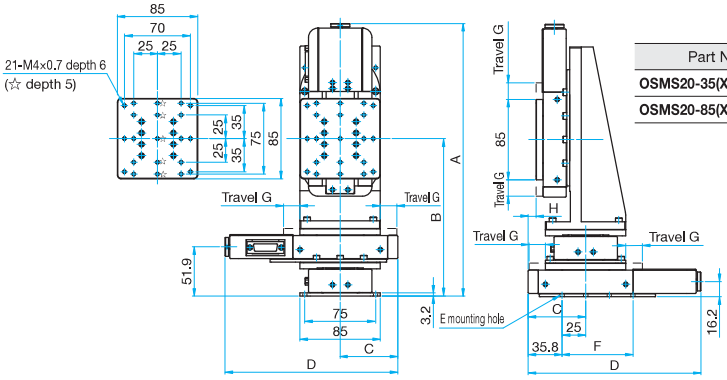
Compatible Driver / Controller

Control System	Compatible Driver	①: SG-5M, SG-5MA ②: SG-514MSC, MC-7514PCL, MC-S0514ZU
	Compatible Controller	HSC-103, SHOT-304GS, HIT-M, HIT-S, PGC-04-U

2D CAD 3D CAD

OSMS20-＊＊(XYZ)

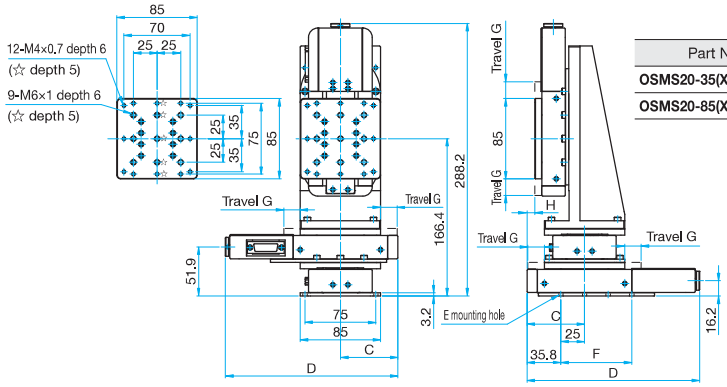
Hexagon socket head cap screw M4×8...8 screws (35)
Hexagon socket head cap screw M4×8...10 screws (85)



Part Number	A	B	C	D	E	F	G	H
OSMS20-35(XYZ)	288.2	166.4	60.8	182.6	8-ϕ4.5	75 (25×3)	17.5	8.3
OSMS20-85(XYZ)	338.2	191.4	85.8	232.6	10-ϕ4.5	100 (25×4)	42.5	33.3

OSMS20-＊＊(XYZ)-M6

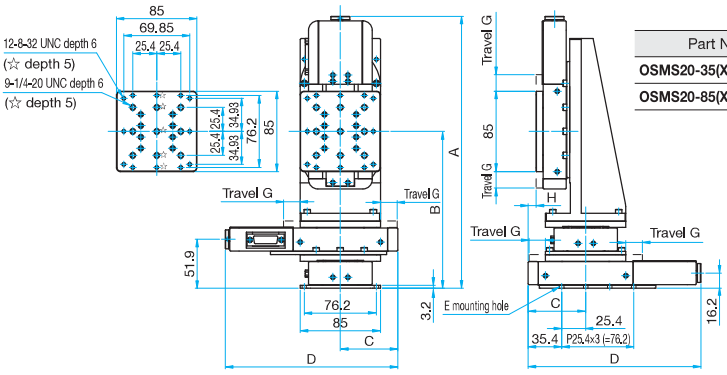
Hexagon socket head cap screw M4×8...8 screws (35)
Hexagon socket head cap screw M4×8...10 screws (85)



Part Number	A	B	C	D	E	F	G	H
OSMS20-35(XYZ)-M6	288.2	166.4	60.8	182.6	8-ϕ4.5	75 (25×3)	17.5	8.3
OSMS20-85(XYZ)-M6	338.2	191.4	85.8	232.6	10-ϕ4.5	100 (25×4)	42.5	33.3

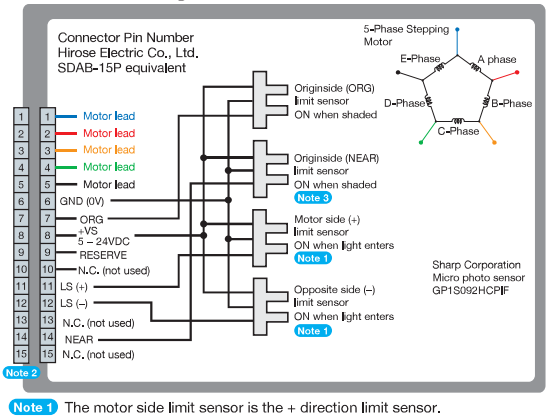
OSMS20-＊＊(XYZ)-INCH

Hexagon socket head cap screw 8/32UNC×5/16...8 screws (35)
Hexagon socket head cap screw 8/32UNC×5/16...10 screws (85)



Part Number	A	B	C	D	E	F	G	H
OSMS20-35(XYZ)-INCH	287.8	166	60.8	182.6	8-ϕ4.5	76.2(25.4×3)	17.5	8.3
OSMS20-85(XYZ)-INCH	338.2	191.4	85.8	232.6	10-ϕ4.5	101.6 (25.4×4)	42.5	33.3

■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150
Note 3 OSMS20-35 is not fitted with proximity origin sensor.
6 and 14P are short-circuited

■Compatible Controllers / Drivers and Cables

Controller

HSC-103 [3 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]

Reference G112 – G117

Cable

D15D15A-CA

Reference G120

Stage

OSMS20-35(XYZ)
OSMS20-85(XYZ)

Driver

Drivers

Reference G020 – G021

Cable

DAC-SG

Reference G120

Precision Motorized Stages with Built-in Compact Scale | OSMS(CS)20-(X) Stage Size 85 x 85 mm

RoHS CE

Precision motorized stages with built-in compact optical scales make highly accurate and reliable full closed loop system using Sigma-Koki controllers (SHOT-302GS/304GS, HIT-M·HIT-S).

- U-shaped guide rail offers light weight, and minimized deflection to achieve high stiffness.
- Includes a compact scale built in while keeping the installation space the same as that of the equivalent open loop OSMS series.

Guide

- Contact our Sales Division for replacement of motors or for stabilizing (drop-preventing) mechanism.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- Contact our Sales Division to use the stage as an XY axis or a Z axis stage.

Specifications

Part Number			OSMS(CS)20-35(X)	OSMS(CS)20-85(X)
Part Number (-M6)			OSMS(CS)20-35(X)-M6	OSMS(CS)20-85(X)-M6
Part Number (-INCH)			OSMS(CS)20-35(X)-INCH	OSMS(CS)20-85(X)-INCH
Mechanical Specifications	Travel [mm]		35	85
	Stage Size [mm]		85×85	85×85
	Feed Screw		Ball screw diameterϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		1.4	1.6
Accuracy Specifications	Resolution	(Full) [μm/pulse]	2	2
		(Half) [μm/pulse]	1	1
	MAX Speed [mm/sec]		25	25
	Positioning Accuracy [μm]		5	10
	Positional Repeatability [μm]		2	2
	Load Capacity [N]		78.4 (8.0kgf)	78.4 (8.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.4	0.4
		Yaw [″/N·cm]	0.25	0.25
		Roll [″/N·cm]	0.35	0.35
	Lost Motion [μm]		3	3
	Backlash [μm]		3	3
	Parallelism [μm]		30	30
	Running Parallelism [μm]		10	10
	Pitch [″] / Yaw [″]		30/20	30/20
Sensor	Sensor Part Number		Micro photo sensor : GP1S097HCZ0F (Sharp Corporation)	Micro photo sensor: GP1S092HCPIF (Sharp Corporation)
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	Equipped (NORMAL OPEN)
Scale head	Resolution [μm]		0.5	0.5

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)	
	Motor Part Number	TS3664N4E10 (□24mm)	
	Step Angle	0.72°	
Sensor	Power Voltage	DC5 – 24V±10%	
	Current Consumption	60mA or lower (20mA or lower per sensor)	80mA or lower (20mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower	
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor	
Scale head	Power Voltage / Current Consumption	DC5V±5% / 50mA	

Compatible Cable

Cable	Driver Cable	D15D15A-CA
	Scale Cable	GSEF-CA-3

Compatible Driver / Controller

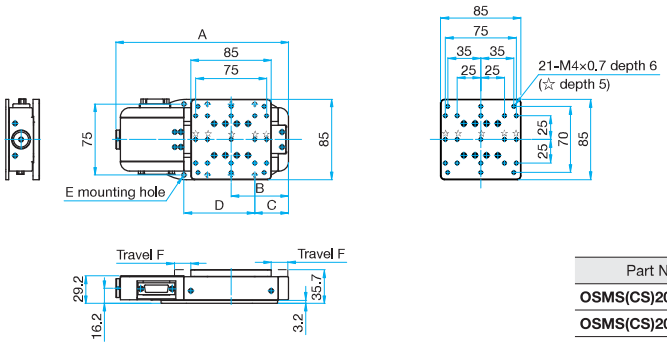
Control System	Compatible Driver	–
	Compatible Controller	SHOT-302GS, SHOT-304GS, HIT-M·HIT-S

2D CAD 3D CAD

Outline Drawing

OSMS(CS)20-＊＊(X)

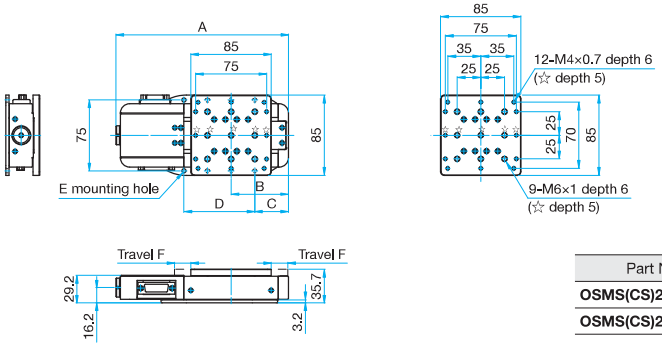
Hexagon socket head cap screw M4×8...8 screws (35)
Hexagon socket head cap screw M4×8...10 screws (85)



Part Number	A	B	C	D	E	F
OSMS(CS)20-35(X)	182.6	60.8	35.8	75 (25×3)	8-ϕ4.5	17.5
OSMS(CS)20-85(X)	232.6	85.8	35.8	100 (25×4)	10-ϕ4.5	42.5

OSMS(CS)20-＊＊(X)-M6

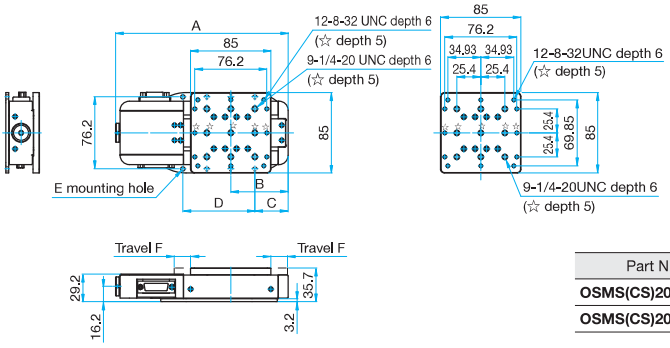
Hexagon socket head cap screw M4×8...8 screws (35)
Hexagon socket head cap screw M4×8...10 screws (85)



Part Number	A	B	C	D	E	F
OSMS(CS)20-35(X)-M6	182.6	60.8	35.8	75 (25×3)	8-ϕ4.5	17.5
OSMS(CS)20-85(X)-M6	232.6	85.8	35.8	100 (25×4)	10-ϕ4.5	42.5

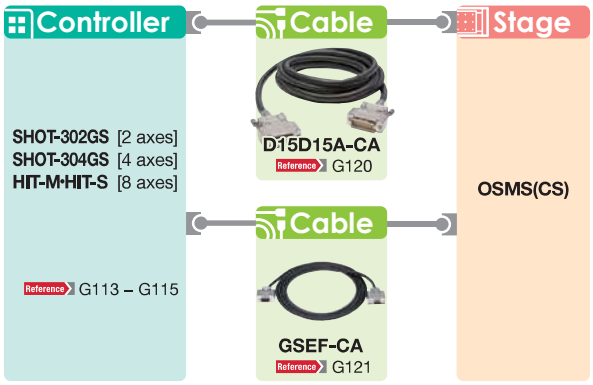
OSMS(CS)20-＊＊(X)-INCH

Hexagon socket head cap screw 8/32UNC×5/16...8 screws (35)
Hexagon socket head cap screw 8/32UNC×5/16...10 screws (85)



Part Number	A	B	C	D	E	F
OSMS(CS)20-35(X)-INCH	182.6	60.8	35.4	76.2 (25.4×3)	8-ϕ4.5	17.5
OSMS(CS)20-85(X)-INCH	232.6	85.8	35	101.6 (25.4×4)	10-ϕ4.5	42.5

Compatible Controllers / Drivers and Cables



OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS26-(X) Stage Size 100 x 100 mm

RoHS CE

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools from which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- We will assemble your X axis stage with a newly purchased X axis stage at a separate cost.

Specifications

Part Number			OSMS26-50(X)	OSMS26-100(X)	OSMS26-200(X)	OSMS26-300(X)
Part Number (-M6)			OSMS26-50(X)-M6	OSMS26-100(X)-M6	OSMS26-200(X)-M6	OSMS26-300(X)-M6
Part Number (-INCH)			OSMS26-50(X)-INCH	OSMS26-100(X)-INCH	OSMS26-200(X)-INCH	OSMS26-300(X)-INCH
Mechanical Specifications	Travel [mm]		50	100	200	300
	Stage Size [mm] (M6, INCH)		100×100 (120×120)	100×100 (120×120)	100×100 (120×120)	100×100 (120×120)
	Feed Screw		Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead
	Positioning Slide		Outer rail structure	Outer rail structure	Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized	Black anodized
	Weight [kg]		2.2	2.7	3.8	4.0
Accuracy Specifications	Resolution	(Full) [µm/pulse]	4	4	4	4
		(Half) [µm/pulse]	2	2	2	2
	MAX Speed [mm/sec]		40	40	40	40
	Positioning Accuracy [µm]		5	10	15	20
	Positional Repeatability [µm]		3	3	6	6
	Load Capacity [N]		117 (12.0kgf)	117 (12.0kgf)	117 (12.0kgf)	117 (12.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.23	0.23	0.23	0.23
		Yaw [″/N·cm]	0.12	0.12	0.12	0.12
		Roll [″/N·cm]	0.2	0.2	0.2	0.2
	Lost Motion [µm]		3	3	5	5
	Backlash [µm]		3	3	3	3
	Parallelism [µm]		50	50	50	50
	Running Parallelism [µm]		10	10	10	20
	Pitch [″] / Yaw [″]		25/20	25/20	30/25	30/25
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF (Sharp Corporation)			
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK525HPB-C4(□28mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	80mA or lower (20mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor

Compatible Driver / Controller

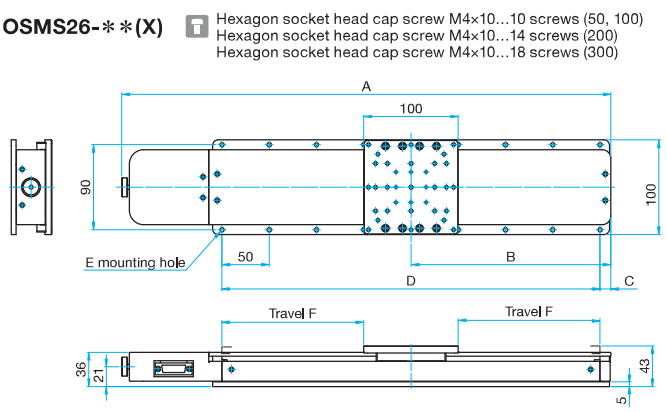
Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

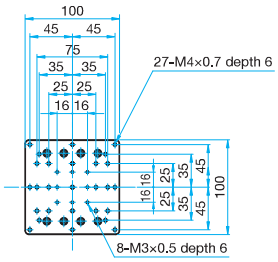
2D CAD 3D CAD

Outline Drawing

OSMS26-＊＊(X)

Hexagon socket head cap screw M4×10...10 screws (50, 100)
Hexagon socket head cap screw M4×10...14 screws (200)
Hexagon socket head cap screw M4×10...18 screws (300)

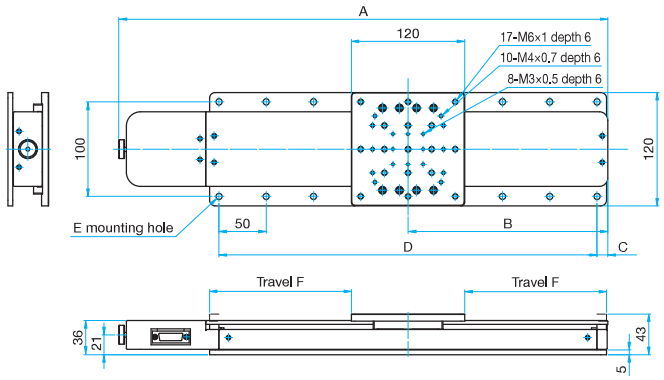


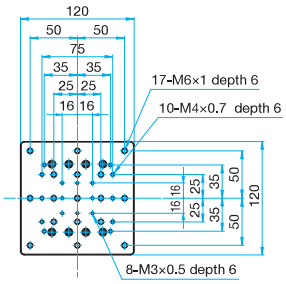


Part Number	A	B	C	D	E	F
OSMS26-50(X)	267.5	86.5	11.5	150 (25, 50×2, 25)	10-ϕ4.5	25
OSMS26-100(X)	317.5	111.5	11.5	200 (50×4)	10-ϕ4.5	50
OSMS26-200(X)	417.5	161.5	11.5	300 (50×6)	14-ϕ4.5	100
OSMS26-300(X)	517.5	211.5	11.5	400 (50×8)	18-ϕ4.5	150

OSMS26-＊＊(X)-M6

Hexagon socket head cap screw M6×10...10 screws (50, 100)
Hexagon socket head cap screw M6×10...14 screws (200)
Hexagon socket head cap screw M6×10...18 screws (300)

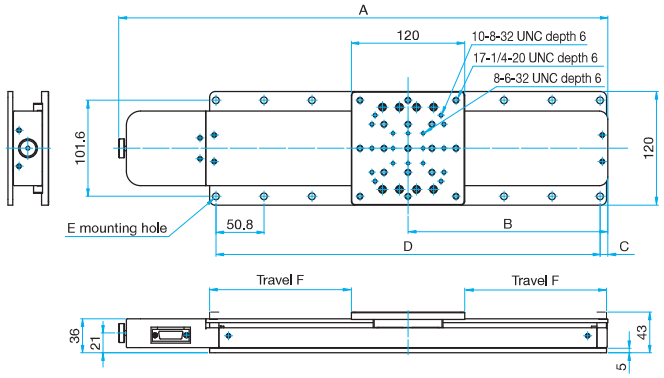


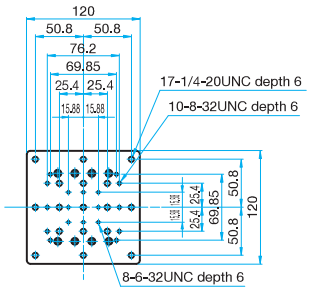


Part Number	A	B	C	D	E	F
OSMS26-50(X)-M6	267.5	86.5	11.5	150 (25, 50×2, 25)	10-ϕ6.5	25
OSMS26-100(X)-M6	317.5	111.5	11.5	200 (50×4)	10-ϕ6.5	50
OSMS26-200(X)-M6	417.5	161.5	11.5	300 (50×6)	14-ϕ6.5	100
OSMS26-300(X)-M6	517.5	211.5	11.5	400(50×8)	18-ϕ6.5	150

OSMS26-＊＊(X)-INCH

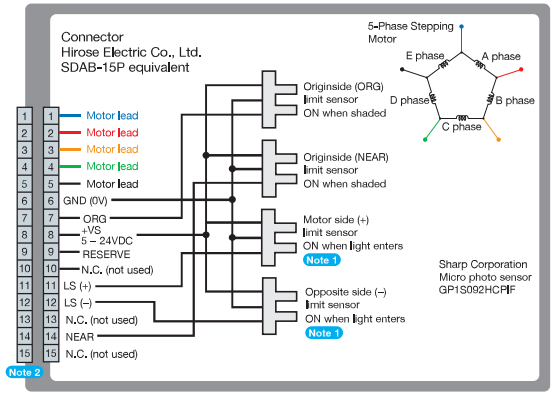
Hexagon socket head cap screw 1/4-20UNC×3/8...10 screws (50, 100)
Hexagon socket head cap screw 1/4-20UNC×3/8...14 screws (200)
Hexagon socket head cap screw 1/4-20UNC×3/8...18 screws (300)





Part Number	A	B	C	D	E	F
OSMS26-50(X)-INCH	267.5	86.5	10.3	152.4 (25.4, 50.8×2, 25.4)	10-ϕ7	25
OSMS26-100(X)-INCH	317.5	111.5	9.9	203.2 (50.8×4)	10-ϕ7	50
OSMS26-200(X)-INCH	417.5	161.5	9.1	304.8 (50.8×6)	14-ϕ7	100
OSMS26-300(X)-INCH	517.5	211.5	8.3	406.4 (50.8×8)	18-ϕ7	150

■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

■Compatible Controllers / Drivers and Cables

Controller

GSC-01 [1 axis]
GSC-02 [2 axes]
SHOT-702 [2 axes]
GIP-101 [1 axis]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M•HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G108 – G117

Cable

D15D15A-CA
Reference G120

Stage

OSMS26-50(X)
OSMS26-100(X)
OSMS26-200(X)
OSMS26-300(X)

Driver

Drivers
Reference G020 – G021

Cable

DAC-SG
Reference G120

OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS26-(XY) Stage Size 100 x 100 mm

RoHS CE

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools for which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- We will assemble your X axis stage with a newly purchased X axis stage at a separate cost.

Specifications

Part Number			OSMS26-50(XY)	OSMS26-100(XY)	OSMS26-200(XY)	OSMS26-300(XY)
Part Number (-M6)			OSMS26-50(XY)-M6	OSMS26-100(XY)-M6	OSMS26-200(XY)-M6	OSMS26-300(XY)-M6
Part Number (-INCH)			OSMS26-50(XY)-INCH	OSMS26-100(XY)-INCH	OSMS26-200(XY)-INCH	OSMS26-300(XY)-INCH
Mechanical Specifications	Travel [mm]		50	100	200	300
	Stage Size [mm] (M6, INCH)		100×100 (120×120)	100×100 (120×120)	100×100 (120×120)	100×100 (120×120)
	Feed Screw		Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead
	Positioning Slide		Outer rail structure	Outer rail structure	Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized	Black anodized
	Weight [kg]		4.4	5.4	7.6	8.0
Accuracy Specifications	Resolution	(Full) [μm/pulse]	4	4	4	4
		(Half) [μm/pulse]	2	2	2	2
	MAX Speed [mm/sec]		40	40	40	40
	Load Capacity [N]		98 (10.0kgf)	98 (10.0kgf)	98 (10.0kgf)	98 (10.0kgf)
	Backlash [μm]		3	3	3	3
	Orthogonality of Motion [μm]		5	5	10	5
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF (Sharp Corporation)			
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK525HPB-C4 (□28mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	160mA or lower (80mA or lower a per axis20mA or lower per a sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor

(Reference) Precision Specifications of Single Axis Stage

Part Number			OSMS26-50(X)	OSMS26-100(X)	OSMS26-200(X)	OSMS26-300(X)
Accuracy Specifications	Positioning Accuracy [μm]		5	10	15	15
	Positional Repeatability [μm]		3	3	6	6
	Moment Stiffness	Pitch [″/N·cm]	0.23	0.23	0.23	0.23
		Yaw [″/N·cm]	0.12	0.12	0.12	0.12
		Roll [″/N·cm]	0.2	0.2	0.2	0.2
	Lost Motion [μm]		3	3	5	5
	Parallelism [μm]		50	50	50	50
	Running Parallelism [μm]		10	10	10	10

Compatible Driver / Controller

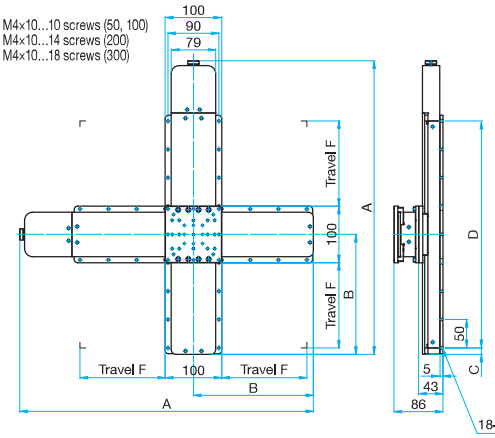
Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-02, SHOT-702, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

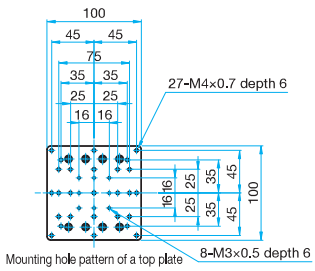
2D CAD 3D CAD

Outline Drawing

OSMS26-＊＊(XY)

Hexagon socket head cap screw M4×10...10 screws (50, 100)
Hexagon socket head cap screw M4×10...14 screws (200)
Hexagon socket head cap screw M4×10...18 screws (300)

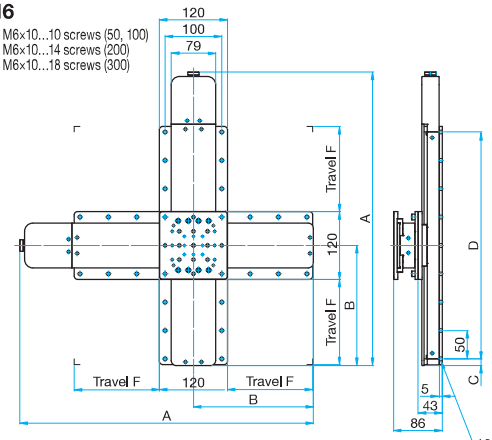


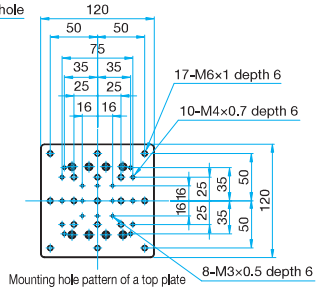


Part Number	A	B	C	D	E	F
OSMS26-50(XY)	267.5	86.5	11.5	150 (25, 50×2, 25)	10-φ4.5	25
OSMS26-100(XY)	317.5	111.5	11.5	200 (50×4)	10-φ4.5	50
OSMS26-200(XY)	417.5	161.5	11.5	300 (50×6)	14-φ4.5	100
OSMS26-300(XY)	517.5	211.5	11.5	400 (50×8)	18-φ4.5	150

OSMS26-＊＊(XY)-M6

Hexagon socket head cap screw M6×10...10 screws (50, 100)
Hexagon socket head cap screw M6×10...14 screws (200)
Hexagon socket head cap screw M6×10...18 screws (300)

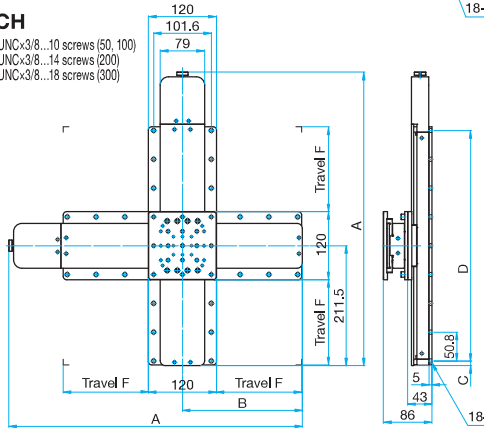


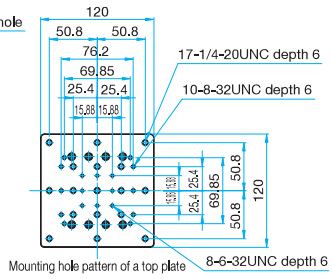


Part Number	A	B	C	D	E	F
OSMS26-50(XY)-M6	267.5	86.5	11.5	150 (25, 50×2, 25)	10-φ6.5	25
OSMS26-100(XY)-M6	317.5	111.5	11.5	200 (50×4)	10-φ6.5	50
OSMS26-200(XY)-M6	417.5	161.5	11.5	300 (50×6)	14-φ6.5	100
OSMS26-300(XY)-M6	517.5	211.5	11.5	400 (50×8)	18-φ6.5	150

OSMS26-＊＊(XY)-INCH

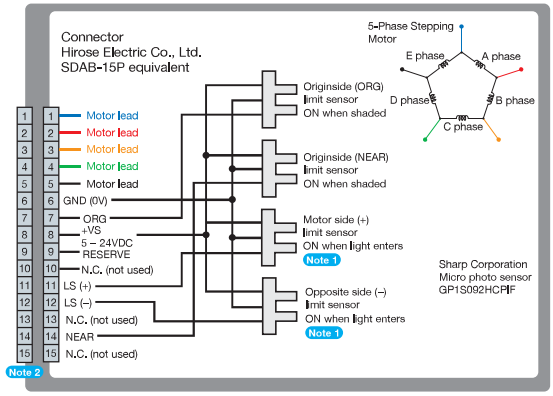
Hexagon socket head cap screw 1/4-20UNC×3/8...10 screws (50, 100)
Hexagon socket head cap screw 1/4-20UNC×3/8...14 screws (200)
Hexagon socket head cap screw 1/4-20UNC×3/8...18 screws (300)





Part Number	A	B	C	D	E	F
OSMS26-50(XY)-INCH	267.5	86.5	10.3	152.4 (25.4, 50.8×2, 25.4)	10-φ7	25
OSMS26-100(XY)-INCH	317.5	111.5	9.9	203.2 (50.8×4)	10-φ7	50
OSMS26-200(XY)-INCH	417.5	161.5	9.1	304.8 (50.8×6)	14-φ7	100
OSMS26-300(XY)-INCH	517.5	211.5	8.3	406.4 (50.8×8)	18-φ7	150

Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

Compatible Controllers / Drivers and Cables

Controller

GSC-02 [2 axes]
SHOT-702 [2 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G109 – G117

Cable

D15D15A-CA
Reference G120

Stage

OSMS26-50(XY)
OSMS26-100(XY)
OSMS26-200(XY)
OSMS26-300(XY)

Driver

Drivers
Reference G020 – G021

Cable

DAC-SG
Reference G120

OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS26-(Z) Stage Size 100 x 100 mm

RoHS CE

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools for which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- We will assemble your X axis stage with a newly purchased X axis stage at a separate cost

Specifications

Part Number			OSMS26-50(Z)	OSMS26-100(Z)	OSMS26-200(Z)	OSMS26-300(Z)
Part Number (-M6)			OSMS26-50(Z)-M6	OSMS26-100(Z)-M6	OSMS26-200(Z)-M6	OSMS26-300(Z)-M6
Part Number (-INCH)			OSMS26-50(Z)-INCH	OSMS26-100(Z)-INCH	OSMS26-200(Z)-INCH	OSMS26-300(Z)-INCH
Mechanical Specifications	Travel [mm]		50	100	200	300
	Stage Size [mm] (M6, INCH)		100×100 (120×120)	100×100 (120×120)	100×100 (120×120)	100×100 (120×120)
	Feed Screw		Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead
	Positioning Slide		Outer rail structure	Outer rail structure	Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized	Black anodized
	Weight [kg]		4.4	4.9	7.2	7.4
Accuracy Specifications	Resolution	(Full) [μm/pulse]	4	4	4	4
		(Half) [μm/pulse]	2	2	2	2
	MAX Speed [mm/sec]		10	10	10	10
	Positioning Accuracy [μm]		15	20	30	40
	Positional Repeatability [μm]		3	3	6	6
	Load Capacity [N]		39.2 (4.0kgf)	39.2 (4.0kgf)	39.2 (4.0kgf)	39.2 (4.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.4	0.4	0.4	0.4
		Yaw [″/N·cm]	0.15	0.15	0.15	0.15
		Roll [″/N·cm]	0.20	0.20	0.20	0.20
	Lost Motion [μm]		3	3	5	5
	Backlash [μm]		3	3	3	3
	Orthogonality of Motion [μm]		30	40	50	50
	Pitch [″] / Yaw [″]		50/20	50/20	55/20	55/20
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF (Sharp Corporation)			
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK525HPB-C4 (□28mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	80mA or lower (20mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor

Compatible Driver / Controller

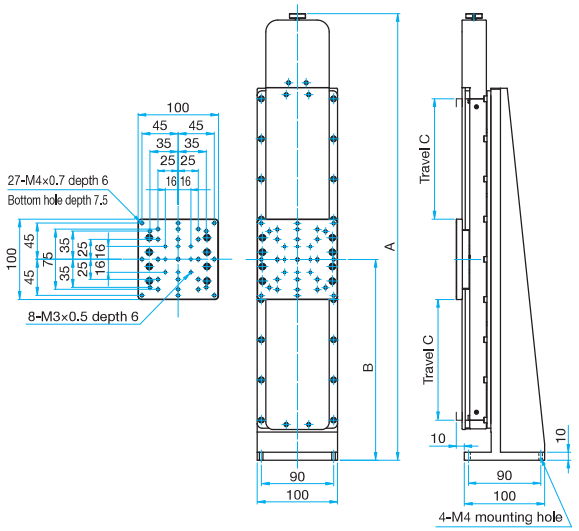
Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

OSMS26-**(Z)

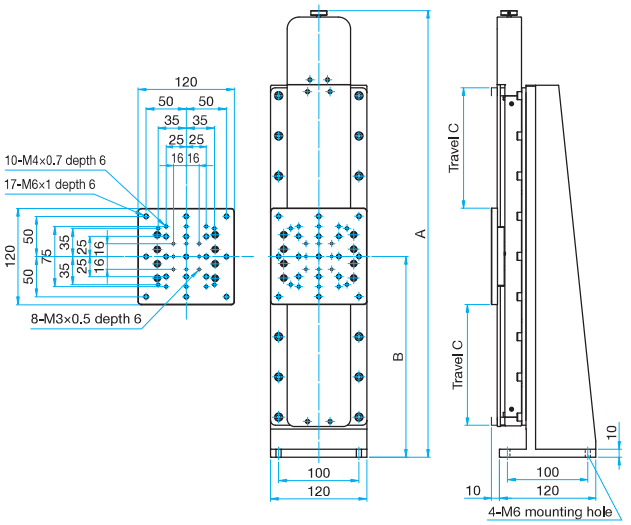
Hexagon socket head cap screw M4×15...4 screws



Part Number	A	B	C
OSMS26-50(Z)	306	125	25
OSMS26-100(Z)	356	150	50
OSMS26-200(Z)	463	200	100
OSMS26-300(Z)	556	250	150

OSMS26-**(Z)-M6

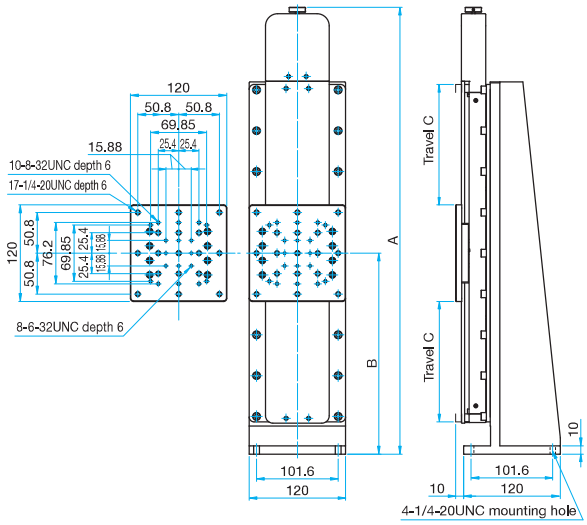
Hexagon socket head cap screw M6×15...4 screws



Part Number	A	B	C
OSMS26-50(Z)-M6	306	125	25
OSMS26-100(Z)-M6	356	150	50
OSMS26-200(Z)-M6	463	200	100
OSMS26-300(Z)-M6	556	250	150

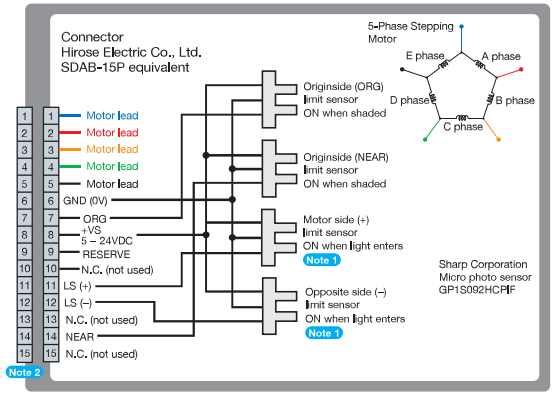
OSMS26-**(Z)-INCH

Hexagon socket head cap screw 1/4-20UNC×5/8...4 screws



Part Number	A	B	C
OSMS26-50(Z)-INCH	305.6	124.6	25
OSMS26-100(Z)-INCH	356	150	50
OSMS26-200(Z)-INCH	463	199.2	100
OSMS26-300(Z)-INCH	556	250	150

Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.

Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

Compatible Controllers / Drivers and Cables

Controller

GSC-01 [1 axis]
GSC-02 [2 axes]
SHOT-702 [2 axes]
GIP-101 [1 axis]
HSC-103 [8 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]

Reference G108 – G117

Cable

D15D15A-CA

Reference G120

Stage

OSMS26-50(Z)
OSMS26-100(Z)
OSMS26-200(Z)
OSMS26-300(Z)

Driver

Drivers

Reference G020 – G021

Cable

DAC-SG

Reference G120

OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS26-(XYZ) Stage Size 100 x 100 mm RoHS

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools for which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- Please contact our Sales Division if you desire to assemble OSMS26-200* or 300** into XYZ axis.

Specifications

Part Number			OSMS26-50(XYZ)	OSMS26-100(XYZ)
Part Number (-M6)			OSMS26-50(XYZ)-M6	OSMS26-100(XYZ)-M6
Part Number (-INCH)			OSMS26-50(XYZ)-INCH	OSMS26-100(XYZ)-INCH
Mechanical Specifications	Travel [mm]		50	100
	Stage Size [mm]		100×100 (120×120)	100×100 (120×120)
	Feed Screw		Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		8.8	10.3
Accuracy Specifications	Resolution	(Full) [µm/pulse]	4	4
		(Half) [µm/pulse]	2	2
	MAX Speed [mm/sec]		10	10
	Load Capacity [N]		39.2 (4.0kgf)	39.2 (4.0kgf)
	Backlash [µm]		3	3
	Orthogonality of Motion [µm]		5	5
	Straightness of Motion [µm]		30	40
Sensor	Sensor Part Number		Micro photo sensor : GP1S092HCPIF (Sharp Corporation)	
	Limit Sensor		Equipped (NORMAL CLOSE)	
	Origin Sensor		Equipped (NORMAL OPEN)	
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK525HPB-C4 (□28mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	240mA or lower (80mA or lower a per axis20mA or lower per a sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor

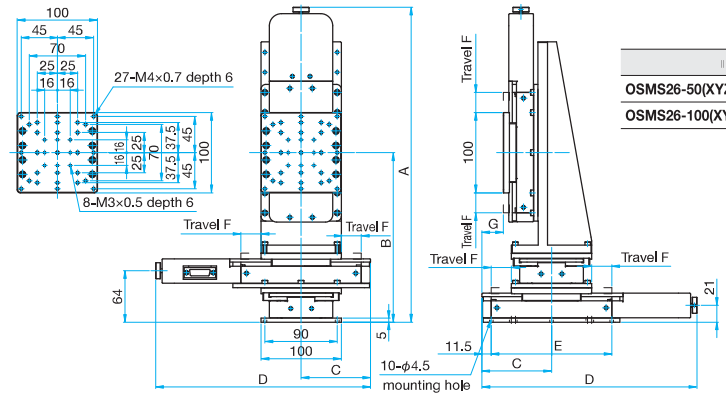
Compatible Driver / Controller

Control System	Compatible Driver	SG-5M, SG-5MA, SG-514MSC, MC-7514PCL, MC-S0514ZU
	Compatible Controller	HSC-103, SHOT-304GS, HIT-M, HIT-S, PGC-04-U

2D CAD 3D CAD

OSMS26-＊＊(XYZ)

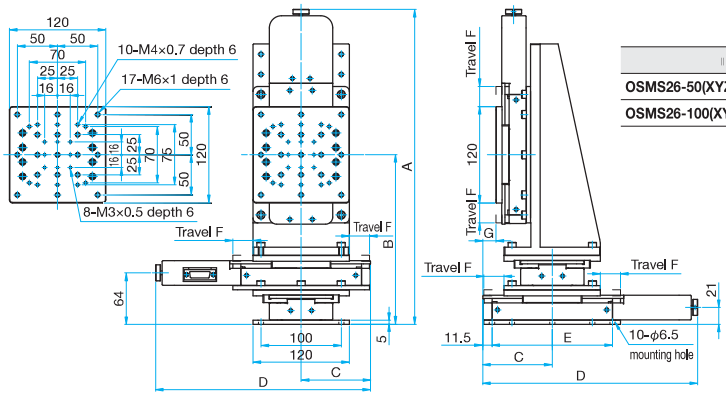
Hexagon socket head cap screw M4×10…10 screws (50, 100)
Hexagon socket head cap screw M4×10…14 screws (200)
Hexagon socket head cap screw M4×10…18 screws (300)



	A	B	C	D	E	F	G
OSMS26-50(XYZ)	392	211	86.5	182.6	150 25 50×25 25	25	26.5
OSMS26-100(XYZ)	442	236	111.5	232.6	200 50×4	50	51.5

OSMS26-＊＊(XYZ)-M6

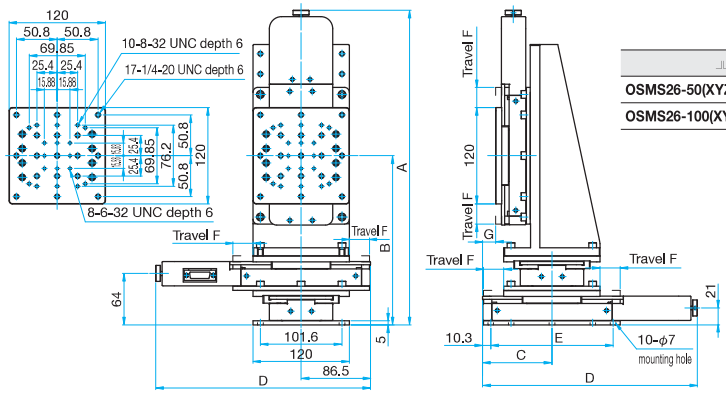
Hexagon socket head cap screw M6×10…10 screws (50, 100)
Hexagon socket head cap screw M6×10…14 screws (200)
Hexagon socket head cap screw M6×10…18 screws (300)



	A	B	C	D	E	F	G
OSMS26-50(XYZ)-M6	392	211	86.5	182.6	150 25 50×2 25	25	16.5
OSMS26-100(XYZ)-M6	442	236	111.5	232.6	200 50×4	50	41.5

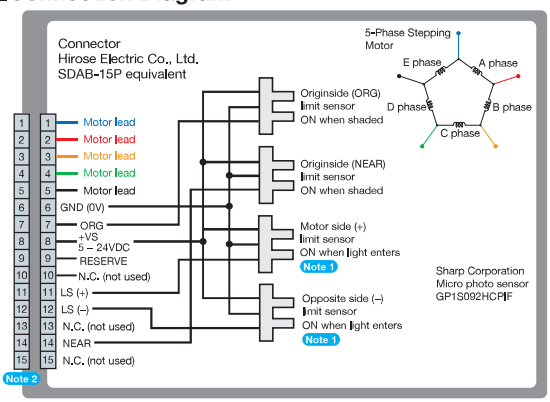
OSMS26-＊＊(XYZ)-INCH

Hexagon socket head cap screw 1/4-20UNC×3/8…10 screws (50, 100)
Hexagon socket head cap screw 1/4-20UNC×3/8…14 screws (200)
Hexagon socket head cap screw 1/4-20UNC×3/8…18 screws (300)



	A	B	C	D	E	F	G
OSMS26-50(XYZ)-INCH	391.6	210.6	86.5	267.5	152.4 25.4 50.8×2 25.4	25	16.5
OSMS26-100(XYZ)-INCH	442	236	111.5	317.5	203.2 50.8×4	50	41.5

Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

Compatible Controllers / Drivers and Cables

Controller
HSC-103 [3 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G108 – G117

Cable

D15D15A-CA
Reference G120

Stage
OSMS26-50(XYZ)
OSMS26-100(XYZ)

Driver
Drivers
Reference G020 – G021

Cable

DAC-SG
Reference G120

Precision Motorized Stages with Built-in Compact Scale | OSMS(CS)26-(X) Stage Size 100 x 100 mm

RoHS CE

Precision motorized stages with built-in compact optical scales make highly accurate and reliable full closed loop system using Sigma-Koki controllers (SHOT-302GS/304GS, HIT-M·HIT-S).

- U-shaped guide rail offers light weight, and minimized deflection to achieve high stiffness.
- Includes a compact scale built in while keeping the installation space the same as that of the equivalent open loop OSMS series.

Guide

- Contact our Sales Division for replacement of motors or for stabilizing (drop-preventing) mechanism.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- Contact our Sales Division to use the stage as an XY axis or a Z axis stage.

Specifications

Part Number			OSMS(CS)26-100(X)	OSMS(CS)26-200(X)
Part Number (-M6)			OSMS(CS)26-100(X)-M6	OSMS(CS)26-200(X)-M6
Part Number (-INCH)			OSMS(CS)26-100(X)-INCH	OSMS(CS)26-200(X)-INCH
Mechanical Specifications	Travel [mm]		100	200
	Stage Size [mm] (M6, INCH)		100×100 (120×120)	100×100 (120×120)
	Feed Screw		Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		3.2	4.3
Accuracy Specifications	Resolution	(Full) [µm/pulse]	4	4
		(Half) [µm/pulse]	2	2
	MAX Speed [mm/sec]		40	40
	Positioning Accuracy [µm]		10	15
	Positional Repeatability [µm]		2	3
	Load Capacity [N]		117 (12.0kgf)	117 (12.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.23	0.23
		Yaw [″/N·cm]	0.12	0.12
		Roll [″/N·cm]	0.2	0.2
	Lost Motion [µm]		3	5
	Backlash [µm]		3	3
	Parallelism [µm]		50	50
	Running Parallelism [µm]		10	10
	Pitch [″] / Yaw [″]		25/20	30/25
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF (Sharp Corporation)	
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
Scale head	Resolution [µm]		0.5	0.5

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK525HPB-C4 (□28mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	80mA or lower (20mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor
Scale head	Power Voltage / Current Consumption	DC5V±5% / 50mA

Compatible Cable

Cable	Driver Cable	D15D15A-CA
	Scale Cable	GSEF-CA-3

Compatible Driver / Controller

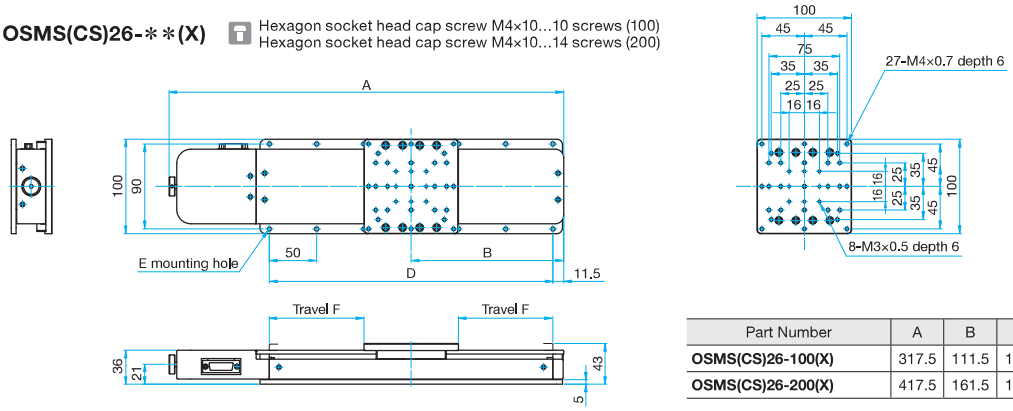
Control System	Compatible Driver	–
	Compatible Controller	SHOT-302GS, SHOT-304GS, HIT-M·HIT-S

2D CAD 3D CAD

Outline Drawing

OSMS(CS)26-＊＊(X)

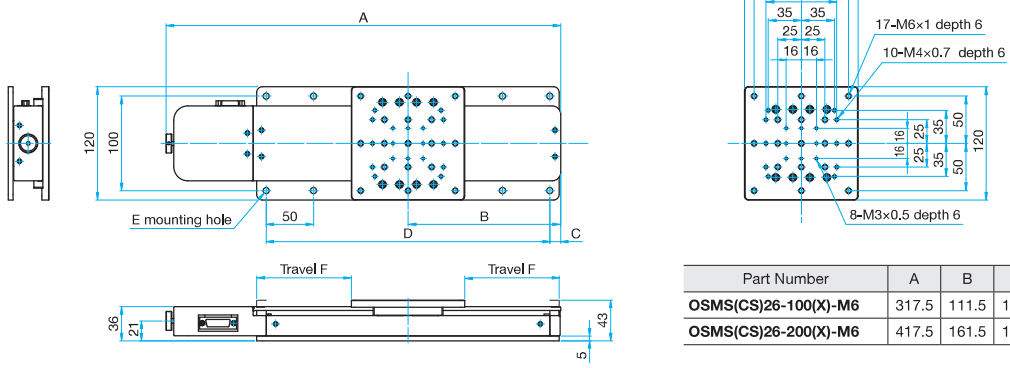
Hexagon socket head cap screw M4×10...10 screws (100)
Hexagon socket head cap screw M4×10...14 screws (200)



Part Number	A	B	C	D	E	F
OSMS(CS)26-100(X)	317.5	111.5	11.5	200 (50×4)	10-ϕ4.5	50
OSMS(CS)26-200(X)	417.5	161.5	11.5	300 (50×6)	14-ϕ4.5	100

OSMS(CS)26-＊＊(X)-M6

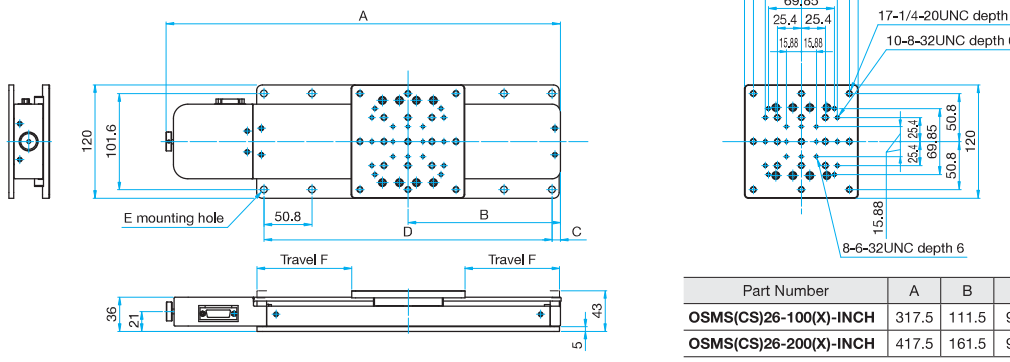
Hexagon socket head cap screw M6×10...10 screws (100)
Hexagon socket head cap screw M6×10...14 screws (200)



Part Number	A	B	C	D	E	F
OSMS(CS)26-100(X)-M6	317.5	111.5	11.5	200 (50×4)	10-ϕ6.5	50
OSMS(CS)26-200(X)-M6	417.5	161.5	11.5	300 (50×6)	14-ϕ6.5	100

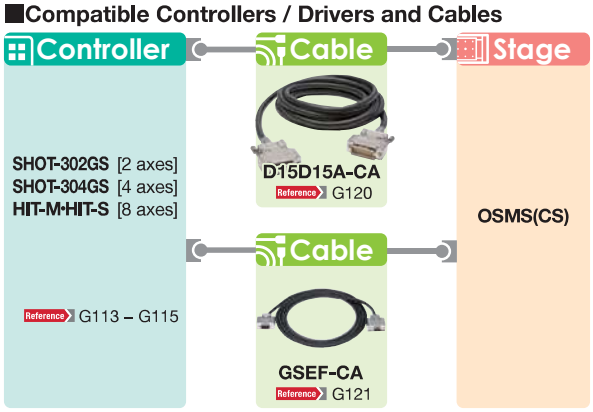
OSMS(CS)26-＊＊(X)-INCH

Hexagon socket head cap screw 1/4-20UNC×3/8...10 screws (100)
Hexagon socket head cap screw 1/4-20UNC×3/8...14 screws (200)



Part Number	A	B	C	D	E	F
OSMS(CS)26-100(X)-INCH	317.5	111.5	9.9	203.2 (50.8×4)	10-ϕ7	50
OSMS(CS)26-200(X)-INCH	417.5	161.5	9.1	304.8 (50.8×6)	14-ϕ7	100

Compatible Controllers / Drivers and Cables



OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS33-(X) Stage Size 120 x 120 mm

RoHS CE

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools for which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- We will assemble your X axis stage with a newly purchased X axis stage at a separate cost.

Specifications

Part Number			OSMS33-300(X)	OSMS33-500(X)
Part Number (-M6)			OSMS33-300(X)-M6	OSMS33-500(X)-M6
Part Number (-INCH)			OSMS33-300(X)-INCH	OSMS33-500(X)-INCH
Mechanical Specifications	Travel [mm]		300	500
	Stage Size [mm]		120×120	120×120
	Feed Screw		Ball screw diameter ϕ10mm, 10mm lead	Ball screw diameter ϕ10mm, 10mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		7.0	8.6
Accuracy Specifications	Resolution	(Full) [μm/pulse]	20	20
		(Half) [μm/pulse]	10	10
	MAX Speed [mm/sec]		120	120
	Positioning Accuracy [μm]		25	25
	Positional Repeatability [μm]		6	6
	Load Capacity [N]		196 (20.0kgf)	196 (20.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.12	0.12
		Yaw [″/N·cm]	0.08	0.08
		Roll [″/N·cm]	0.1	0.1
	Lost Motion [μm]		5	5
	Backlash [μm]		3	3
	Parallelism [μm]		50	50
	Running Parallelism [μm]		15	25
	Pitch [″] / Yaw [″]		40/25	40/25
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF (Sharp Corporation)	
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)
	Motor Part Number	TS3667N43E967 (□42mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	80mA or lower (20mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor

Compatible Driver / Controller

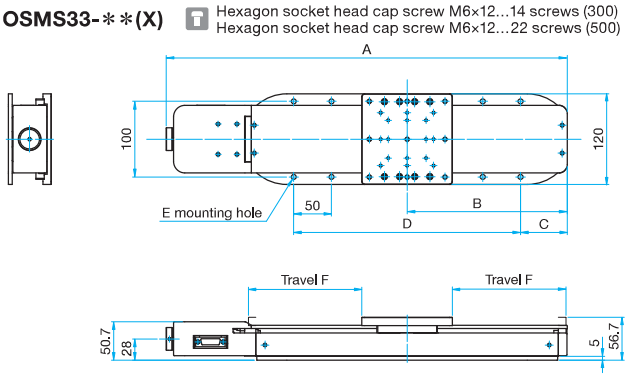
Control System	Compatible Driver	MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	SHOT-702, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

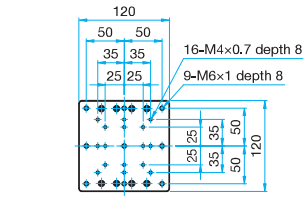
2D CAD 3D CAD

Outline Drawing

OSMS33-∗∗(X)

Hexagon socket head cap screw M6×12...14 screws (300)
Hexagon socket head cap screw M6×12...22 screws (500)



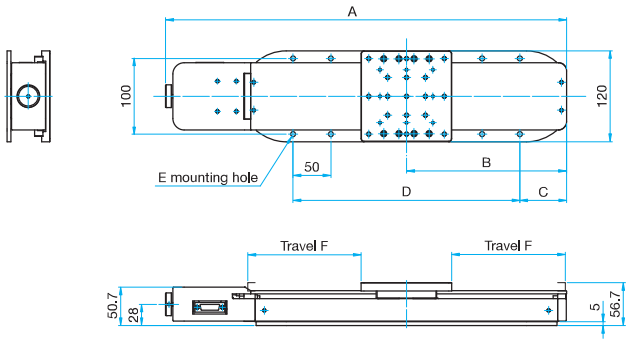


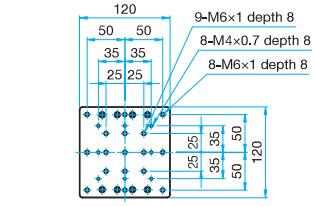
Mounting hole pattern of a top plate

Part Number	A	B	C	D	E	F
OSMS33-300(X)	530.3	211.8	61.8	300 (50×6)	14-φ6.5	150
OSMS33-500(X)	730.3	311.8	61.8	500 (50×10)	22-φ6.5	250

OSMS33-∗∗(X)-M6

Hexagon socket head cap screw M6×12...14 screws (300)
Hexagon socket head cap screw M6×12...22 screws (500)



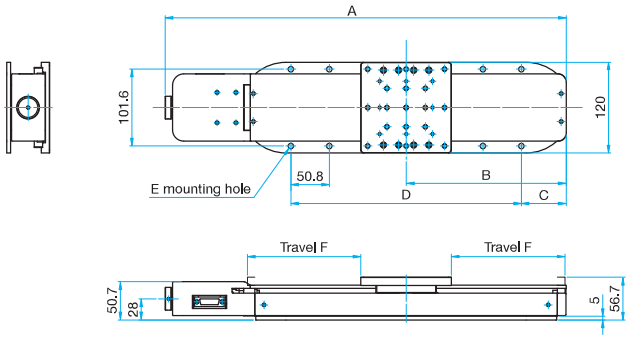


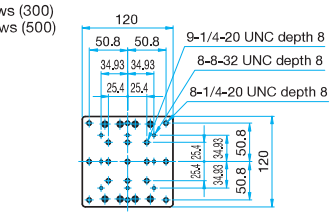
Mounting hole pattern of a top plate

Part Number	A	B	C	D	E	F
OSMS33-300(X)-M6	530.3	211.8	61.8	300 (50×6)	14-φ6.5	150
OSMS33-500(X)-M6	730.3	311.8	61.8	500 (50×10)	22-φ6.5	250

OSMS33-∗∗(X)-INCH

Hexagon socket head cap screw 1/4-20UNC×1/2...14 screws (300)
Hexagon socket head cap screw 1/4-20UNC×1/2...22 screws (500)

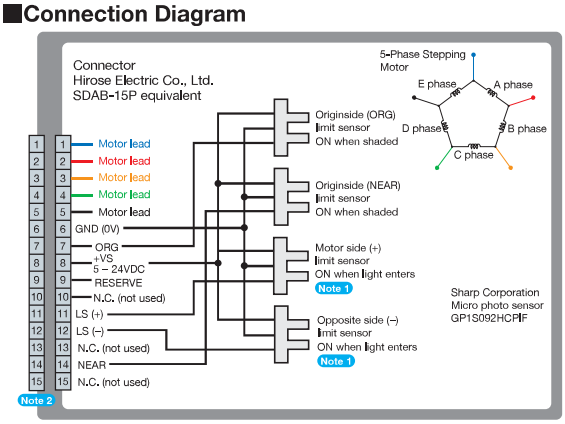




Mounting hole pattern of a top plate

Part Number	A	B	C	D	E	F
OSMS33-300(X)-INCH	530.3	211.8	59.4	304.8 (50.8×6)	14-φ7	150
OSMS33-500(X)-INCH	730.3	311.8	57.8	508 (50.8×10)	22-φ7	250

■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

■Compatible Controllers / Drivers and Cables

Controller
SHOT-702 [2 axes]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G110 – G117

Cable
D15D15A-CA
Reference G120

Stage
OSMS33-300(X)
OSMS33-500(X)

Driver
Drivers
Reference G020 – G021

Cable
DAC-SG
Reference G120

OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS33-(XY) Stage Size 120 x 120 mm

RoHS CE

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools for which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- We will assemble your X axis stage with a newly purchased X axis stage at a separate cost.

Specifications

Part Number			OSMS33-300(XY)	OSMS33-500(XY)
Part Number (-M6)			OSMS33-300(XY)-M6	OSMS33-500(XY)-M6
Part Number (-INCH)			OSMS33-300(XY)-INCH	OSMS33-500(XY)-INCH
Mechanical Specifications	Travel [mm]		300	500
	Stage Size [mm]		120×120	120×120
	Feed Screw		Ball screw diameter ϕ10mm, 10mm lead	Ball screw diameter ϕ10mm, 10mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		14.0	17.2
Accuracy Specifications	Resolution	(Full) [μm/pulse]	20	20
		(Half) [μm/pulse]	10	10
	MAX Speed [mm/sec]		80	80
	Load Capacity [N]		156 (16.0kgf)	156 (16.0kgf)
	Backlash [μm]		3	3
	Orthogonality of Motion [μm]		10	10
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF(Sharp Corporation)	
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)
	Motor Part Number	TS3667N43E967 (□42mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	160mA or lower (80mA or lower a per axis20mA or lower per a sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor

(Reference) Precision Specifications of Single Axis Stage

Part Number			OSMS33-300(X)	OSMS33-500(X)
Accuracy Specifications	Positioning Accuracy [μm]		25	20
	Positional Repeatability [μm]		6	6
	Moment Stiffness	Pitch [″/N·cm]	0.12	0.12
		Yaw [″/N·cm]	0.08	0.08
		Roll [″/N·cm]	0.1	0.1
	Lost Motion [μm]		5	5
	Parallelism [μm]		50	50
	Running Parallelism [μm]		15	25

Compatible Driver / Controller

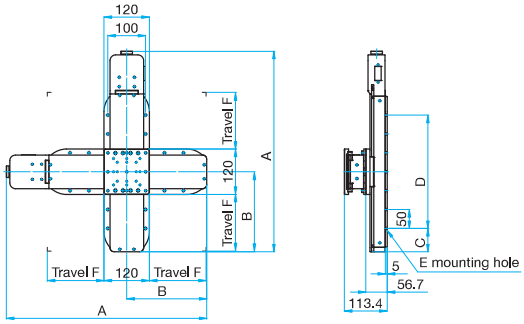
Control System	Compatible Driver	MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	SHOT-702, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

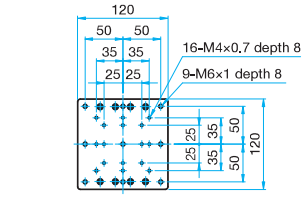
2D CAD 3D CAD

Outline Drawing

OSMS33-＊＊(XY)

Hexagon socket head cap screw M6×12...14 screws (300)
Hexagon socket head cap screw M6×12...22 screws (500)



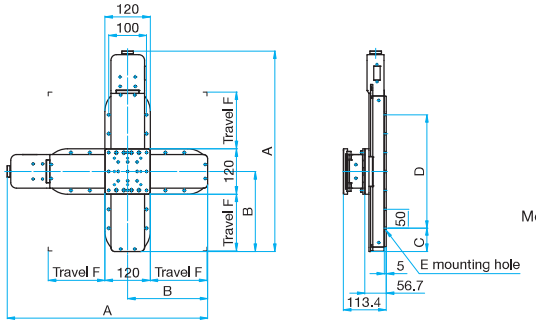


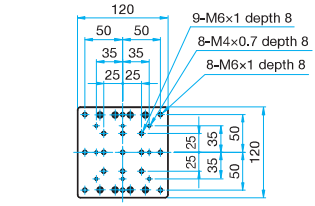
Mounting hole pattern of a top plate

Part Number	A	B	C	D	E	F
OSMS33-300(XY)	530.3	211.8	61.8	300 (50×6)	14-φ6.5	150
OSMS33-500(XY)	730.3	311.8	61.8	500 (50×10)	22-φ6.5	250

OSMS33-＊＊(XY)-M6

Hexagon socket head cap screw M6×12...14 screws (300)
Hexagon socket head cap screw M6×12...22 screws (500)



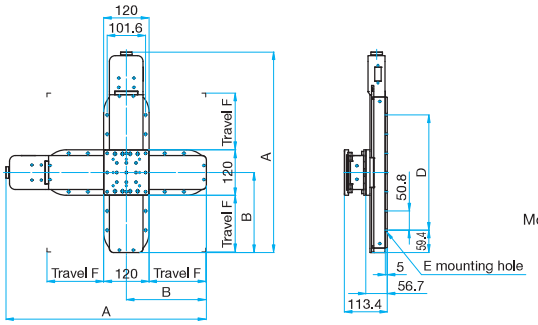


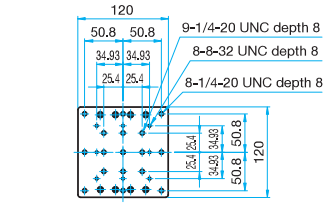
Mounting hole pattern of a top plate

Part Number	A	B	C	D	E	F
OSMS33-300(XY)-M6	530.3	211.8	61.8	300 (50×6)	14-φ6.5	150
OSMS33-500(XY)-M6	730.3	311.8	61.8	500 (50×10)	22-φ6.5	250

OSMS33-＊＊(XY)-INCH

Hexagon socket head cap screw 1/4-20UNC×1/2...14 screws (300)
Hexagon socket head cap screw 1/4-20UNC×1/2...22 screws (500)

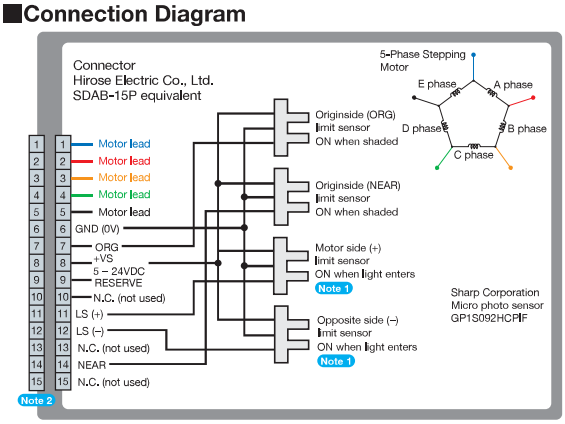




Mounting hole pattern of a top plate

Part Number	A	B	C	D	E	F
OSMS33-300(XY)-INCH	530.3	211.8	59.4	304.8 (50.8×6)	14-φ7	150
OSMS33-500(XY)-INCH	730.3	311.8	57.8	508 (50.8×10)	22-φ7	250

■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

■Compatible Controllers / Drivers and Cables

Controller
SHOT-702 [2 axes]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G110 – G117

Cable
D15D15A-CA
Reference G120

Stage
OSMS33-300(XY)
OSMS33-500(XY)

Driver
Drivers
Reference G020 – G021

Cable
DAC-SG
Reference G120

OSMS Series Translation Motorized Stages - 5 Phase Stepping Motor | OSMS33-(Z) Stage Size 120 x 120 mm RoHS CE

Stepping motor driven stages, ideal for positioning of measuring instruments or inspection tools for which high stiffness and high precision are required.

- U-shaped rail offers light weight, and minimized deflection to achieve high stiffness.

Guide

- Contact our Sales Division if you desire to change motors, etc.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- We will assemble your X axis stage with a newly purchased X axis stage at a separate cost.

Specifications

Part Number			OSMS33-300(Z)	OSMS33-500(Z)
Part Number (-M6)			OSMS33-300(Z)-M6	OSMS33-500(Z)-M6
Part Number (-INCH)			OSMS33-300(Z)-INCH	OSMS33-500(Z)-INCH
Mechanical Specifications	Travel [mm]		300	500
	Stage Size [mm]		120×120	120×120
	Feed Screw		Ball screw diameter ϕ10mm, 10mm lead	Ball screw diameter ϕ10mm, 10mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		14.5	16.1
Accuracy Specifications	Resolution	(Full) [μm/pulse]	20	20
		(Half) [μm/pulse]	10	10
	MAX Speed [mm/sec]		30	30
	Positioning Accuracy [μm]		50	50
	Positional Repeatability [μm]		6	6
	Load Capacity [N]		58.8 (6.0kgf)	58.8 (6.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.2	0.2
		Yaw [″/N·cm]	0.15	0.15
		Roll [″/N·cm]	0.15	0.15
	Lost Motion [μm]		5	5
	Backlash [μm]		3	3
	Orthogonality of Motion [μm]		30	35
	Pitch [″] / Yaw [″]		50/25	55/25
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF(Sharp Corporation)	
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)
	Motor Part Number	TS3667N43E967 (□42mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	80mA or lower (20mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor

Compatible Driver / Controller

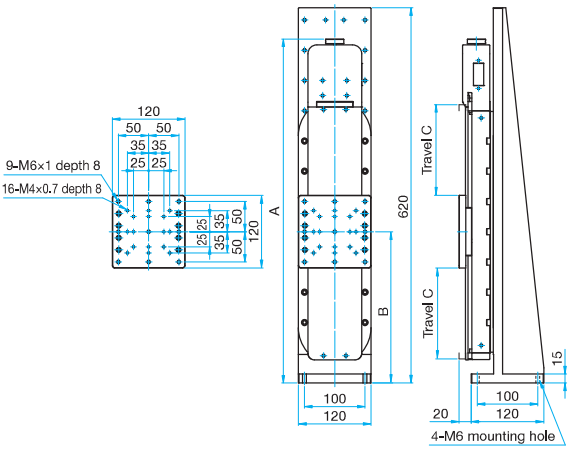
Control System	Compatible Driver	SG-514MSC, MC-7514PCL
	Compatible Controller	SHOT-702, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

OSMS33-＊＊(Z)

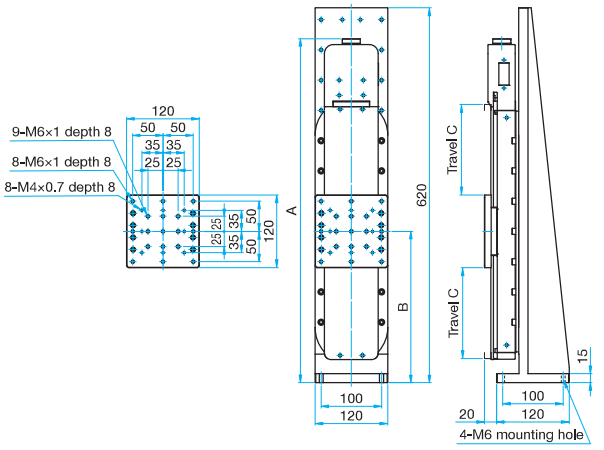
Hexagon socket head cap screw M6×22...4 screws



Part Number	A	B	C
OSMS33-300(Z)	568.5	250	150
OSMS33-500(Z)	768.5	350	250

OSMS33-＊＊(Z)-M6

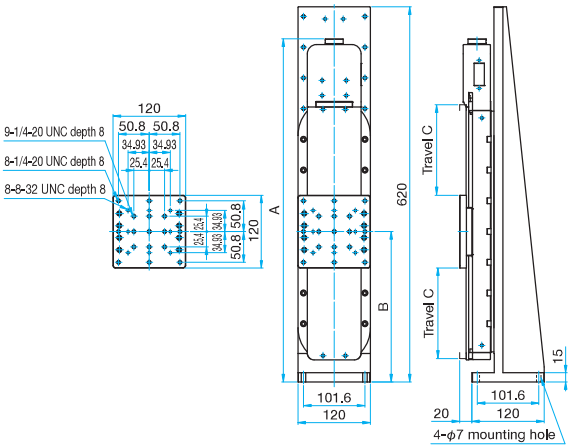
Hexagon socket head cap screw M6×22...4 screws



Part Number	A	B	C
OSMS33-300(Z)-M6	568.5	250	150
OSMS33-500(Z)-M6	768.5	350	250

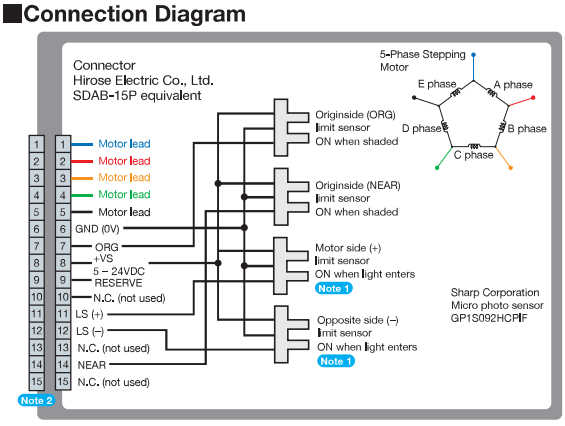
OSMS33-＊＊(Z)-INCH

Hexagon socket head cap screw 1/4-20UNC×7/8...4 screws



Part Number	A	B	C
OSMS33-300(Z)-INCH	568.5	248.4	150
OSMS33-500(Z)-INCH	768.5	350	250

■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.

Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

■Compatible Controllers / Drivers and Cables

Controller

SHOT-702 [2 axes]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]

Reference G110 – G117

Cable

D15D15A-CA

Reference G120

Stage

OSMS33-300(Z)
OSMS33-500(Z)

Driver

Drivers

Reference G020 – G021

Cable

DAC-SG

Reference G120

Precision Motorized Stages with Built-in Compact Scale | OSMS(CS)33-(X) Stage Size 120 x 120 mm

RoHS CE

Long travel, high stiffness precision motorized stages with built-in compact optical scales make highly accurate and reliable full closed loop system using Sigma-Koki controllers (SHOT-302GS/304GS, HIT-M·HIT-S)

- U-shaped guide rail offers light weight, and minimized deflection to achieve high stiffness.
- Includes a compact scale built in while keeping the installation space the same as that of the equivalent open loop OSMS series.

Guide

- Contact our Sales Division for replacement of motors or for stabilizing (drop-preventing) mechanism.
  Reference G017, G123 (Motorized Stage System Question Sheet)
  WEB Reference Catalog Code W9500
- Grease change is optionally available.
  Reference G122 WEB Reference Catalog Code W9006
- Contact our International Sales Division to use the stage as an XY axis or a Z axis stage.

Specifications

Part Number			OSMS(CS)33-300(X)	OSMS(CS)33-500(X)
Part Number (-M6)			OSMS(CS)33-300(X)-M6	OSMS(CS)33-500(X)-M6
Part Number (-INCH)			OSMS(CS)33-300(X)-INCH	OSMS(CS)33-500(X)-INCH
Mechanical Specifications	Travel [mm]		300	500
	Stage Size [mm]		120×120	120×120
	Feed Screw		Ball screw diameter ϕ10mm, 10mm lead	Ball screw diameter ϕ10mm, 10mm lead
	Positioning Slide		Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		7.8	9.6
Accuracy Specifications	Resolution	(Full) [µm/pulse]	20	20
		(Half) [µm/pulse]	10	10
	MAX Speed [mm/sec]		100	100
	Positioning Accuracy [µm]		25	25
	Positional Repeatability [µm]		5	5
	Load Capacity [N]		196 (20.0kgf)	196 (20.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.12	0.12
		Yaw [″/N·cm]	0.08	0.08
		Roll [″/N·cm]	0.1	0.1
	Lost Motion [µm]		5	5
	Backlash		3	3
	Parallelism [µm]		50	50
	Running Parallelism [µm]		15	25
	Pitch [″] / Yaw [″]		40/25	40/25
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF (Sharp Corporation)	
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
Scale head	Resolution [µm]		0.5	0.5

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)
	Motor Part Number	TS3667N43E967 (□42mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	80mA or lower (20mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor
Scale head	Power Voltage / Current Consumption	DC5V±5% / 100mA

Compatible Cable

Cable	Driver Cable	D15D15A-CA
	Scale Cable	GSEF-CA-3

Compatible Driver / Controller

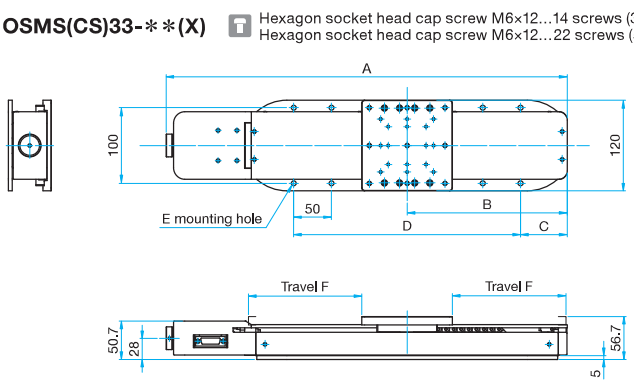
Control System	Compatible Driver	–
	Compatible Controller	SHOT-302GS, SHOT-304GS, HIT-M·HIT-S

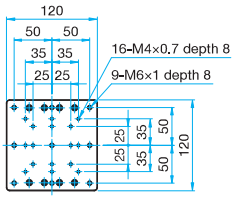
2D CAD 3D CAD

Outline Drawing

OSMS(CS)33-＊＊(X)

Hexagon socket head cap screw M6×12...14 screws (300)
Hexagon socket head cap screw M6×12...22 screws (500)



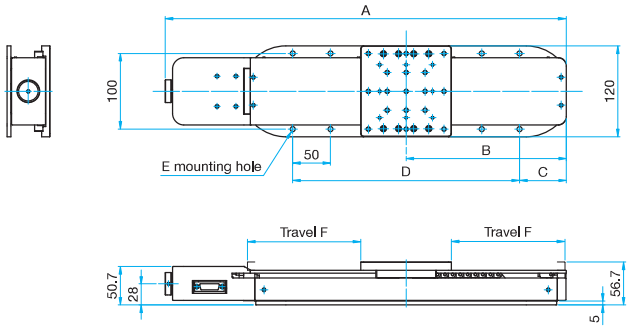


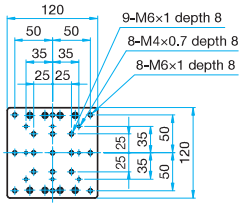
Mounting hole pattern of a top plate

Part Number	A	B	C	D	E	F
OSMS(CS)33-300(X)	530.3	211.8	61.8	300 (50×6)	14-φ6.5	150
OSMS(CS)33-500(X)	730.3	311.8	61.8	500 (5×10)	22-φ6.5	250

OSMS(CS)33-＊＊(X)-M6

Hexagon socket head cap screw M6×12...14 screws (300)
Hexagon socket head cap screw M6×12...22 screws (500)



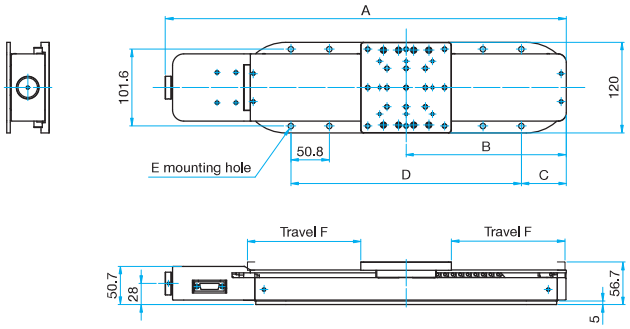


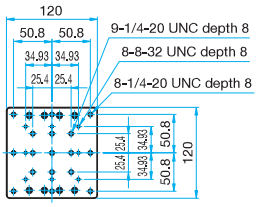
Mounting hole pattern of a top plate

Part Number	A	B	C	D	E	F
OSMS(CS)33-300(X)-M6	530.3	211.8	61.8	300 (50×6)	14-φ6.5	150
OSMS(CS)33-500(X)-M6	730.3	311.8	61.8	500 (5×10)	22-φ6.5	250

OSMS(CS)33-＊＊(X)-INCH

Hexagon socket head cap screw 1/4-20UNC×1/2...14 screws (300)
Hexagon socket head cap screw 1/4-20UNC×1/2...22 screws (500)

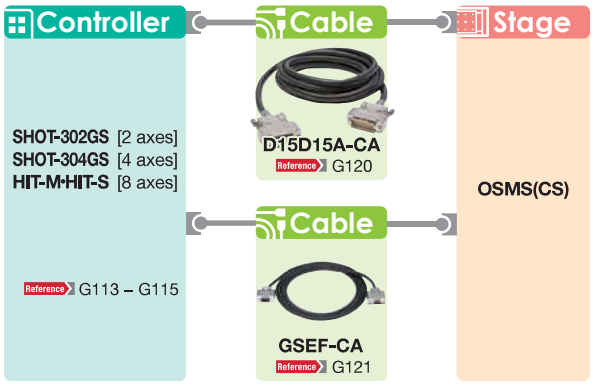




Mounting hole pattern of a top plate

Part Number	A	B	C	D	E	F
OSMS(CS)33-300(X)-INCH	530.3	211.8	59.4	304.8 (50.8×6)	14-φ7	150
OSMS(CS)33-500(X)-INCH	730.3	311.8	57.8	508 (50.8×10)	22-φ7	250

Compatible Controllers / Drivers and Cables



SGMV series Translation Motorized Stages - AC servo Motor
Stage Size 60 × 60 mm / 80 × 80 mm

SGMV RoHS

High precision/high stiffness stages driven by AC servo motor.

- U-shaped rail with integral ball screw offers light weight, and minimized deflection for high stiffness.

Specifications

Part Number			SGMV20-35(X)-0B	SGMV20-80(X)-0B	SGMV26-100(X)-0B	SGMV26-200(X)-0B
Mechanical Specifications	Travel [mm]		35	80	100	200
	Stage Size [mm]		60×60	60×60	80×80	80×80
	Feed Screw		Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead
	Positioning Slide		Outer rail structure	Outer rail structure	Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized	Black anodized
	Weight [kg]		0.7	1	1.7	2.5
Accuracy Specifications	Resolution	(Full) [μm/pulse]	—	—	—	—
		(Half) [μm/pulse]	—	—	—	—
	MAX Speed [mm/sec]		35	80	130	130
	Positioning Accuracy [μm]		7	10	10	15
	Positional Repeatability [μm]		4	5	5	6
	Load Capacity [N]		80 (8.0kgf)	80 (8.0kgf)	130 (13.0kgf)	130 (13.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.4	0.4	0.23	0.23
		Yaw [″/N·cm]	0.25	0.25	0.12	0.12
		Roll [″/N·cm]	0.35	0.35	0.2	0.2
	Lost Motion [μm]		2	2	2	2
	Backlash [μm]		2	2	2	2
	Parallelism [μm]		30	30	50	50
	Running Parallelism [μm]		10	10	10	10
	Pitch [″] / Yaw [″]		30/20	30/20	30/20	30/25
Sensor	Sensor Part Number		Micro photo sensor: PM-L25 (SUNX Co.,Ltd.)			
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		None	None	None	None
	Proximity Origin Sensor		None	None	None	None

Motor / Sensor Specifications

Motor	Type	AC servo Motor 10W (YASKAWA Electric Corporation)
	Motor Part Number	SGMMV-A1E2A21 (□25mm)
	Rated Torque	0.0318N·m
	Resolution Encoder	17bit (131,072p/r)
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	30mA or lower (15mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction)

Compatible Driver / Controller

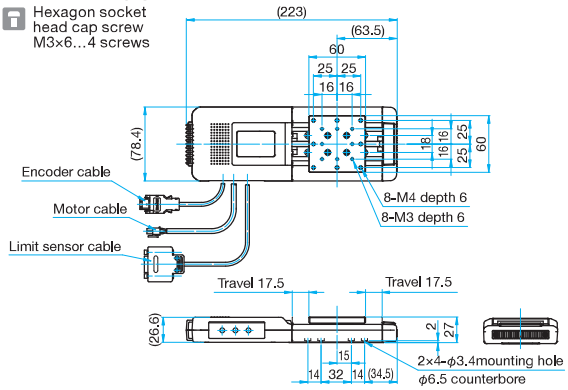
Control System	Compatible Driver	SGDV-2R9EP1A
	Compatible Controller	PGC-04-U

2D CAD 3D CAD

Outline Drawing

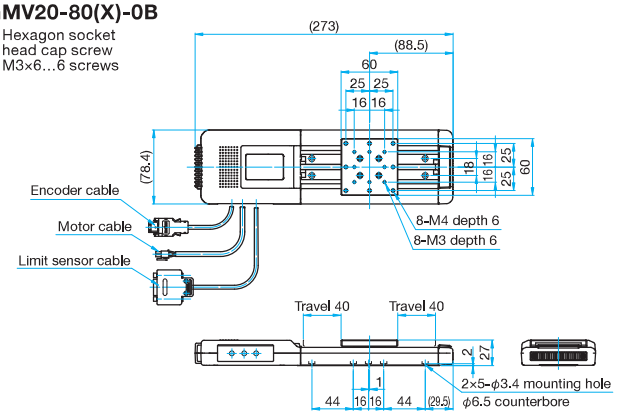
SGMV20-35(X)-0B

Hexagon socket head cap screw M3×6…4 screws



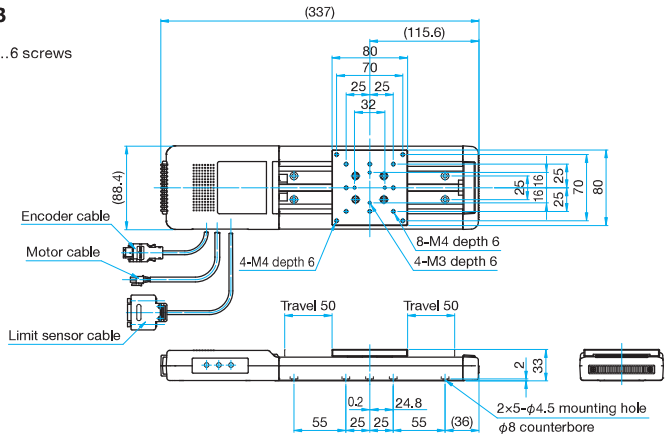
SGMV20-80(X)-0B

Hexagon socket head cap screw M3×6…6 screws



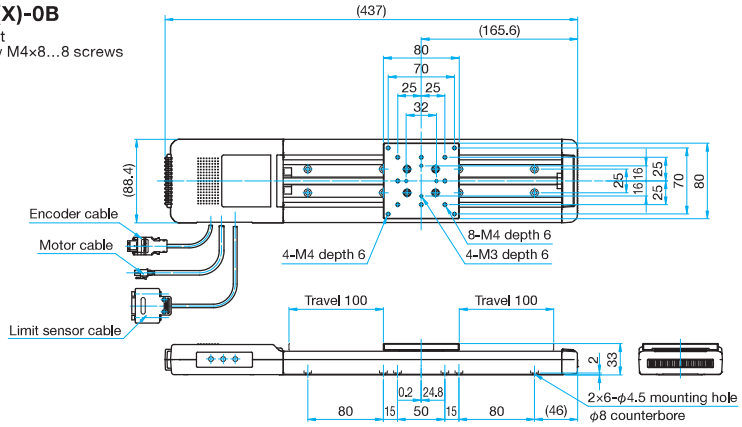
SGMV26-100(X)-0B

Hexagon socket head cap screw M4×8…6 screws



SGMV26-200(X)-0B

Hexagon socket head cap screw M4×8…8 screws



Encoder cable*2
Cable Length ≒280mm
Plug: 55102-0600 (Molex Japan Co., Ltd.)

Motor cable*2
Cable Length ≒280mm
Receptacle: 43025-0400 (Molex Japan Co., Ltd.)

Limit sensor cable
Cable Length ≒280mm
D-sub9Pin (JAE)
(Connector DE-9P-NR
\ Hood DE-C8-J9-F1-1R

*2
Servo Pack SGDV-2R9EP1A

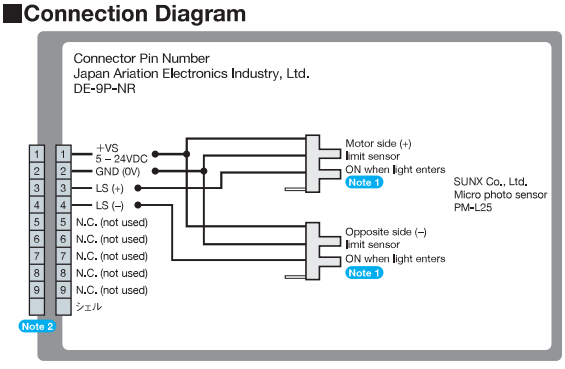
Controller / Servo Pack

Part Number	Products Name
PGC-04-U	Pulus Generating Controller
SGDV-2R9EP1A	Servo Packs for Driving Servo Motor

Cable

Part Number	Products Name	Cable Lenght [m]
PGC-ACS-1	Servo Pack (For PGC-04-U) (Controller Side: 10126-3000PE Stage Side: DE-957S-NR Servo Pack Side: 10126-3000PE)	1
JZSP-CF1M00-03-E	Cable for SGMV (For AC Servo)	3
JZSP-CMP00-03-E	Cable for SGMV (For Encoder)	3
JZSP-CF1G00-01-E	Cable for SGMV (For Power)	1

Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor. Motorized stages are not fitted with origin and proximity origin sensors. Limit sensors are used as origin detection sensors.

Note 2 Compatible cable connector: Japan Aviation Electronics Industry, Ltd. DE-C8-J9-F1-1R

Thin Long Travel Stage
Stage Size 80 × 80 mm / 120 × 120 mm

KLSA/KLSS

RoHS

Designed for high stiffness while minimizing the height of the stage.

- Four linear guide blocks are located at optimal positions to improve positional repeatability.
- For lower cost, the KLSA has an aluminum body. For maximum rigidity, the KLSS has a steel body.

Guide

- Please contact us when assembled into XYZ axis or use in reversion on the ceiling or vertical direction.
- Opposite model or various motor changes are optionally available.

Reference G030

Specifications

Part Number			KLSA-100X-0B	KLSS-100X-0B	KLSA-200X-0B	KLSS-200X-0B
Mechanical Specifications	Travel [mm]		100	100	200	200
	Stage Size [mm]		80×80	80×80	120×120	120×120
	Feed Screw		Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ10mm, 5mm lead	Ball screw diameter ϕ10mm, 5mm lead
	Positioning Slide		Liner guide	Liner guide	Liner guide	Liner guide
	Stage Material		Aluminum	Steel	Aluminum	Steel
	Finish		Black anodized	Black chromium oxide	Black anodized	Black chromium oxide
	Weight [kg]		2.2	3.5	5.1	7.7
Accuracy Specifications	Resolution	(Full) [μm/pulse]	4	4	10	10
		(Half) [μm/pulse]	2	2	5	5
	MAX Speed [mm/sec]		30	30	50	50
	Positioning Accuracy [μm]		15	15	20	20
	Positional Repeatability [μm]		±1	±1	±1	±1
	Load Capacity [N]		147 (15kgf)	147 (15kgf)	294 (30kgf)	294 (30kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.05	0.05	0.02	0.02
		Yaw [″/N·cm]	0.05	0.05	0.02	0.02
		Roll [″/N·cm]	0.1	0.1	0.02	0.02
	Lost Motion [μm]		4	4	4	4
	Backlash [μm]		1	1	1	1
	Parallelism [μm]		50	50	50	50
	Orthogonality of Motion [μm]		10	10	10	10
	Pitch [″] / Yaw [″]		20/15	20/15	40/20	40/20
Sensor	Sensor Part Number		Micro photo sensor: PM-L25 (SUNX Co.,Ltd.): Limit sensor, origin sensor			
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK545-NBW (□42mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	45mA or lower (15mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	In the case of light shielded ,output transistor OFF (No conduction): Limit sensor In the case of light shielded ,output transistor ON (Conduction): Origin sensor

Compatible Driver / Controller

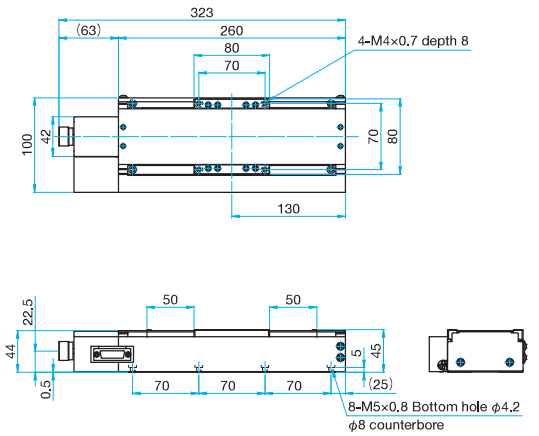
Control System	Compatible Driver	MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

Application Systems
Optics & Optical Coatings
Opto-Mechanics
Bases
Manual Stages
Actuators & Adjusters
Motoeized Stages
Light Sources & Laser Safety
Index
Guide
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

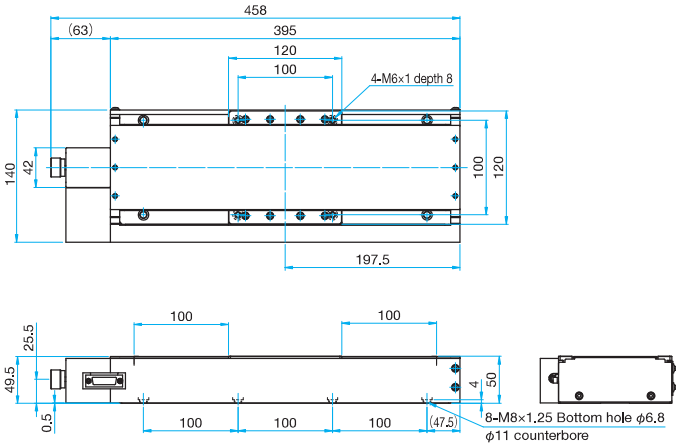
2D CAD 3D CAD

Outline Drawing

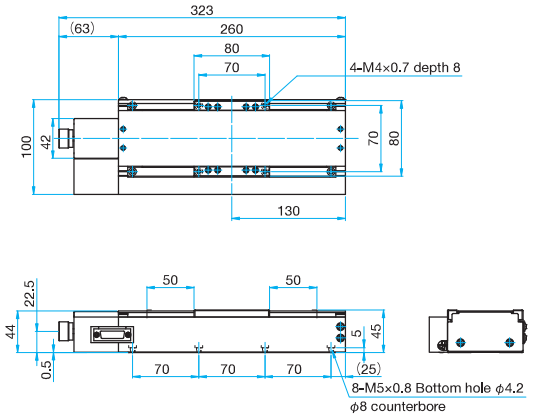
KLSA-100X-0B Hexagon socket head cap screw M4×10…8 screws



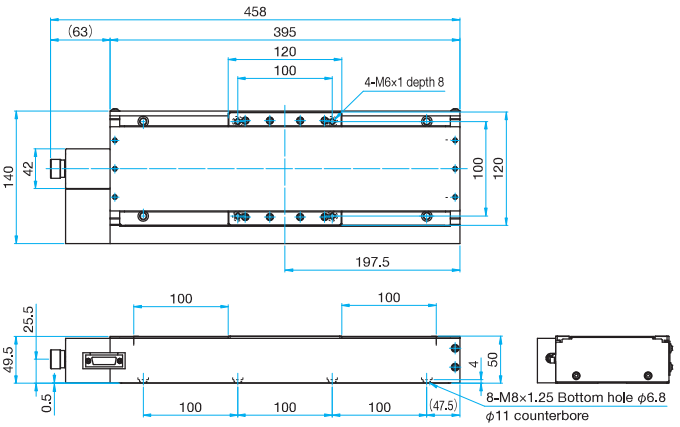
KLSA-200X-0B Hexagon socket head cap screw M6×12…8 screws



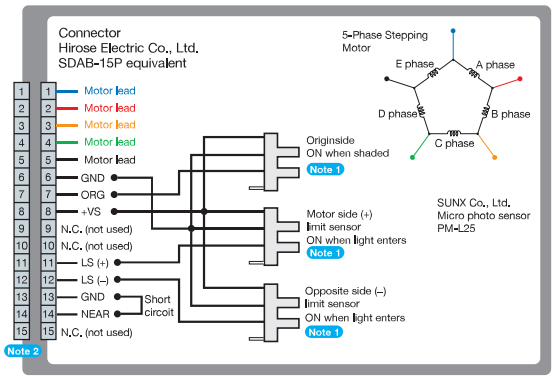
KLSS-100X-0B Hexagon socket head cap screw M4×10…8 screws



KLSS-200X-0B Hexagon socket head cap screw M6×12…8 screws



■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with origin and proximity origin sensors.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

■Compatible Controllers / Drivers and Cables

Controller
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M/HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G112 – G117

Cable

D15D15A-CA
Reference G120

Stage
KLSA-100X-0B
KLSS-100X-0B
KLSA-200X-0B
KLSS-200X-0B

Driver
Drivers
Reference G020 – G021

Cable

DAC-SG
Reference G120

Aluminum Crossed Roller Guide Motorized Stage

Stage Size 40 × 40 mm / 60 × 60 mm / 100 × 100 mm / 100 × 175 mm

TAMM RoHS

Motorized crossed roller stages offer small foorprint, low-profile and high durability.

These linear stages utilize
- anti-creep crossed roller bearings
- a special nut-shape ball screw.
- black anodized aluminum body.

Guide

- Due to the motor offset, a spacer is required when mounting the stage on a flat surface (MSP-40 WEB Reference Catalog Code W6035, WEB Reference Catalog Code W6036 or Contact our Sales Division for custom spacers) Reference D041 –
- After purchasing two X axis stages, to assemble them into an XY axis stage, assembly adjustment cost and performance inspection cost will be charged separately.
- Contact our Sales Division for other customization options including alternate motors. Or, use the motorized stage system question sheet. Reference G123 WEB Reference Catalog Code W9500

Specifications

Part Number			CE TAMM40-10C	CE TAMM60-15C	TAMM100-50C	TAMM100-100C
Opposite ModelPart Number			CE TAMM40-10CR	CE TAMM60-15CR	TAMM100-50CR	TAMM100-100CR
Mechanical Specifications	Travel [mm]		10	15	50	100
	Stage Size [mm]		40×40	60×60	100×100	100×175
	Feed Screw		Ball screw diameter ϕ4mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ8mm, 1mm lead	Ball screw diameter ϕ8mm, 1mm lead
	Positioning Slide		Crossed roller guide	Crossed roller guide	Crossed roller guide	Crossed roller guide
	Stage Material		Aluminum	Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized	Black anodized
	Weight [kg]		0.33	0.48	1.9	2.9
Accuracy Specifications	Resolution	(Full) [µm/pulse]	2	2	2	2
		(Half) [µm/pulse]	1	1	1	1
	MAX Speed [mm/sec]		10	10	10	10
	Positioning Accuracy [µm]		6	6	6	10
	Positional Repeatability [µm]		1	1	1	1
	Load Capacity [N]		29.4 (3.0kgf)	49 (5.0kgf)	98 (10.0kgf)	98 (10.0kgf)
	Moment Stiffness[″/N·cm]		1.5	0.5	0.05	0.03
	Lost Motion [µm]		1	1	1	1
	Backlash [µm]		1	1	1	1
	Parallelism [µm]		30	30	30	30
	Running Parallelism [µm]		10	10	10	10
	Pitch [″] / Yaw [″]		25/25	20/20	20/15	20/15
Sensor	Sensor Part Number		Micro photo sensor: GP1S097HCZ (Sharp Corporation) Limit Sensor, Origin Sensor			
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)	
	Motor Part Number	PK523HPB-C12 (□28mm)	PK544NBW (□42mm)
	Step Angle	0.72°	
Sensor	Power Voltage	DC5 - 24V±10%	
	Current Consumption	60mA or lower (20mA or lower per sensor)	
	Control Output	NPN open collector output DC30V or lower, 50mA or lower	
	Output Logic	In the case of light shielded ,output transistor OFF (No conduction): Limit sensor In the case of light shielded ,output transistor ON (Conduction): Origin sensor	

Compatible Driver / Controller

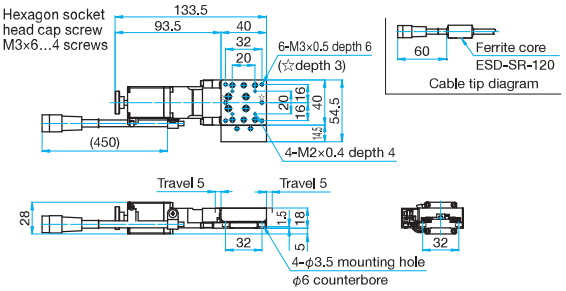
Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL	SG-5M, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103 SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U	SHOT-702, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

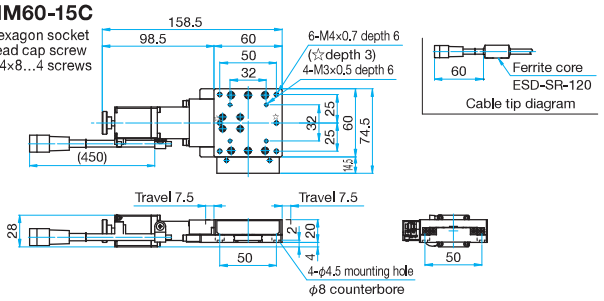
TAMM40-10C

Hexagon socket head cap screw M3×6…4 screws

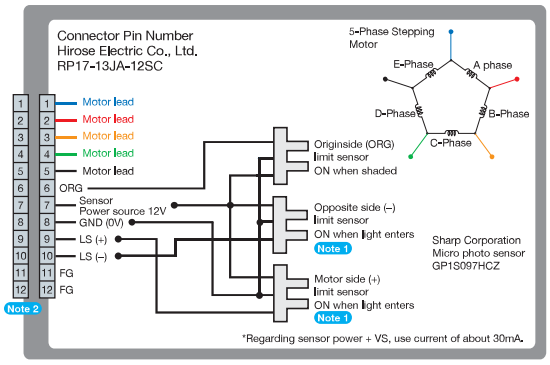


TAMM60-15C

Hexagon socket head cap screw M4×8…4 screws



Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with proximity origin sensors.
Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

Compatible Controllers / Drivers and Cables

Controller

GSC-01 [1 axis]
GSC-02 [2 axes]
SHOT-702 [2 axes]
GIP-101 [1 axis]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G108 – G117

Cable

D15RP-CA
Reference G120

Stage

TAMM40-10C
TAMM60-15C

Driver

Drivers
Reference G020 – G021

Cable

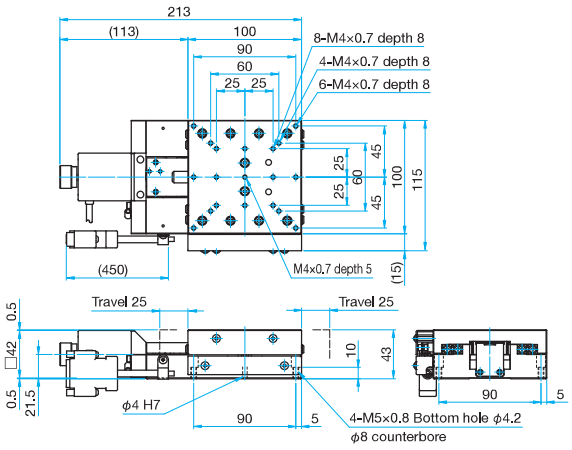
MINI-CA-SG
Reference G120

Stage

TAMM40-10C
TAMM60-15C

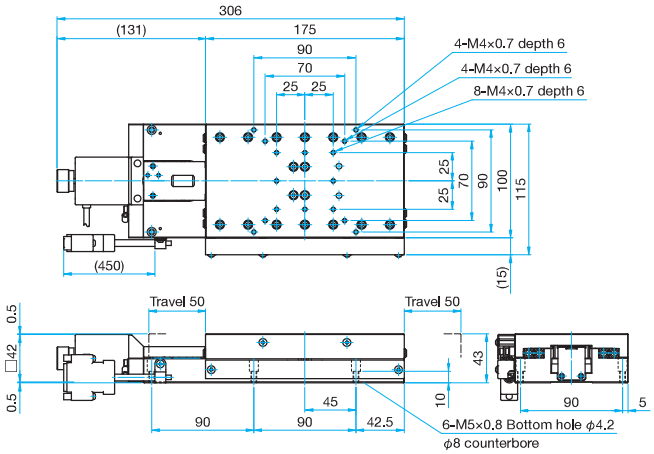
TAMM100-50C

Hexagon socket head cap screw M4×15…4 screws

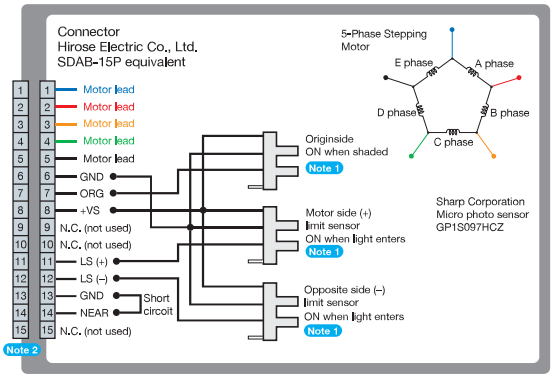


TAMM100-100C

Hexagon socket head cap screw M4×15…6 screws



Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with origin and proximity origin sensors.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

Compatible Controllers / Drivers and Cables

Controller

SHOT-702 [2 axes]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G110 – G117

Cable

D15D15A-CA
Reference G120

Stage

TAMM100-50C
TAMM100-100C

Driver

Drivers
Reference G020 – G021

Cable

DAC-SG
Reference G120

Stage

TAMM100-50C
TAMM100-100C

Aluminum Crossed Roller Guide Motorized Stage

Stage Size 40 × 40 mm / 60 × 60 mm / 100 × 100 mm / 100 × 175 mm

TAMM-XY RoHS

Motorized crossed roller stages offer small foorprint, low-profile and high durability.

These linear stages utilize
- anti-creep crossed roller bearings
- a special nut-shape ball screw.
- black anodized aluminum body.

Guide

- Due to the motor offset, a spacer is required when mounting the stage on a flat surface (MSP-40 WEB Reference Catalog Code W6035, MSP-60 WEB Reference Catalog Code W6036 or Contact our Sales Division for custom spacers) Reference D055 –
- After purchasing two X axis stages, to assemble them into an XY axis stage, assembly adjustment cost and performance inspection cost will be charged separately.
- Contact our Sales Division for other customization options including alternate motors. Or, use the motorized stage system question sheet. Reference G123 WEB Reference Catalog Code W9500

Specifications

Part Number			TAMM40-10C(XY)	TAMM60-15C(XY)	TAMM100-50C(XY)	TAMM100-100C(XY)
Mechanical Specifications	Travel [mm]		10	15	50	100
	Stage Size [mm]		40×40	60×60	100×100	100×175
	Feed Screw		Ball screw diameter ϕ4mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ8mm, 1mm lead	Ball screw diameter ϕ8mm, 1mm lead
	Positioning Slide		Crossed roller guide	Crossed roller guide	Crossed roller guide	Crossed roller guide
	Stage Material		Aluminum	Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized	Black anodized
	Weight [kg]		0.66	0.96	3.8	5.8
Accuracy Specifications	Resolution	(Full) [μm/pulse]	2	2	2	2
		(Half) [μm/pulse]	1	1	1	1
	MAX Speed [mm/sec]		10	10	10	10
	Load Capacity [N]		24.5 (2.5kgf)	39.2 (4.0kgf)	78.4 (8.0kgf)	68.6 (7.0kgf)
	Backlash [μm]		1	1	1	1
	Orthogonality of Motion [μm]		5	5	5	5
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF(Sharp Corporation)			
	Limit Sensor		Equipped (NORMAL CLOSE)			
	Origin Sensor		Equipped (NORMAL OPEN)			
	Proximity Origin Sensor		None			

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)	
	Motor Part Number	PK523HPB-C12 (□28mm)	PK544NBW (□42mm)
	Step Angle	0.72°	
Sensor	Power Voltage	DC5 – 24V±10%	
	Current Consumption	120mA or lower (60mA or lower a per axis20mA or lower per a sensor)	
	Control Output	NPN open collector output DC30V or lower, 50mA or lower	
	Output Logic	In the case of light shielded ,output transistor OFF (No conduction): Limit sensor In the case of light shielded ,output transistor ON (Conduction): Origin sensor	

Compatible Driver / Controller

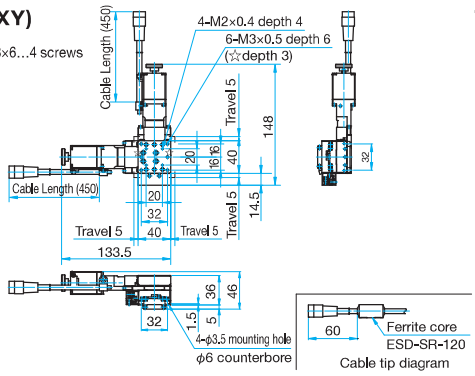
Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL	SG-5M, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-02, SHOT-702, SHOT-302GS, SHOT-304GS, HIT-M, HIT-S, PGC-04-U, HSC-103	SHOT-702, SHOT-302GS, SHOT-304GS, HIT-M, HIT-S, PGC-04-U, HSC-103

2D CAD 3D CAD

Outline Drawing

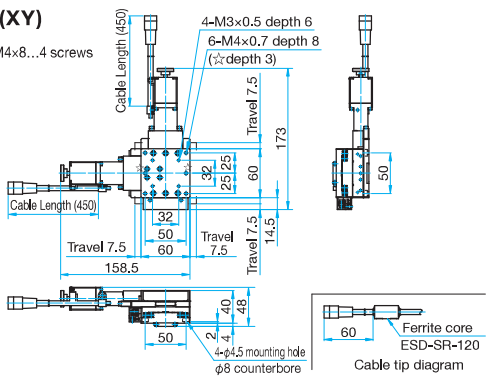
TAMM40-10C(XY)

Hexagon socket head cap screw M3×6…4 screws

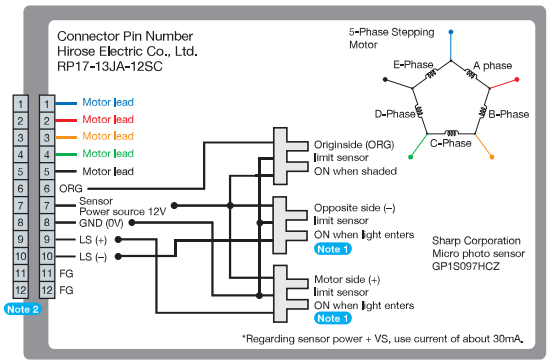


TAMM60-15C(XY)

Hexagon socket head cap screw M4×8…4 screws



Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with proximity origin sensors.
Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

Compatible Controllers / Drivers and Cables

Controller

GSC-02 [2 axes]
SHOT-702 [2 axes]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
PGC-04-U [4 axes]
HIT-M·HIT-S [8 axes]
Reference G110 – G117

Cable

D15RP-CA
Reference G120

Stage

TAMM40-10C(XY)
TAMM60-15C(XY)

Driver

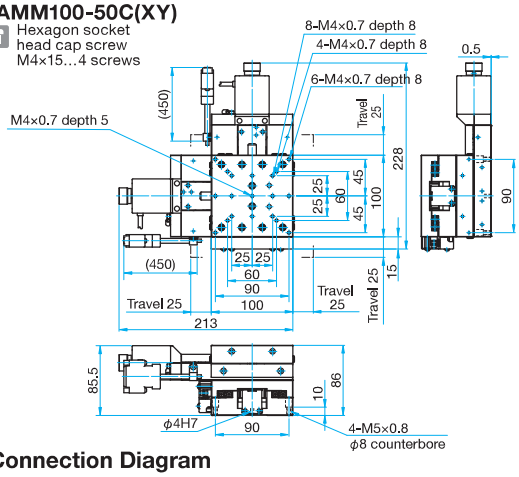
Drivers
Reference G020 – G021

Cable

MINI-CA-SG
Reference G120

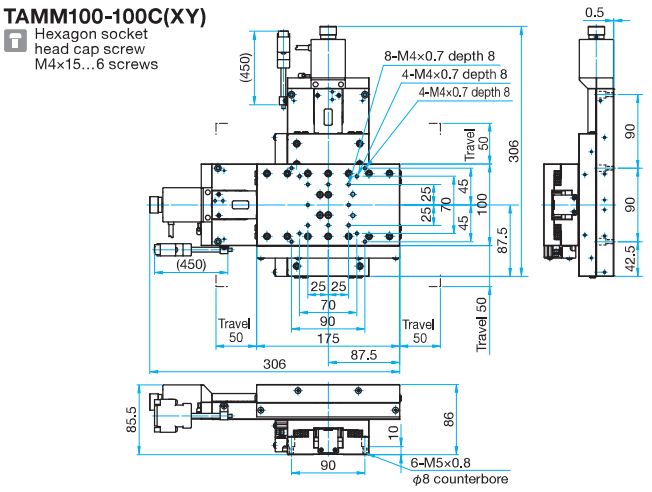
TAMM100-50C(XY)

Hexagon socket head cap screw M4×15…4 screws

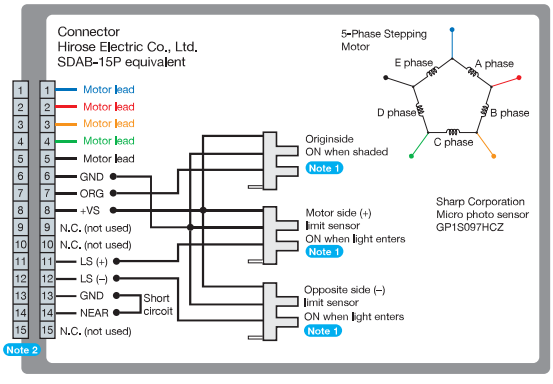


TAMM100-100C(XY)

Hexagon socket head cap screw M4×15…6 screws



Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with origin and proximity origin sensors.
Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

Compatible Controllers / Drivers and Cables

Controller

SHOT-702 [2 axes]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G110 – G117

Cable

D15D15A-CA
Reference G120

Stage

TAMM100-50C(XY)
TAMM100-100C(XY)

Driver

Drivers
Reference G020 – G021

Cable

DAC-SG
Reference G120

Precision Motorized Stages - 5 Phase Stepping Motor

Stage Size 165 × 165 mm / 165 × 220 mm /165 × 420 mm

HST-X RoHS CE

High precision X axis stages fitted with precision ball screws and precision crossed roller.

- The combination of HST Series and 3 axis Stage Controllers HSC-103 can perform low-noise and low-vibration operation, compared with conventional products.
- Steel body offers excellent stiffness and high load capacity.

Guide

- Contact our sales team for more information regarding customization. Reference G123 WEB Reference Catalog Code W9500
- Two single axis stages can be sent to OptoSigma to be assembled, aligned and tested for a nominal cost.

Specifications

Part Number			HST-50X	HST-100X	HST-200X
Mechanical Specifications	Travel [mm]		50	100	200
	Stage Size [mm]		165×165	165×220	165×420
	Feed Screw		Ball screw diameter ϕ10mm, 2mm lead	Ball screw diameter ϕ10mm, 2mm lead	Ball screw diameter ϕ10mm, 2mm lead
	Positioning Slide		Crossed roller	Crossed roller	Crossed roller
	Stage Material		Steel	Steel	Steel
	Weight [kg]		8.7	10.6	18.7
Accuracy Specifications	Resolution	(Full) [μm/pulse]	4	4	4
		(Half) [μm/pulse]	2	2	2
	MAX Speed [mm/sec]		10	10	20
	Positioning Accuracy [μm]		5	7	8
	Positional Repeatability [μm]		2	2	2
	Load Capacity [N]		392 (40.0kgf)	392 (40.0kgf)	392 (40.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.01	0.01	0.01
		Yaw [″/N·cm]	0.01	0.01	0.01
		Roll [″/N·cm]	0.005	0.005	0.005
	Lost Motion [μm]		1	1	1
	Backlash [μm]		1	1	1
	Parallelism [μm]		50	70	100
	Running Parallelism [μm]		10	10	20
	Pitch [″] / Yaw [″]		15/15	20/20	20/20
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF (Sharp Corporation)		
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 1.4A/phase (Oriental Motor Co., Ltd.)		
	Motor Part Number	PKP544N18B (□42mm)	PKP544N18B (□42mm)	PKP546N18B (□42mm)
	Step Angle	0.72°		
Sensor	Power Voltage	DC5 – 24V ±10%		
	Current Consumption	80mA or lower (20mA or lower per sensor)		
	Control Output	NPN open collector output DC30V or lower, 50mA or lower		
	Output Logic	When shaded: Output transistor OFF (no conduction): Limit sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor		

Compatible Cable

Cable	Driver Cable	D15D15A-CA

Compatible Driver / Controller

Control System	Compatible Driver	SG-5M, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-SH, PGC-04-U

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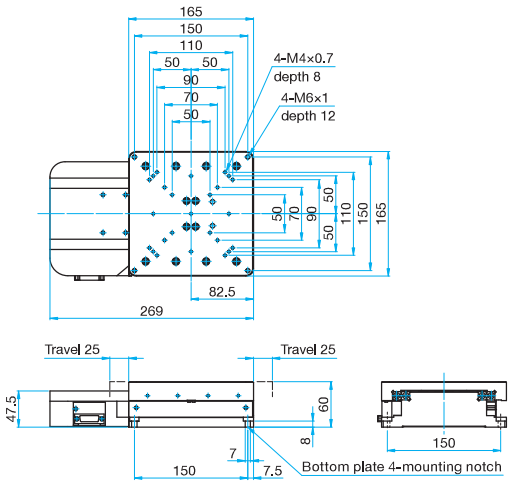
40 × 40 mm
60 × 60 mm
80 × 80 mm
85 × 85 mm
100 × 100 mm
120 × 120 mm
Others

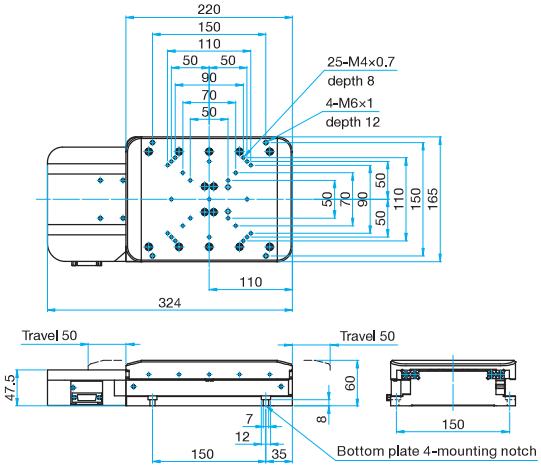
2D CAD 3D CAD

Outline Drawing

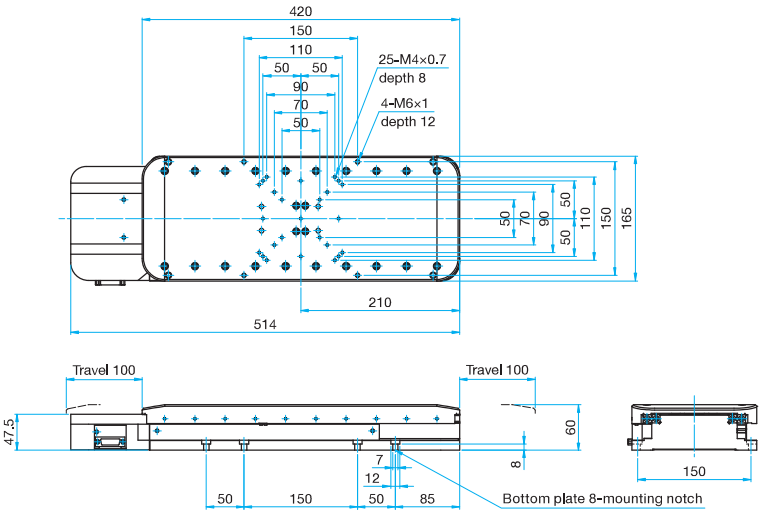
HST-50X
Hexagon socket head cap screw M6×15…4 screws



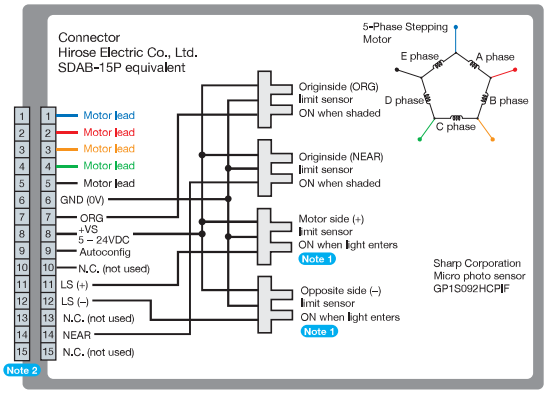
HST-100X
Hexagon socket head cap screw M6×15…4 screws



HST-200X
Hexagon socket head cap screw M6×15…8 screws



Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.

Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

Compatible Controllers / Drivers and Cables

Controller
- HSC-103 [3 axes]
- SHOT-302GS [4 axes]
- SHOT-304GS [3 axes]
- HIT-M·HIT-SH [8 axes]
- PGC-04-U [4 axes]

Reference G112 – G115

Cable

D15D15A-CA

Reference G120

Stage

HST-X

Driver

Drivers

Reference G020 – G021

Cable

DAC-SG

Reference G120

Precision Motorized Stages - 5 Phase Stepping Motor

Stage Size 165 × 165 mm / 165 × 220 mm /165 × 420 mm

HST-XY RoHS

High precision XY axis stages fitted with precision ball screws and precision crossed roller.

- The combination of HST Series and 3 axis Stage Controllers HSC-103 can perform low-noise and low-vibration operation, compared with conventional products.
- Steel body offers excellent stiffness and high load capacity.

Guide

▶Contact our sales team for more information regarding customization.
Reference G123 WEB Reference Catalog Code W9500

Specifications

Part Number			HST-50XY	HST-100XY	HST-200XY
Mechanical Specifications	Travel [mm]		50	100	200
	Stage Size [mm]		165×165	165×220	165×420
	Feed Screw		Ball screw diameter ϕ10mm, 2mm lead	Ball screw diameter ϕ10mm, 2mm lead	Ball screw diameter ϕ10mm, 2mm lead
	Positioning Slide		Crossed roller	Crossed roller	Crossed roller
	Stage Material		Steel	Steel	Steel
	Weight [kg]		17.4	21.2	40.0
Accuracy Specifications	Resolution	(Full) [μm/pulse]	4	4	4
		(Half) [μm/pulse]	2	2	2
	MAX Speed [mm/sec]		10	10	20
	Positioning Accuracy [μm]		10	12	15
	Positional Repeatability [μm]		2	2	2
	Load Capacity [N]		196 (20.0kgf)	196 (20.0kgf)	196 (20.0kgf)
	Lost Motion [μm]		1	1	1
	Backlash [μm]		1	1	1
	Orthogonality of Motion [μm]		5	5	10
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF (Sharp Corporation)		
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 1.4A/phase (Oriental Motor Co., Ltd.)		
	Motor Part Number	PKP544N18B (□42mm)	PKP544N18B (□42mm)	PKP546N18B (□42mm)
	Step Angle	0.72°		
Sensor	Power Voltage	DC5 – 24V ±10%		
	Current Consumption	160mA or lower (80mA or lower a per axis20mA or lower per a sensor)		
	Control Output	NPN open collector output DC30V or lower, 50mA or lower		
	Output Logic	When shaded: Output transistor OFF (no conduction): Limit sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor		

(Reference) Precision Specifications of Single Axis Stage

Part Number			HST-50X	HST-100X	HST-200X
Accuracy Specifications	Moment Stiffness	Pitch [″/N·cm]	0.01	0.01	0.01
		Yaw [″/N·cm]	0.01	0.01	0.01
		Roll [″/N·cm]	0.005	0.005	0.005
	Parallelism [μm]		50	70	100
	Running Parallelism [μm]		10	10	20

Compatible Cable

Cable	Driver Cable	D15D15A-CA

Compatible Driver / Controller

Control System	Compatible Driver	SG-5M, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-SH, PGC-04-U

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Vacuum
Options
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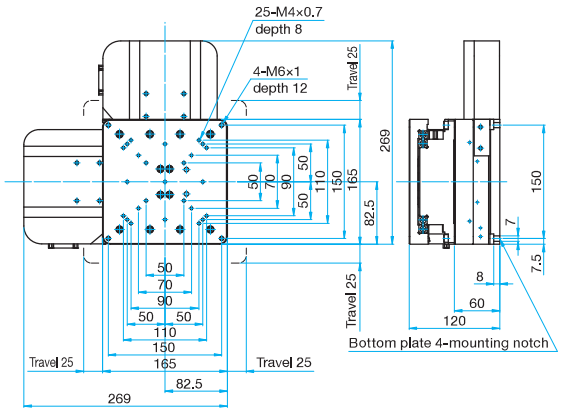
60 × 60 mm
80 × 80 mm
85 × 85 mm
100 × 100 mm
120 × 120 mm
Others

2D CAD 3D CAD

Outline Drawing

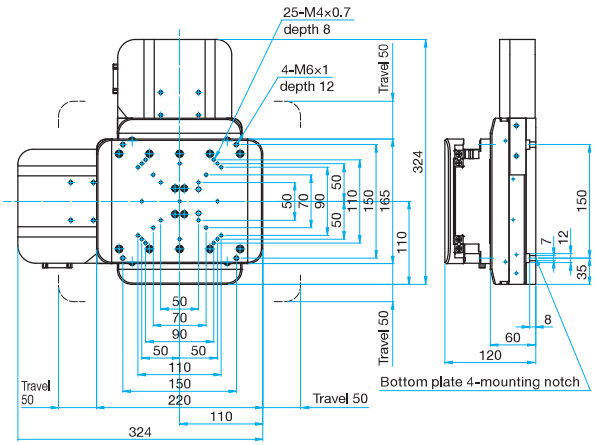
HST-50XY

Hexagon socket head cap screw M6×15…4 screws



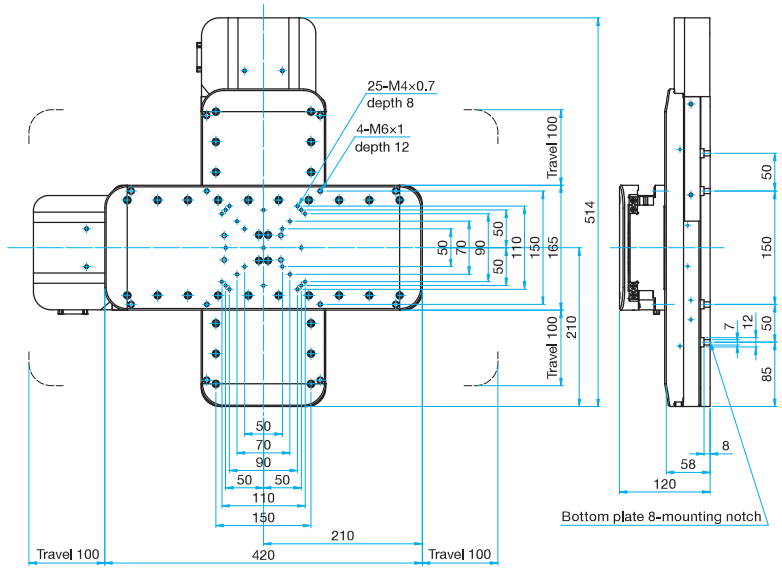
HST-100XY

Hexagon socket head cap screw M6×15…4 screws

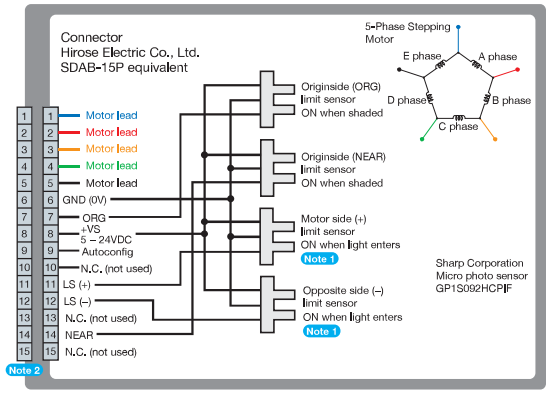


HST-200XY

Hexagon socket head cap screw M6×15…8 screws



Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.

Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

Compatible Controllers / Drivers and Cables

Controller

HSC-103 [3 axes]
SHOT-302GS [4 axes]
SHOT-304GS [3 axes]
HIT-M·HIT-SH [8 axes]
PGC-04-U [4 axes]
Reference G112 – G115

Cable

D15D15A-CA
Reference G120

Stage

HST-XY

Driver

Drivers
Reference G020 – G021

Cable

DAC-SG
Reference G120

Precision Motorized Stages - 5 Phase Stepping Motor

Stage Size 165 × 165 mm / 165 × 220 mm /165 × 420 mm

HST-Z RoHS

High precision Z axis stages fitted with precision ball screws and precision crossed roller.

- The combination of HST Series and 3 axis Stage Controllers HSC-103 can perform low-noise and low-vibration operation, compared with conventional products.
- Steel body offers excellent stiffness and high load capacity.

Guide

▶Contact our sales team for more information regarding customization.
Reference G123 WEB Reference Catalog Code W9500

Specifications

Part Number			HST-50Z	HST-100Z	HST-200Z
Mechanical Specifications	Travel [mm]		50	100	200
	Stage Size [mm]		165×165	165×220	165×420
	Feed Screw		Ball screw diameter ϕ10mm, 2mm lead	Ball screw diameter ϕ10mm, 2mm lead	Ball screw diameter ϕ10mm, 2mm lead
	Positioning Slide		Crossed roller	Crossed roller	Crossed roller
	Stage Material		Steel	Steel	Steel
	Weight [kg]		13	14.9	25.7
Accuracy Specifications	Resolution	(Full) [μm/pulse]	4	4	4
		(Half) [μm/pulse]	2	2	2
	MAX Speed [mm/sec]		10	10	10※
	Positioning Accuracy [μm]		5	7	8
	Positional Repeatability [μm]		2	2	2
	Load Capacity [N]		98 (10.0kgf)	98 (10.0kgf)	98 (10.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.015 (Y pitch)	0.020 (Y pitch)	0.030 (Y pitch)
		Yaw [″/N·cm]	0.01 (X pitch)	0.015 (X pitch)	0.020 (X pitch)
		Roll [″/N·cm]	0.005	0.015	0.015
	Lost Motion [μm]		1	1	1
	Backlash [μm]		1	1	1
	Perpendicularity of Motion [μm]		10	15	25
	Pitch [″] / Yaw [″]		25/15	25/20	25/25
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF (Sharp Corporation)		
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

※ When HST-200Z is operated with 3 axis Stage Controllers HSC-103, the maximum speed is 20 mm/sec.

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 1.4A/phase (Oriental Motor Co., Ltd.)		
	Motor Part Number	PKP544N18B (□42mm)	PKP544N18B (□42mm)	PKP546N18B (□42mm)
	Step Angle	0.72°		
Sensor	Power Voltage	DC5 – 24V ±10%		
	Current Consumption	80mA or lower (20mA or lower per sensor)		
	Control Output	NPN open collector output DC30V or lower, 50mA or lower		
	Output Logic	When shaded: Output transistor OFF (no conduction): Limit sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor		

Compatible Cable

Cable	Driver Cable	D15D15A-CA

Compatible Driver / Controller

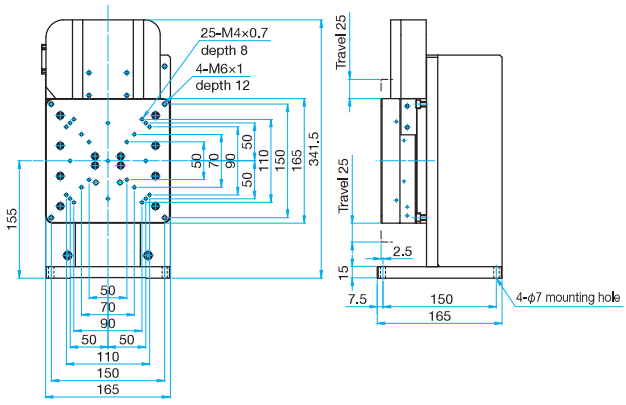
Control System	Compatible Driver	SG-5M, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-SH, PGC-04-U

Application Systems
Optics & Optical Coatings
Opto-Mechanics
Bases
Manual Stages
Actuators & Adjusters
Motoeized Stages
Light Sources & Laser Safety
Index
Guide
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

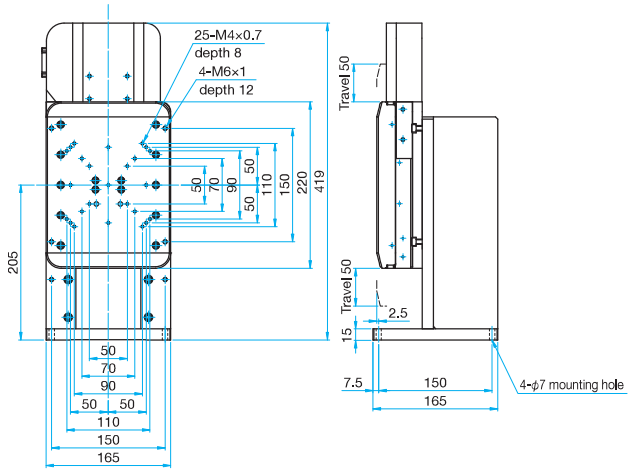
2D CAD 3D CAD

Outline Drawing

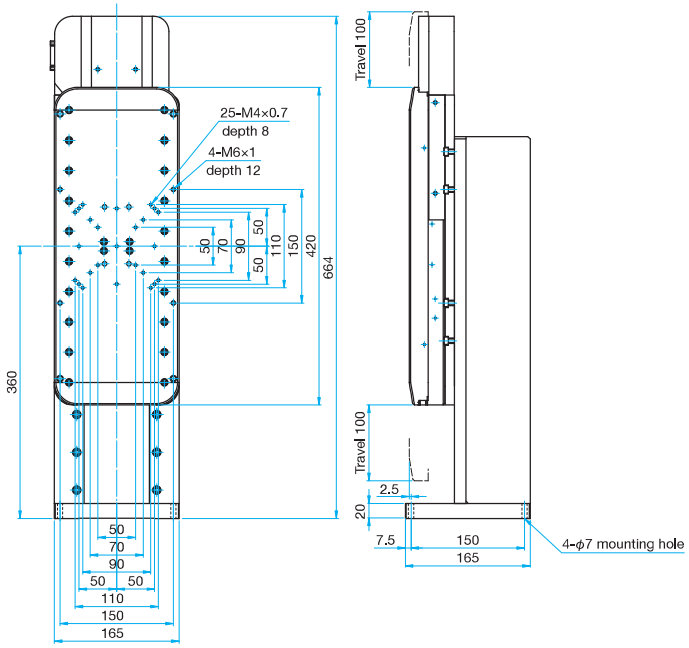
HST-50Z
Hexagon socket head cap screw M6×25…4 screws



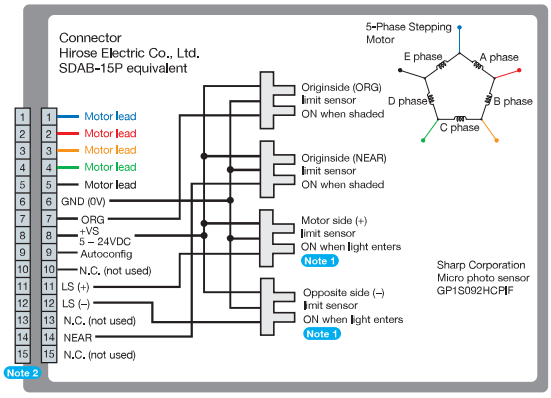
HST-100Z
Hexagon socket head cap screw M6×25…4 screws



HST-200Z
Hexagon socket head cap screw M6×30…4 screws



■Connection Diagram



■Compatible Controllers / Drivers and Cables

Controller

HSC-103	[3 axes]
SHOT-302GS	[4 axes]
SHOT-304GS	[3 axes]
HIT-M·HIT-SH	[8 axes]
PGC-40-U	[4 axes]

Reference G112 – G115

Cable

D15D15A-CA

Reference G120

Stage

HST-Z

Driver

Drivers

Reference G020 – G021

Cable

DAC-SG

Reference G120

Note 1 The motor side limit sensor is the + direction limit sensor.

Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

Precision Motorized Stages - 5 Phase Stepping Motor
Stage Size 165 × 165 mm / 165 × 220 mm

HST-XYZ RoHS

High precision XYZ axis stages fitted with precision ball screws and precision crossed roller.

- The combination of HST Series and 3 axis Stage Controllers HSC-103 can perform low-noise and low-vibration operation, compared with conventional products.
- Steel body offers excellent stiffness and high load capacity.

Guide

▶Contact our sales team for more information regarding customization.
Reference G123 WEB Reference Catalog Code W9500

Specifications

Part Number			HST-50XYZ	HST-100XYZ
Mechanical Specifications	Travel [mm]		50	100
	Stage Size [mm]		165×165	165×220
	Feed Screw		Ball screw diameter ϕ8mm, 2mm lead	Ball screw diameter ϕ8mm, 2mm lead
	Positioning Slide		Crossed roller	Crossed roller
	Stage Material		Steel	Steel
	Finish		Black anodized	Black anodized
	Weight [kg]		30.4	36.1
Accuracy Specifications	Resolution	(Full) [μm/pulse]	4	4
		(Half) [μm/pulse]	2	2
	MAX Speed [mm/sec]		10	10
	Positional Repeatability [μm]		2	2
	Load Capacity [N]		39.2 (4.0kgf)	39.2 (4.0kgf)
	Lost Motion [μm]		1	1
	Backlash [μm]		1	1
	Orthogonality of Motion [μm]		5	5
	Straightness of Motion [μm]		10	15
Sensor	Sensor Part Number		Micro photo sensor : GP1S092HCPIF (Sharp Corporation)	
	Limit Sensor		Equipped (NORMAL CLOSE)	
	Origin Sensor		Equipped (NORMAL OPEN)	
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 1.4A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK544N18B (□42mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	240mA or lower (80mA or lower a per axis20mA or lower per a sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor

Compatible Driver / Controller

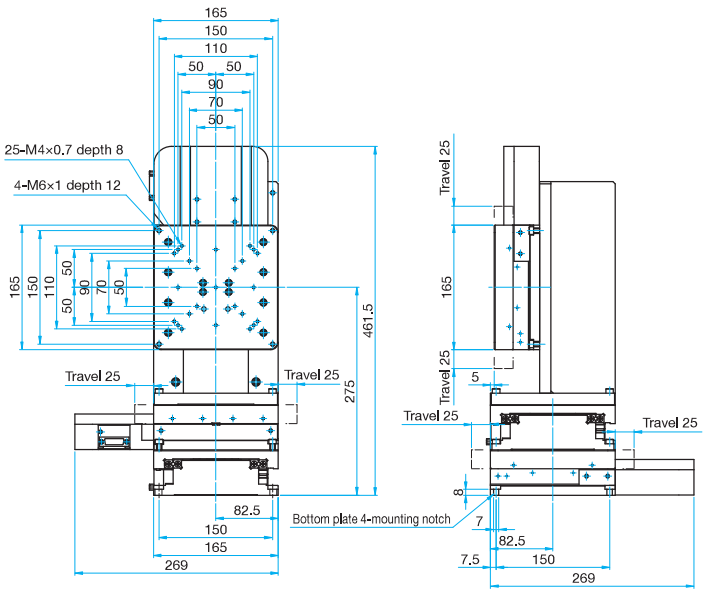
Control System	Compatible Driver	SG-5M, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	HSC-103, SHOT-304GS, HIT-M, HIT-SH, PGC-04-U

2D CAD 3D CAD

Outline Drawing

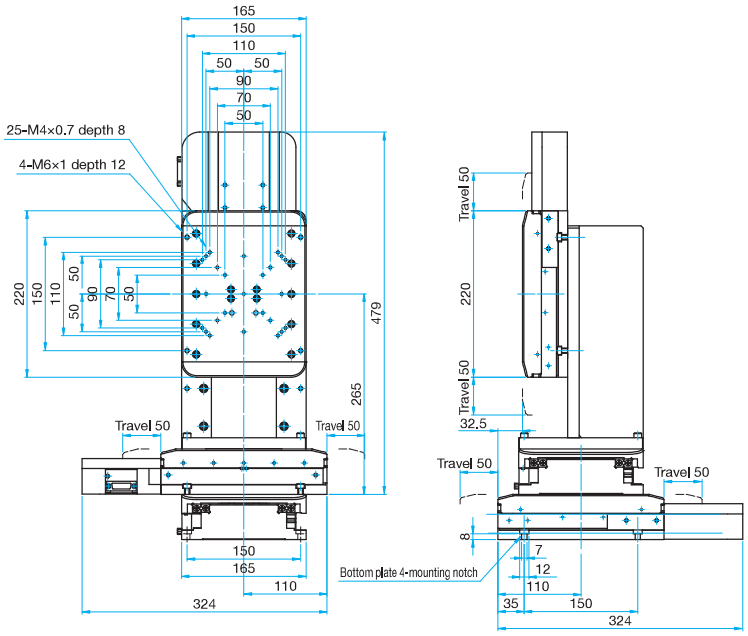
HST-50XYZ

Hexagon socket head cap screw M6×15…4 screws

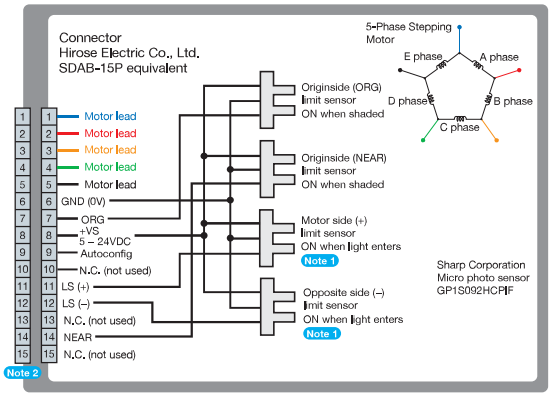


HST-100XYZ

Hexagon socket head cap screw M6×15…4 screws



Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.

Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

Compatible Controllers / Drivers and Cables

Controller

HSC-103 [3 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-SH [8 axes]
PGC-04-U [4 axes]

Reference G112 – G115

Cable

D15D15A-CA

Reference G120

Stage

HST-X

Driver

Drivers

Reference G020 – G021

Cable

DAC-SG

Reference G120

Precision Motorized Stages with built in Glass-scale Encoder

Stage Size 165 × 165 mm / 165 × 220 mm /165 × 420 mm

HST(GS)

RoHS CE

Linear scales consist of "scales" used as a ruler and a "detector" which obtains positional information from the scales.

- Linear scales are used in indispensable processes in many fields, and mainly used in equipment for manufacturing electronic devices such as semiconductors, flat panel displays (FPD), and printed wiring boards, electronic component mounting machine, machine tools, and carrier machine.

Guide

- Interpolated resolution of the glass scale is set to 0.05μm.
- Contact our sales team about custom configurations.

Attention

- When operating the HST(GS) series with closed loop control, in order to use it within the specifications listed in the catalog, the number of motor divisions of the controller is recommended to be set to 100 or higher (travel per pulse is 0.05μm or less).

Specifications

Part Number			HST(GS)-50X	HST(GS)-100X	HST(GS)-200X
Mechanical Specifications	Travel [mm]		50	100	200
	Stage Size [mm]		165×165	165×220	165×420
	Feed Screw		Ball screw diameter ϕ10mm, 2mm lead	Ball screw diameter ϕ10mm, 2mm lead	Ball screw diameter ϕ10mm, 2mm lead
	guide		Crossed roller guide	Crossed roller guide	Crossed roller guide
	Stage Material		Steel	Steel	Steel
	Weight [kg]		8.8	10.7	18.9
Accuracy Specifications	Resolution	(Full) [μm/pulse]	4	4	4
		(Half) [μm/pulse]	2	2	2
	MAX Speed [mm/sec]		10	10	20
	Positioning Accuracy [μm]		3	4	5
	Positional Repeatability [μm]		0.5	0.5	0.8
	Load Capacity [N]		392 (40.0kgf)	392 (40.0kgf)	392 (40.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	0.01	0.01	0.01
		Yaw [″/N·cm]	0.01	0.01	0.01
		Roll [″/N·cm]	0.005	0.005	0.005
	Lost Motion [μm]		0.5	0.5	0.5
	Backlash [μm]		1	1	1
	Parallelism [μm]		50	70	100
	Running Parallelism [μm]		10	10	20
	Pitch [″] / Yaw [″]		15/15	20/20	20/20
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF (Sharp Corporation)		
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 1.4A/phase (Oriental Motor Co., Ltd.)		
	Motor Part Number	PKP544N18B (□42mm)	PKP544N18B (□42mm)	PKP546N18B (□42mm)
	Step Angle	0.72°		
Sensor	Power Voltage	DC5 – 24V ±10%		
	Current Consumption	80mA or lower (20mA or lower per sensor)		
	Control Output	NPN open collector output DC30V or lower, 50mA or lower		
	Output Logic	When shaded: Output transistor OFF (no conduction): Limit sensor When shaded: Output transistor ON (conduction): Origin sensor, Proximity Origin Sensor		
Scale head	Power Voltage / Current Consumption	DC5V±5% / 100mA		

Compatible Cable

Cable	Driver Cable	D15D15A-CA
	Scale Cable	GSEF-CA-3

Compatible Controller

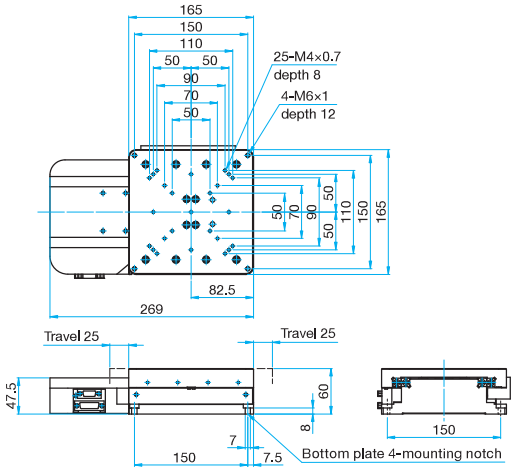
Compatible Controller	SHOT-302GS, SHOT-304GS, HIT-M·HIT-SH

2D CAD 3D CAD

Outline Drawing

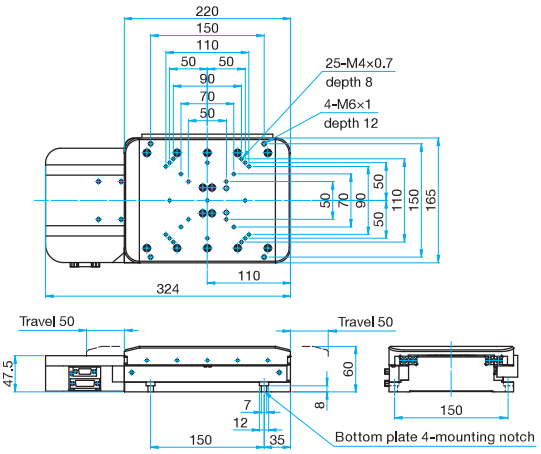
HST(GS)-50X

Hexagon socket head cap screw M6×15…4 screws



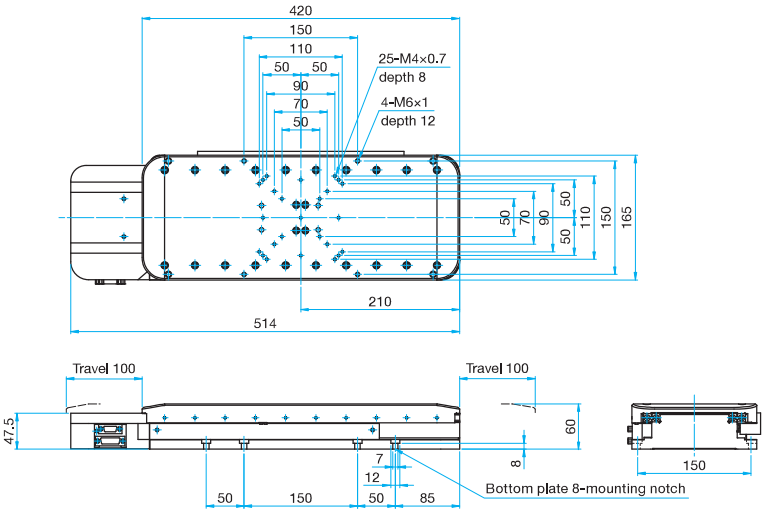
HST(GS)-100X

Hexagon socket head cap screw M6×15…4 screws

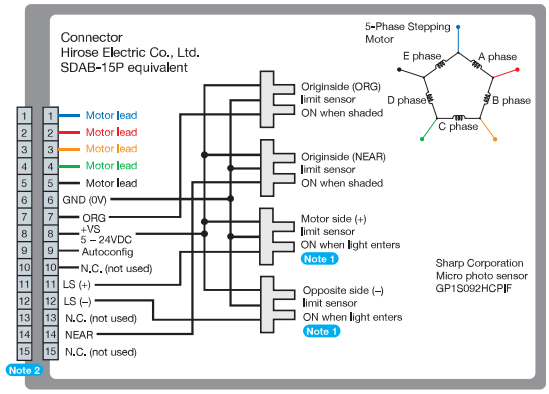


HST(GS)-200X

Hexagon socket head cap screw M6×15…8 screws



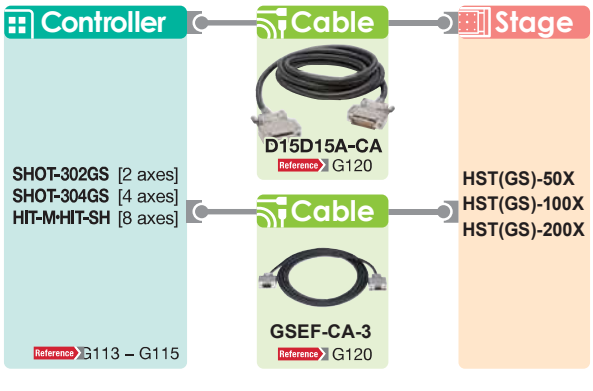
■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.

Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

■Compatible Controllers / Cables



Translation Motorized Stages, Flat Z axis - 5 Phase Stepping Motor
Stage Size 40 × 40 mm / 60 × 60 mm / 80 × 80 mm

OSMS-ZF RoHS CE

Z axis stepping motor driven stages for measurement and inspection, offering high stiffness and high precision.
The mounting platform is oriented parallel to the base and is perpendicular to the direction of travel.

- Unconventional design incorporates a horizontal platform Z axis stage which mounts the motor in the main body to minimize footprint.
- Minimized protrusions make these stages ideal for system assembly

Specifications

Part Number			OSMS40-5ZF-0B	OSMS60-5ZF	OSMS60-10ZF	OSMS80-20ZF-0B
Mechanical Specifications	Travel [mm]		5	5	10	20
	Stage Size [mm]		40×40	60×60	60×60	80×80
	Feed Screw		Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ8mm, 2mm lead
	Positioning Slide		Outer rail structure	Outer rail structure	Outer rail structure	Outer rail structure
	Stage Material		Aluminum	Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized	Black anodized
	Weight [kg]		0.35	0.6	0.6	1.6
Accuracy Specifications	Resolution	(Full) [μm/pulse]	1.0	2.0	2.0	0.2
		(Half) [μm/pulse]	0.5	1.0	1.0	0.1
	MAX Speed [mm/sec]		2	4	4	1
	Positional Repeatability [μm]		5	5	5	5
	Load Capacity [N]		19.6 (2.0kgf)	39.2 (4.0kgf)	39.2 (4.0kgf)	147 (15.0kgf)
	Moment Stiffness	Pitch [″/N·cm]	2.0	0.4	0.4	0.2
		Yaw [″/N·cm]	2.0	1.0	1.0	1.0
		Roll [″/N·cm]	1.0	1.0	1.0	1.0
	Lost Motion [μm]		5	5	5	5
	Parallelism [μm]		50	50	50	50
	Running Parallelism [μm]		15	15	15	15
	Pitch [″]		25	20	20	25
Sensor	Sensor Part Number		Micro photo sensor: GP1S097HCZ0F (Sharp Corporation): Limit Sensor (60-5ZF/60-10ZF) Micro photo sensor: PM-U25 (SUNX Co.,Ltd.): Limit Sensor (40-5ZF/80-20ZF)			
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		None	None	None	None
	Proximity Origin Sensor		None	None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.35A/phase (Oriental Motor Co., Ltd.)	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)		
	Motor Part Number	PK513PA-C21 (□20mm)	PK523HPB-C12 (□28mm)	PK523HPB-C12 (□28mm)	A7177-90215KTG (□28mm)
	Step Angle	0.72°			0.036°
Sensor	Power Voltage	DC5 – 24V ±10% or lower			
	Current Consumption	30mA or lower (15mA or lower per sensor)	40mA or lower (20mA or lower per sensor)		30mA or lower (15mA or lower per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower			
	Output Logic	When shaded: Output transistor OFF (no conduction)			

Compatible Driver / Controller

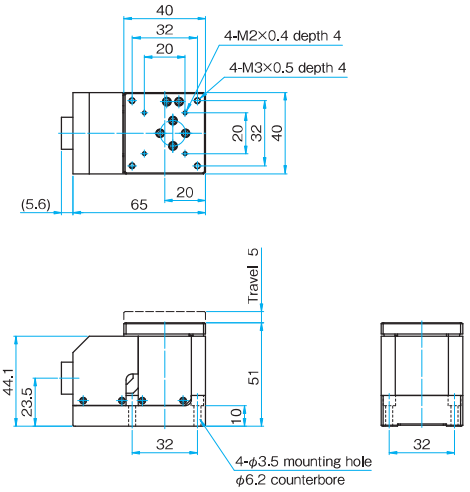
Control System	Compatible Driver	MC-S0514ZU, SG-514MSC	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL	MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, HSC-103*, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U		

*HSC-103 : OSMS40-5ZF not compatible.

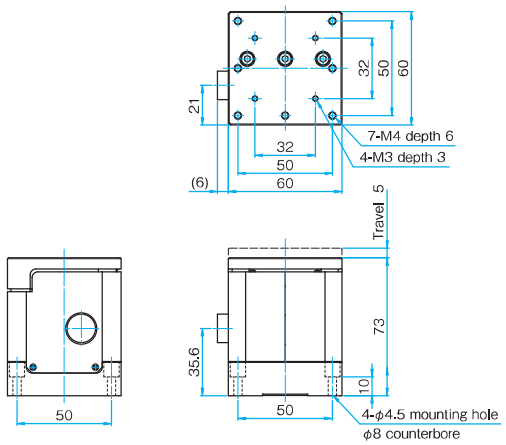
2D CAD 3D CAD

Outline Drawing

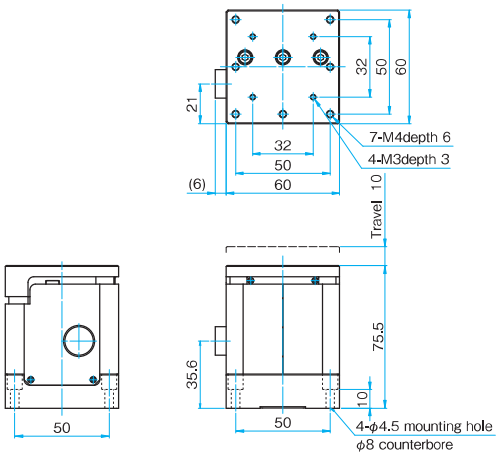
OSMS40-5ZF-0B
Hexagon socket head cap screw M3×15…4 screws



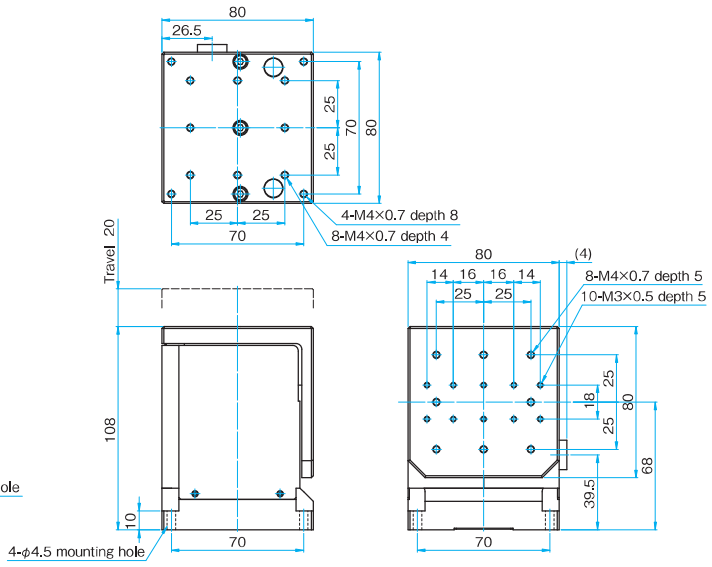
OSMS60-5ZF
Hexagon socket head cap screw M4×15…4 screws



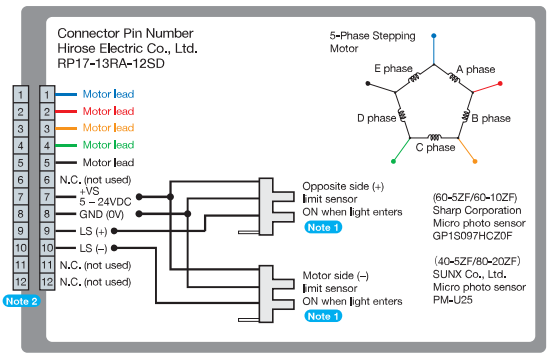
OSMS60-10ZF
Hexagon socket head cap screw M4×15…4 screws



OSMS80-20ZF-0B
Hexagon socket head cap screw M4×15…4 screws



■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with proximity origin sensors.
Limit sensors are used as origin detection sensors.

Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

■Compatible Controllers / Drivers and Cables

Controller

GSC-01	[1 axis]
GSC-02	[2 axes]
SHOT-702	[2 axes]
HSC-103*	[3 axes]
SHOT-302GS	[2 axes]
SHOT-304GS	[4 axes]
HIT-M·HIT-S	[8 axes]
PGC-04-U	[4 axes]

Reference G108 – G117

Cable

D15RP-CA
Reference G120

Stage

OSMS-ZF

*HSC-103 : OSMS40-5ZF not compatible.

Driver

Drivers
Reference G020 – G021

Cable

MINI-CA-SG
Reference G120

Actuator for Objective Lenses (Stepper motor type) | SGSP-OBL RoHS

Stepping motor type objective lens actuator provides much longer travel than Piezo type actuators.

- The 5-phase stepping motor can be connected to any of our standard stepping motor controllers.
- With a compact and high resolution design this is best suited for incorporation into a microscope lens tube or an auto focus system.
- Can be used for upright type and inverted type microscopes.

Guide

- Threaded inserts compatible with a variety of manufacturers' objective lenses are also available(reference OBL-ADP).
- The SFS-OBL-2 uses a metal enclosure type piezo actuator for higher duty cycles and longer life in industrial environments.

Attention

- A set of adapters (not included) is required for mounting the actuator on a microscopes and to attach an objective lens to the actuator.

Specifications

Part Number			SGSP-OBL-3
Mechanical Specifications	Travel [mm]		3
	Stage Size [mm]		(Mounted adapter)
	Feed Screw		Precision ground screw ϕ6mm, 0.5mm lead
	Positioning Slide		Crossed roller guide
	Stage Material		Aluminum
	Finish		White anodized
	Weight [kg]		0.4
Accuracy Specifications	Resolution	(Full) [μm/pulse]	1
		(Half) [μm/pulse]	0.5
	MAX Speed [mm/sec]		1
	Positioning Accuracy [μm]		5
	Positional Repeatability [μm]		2
	Load Capacity [N]		4.9 (0.5kgf)
	Moment Stiffness[″/N·cm]		—
	Lost Motion [μm]		2
	Backlash [μm]		1
	Parallelism [μm]		—
	Running Parallelism [μm]		2
	Pitch [″] / Yaw [″]		15/15
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPI (Sharp Corporation)
	Limit Sensor		Equipped (NORMAL CLOSE)
	Origin Sensor		None
	Proximity Origin Sensor		None

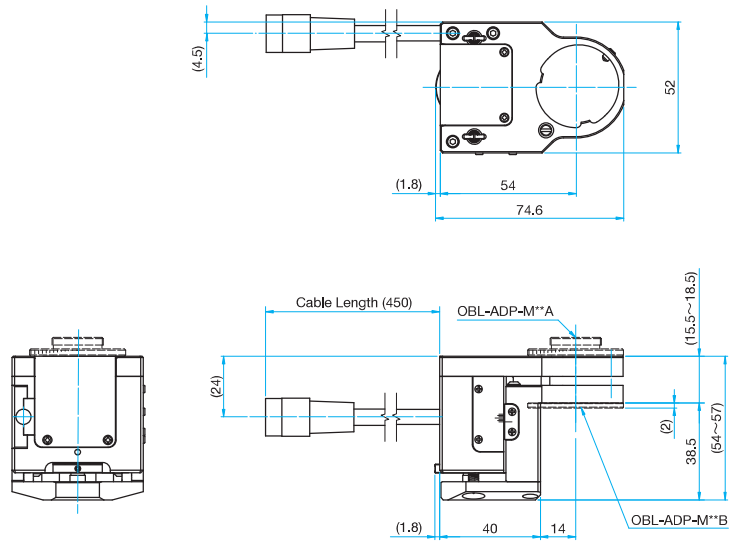
Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.35A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK513PA-C21 (□20mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC+5V – +24V±10%
	Current Consumption	40mA or lower (20mA or lower per sensor)
	Control Output	NPN open collector output DC 30V or lower, 50mA or lower
	Output Logic	In the case of light shielded ,output transistor OFF (No conduction): Limit sensor

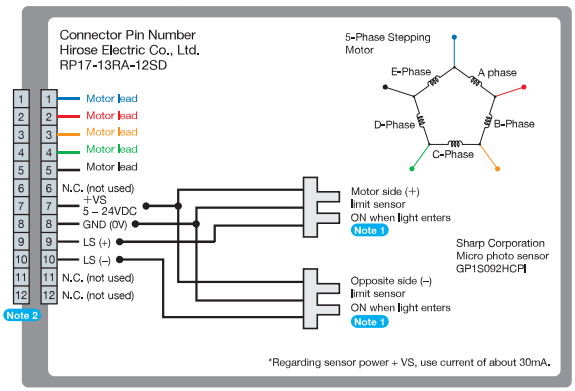
Compatible Driver / Controller

Control System	Compatible Driver	SG-5MA, MC-S0514ZU, SG-514MSC
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

Outline Drawing



Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with proximity origin sensors.
Limit sensors are used as origin detection sensors.

Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

Compatible Controllers / Drivers and Cables

Controller

GSC-01	[1 axis]
GSC-02	[2 axes]
SHOT-702	[2 axes]
HSC-101	[1 axis]
SHOT-302GS	[2 axes]
SHOT-304GS	[4 axes]
HIT-M·HIT-S	[8 axes]
PGC-04-U	[4 axes]

Reference G108 – G117

Cable

D15RP-CA
Reference G120

Stage

SGSP-OBL

Driver

Drivers
Reference G020 – G021

Cable

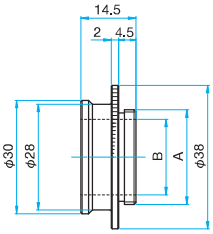
MINI-CA-SG
Reference G120

Objective Lens Adapters

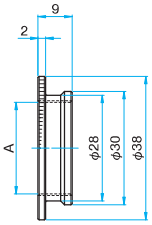
Adapters to mount the Stepping motor Actuator for Objective Lens (SFS-OBL, SFAI-OBL) to a variety of microscopes and objectives.

Outline Drawing

OBL-ADP3-MA**



OBL-ADP3-MB**



Specifications

Part Number	Mounting Screw Size [mm]	A [mm]	B [mm]
OBL-ADP3-M20.32A	Microscope side M20.32	M20.32 P=0.706 (W0.8×1/36)	15
OBL-ADP3-M20.32B	Objective lens side M20.32	M20.32 P=0.706 (W0.8×1/36)	–
OBL-ADP3-M25.0A	Microscope side M25.0	M25.0 P=0.75	20
OBL-ADP3-M25.0B	Objective lens side M25.0	M25.0 P=0.75	–
OBL-ADP3-M26.0A	Microscope side M26.0	M26.0 P=0.706 (W26.0×1/36)	21
OBL-ADP3-M26.0B	Objective lens side M26.0	M26.0 P=0.706 (W26.0×1/36)	–

Rotation Motorized Stages
Stage Size ϕ 40 mm / ϕ 60 mm

OSMS-YAW

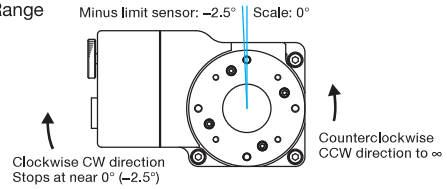
RoHS CE

Stepping motor driven rotation stages utilizing precision bearings and worm gear drive mechanisms.

- Suitable for rotating optics aout the optical axis, measuring, inspection and evaluation instruments.
- 360° continuous motion
- Low, compact profile
  Adapters to hold a variety of optics are available.

Guide

▶Rotation Range



▶Homing of rotation motorized stages is performed using the CW limit sensor as the origin sensor.
▶Origin detection is adjusted so that the stage stops at 0 degrees when homing is performed in the MINI system at half step.

Attention

▶Load capacity and precision may be derated when mounted upside down or vertically. Contact us for informations regarding your specific application.

Specifications

Part Number			OSMS-40YAW	OSMS-60YAW	OSMS-60YAW-W
Mechanical Specifications	Rotation Range		Move in the counterclockwise CCW direction to ∞, and stop at near 0 degree (–2.5°) in the clockwise CW direction.		
	Stage Size [mm]		ϕ40	ϕ60	ϕ60
	Travel Mechanism (reduction ratio)		Worm gear (1:144)	Worm gear (1:144)	Worm gear (1:144)
	Positioning Slide		Bearing method	Bearing method	Bearing method
	Stage Material		Aluminum / Aluminum bronze	Aluminum / Aluminum bronze	Aluminum / Aluminum bronze
	Weight [kg]		0.35	0.45	1.0
Accuracy Specifications	Resolution	(Full) [°/pulse]	0.005	0.005	0.005
		(Half) [°/pulse]	0.0025	0.0025	0.0025
	MAX Speed [°/sec]		30	30	30
	Positioning Accuracy [°]		0.1	0.1	—
	Positional Repeatability [°]		0.02	0.02	0.02
	Load Capacity [N]		19.6 (2.0kgf)	29.4 (3.0kgf)	29.4 (3.0kgf)
	Moment Stiffness [″/N·cm]		2	1	—
	Lost Motion [°]		0.05	0.05	0.05
	Backlash [°]		0.1	0.1	0.1
	Parallelism [µm]		50	50	—
	Concentricity [µm]		30	30	—
	Wobble [mm]		0.02	0.02	—
Sensor	Sensor Part Number		Micro Photoelectric Sensor: PM-F25 (SUNX Co., Ltd.)	Micro Photoelectric Sensor: PM-R25 (SUNX Co., Ltd.)	Micro Photoelectric Sensor: PM-R25 (SUNX Co., Ltd.)
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		None	None	None
	Proximity Origin Sensor		None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)
	Motor Part Number	TS3664N4E10 (□24mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V ±10%
	Current Consumption	15mA or lower
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction)

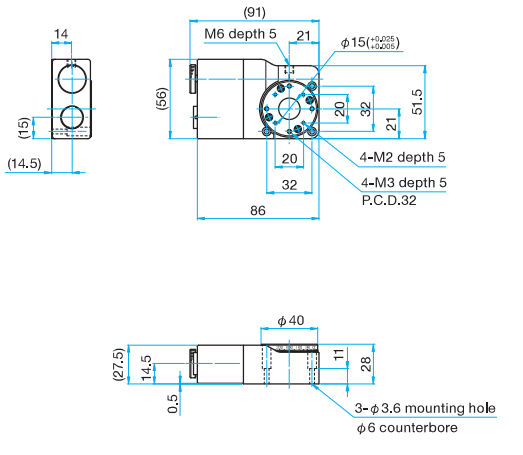
Compatible Driver / Controller

Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

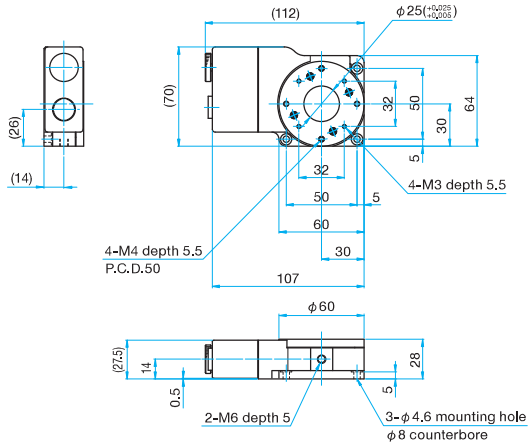
2D CAD 3D CAD

Outline Drawing

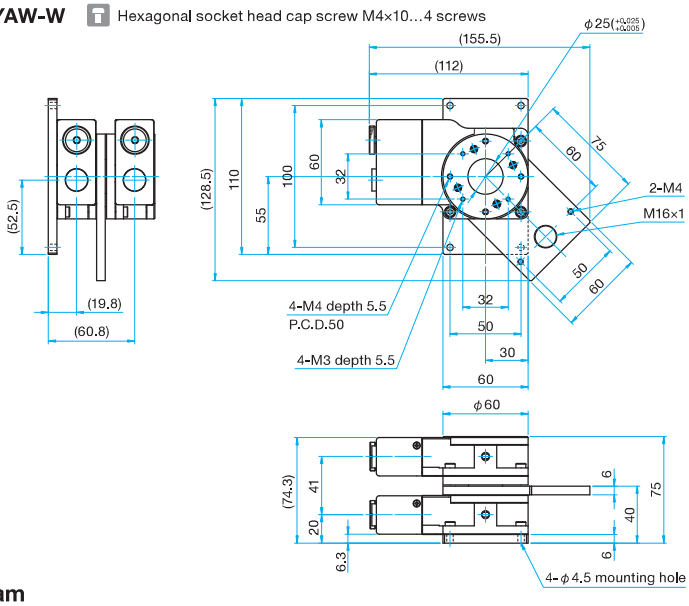
OSMS-40YAW
Hexagon socket head cap screw M3×15…3 screws



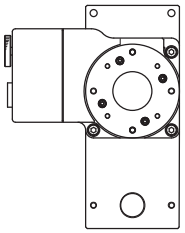
OSMS-60YAW
Hexagonal socket head cap screw M4×10…3 screws



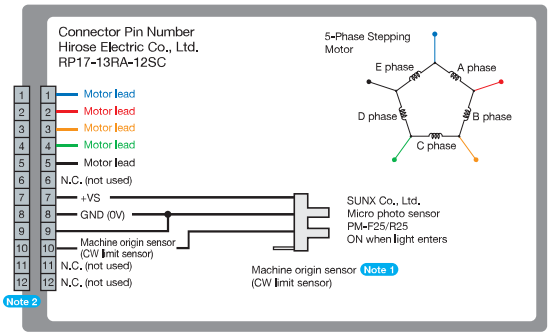
OSMS-60YAW-W
Hexagonal socket head cap screw M4×10…4 screws



When homing of OSMS-60YAW-W is performed, the position will become as shown below.



■Connection Diagram



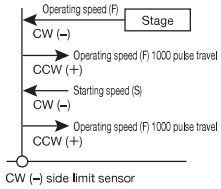
Note 1 When a travel command in the "+" direction is issued, the mounting table rotates to ∞ in the CCW (counterclockwise) direction viewed from the top surface, but it is stopped by the machine origin sensor (CW limit sensor) in the CW (clockwise) direction. Detect the machine origin using the method (MINI system) that detects the origin with a machine origin sensor (CW limit sensor).

Note 2 Compatible cable connector: Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

■Machine Origin Detection

MINI System

When the machine origin detection command is issued, the stage starts traveling in the CW (-) direction at the operating speed (F) set with the memory switch, and stops by the CW (-) side limit sensor. Then it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses.
After stop, it starts traveling in the CW (-) direction again at the starting speed (S), and stops by the CW (-) side limit sensor. After that, it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses.
This position is regarded as the machine origin.



■Compatible Controllers / Drivers and Cables

Controller

GSC-01	[1 axis]
GSC-02	[2 axes]
SHOT-702	[2 axes]
GIP-101	[1 axis]
HSC-103	[3 axes]
SHOT-302GS	[2 axes]
SHOT-304GS	[4 axes]
HIT-M·HIT-S	[8 axes]
PGC-04-U	[4 axes]

Reference G108 – G117

Cable

D15RP-CA
Reference G120

Stage

OSMS-40YAW
OSMS-60YAW
OSMS-60YAW-W

Driver

Drivers
Reference G020 – G021

Cable

MINI-CA-SG
Reference G120

Rotation Motorized Stages
Stage Size ϕ 80 mm / ϕ 120 mm / ϕ 160 mm

OSMS-YAW

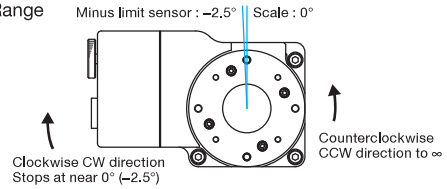
RoHS CE

Stepping motor driven rotation stages utilizing precision bearings and worm gear drive mechanisms.

- Suitable for rotating optics aout the optical axis, measuring, inspection and evaluation instruments.
- 360° continuous motion
- Low, compact profile
  Adapters to hold a variety of optics are available.

Guide

▶Rotation Range



▶Homing of rotation motorized stages is performed using the CW limit sensor as the origin sensor.
▶Origin detection is adjusted so that the stage stops at 0 degrees when homing is performed in the MINI system at half step.

Attention

▶Load capacity and precision may be derated when mounted upside down or vertically. Contact us for informations regarding your specific application.

Specifications

Part Number			OSMS-80YAW	OSMS-120YAW	OSMS-160YAW	OSMS-120YAW-W
Mechanical Specifications	Rotation Range		Move in the counterclockwise CCW direction to ∞, and stop at near 0 degree (–2.5°) in the clockwise CW direction.			
	Stage Size [mm]		ϕ80	ϕ120	ϕ160	ϕ120
	Travel Mechanism (reduction ratio)		Worm gear (1:144)	Worm gear (1:144)	Worm gear (1:144)	Worm gear (1:144)
	Positioning Slide		Bearing method	Crossed roller	Crossed roller	Crossed roller
	Stage Material		Aluminum / Aluminum bronze	Aluminum / Aluminum bronze	Aluminum / Aluminum bronze	Aluminum / Aluminum bronze
	Weight [kg]		1.1	2.0	2.5	5.5
Accuracy Specifications	Resolution	(Full) [°/pulse]	0.005	0.005	0.005	0.005
		(Half) [°/pulse]	0.0025	0.0025	0.0025	0.0025
	MAX Speed [°/sec]		30	30	30	30
	Positioning Accuracy [°]		0.15	0.1	0.1	—
	Positional Repeatability [°]		0.02	0.02	0.02	0.02
	Load Capacity [N]		98 (10.0kgf)	196 (20.0kgf)	196 (20.0kgf)	196 (20.0kgf)
	Moment Stiffness [″/N·cm]		0.2	0.1	0.1	—
	Lost Motion [°]		0.05	0.05	0.05	—
	Backlash [°]		0.08	0.08	0.08	0.08
	Parallelism [μm]		50	50	60	—
	Concentricity [μm]		30	30	30	—
	Wobble [mm]		0.02	0.02	0.02	—
Sensor	Sensor Part Number		Micro Photoelectric Sensor: PM-F25 (SUNX Co., Ltd.)			
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		None	None	None	None
	Proximity Origin Sensor		None	None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK525HPB-C4 (□28mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V ±10%
	Current Consumption	15mA or lower
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction)

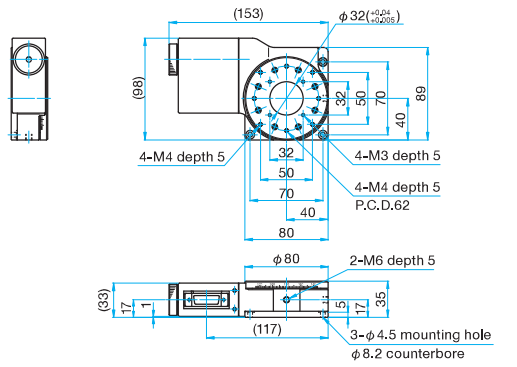
Compatible Driver / Controller

Control System	Compatible Driver	MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	SHOT-702, HSC-103, GIP-101, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

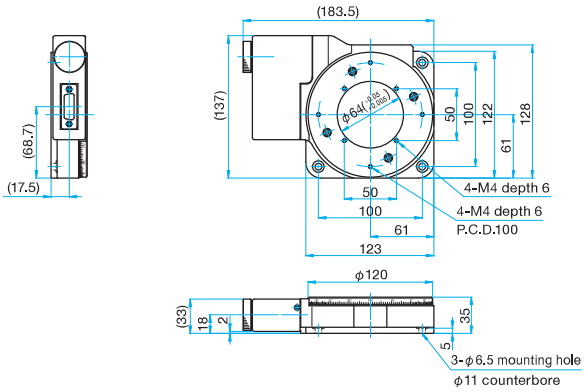
2D CAD 3D CAD

Outline Drawing

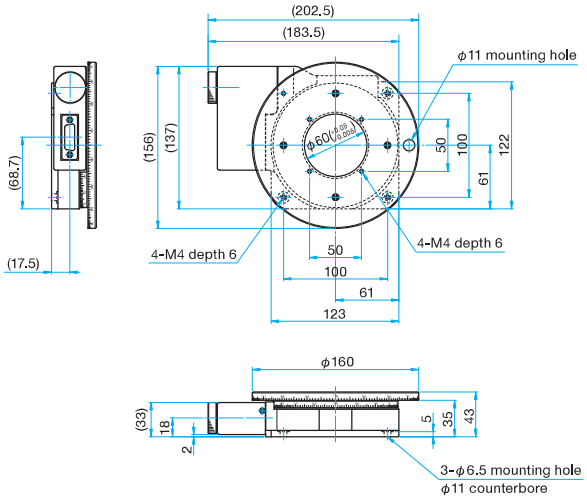
OSMS-80YAW
Hexagonal socket head cap screw M4×10…3 screws



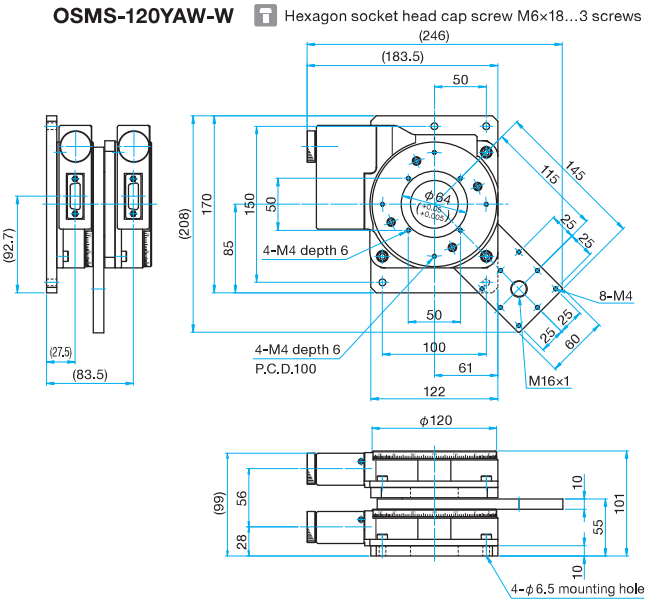
OSMS-120YAW
Hexagon socket head cap screw M6×10…3 screws



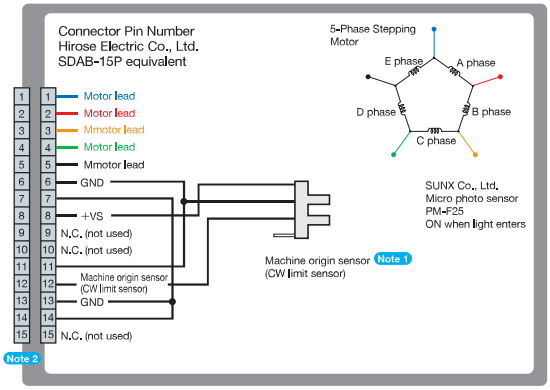
OSMS-160YAW
Hexagon socket head cap screw M6×10…3 screws



OSMS-120YAW-W
Hexagon socket head cap screw M6×18…3 screws



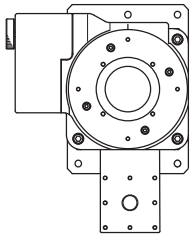
■Connection Diagram



Note 1 When a travel command in the "+" direction is issued, the mounting table rotates to ∞ in the CCW (counterclockwise) direction viewed from the top surface, but it is stopped by the machine origin sensor (CW limit sensor) in the CW (clockwise) direction. Detect the machine origin using the method (MINI system) that detects the origin with a machine origin sensor (CW limit sensor).

Note 2 Compatible cable connector: DDK Ltd. 17JE-13150

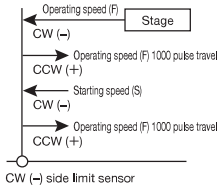
If homing of OSMS-120YAW-W is performed, the position will become as shown below.



■Machine Origin Detection

MINI System

When the machine origin detection command is issued, the stage starts traveling in the CW (-) direction at the operating speed (F) set with the memory switch, and stops by the CW (-) side limit sensor. Then it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses.
After stop, it starts traveling in the CW (-) direction again at the starting speed (S), and stops by the CW (-) side limit sensor. After that, it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses.
This position is regarded as the machine origin.



■Compatible Controllers / Drivers and Cables

Controller
SHOT-702 [2 axes]
GIP-101 [1 axis]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G110 – G117

Cable
D15D15A-CA
Reference G120

Stage
OSMS-80YAW
OSMS-120YAW
OSMS-160YAW
OSMS-120YAW-W

Driver
Drivers
Reference G020 – G021

Cable
DAC-SG
Reference G120

Precision Rotation Motorized Stages
Stage Size ϕ 120 mm / ϕ 160 mm

HST-YAW

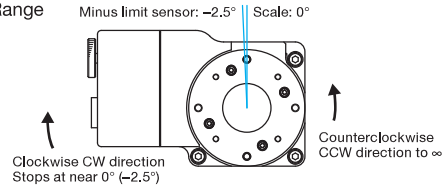
RoHS CE

High precision and high stability rotation motorized stages fitted with bearing positioning slide. The combination of HST Series and 3 axis Stage Controllers HSC-103 can perform low-noise and low-vibration operation, compared with conventional products.

- Rotation motorized stages suitable for use when high load capacity is required.

Guide

▶Rotation Range



▶Homing of rotation motorized stages is performed using the CW limit sensor as the origin sensor.
▶Origin detection is adjusted so that the stage stops at 0 degrees when homing is performed in the MINI system at half step.

Attention

▶Load capacity and precision may be derated when mounted upside down or vertically. Contact us for informations regarding your specific application.

Specifications

Part Number			HST-120YAW-0B	HST-160YAW-0B
Mechanical Specifications	Rotation Range		Move in the counterclockwise CCW direction to ∞, and stop at near 0 degree (–2.5°) in the clockwise CW direction.	
	Stage Size [mm]		ϕ120	ϕ160
	Travel Mechanism (reduction ratio)		Worm gear (1:144)	Worm gear (1:144)
	Positioning Slide		Bearing method	Bearing method
	Stage Material		Aluminum / Aluminum bronze	Aluminum / Aluminum bronze
	Weight [kg]		5	8.5
Accuracy Specifications	Resolution	(Full) [°/pulse]	0.005	0.005
		(Half) [°/pulse]	0.0025	0.0025
	MAX Speed [°/sec]		30	30
	Positioning Accuracy [°]		0.1	0.1
	Positional Repeatability [°]		0.01	0.01
	Load Capacity [N]		343 (35.0kgf)	392 (40.0kgf)
	Moment Stiffness [″/N·cm]		0.015	0.01
	Lost Motion [°]		0.01	0.01
	Backlash [°]		0.003	0.003
	Parallelism [µm]		50	50
	Concentricity [µm]		20	20
	Wobble [mm]		0.01	0.01
Sensor	Sensor Part Number		Micro Photoelectric Sensor: PM-U25 (SUNX Co., Ltd.)	Micro Photo Sensor: PM-F25 (SUNX Co., Ltd.)
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		None	None
	Proximity Origin Sensor		None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 1.4A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PKP546N18B (□42mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V ±10%
	Current Consumption	15mA or lower
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF

Compatible Cable

Cable	Driver Cable	D15D15A-CA

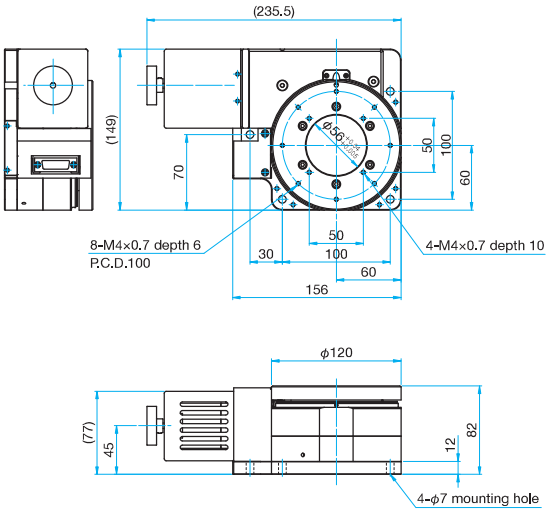
Compatible Driver / Controller

Control System	Compatible Driver	SG-5M*, MC-S0514ZU, SG-514MSC*, MC-7514PCL (* DC36V)
	Compatible Controller	HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-SH, PGC-04-U

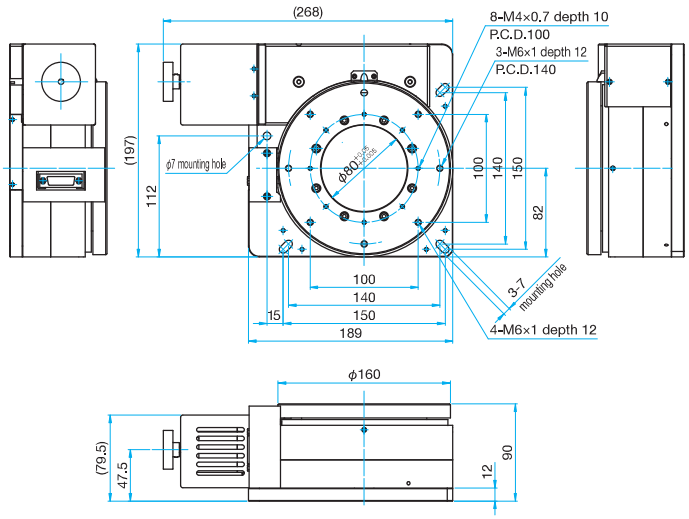
2D CAD 3D CAD

Outline Drawing

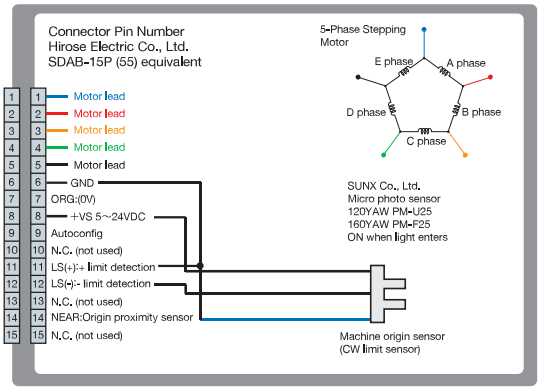
HST-120YAW-0B Hexagon socket head cap screw M6×20…4 screws



HST-160YAW-0B Hexagon socket head cap screw M6×20…4 screws



■Connection Diagram



■Compatible Controllers / Drivers and Cables

Controller
- SHOT-302GS [2 axes]
- HSC-103 [3 axes]
- SHOT-304GS [4 axes]
- HIT-M·HIT-SH [8 axes]
- PGC-04-U [4 axes]

Reference G112 – G115

Cable D15D15A-CA
Reference G120

Stage HST-120YAW-0B HST-160YAW-0B

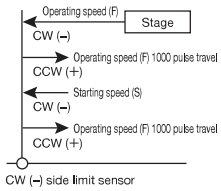
Driver Drivers
Reference G020 – G021

Cable DAC-SG
Reference G120

■Machine Origin Detection

MINI System

When the machine origin detection command is issued, the stage starts traveling in the CW (-) direction at the operating speed (F) set with the memory switch, and stops by the CW (-) side limit sensor. Then it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses.
After stop, it starts traveling in the CW (-) direction again at the starting speed (S), and stops by the CW (-) side limit sensor. After that, it travels in the CCW (+) direction at the operating speed (F) for 1000 pulses.
This position is regarded as the machine origin.



High Durability Motorized Rotation Stages

Stage Size ϕ 60 mm / ϕ 80 mm / ϕ 120 mm

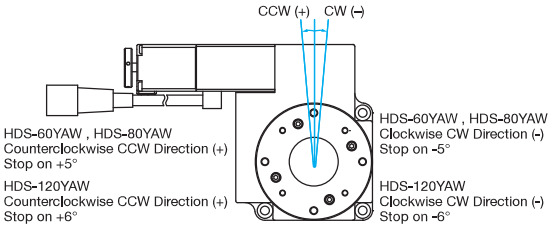
HDS-YAW RoHS CE

Limited range high duty cycle rotation stage.

- Good for the automatic alignment devices which need to repeatedly adjust the angle of rotation by a small amount.
- The ball screw system drive mechanism reduces abrasion and backlash for high durability.
- Since it converts linear motion of the ball screw into rotational motion using a steel belt, the angular spped and resolution is the same over the full range of travel.

Guide

▶The origin sensor for HDS series is at the center of travel (0°).



Attention

▶The HDS series should always be mounted horizontally. Performance can not be guaranteed if used in other orientations. If other oritnations are required, please contact our Sales Division.

Specifications

Part Number			HDS-60YAW	HDS-80YAW	HDS-120YAW
Mechanical Specifications	Rotation Range		±5°	±5°	±6°
	Stage Size [mm]		ϕ60	ϕ80	ϕ120
	Travel Mechanism		Ball screw with steel belt	Ball screw with steel belt	Ball screw with steel belt
	Positioning Slide		Bearing method	Bearing method	Crossed roller guide
	Stage Material		Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized
	Weight [kg]		0.5	0.9	1.4
Accuracy Specifications	Resolution	(Full) [°/pulse]	≒0.0053	≒0.0038	≒0.0022
		(Half) [°/pulse]	≒0.0027	≒0.0019	≒0.0011
	MAX Speed [°/sec]		60	60	60
	Positioning Accuracy [°]		0.05	0.05	0.05
	Positional Repeatability [°]		0.003	0.003	0.003
	Load Capacity [N]		29.4 (3.0kgf)	58.8 (3.0kgf)	98 (10kgf)
	Moment Stiffness [″/N·cm]		1	0.2	0.1
	Lost Motion [°]		0.003	0.003	0.003
	Backlash [°]		0.05	0.05	0.05
	Parallelism [µm]		50	50	50
	Concentricity [µm]		10	10	10
	Wobble [mm]		0.01	0.01	0.01
Sensor	Sensor Part Number		Micro photo sensor: GP1S097HCZ(Sharp Corporation)		
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor		None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	TS3664N4E10 (□24mm)	PK523HPB-C12 (□28mm)
	Step Angle	0.72°	
Sensor	Power Voltage	DC5 – 24V±10%	
	Current Consumption	60mA or lower (20mA per sensor)	
	Control Output	NPN open collector output DC30V or lower, 50mA or lower	
	Output Logic	When shaded: Output transistor OFF (no conduction): Limit sensor When shaded: Output transistor ON (conduction): Origin sensor	

Compatible Driver / Controller

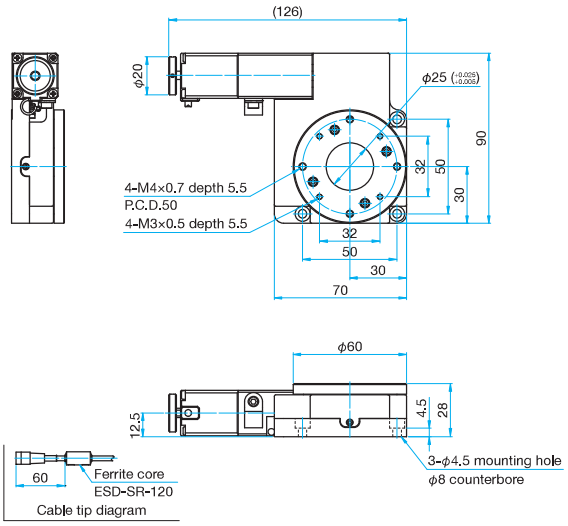
Control System	Compatible Driver	SG-5M, SG-5MA, SG-55M, MC-S0514ZU, MC-7514PCL
	Compatible Controller	GSC-01, GIP-101, GSC-02, SHOT-702, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

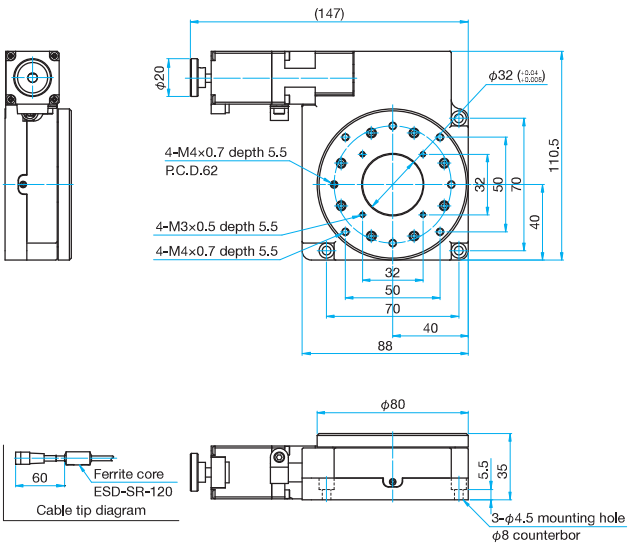
HDS-60YAW

Hexagon socket head cap screw M4×10...3 screws



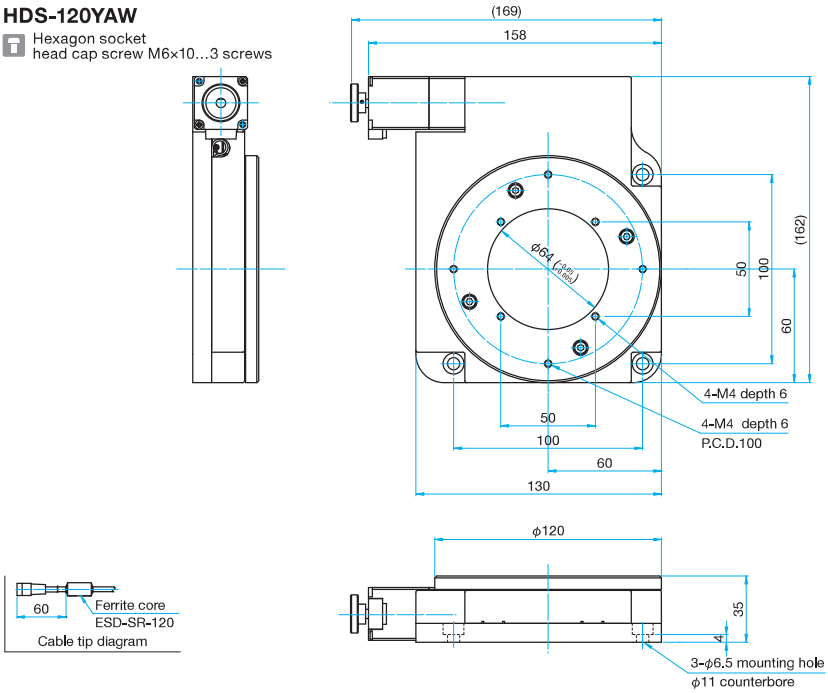
HDS-80YAW

Hexagon socket head cap screw M4×12...3 screws

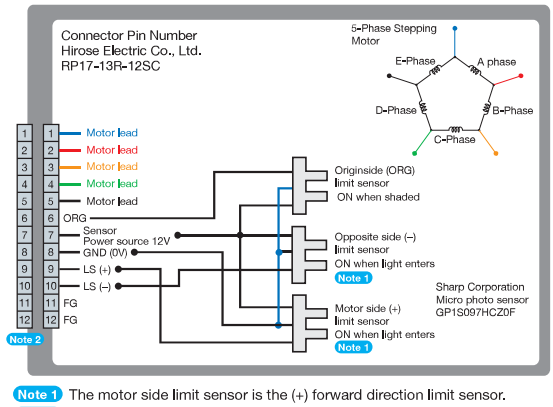


HDS-120YAW

Hexagon socket head cap screw M6×10...3 screws



Connection Diagram



Note 1 The motor side limit sensor is the (+) forward direction limit sensor.

Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

Compatible Controllers / Drivers and Cables

Controller

GSC-01	[1 axis]
GSC-02	[2 axes]
SHOT-702	[2 axes]
GIP-101	[1 axis]
HSC-103	[3 axes]
SHOT-302GS	[2 axes]
SHOT-304GS	[4 axes]
HIT-M·HIT-S	[8 axes]
PGC-04-U	[4 axes]

Reference G108 – G117

Cable

D15RP-CA

Reference G120

Stage

HDS-60YAW
HDS-80YAW
HDS-120YAW

Driver

Drivers

Reference G020 – G021

Cable

MINI-CA-SG

Reference G120

Motorized Extended Guide Goniometer
Stage Size 40 × 40 mm

OSMS-40A RoHS CE

High precision motorized goniometers with integrated bearing ways for superior stiffness, accuracy and durability.
Their smooth motion makes them ideal for frequent angle adjustment.

- Extended Contact bearing ways are machined directly into the main body reduce the number of parts and assembly time, making these very durable and cost effective.
- Attachment pins (accessories) are ideal for positioning when assembling into $\alpha\beta$ axis or mounting on various instruments or devices.

Guide

- Contact our Sales Division if you desire to assemble into an $\alpha\beta$ axis stage.
- Contact our Sales Division if you desire a rotation center height not listed in the catalog.
- Manual type (GOHT-40) is also available.

Reference E174
WEB Reference Catalog Code W7092

GOHT-40A✻✻✻

Specifications

Part Number			OSMS-40A60	OSMS-40A75
(Opposite Model)			OSMS-40A60R	OSMS-40A75R
Mechanical Specifications	Travel [°]		±5	±4
	Stage Size [mm]		40×40	40×40
	Travel Mechanism (reduction ratio)		Worm gear (1: 332)	Worm gear (1: 406)
	Positioning Slide		Extended Contact Ball Guide	Extended Contact Ball Guide
	Stage Material		SUS440C quench hardened	SUS440C quench hardened
	Finish		Super black chrome	Super black chrome
	Weight [kg]		0.4	0.4
Size Tolerance	Stage Height [mm]		15	15
	Rotation Center Height [mm]		60±0.1	75±0.1
	Rotation Center Deflection Accuracy [mm]		Within ϕ0.01	Within ϕ0.01
Accuracy Specifications	Resolution	(Full) [°/pulse]	about 0.00217	about 0.00177
		(Half) [°/pulse]	about 0.00108	about 0.00089
	MAX Speed [°/sec]		10	8.9
	Positional Repeatability [°]		±0.004	±0.004
	Load Capacity [N]		19.6(2.0kgf)	19.6(2.0kgf)
	Moment Stiffness [″/N·cm]		Roll 0.6 Yaw 0.6	Roll 0.6 Yaw 0.6
	Lost Motion [°]		0.02	0.02
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPIF(Sharp Corporation): Limit Sensor	
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK523HPB-C12 (□28mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	40mA or lower (20mA per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction) : Limit Sensor When shaded: Output transistor ON (conduction): Origin sensor

Compatible Driver / Controller

Control System	Compatible Driver	SG-5M, SG-5MA, SG-55M, SG-55MA, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

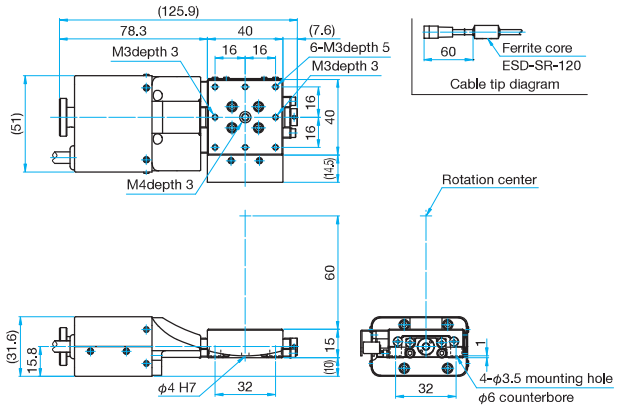
Application Systems
Optics & Optical Coatings
Opto-Mechanics
Bases
Manual Stages
Actuators & Adjusters
Motoeized Stages
Light Sources & Laser Safety
Index
Guide
Controllers/Drivers
Softwares
Stepping Motor
AC Servo Motor
Cables
Piezo
X Translation
Theta Rotation
Goniometer
Vacuum
Options
40 × 40 mm
60 × 60 mm
80 × 80 mm
85 × 85 mm
100 × 100 mm
120 × 120 mm
Others

2D CAD 3D CAD

Outline Drawing

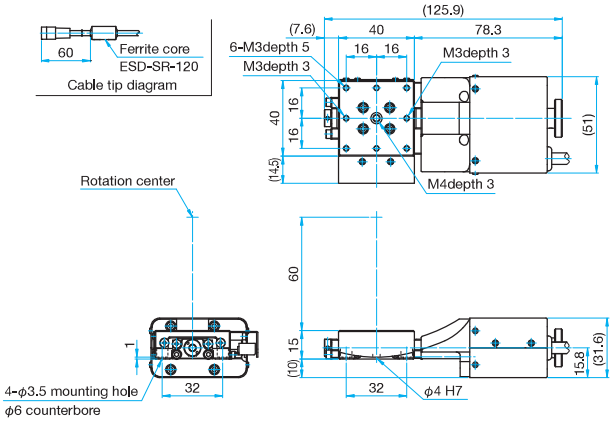
OSMS-40A60

Hexagon socket head cap screw M3×6…4 screws, Attachment pins



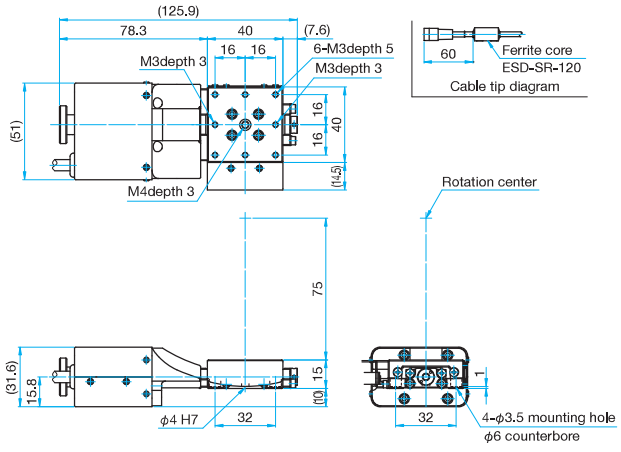
OSMS-40A60R

Hexagon socket head cap screw M3×6…4 screws, Attachment pins



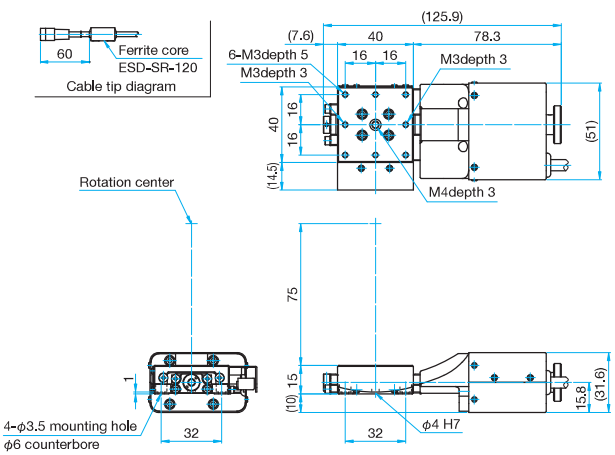
OSMS-40A75

Hexagon socket head cap screw M3×6…4 screws, Attachment pins

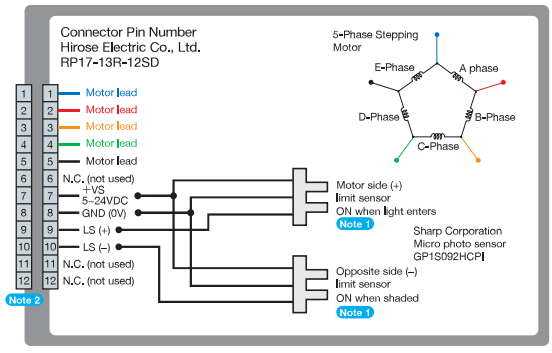


OSMS-40A75R

Hexagon socket head cap screw M3×6…4 screws, Attachment pins



Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with origin and proximity origin sensors.
Limit sensors are used as origin detection sensors.

Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

Compatible Controllers / Drivers and Cables

Controller

GSC-01	[1 axis]
GSC-02	[2 axes]
SHOT-702	[2 axes]
GIP-101	[1 axis]
HSC-103	[3 axes]
SHOT-302GS	[2 axes]
SHOT-304GS	[4 axes]
HIT-M·HIT-S	[8 axes]
PGC-04-U	[4 axes]

Reference G108 – G117

Cable

D15RP-CA

Reference G120

Stage

OSMS-40A

Driver

Drivers

Reference G020 – G021

Cable

MINI-CA-SG

Reference G120

Motorized Extended Guide Goniometer
Stage Size 60 × 60 mm

OSMS-60A RoHS CE

High precision motorized goniometers with integrated bearing ways for superior stiffness, accuracy and durability.
Their smooth motion makes them ideal for frequent angle adjustment.

- Extended Contact bearing ways are machined directly into the main body reduce the number of parts and assembly time, making these very durable and cost effective.
- Attachment pins (accessories) are ideal for positioning when assembling into $\alpha\beta$ axis or mounting on various instruments or devices.

Guide

- Contact our Sales Division if you desire to assemble into an $\alpha\beta$ axis stage.
- Manual type (GOHT-60) is also available.

Reference E178
WEB Reference Catalog Code W7093

GOHT-60A✱✱✱

Specifications

Part Number			OSMS-60A60	OSMS-60A85	OSMS-60A105
(Opposite Model)			OSMS-60A60R	OSMS-60A85R	OSMS-60A105R
Mechanical Specifications	Travel [°]		±14	±9	±7
	Stage Size [mm]		60×60	60×60	60×60
	Travel Mechanism (reduction ratio)		Worm gear (1: 246)	Worm gear (1: 314)	Worm gear (1: 380)
	Positioning Slide		Extended Contact Ball Guide	Extended Contact Ball Guide	Extended Contact Ball Guide
	Stage Material		SUS440C quench hardened	SUS440C quench hardened	SUS440C quench hardened
	Finish		Super black chrome	Super black chrome	Super black chrome
	Weight [kg]		0.85	0.75	0.75
Size Tolerance	Stage Height [mm]		25	20	20
	Rotation Center Height [mm]		60±0.1	85±0.1	105±0.1
	Rotation Center Deflection Accuracy [mm]		Within ϕ0.01	Within ϕ0.01	Within ϕ0.01
Accuracy Specifications	Resolution	(Full) [°/pulse]	about 0.00293	about 0.00229	about 0.00198
		(Half) [°/pulse]	about 0.00146	about 0.00115	about 0.00095
	MAX Speed [°/sec]		10	8	6.6
	Positional Repeatability [°]		±0.004	±0.004	±0.004
	Load Capacity [N]		29.4(3.0kgf)	29.4 (3.0kgf)	29.4 (3.0kgf)
	Moment Stiffness [″/N·cm]		Roll 0.3 Yaw 0.3	Roll 0.3 Yaw 0.3	Roll 0.3 Yaw 0.3
	Lost Motion [°]		0.02	0.02	0.02
Sensor	Sensor Part Number		Micro photo sensor: GP1S097HCZ0F(Sharp Corporation): Limit Sensor, Origin Sensor		
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	PK523HPB-C12 (□28mm)
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	60mA or lower (20mA per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction): Limit sensor When shaded: Output transistor ON (conduction): Origin sensor

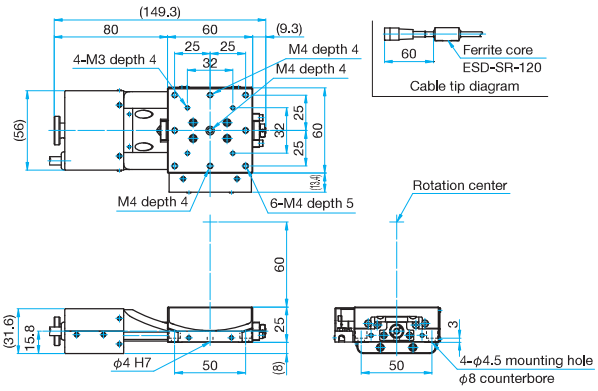
Compatible Driver / Controller

Control System	Compatible Driver	SG-5M, SG-5MA, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

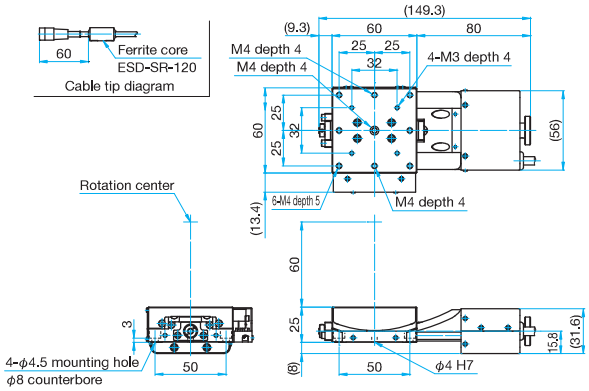
2D CAD 3D CAD

Outline Drawing

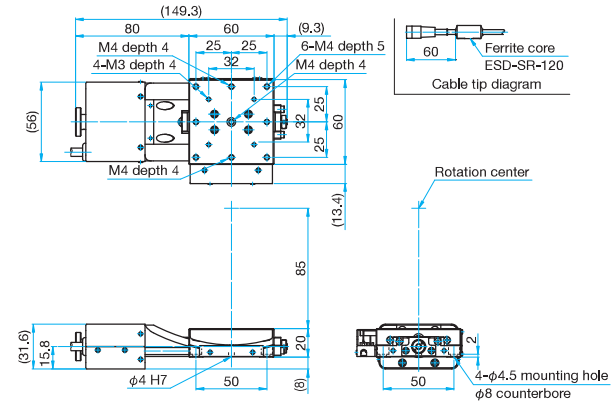
OSMS-60A60
Hexagon socket head cap screw M4×8...4 screws, Attachment pins



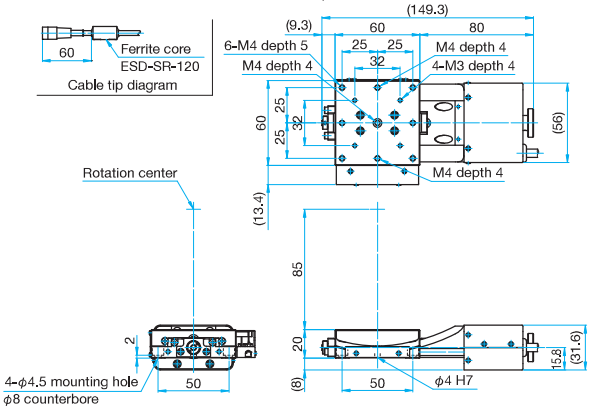
OSMS-60A60R
Hexagon socket head cap screw M4×8...4 screws, Attachment pins



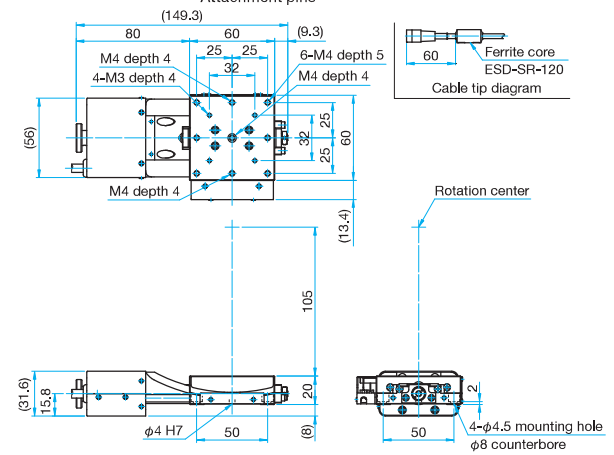
OSMS-60A85
Hexagon socket head cap screw M4×8...4 screws, Attachment pins



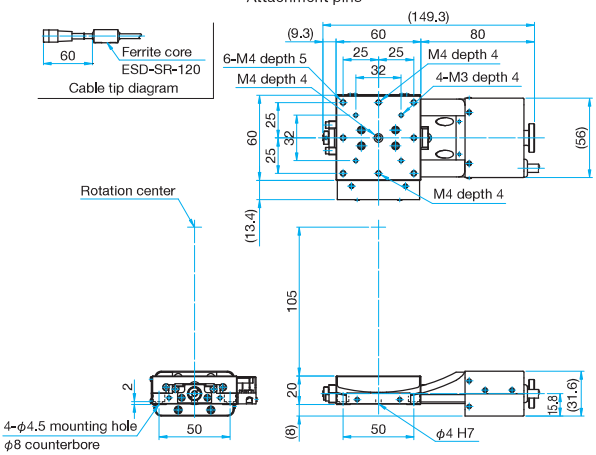
OSMS-60A85R
Hexagon socket head cap screw M4×8...4 screws, Attachment pins



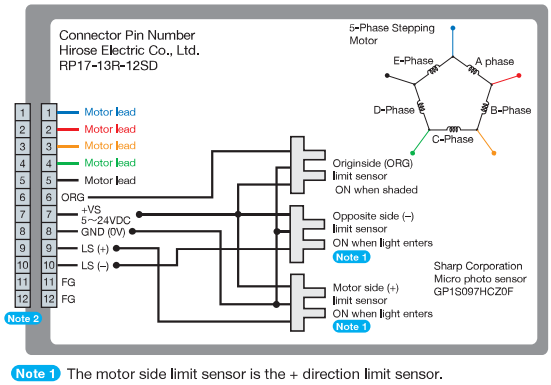
OSMS-60A105
Hexagon socket head cap screw M4×8...4 screws, Attachment pins



OSMS-60A105R
Hexagon socket head cap screw M4×8...4 screws, Attachment pins



■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with proximity origin sensors.
Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

■Compatible Controllers / Drivers and Cables

Controller

GSC-01	[1 axis]
GSC-02	[2 axes]
SHOT-702	[2 axes]
GIP-101	[1 axis]
HSC-103	[3 axes]
SHOT-302GS	[2 axes]
SHOT-304GS	[4 axes]
HIT-M·HIT-S	[8 axes]
PGC-04-U	[4 axes]

Reference G108 – G117

Cable

D15RP-CA
Reference G120

Stage

OSMS-60A

Driver

Drivers
Reference G020 – G021

Cable

MINI-CA-SG
Reference G120

Two Axis Motorized Extended Guide Goniometer

Stage Size 40 × 40 mm / 60 × 60 mm

OSMS-B RoHS

High precision motorized goniometers with integrated bearing ways for superior stiffness, accuracy and durability.Their smooth motion makes them ideal for frequent angle adjustment.

- Extended Contact bearing ways are machined directly into the main body reduce the number of parts and assembly time, making these very durable and cost effective.
- Attachment pins (accessories) are ideal for positioning when assembling into $\alpha\beta$ axis or mounting on various instruments or devices.

Guide

- Contact our Sales Division if you desire to assemble into an $\alpha\beta$ axis stage.
- Manual type $\alpha\beta$ axis (GOHT-40,60) is also available.

Reference E176 – E179
WEB Reference Catalog Code W7104, W7105

GOHT-**B**B

Specifications

Part Number				OSMS-40B60	OSMS-60B60	OSMS-60B85
(Opposite Model)				OSMS-40B60R	OSMS-60B60R	OSMS-60B85R
Mechanical Specifications	Travel [°]		Upper β axis	±5	±14	±9
			Lower α axis	±4	±9	±7
	Stage Size [mm]			40×40	60×60	60×60
	Travel Mechanism (reduction ratio)		Upper β axis	Worm gear (1: 332)	Worm gear (1: 246)	Worm gear (1: 314)
			Lower α axis	Worm gear (1: 406)	Worm gear (1: 314)	Worm gear (1: 380)
	Positioning Slide			Extended Contact Ball Guide	Extended Contact Ball Guide	Extended Contact Ball Guide
	Stage Material			SUS440C quench hardened	SUS440C quench hardened	SUS440C quench hardened
	Finish			Super black chrome	Super black chrome	Super black chrome
	Weight [kg]			0.8	1.6	1.5
Size Tolerance	Stage Height [mm]			30	45	40
	Rotation Center Height [mm]			60±0.2	60±0.2	85±0.2
	Rotation Center Deflection Accuracy [mm]			Within ϕ0.01	Within ϕ0.01	Within ϕ0.01
Accuracy Specifications	Resolution	(Full) [°/pulse]	Upper β axis	about 0.00217	about 0.00293	about 0.00229
			Lower α axis	about 0.00177	about 0.00229	about 0.00198
		(Half) [°/pulse]	Upper β axis	about 0.00108	about 0.00146	about 0.00115
			Lower α axis	about 0.00089	about 0.00115	about 0.00095
	MAX Speed [°/sec]			8	8	6
	Load Capacity [N]			14.7 (1.5kgf)	19.6 (2.0kgf)	19.6 (2.0kgf)
Sensor	Sensor Part Number			Micro photo sensor: GP1S092HCPIF (Sharp Corporation)	Micro photo sensor: GP1S097HCZ (Sharp Corporation)	
	Limit Sensor			Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor			None	Equipped (NORMAL OPEN)	Equipped (NORMAL OPEN)
	Proximity Origin Sensor			None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)	
	Motor Part Number	PK523HPB-C12 (□28mm)	
	Step Angle	0.72°	
Sensor	Power Voltage	DC5 – 24V±10%	
	Current Consumption	80mA or lower (40mA or lower a per axis 20mA or lower per a sensor)	120mA or lower (60mA or lower a per axis 20mA or lower per a sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower	
	Output Logic	When shaded: Output transistor OFF (no conduction): Limit sensor When shaded: Output transistor ON (conduction): Origin sensor	

Compatible Cable

Cable	Driver Cable	D15RP-CA (Controller), MINI-SG-CA (Driver)

Compatible Driver / Controller

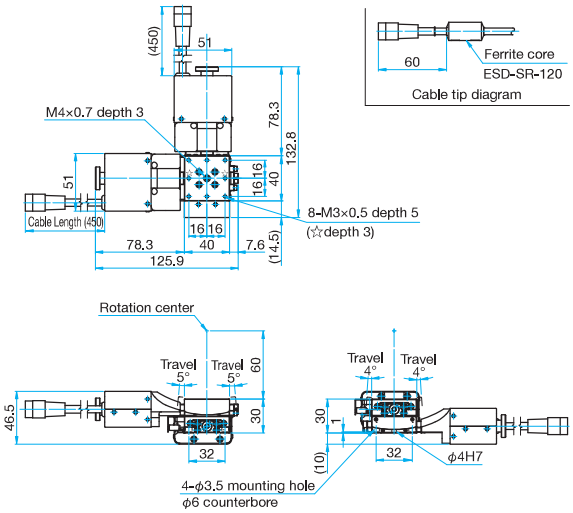
Control System	Compatible Driver	SG-5M, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-02, HSC-103, SHOT-702, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

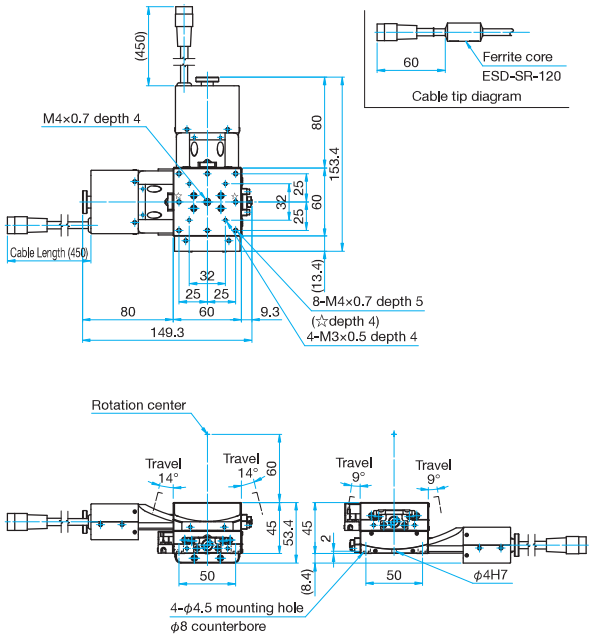
OSMS-40B60

Hexagon socket head cap screw M3×6...4 screws, Attachment pins



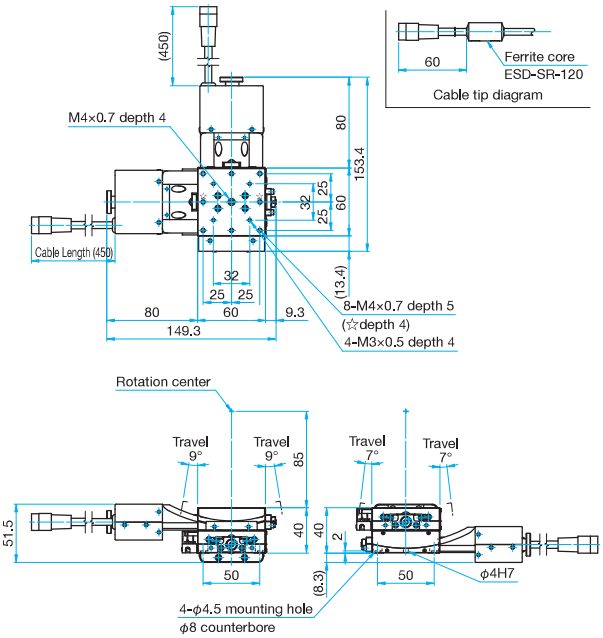
OSMS-60B60

Hexagon socket head cap screw M4×8...4 screws, Attachment pins

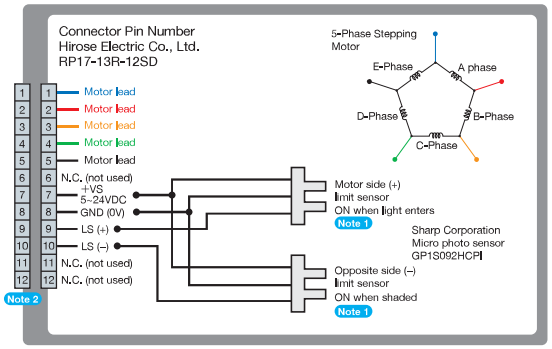


OSMS-60B85

Hexagon socket head cap screw M4×8...4 screws, Attachment pins



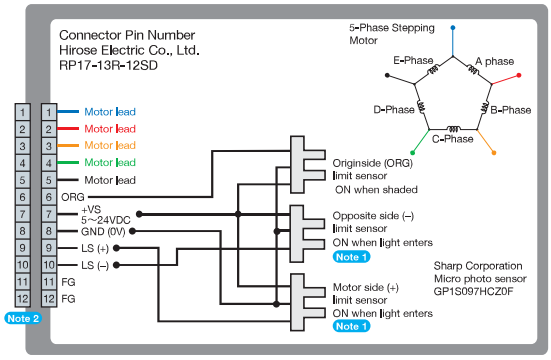
Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with origin and proximity origin sensors.
Limit sensors are used as origin detection sensors.

Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.
Motorized stages are not fitted with proximity origin sensors.

Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. RP17-13PA-12PC/RP17-PC-122

Compatible Controllers / Drivers and Cables

Controller

GSC-02	[2 axes]
SHOT-702	[2 axes]
HSC-103	[3 axes]
SHOT-302GS	[2 axes]
SHOT-304GS	[4 axes]
HIT-M·HIT-S	[8 axes]
PGC-04-U	[4 axes]

Reference G110 – G117

Cable

D15RP-CA

Reference G120

Stage

OSMS-40B60
OSMS-60B60
OSMS-60B85

Driver

Drivers

参照 G020~G021

Cable

MINI-CA-SG

Reference G120

Motorized Crossed Roller Goniometers
Stage Size 60 × 60 mm

SGSP-A

RoHS

Aluminum body motorized goniometer with crossed roller bearings.

- Light weight with compact footprint.
- Rotation center heights available: 75mm, 100mm or 130mm.

Guide

▶After purchasing two α axis stages, to assemble them into an $\alpha\beta$ axis stage, assembly adjustment cost and performance inspection cost will be charged separately.

Specifications

Part Number			SGSP-60A75	SGSP-60A100	SGSP-60A130
Mechanical Specifications	Angle Range [°]		±7	±5	±4
	Stage Size [mm]		60×60	60×60	60×60
	Positioning Slide		Crossed roller guide	Crossed roller guide	Crossed roller guide
	Travel Mechanism		Worm and worm wheel	Worm and worm wheel	Worm and worm wheel
	Stage Material		Aluminum	Aluminum	Aluminum
	Finish		Black anodized	Black anodized	Black anodized
	Weight [kg]		0.65	0.55	0.65
Size Tolerance	Stage Height [mm]		35	30	35
	Rotation Center Height [mm]		75	100	130
	Rotation Center Deflection Accuracy [mm]		ϕ0.05	ϕ0.05	ϕ0.05
Accuracy Specifications	Resolution	(Full) [°/pulse]	about 0.002	about 0.001	about 0.001
		(Half) [°/pulse]	about 0.001	about 0.0005	about 0.0005
	MAX Speed [°/sec]		6	6	6
	Positional Repeatability [°]		±0.004	±0.004	±0.004
	Load Capacity [N]		24.5 (2.5kgf)	24.5 (2.5kgf)	24.5 (2.5kgf)
	Moment Stiffness [″/N·cm]		1	1	1
	Lost Motion [°]		0.02	0.02	0.02
Sensor	Sensor Part Number		Micro photo sensor: GP1S092HCPI(Sharp Corporation)		
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		None	None	None
	Proximity Origin Sensor		None	None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	C9863-90215P
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	40mA or lower (20mA per sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction)

Compatible Driver / Controller

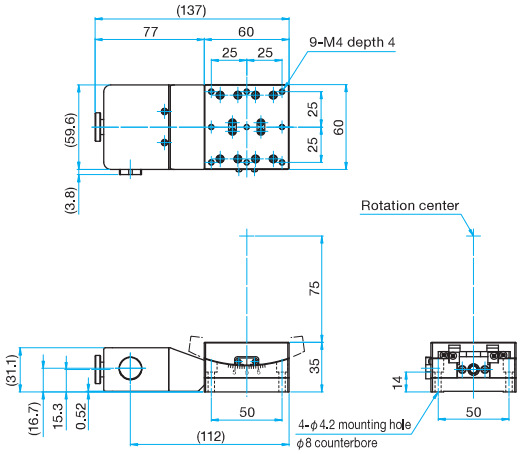
Control System	Compatible Driver	SG-5M, SG-55M, SG-514MSC
	Compatible Controller	GSC-01, GSC-02, SHOT-702, HSC-103, GIP-101, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

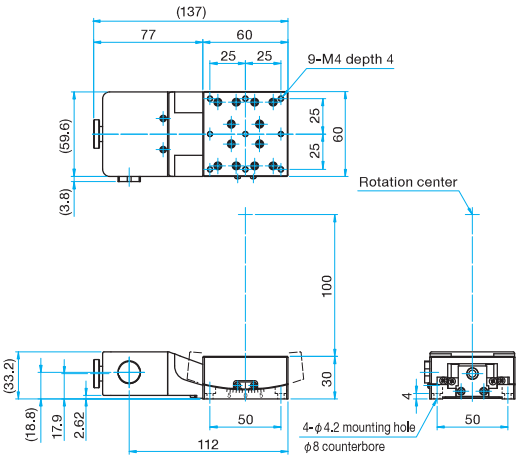
SGSP-60A75

Hexagonal socket head cap screw M4×18…4 screws



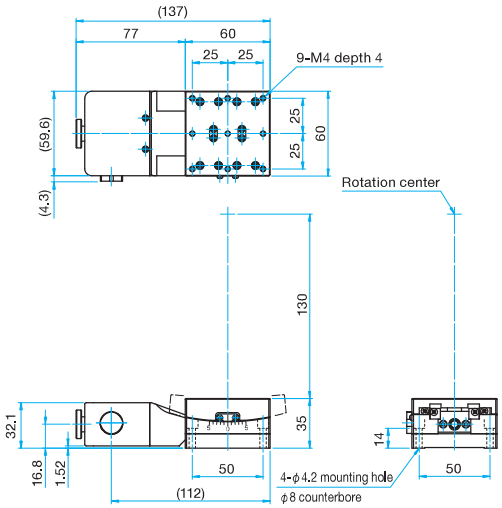
SGSP-60A100

Hexagonal socket head cap screw M4×8…4 screws

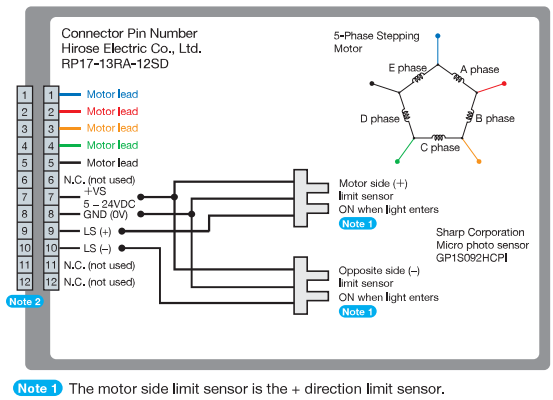


SGSP-60A130

Hexagonal socket head cap screw M4×18…4 screws



■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.

Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. PR17-13PA-12PC/RP17-PC-122

■Compatible Controllers / Drivers and Cables

Controller

GSC-01 [1 axis]
GSC-02 [2 axes]
SHOT-702 [2 axes]
GIP-101 [1 axis]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M•HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G108 – G117

Cable

D15RP-CA
Reference G120

Stage

SGSP-60A

Driver

Drivers
Reference G020 – G021

Cable

MINI-CA-SG
Reference G120

Two Axis Motorized Crossed Roller Goniometers
Stage Size 60 × 60 mm

SGSP-B RoHS

Two axis aluminum body motorized goniometer with crossed roller bearings.

- Light weight with compact footprint.
- Rotation center heights available: 75mm or 100mm.

Attention

▶Preassembled for best perpendicularity of α and β axis stages. Note that if you disassemble the two axes, the optimized alignement will be lost.

Application Systems
Optics & Optical Coatings
Opto-Mechanics
Bases
Manual Stages
Actuators & Adjusters
Motoeized Stages
Light Sources & Laser Safety
Index
Guide
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

Specifications

Part Number			SGSP-60B75	SGSP-60B100
Mechanical Specifications	Angle Range [°]	(Upper)	β axis: ±7	β axis: ±5
		(Lower)	α axis: ±5	α axis: ±4
	Stage Size [mm]		60×60	60×60
	Positioning Slide		Crossed roller	Crossed roller
	Travel Mechanism		Worm and worm wheel	Worm and worm wheel
	Stage Material		Aluminum	Aluminum
	Finish		Black anodized	Black anodized
	Weight [kg]		1.10 (2 axes)	1.20 (2 axes)
Size Tolerance	Stage Height [mm]		55	65
	Rotation Center Height [mm]		75	100
	Rotation Center Deflection Accuracy [mm]		—	—
Accuracy Specifications	Resolution	(Full) [°/pulse]	α axis: about 0.001, β axis: about 0.002	α axis: about 0.001, β axis: about 0.001
		(Half) [°/pulse]	α axis: about 0.0005, β axis: about 0.001	α axis: about 0.0005, β axis: about 0.0005
	MAX Speed [°/sec]		6	6
	Load Capacity [N]		19.1 (1.9kgf)	19.1 (1.9kgf)
	Moment Stiffness [″/N·cm]		—	—
	Lost Motion [°]		—	—
Sensor	Sensor Part Number		GP1S092HCPI (Sharp Corporation)	
	Limit Sensor		Equipped (NORMAL CLOSE)	Equipped (NORMAL CLOSE)
	Origin Sensor		None	None
	Proximity Origin Sensor		None	None

Motor / Sensor Specifications

Motor	Type	5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	C9863-90215P
	Step Angle	0.72°
Sensor	Power Voltage	DC5 – 24V±10%
	Current Consumption	80mA or lower (40mA or lower a per axis 20mA or lower per a sensor)
	Control Output	NPN open collector output DC30V or lower, 50mA or lower
	Output Logic	When shaded: Output transistor OFF (no conduction)

Configuration

Part Number	SGSP-60B75	SGSP-60B100
(Upper) β axis	SGSP-60A75	SGSP-60A100
(Lower) α axis	SGSP-60A100	SGSP-60A130

(Reference) Precision Specifications of Single Axis Stage

Part Number		SGSP-60A75	SGSP-60A100	SGSP-60A130
Accuracy Specifications	Positional Repeatability [°]	±0.004	±0.004	±0.004
	Moment Stiffness [″/N·cm]	1	1	1
	Lost Motion [°]	0.02	0.02	0.02

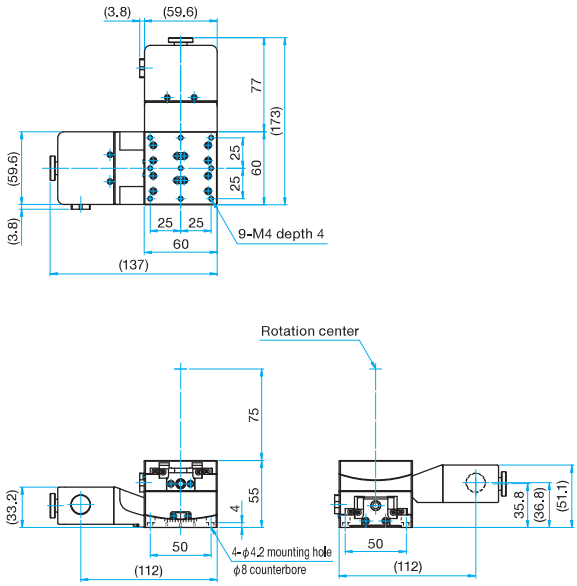
Compatible Driver / Controller

Control System	Compatible Driver	SG-5M, MC-S0514ZU, SG-514MSC
	Compatible Controller	GSC-02, SHOT-702, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

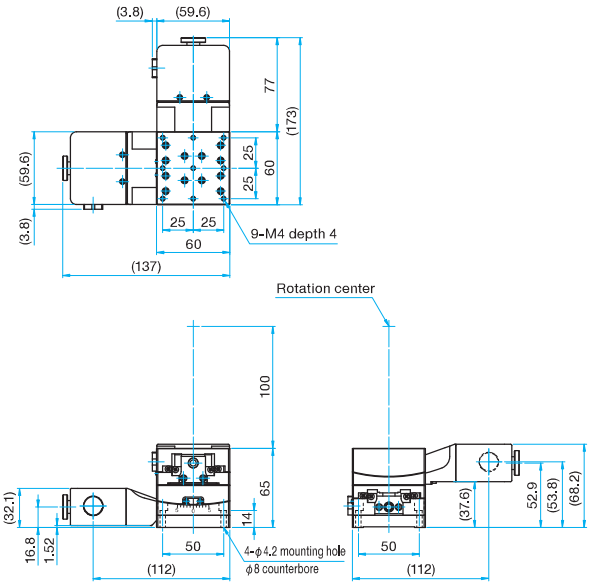
2D CAD 3D CAD

Outline Drawing

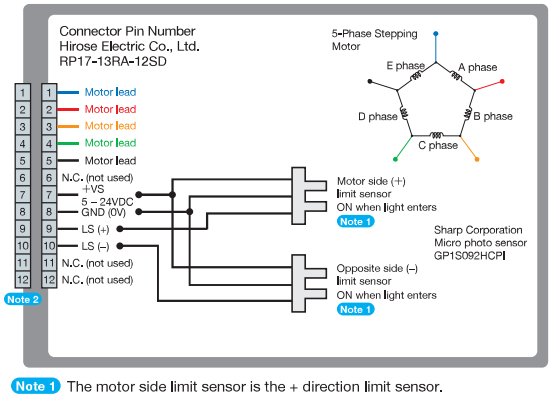
SGSP-60B75 Hexagonal socket head cap screw M4×8…4 screws



SGSP-60B100 Hexagonal socket head cap screw M4×18…4 screws



■Connection Diagram



Note 1 The motor side limit sensor is the + direction limit sensor.

Note 2 Compatible cable connector:
Hirose Electric Co., Ltd. PR17-13PA-12PC/RP17-PC-122

■Compatible Controllers / Drivers and Cables

Controller

GSC-02 [2 axes]
SHOT-702 [2 axes]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M•HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G109 – G117

Cable

D15RP-CA
Reference G120

Stage

SGSP-60B

Driver

Drivers
Reference G020 – G021

Cable

MINI-CA-SG
Reference G120

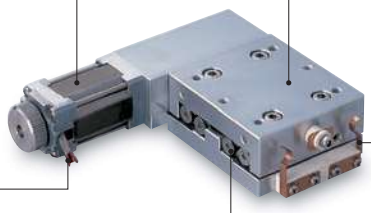
Vacuum Compatible Motorized Stage Guide | VSGSP Guide

For use in vacuum environments, the vacuum compatible stage series offers replacement with a stainless steel or machined aluminum body as well as replacement with vacuum grease, and uses a vacuum rated motor and a contact type or mechanical driven type switch, and Teflon coated cables for signal wires.
The series is suited for positioning in environments where the degree of vacuum is between 10^{-4} and 10^{-5}Pa. For the vacuum characteristics, see the measurement data of outgas volume, degree of vacuum, and mass component ratio.

- In addition to the standard lineup, motor replacement, sensor replacement, special specifications such as vacuum compatible large mirror holders, and replacement of grease to vacuum grease for the guides or feed screws of standard specification stages to deal with low vacuum specifications are available. Contact our Sales Division for more information.

Vacuum Compatible 5 Phase Stepping Motor
The □24mm minimum size and lightest type motor saves space.

Compact Body
Machined Aluminum and use of a crossed roller for the linear guide achieved the thin body.



Limit Sensor
The copper plate contact type limit sensor enables limit detection inside a vacuum chamber.

Teflon Coated Cable

Vacuum Grease
(Fomblin Grease)

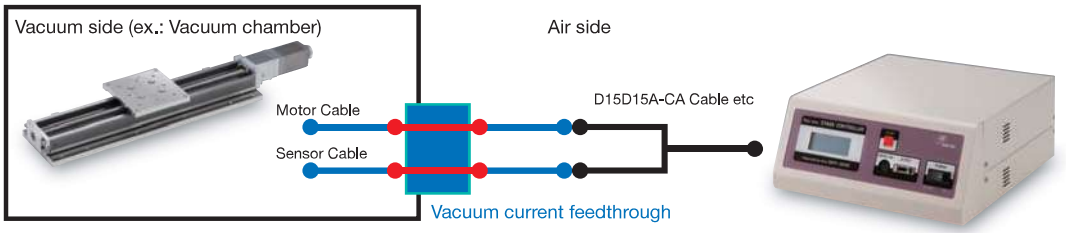
Rotation Table
The body is made of aluminum machining.

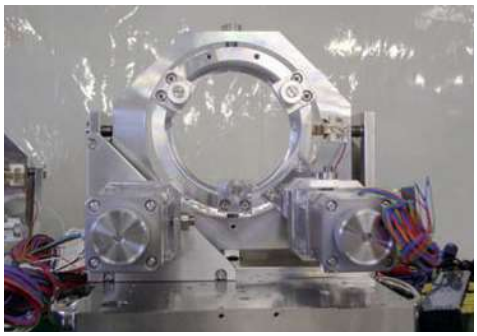
Limit Sensor
The high-vacuum compatible limit switch enables origin detection with high repeatability inside a vacuum chamber.
* Only for VSGSP-120YAW

Vacuum Grease
(Fomblin Grease)

Vacuum Compatible 5 Phase Stepping Motor
The motor size for VSGSP-60YAW is □24mm and VSGSP-120YAW is □42mm.

[Attention] To use a vacuum compatible stage in a vacuum chamber, the connection cables between the vacuum side and the atmosphere side need to be relayed using a vacuum current feedthrough or the like. Prepare the feedthrough according to the vacuum chamber specifications.





[Example of Special Order]
Vacuum Compatible Large Mirror Holder

Guide

- Because heat dissipation generally deteriorates in vacuum, specification temperature conditions are stricter than those for atmosphere. Check the usage conditions such as stage operation to make sure that the motor case temperature does not exceed 80°C.

●Emitted amount of gas

Part Number	Emitted Amount of Gas Q (after 40 minutes of emission)	
	(Torr･ℓ/s/unit)	(Pa･ℓ/s/unit)
VSGSP26-200	4.77×10^{-4}	6.36×10^{-2}
VSGSP-60	6.75×10^{-5}	9.00×10^{-3}
VSGSP-120YAW	4.78×10^{-4}	6.37×10^{-2}

Evaluation and Device Specifications
Exhaust system: Turbo-Molecular Pump STP-301
Seiyu Instruments Inc. (Now Edwards Japan Limited)
Pumping speed: 300ℓ/sec
Mass spectroscope: Quad Mass Spectrometer QME200
Pfeiffer Vacuum
Mass range: 1 – 200amu

Emitted amount of gas is found by the following equation:

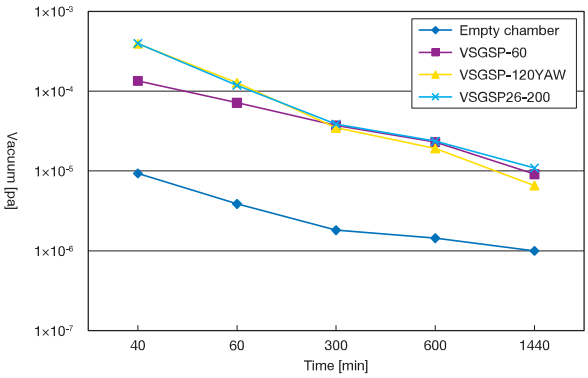
$$Q = \frac{(P - P') \times V}{t \times N}$$

P : Vacuum immediately after seal off
P′ : Vacuum after seal-off time has elapsed
N : Number of stage units (1unit)
V : Vacuum chamber volume (ℓ)
t : Seal-off time (600s)

From the measurement results of gas volume discharged from a vacuum compatible motorized stage

The main components of outgas are water and nitrogen. This is because the gas was caused by residual air on the stage surface, and grease used for drive components is considered to have little impact on the amount of gas.

●Vacuum of Vacuum Chamber



●Mass Component Ratio

Mass Number	Component Ratio [%]			Ion	Gas Molecule
	VSGSP-60	VSGSP26-200	VSGSP-120YAW		
1	19.58	19.96	17.90	H^+	H_2, water vapor, hydrocarbon
2	2.81	5.28	3.34	H_2^+	H_2, water vapor, hydrocarbon
12	0.60	0.85	0.79	C^+	CO, CO_2, hydrocarbon
13	0.17	–	–	CH^+	Hydrocarbon
14	0.79	1.26	0.91	N^+, CO^{2+}, CH_2^+	N_2, NH_3, CO, hydrocarbon
15	–	2.37	–	CH_3^+, NH^+	Hydrocarbon, NH_3
16	3.03	–	2.98	O^+, CH_4^+, NH_2^+	O_2, CH_4, NH_3
17	15.77	–	14.48	OH^+, NH_3^+	H_2O, NH_3
18	48.02	17.30	43.89	H_2O^+	H_2O
20	0.22	–	0.29	HF^+, Ar^{2+}	HF, Ar
26	0.33	–	0.53	$C_2H_2^+$	Hydrocarbon
27	0.83	4.53	1.52	$C_2H_3^+$	Hydrocarbon
28	2.17	2.49	2.76	CO^+, N_2^+, $C_2H_4^+$	CO, CO_2, N_2, hydrocarbon
29	0.73	6.08	1.44	$C_2H_5^+$	Hydrocarbon
30	0.08	–	–	$C_2H_6^+$, NO^+	C_2H_6, NO
31	0.14	0.31	0.27	$C_2H_2OH^+$	C_2H_3OH
32	0.26	–	0.27	O^{2+}, S^+	O_2, H_2S, SO_2
39	0.39	2.57	0.78	$C_3H_3^+$	Hydrocarbon
41	0.51	7.44	1.07	$C_3H_5^+$	Hydrocarbon
42	–	–	0.41	$C_3H_6^+$	Hydrocarbon
43	0.74	8.00	1.01	$C_3H_5^+$	Hydrocarbon
44	0.40	–	0.66	$C_3H_8^+$, CO_2^+, N_2O^+, $C_2H_4OH^+$	C_3H_8, CO_2, N_2O, C_2H_4OH
45	–	0.31	0.31	$C_2H_5O^+$	C_2H_5OH
50	–	0.23	–	$C_4H_2^+$	Hydrocarbon

Data

●Interpretation of Mass Peak

The following list shows major gases that appear for each mass number when mass peaks (mass spectra) of residual gas are measured, and their interpretations.

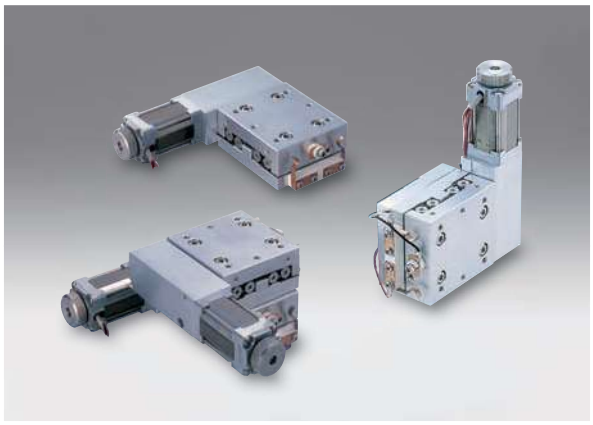
List of Residual Gas Spectra

Mass Number	Ion	Remarks	Mass Number	Ion	Remarks
1	H^+	H_2, H_2O, hydrocarbons, etc	30	NO^+	Appears immediately after emission of dirty vacuum system.
2	H_2^+	H_2, H_2O, hydrocarbons, etc	31	CH_3O^+	Alcohol
3	HD^+	Abundance ratio of D is about 0.01%.	32	O_2^+	Becomes N_{23} : O_{32} = 4 : 1 when air leak occurs.
4	He^+		35	Cl^+	
12	C^+	CO, CO_2, hydrocarbons	37	Cl^+	Cl_{35} : Cl_{37} = 3 : 1
14	N^+, CH_2^+, CO_2^+	N_2, CO_2, hydrocarbons	39	K^+, $C_3H_3^+$	K^+ dissociates from filament.
15	CH_3^+	Molecule that has CH_4, CH_3	40	Ar^+, $C_3H_4^+$	Ar makes up 1% of the atmosphere.
16	C^+, CH_4^+	O_2, CH_4, oxygen compounds	41	$C_3H_5^+$	Hydrocarbon
17	OH^+	H_2O	42	$C_3H_6^+$	Hydrocarbon
18	H_2O^+	H_2O, OH^+ : H_2O_+ ≒ 1 : 5	43	$C_3H_7^+$	Hydrocarbon
19	F^+	Sometimes adsorbed to filaments and electrode surface.	44	CO_2^+	
20	Ar^+, H_2O^+, Ne^+	$H_2O(20)$ is present about 0.2% of abundance ratio of O_{15}.	50	$C_4H_2^+$	Hydrocarbon
22	CO_2^{2+}, Ne^+	Abundance ratio of NE_{22} is 8.8%.	51	$C_4H_3^+$	Hydrocarbon
23	Na^+	Sometimes adsorbed to filaments and electrode surface.	55	$C_4H_7^+$	Hydrocarbon
27	$C_2H_3^+$	Hydrocarbon	56	$C_4H_8^+$	Hydrocarbon
28	N_2^+, CO^+	Remain till the last.	57	$C_4H_9^+$	Hydrocarbon
29	$C_2H_5^+$, N_2^+, CO^+	Abundance ratio of N_{15} is 0.7%, and that of C_{13} is 1.1%.			

Vacuum Compatible Miniature Motorized Stages
Stage Size 55 × 60 mm

VSGSP-60 RoHS

Compact motorized stages for use in high vacuum.
Compact, slim body for minimal footprint.



Guide

- Includes 1m teflon coated cables to connect the vacuum motor and vacuum limit switches to the chamber feedthrough connector.
- Please Contact our Sales Division for more information about vacuum applications miniature motorized stages which are CE certificated.
- Various types of stages and holders which can be used in vacuum environments are also available. Reference D023

Specifications

Part Number			VSGSP-60(X)	VSGSP-60(XY)	VSGSP-60(Z)
Mechanical Specifications	Travel [mm]		20	20	20
	Stage Size [mm]		55×60	55×60	55×60
	Feed Screw		Precision ground screw ϕ4mm, 0.5mm lead	Precision ground screw ϕ4mm, 0.5mm lead	Precision ground screw ϕ4mm, 0.5mm lead
	Positioning Slide		Crossed roller guide	Crossed roller guide	Crossed roller guide
	Stage Material		Aluminum	Aluminum	Aluminum
	Finish		None	None	None
	Weight [kg]		0.55	1.1	0.6
Accuracy Specifications	Resolution	(Full) [μm]	1	1	1
		(Half) [μm]	0.5	0.5	0.5
	MAX Speed [mm/sec]		5	5	—
	Positional Repeatability [μm]		6	6	6
	Load Capacity [N]		29.4 (3.0kgf)	19.6 (2.0kgf)	14.7 (1.5kgf)
	Lost Motion [μm]		5	5	5
Sensor	Type		Vacuum limit switch	Vacuum limit switch	Vacuum limit switch
	Limit Sensor		Contact type	Contact type	Contact type
	Origin Sensor		None	None	None
	Proximity Origin Sensor		None	None	None

Motor / Sensor Specifications

Motor	Type	Vacuum compatible 5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)		
	Motor Part Number	TS3664N5 (□24mm)		
	Step Angle	0.72°		
Sensor	Control Output	Contact type	Contact type	Contact type
	Output Logic	NORMAL OPEN	NORMAL OPEN	NORMAL OPEN

Compatible Driver / Controller

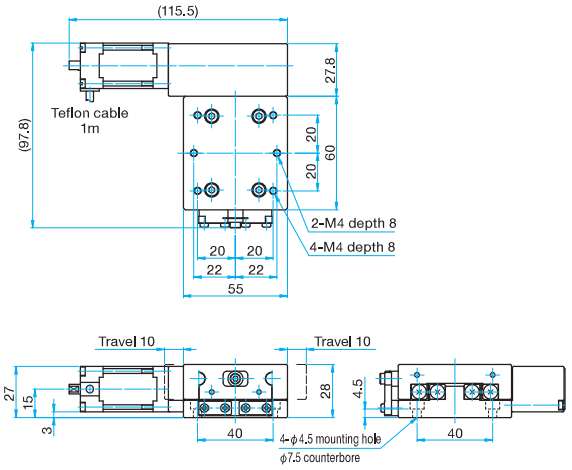
Control System	Compatible Driver	SG-5M, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

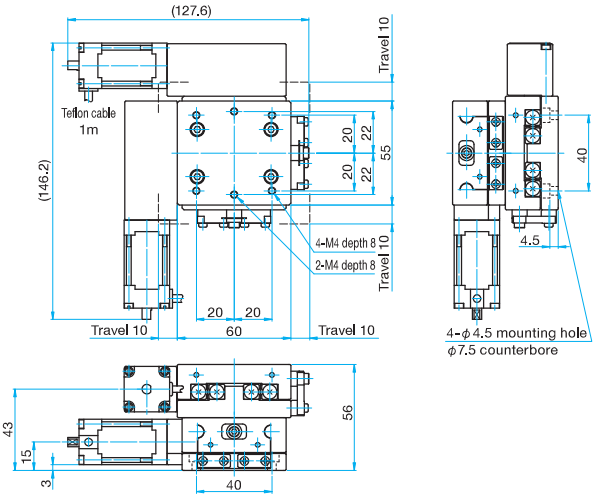
VSGSP-60(X)

Hexagonal socket head cap screw M4×10…4 screws



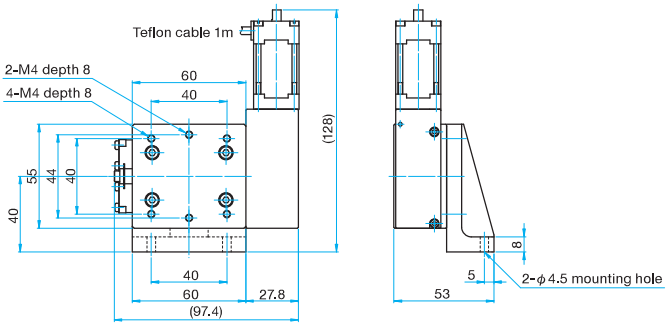
VSGSP-60(XY)

Hexagonal socket head cap screw M4×10…4 screws

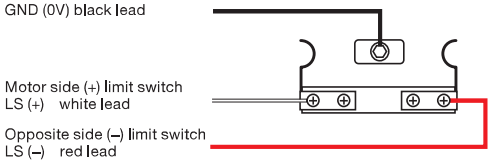


VSGSP-60(Z)

Hexagonal socket head cap screw M4×15…2 screws



Vacuum Limit Switch

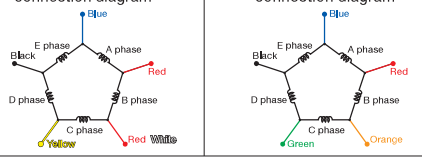


* Use the motor side and opposite side limit switches as normal open.

Wiring of Vacuum Stages

The vacuum compatible stepping motor TS3664N5 used for vacuum stages has five bare lead wires.
For wiring, they correspond to the motor lead colors shown in the wiring diagrams of driver or cable as follows.
(The motor leads shown in the connection diagrams of driver or cable indicate wiring of stepping motors used for normal stages.)

		Vacuum stage motor lead color	Motor lead color shown in driver or cable connection diagram
Corresponding connection	1	Blue	Blue
	2	Red	Red
	3	Red White	Orange
	4	Yellow	Green
	5	Black	Black
		Vacuum compatible stage motor connection diagram	5-phase stepping motor connection diagram



Compatible Controllers / Drivers and Cables

Controller

GSC-01 [1 axis]
GSC-02 [2 axes]
SHOT-702 [2 axes]
GIP-101 [1 axis]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04 [4 axes]
Reference G108 – G117

Cable

D15RP-CA
Reference G120

Stage

VSGSP-60(X)
VSGSP-60(XY)
VSGSP-60(Z)

Driver

Drivers
Reference G020 – G021

Cable

MINI-CA-SG
Reference G120

* Make the cable into bare wire specification after purchase.

Vacuum Compatible Motorized Stages
Stage Size 60 × 60 mm / 80 × 80 mm

VSGSP-(X)

RoHS

Motorized SGSP stages modified for use in high vacuum.

● Linear stages have available travel between 35 – 200mm and has a similar footprint to the SGSP series.

Guide

▶Includes 1m teflon coated cables to connect the vacuum motor and vacuum limit switches to the chamber feedthrough connector.

Specifications

Part Number			VSGSP20-35(X)	VSGSP20-85(X)	VSGSP26-200(X)
Mechanical Specifications	Travel [mm]		35	85	200
	Stage Size [mm]		60×60	60×60	80×80
	Feed Screw		Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ6mm, 1mm lead	Ball screw diameter ϕ8mm, 2mm lead
	Positioning Slide		Outer rail structure	Outer rail structure	Outer rail structure
	Stage Material		Aluminum / Stainless steel	Aluminum / Stainless steel	Aluminum / Stainless steel
	Finish		None	None	None
	Weight [kg]		1.0	1.1	2.5
Accuracy Specifications	Resolution	(Full) [µm]	2	2	4
		(Half) [µm]	1	1	2
	MAX Speed [mm/sec]		10	10	20
	Positional Repeatability [µm]		5	5	10
	Load Capacity [N]		39.2(4.0kgf)	39.2(4.0kgf)	58.8(6.0kgf)
	Lost Motion [µm]		3	3	10
Sensor	Sensor Part Number		GN-PT5M3B-1 (Metrol Co., Ltd.)	GN-PT5M3B-1 (Metrol Co., Ltd.)	GN-PT5M3B-1 (Metrol Co., Ltd.)
	Limit Sensor		Vacuum touch sensor (NORMAL CLOSE)	Vacuum touch sensor (NORMAL CLOSE)	Vacuum touch sensor (NORMAL CLOSE)
	Origin Sensor		None	None	None
	Proximity Origin Sensor		None	None	None

Motor / Sensor Specifications

Motor	Type	Vacuum compatible 5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)		
	Motor Part Number	A7298-90215KV (□28mm)	A7298-90215KV (□28mm)	A7298-90215KV (□28mm)
	Step Angle	0.72°		
	Control Output	Touch sensor		
	Output Logic	NORMAL CLOSE	NORMAL CLOSE	NORMAL CLOSE

Compatible Driver / Controller

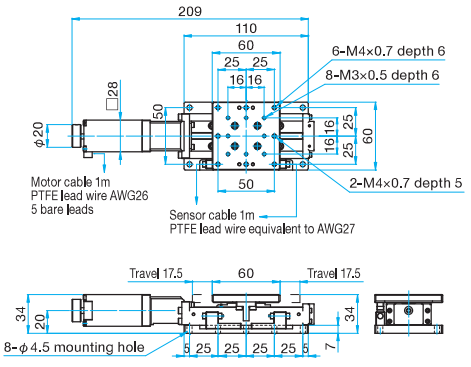
Control System	Compatible Driver	SG-5M, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

Outline Drawing

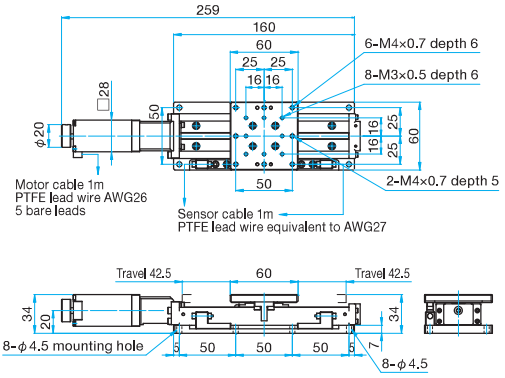
VSGSP20-35(X)

Hexagonal socket head cap screw M4×12...4 screws



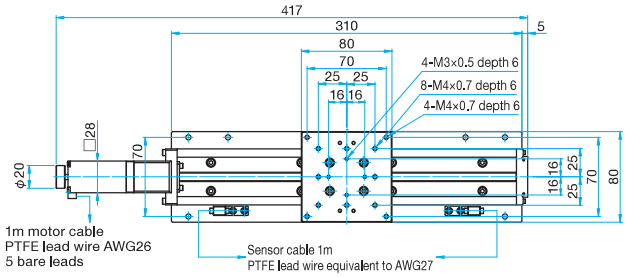
VSGSP20-85(X)

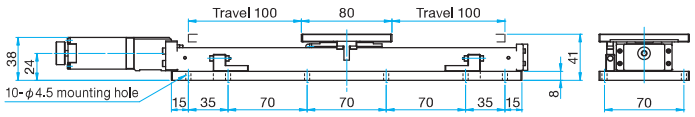
Hexagonal socket head cap screw M4×12...4 screws



VSGSP26-200(X)

Hexagonal socket head cap screw M4×12...8 screws

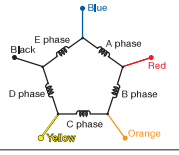


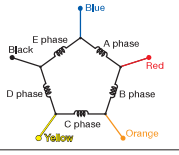


■Wiring of Vacuum Stages

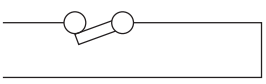
The vacuum compatible stepping motor A7298-90215KV used for vacuum stages has five bare lead wires.
For wiring, they correspond to the motor lead colors shown in the wiring diagrams of driver or cable as follows.
(The motor leads shown in the connection diagrams of driver or cable indicate wiring of stepping motors used for normal stages.)

		Vacuum stage motor lead color	Motor lead color shown in driver or cable connection diagram
Corresponding connection	1	Blue	Blue
	2	Red	Red
	3	Orange	Orange
	4	Green	Green
	5	Black	Black
		Vacuum compatible stage motor connection diagram	5-phase stepping motor connection diagram





■Limit Sensor (high vacuum compatible switch)



Linear stage series normal close specification

■Compatible Controllers / Drivers and Cables

Controller

GSC-01 [1 axis]
GSC-02 [2 axes]
SHOT-702 [2 axes]
GIP-101 [1 axis]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G108 – G117

Cable

D15RP-CA
Reference G120

Stage

VSGSP20-35(X)
VSGSP20-85(X)
VSGSP26-200(X)

Driver

Drivers
Reference G020 – G021

Cable

MINI-CA-SG
Reference G120

* Make the cable into bare wire specification after purchase.

Vacuum Compatible Motorized Rotation Stage

Stage Size ϕ 60 mm / ϕ 120 mm

VSGSP-YAW RoHS

Motorized SGSP-YAW rotation stages modified for use in high vacuum.

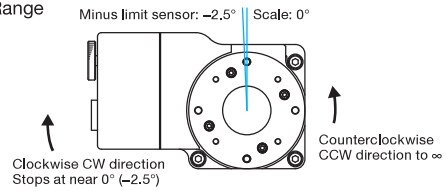
- The ϕ60mm size is best suited for use in smaller chambers.
- The ϕ120mm size has a high load capacity due the larger bearing and larger motor.

Guide

- Includes 1m teflon coated cables to connect the vacuum motor and vacuum limit switches to the chamber feedthrough connector.
- Origin detection is adjusted so that the stage stops at 0 degrees when homing is performed in the MINI system at half step.

Guide

- Rotation Range



- Homing of rotation motorized stages is performed using the CW limit sensor as the origin sensor.
- Origin detection is adjusted so that the stage stops at 0 degrees when homing is performed in the MINI system at half step.
- ϕ60mm rotation stage does not include a limit sensor.

Specifications

Part Number			VSGSP-60YAW	VSGSP-120YAW
Mechanical Specifications	Rotation Range		In the CW or CCW direction to ∞	Counterclockwise CCW direction to ∞, Clockwise CW direction stops at near 0 degree (–2.5°)
	Stage Size [mm]		ϕ60	ϕ120
	Feed Screw		Worm and worm wheel	Worm and worm wheel
	Positioning Slide		Bearing	Crossed roller
	Stage Material		Aluminum	Aluminum / Stainless steel
	Finish		None	None
	Weight [kg]		0.45	1.7
Accuracy Specifications	Resolution	(Full) [°]	0.005	0.005
		(Half) [°]	0.0025	0.0025
	MAX Speed [°/sec]		20	20
	Positional Repeatability [°]		0.02	0.02
	Load Capacity [N]		29.4 (3.0kgf)	98.0 (10.0kgf)
	Lost Motion [°]		0.05	0.05
Sensor	Type		None	GN-STM35A-1 (Metrol Co., Ltd.)
	Limit Sensor		None	Vacuum touch sensor (NORMAL OPEN)
	Origin Sensor		None	None
	Proximity Origin Sensor		None	None

Motor / Sensor Specifications

Motor	Type	Vacuum compatible 5-phase stepping motor 0.75A/phase (Tamagawa Seiki Co., Ltd.)	Vacuum compatible 5-phase stepping motor 0.75A/phase (Oriental Motor Co., Ltd.)
	Motor Part Number	TS3664N5 (□24mm)	PK543V-NB (□42mm)
	Step Angle	0.72°	0.72°
Sensor	Control Output	—	Contact type
	Output Logic	—	NORMAL OPEN

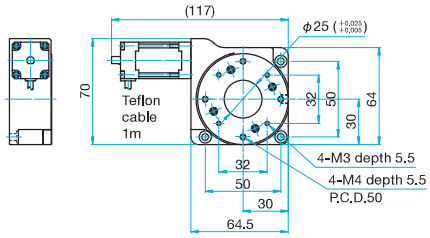
Compatible Driver / Controller

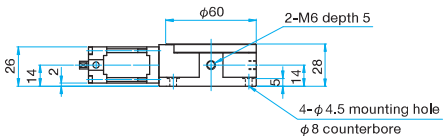
Control System	Compatible Driver	SG-5M, MC-S0514ZU, SG-514MSC, MC-7514PCL
	Compatible Controller	GSC-01, GSC-02, SHOT-702, GIP-101, HSC-103, SHOT-302GS, SHOT-304GS, HIT-M·HIT-S, PGC-04-U

2D CAD 3D CAD

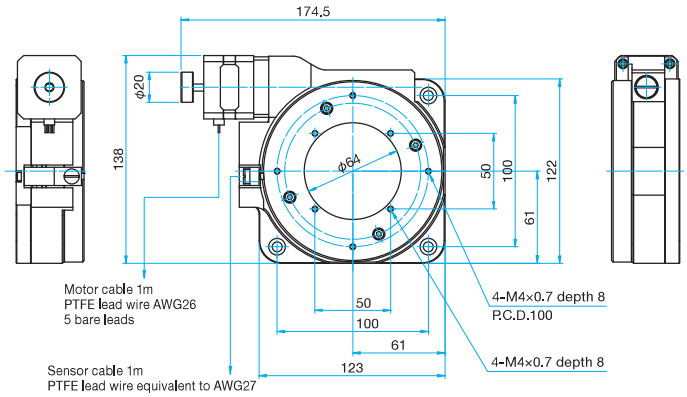
Outline Drawing

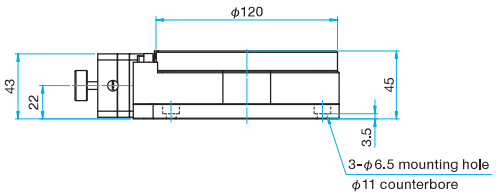
VSGSP-60YAW Hexagonal socket head cap screw M4×10…3 screws





VSGSP-120YAW Hexagon socket head cap screw M6×10…3 screws

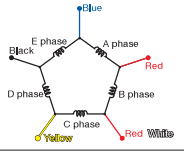


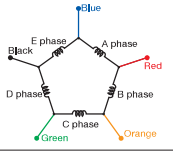


Wiring of Vacuum Stages

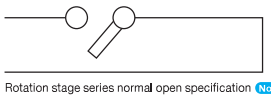
The vacuum compatible stepping motor TS3664N5 used for vacuum stages has five bare lead wires.
For wiring, they correspond to the motor lead colors shown in the wiring diagrams of driver or cable as follows.
(The motor leads shown in the connection diagrams of driver or cable indicate wiring of stepping motors used for normal stages.)

		Vacuum stage motor lead color	Motor lead color shown in driver or cable connection diagram
Corresponding connection	1	Blue	Blue
	2	Red	Red
	3	60YAW: Red White 120YAW: Orange	Orange
	4	60YAW: Yellow 120YAW: Green	Green
	5	Black	Black
		Vacuum compatible stage motor connection diagram	5-phase stepping motor connection diagram (SGSP series)





Limit Sensor (high vacuum compatible switch): VSGSP-120YAW



Rotation stage series normal open specification Note 3

Note 3 Set the controller of vacuum compatible motorized rotation stages to normal open.

Compatible Controllers / Drivers and Cables

Controller

GSC-01 [1 axis]
GSC-02 [2 axes]
SHOT-702 [2 axes]
GIP-101 [1 axis]
HSC-103 [3 axes]
SHOT-302GS [2 axes]
SHOT-304GS [4 axes]
HIT-M·HIT-S [8 axes]
PGC-04-U [4 axes]
Reference G108 – G117

Cable

D15RP-CA
Reference G120

Stage

VSGSP-60YAW
VSGSP-120YAW

Driver

Drivers
Reference G020 – G021

Cable

MINI-CA-SG
Reference G120

* Make the cable into bare wire specification after purchase.

Single axis Stage Controller | GSC-01

RoHS CE Catalog Code W9042

Low cost single axis stage controller with built-in 5-phase stepping motor driver.

● Can be operated by computer control using the RS232C interface, by the jog switch on the front panel, or by TTL I/O.

Guide

▶Sample programs are available for download from our website.
- SG Sample 32/64-bit version for Windows® (only for RS232C)
- LabVIEW for RS232C (for v.5.1/v.6i/v7.1/v.8.6/v.2012/v.2013/v.2014/v.2015)

Attention

▶The GSC-01 requires an external power supply (24VDC, 2A output). The PAT-001-POW1 (AC adapter) can be purchased with the controller or power can be provided by the end user.

Part Name	Part Number
Single axis Stage Controller	**GSC-01**
AC Adapter	**PAT-001-POW1**

■Primary Functions

Controller Function	○
Number of Control Axes	1
Stored Program Control	–
Feedback Control	–
Circular Interpolation Control	–
Linear Interpolation Control	–
Driver Function	Standard
Micro-step (Max. Division)	2
Driving Current (A/phase)	0.2 – 0.8

■General Specifications

Power Voltage	DC24V 2A
Power Consumption	48VA
Operating Temperature	5 – 40°C
Storage Temperature	–
Ambient Humidity	20 – 80%RH (without condensation)
External Dimensions (W×H×Dmm)	47×125×90
Weight (kg)	0.4

■Interface

GP-IB	–
RS232C	○
USB	–
Ethernet	–

■Performance Specifications

Coordinate Indication Range	–
Max. Travel to Set	16,777,215
Max. Driving Speed (pps)	20,000
Min. Driving Speed (pps)	100
Acceleration/Deceleration Time (ms)	0 – 1,000

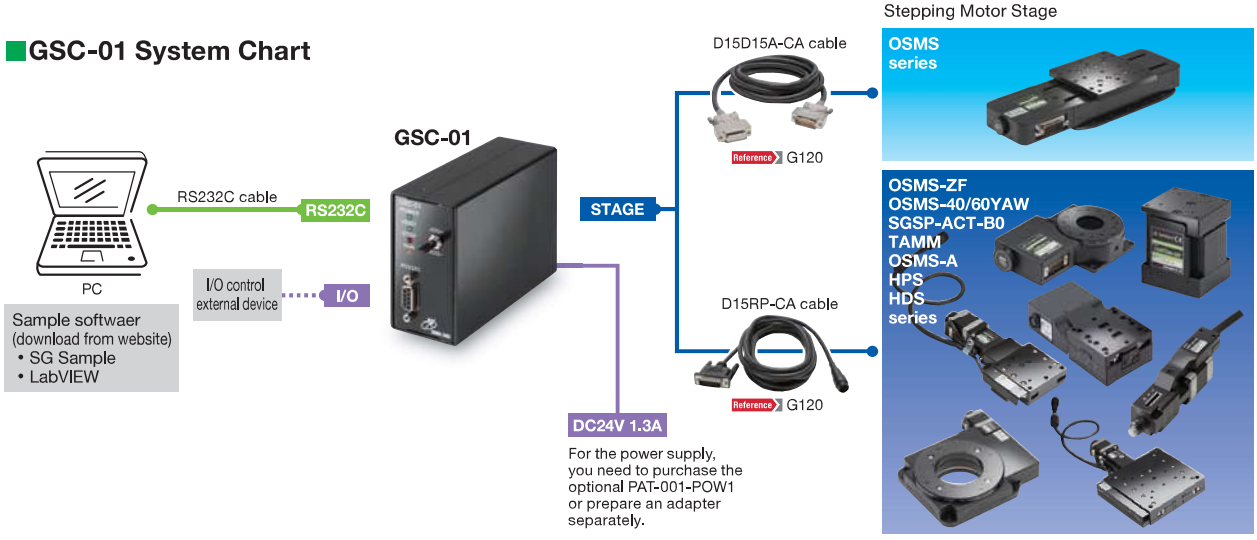
■I/O Specification

Origin Sensor	–
Proximity Sensor	–
CW (+) Limit	○
CCW (–) Limit	○
General Purpose Input	4 points
General Purpose Output	4 points
Control Input	3 points
Control Output	–
Trigger Output	–

■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	○
Origin Offset Setting	○
Jog Operation Speed Setting	○

■GSC-01 System Chart



2 axis Stage Controller | GSC-02

RoHS CE Catalog Code W9044

Low cost two axis stage controller with built-in 5-phase stepping motor driver.

● Can be operated by computer control using the RS232C interface. Manual and programmed control is available using optional SJT-02 dedicated controller.

Guide

▶Sample programs are available for download from our website.
- SG Sample 32/64-bit version for Windows® (only for RS232C)
- LabVIEW for RS232C (for v.5.1/v.6i/v7.1/v.8.6/v.2010/v.2012/v.2013/v.2014/v.2015)

Attention

▶The GSC-02 requires an external power supply (24VDC, 2A output). The PAT-001-POW1 (AC adapter) can be purchased with the controller or power can be provided by the end user.

Part Name	Part Number
2 axis Stage Controller	**GSC-02**
Joystick Terminal	**SJT-02**
AC Adapter	**PAT-001-POW1**

■Primary Functions

Controller Function	○
Number of Control Axes	2
Stored Program Control	△
Feedback Control	–
Circular Interpolation Control	–
Linear Interpolation Control	–
Driver Function	Standard
Micro-step (Max. Division)	2 (half step only)
Driving Current (A/phase)	0.3 – 0.8

△…Programs can be controlled using SJT-02.

■General Specifications

Power Voltage	DC24V 2A
Power Consumption	48VA
Operating Temperature	5 – 40°C
Storage Temperature	–20 – 60°C
Ambient Humidity	20 – 80%RH (without condensation)
External Dimensions (W×H×Dmm)	180×40×125
Weight (kg)	0.7

■Interface

GP-IB	–
RS232C	○
USB	–
Ethernet	–

■Optional

CJ-200A	–
JS-300	–
JB-400	–
SJT-02	○

■Performance Specifications

Coordinate Indication Range	–
Max. Travel to Set	16,777,214
Max. Driving Speed (pps)	20,000
Min. Driving Speed (pps)	1
Acceleration/Deceleration Time (ms)	0 – 1,000

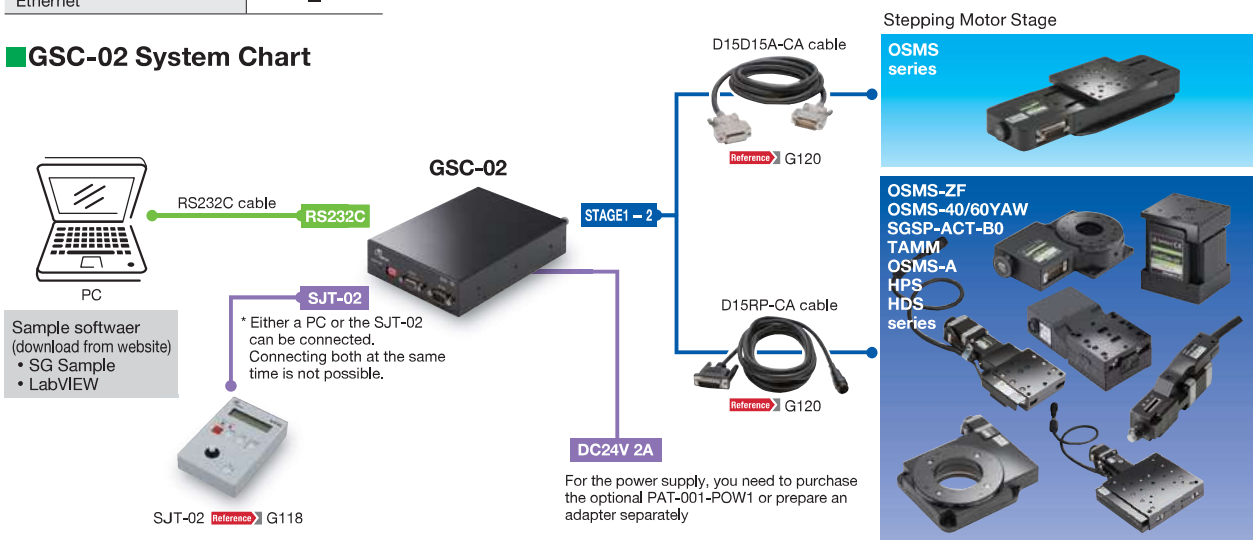
■I/O Specification

Origin Sensor	○
Proximity Sensor	○
CW (+) Limit	○
CCW (–) Limit	○
General Purpose Input	–
General Purpose Output	–
Control Input	–
Control Output	–
Trigger Output	–

■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	–

■GSC-02 System Chart



2 axis Stage Controller | SHOT-702

RoHS CE Catalog Code W9045

2 axis stage controller with built-in micro-step driver.

● Can be operated by computer control using the RS232C interface. Manual and programmed control is available using optional dedicated controllers (JS-300, JB-400).

Guide

▶Sample programs are available for download from our website.
- SG Sample 32/64-bit version for Windows® (only for RS232C)
- LabVIEW for RS232C (for v.5.1/v.6i/v7.1/v.8.6/v.2010/v.2012/v.2013/v.2014/v.2015)

Part Name	Part Number
2 axis Stage Controller	**SHOT-702**
Joy Stick	**JS-300**
Jog Operation Box	**JB-400**
Jog Dial	**JD-100**
MDR Cable	**MDR14-CA-2.5**

■Primary Functions

Controller Function	○
Number of Control Axes	2
Stored Program Control	–
Feedback Control	–
Circular Interpolation Control	–
Linear Interpolation Control	–
Driver Function	Micro-step
Micro-step (Max. Division)	250
Driving Current (A/phase)	0.1 – 1.1

■General Specifications

Power Voltage	AC100 – 240V 50/60Hz
Power Consumption	50VA
Operating Temperature	5 – 40°C
Storage Temperature	–20 – 60°C
Ambient Humidity	20 – 80%RH (without condensation)
External Dimensions (W×H×Dmm)	260×70×280
Weight (kg)	2.8

■Interface

GP-IB	–
RS232C	○
USB	–
Ethernet	–

■Optional

CJ-200A	–
JS-300	○
JB-400	○
JD-100	○
SJT-02	–

■Performance Specifications

Coordinate Indication Range	–
Max. Travel to Set	268,435,455
Max. Driving Speed (pps)	500,000
Min. Driving Speed (pps)	1
Acceleration/Deceleration Time (ms)	1 – 1,000

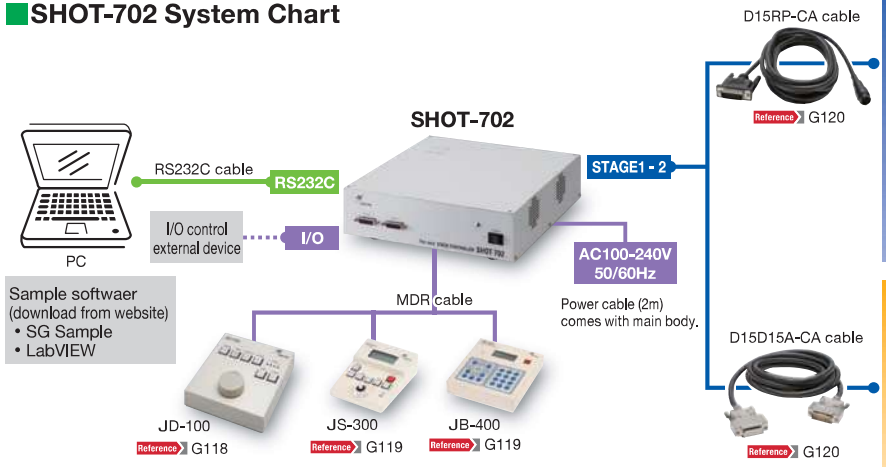
■I/O Specification

Origin Sensor	○
Proximity Sensor	○
CW (+) Limit	○
CCW (–) Limit	○
General Purpose Input	1 point
General Purpose Output	1 point
Control Input	1 point
Control Output	1 point
Trigger Output	–

■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	○

■SHOT-702 System Chart



Stepping Motor Stage

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40 × 40 mm
60 × 60 mm
80 × 80 mm
85 × 85 mm
100 × 100 mm
120 × 120 mm
Others

Single axis controller with built-in micro-step driver and 5 buttons for quick access to memorized locations.

- Compatible with objective lens turrets, motorized zoom lens and other LASER accessory units in addition to motorized stages fitted with 5-phase stepping motor.

Guide

▶Sample programs are available for download from our website.
- SG Sample 32/64-bit version for Windows® (only for RS232C)
- LabVIEW for RS232C (for v.5.1/v.6i/v7.1/v.8.6/v.2010/v.2012/v.2013/v.2014/v.2015)

Part Name	Part Number
Intelligent Positioning System	**GIP-101**

Primary Functions

Controller Function	○
Number of Control Axes	1
Stored Program Control	–
Feedback Control	–
Circular Interpolation Control	–
Linear Interpolation Control	–
Driver Function	Micro-step
Micro-step (Max. Division)	250
Driving Current (A/phase)	0.23 – 0.75

General Specifications

Power Voltage	AC100 – 240V 50/60Hz
Power Consumption	100VA
Operating Temperature	0 – 40°C
Storage Temperature	–
Ambient Humidity	20 – 80%RH (without condensation)
External Dimensions (W×H×Dmm)	145×205×81
Weight (kg)	2

Interface

GP-IB	–
RS232C	○
USB	–
Ethernet	–

Performance Specifications

Coordinate Indication Range	–
Max. Travel to Set	16,777,214
Max. Driving Speed (pps)	22,000
Min. Driving Speed (pps)	50
Acceleration/Deceleration Time (ms)	20 – 1,000 16 steps

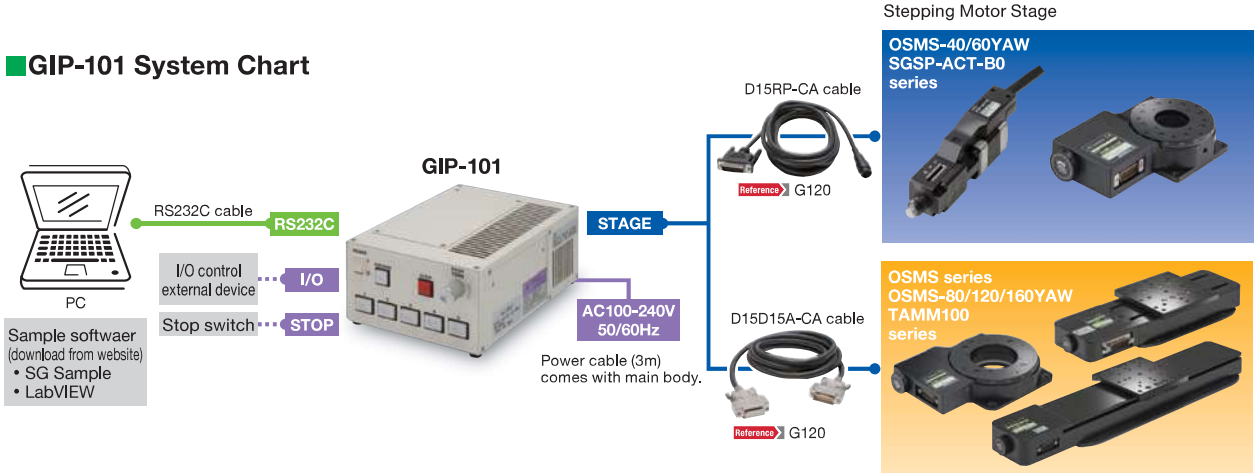
I/O Specification

Origin Sensor	○
Proximity Sensor	○
CW (+) Limit	○
CCW (–) Limit	○
General Purpose Input	–
General Purpose Output	–
Control Input	6 points
Control Output	1 point
Trigger Output	–

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	○

GIP-101 System Chart



3 axis Stage Controllers | HSC-103

RoHS CE Catalog Code W9094

HSC-103 is designed to operate medium to high current 5-phase motor stages. The driver design reduces noise and vibration compared to older stepper motor drivers.

- USB communication (serial communication) from PC is available.
- Up to 3 axis motorized stages can be operated.

Guide

▶Sample programs are available for download on our website.
- SG Sample 32/64 bit version for Windows®
- LabVIEW for RS232C (for v.2010/v.2012/v.2013/v.2014/v.2015)

Part Name	Part Number
3 axis Stage Controllers	**HSC-103**
Joy Stick	**JD-100**
Jog Operation Box	**JS-300**
Jog Dial	**JB-400**
MDR Cable	**MDR14-CA-2.5**

Primary Functions

Controller Function	○
Number of Control Axes	3
Stored Program Control	○
Feedback Control	–
Circular Interpolation Control	○
Linear Interpolation Control	3 axes
Driver Function	Micro-step
Micro-step (Max. Division)	40*1
Driving Current (A/phase)	1.4*2

*1 Division is fixed.
*2 0.75A/Phase is available by switching.

General Specifications

Power Voltage	AC100 – 240V 50/60Hz
Power Consumption	200VA
Operating Temperature	5 – 40°C
Storage Temperature	–20 – 60°C
Ambient Humidity	20 – 80%RH (without condensation)
External Dimensions (W×H×Dmm)	260×260×95
Weight (kg)	3.3

Interface

GP-IB	–
RS232C	–
USB	○
Ethernet	–

Optional

CJ-200A	–
JS-300	○
JB-400	○
JD-100	○
SJT-02	–

Performance Specifications

Coordinate Indication Range	–
Max. Travel to Set	134,217,727
Max. Driving Speed (pps)	4,000,000
Min. Driving Speed (pps)	1
Acceleration/Deceleration Time (ms)	1 – 1,000

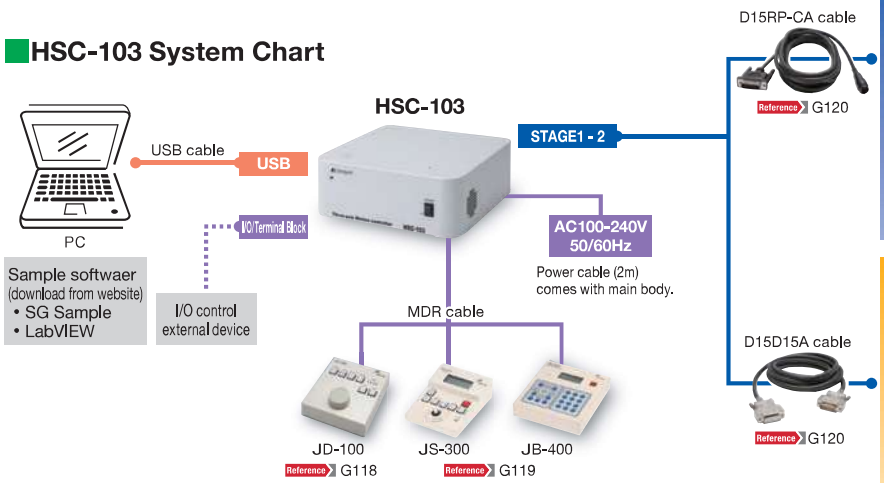
I/O Specification

Origin Sensor	○
Proximity Sensor	○
CW (+) Limit	○
CCW (–) Limit	○
General Purpose Input	4 points
General Purpose Output	4 points
Control Input	8points
Control Output	–
Trigger Output	–

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	○

HSC-103 System Chart



Stepping Motor Stage

2 axis and 4 axis stage controllers with built-in display and micro-step driver.

Multiple operation modes:
- Computer control using RS232C/GP-IB/USB interfaces
- Manually operated using the optional control pad (CJ-200A) or dedicated controllers (JS-300, JB-400)
- Internally programmed using two banks of stored programs.
- Remotely operated by other devices using TTL I/O.
- Full closed loop control is possible when used in combination with stages equiped with built in glass-scales.

Guide

▶Sample programs are available for download from our website.
- SG Sample 32/64-bit version for Windows® (only for RS232C)
- LabVIEW for RS232C (for v.5.1/v.6i/v7.1/v.8.6/v.2010/v.2012/v.2013/v.2014/v.2015)
- LabVIEW for GP-IB (for v.5.1/v.6i/v7.1/v.8.6/v.2010/v.2012/v.2013/v.2014/v.20152)

Part Name	Part Number
2 axis Stage Controller	**SHOT-302GS**
4 axis Stage Controller	**SHOT-304GS**
Control Pad	**CJ-200A**
Joy Stick	**JS-300**
Jog Operation Box	**JB-400**
Jog Dial	**JD-100**
MDR Cable	**MDR14-CA-2.5**

Primary Functions

Part Number	SHOT-302GS	SHOT-304GS
Controller Function	○	
Number of Control Axes	2	4
Stored Program Control	○	
Feedback Control	GS	
Circular Interpolation Control	○	
Linear Interpolation Control	2 axes	
Driver Function	Micro-step	
Micro-step (Max. Division)	250	
Driving Current (A/phase)	0.25 – 1.4	
CJ-200A	Required	

General Specifications

Power Voltage	AC100 – 240V 50/60Hz	
Power Consumption	160VA	300VA
Operating Temperature	5 – 40°C	
Storage Temperature	–20 – 60°C	
Ambient Humidity	20 – 80%RH (without condensation)	
External Dimensions (W×H×Dmm)	270×302×118	
Weight (kg)	5.5	6.5

Interface

GP-IB	○
RS232C	○
USB	○
Ethernet	–

Optional

CJ-200A	○
JS-300	○
JB-400	○
JD-100	○
SJT-02	–

Performance Specifications

Coordinate Indication Range	±999,999,999
Max. Travel to Set	268,435,455
Max. Driving Speed (pps)	500,000
Min. Driving Speed (pps)	1
Acceleration/Deceleration Time (ms)	0 – 1,000

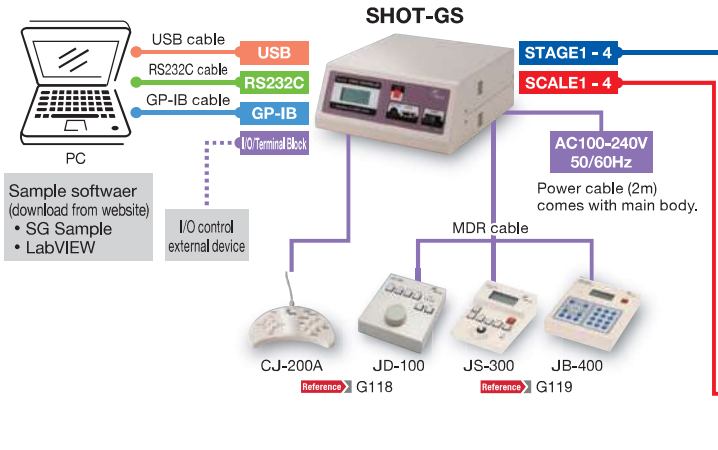
I/O Specification

Origin Sensor	○
Proximity Sensor	○
CW (+) Limit	○
CCW (–) Limit	○
General Purpose Input	4 points
General Purpose Output	4 points
Control Input	15 points
Control Output	5 points
Trigger Output	○

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	○

SHOT-302GS/304GS System Chart



Stepping Motor Stage

Stages with built in Glass-scale Encoder

Extensible Stage Controller | HIT-M/S/SH

RoHS CE

Modular stage control system with Master controller and from one to eight slave Axes.

- Control with RS232C/USB/Ethernet interfaces is available.
- Full closed loop control is possible when used in positioning stage equipped with encoder.

Guide

▶Sample programs are available for download on our website.
- SG Sample 32/64 bit version for Windows®
- LabVIEW for RS232C (for v.2014/v.2015)

Attention

▶Power supply is DC+24V 1A. Depending on the number of stage axes, rated current of 2A (single axis) to 9A (8 axes) is required.
Power supply is DC+24V 2A. Depending on the number of stage axes, rated current of 3A (single axis) to 17A (8 axes) is required.
Please purchase the PAT-001-POW1 (AC adapter) or prepare a power supply separately.

Part Name	Part Number
Extensible Stage Controller (Master)	**HIT-M**
Extensible Stage Controller (Slave)	**HIT-S**
Extensible Stage Controller (Slave)	**HIT-SH**
LAN Cable	**LAN-2**
AC Adapter	**PAT-001-POW1**

■Primary Functions

Part Number	HIT-M	HIT-S	HIT-SH
Controller Function	○	–	–
Number of Control Axes	8	–	–
Stored Program Control	○	–	–
Feedback Control	–	OSMS (CS)series	HST (GS) series
Circular Interpolation Control	○	–	–
Linear Interpolation Control	3 axes	–	–
Driver Function	–	Micro-step	Micro-step
Micro-step (Max. Division)	–	250	250
Driving Current (A/phase)	–	0.11 – 11.1	1.4 (Fixed)

■General Specifications

Part Number	HIT-M	HIT-S	HIT-SH
Power Voltage	DC24V 1A		DC24V 2A
Power Consumption	24VA		48VA
Operating Temperature	5 – 40°C		
Storage Temperature	–20 – 60°C		
Ambient Humidity	20 – 80%RH (without condensation)		
External Dimensions (W×H×Dmm)	130×120×50	130×120×50	130×120×65
Weight (kg)	0.62	0.63	0.72

■Interface

GP-IB	–
RS232C	○
USB	○
Ethernet	○

■Optional

CJ-200A	–
JS-300	–
JB-400	–
JD-100	–
SJT-02	–

■Performance Specifications

Coordinate Indication Range	–
Max. Travel to Set	134,217,727
Max. Driving Speed (pps)	500,000
Min. Driving Speed (pps)	1
Acceleration/Deceleration Time (ms)	1 – 1,000

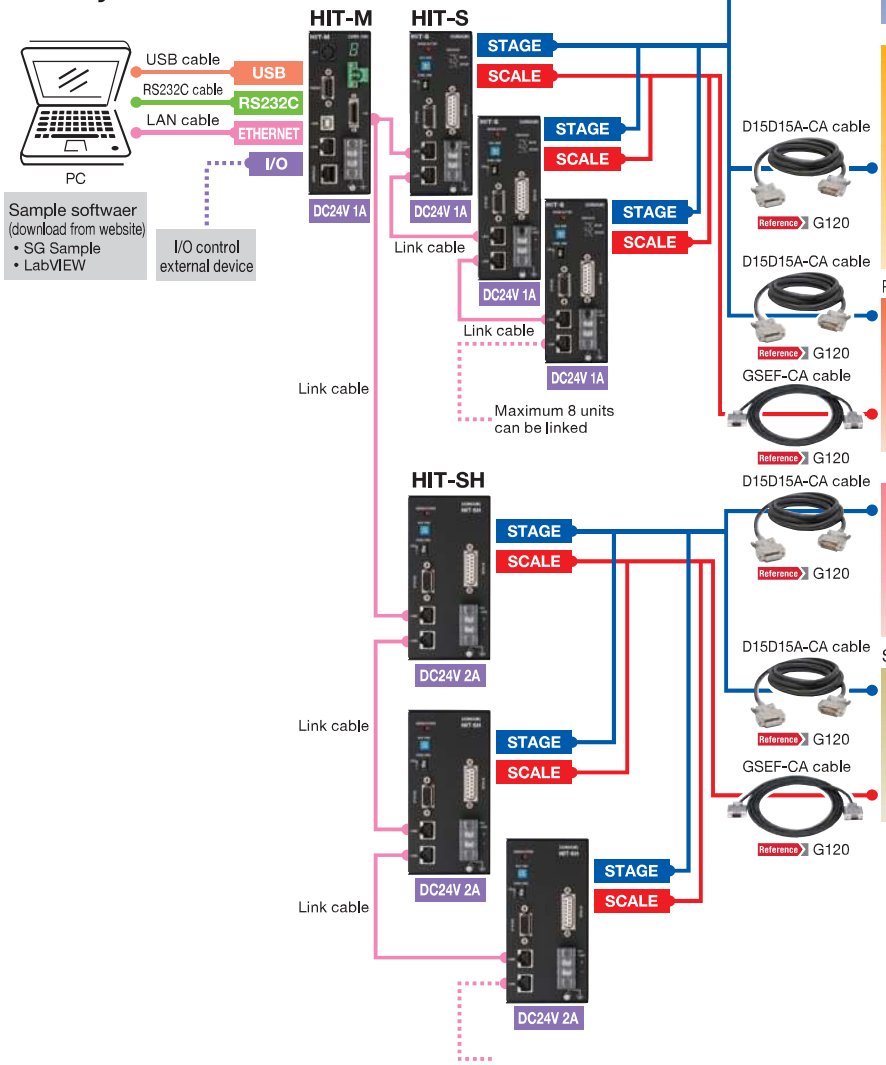
■I/O Specification

Origin Sensor	○
Proximity Sensor	○
CW (+) Limit	○
CCW (–) Limit	○
General Purpose Input	4 points
General Purpose Output	4 points
Control Input	–
Control Output	–
Trigger Output	–

■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	○

HIT System Chart



Stepping Motor Stage

Precision Motorized Stages with Built-in Compact Scale

Stages with built in Glass-scale Encoder

Pulse Generating Controller | PGC-04-U

RoHS CE

4-axis pulse generator type controller that can be connected to the various motor drivers.

- External control with USB and Ethernet interfaces are available.
- Can be manually operated by a Handy Terminal (JS-300, JB-400, JD-100).

Guide

▶Sample programs are available for download from our website.
- SG Sample 32/64-bit version for Windows® (only for RS232C)
- Lab VIEW for RS232C (for v.2014/v.2015)

Attention

▶Cable and motor driver are sold separately. Please purchase 5-phase stepping motor drivers MC-S0514ZU or prepare compatible driver of customer choice.

▶Power supply is DC+24V 2A. You need to purchase the PAT-001-POW1 (AC adapter) or prepare an adapter separately.

Products Name	Part Number
Pulse Generating Controller	**PGC-04-U**
Joystick Terminal	**JS-300**
Jog Operation Box	**JB-400**
Jog Dial	**JD-100**
AC Adapter	**PAT-001-POW1**

■Primary Functions

Controller Function	○
Number of Control Axes	4
Stored Program Control	○
Feedback Control	–
Circular Interpolation Control	○
Linear Interpolation Control	3 axes
Driver Function	–
Micro-step (Max. Division)	–
Driving Current (A/phase)	–

■General Specifications

Power Voltage	DC24V
Power Consumption	1.4A
Operating Temperature	5 – 40°C
Storage Temperature	–20 – 60°C
Ambient Humidity	20 – 80%RH (without condensation)
External Dimensions (W×H×Dmm)	180×140×60
Weight (kg)	1.3

■Interface

GP-IB	–
RS232C	–
USB	○
Ethernet	○

■Optional

CJ-200A	–
JS-300	○
JB-400	○
JD-100	○
SJT-02	–

■Performaifications

Coordinate Indication Range	–
Max. Travel to Set	134,217,727
Max. Driving Speed (pps)	4,000,000
Min. Driving Speed (pps)	1
Acceleration/Deceleration Time (ms)	1 – 1,000

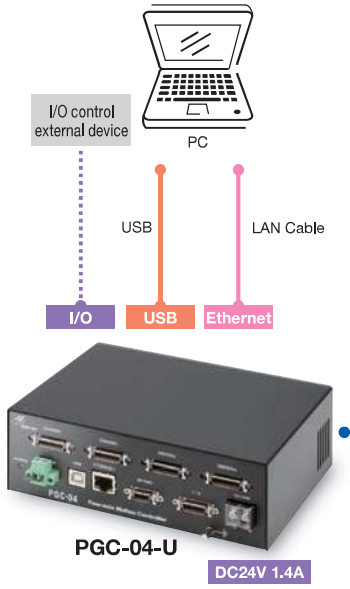
■I/O Specification

Origin Sensor	○
Proximity Sensor	○
CW (+) Limit	○
CCW (–) Limit	○
General Purpose Input	4 points
General Purpose Output	4 points
Control Input	–
Control Output	–
Trigger Output	–

■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	○

System Diagram



5-phase Stepping Motor Driver
(ex.MC-S0514ZU)

PGC-S0514ZU Cable: PGC-S0514ZU-3

5-phase Stepping Motorized Stage (ex.HPS60-20(X)-M5 etc.)

Motor Cable: (Oriental Motor Co., Ltd.) etc

2-phase Stepping Motor Driver
(ex:A8576-0415Y)

PGC-0415Y Cable: PGC-0415Y-3

2-phase Stepping Motorized Stages (ex.HPS60-20(X)-M2 etc.)

Motor Cable: (Oriental Motor Co., Ltd.) etc

α (ex.ARD-K)
(ex.ARD-K)

PGC-ARD Cable: PGC-ARD-3

αSTEP Motorized Stages (ex.HPS60-20(X)-MA etc.)

Motor Cable: CC030VAF2
*Supplied to the αSTEP Driver (Oriental Motor Co., Ltd.)

AC Servo Driver
(ex.SGDV-2R9EP1A)

PGC-ACS Cable: PGC-ACS-1

AC Servo Motorized Stages (ex.SGMV20-35(X))

Motor Cable: JZSP-CF1M00-03-E (Yasukawa Electric Corporation)
Encoder Cable: JZSP-CMP00-03-E (Yasukawa Electric Corporation)

Joystick Terminal Jog Dial

SJT-02
JD-100

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40 × 40 mm
60 × 60 mm
80 × 80 mm
85 × 85 mm
100 × 100 mm
120 × 120 mm
Others

SJT-02

Catalog Code W9049

Dedicated joystick terminal for the GSC-02 controller

- Enables manual operation of attached motorized stages.
- Internal program memory allows automatic operation without using a PC.

General Specifications	
Power Supply	DC+24V Supplied from a 2 axis stage controller (GSC-02/SHOT-602).
Operating Temperature	5 – 40°C
Ambient Humidity	20 – 80%RH (without condensation)
External Dimensions	(W)94 × (H)30 × (D)140mm
Weight	0.6kg (including a special cable)
Display	LDC 16 digits, 2 lines
Connecting Cable	Attached special connecting cable (detachable)

Performance Specifications	
Number of Control Axes	2 axes
Operation Mode	MANUAL (M) / TEACHING (T) / RUN (R) EDIT (E) / MEM SW SET Mode
Coordinate Indication Range	X axis: Approx. –99999999 – +99999999 pulses Y axis: Approx. –99999999 – +99999999 pulses
Coordinate Input Range	X axis: Approx. –16777214 – +16777214 pulses Y axis: Approx. –16777214 – +16777214 pulses
Limit Sensor Status	X axis: Displayed left side of coordinate symbol ("L" is displayed when detected.) Y axis: Displayed left side of coordinate symbol ("L" is displayed when detected.)
Speed Parameter	Switchable among 10 steps
Min. Driving Speed	(S) 1 – 20000pps
Max. Driving Speed	(F) 1 – 20000pps
Acceleration /Deceleration Time	(R) 0 – 1000mS
Coordinate Display Unit	[PLS] [μm] [°]
Program Memory Capacity	128 steps × 4 channels
Program Parameter	Wait time 0 – 25.5 [sec] Unit: 0.1 sec Repeated 0 – 99999999 [times]
Origin Return Axes	X axis only / Y axis only / Both axes
Motor Rotation Direction	X axis: Positive (POS) / Negative (NEG) Y axis: Positive (POS) / Negative (NEG)

Specifications	
Part Number	SJT-02
Type	Joystick
Power Supply	Supplied from controller

JD-100

Catalog Code W9085

Manual operation of motorized stages is possible using the JOG buttons or JOG dial. The RATE button allows easy switching of the travel per click (2 steps). Mode switching between SHOT-302GS/SHOT-304GS and switching of travel speed (4 steps) can be performed at using the front parel buttens.

Functions	
LCD Panel	None
MODE Button	Switches between SHOT-302GS/SHOT-304GS modes.
RATE Button	Changes the travel per click. (Normal RATE: 1 pulse/click, High RATE: 5 pulses/click)
AXIS-SEL Button	Switches the motion axes (1 to 4 axes) using the jog dial.
SPEED Button	Switches the travel speed in 4 steps set with the controller. (SHOT-302GS/304GS only)
JOG+/– Button	Operates in +/- direction while the respective button is being pressed.
Number of Control Axes	2/4

Specifications	
Part Number	JD-100
Type	Jog Dial
Cable	MDR14-CA-2.5 (purchase separately)
Display	None
External Dimensions [W×H×Dmm]	130×36×145
Weight [kg]	0.6

Joy Stick
Jog Operation Box

JS-300
JB-400

RoHS CE Catalog Code W9050

Remote controls for SHOT-302GS/304GS, SHOT-702, PGC-04-U, and HSC-103.

JS-300

- Enables manual operation of attached motorized stages using a joystick.

Specifications	
Part Number	**JS-300**
Type	Button operation
Cable	MDR14-CA-2.5 (purchase separately)
Display	LCD (16 digits × 4 lines)
External Dimensions [W×H×Dmm]	120×50×160
Weight [kg]	0.7

Functions	
LCD Panel	Display digits: 16 digits × 4 lines
MODE Button	Switches modes (SHOT-302GS/SHOT-304GS)
E-ORG Button	Returns to theoretical (electric) origin
ZERO Button	Sets theoretical (electric) origin
Control Axis Switch Button	Switches the operating axis of joystick (1, 2 or 3, 4 axes)
Joystick	Joystick Controls 1, 2 or 3, 4 axes
M-ORG Button	Machine Origin Return
Third axis Operating Switch	Operates third axis
SPEED Button	A button to select one of the four motion speeds set by the controller.
STOP Button	Emergency stop

JB-400

- Enables manual operation of attached motorized stages using a keypad.
- Can be used to edit setup parameters and internal programs when connected to SHOT-302GS or SHOT-304GS.

Specifications	
Part Number	**JB-400**
Type	Button operation
Cable	MDR14-CA-2.5 (purchase separately)
Display	LCD (16 digits × 4 lines)
External Dimensions [W×H×Dmm]	178×38×195
Weight [kg]	0.7

Functions		
LCD Panel	Display digits: 16 digits × 4 lines	
Program Button	Execution of internal program (exclude SHOT-702)	
SPEED Button	A button to select one of the four motion speeds set by the controller.	
MODE Button	Switches between SHOT-302GS/SHOT-304GS models	
ORG X/Y Button	Returns X/Y axis to machine origin	
Reset X/Y Button	Sets theoretical (electric) origin of X/Y axis	
STOP Button	Emergency stop	
JOG/Pulse Button	Switches between JOG operation and fixed pulse operation	
X axis / Y axis Control Button	When set to JOG operation: Move while the button is being pressed	When set to fixed pulse operation: Move for the registered number of pulses at each press of the button
CLEAR Button	Resets the fixed pulse setting to zero	
Numeric Keypad (0 – 9)	Inputs the number of fixed pulse	
SET Button	Completes setting of fixed pulse	

Cables

RoHS Catalog Code W9052

Cables for connecting motorized stages to controllers or drivers.

- Refer to compatible controllers/drivers and cables described on the page of each motorized stage.

D15RP-CA Cable

Controller side (15 pins)
D-sub15pin
(Male Type)

Stage side (12 pins)
RP17-13PA-12PC
(Male Type)
Hirose Electric Co., Ltd.

Pin Number		Wire	Pin Number	
1	Motor lead	Brown	1	Motor lead
2	Motor lead	Red	2	Motor lead
3	Motor lead	Orange	3	Motor lead
4	Motor lead	Green	4	Motor lead
5	Motor lead	Black	5	Motor lead
6	GND	Brown	6	Origin sensor
7	Origin sensor	Gray	7	+VS
8	+VS		8	GND
9	N.C.		9	Limit sensor (+)
10	N.C.		10	Limit sensor (–)
11	Limit sensor (+)	White	11	F.G.
12	Limit sensor (–)	Purple	12	F.G.
13	GND	Black		
14	Origin proximity sensor	Black		
15	+VS	Black		

Outer shield

(Reference) Rough guide of the minimum bending radius is 40mm.

MINI-CA-SG Cable

Stage side (12 pins)
RP17-13PA-12PC
(Male Type)
Hirose Electric Co., Ltd.

Wire	Pin Number	
Brown	1	Motor lead
Red	2	Motor lead
Orange	3	Motor lead
Yellow	4	Motor lead
Green	5	Motor lead
Blue	6	N.C.
Purple	7	+VS
Gray	8	GND
White	9	Limit sensor (+)
Black	10	Limit sensor (–)
Inner shield	11	F.G.
Outer shield	12	F.G.

Driver side terminal is not processed

(Reference) Rough guide of the minimum bending radius is 40mm.

D15D15A-CA Cable

Controller side (15 pins)
17JE-23150-02(D1)
Hood: 17JE-15H-1A4-CF
(Male Type) DDK Ltd.

Stage side (15 pins)
17JE-13150-02(D1)A
Hood: 17JE-15H-1A4-CF
(Female Type) DDK Ltd.

Pin Number		Wire	Pin Number	
1	Motor lead	Orange/Black1	1	Motor lead
2	Motor lead	Orange/Red1	2	Motor lead
3	Motor lead	Light grey/Black1	3	Motor lead
4	Motor lead	Light grey/Red1	4	Motor lead
5	Motor lead	White/Black1	5	Motor lead
6	GND	White/Red1	6	GND
7	Origin sensor	Yellow/Black1	7	Origin sensor
8	+VS	Yellow/Red1	8	+VS
9	Autoconfig	Pink/Black1	9	Autoconfig
10	Reserve	Pink/Red1	10	Reserve
11	Limit sensor (+)	Orange/Black2	11	Limit sensor (+)
12	Limit sensor (–)	Orange/Red2	12	Limit sensor (–)
13	GND	Light grey/Black2	13	GND
14	Origin proximity sensor	Light grey/Red2	14	Origin proximity sensor
15	N.C.	Inner shield / Outer shield	15	N.C.

For the color of the cable wiring, it is marked with an insulating color, dot color and number of dots.

(Reference) Rough guide of the minimum bending radius is 60mm.

DAC-SG Cable

Stage side (15 pins)
17JE-13150-02 (D1)
Hood: 17JE-15H-1A
(Female Type) DDK Ltd.

Multiple 13 core cable

Wire	Pin Number	
Inner shield	1	Motor lead
Black	2	Motor lead
White	3	Motor lead
Red	4	Motor lead
Green	5	Motor lead
Yellow	6	GND
Gray	7	Origin sensor
Brown	8	+VS
Blue	9	N.C.
	10	N.C.
Pink	11	Limit sensor (+)
Light Blue	12	Limit sensor (–)
Light Green	13	GND
Orange	14	Origin proximity sensor
Purple	15	+VS
Outer shield	Case	

Driver side terminal is not processed

Inner shield
Outer shield

Specifications

Part Number	Controller Side	Stage Side	Cable Length [m]
D15RP-CA-2	D-sub 15pin / male type	RP17-13PA-12PC / 12pin	2
D15RP-CA-3	D-sub 15pin / male type	RP17-13PA-12PC / 12pin	3
D15RP-CA-5	D-sub 15pin / male type	RP17-13PA-12PC / 12pin	5
MINI-CA-SG-1	Unprocessed	RP17-13PA-12PC / 12pin	1
MINI-CA-SG-2	Unprocessed	RP17-13PA-12PC / 12pin	2
MINI-CA-SG-3	Unprocessed	RP17-13PA-12PC / 12pin	3
MINI-CA-SG-4	Unprocessed	RP17-13PA-12PC / 12pin	4
MINI-CA-SG-5	Unprocessed	RP17-13PA-12PC / 12pin	5
D15D15A-CA-2	17JE-23150 / male type	17JE-13150 / female type	2
D15D15A-CA-3	17JE-23150 / male type	17JE-13150 / female type	3
D15D15A-CA-5	17JE-23150 / male type	17JE-13150 / female type	5
DAC-SG-2	Unprocessed	17JE-13150 / female type	2
DAC-SG-3	Unprocessed	17JE-13150 / female type	3
DAC-SG-4	Unprocessed	17JE-13150 / female type	4
DAC-SG-5	Unprocessed	17JE-13150 / female type	5

Cables for encoders to controllers and controllers to computers.

MDR14-CA-2.5 Cable

Controller side (14 pins)
Connector: 10114-3000PE
Shell: 10314-52F0-008
Sumitomo 3M Limited

Stage side (14 pins)
Connector: 10114-3000PE
Shell: 10314-52F0-008
Sumitomo 3M Limited

Pin Number		Wire	Pin Number	
1	Signal GND	Blue	1	Signal GND
2	+5V	Red	2	+5V
3	RXD+	Gray	3	RXD+
4	TXD+	White	4	TXD+
5	STOP–	Orange	5	STOP–
6	N.C.		6	N.C.
7	N.C.	Green	7	N.C.
8	Signal GND	Brown	8	Signal GND
9	+5V	Purple	9	+5V
10	RXD–	Black	10	RXD–
11	TXD–	Yellow	11	TXD–
12	CONNECT–		12	CONNECT–
13	N.C.		13	N.C.
14	N.C.		14	N.C.
Case		Inner shield / Outer shield	Case	

● The MDR14-CA-2.5 cable is for connecting between SHOT-302GS/ 304GS/SHOT-702 and JS-300/JB-400.

Specifications

Part Number	Controller Side	JS/JD side	Cable Length [m]
MDR14-CA-2.5	10114-3000PE	10114-3000PE	2.5

DHR-CA-3 Cable

Controller side (15 pins)
Connector: 17JE-23150-02(D1)
Hood: 17JE-15H-1A-CF
(Male Type) DDK Ltd.

Stage side (10 pins)
HR10A-10P-10PC(73)
(Male Type)
Hirose Electric Co., Ltd.

Pin Number		Wire	Pin Number	
1	Motor lead	Brown	1	Motor lead
2	Motor lead	Red	2	Motor lead
3	Motor lead	Orange	3	Motor lead
4	Motor lead	Yellow	4	Motor lead
5	Motor lead	Green	5	Motor lead
6	GND	Gray	6	Auto config
7	Origin sensor	Green	7	+VS
8	+VS	Blue	8	GND
9	Auto config		9	Limit sensor (+)
10	N.C.	White	10	Limit sensor (–)
11	Limit sensor (+)	Black	Clamp Bracket	F.G.
12	Limit sensor (–)	Green		
13	GND	Green		
14	Origin proximity sensor	Purple		
15	+VS			
Case		Inner shield / Outer shield		

Specifications

Part Number	Controller Side	Stage Side	Cable Length [m]
DHR-CA-3	17JE-23150-02 (Male Type)	HR10A-10P-10PC(73)	3

GSEF-CA-3 Cable

Controller side (15 pins)
Connector: D02-M15SG-N-F1
Hood: DE-C8-J9-F1-1R
(Male Type)
Japan Aviation Electronics Industry, Ltd.

Stage side (15 pins)
Connector: D02-M15SG-N-FO
Hood: DE-C8-J9-F1-1R
(Female Type)
Japan Aviation Electronics Industry, Ltd.

Pin Number		Wire	Pin Number	
1	Signal GND	Blue	1	N.C.
2	Signal GND	Green	2	N.C.
3	+5V	Red	3	N.C.
4	+5V	Brown	4	A–
5	N.C.		5	A+
6	N.C.		6	N.C.
7	N.C.		7	N.C.
8	N.C.		8	N.C.
9	Alarm–	White	9	B–
10	A+	Orange	10	B+
11	A–	Yellow	11	Alarm–
12	B+	Purple	12	+5V
13	B–	Gray	13	Signal GND
14	N.C.		14	N.C.
15	FG	Black	15	FG
Case		Inner shield / Outer shield	Case	

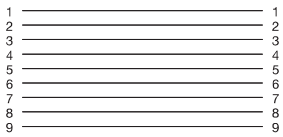
Specifications

Part Number	Controller Side	Stage Side	Cable Length [m]
GSEF-CA-3	D02-M15PG-N-F0 (with ferrite core)	D02-M15SG-N-F0	3

Other Cables

RS232C Cable

Sigma Koki controller (D-sub 9pin male type) — DOS/V PC (D-sub 9pin female type)



Specifications

Part Number	Cable Length [m]
RS232C/STR-1.8	1.8
RS232C/STR-3	3
RS232C/STR-4.5	4.5

GP-IB Cable

Specifications

Part Number	Cable Length [m]
GP-IB-0.5	0.5
GP-IB-1	1
GP-IB-2	2
GP-IB-3	3
GP-IB-4	4

USB Cable

USB A connector male type — 2m Fully connected straight cable — USB B connector male type

Specifications

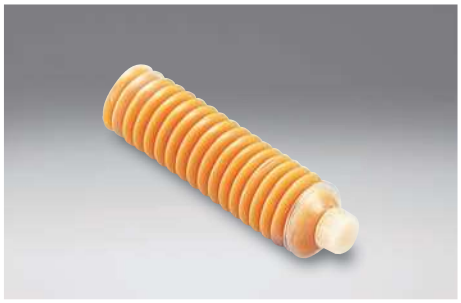
Part Number	Cable Length [m]
USB-1	1
USB-2	2

Maintenance / Cleanroom / Vacuum Grease | AFA/AFB/AFE/YVAC

Maintenance

Catalog Code W9005

To maintain smooth operation, grease should be inspected and checked periodically and grease replaced if necessary. Regular grease maintenance will prevent rust and extend product life cycle significantly.



Effect of Grease

Minimizes friction to enable smooth drive.

Grease maintenance procedure

① Wipe off old grease.
② Apply new grease.
③ Move the stage over the full range several times to distribute grease thoroughly.
④ Wipe off excess grease from step ③.
* Too much grease will cause dust to adhere.

Guide

▶Stages can be returned to OptoSigma for maintenance. Contact our Sales Division for more information.

Attention

▶When handling grease, avoid contamination with foreign substances, mixing with different type of grease and exposure to excessive heat.

Specifications

Part Number	AFA	AFB
Motorized Stages Used	SGSP15 Series SGSP20 Series SGSP26 Series	SGSP33 Series SGSP46 Series SGSP65 Series TAMM
Manufacturer	THK CO., LTD.	THK CO., LTD.
Operating Temperature Range [°C]	–45 ~ +160	–15 ~ +100

Cleanroom / Vacuum Grease

Catalog Code W9006

Grease used for motorized stages can be replaced with grease for clean room environments or grease for vacuum applications.

Replacement Sites

Motorized stage : Ball screw part, crossed roller part (TAMM series)
Contact OptoSigma before changing grease as grease used for each component (guide / ball screw) is different.
Rotation stage : Cannot be replaced by customer. Contact OptoSigma for more information.
Goniometer stage : Cannot be replaced by customer. Contact OptoSigma for more information.

Attention

▶Please be noted that if the grease is rrplaced, there is a possibility that Max speed of the stage would be significantly lower that the specifed value on our catalogue. Please contact our Sales Division for further information.

Features

Low dust generation grease for clean room environments

Reduces burden for maintenance since it is hard to deteriorate and has long life.
It may lose fluidity and get hard suddenly in low-temperature environments.

Fomblin Vacuum Grease

Has excellent heat resistance, lubricity and compatibility with other materials.
It has long life and is usable in high temperature (–20°C ~ +250°C).

Specifications

Part Number	AFE-GREASE-C	YVAC-GREASE-C
Number of Axes [axis]	1	1
Manufacturer	THK CO., LTD.	Solvay Solexis
Name	Low dust generation grease for clean room environments	Fomblin Vacuum Grease
Part Number	AFE	YVAC
Operating Temperature Range [°C]	–40 ~ +120	–20 ~ +250

Motorized Stage System Question Sheet ☐Quotation ☐Order

Date

☐ To: SIGMAKOKI Co., Ltd. **FAX +81-3-5638-6550**

Affiliation (Organization Name)							
Department		Name					
TEL		FAX		E-mail			
Country/Address							
Project Name	(Tentative name is okay)						
Drawing number		Estimate	☐ Yes: by Date			☐ No	
Desired Delivery Date		Budget	JP Yen				
Quantity		Part Number	Fill in this column if you desire to modify a product listed on the catalog or if you have a base product.				
Usage	☐ Research and development ☐ For incorporation (equipment / production)	Axis Direction	☐ X axis	☐ XY axis	☐ Z axis	☐ Combination	
Weight of Sample, etc.		Changing Travel (changing limit sensor position)					
Table Size	mm	Travel	mm				
Number of Axes		Load Capacity	kgf				
Resolution	(Full)	Positioning Accuracy					
	(Half)	Positional Repeatability					
Changing Motor	☐ Electromagnetic brake ☐ Reduction gear ☐ Other (AC servo)						
Others	* Write more detailed specifications here. (Rough illustration is acceptable.)						

SIGMAKOKI CO., LTD.

General Catalog 02

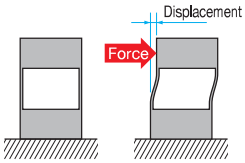
Piezo Guide

For the guide mechanism, Sigma fine stages adopted a guide system that utilizes elastic deformation of metals and a mechanism to increase deformation of piezo elements. These originally designed stages achieved readable resolution of 10nm during closed loop control, ideal for uses that require high-speed high-precision positioning.

Structure of Sigma Fine Stage

■Displacement Magnification Method

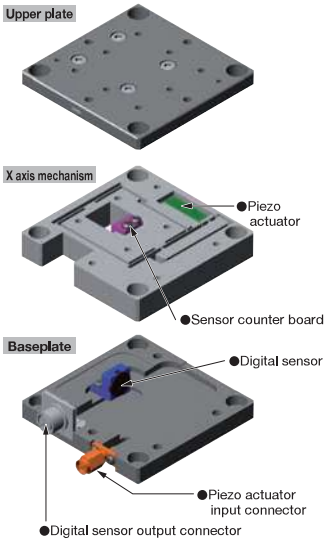
Piezo actuator and displacement magnification mechanism offer a large operating range.



■Digital Sensor

Closed loop control is possible with a digital sensor that does not require any high precision analog amplifier or AD conversion circuit.

■SFS-H Internal Structural Drawing



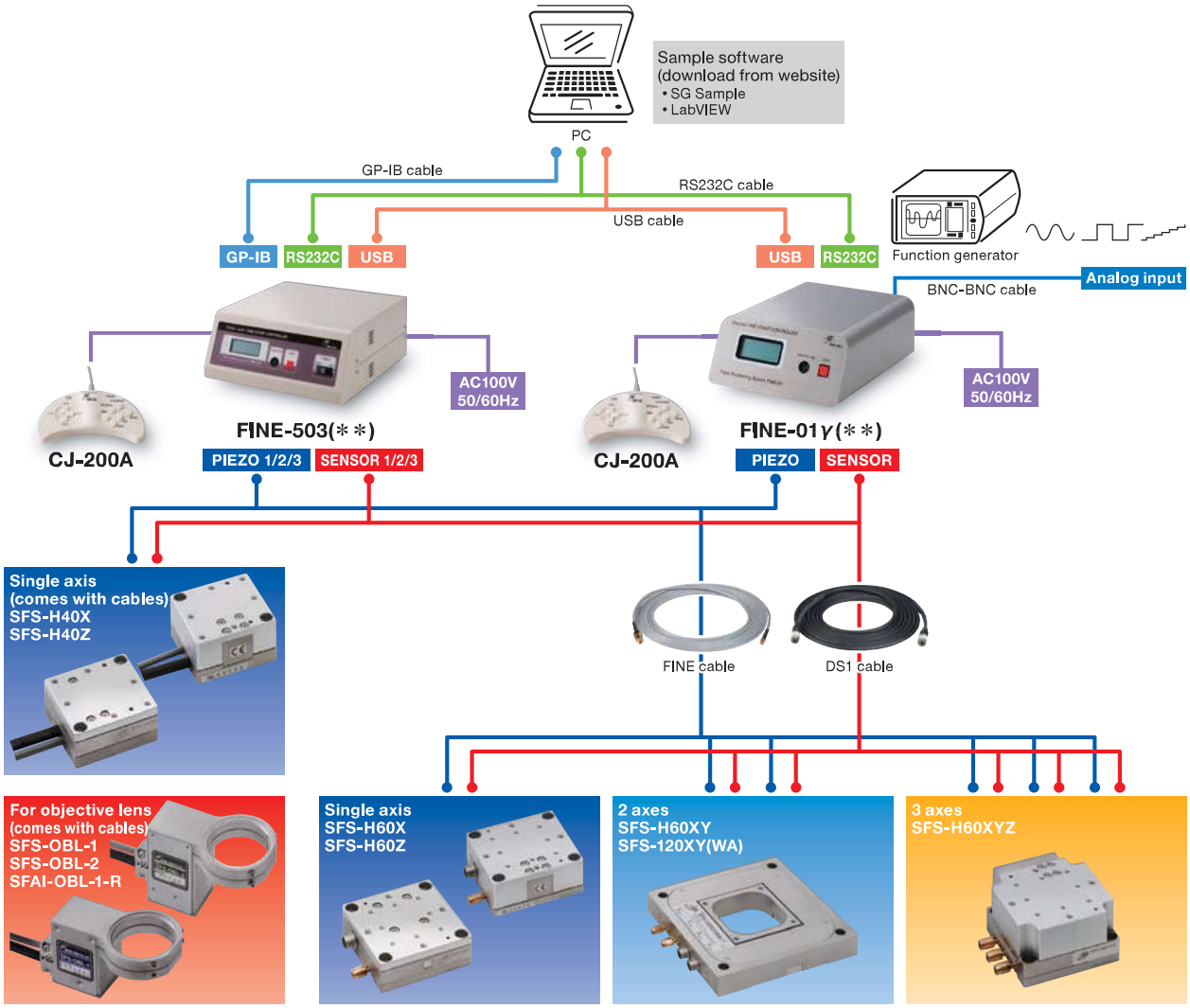
Operating Environment of Sigma Fine Stage

Use fine stages within the following operating environment temperature range. Contact us separately if you desire to use the stages outside the operating environment temperature range.

*Operating environment	*Recommended environment
Temperature: 10°C – 30°C	Temperature: 20°C ±1°C
Humidity: 20% – 60% (without condensation)	Humidity: 40% or lower

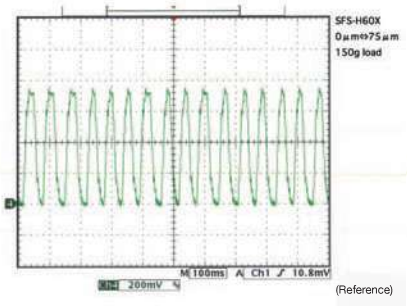
Since durability of piezo elements used in the SFS/SFS-H stage series will deteriorate in high humidity environments, use them in the above environments.

Sigma Fine System Chart

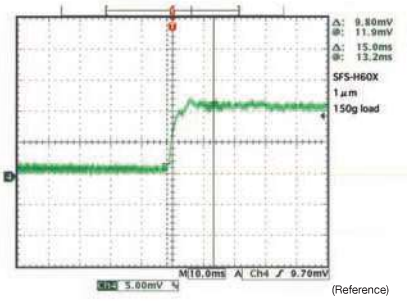


Accuracy Measurement Example: Sigma Fine Stage System SFS-H (Linear Stage)

High Speed Convergence Data



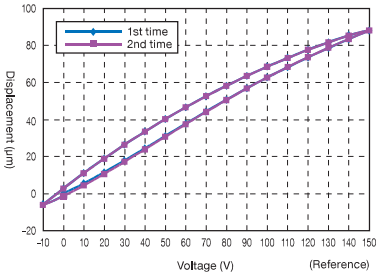
0⇔75μm pulse rate (16Hz)
Closed loop control
by SFS-H60X at 150g load



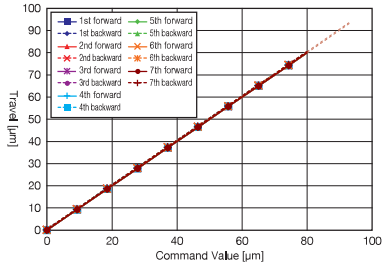
0⇒1μm step convergence data (15msec)
Closed loop control
by SFS-H60X at 150g load

Travel

The following graph shows the hysteresis curve unique to piezo actuators during open loop control travel.

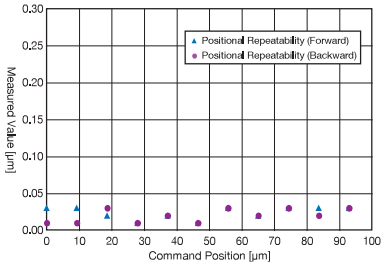


Linearity



0⇔80μm linearity within 0.3%
Closed loop control
by SFS-H60X at 150g load

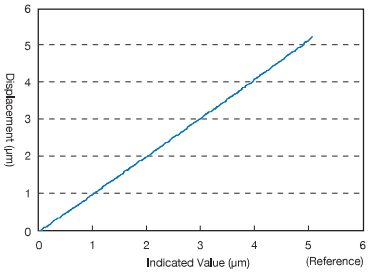
Positional Repeatability



0⇔80μm positional repeatability 50nm or lower
by SFS-H60X at 150g load

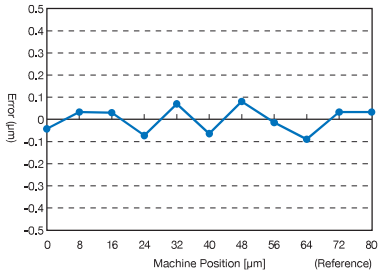
Characteristics of Fine Feed

Characteristics when feed amount is small in closed loop control. Hysteresis disappears in open loop control.



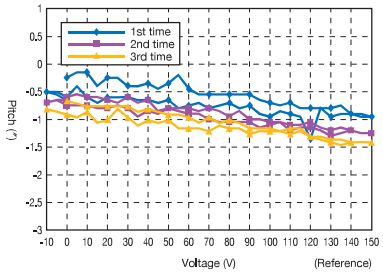
Straightness

Deviation from the straight line in the direction of travel.



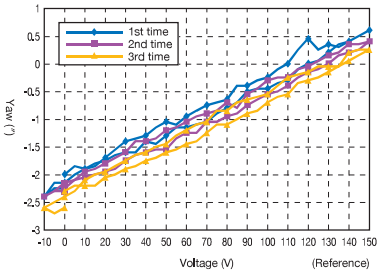
Pitch

Tilt around the axis in the horizontal plane perpendicular to the direction of travel.



Characteristics of Yaw

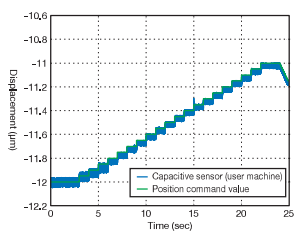
Rotation around the axis in the vertical plane perpendicular to the direction of travel.



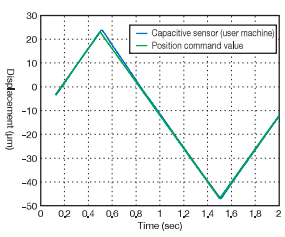
Follow-up example with Respect to Analog Input: SFS-H (Linear Stage) *Controlled by FINE-01γ

High Speed Convergence Data

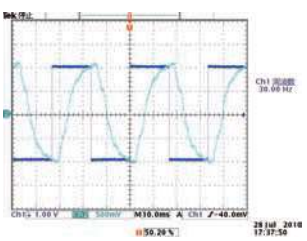
Input waveform: Navy/Output waveform: Light blue



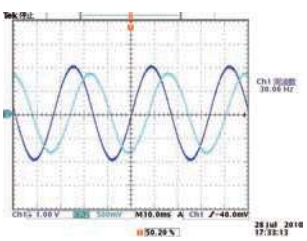
SFS-H40X
Staircase wave input/output waveforms
(Step 50nm 20-step staircase wave)



SFS-H40X
Saw-tooth wave input/output waveforms
(Uniform motion 35μm1Hz)



SFS-H40X
Rectangular wave input/output (30Hz)



SFS-H40X
Sine wave input/output (30Hz)

Sigma 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.

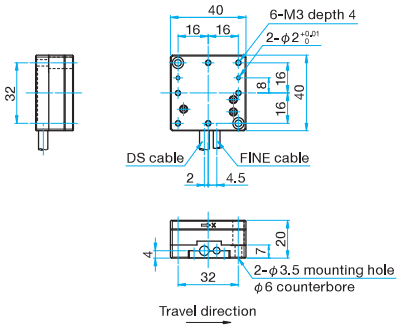
SFS-H

- 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.

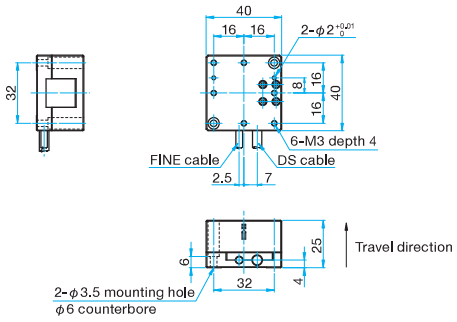
2D CAD 3D CAD

Outline Drawing

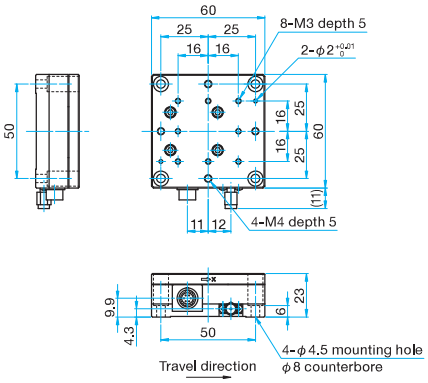
SFS-H40X(CL) Hexagon socket head cap screw M3×10…2 screws



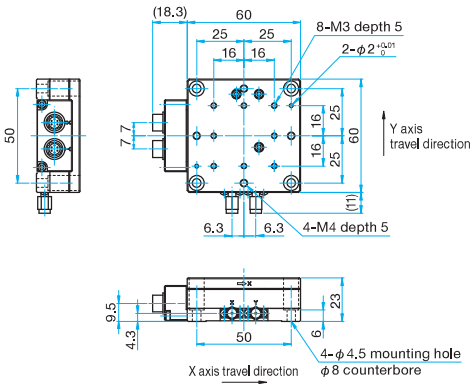
SFS-H40Z(CL) Hexagon socket head cap screw M3×10…2 screws



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



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



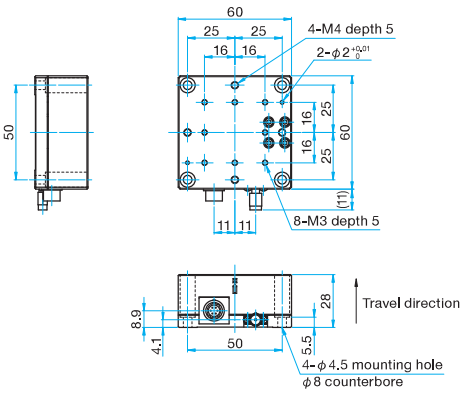
Specifications

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

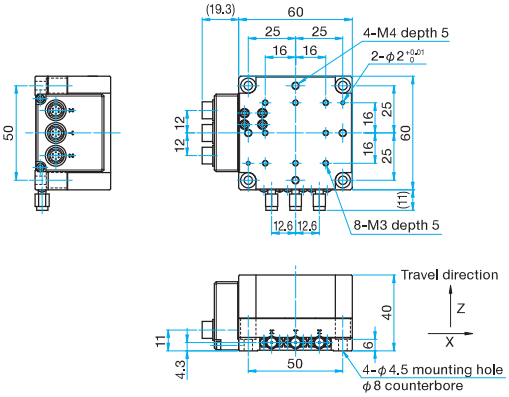
2D CAD 3D CAD

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)

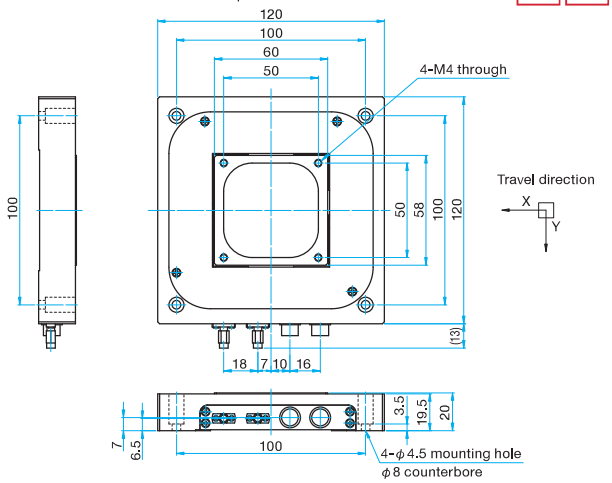
Two Axis Nanometer resolution high stiffness flexure stages with central aperture.

- 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

Piezo Actuator for Objective Lens | SFS-OBL (Upright)/SFAI-OBL RoHS CE (SFS-OBL-1 only) Catalog Code W9056

Objective lens actuators for upright inverted microscope employing piezo element actuator and digital sensor for feedback.

- Compact package for smooth integration into existing microscopes.
- Designed for high-speed, high-resolution positioning.
- Open loop travel is 100µm, closed loop travel is 80µm. Compared to the open-loop control, the maximum travel of closed-loop control will be less about 10%.
- Each model can be installed on a variety of upright or inverted microscopes. Thread inserts make it easy to integrate with different manufacturer's standard threads.
- As in the case of the Sigma fine stage series, these actuators can be driven with the controller (FINE-01γ/503(CL)). Recommended controllers are the FINE series controllers.
  WEB Reference Catalog Code W9057

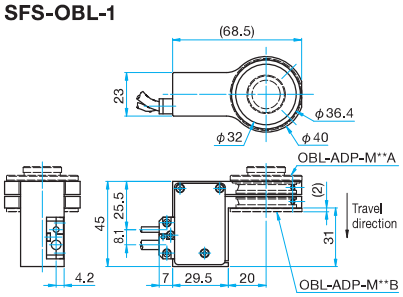
Guide

- Threaded inserts compatible with a variety of manufacturers' objective lenses are also available(Reference OBL-ADP).
- The SFS-OBL-2 uses a metal enclosure type piezo actuator for higher duty cycles and longer life in industrial environments.

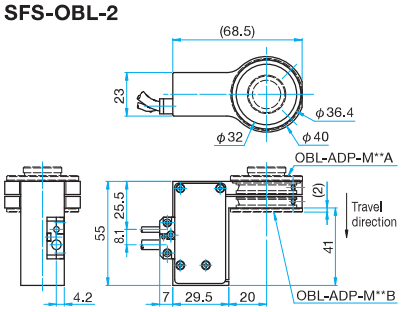
Outline Drawing

2D CAD 3D CAD

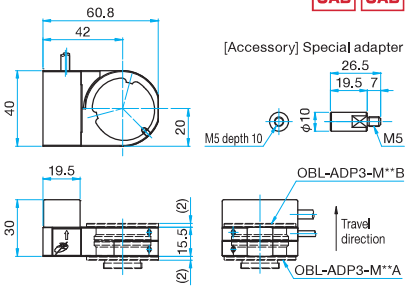
SFS-OBL-1



SFS-OBL-2



SFAI-OBL-1R



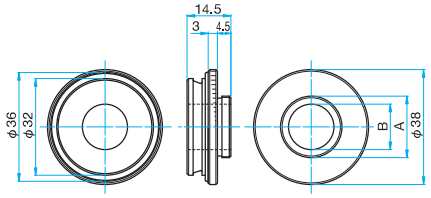
Specifications

Part Number	CE SFS-OBL-1	SFS-OBL-2	SFAI-OBL-1R
Travel (at open-loop control)	100µm±15%	100µm±15%	100µm±15%
Objective Lens Diameter [mm]	Diameter φ39 or less	Diameter φ39 or less	Diameter φ39 or less
Dimensions [mm]	(W)75.5 × (H)45 × (D)40	(W)75.5 × (H)55 × (D)40	(W)60.8 × (H)30 × (D)40
Actuator	Piezo element	Piezo element	Piezo element
Weight [kg]	0.15	0.24	0.15
Theoretical Resolution (open-loop) [nm]	1	1	about 0.8
Resolution (closed-loop) [nm]	10	10	10
Straightness (Xy Xz Yx Yz) [µm]	1 or lower	1 or lower	0.2 or lower
Positional Repeatability [µm]	0.1 or lower	0.1 or lower	0.1 or lower
Load Capacity [N]	—	—	4.9 (0.5kgf)
Micro-displacement Sensor	Digital sensor	Digital sensor	Digital sensor
Compatible Adapter	OBL-ADP-**	OBL-ADP-**	OBL-ADP3-**
Accessories	Cable (2m)	Cable (2m)	Cable (2m), four special lift spacers

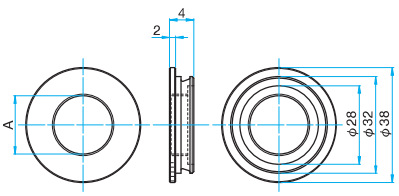
Objective Lens Adapters

Adapters to mount the Piezo Actuator for Objective Lens (SFS-OBL, SFAI-OBL) to a variety of microscopes and objectives.

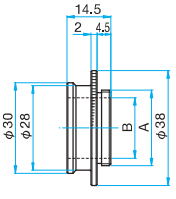
OBL-ADP-MA**



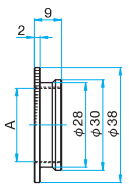
OBL-ADP-MB**



OBL-ADP3-MA**



OBL-ADP3-MB**



SFS-OBL Compatible Adapters

Part Number	Mounting Screw Size [mm]	A [mm]	B [mm]
OBL-ADP-M20.32A	Microscope side M20.32	M20.32 P=0.706 (W0.8×1/36)	15
OBL-ADP-M20.32B	Objective lens side M20.32	M20.32 P=0.706 (W0.8×1/36)	—
OBL-ADP-M25.0A	Microscope side M25.0	M25.0 P=0.75	20
OBL-ADP-M25.0B	Objective lens side M25.0	M25.0 P=0.75	—
OBL-ADP-M26.0A	Microscope side M26.0	M26.0 P=0.706 (W26.0×1/36)	21
OBL-ADP-M26.0B	Objective lens side M26.0	M26.0 P=0.706 (W26.0×1/36)	—

SFAI-OBL Compatible Adapters

Part Number	Mounting Screw Size [mm]	A [mm]	B [mm]
OBL-ADP3-M20.32A	Microscope side M20.32	M20.32 P=0.706 (W0.8×1/36)	15
OBL-ADP3-M20.32B	Objective lens side M20.32	M20.32 P=0.706 (W0.8×1/36)	—
OBL-ADP3-M25.0A	Microscope side M25.0	M25.0 P=0.75	20
OBL-ADP3-M25.0B	Objective lens side M25.0	M25.0 P=0.75	—
OBL-ADP3-M26.0A	Microscope side M26.0	M26.0 P=0.706 (W26.0×1/36)	21
OBL-ADP3-M26.0B	Objective lens side M26.0	M26.0 P=0.706 (W26.0×1/36)	—

Application Systems
Optics & Optical Coatings
Opto-Mechanics
Bases
Manual Stages
Actuators & Adjusters
Motoeized Stages
Light Sources & Laser Safety
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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

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 (WxHxDmm)	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.

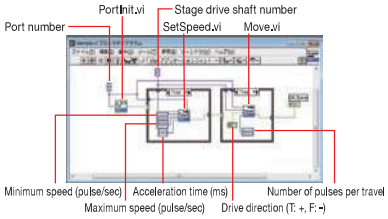
(1) Speed specification (2) Homing control (3) Travel control

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.



Other: 30 Day Trial Version (SGADVANCEE)

Trial Version

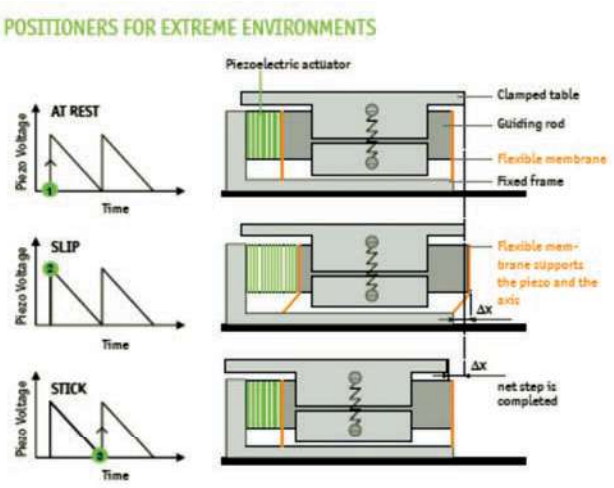
Using SGADVANCEE makes it is possible to easily build measurement and control systems for a wide variety of measurement environments.
Installing the trial version will require entering a serial number. The serial number for the trial version is shown on the download page.
WEB Reference http://www.global-optosigma.com/en_jp/software/product-download_en.html

ECS Positioners | ECS series

Industrial Line positioners by attocube combine high precision piezodrive technology with extremely rugged, cost effective design.

- All ECS positioners of the Industrial Line are designed for operation at ambient temperature and, depending on the model, for pressures ranging from atmospheric to UHV.
- The ECS drive series features crossed roller bearings and is thus specified for high loads of up to several kilograms and guiding errors of less than 0.1mrad in pitch, yaw, and roll.
- Travel range is up to 50mm, step sizes as small as 50nm. Optional position sensor for closed loop operation with 1nm resolution. Attocube's Industrial Line positioners are available in a wide variety of designs, sizes, and travel ranges and can be stacked directly on top of each other for multi axis operation. Please OptoSigma for more information for the Z axis stage.

Operating principle



The basic operating principle is shown as left;
An actuator is driven by a sawtooth voltage, and making use of the difference between static friction force and the kinetic friction force, control the position of the top table.

The parameters to adjust are only the voltage amplitude and the repetition frequency.
The range of the value will be 1v ~ 45v, 1Hz ~ 5kHz, respectively.

Table is positioned by the closed loop control using the linear encoder. The position repeatability is 50nm and the accuracy is a less than 0.01% of the movement range. Therefore, for instance, repeatability of a stage of which travel range is 30mm will be 3μm or less.

Specifications of vacuum compatible type

RT version: standard type
- 10^{-2} Pa/ main material: Aluminum

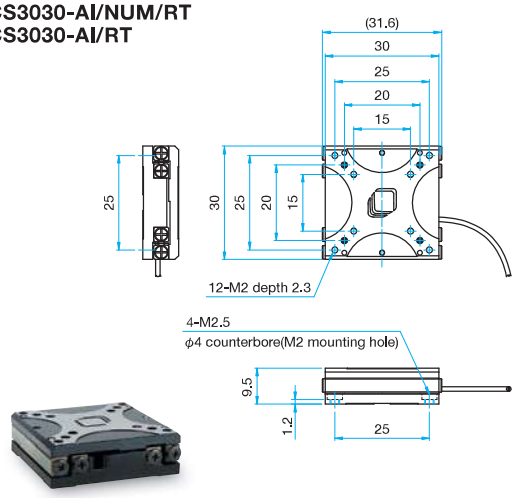
HV version: high vacuum type
- 10^{-6} Pa / main material: stainless steel

UHV version: ultra-high vacuum type (custom made)
- 10^{-6} – 10^{-9} Pa / main material: stainless

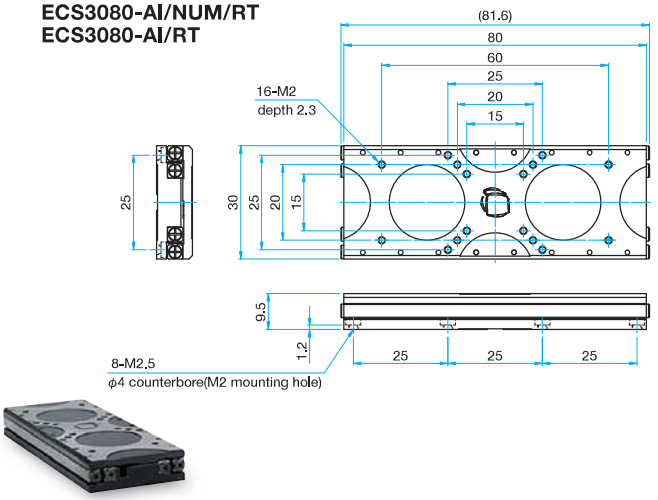
2D CAD 3D CAD

Outline Drawing

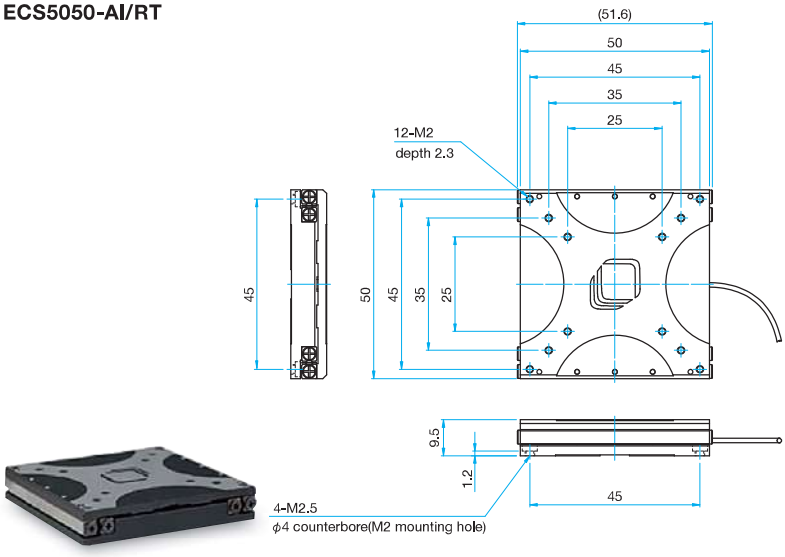
ECS3030-AI/NUM/RT
ECS3030-AI/RT



ECS3080-AI/NUM/RT
ECS3080-AI/RT



ECS5050-AI/NUM/RT
ECS5050-AI/RT



Specifications

Products Name		X Axis Positioner	X Axis Positioner	X Axis Positioner
Part Number (with sensor)		**ECS3030-AI/NUM/RT**	**ECS3080-AI/NUM/RT**	**ECS5050-AI/NUM/RT**
Part Number (without sensor)		**ECS3030-AI/RT**	**ECS3080-AI/RT**	**ECS5050-AI/RT**
Closed-loop travel properties / with sensor	Position Resolution	1nm	1nm	1nm
	Position Repeatability	50nm	50nm	50nm
	Scale accuracy	<0.01% of travel range	<0.01% of travel range	<0.01% of travel range
Open-loop travel properties M*1	Minimum step size	50nm	50nm	30nm
	Fine positioning range	0 – 1.2µm	0 – 1.6µm	0 – 1.6µm
Travel Range		20mm	50mm	30mm
Stage Size [mm]		30×30	30×80	50×50
Positioning Slide		Crossed Roller Bearing	Crossed Roller Bearing	Crossed Roller Bearing
Weight [kg]		0.029	0.078	0.07
Maximum Travel Speed		4.5mm/sec	4.5mm/sec	4.5mm/sec
Load Capacity (horizontal mounting)		9kgf	24kgf	15kgf

*1 When used in 1 FINE POSITIONING mode and within the input voltage range (0 ~ 45V).
* Load capacity is the load carrying capacity of the moving guide, it does not guarantee other accuracy specifications.
* In addition to the RT version of standard item, there are "HV" and "UHV" version. (Please specify / HV or / UHV on the Part Number.)
* Limit sensor is not included.

ECS Positioners | ECS series

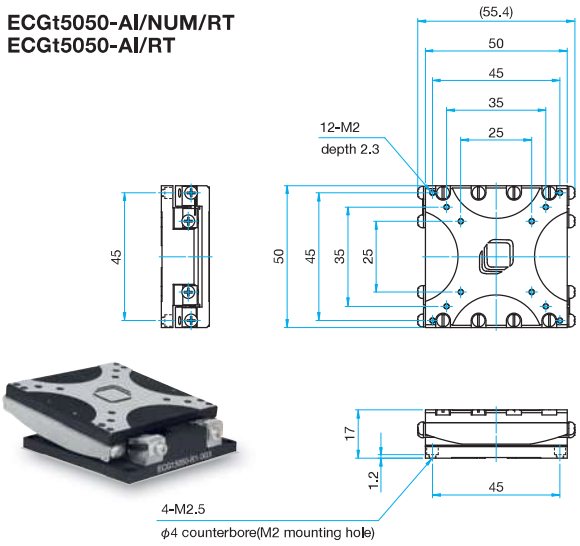
attocube pioneers of precision

Catalog Code W9200

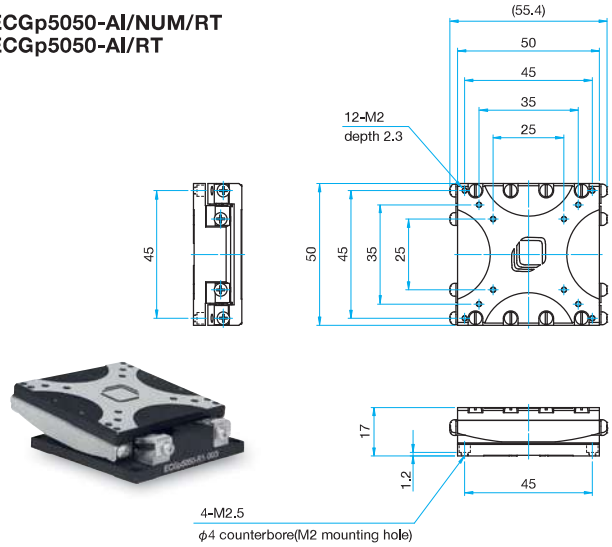
2D CAD 3D CAD

Outline Drawing

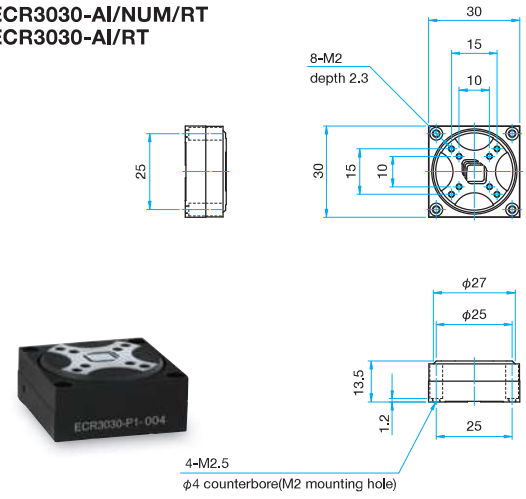
ECGt5050-AI/NUM/RT
ECGt5050-AI/RT



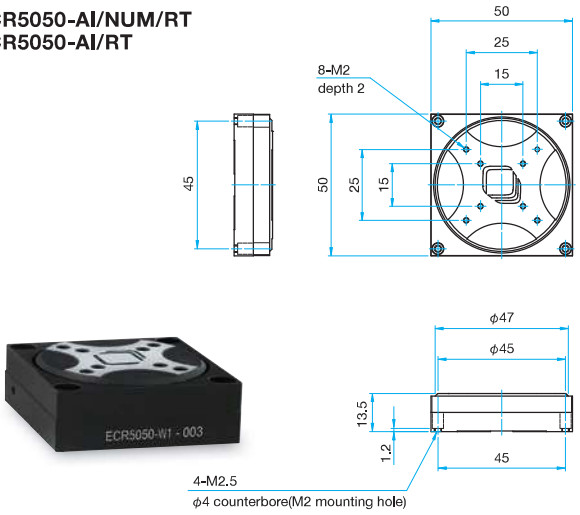
ECGp5050-AI/NUM/RT
ECGp5050-AI/RT



ECR3030-AI/NUM/RT
ECR3030-AI/RT



ECR5050-AI/NUM/RT
ECR5050-AI/RT



Specifications

Products Name		Goniometer	Goniometer	Rotator	Rotator
Part Number (with sensor)		ECGt5050-AI/NUM/RT	ECGp5050-AI/NUM/RT	ECR3030-AI/NUM/RT	ECR5050-AI/NUM/RT
Part Number (without sensor)		ECGt5050-AI/RT	ECGp5050-AI/RT	ECR3030-AI/RT	ECR5050-AI/RT
Closed-loop travel properties / with sensor	Position Resolution	0.000001°	0.000001°	0.00001°	0.0001°
	Position Repeatability	±0.00005°	±0.00005°	±0.0005°	±0.0005°
	Scale accuracy	≒0.001°	≒0.001°	≒0.002°	≒0.002°
Open-loop travel properties M*1	Minimum step size	0.0001°	0.0001°	0.0004°	0.0002°
	Fine positioning range	0 – 0.0012°	0 – 0.0009°	0 – 0.010°	0 – 0.005°
Travel Range		10°	10°	360°	360°
Stage Size [mm]		50×50	50×50	30×30	50×50
Positioning Slide		Crossed Roller Bearing	Crossed Roller Bearing	Ball Bearing	Ball Bearing
Weight [kg]		0.137	0.137	0.28	0.1
Maximum Travel Speed		≒1°/sec	≒1°/sec	≒10°/sec	≒10°/sec
Load Capacity (horizontal mounting)		1kgf	1kgf	2kgf	2kgf

*1 When used in 1 FINE POSITIONING mode and within the input voltage range (0 ~ 45V).
* Load capacity is the load carrying capacity of the moving guide, it does not guarantee other accuracy specifications.
* In addition to the RT version of standard item, there are “HV” and “UHV” version. (Please specify / HV or / UHV on the Part Number.)
* Limit sensor is not included.

The three axes controller ECC100 is used for driving all ECS positioners either in open loop or closed loop mode, depending on the corresponding positioner model.

Controller Hardware	
Part Number	ECC100
External Dimensions [mm]	about (W)210×(H)50×(D)210
Weight [kg]	1.9
Power supply	100/115/230V 50 – 60Hz
Power consumption	max. 100W

Output Signals	
Stepping - voltage range	0 – 45V
Stepping - frequency range	0 – 5kHz (1 axis) about (W)210×(H)50×(D)210
Stepping - maximum current	>5A Peak
Resolution of signal generation	680μV (16 bit)
Output connectors	D-sub 15pin
Input connectors	USB2.0

Features of software

3-axis controller (Part Number: ECC100-PRO / RT / HV / UHV) will be delivered with Windows®-based software package / Daisy-Pro including LabView driver set and DLL.
Additionally, you can freely operate a program by dedicated software package / PRO (Part Number: Pro-version software for ECC100).
Option / SYNC can be used for the Ethernet interface and in the controller with the Epics driver.

Guide

▶Sample programs are available for download on our website.
• SG Sample 32/64-bit version for Windows®(only for RS232C)

Major Faction of Daisy-Pro software

1. Driving setting

1) JOG mode (Manual Positioning)
2) Pre-set driving (Auto Positioning)
3) Drive parameter settings (voltage, frequency)

2. Display setting

1) Position display
2) Reference detection and display
3) EOT (End of travel) detection and display

This product is made in Germany / Attocube
High precision positioning stage and controller.

Light Sources & Laser Safety