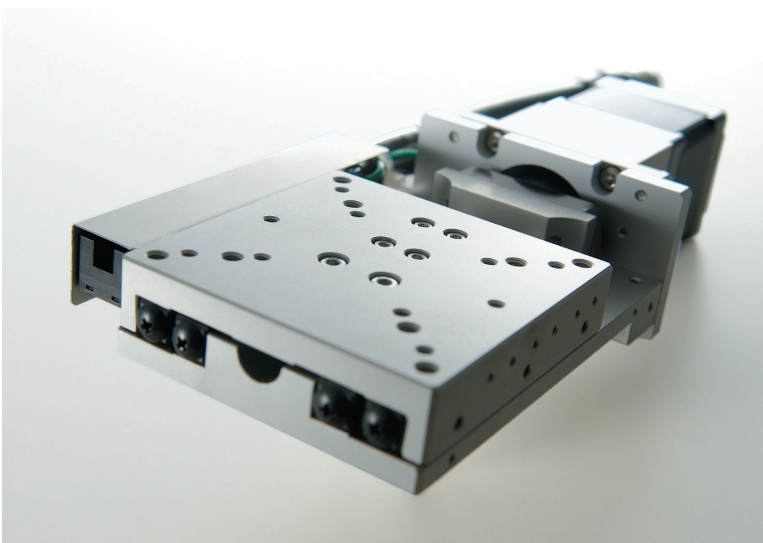


Crossed-roller Guide Guidance



Made of aluminum, this stage is "lightweight", "compact", and "highly accurate".

■ Usage

- Automatic focusing
- Precision positioning for lens and electronic parts.

Features of Crossed-roller guide

■ Light weight

- ◎ It is made of aluminium to weight as little as possible.

■ Compact

KXC series

- ◎ As sensor is embedded in a stage body, projection from the table surface is small.

You can use it without though to opposite hand.

KX series

- ◎ Not only the thin body but high precision. Available maximum 25kg load capacity.

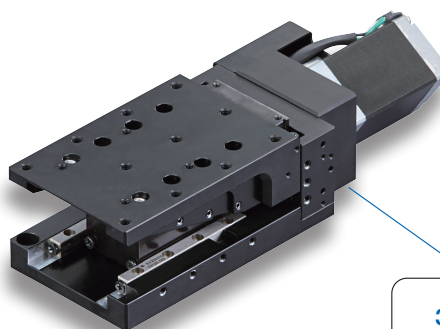
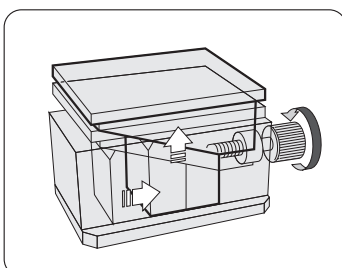


■ High precision

- ◎ Satisfy a high rigidity by a linear contact with V-groove and cross roller. It is ideal for fine feeding because of a little operation slip and a low friction.

Feature of horizontal Z wedge type

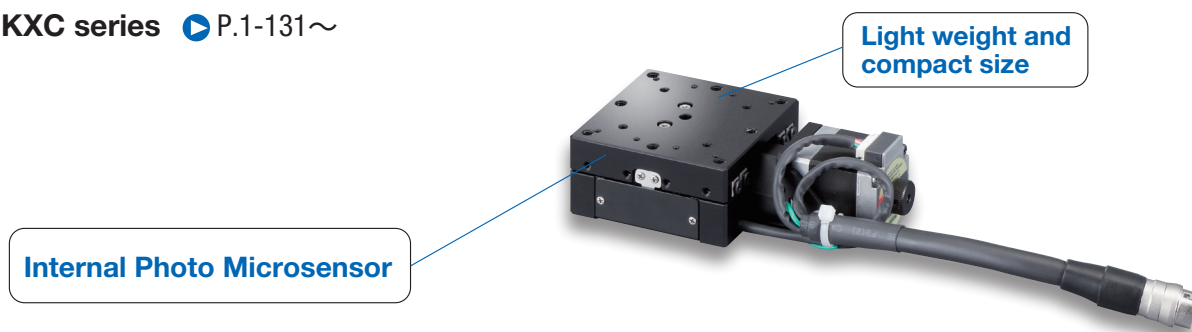
Place the crossed-roller guide to horizontal, oblique and vertical direction, and it allows stage table to be shifted up or down with precision ball screw drive. All of the sliding part is configured in the rotational motion, drive high precision, to be effective against moment load.



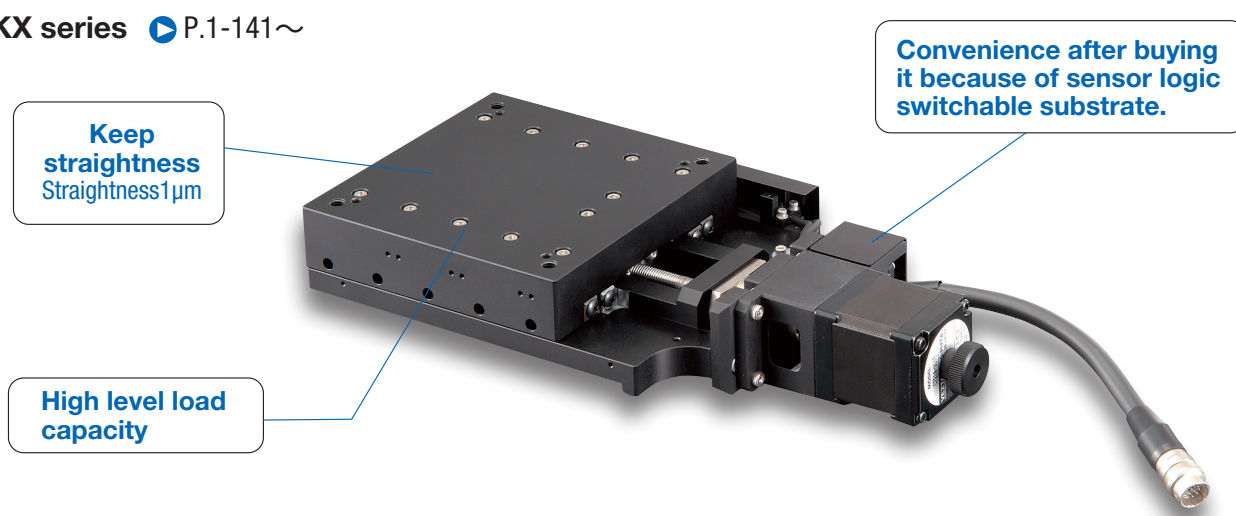
3 directions crossed-roller guide.
High rigidity and thin model.

High performance

KXC series ▶ P.1-131~



KX series ▶ P.1-141~



■ Crossed-roller guide stroke line-up

15mm	20mm	25mm	30mm	40mm	50mm	70mm	100mm
------	------	------	------	------	------	------	-------

▽ How to mount

Stroke the upper plate to CW or CCW. Screw on bolt holes for each 2. (Total 4 screws)

▽ About object on the upper or lower stage.

Mounting the stage on a surface with poor flatness, or attaching an object with poor flatness to the stage, may deform the stage surface and affect its accuracy. Please ensure proper flatness. [Recommended flatness: 10 μm or less]

▽ Positioning

■ Position of stage mounting

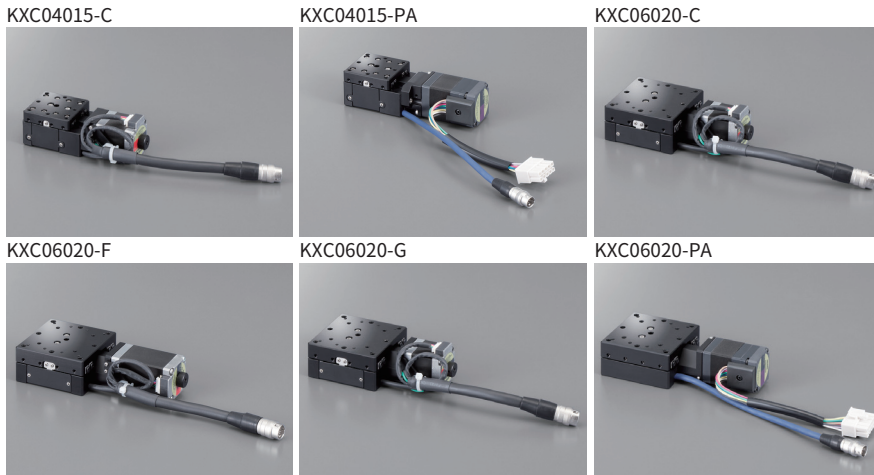
All products SPEC shows must be shown flat setting condition.

Pay attention to mount such as up side down, vertical on the side and horizontal on the side.

Load capacity and accuracy might be changed by the positioning.

Please feel free to ask us for more information.

X-axis Crossed-roller Guide: KXC04015/KXC06020



KXC04015-C

▶ Cables P.1-287~
▶ Electrical specification P.1-139~

1 Table size/Travel distance

Code	Table size	Travel distance
04015	□40mm	15 mm
06020	□60mm	20 mm

2 Motor option

Code	Specification
C	Standard
F	High-torque
G	High-resolution
PA	□28 α Step (Driver set)

* PA can choose only cable code P. Cannot choose the blank.
 * In case of KXC04, can be chosen only C and PA.

3 Cable option

Code	Specification	Cable type
Blank	Cable is not included (Standard)	—
A	2m	D214-2-2E
B	2m One end loose	D214-2-2EK
C	4m	D214-2-4E
D	4m One end loose	D214-2-4EK
E	Only connector (Cable is not included)	—
F	Robot cable 2m	D214-2-2R
G	Robot cable 2m one end loose	D214-2-2RK
H	Robot cable 4m	D214-2-4R
J	Robot cable 4m one end loose	D214-2-4RK
P	Cable for α step 3m	—

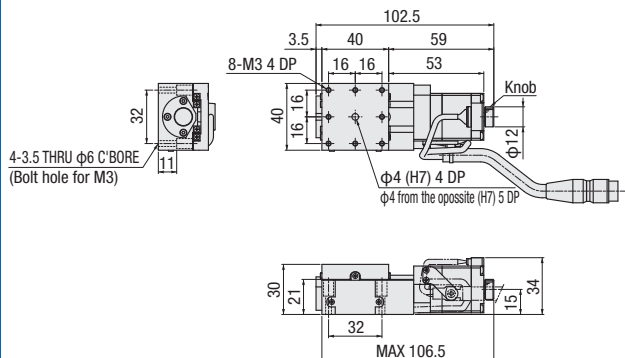
* One end loose position to only stage opposite side.
 * Please select "Code A, C, F or H" when connect with stepping motor controller(DS102/112).

		SPEC						
Model		KXC04015-C	KXC04015-PA	KXC06020-C	KXC06020-F	KXC06020-G	KXC06020-PA	
Mechanical specification	Travel distance	15mm			20mm			
	Table size	40×40mm			60×60mm			
	Feed screw (Ball screw)	φ6 lead 1			φ8 lead 1			
	Guide	Crossed roller guide						
Main materials-Finishing		Aluminum-Black almite finishing						
Weight		0.31kg	0.36kg	0.44kg	0.54kg	0.44kg	0.49kg	
Accuracy specification	Resolution (Pulse)	Full/Half	2μm/1μm	1μm (Set to 1000P/R)	2μm/1μm		1μm/0.5μm	1μm (Set to 1000P/R)
		Microstep	0.1μm (1/20 on resolution)	—	0.1μm (1/20 on resolution)		0.05μm (1/20 on resolution)	—
	MAX speed	10mm/sec			20mm/sec			
	Uni-directional positioning accuracy	10μm			5μm			
	Repeatability positioning accuracy	±0.2μm						
	Load capacity	5.0kgf [49N]						
	Moment stiffness	Pitch 0.33/yaw 0.44/roll 0.37 ["/N • cm]			Pitch 0.15/yaw 0.12/roll 0.07 ["/N • cm]			
	Lost motion	1μm						
	Backlash	0.5μm						
	Straightness	3μm						
Sensor	Parallelism	30μm						
	Motion parallelism	10μm						
	Pitching/Yawing	25"/ 20"			20"/ 15"			
	Limit sensor	—			Installed			
Origin sensor	—			Installed				
Slit origin sensor	—			—				
Provided screw (Hexagon-headed bolt)		4 of M3—16			4 of M4—16			

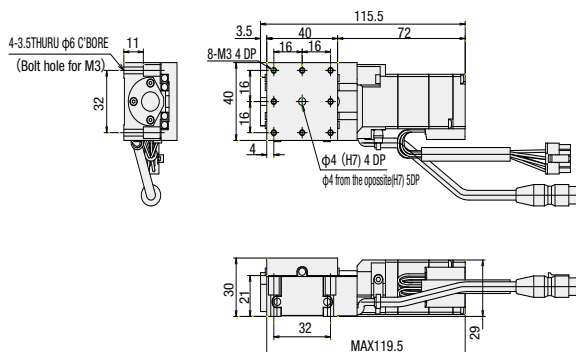
* Motor code [C•F•G] not include the cable. Choose the cable from cable code table.
 * Motor code [PA] includes the driver, motor and sensor cable.

Dimensions

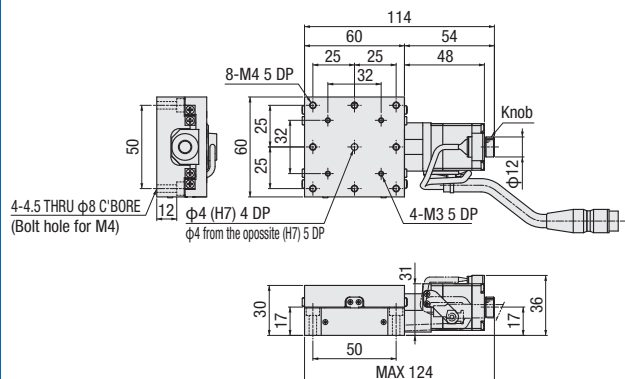
KXC04015-C



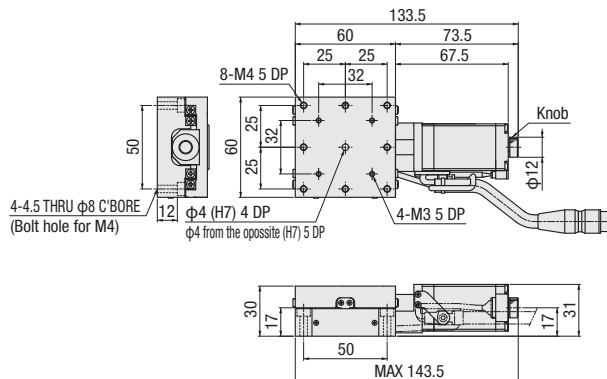
KXC04015-PA



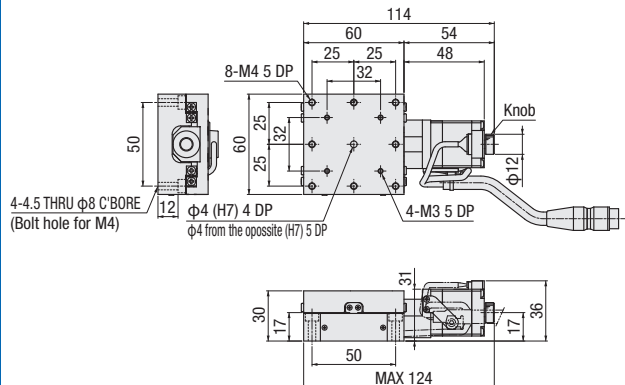
KXC06020-C



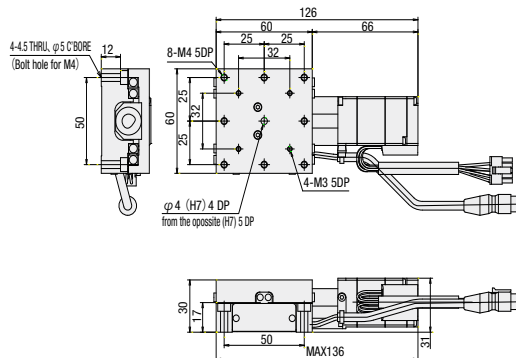
KXC06020-F



KXC06020-G



KXC06020-PA



Motorized Stage
X
XY
Z
Horizontal Z
XYZ
Goniometer
Rotary
Unit
Controller
KXT Linear Ball
PG Linear Ball
KXG/KXL Linear Ball
Cross Roller
Slide Guide
<input type="checkbox"/> 40
<input type="checkbox"/> 50
<input checked="" type="checkbox"/> 60
<input type="checkbox"/> 70
<input type="checkbox"/> 80
<input type="checkbox"/> 100
<input type="checkbox"/> 120
<input type="checkbox"/> 180
Other
1
132

XY-axis Crossed-roller Guide: KYC04015/KYC06020

KYC04015-C



KYC04015-PA



KYC06020-C



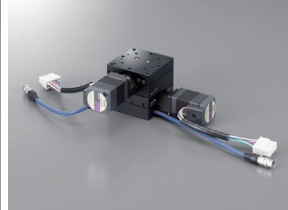
KYC06020-F



KYC06020-G



KYC06020-PA



KYC04015-C

1 2 3

☉ Cables P.1-287~
☉ Electrical specification P.1-139~

1 Table size/Travel distance

Code	Table size	Travel distance
04015	□40mm	15 mm
06020	□60mm	20 mm

2 Motor option

Code	Specification
C	Standard
F	High-torque
G	High-resolution
PA	□28 α Step (Driver set)

* PA can choose only cable code P. Cannot choose the blank.
* In case of KXC04, can be chosen only C and PA.

3 Cable option

Code	Specification	Cable type
Blank	Cable is not included (Standard)	—
A	2m	D214-2-2E
B	2m One end loose	D214-2-2EK
C	4m	D214-2-4E
D	4m One end loose	D214-2-4EK
E	Only connector (Cable is not included)	—
F	Robot cable 2m	D214-2-2R
G	Robot cable 2m one end loose	D214-2-2RK
H	Robot cable 4m	D214-2-4R
J	Robot cable 4m one end loose	D214-2-4RK
P	Cable for α step 3m	—

* One end loose position to only stage opposite side.
* Please select "Code A, C, F or H" when connect with stepping motor controller(DS102/112).

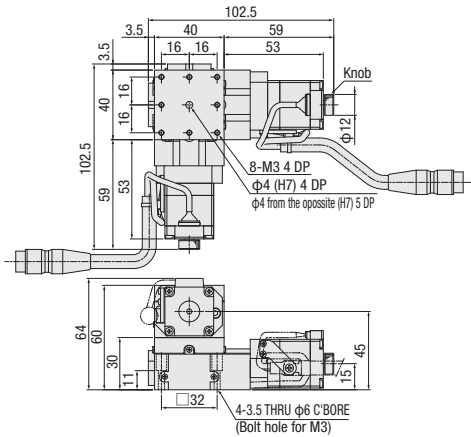
SPEC

Model	KYC04015-C	KYC04015-PA	KYC06020-C	KYC06020-F	KYC06020-G	KYC06020-PA
Travel distance	15mm		20mm			
Table size	40×40mm		60×60mm			
Feed screw (Ball screw)	$\phi 6$ lead 1		$\phi 8$ lead 1			
Guide	Crossed roller guide					
Main materials-Finishing	Aluminum-Black almite finishing					
Weight	0.63kg	0.73kg	0.90kg	1.10kg	0.90kg	1.00kg
Resolution (Pulse)	Full/Half	2 μ m/1 μ m	1 μ m (Set to 1000P/R)	2 μ m/1 μ m		1 μ m/0.5 μ m
	Microstep (1/20)	0.1 μ m	—	0.1 μ m		0.05 μ m
MAX speed	10mm/sec			20mm/sec		
Load capacity	4.5kgf [44.1N]					
Perpendicularity	7.5 μ m/Full stroke			10 μ m/Full stroke		
Pitching/Yawing	25"/ 20"			20"/ 15"		
Limit sensor				Installed		
Origin sensor				Installed		
Slit origin sensor				—		
Provided screw (Hexagon-headed bolt)	4 of M3—16			4 of M4—16		
Single axis accuracy specification	Uni-directional positioning accuracy	10 μ m		5 μ m		
	Repeatability positioning accuracy			±0.2 μ m		
	Lost motion			1 μ m		
	Backlash			0.5 μ m		
	Straightness			3 μ m		

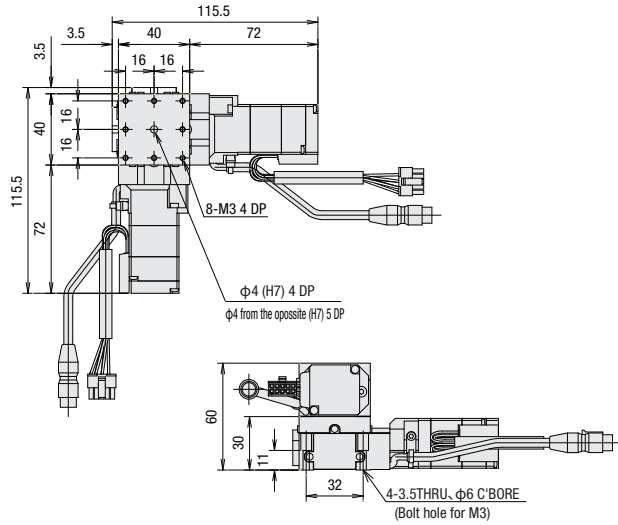
* Motor code [C·F·G] not include the cable. Choose the cable from cable code table.
* Motor code [PA] includes the driver, motor and sensor cable.

Dimensions

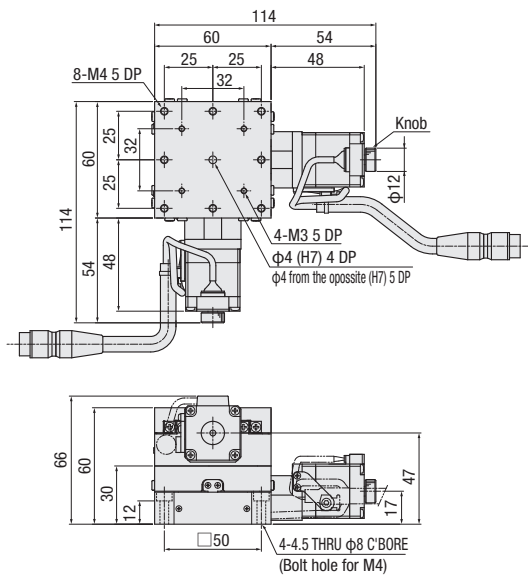
KYC04015-C



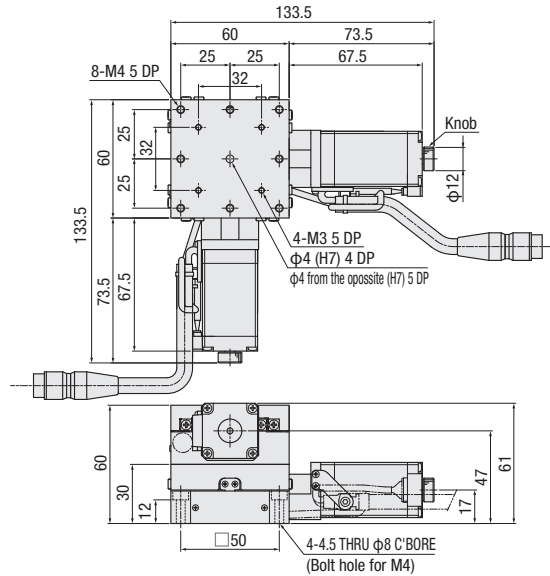
KYC04015-PA



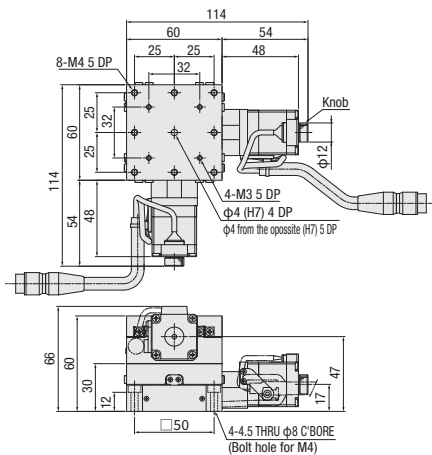
KYC06020-C



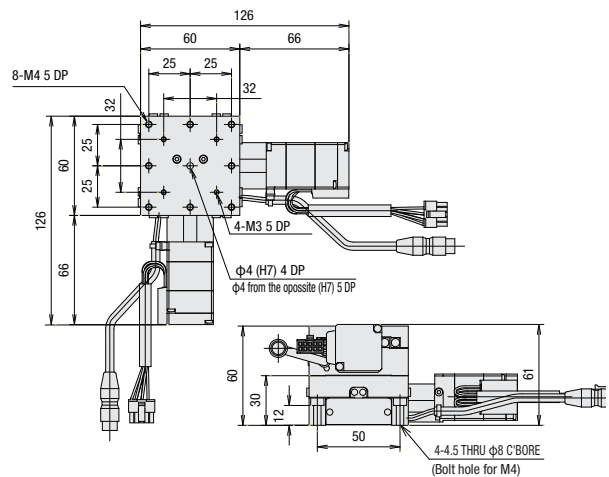
KYC06020-F



KYC06020-G



KYC06020-PA



Motorizec Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

134

Z-axis Crossed-roller Guide: KZC04015/KZC06020



- X
- XY
- Z
- Horizontal Z
- XYZ
- Goniometer
- Rotary
- Unit
- Controller

KZC04015-C

1
2
3

▶ Cables P.1-287~
▶ Electrical specification P.1-139~

1 Table size/Travel distance

Code	Table size	Travel distance
04015	□40mm	15 mm
06020	□60mm	20 mm

2 Motor option

Code	Specification
C	Standard
F	High-torque
G	High-resolution
PA	□28 α Step (Driver set)

* PA can choose only cable code P. Cannot choose the blank.
 * In case of KXC04, can be chosen only C and PA.

3 Cable option

Code	Specification	Cable type
Blank	Cable is not included (Standard)	—
A	2m	D214-2-2E
B	2m One end loose	D214-2-2EK
C	4m	D214-2-4E
D	4m One end loose	D214-2-4EK
E	Only connector (Cable is not included)	—
F	Robot cable 2m	D214-2-2R
G	Robot cable 2m one end loose	D214-2-2RK
H	Robot cable 4m	D214-2-4R
J	Robot cable 4m one end loose	D214-2-4RK
P	Cable for α step 3m	—

* One end loose position to only stage opposite side.
 * Please select "Code A, C, F or H" when connect with stepping motor controller(DS102/112).

- KXT Linear Ball
- PG Linear Ball

- KXG/KXL Linear Ball

- Cross Rollere

- Slide Guide

- 40

- 50

- 60

- 70

- 80

- 100

- 120

- 180

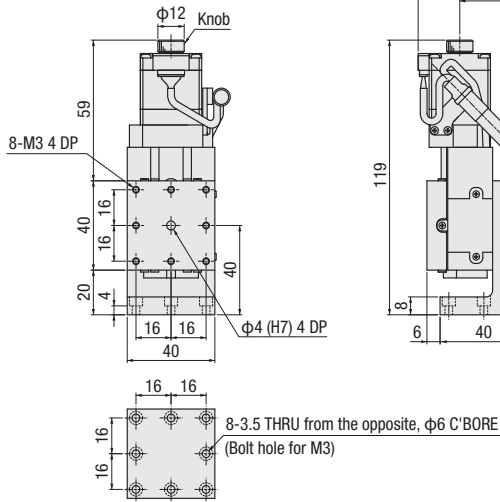
- Other

		SPEC						
Model		KZC04015-C	KZC04015-PA	KZC06020-C	KZC06020-F	KZC06020-G	KZC06020-PA	
Mechanical specification	Travel distance	15mm			20mm			
	Table size	40×40mm			60×60mm			
	Feed screw (Ball screw)	φ6 lead 1			φ8 lead 1			
	Guide	Crossed roller guide						
Main materials-Finishing		Aluminum-Black almite finishing						
Weight		0.38kg	0.43kg	0.80kg	0.90kg	0.80kg	0.85kg	
Accuracy specification	Resolution (Pulse)	Full/Half	2μm/1μm	1μm (Set to 1000P/R)	2μm/1μm		1μm/0.5μm	1μm (Set to 1000P/R)
		Microstep	0.1μm (1/20 on resolution)	—	0.1μm (1/20 on resolution)		0.05μm (1/20 on resolution)	—
	MAX speed	10mm/sec			20mm/sec			
Load capacity (Excitation)		3.0kgf [29.4N]						
Vertical degree		7.5μm/Full stroke			10μm/Full stroke			
Pitching/Yawing		25"/ 20"			20"/ 15"			
Sensor	Limit sensor	Installed						
	Origin sensor	Installed						
	Slit origin sensor	—						
	Provided screw (Hexagon-headed bolt)	4 of M3—8			4 of M4—10			
Spline and accuracy specification	Uni-directional positioning accuracy	10μm			5μm			
	Repeatability positioning accuracy	±0.2μm						
	Lost motion	1μm						
	Backlash	0.5μm						
	Straightness	3μm						

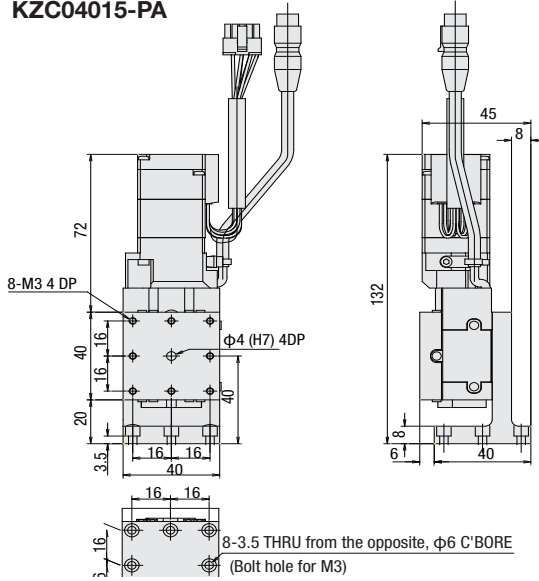
* Motor code [C•F•G] not include the cable. Choose the cable from cable code table.
 * Motor code [PA] includes the driver, motor and sensor cable.

外形寸法図

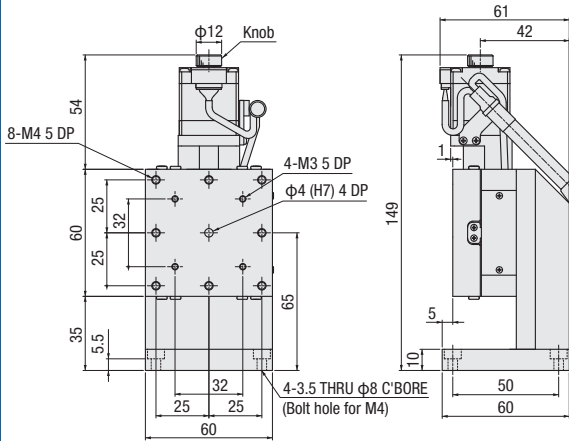
KZC04015-C



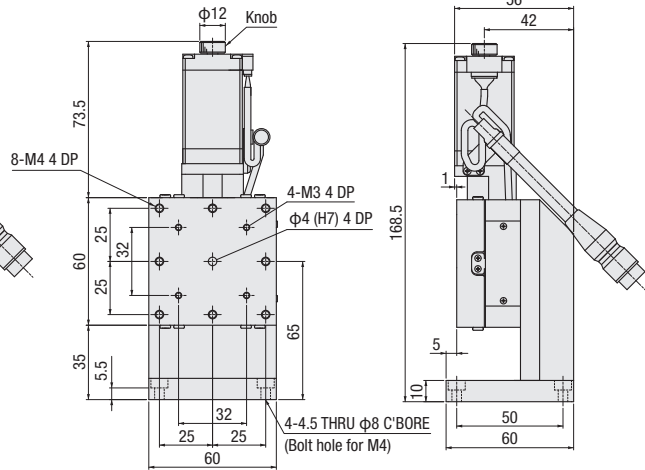
KZC04015-PA



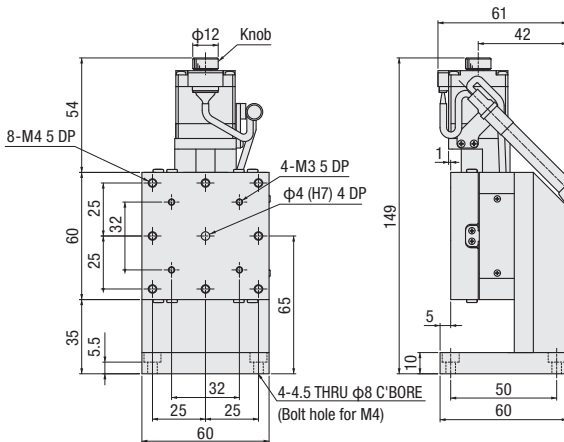
KZC06020-C



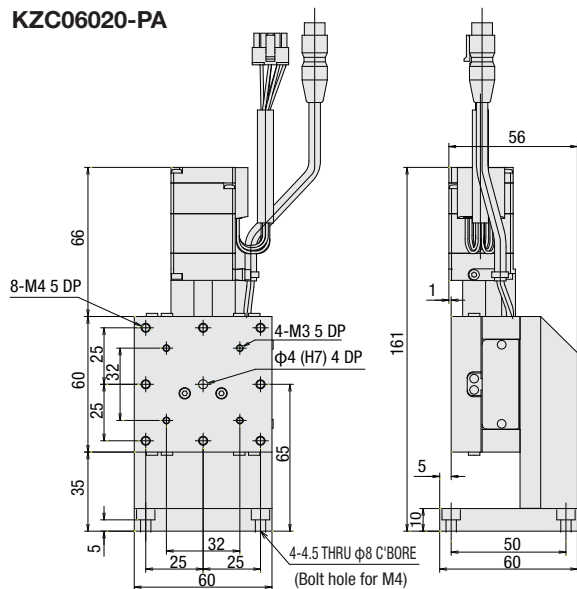
KZC06020-F



KZC06020-G



KZC06020-PA



Motorizec Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

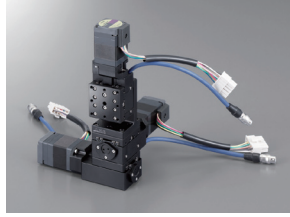
136

XYZ-axis Crossed-roller Guide: KWC04015/KWC06020

KWC04015-C



KWC04015-PA



KWC06020-LC



KWC06020-LF



KWC06020-LG



KWC06020-LPA



KWC06020-LC

1 2 3 4

▶ Cables P.1-287~
▶ Electrical specification P.1-139~

1 Table size/Travel distance

Code	Table size	Travel distance
04015	□40mm	15mm
06020	□60mm	20mm

2 Sensor cover location specification

L	L Specification
R	R Opposite hand

*04015 for only L position

3 Motor option

Code	Specification
C	Standard
F	High-torque
G	High resolution
PA	□28 α Step (Driver set)

* PA can choose only cable code P. Cannot choose the blank.
* In case of KWC04, can be chosen only C and PA.

4 Cable option

Code	Specification	Cable type
Blank	Cable is not included (Standard)	—
A	2m	D214-2-2E
B	2m One end loose	D214-2-2EK
C	4m	D214-2-4E
D	4m One end loose	D214-2-4EK
E	Only connector (Cable is not included)	—
F	Robot cable 2m	D214-2-2R
G	Robot cable 2m one end loose	D214-2-2RK
H	Robot cable 4m	D214-2-4R
J	Robot cable 4m one end loose	D214-2-4RK
P	Cable for α step 3m	—

* One end loose position to only stage opposite side.
* Please select "Code A, C, F or H" when connect with stepping motor controller(DS102/112).

- X
- XY
- Z
- Horizontal Z
- XYZ
- Goniometer
- Rotary
- Unit
- Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

□120

□180

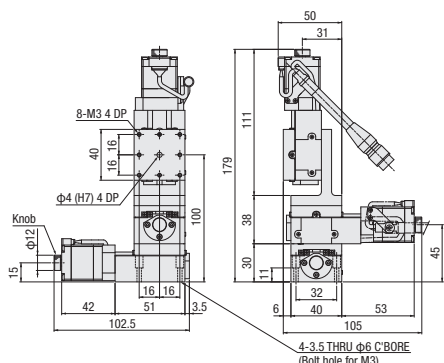
Other

SPEC							
Model	KWC04015-C		KWC04015-PA	KWC06020-LC	KWC06020-LF	KWC06020-LG	KWC06020-LPA
(Opposite hand)	—			KWC06020-RC	KWC06020-RF	KWC06020-RG	KWC06020-RPA
Travel distance	15mm				20mm		
Table size	40×40mm				60×60mm		
Feed screw (Ball screw)	φ6 lead 1				φ8 lead 1		
Guide	Crossed roller guide						
Main materials-Finishing	Aluminum-Black almite finishing						
Weight	1.03kg	1.45kg		1.98kg	2.00g	1.70kg	1.85kg
Resolution (Pulse)	Full/Half	2μm/1μm	1μm (Set to 1000P/R)	2μm/1μm		1μm/0.5μm	1μm (Set to 1000P/R)
	Microstep	0.1μm (1/20 on resolution)	—	0.1μm (1/20 on resolution)		0.05μm (1/20 on resolution)	—
MAX speed	10mm/sec			20mm/sec			
Load capacity (Excitation)				3.0kgf [29.4N]			
Pitching/Yawing	25"/ 20"			20"/ 15"			
Sensor	Limit sensor				Installed		
	Origin sensor				Installed		
	Slit origin sensor				—		
Provided screw (Hexagon-headed bolt)	4 of M3—16			4 of M4—16			
Stage axis accuracy specification	Uni-directional positioning accuracy	10μm		5μm			
	Repeatability positioning accuracy			±0.2μm			
	Lost motion			1μm			
	Backlash			0.5μm			
	Straightness			3μm			

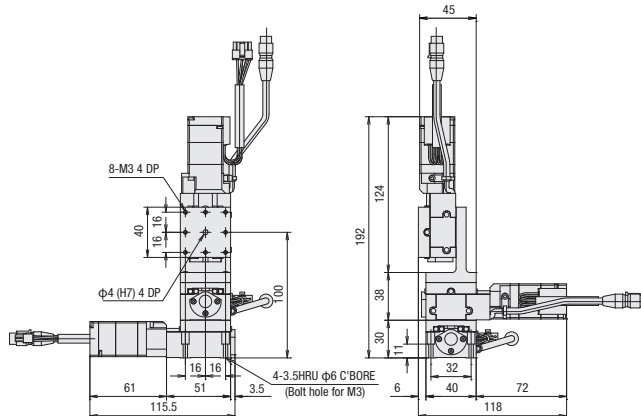
* Motor code [C•F•G] not include the cable. Choose the cable from cable code table.
* Motor code [PA] includes the driver, motor and sensor cable.

Dimensions

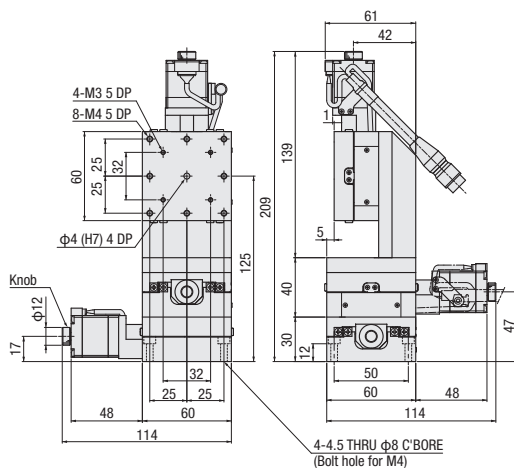
KWC04015-C



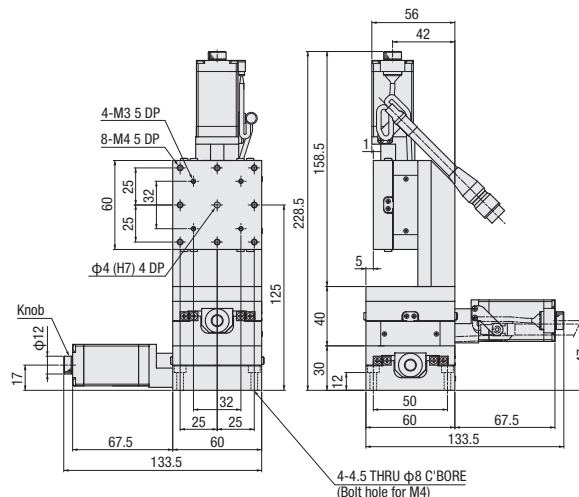
KWC04015-PA



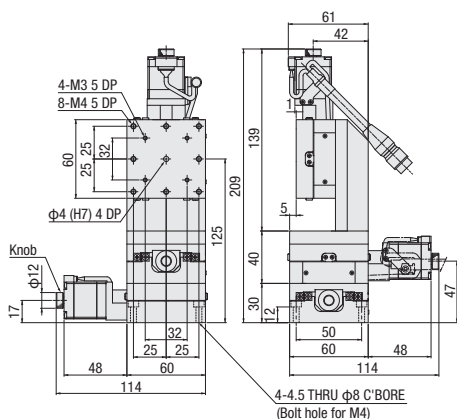
KWC06020-LC



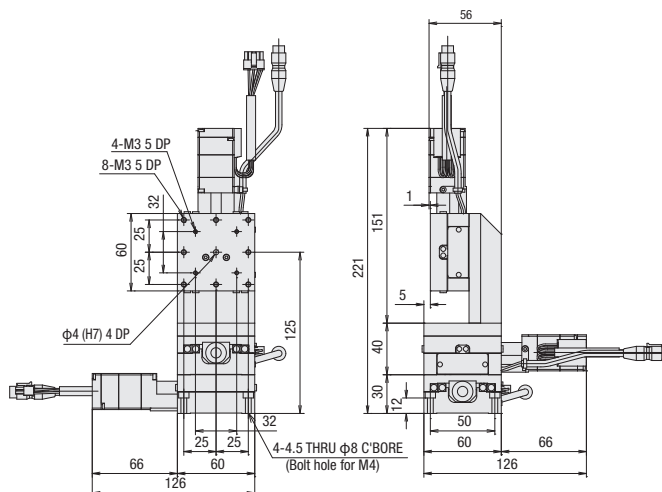
KWC06020-LF



KWC06020-LG



KWC06020-LPA



Motorizec Stage
X
XY
Z
Horizontal Z
XYZ
Goniometer
Rotary
Unit
Controller
KXT Linear Ball
PG Linear Ball
KXG/KXL Linear Ball
Cross Roller
Slide Guide
<input type="checkbox"/> 40
<input type="checkbox"/> 50
<input checked="" type="checkbox"/> 60
<input type="checkbox"/> 70
<input type="checkbox"/> 80
<input type="checkbox"/> 100
<input type="checkbox"/> 120
<input type="checkbox"/> 180
Other

Electrical Specification: KXC04015/KXC06020

Electrical Specification

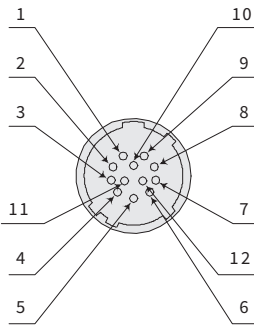
Models		KXC04015-C	KXC06020-C	KXC06020-F	KXC06020-G	KXC04015-PA	KXC06020-PA	
Motor (*1)	Type	5 phase stepping motor 0.75A/Phase				α step motor		
	Model (*2)	C005C-90215P-1 (□28mm)		PK525HPB-C1 (□28mm)		PK523HPMB-C1 (□28mm)		
	Step angle	0.72°			0.36°		0.36° (Set to 1000P/R)	
	Driver type	CVD507-K-A9				ARD-K		
Connector	Model	HR10A-10J-12P (73) (Hirose Electric Co., Ltd.)				HR10A-7J-6P (73)		
	Contact type	-				-		
	applicable connector on acceptance side	HR10A-10P-12S (73) (Hirose Electric Co., Ltd.)				HR10A-7P-6S (73)		
	Compatible receiving contact	-				-		
Sensor	Limit sensor	Installed						
	Origin sensor	Installed						
	Slit origin sensor	-						
	Model	Photo microsensor EE-SX4320 (Omron Co., Ltd.)						
	Power voltage	DC5~24V ±10%						
	Consumption current	Total 60mA or less						
	Control output	NPN open collector output DC5~24V 8mA or less Residual voltage 0.3V or less when the load current is 2mA						
	Output logic	On detection (light shield condition): Output transistor OFF (Non-continuity)						

*1 See page P.1-297~ for details of single motor specification.

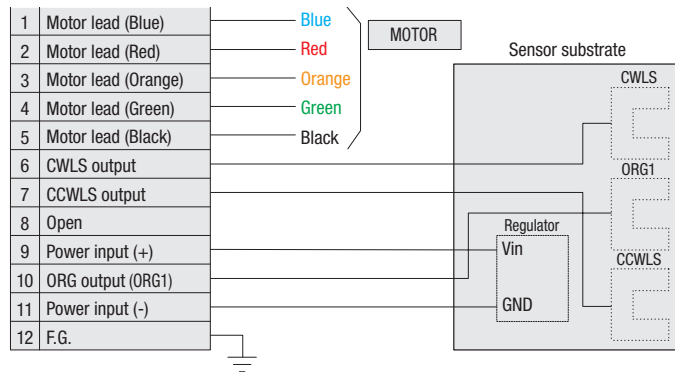
*2 Model numbers include Suruga Seiki's proprietary management codes.

Motor code: C (Standard) • F (High-torque) • G (High resolution)

Pin allocation (The same)

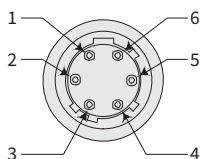


Connection diagram (The same)

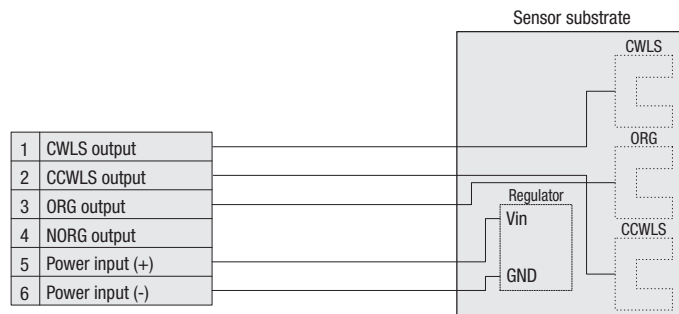


Motor code: PA (α step) Motor cable model: CC030VA2R2 P.1-293

Pin allocation (Sensor)



Connection diagram (Sensor)



※Other side cable specification See page P.1-296

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

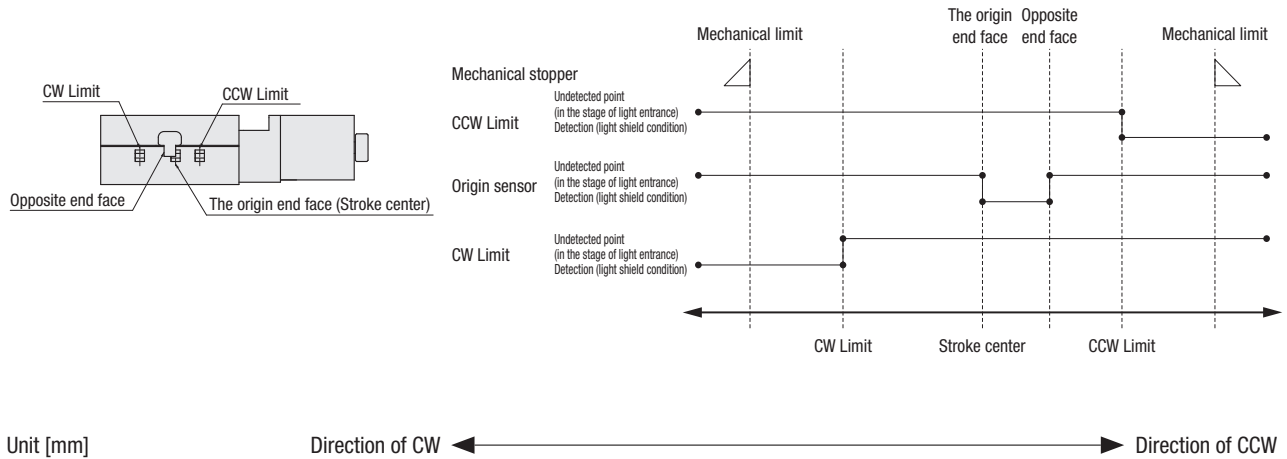
□100

□120

□180

Other

Timing chart



Unit [mm]	Reference coordinate	Mechanical limit	CW Limit	The origin end face Stroke center	Opposite end face	CCW Limit	Mechanical limit
KXC04015	Return to origin	8.5	7.7	0	2	7.7	8.5
KXC06020	Return to origin	11	10.5	0	5	10.5	11

*Return to origin means that is performed return to origin type 4 using DS102/DS112 series.
 * The coordinate value should be on the design. Dimension error may occur about plus or minus 0.5 mm.

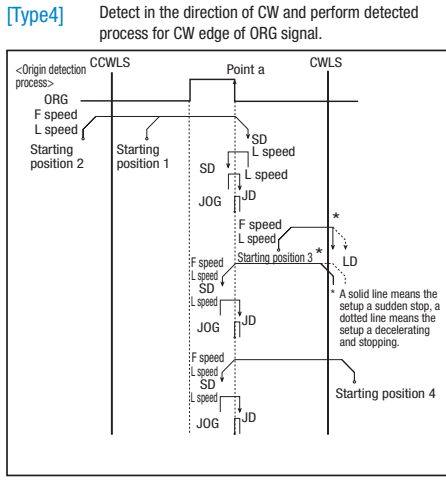
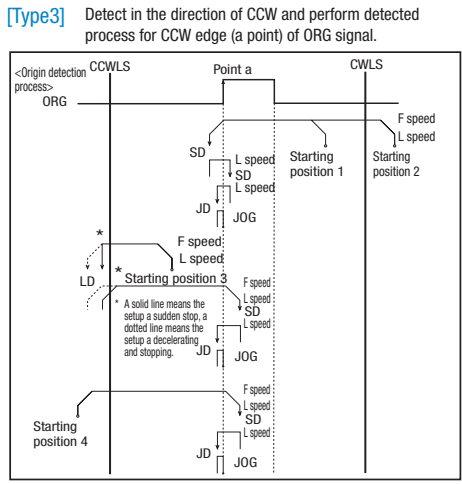
Note: The timing chart shows only timing of sensor, it is not for output signal logic.
 Refer to ON/OFF display of output transistor that shows on electrical specifications-sensor-output logic for output signal logic.

Method for return to origin

Suruga's motorized stages is different from the wire connection as the number of sensors depending on models. It is necessary to choose type to suit correctly as return to origin operation is divided into same types/Selected wrong type may be operated uncorrectly. Choose your best one whatever you need according to be recommended as below.

KXC04015/KXC06020 recommended return to origin Return to origin sequence P.1-281~

- Type 3: Detect in the direction of CCW and perform detected process for CCW edge of ORG signal.
- Type 4: Detect in the direction of CW and perform detected process for CW edge of ORG signal.
- Type 9: After finished Type3, perform detected process for CCW edge of TIMING signal.
- Type 10: After finished Type4, perform detected process for CW edge of TIMING signal.



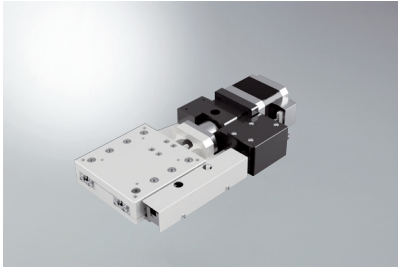
- X
- XY
- Z
- Horizontal Z
- XYZ
- Goniometer
- Rotary
- Unit
- Controller

- KXT Linear Ball
- PG Linear Ball
- KXG/KXL Linear Ball
- Cross Roller
- Slide Guide

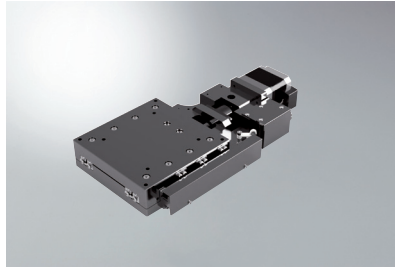
- 40
- 50
- 60
- 70
- 80
- 100
- 120
- 180
- Other

Thin Type X-axis Crossed-roller Guide: KX0725/KX0830/KX1040/KX1250

KX0725-LG



KX1040-LG



RoHS

KX0725-LG5

1 2 3

● Cables P.1-287~
● Electrical specification P.1-147~

1 Table size/Travel distance

Code	Table size	Travel distance
0725	□70 mm	25 mm
0830	□80 mm	30 mm
1040	□100 mm	40 mm
1250	□120 mm	50 mm

2 Sensor cover location specification

L	L position
R	Opposite hand

3 Cable option

Code	Specification	Cable type
Blank	2m	D214-2-2E
1	2m One end loose	D214-2-2EK
2	4m	D214-2-4E
3	4m One end loose	D214-2-4EK
4	Only connector (Cable is not included)	—
5	Cable is not included (Standard)	—
6	Robot cable 2m	D214-2-2R
7	Robot cable 4m	D214-2-4R
8	Robot cable 4m one end loose	D214-2-4RK
9	Robot cable 2m one end loose	D214-2-2RK

* One end loose position to only stage opposite side.
 * If you choose the option specification, please add the difference to standard price.
 * Please select "blank, 2, 6 and 7" when connect with stepping motor controller(DS102/112).

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

□120

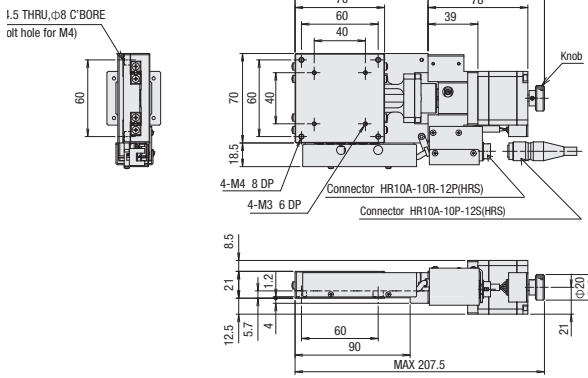
□180

Other

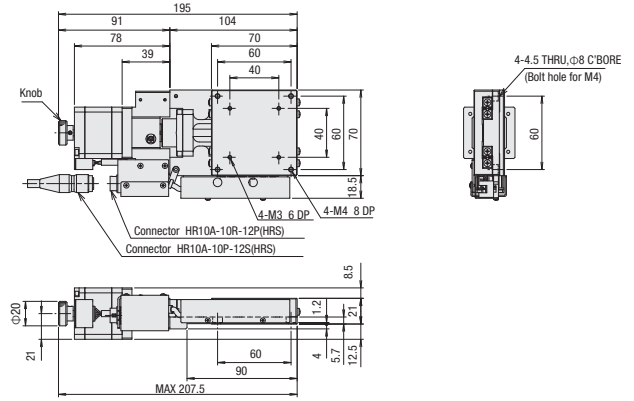
		SPEC			
Model		KX0725-LG5	KX0830-LG5	KX1040-LG5	KX1250-LG5
(Opposite hand)		KX0725-RG5	KX0830-RG5	KX1040-RG5	KX1250-RG5
Mechanical specification	Travel length	25mm	30mm	40mm	50mm
	Table size	70×70mm	80×80mm	100×100mm	120×120mm
	Feed screw	Ball screwφ6 lead 1			
	Guide	Crossed roller guide			
	Main materials-Finishing	Aluminum-White almite finish	Aluminum-Black almite finishing		
Accuracy specification	Weight	0.98kg	1.19kg	1.59kg	2.19kg
	Resolution (Pulse)	1μm/0.5μm 0.05μm (1/20 on resolution)			
	MAX speed	10mm/sec			
	Uni-directional positioning accuracy	5μm			
	Repeatability positioning accuracy	±0.2μm			
	Load capacity	10kgf [98N]	15kgf [147N]	20kgf [196N]	25kgf [245N]
	Moment stiffness	Pitch 0.09/yaw 0.07/roll 0.07 [°/N · cm]	Pitch 0.05/yaw 0.04/roll 0.03 [°/N · cm]	Pitch 0.04/yaw 0.04/roll 0.02 [°/N · cm]	Pitch 0.03/yaw 0.02/roll 0.02 [°/N · cm]
	Lost motion	1μm			
	Backlash	0.5μm			
	Straightness	1μm			
	Parallelism	30μm			
	Motion parallelism	10μm		15μm	
	Pitching/Yawing	20"/15"			
Sensor	Limit sensor	Installed			
	Origin sensor	Installed			
	Slit origin sensor	—			
	Provided screw (Hexagon-headed bolt)	4 of M4-8		4 of M4-10	

Dimensions

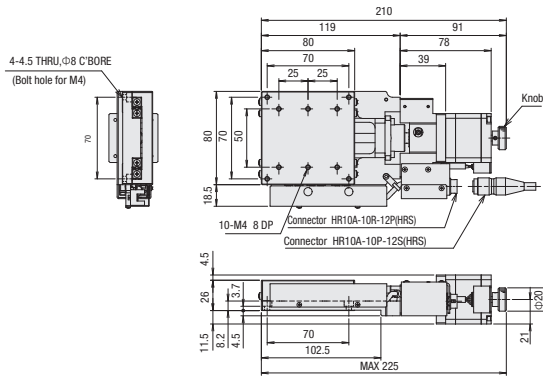
KX0725-LG



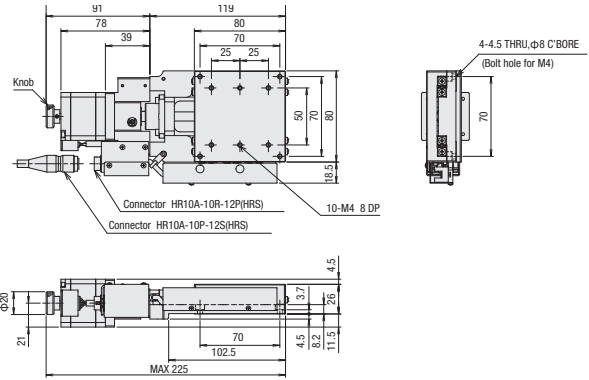
KX0725-RG



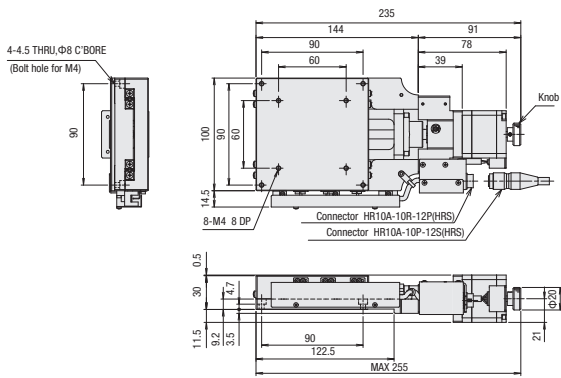
KX0830-LG



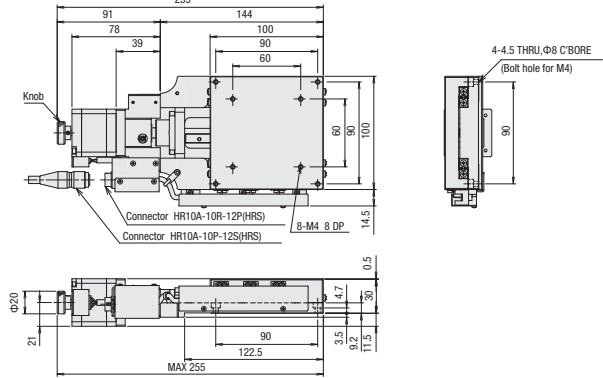
KX0830-RG



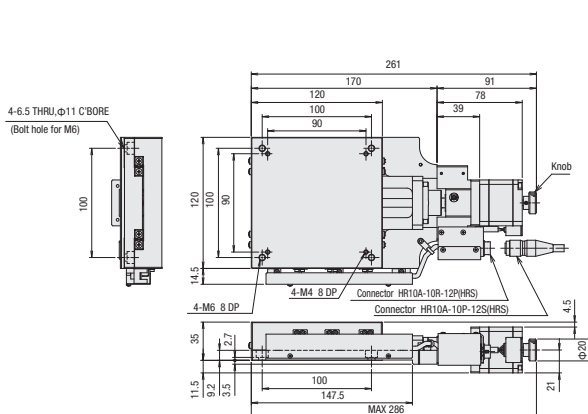
KX1040-LG



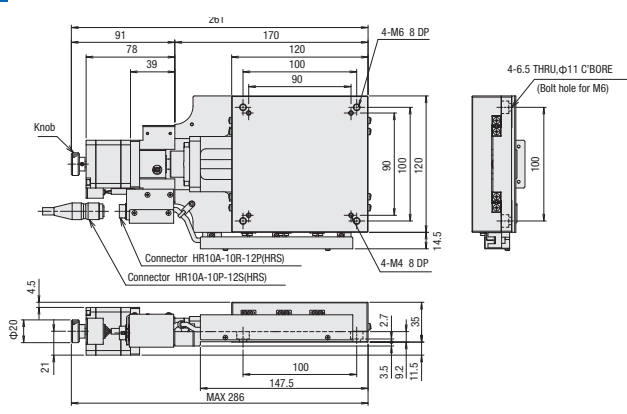
KX1040-RG



KX1250-LG



KX1250-RG



Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

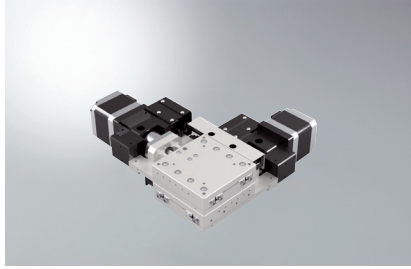
Other

1

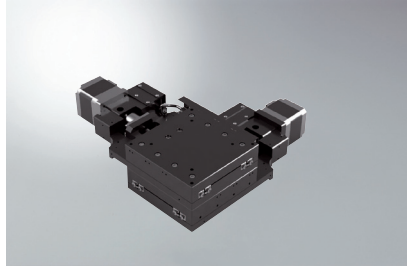
142

Thin Type XY-axis Crossed-roller Guide: KY0725/KY0830/KY1040/KY1250

KX0725-LG



KX1040-LG



RoHS

KY0725-LG5

1 2 3

● Cables P.1-287~
● Electrical specification P.1-147~

1 Table size/Travel distance

Code	Table size	Travel distance
0725	□70mm	25mm
0830	□80mm	30mm
1040	□100mm	40mm
1250	□120mm	50mm

2 Sensor cover location specification

L	L position
R	Opposite hand

3 Cable option

Code	Specification	Cable type
Blank	2m	D214-2-2E
1	2m One end loose	D214-2-2EK
2	4m	D214-2-4E
3	4m One end loose	D214-2-4EK
4	Only connector (Cable is not included)	—
5	Cable is not included (Standard)	—
6	Robot cable 2m	D214-2-2R
7	Robot cable 4m	D214-2-4R
8	Robot cable 4m one end loose	D214-2-4RK
9	Robot cable 2m one end loose	D214-2-2RK

* One end loose position to only stage opposite side.
* If you choose the option specification, please add the difference to standard price.
* Please select "blank, 2, 6 and 7" when connect with stepping motor controller(DS102/112).

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

□120

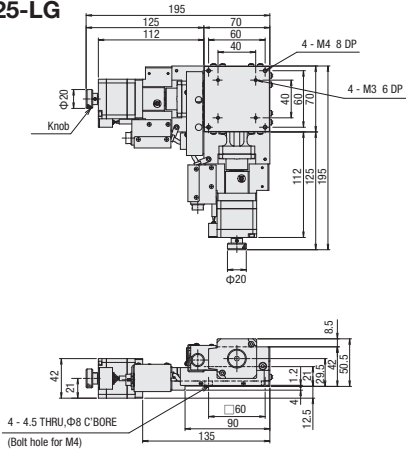
□180

Other

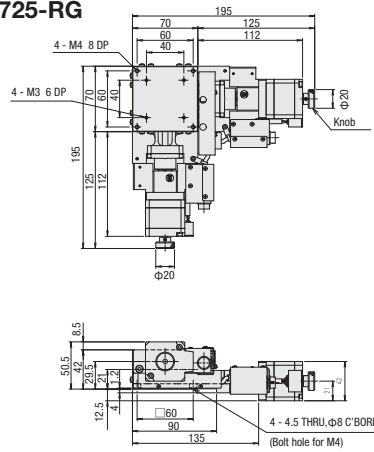
SPEC				
Model	KY0725-LG5	KY0830-LG5	KY1040-LG5	KY1250-LG5
(Opposite hand)	KY0725-RG5	KY0830-RG5	KY1040-RG5	KY1250-RG5
Travel distance	25mm	30mm	40mm	50mm
Table size	70×70mm	80×80mm	100×100mm	120×120mm
Feed screw	Ball screwφ6 lead 1		Ball screwφ8 lead 1	
Guide	Crossed roller guide			
Main materials-Finishing	Aluminum-White almite finish	Aluminum-Black almite finishing		
Weight	1.96kg	2.38kg	3.18kg	4.38kg
Resolution (Pulse)	Full/Half Microstep	1μm/0.5μm		
		0.05μm (1/20 on resolution)		
MAX speed	10mm/sec			
Load capacity	9kgf [88.2N]	13.8kgf [135.2N]	18.4kgf [180.3N]	22.8kgf [223.4N]
Perpendicularity	30μm/Full stroke			
Limit sensor	Installed			
Origin sensor	Installed			
Slit origin sensor	—			
Provided screw (Hexagon-headed bolt)	4 of M4-8		4 of M4-10	4 of M6-10
Single axis accuracy specification	Uni-directional positioning accuracy	5μm		
	Repeatability positioning accuracy	±0.2μm		
	Lost motion	1μm		
	Backlash	0.5μm		
	Straightness	1μm		
	Pitching/Yawing	20"/15"		

外形寸法図

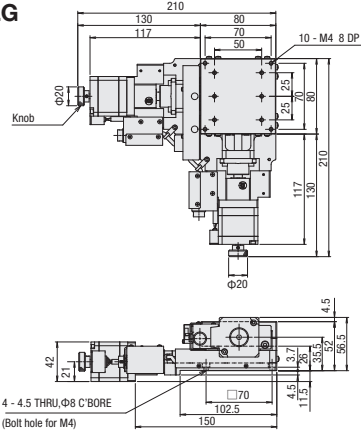
KY0725-LG



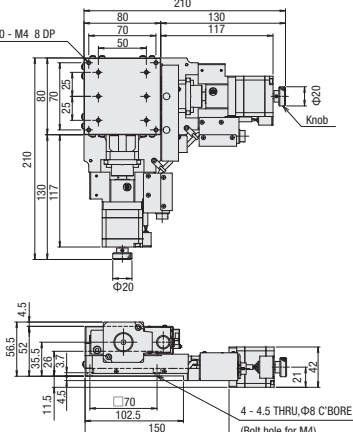
KY0725-RG



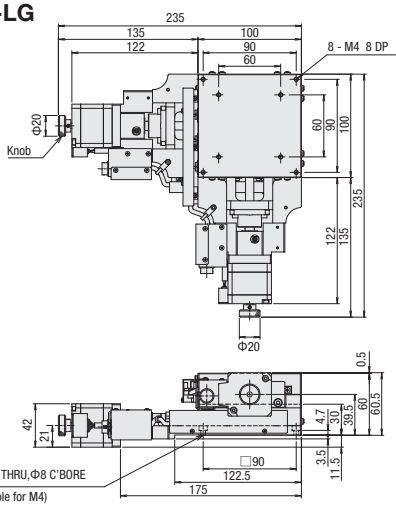
KY0830-LG



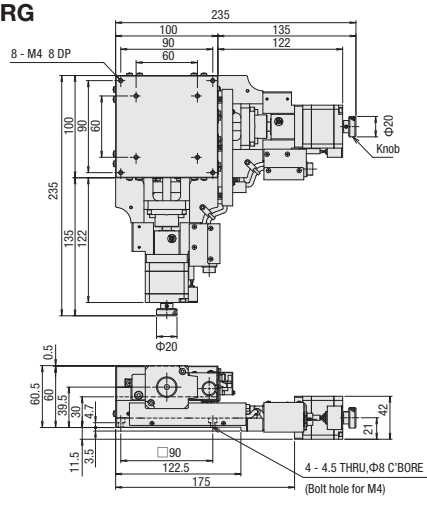
KY0830-RG



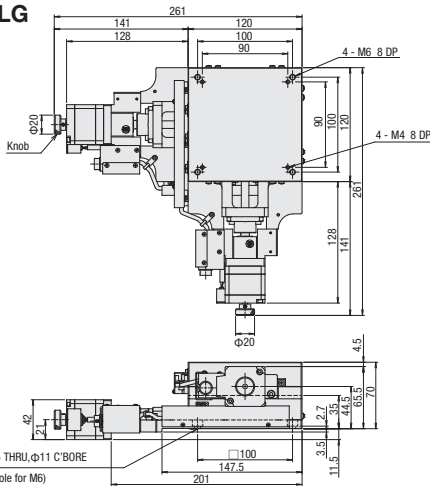
KY1040-LG



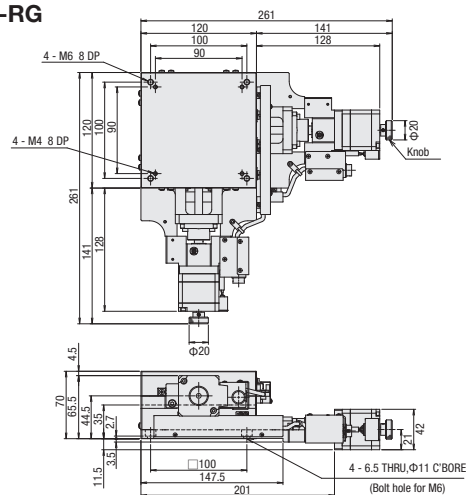
KY1040-RG



KY1250-LG



KY1250-RG



Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

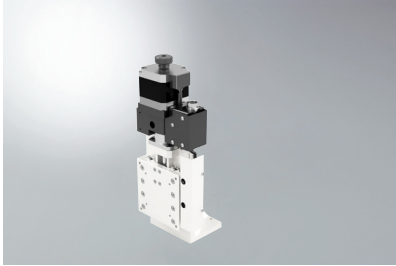
Other

1

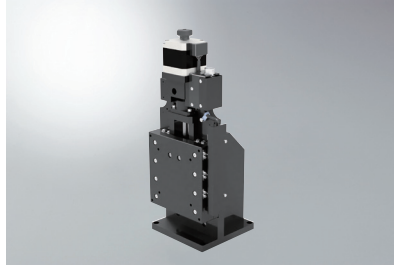
144

Thin Type Z-axis Crossed-roller Guide: KZ0725/KZ0830/KZ1040/KZ1250

KZ0725-LG



KZ1040-LG



RoHS

KZ0725-LG5

1 2 3

▶ Cables P.1-287~
▶ Electrical specification P.1-147~

1 Table size/Travel distance

Code	Table size	Travel distance
0725	□70 mm	25 mm
0830	□80 mm	30 mm
1040	□100 mm	40 mm
1250	□120 mm	50 mm

2 Sensor cover location specification

L	L position
R	Opposite hand

3 Cable option

Code	Specification	Cable type
Blank	2m	D214-2-2E
1	2m One end loose	D214-2-2EK
2	4m	D214-2-4E
3	4m One end loose	D214-2-4EK
4	Only connector (Cable is not included)	—
5	Cable is not included (Standard)	—
6	Robot cable 2m	D214-2-2R
7	Robot cable 4m	D214-2-4R
8	Robot cable 4m one end loose	D214-2-4RK
9	Robot cable 2m one end loose	D214-2-2RK

* One end loose position to only stage opposite side.
* If you choose the option specification, please add the difference to standard price.
* Please select "blank, 2, 6 and 7" when connect with stepping motor controller(DS102/112).

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Rollere

Slide
Guide

□40

□50

□60

□70

□80

□100

□120

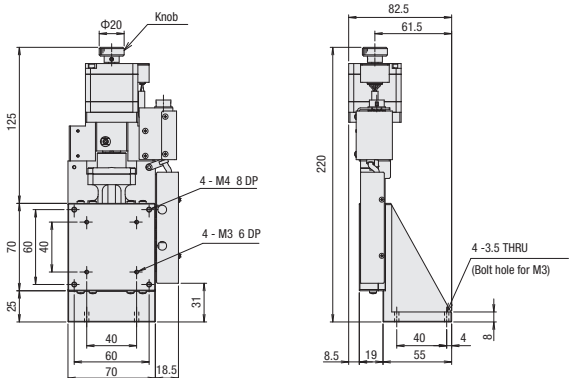
□180

Other

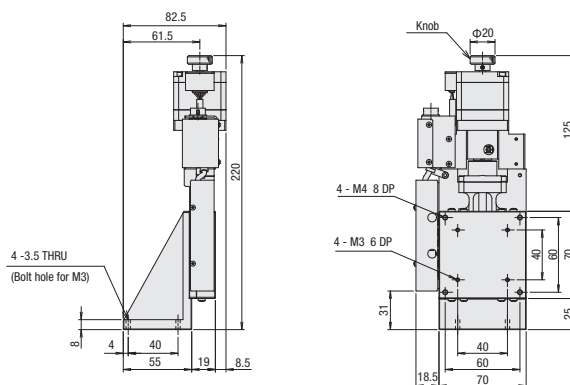
		SPEC			
Model		KZ0725-LG5	KZ0830-LG5	KZ1040-LG5	KZ1250-LG5
(Opposite hand)		KZ0725-RG5	KZ0830-RG5	KZ1040-RG5	KZ1250-RG5
Mechanical specification	Travel length	25mm	30mm	40mm	50mm
	Table size	70×70mm	80×80mm	100×100mm	120×120mm
	Feed screw	Ball screwφ6 lead 1			
	Guide	Crossed roller guide			
Main materials-Finishing		Aluminum-White almite finish		Aluminum-Black almite finishing	
Weight		1.28kg	1.48kg	2.63kg	3.99kg
Accuracy specification	Resolution (Pulse)	Full/Half Microstep 1μm/0.5μm 0.05μm (1/20 on resolution)			
	MAX speed	10mm/sec			
	Load capacity (Excitation)	5kgf [49N]	7.5kgf [73.5N]		
	Vertical degree	20μm	25μm	30μm	40μm
	Pitching/Yawing	20" / 15"			
	Uni-directional positioning accuracy	15μm			
	Repeatability positioning accuracy	±0.2μm			
Sensor	Lost motion	1μm			
	Straightness	2μm			
	Limit sensor	Installed			
	Origin sensor	Installed			
Slit origin sensor		-			
Provided screw (Hexagon-headed bolt)		4 of M3-12	4 of M4-12	4 of M4-10	4 of M6-12
Slit axis accuracy specification	Uni-directional positioning accuracy	5μm			
	Repeatability positioning accuracy	±0.2μm			
	Lost motion	1μm			
	Backlash	0.5μm			
	Straightness	1μm			
Pitching/Yawing	20" / 15"				

外形寸法図

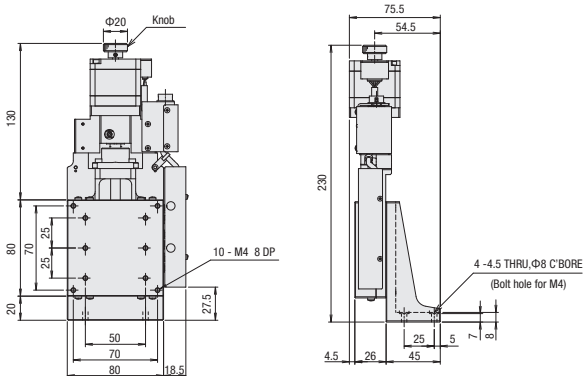
KZ0725-LG



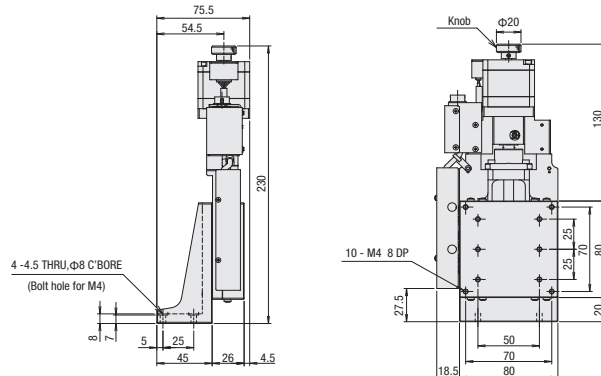
KZ0725-RG



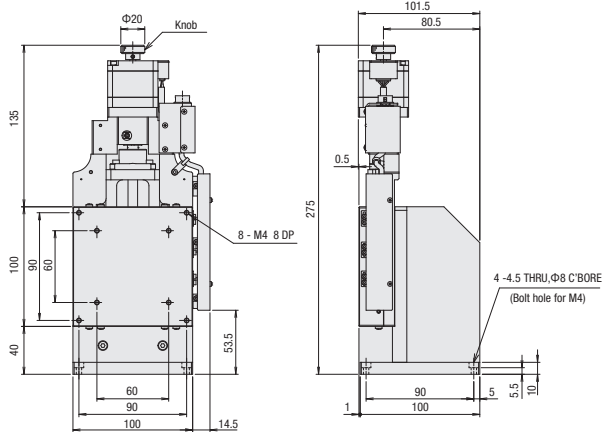
KZ0830-LG



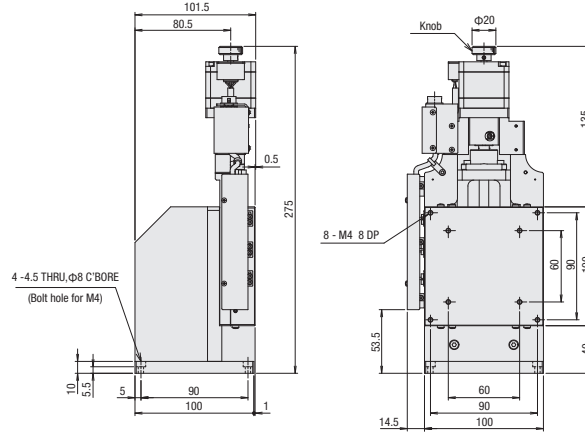
KZ0830-RG



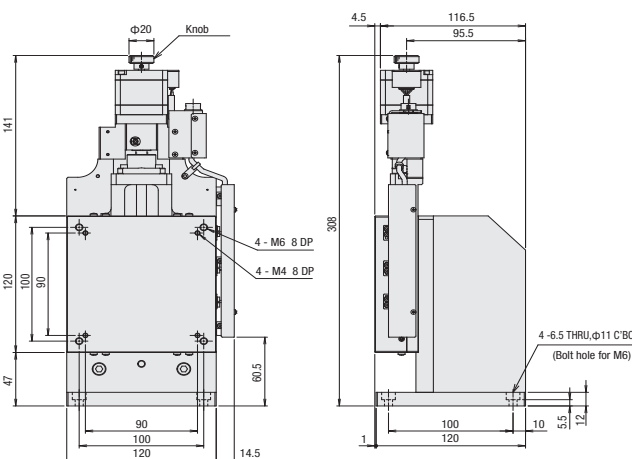
KZ1040-LG



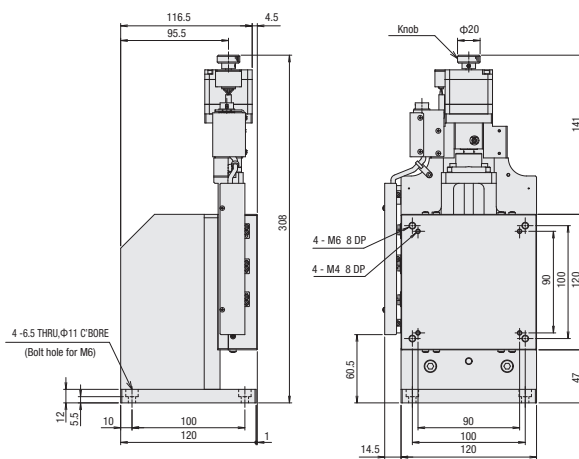
KZ1040-RG



KZ1250-LG



KZ1250-RG



Motorizec Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

146

Electrical Specification: KX0725/KX0830/KX1040/KX1250

Electrical Specification

Models		KX0725	KX0830	KX1040	KX1250
Motor(*1)	Type	5 phase stepping motor 0.75A/Phase(Oriental Motor Co., Ltd.)			
	Model (*2)	PK544PMB-C18(□ 42mm)			
	Step angle	0.36°			
Connector	Model	HR10A-10R-12P (73) (Hirose Electric Co., Ltd.)			
	applicable connector on acceptance side	HR10A-10P-12S (73) (Hirose Electric Co., Ltd.)			
Sensor	Limit sensor	Installed			
	Origin sensor	Installed			
	Slit origin sensor	-			
	Model	Micro Photoelectric Sensor PM-L25 (Panasonic Industrial Devices SUNX)			
	Power voltage	DC5~24V ±10%			
	Consumption current	Total 45mA or less (15mA or less per 1 sensor)			
	Control output	NPN open collector output DC30V or less 50mA or less Residual voltage 2V or less when the load current is 50mA Residual voltage 1V or less when the load current is 16mA			
	Output logic (*)	On detection (light shield condition): Output transistor OFF (Non-continuity)			

*KX series, the origin sensor switchable output logic. (The output logic was set at the shipping)

Dip switch of logic sg plate will be set as below.

The dip switch 1 and 2 is used for logic setting of origin sensor ORG.

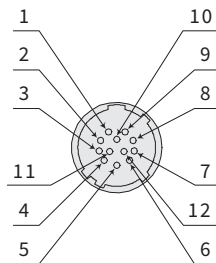
- { On detection (light shield condition): Output transistor OFF (Non-continuity): 1=ON,2=OFF
- { On detection (light shield condition): Output transistor ON (Continuity): 1=OFF,2=ON

*1 See page P.1-297~ for details of single motor specification

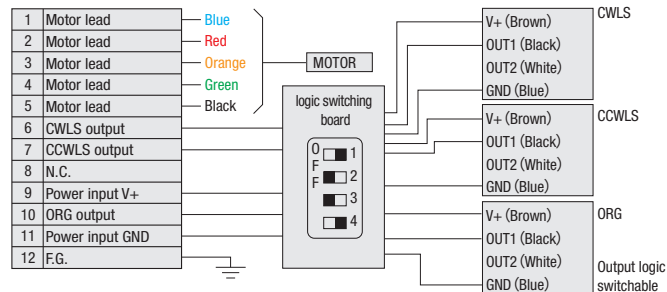
*2 Motor model is our own management model.

* The electric specification of XY, Z are the same.

Pin allocation



Connection diagram



* Dip switch number 3 and 4 are not used.

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

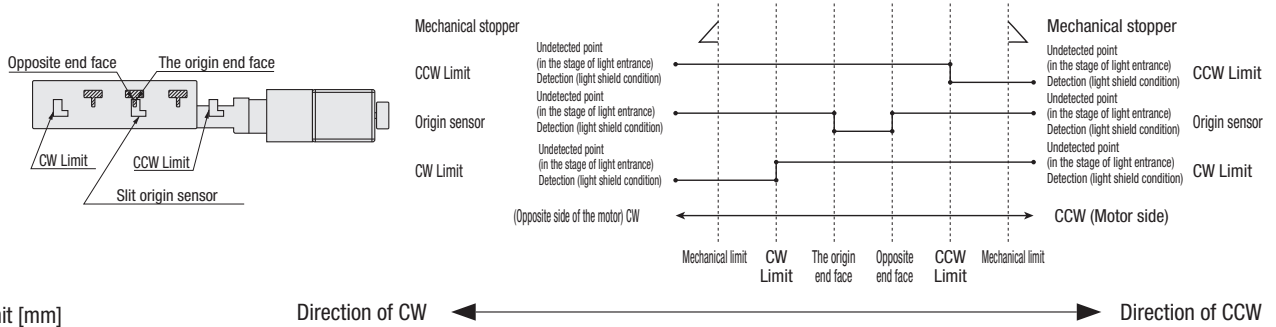
□100

□120

□180

Other

Timing chart



Unit [mm]	Reference coordinate	Mechanical limit	CW Limit	Origin	Opposite end face	CCW Limit	Mechanical limit
KX0725	Return to origin	15	13.3	0	2	13.3	15
KX0830	Return to origin	17.5	15.8	0	2	15.8	17.5
KX1040	Return to origin	22.5	20.8	0	2	20.8	22.5
KX1250	Return to origin	27.5	25.8	0	2	25.8	27.5

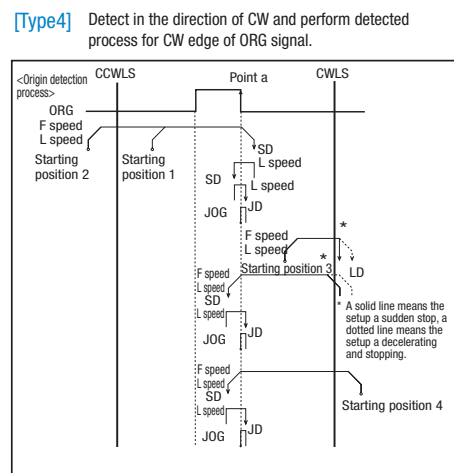
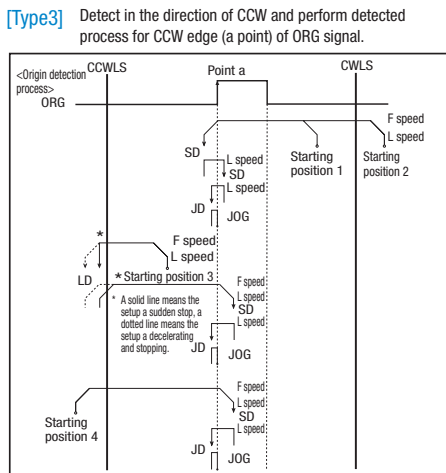
*Return to origin means that is performed return to origin Type 4 using DS102/DS112 series.
 * The coordinate value should be on the design. Dimension error may occur about plus or minus 0.5 mm.

Method for return to origin

Suruga's motorized stages is different from the sensor specifications depends on models. As return to origin operation is divided into types, it is necessary to choose the correct type. Selected wrong type may be operated incorrectly. Choose your best one whatever you need according to be recommended as below.

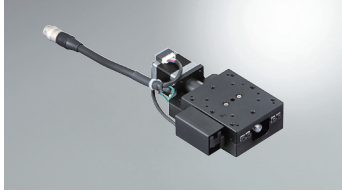
■ **KX0725/KX0830/KX1040/KX1250 recommended return to origin** ▶ **Return to origin sequence** P.1-281~

- Type 3: Detect in the direction of CCW and perform detected process for CCW edge of ORG signal.
- Type 4: Detect in the direction of CW and perform detected process for CW edge of ORG signal.
- Type 9: After finished Type3, perform detected process for CCW edge of TIMING signal.
- Type 10: After finished Type4, perform detected process for CW edge of TIMING signal.



X-axis Crossed-roller Guide: KS101-30

KS101-30RC



KS101-30LG



RoHS

KS101-30LC-5

1 2 3 4

Calbes P.1-287~
Electrical specification P.1-155~

1 Travel distance

30	30mm
----	------

2 Sensor cover location

L	L position
R	Opposite hand

3 Motor option

Code	Specification
C	Standard
G	High resolution
PA	<input type="checkbox"/> 28 αSTEP[ARM24SAK] (DC)
QA	<input type="checkbox"/> 42 αSTEP[ARM46AC] (AC)

* Must be chosen the cable from 2A~5R for PA and QA.

4 Cable option

Code	Specification	Cable type
Blank	2m	D214-2-2E
1	2m One end loose	D214-2-2EK
2	4m	D214-2-4E
3	4m One end loose	D214-2-4EK
4	Only connector (Cable is not included)	—
5	Cable is not included (Standard)	—
6	Robot cable 2m	D214-2-2R
7	Robot cable 4m	D214-2-4R
8	Robot cable 4m one end loose	D214-2-4RK
9	Robot cable 2m one end loose	D214-2-2RK
2A	2m (α step)	—
5A	5m (α step)	—
2R	Robot cable 2m (α step)	—
5R	Robot cable 5m (α step)	—

* One end loose position to only stage opposite side.
* Please select "blank, 2, 6 and 7" when connect with stepping motor controller(DS102/112).

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

40

50

60

70

80

100

120

180

Ohter

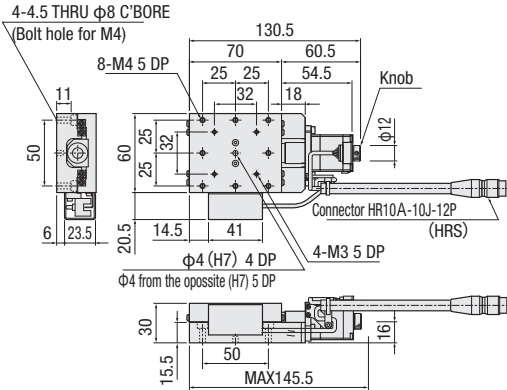
SPEC				
Model	KS101-30LC-5	KS101-30LG-5	KS101-30LPA	KS101-30LQA
(Opposite hand)	KS101-30RC-5	KS101-30RG-5	KS101-30RPA	KS101-30RQA
Travel length	30mm			
Table size	60×70mm			
Feed screw	Ball screwφ8 lead 1			
Guide	Crossed roller guide			
Main materials-Finishing	Aluminum-Black almite finishing			
Weight	0.56kg	0.74kg	0.61kg	0.96kg
Resolution (Pulse)	Full/Half 2μm/1μm	1μm/0.5μm	1μm (Set to 1000P/R)	
	Microstep —	0.05μm (1/20 on resolution)	—	
MAX speed	20mm/sec	10mm/sec	20mm/sec	
Uni-directional positioning accuracy	5μm			
Repeatability positioning accuracy	±0.2μm			
Load capacity	5.0kgf [49N]			
Moment stiffness	Pitch 0.15/yaw 0.08/roll 0.07 ["/N • cm]			
Lost motion	1μm			
Backlash	0.5μm			
Straightness	3μm			
Parallelism	30μm			
Motion parallelism	10μm			
Pitching/Yawing	25"/ 20"			
Limit sensor	Installed			
Origin sensor	Installed			
Slit origin sensor	—			
Provided screw (Hexagon-headed bolt)	4 of M4—16			

* includes a driver for α step. Please order from cable option 2A,5A,2R and 5R. Sensor cable attached only receiving connector. See page P.1-156~.

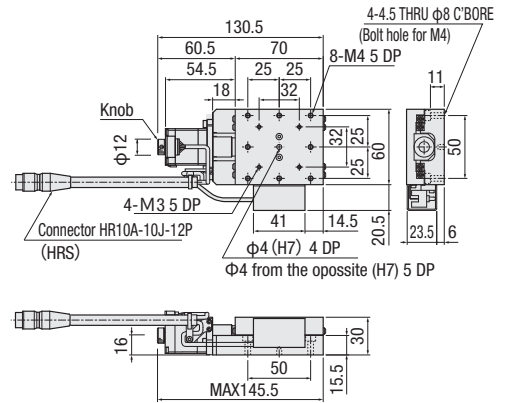
* The controller for α step drive is not supplied.

Dimensions

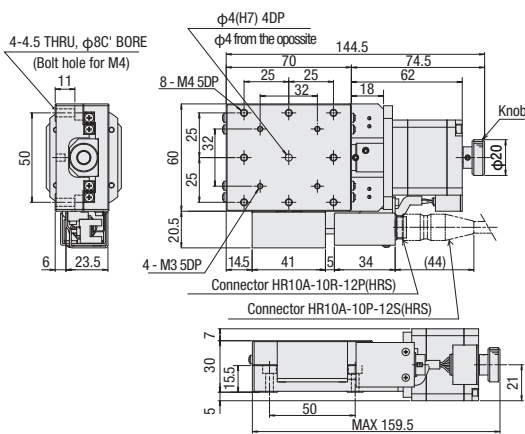
KS101-30LC



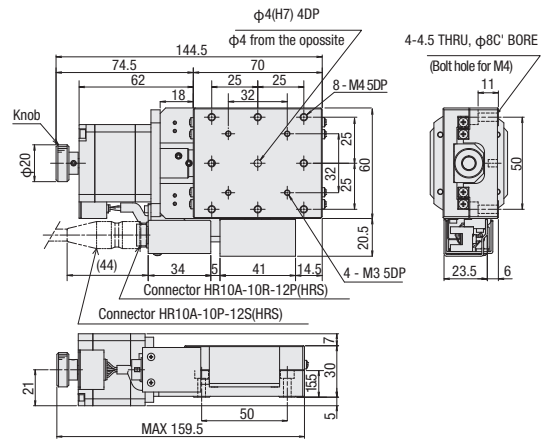
KS101-30RC



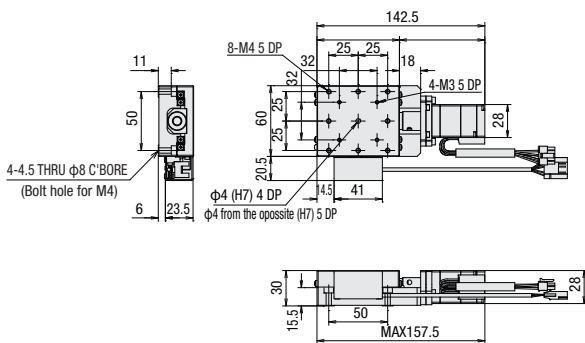
KS101-30LG



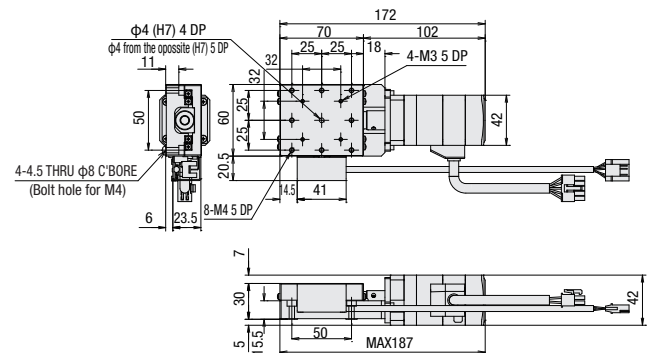
KS101-30RG



KS101-30LPA



KS101-30LQA



Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

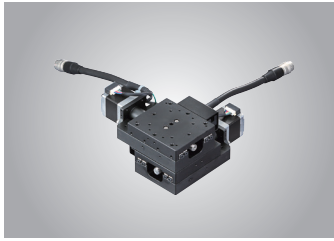
1

150

XY-axis Crossed-roller Guide: KS201-30

RoHS

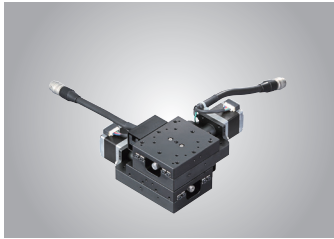
KS201-30LC



KS201-30LG



KS201-30RC



KS201-30RG



KS201-30LC-5

1 2 3 4

Calbes P.1-287~
Electrical specification P.1-155~

1 Travel distance

30	30mm
----	------

2 Sensor cover location

L	L position
R	Opposite hand

3 Motor option

Code	Specification
C	Standard
G	High resolution

4 Cable option

Code	Specification	Cable type
Blank	2m	D214-2-2E
1	2m One end loose	D214-2-2EK
2	4m	D214-2-4E
3	4m One end loose	D214-2-4EK
4	Only connector (Cable is not included)	—
5	Cable is not included (Standard)	—
6	Robot cable 2m	D214-2-2R
7	Robot cable 4m	D214-2-4R
8	Robot cable 4m one end loose	D214-2-4RK
9	Robot cable 2m one end loose	D214-2-2RK

* One end loose position to only stage opposite side.
* Please select "blank, 2, 6 and 7" when connect with stepping motor controller(DS102/112).

Motorized Stage

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

40

50

60

70

80

100

120

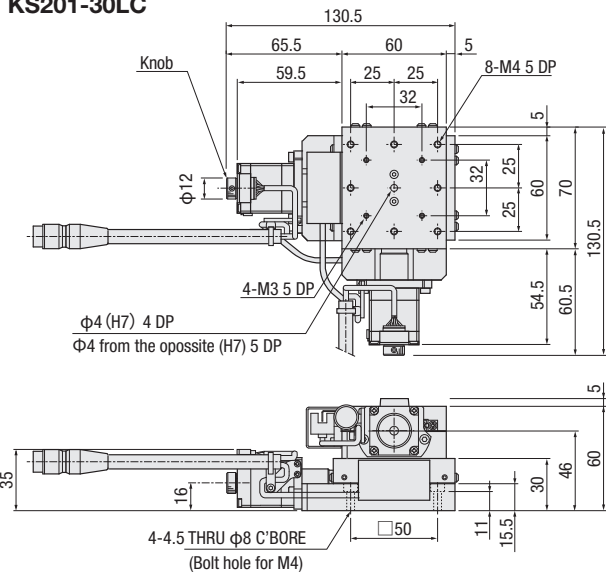
180

Other

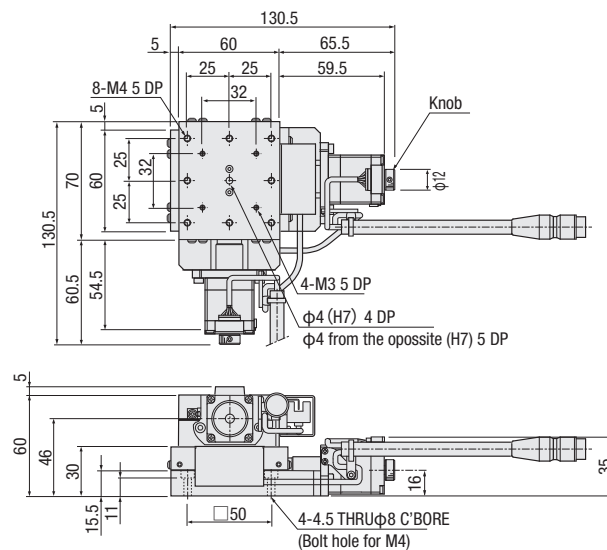
			SPEC	
Model			KS201-30LC-5	KS201-30LG-5
(Opposite hand)			KS201-30RC-5	KS201-30RG-5
Mechanical specification	Travel length		30mm	
	Table size		60×70mm	
	Feed screw		Ball screwφ8 lead 1	
	Guide		Crossed roller guide	
	Main materials-Finishing		Aluminum-Black almite finishing	
Accuracy specification	Weight		1.12kg	1.52kg
	Resolution (Pulse)	Full/Half Microstep	2μm/1μm	1μm/0.5μm
	MAX speed		20mm/sec	10mm/sec
	Load capacity		4.5kgf [44.1N]	
	Perpendicularity		15μm/Full stroke	
Sensor	Pitching/Yawing		25" / 20"	
	Limit sensor		Installed	
	Origin sensor		Installed	
	Slit origin sensor		-	
	Provided screw (Hexagon-headed bolt)		4 of M4-16	
Step accuracy specification	Uni-directional positioning accuracy		5μm	
	Repeatability positioning accuracy		±0.2μm	
	Lost motion		1μm	
	Backlash		0.5μm	
	Straightness		3μm	

Dimensions

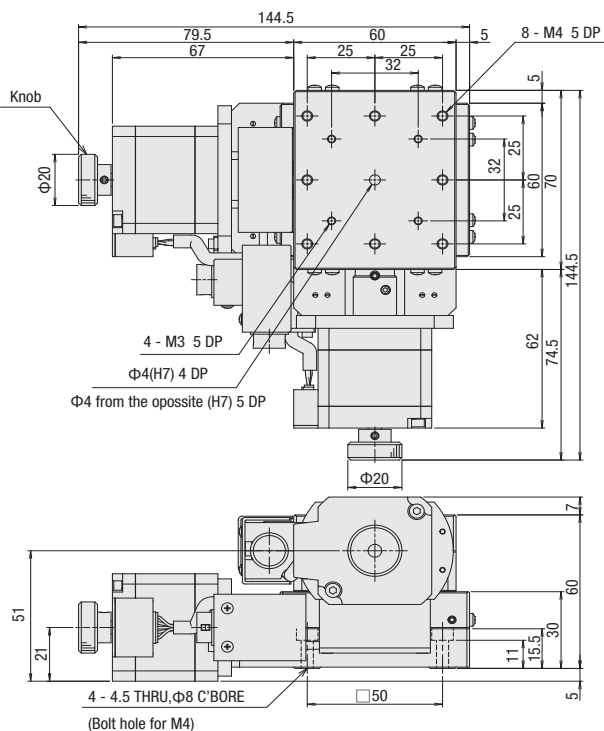
KS201-30LC



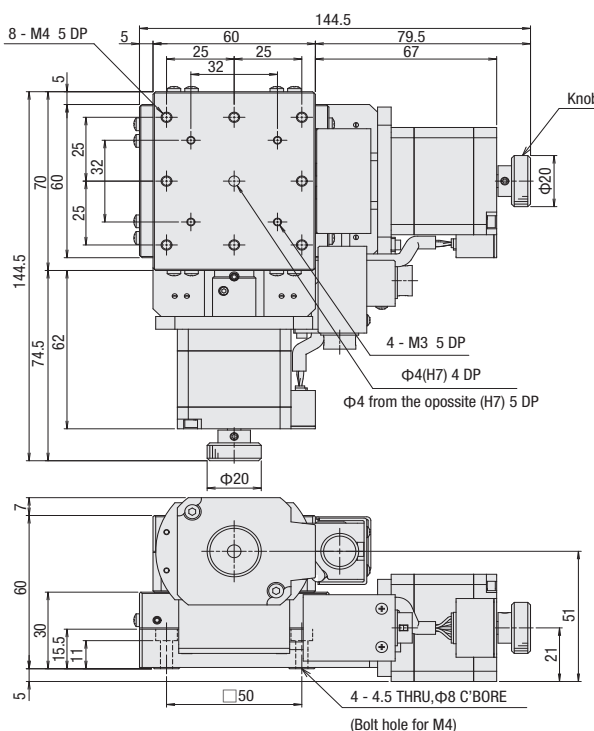
KS201-30RC



KS201-30LG



KS201-30RG



Motorizec Stage

- X
- XY
- Z
- Horizontal Z
- XYZ
- Goniometer
- Rotary
- Unit
- Controller

- KXT Linear Ball
- PG Linear Ball
- KXG/KXL Linear Ball

Cross Roller

Slide Guide

- 40
- 50
- 60
- 70
- 80
- 100
- 120
- 180

Other

Z-axis Crossed-roller Guide: KS301-30

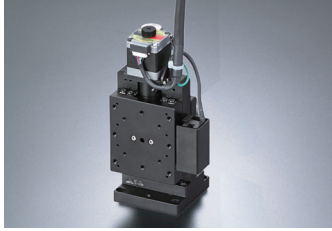
KS301-30LC



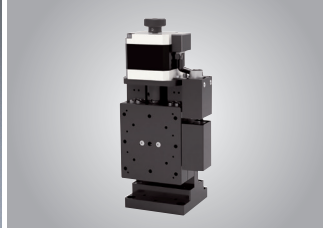
KS301-30LG



KS301-30RC



KS301-30RG



KS301-30LC-5

1 2 3 4

▶ Calbes P.1-287~

▶ Electrical specification P.1-155~

1 Travel distance

30	30mm
----	------

2 Sensor cover location

L	L position
R	Opposite hand

3 Motor option

Code	Specification
C	Standard
G	High resolution

4 Cable option

Code	Specification	Cable type
Blank	2m	D214-2-2E
1	2m One end loose	D214-2-2EK
2	4m	D214-2-4E
3	4m One end loose	D214-2-4EK
4	Only connector (Cable is not included)	—
5	Cable is not included (Standard)	—
6	Robot cable 2m	D214-2-2R
7	Robot cable 4m	D214-2-4R
8	Robot cable 4m one end loose	D214-2-4RK
9	Robot cable 2m one end loose	D214-2-2RK

* One end loose position to only stage opposite side.
* Please select "blank, 2, 6 and 7" when connect with stepping motor controller(DS102/112).

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross Rollere

Slide Guide

40

50

60

70

80

100

120

180

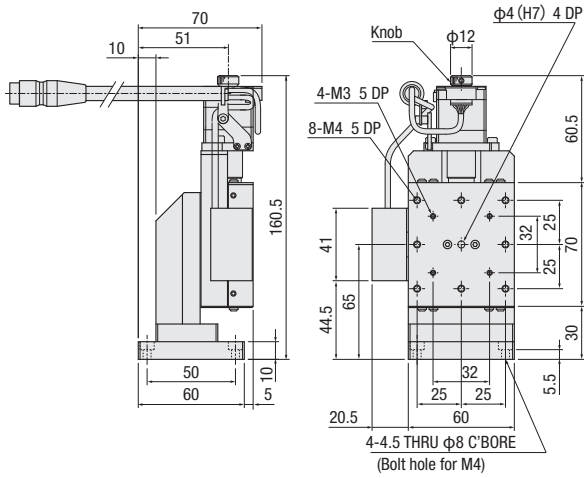
Other

1

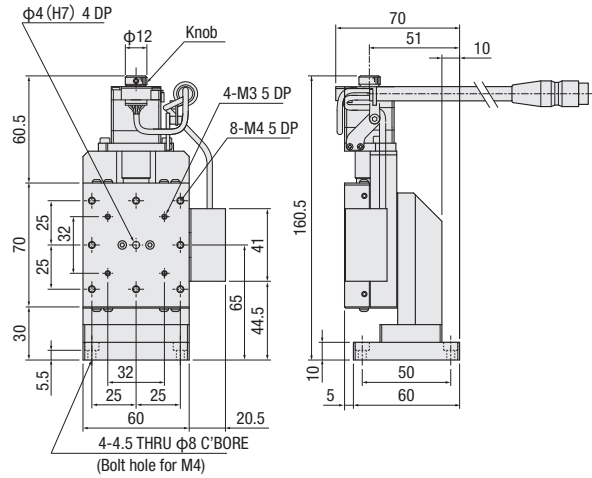
			SPEC	
Model			KS301-30LC-5	KS301-30LG-5
(Opposite hand)			KS301-30RC-5	KS301-30RG-5
Mechanical specification	Travel length		30mm	
	Table size		60×70mm	
	Feed screw		Ball screwφ8 lead 1	
	Guide		Crossed roller guide	
	Main materials-Finishing		Aluminum-Black almite finishing	
Accuracy specification	Weight		0.89kg	1.09kg
	Resolution (Pulse)	Full/Half	2μm/1μm	1μm/0.5μm
		Microstep	—	0.05μm (1/20 on resolution)
	MAX speed		20mm/sec	10mm/sec
	Load capacity (Excitation)		3.0kgf [29.4N]	
Sensor	Vertical degree		15μm/Full stroke	
	Pitching/Yawing		25"/ 20"	
	Limit sensor		Installed	
	Origin sensor		Installed	
	Slit origin sensor		—	
Provided screw (Hexagon-headed bolt)			4 of M4—10	
Single axis accuracy specification	Uni-directional positioning accuracy		5μm	
	Repeatability positioning accuracy		±0.2μm	
	Lost motion		1μm	
	Backlash		0.5μm	
	Straightness		3μm	

Dimensions

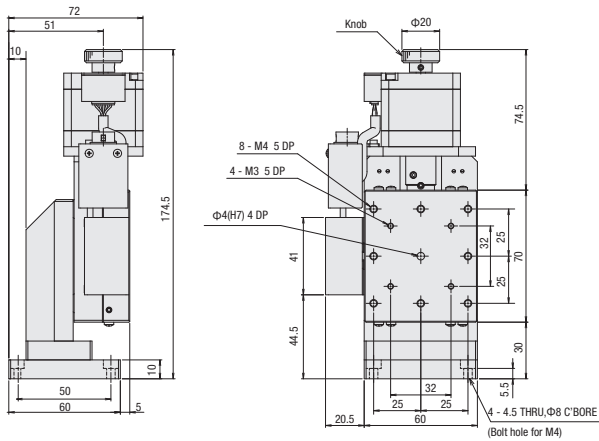
KS301-30LC



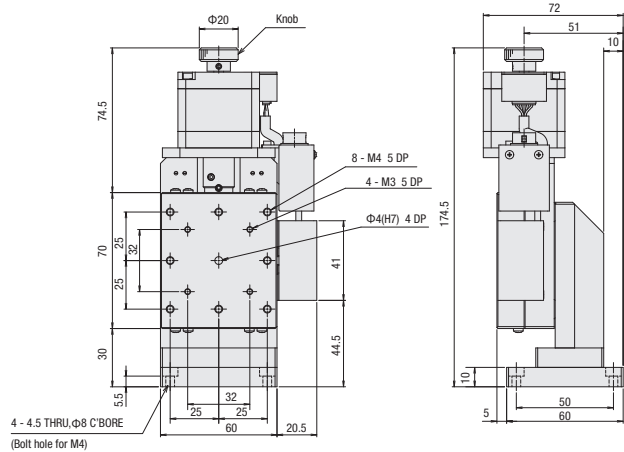
KS301-30RC



KS301-30LG



KS301-30RG



Motorizec Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

154

Electrical Specification: KS101-30

Electrical specification

Models		KS101-30LC KS101-30RC	KS101-30LG KS101-30RG	KS101-30LPA KS101-30RPA	KS101-30LQA KS101-30RQA
Motor (*1)	Type	5 phase stepping motor 0.75A/Phase (Oriental Motor Co., Ltd.)		α step (Oriental Motor Co., Ltd.)	
	Model (*2)	C005C-90215P-1 (□28mm)	PK544PMB-C18 (□42mm)	ARM24SAK (□28mm)	ARM46AC (□42mm)
	Step angle	0.72°	0.36°	0.36° (Set to 1000P/R)	
Connector	Driver type	CVD507-K-A9		ARD-K	ARD-A
	Model	HR10A-10J-12P (73)	HR10A-10R-12P (73)	172211-6 (Tyco Electronics Japan G.K.)	
	applicable connector on acceptance side	HR10A-10P-12S (73) (Hirose Electric Co., Ltd.)		171822-6 (Tyco Electronics Japan G.K.)	
	Contact type	—		170430-1 (Tyco Electronics Japan G.K.)	
Sensor	Compatible receiving contact	—		170205-1 (Tyco Electronics Japan G.K.)	
	Limit sensor	Installed			
	Origin sensor	Installed			
	Slit origin sensor	—			
	Model	Micro Photo Sensor PM-□25 (Panasonic Industrial Devices SUNX)			
	Power voltage	DC5~24V or less ±10%			
	Consumption current	Total 45mA or less (15mA or less per 1 sensor)			
	Control output	NPN open collector output DC30V or less 50mA or less Residual voltage 2V or less when the load current is 50mA Residual voltage 1V or less when the load current is 16mA			
Output logic	On detection (light shield condition): Output transistor OFF (Non-continuity)				

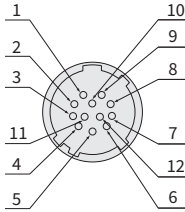
*1 See page P.1-297~ for details of single motor specification

*2 Model numbers include Suruga Seiki's proprietary management codes.

* The electric specification of XY, Z are the same.

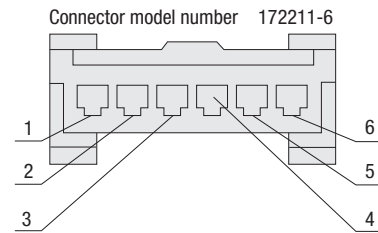
Pin allocation

KS101-30LC (LG) /KS101-30RC (RG)



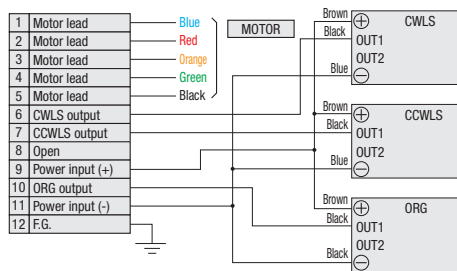
Pin allocation (sensor)

KS101-30LPA (QA) /KS101-30RPA (QA)



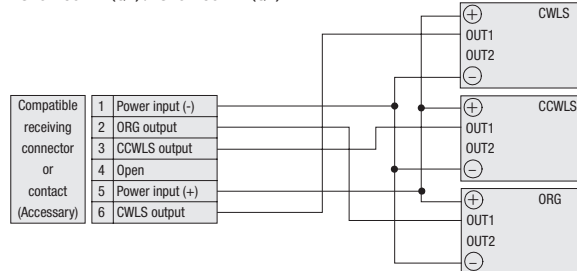
Connection diagram

KS101-30LC (LG) /KS101-30RC (RG)

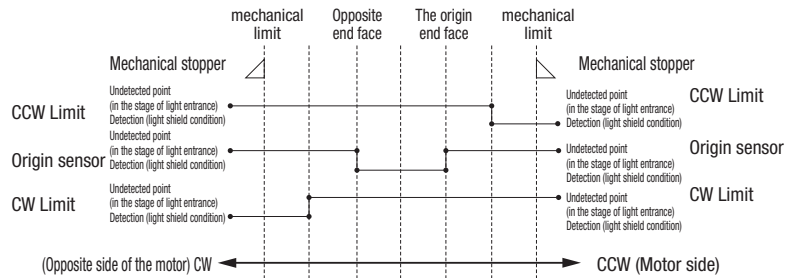
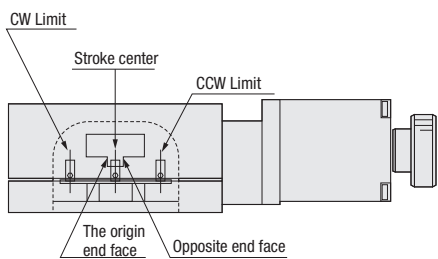


Connection diagram (sensor)

KS101-30LPA (QA) /KS101-30RPA (QA)



Timing chart



Unit [mm]	Reference coordinate	Mechanical limit	CW Limit	Opposite end face	Stroke center	The origin end face	CCW Limit	Mechanical limit
KS101-30	Return to origin	18.5	17.5	4	2	0	13.5	14.5
	Stroke center	16.5	15.5	2	0	2	15.5	16.5

*Return to origin means that is performed return to origin Type 3 using DS102/DS112 series.

* The coordinate value should be on the design. Dimension error may occur about plus or minus 0.5 mm.

Note: The timing chart shows only timing of sensor, it is not for output signal logic.

Refer to ON/OFF display of output transistor that shows on electrical specifications-sensor-output logic for output signal logic.

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT Linear Ball

PG Linear Ball

KXG/KXL Linear Ball

Cross Roller

Slide Guide

□40

□50

□60

□70

□80

□100

□120

□180

Other

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

156

Method for return to origin

Suruga's motorized stages is different from the sensor specifications depends on models. As return to origin operation is divided into types, it is necessary to choose the correct type. Selected wrong type may be operated uncorrectly.

Choose your best one whatever you need according to be recommended as below.

KS101-30 series recommended return to origin Return to origin sequence P.1-281~

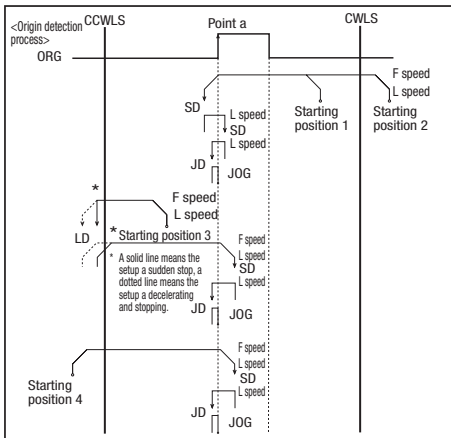
Type 3: Detect in the direction of CCW and perform detected process for CCW edge(a point) of ORG signal.

Type 4: Detect in the direction of CW and perform detected process for CW edge of ORG signal.

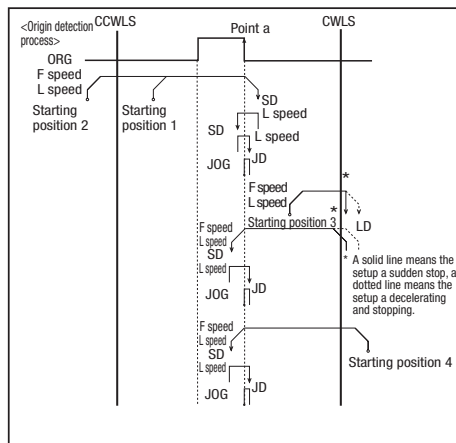
Type 9: After finished Type3, perform detected process for CCW edge of TIMING signal.

Type 10: After finished Type4, perform detected process for CW edge of TIMING signal.

[Type3] Detect in the direction of CCW and perform detected process for CCW edge (a point) of ORG signal.



[Type4] Detect in the direction of CW and perform detected process for CW edge of ORG signal.

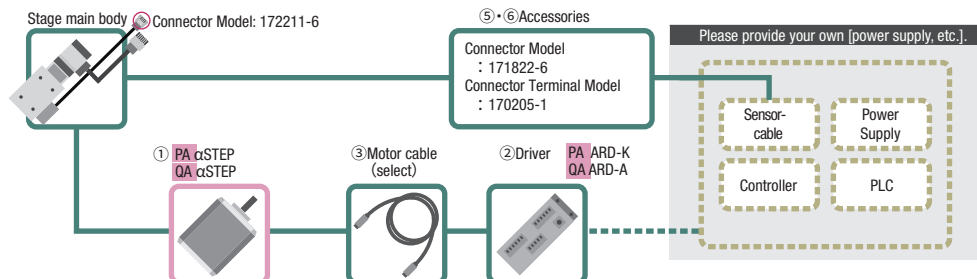


Configuration

Motor option

PA αSTEP
 Motor model
 ARM24SAK

QA αSTEP
 Motor model
 ARM46AC



Code	①Motor model	②Driver(Acc.)	③Select Motor cable (Acc.)	④Sensor cable	⑤Rectangular Connector (Acc.)	⑥Connector Contact (Acc.)
PA	ARM24SAK	ARD-K	2A : CC020VA2F2 5A : CC050VA2F2 2R : CC020VA2R2 5R : CC050VA2R2	Please provide your own.	171822-6 (1pc TE Japan)	170205-1 (5pcs TE Japan)
QA	ARM46AC	ARD-A	2A : CC020VAF 5A : CC050VAF 2R : CC020VAR 5R : CC050VAR			

Note: Only the mating connector is supplied for the sensor cable.

X-axis Crossed-roller Guide: KS102



* All image is for illustrative purposes only.

KS102-100LG-5

1 2 3 4

Calbes P.1-287~

Electrical specification P.1-159~

1 Travel distance

30	30mm
70	70mm
100	100mm

2 Sensor cover location

L	L position
R	Opposite hand

Note:
When Motor Code "QA" is selected, the "Blank" (No symbol) option corresponds to the "L" position.

3 Motor option

Code	Specification
G	High-resolution (Step Angle: 0.36°)
QA	42 αSTEP[ARM46AC] (AC)

* Must be chosen the cable from 2A-5R for QA.

4 Cable option

Code	Specification	Cable type
Blank	2m	D214-1-2E
1	2m One end loose	D214-1-2EK
2	4m	D214-1-4E
3	4m One end loose	D214-1-4EK
4	Only connector (Cable is not included)	—
5	Cable is not included (Standard)	—
6	Robot cable 2m	D214-1-2R
7	Robot cable 4m	D214-1-4R
8	Robot cable 4m one end loose	D214-1-4RK
9	Robot cable 2m one end loose	D214-1-2RK
2A	2m (α step)	—
5A	5m (α step)	—
2R	Robot cable 2m (α step)	—
5R	Robot cable 5m (α step)	—

* One end loose position to only stage opposite side.

* Please select "blank, 2, 6 and 7" when connect with stepping motor controller(DS102/112).

SPEC

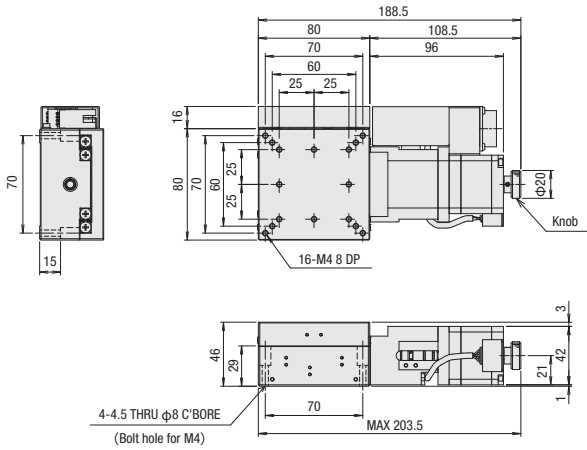
Model		KS102-30LG-5	KS102-70LG-5	KS102-100LG-5	KS102-30QA	KS102-70QA	KS102-100QA	
(Opposite hand)		KS102-30RG-5	KS102-70RG-5	KS102-100RG-5	KS102-30RQA	KS102-70RQA	KS102-100RQA	
Mechanical specification	Travel length	30mm	70mm	100mm	30mm	70mm	100mm	
	Table size	80×80mm	80×130mm	80×160mm	80×80mm	80×130mm	80×160mm	
	Feed screw	Ball screwφ8 lead 1						
	Guide	Crossed roller guide						
Main materials-Finishing		Aluminum-Black almite finishing						
Weight		1.42kg	1.84kg	2.15kg	1.6kg	2.0kg	2.3kg	
Accuracy specification	Resolution (Pulse)	1μm/0.5μm			1μm (Set to 1000P/R)			
	Microstep	0.05μm (1/20 on resolution)			-			
	MAX speed	10mm/sec						
	Uni-directional positioning accuracy	5μm		10μm		5μm		10μm
	Repeatability positioning accuracy	±0.2μm						
	Load capacity	20kgf [196N]						
	Moment stiffness	Pitch 0.07/yaw 0.06/roll 0.02 ["/N · cm]	Pitch 0.01/yaw 0.014/roll 0.01 ["/N · cm]	Pitch 0.005/yaw 0.011/roll 0.008 ["/N · cm]	Pitch 0.07/yaw 0.06/roll 0.02 ["/N · cm]	Pitch 0.01/yaw 0.014/roll 0.01 ["/N · cm]	Pitch 0.005/yaw 0.011/roll 0.008 ["/N · cm]	
	Lost motion	1μm						
	Backlash	0.5μm						
	Parallelism	30μm						
Motion parallelism	Pitching/Yawing	10μm	15μm		10μm	15μm		
	Pitching/Yawing	25"/15"	25"/20"		25"/15"	25"/20"		
Sensor	Limit sensor	Installed						
	Origin sensor	Installed						
	Slit origin sensor	Installed						
Provided screw (Hexagon-headed bolt)		4 of M4-20						

* [QA] includes a driver for α step. Motor cable sold separately. Please order from cable option 2A,5A,2R and 5R. Sensor cable attached only receiving connector. See page P.1-160~.

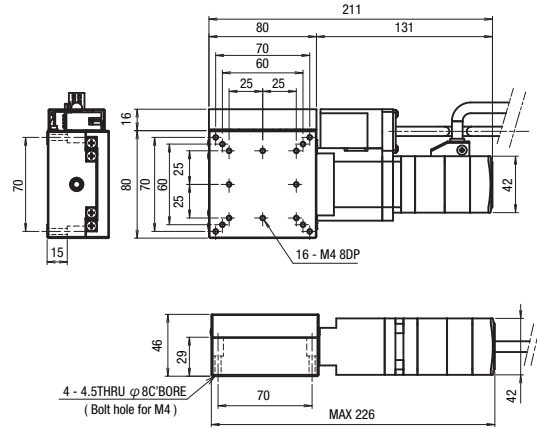
* The controller for α step drive is not supplied.

Dimensions

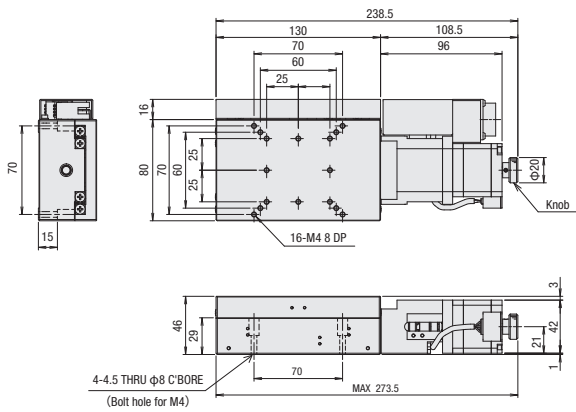
KS102-30LG



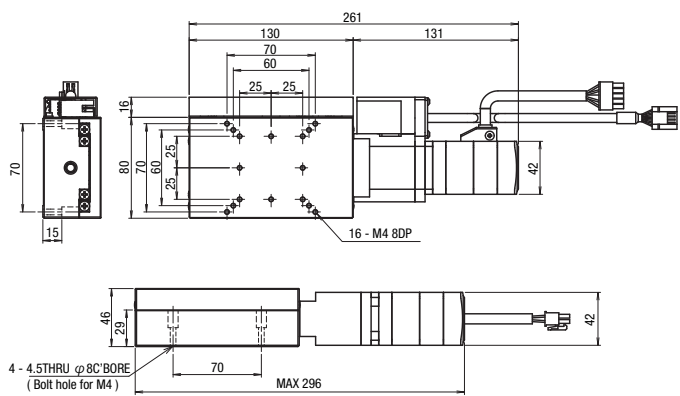
KS102-30QA



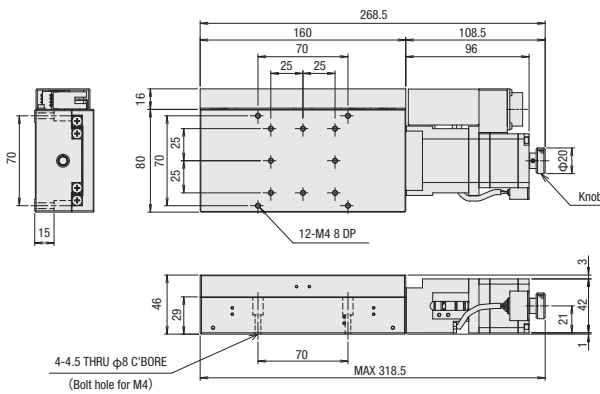
KS102-70LG



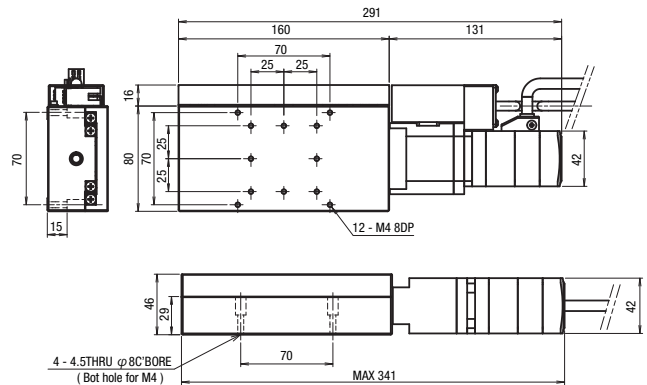
KS102-70QA



KS102-100LG



KS102-100QA



Motorized Stage

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

40

50

60

70

80

100

120

180

Other

1

158

Motorized Stage

Electrical Specification: KS102

Electrical specification

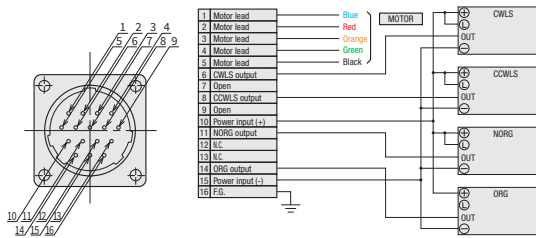
Models		KS102-30LG	KS102-70LG	KS102-100LG	KS102-30LQA	KS102-70LQA	KS102-100LQA
		KS102-30RG	KS102-70RG	KS102-100RG	KS102-30RQA	KS102-70RQA	KS102-100RQA
Motor (*1)	Type	5 phase stepping motor 0.75A/Phase (Oriental Motor Co., Ltd.)			α step motor (Oriental Motor Co., Ltd.)		
	Model (*2)	PK544PMB-C18 (□ 42mm)			ARM46AC (□ 42mm)		
	Step angle	0.36°			0.36° (Set to 1000P/R)		
	Driver type	CVD507-K-A9			ARD-A		
Connector	Model	SRCN2A21-16P (JAE)			172211-6 (Tyco Electronics Japan G.K.)		
	applicable connector on acceptance side	SRCN6A21-16S (JAE)			171822-6 (Tyco Electronics Japan G.K.)		
	Connector type	—			170430-1 (Tyco Electronics Japan G.K.)		
	applicable connector on acceptance side model	—			170205-1 (Tyco Electronics Japan G.K.)		
Sensor	Limit sensor	Installed					
	Proximity origin sensor	Installed					
	Slit origin sensor	Installed					
	Model	Photo microsensor EE-SX673 (Omron Co., Ltd.)					
	Power voltage	DC5~24V ±10%					
	Consumption current	Total 140mA or less (35mA or less per 1 sensor)					
	Control output	NPN open collector output DC5~24V 100mA or less Residual voltage 0.8V or less when the load current is 100mA Residual voltage 0.4V or less when the load current is 40mA					
Output logic	On detection (light shield condition): Output transistor OFF (Non-continuity) (Only slit origin sensor is OFF when detected. (Non-continuity))						

*1 See page P.1-297~ for details of single motor specification.

*2 Model numbers include Suruga Seiki's proprietary management codes.

Pin allocation

Connection diagram

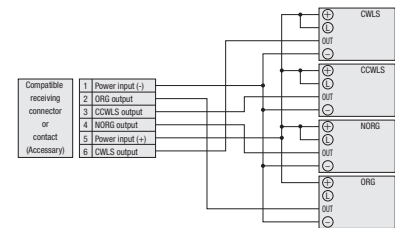
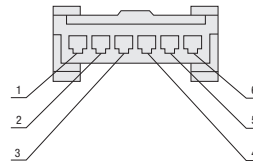


Pin allocation (sensor)

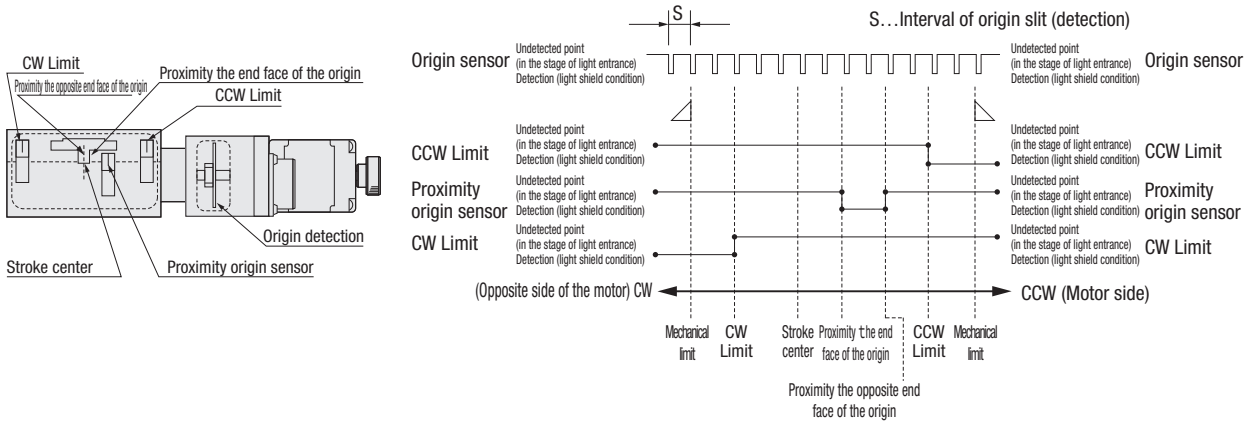
Connection diagram (sensor)

KS102-□□QA

Connector model number 172211-6



Timing chart



Unit [mm]

Direction of CW ←

→ Direction of CCW

	Reference coordinate	Mechanical limit	CW Limit	Stroke center	The proximity origin end face	Proximity the opposite end face of the origin	CCW Limit	Mechanical limit
KS102-30	Return to origin	—	23	7	0	6	9	—
	Stroke center	—	16	0	7	13	16	—
KS102-70	Return to origin	—	63	27	0	6	9	—
	Stroke center	—	36	0	27	33	36	—
KS102-100	Return to origin	—	93	42	0	6	9	—
	Stroke center	—	51	0	42	48	51	—

The same

Interval of origin slit (detection) S=1

* Return to origin means that is performed return to origin type 1 using DS102/DS112 series.

* Origin becomes any position till the origin sensor is detected shielded disk slit of the origin side after through the proximity end face.

* The coordinate value should be on the design. Dimension error may occur about plus or minus 0.5 mm.

Note: The timing chart shows only timing of sensor, it is not for output signal logic. Refer to ON/OFF display of output transistor that shows on electrical specifications-sensor-output logic for output signal logic.

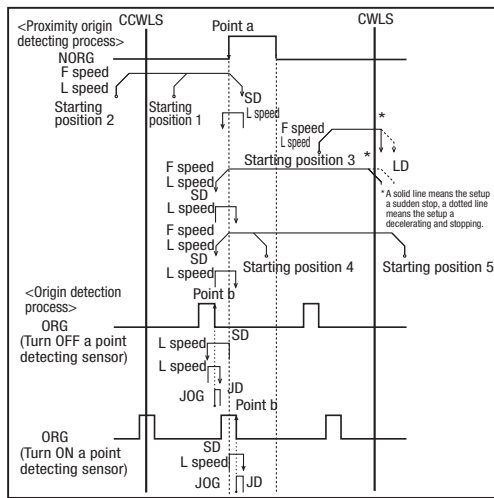
Method for return to origin

Suruga's motorized stages is different from the sensor specifications depends on models. As return to origin operation is divided into types, it is necessary to choose the correct type. Selected wrong type may be operated uncorrectly. Choose your best one whatever you need according to be recommended as below.

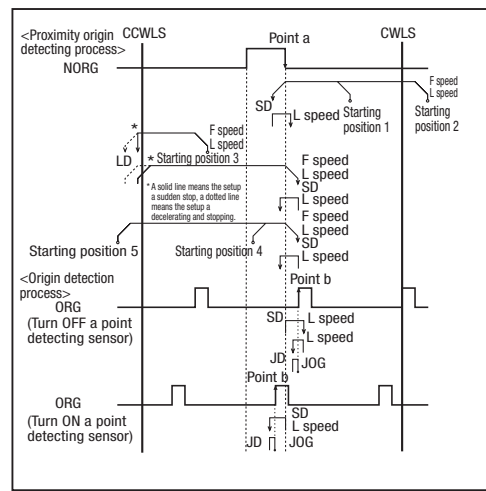
KS102 recommended return to origin Return to origin sequence P.1-281~

- Type1: Detect in the direction of CCW and perform detected process for CW edge(point a) of NORG signal. Next detect an edge of CCW side(point b) of ORG signal.
- Type2: Detect in the direction of CW and perform detected process for CCW edge of NORG signal. Next detect on edge of CW side (point b) of ORG signal.
- Type7: After finished type1, perform detected process for CCW edge of TIMING signal.
- Type8: After finished type2, perform detected process for CW edge of TIMING signal.

[Type2] Detect in the direction of CW and perform detected process for CCW edge(point a) of NORG signal. Next detect on edge of CW side (point b) of ORG signal.



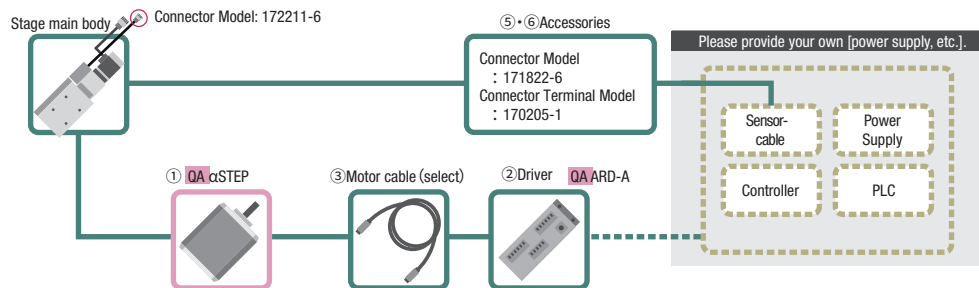
[Type1] Detect in the direction of CCW and perform detected process for CW edge(point a) of NORG signal. Next detect an edge of CCW side(point b) of ORG signal.



αSTEP Configuration

Motor option

QA αSTEP
 Motor model
 ARM46AC



Code	① Motor model	② Driver(Acc.)	③ Select Motor cable (Acc.)	④ Sensor cable	⑤ Rectangular Connector (Acc.)	⑥ Connector Contact (Acc.)
QA	ARM46AC	ARD-A	2A : CC020VAF 5A : CC050VAF 2R : CC020VAR 5R : CC050VAR	Please provide your own.	1171822-6 (1pc TE Japan)	70205-1 (5pcs TE Japan)

Note: Only the mating connector is supplied for the sensor cable.

- X
- XY
- Z
- Horizontal Z
- XYZ
- Goniometer
- Rotary
- Unit
- Controller

- KXT Linear Ball
- PG Linear Ball
- KXG/KXL Linear Ball

- Cross Roller
- Slide Guide

- 40
- 50
- 60
- 70
- 80
- 100
- 120
- 180
- Other