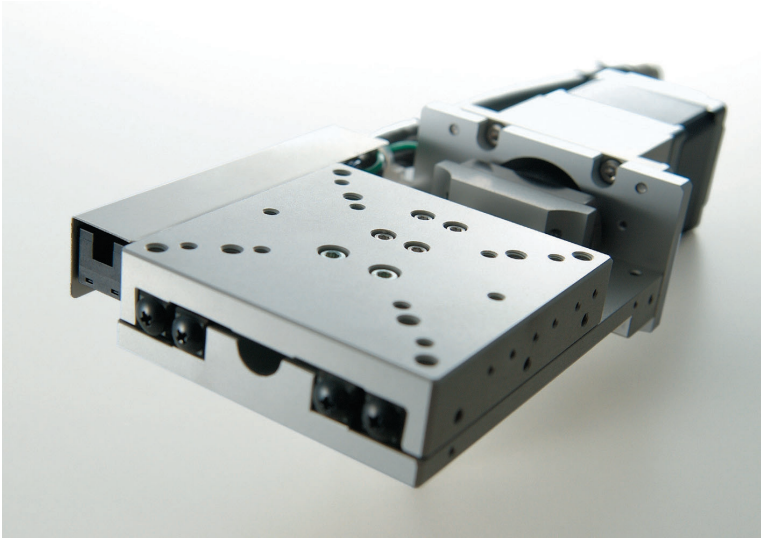


Cross Roller Guide Guidance



It is “Light weight”
“Compact size” and
“High precision” Stages
because of the aluminum
main material.

■ Usage

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

Features of Cross 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.



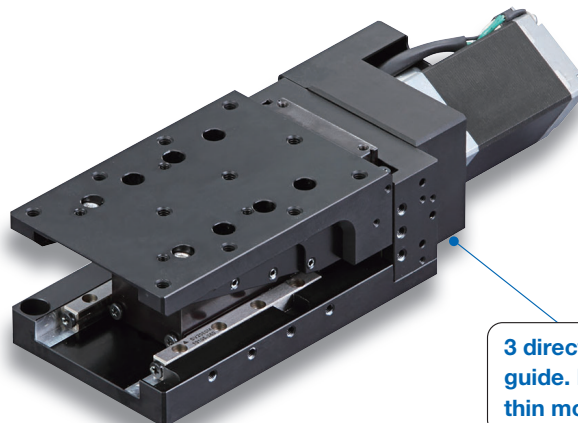
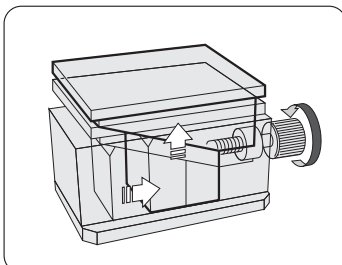
■ High precision

- ◎ 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 cross 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.

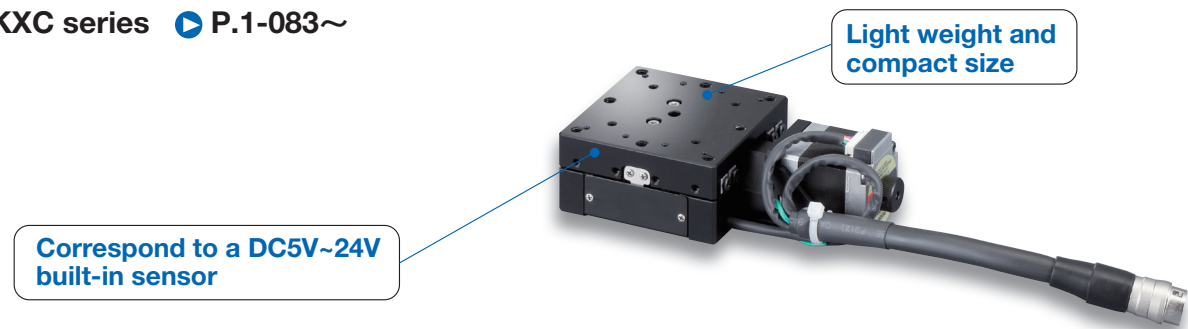
Wedge type image



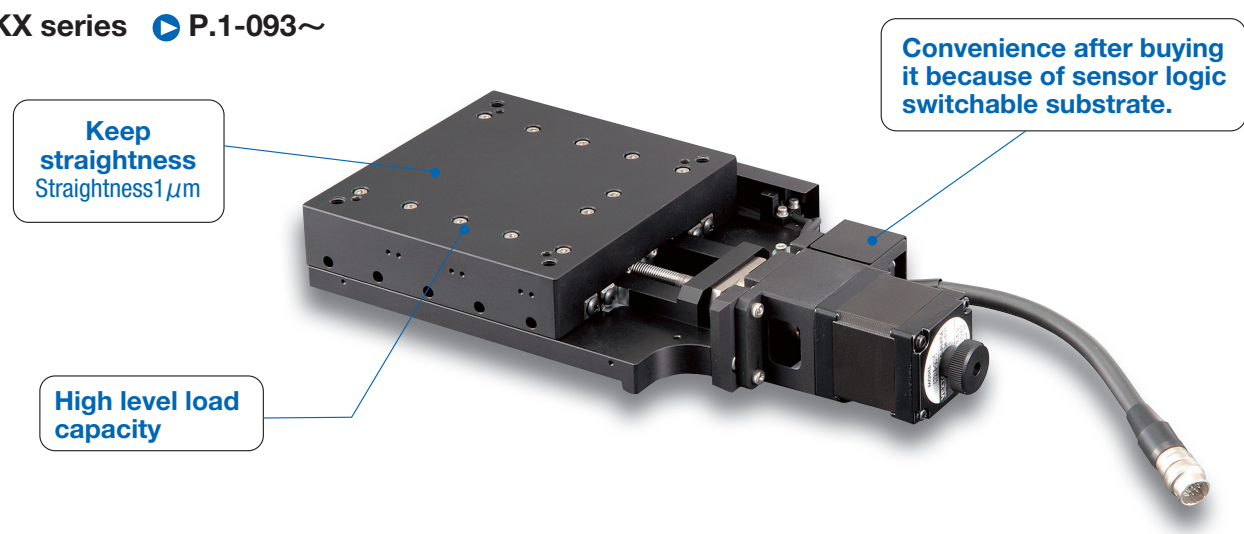
3 directions cross roller
guide. High rigidity and
thin model.

High performance

KXC series ▶ P.1-083~



KX series ▶ P.1-093~



■ Cross roller guide stroke line-up

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

Available various motors

Selectable high-torque, high resolution and α step. * Need to separately confirmation to use the electromagnetic brake.
 Please see product pages for more information. * Unselectable some parts of types.

For use correctly

▽ 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.

Stage surface might be deformed and Mounting unflat object and set to the unflat place can affect to be deformed stage surface and decreasing accuracy. When a stage is mounted on uneven or an object that is uneven, the stage table may deformed, and may also affected the accuracy.

▽ 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 Cross Roller Guide: KXC04015/KXC06020

KXC04015-C



KXC04015-PA



KXC06020-C



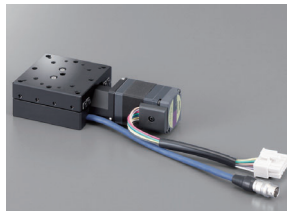
KXC06020-F



KXC06020-G



KXC06020-PA



RoHS

See page P.009

Model Selection code Option code

KXC 04015-

1 2 3 4

Cable P.1-207~
Electrical specification P.1-091~

1 Table size

04	40mm
06	60mm

* Not available 04020 and 06015

2 Travel length

015	15mm
020	20mm

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 KXC04, can be chosen only C and PA.

4 Cable option

Code	Specification	Cable type
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
Blank	Cable is not included (Standard)	—
P	Cable for α step 3m	—

* One end loose position to only stage opposite side.
* If you choose the option specification, please add the difference to standard price.
* See page P.1-207,209~ for cable details.
* 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 length		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		Within 10μm		Within 5μm			
	Repeatability positioning accuracy		Within ±0.5μm		Within ±0.3μm			
	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		Within 1μm					
	Backlash		Within 0.5μm					
	Straightness		Within 3μm					
Parallelism		Within 30μm						
Motion parallelism		Within 10μm						
Pitching/Yawing		Within 25°/Within 20°		Within 20°/Within 15°				
Sensor	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.

Dimensional outline drawings



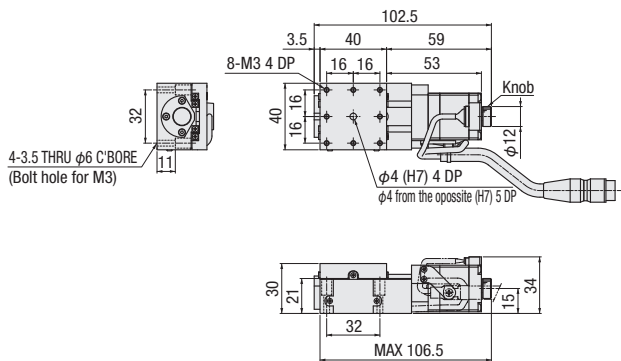
PART
COMMUNITY

CAD
DATA

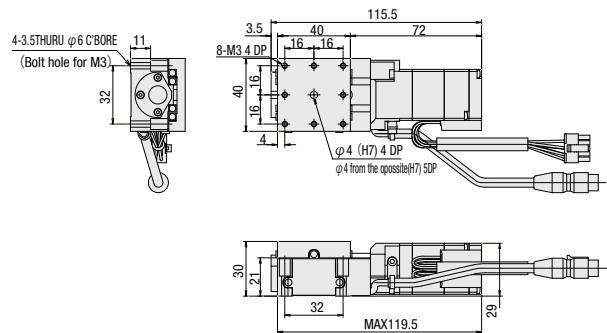
SURUGA
SEIKI

CAD
3D·2D

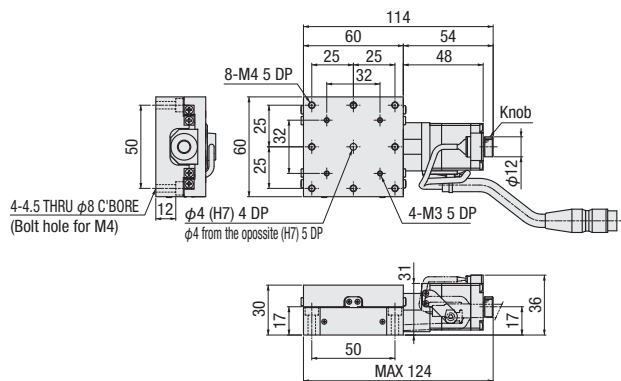
KXC04015-C



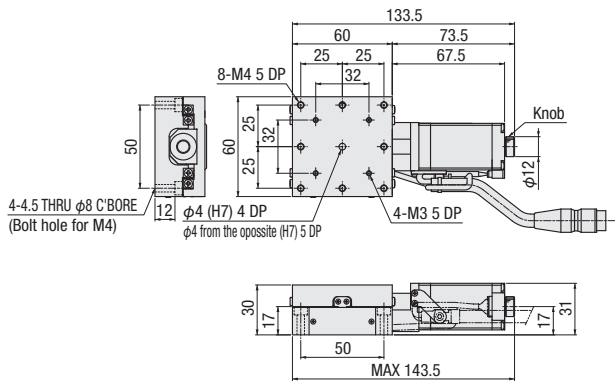
KXC04015-PA



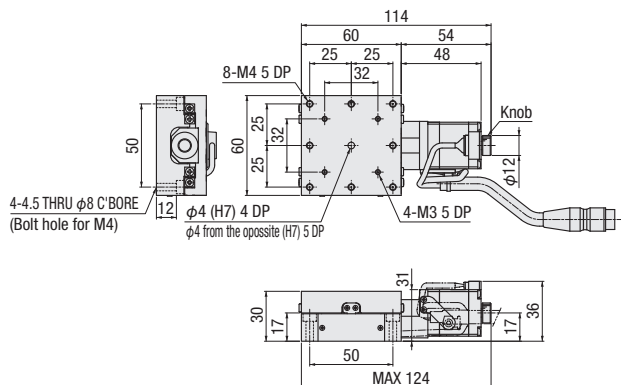
KXC06020-C



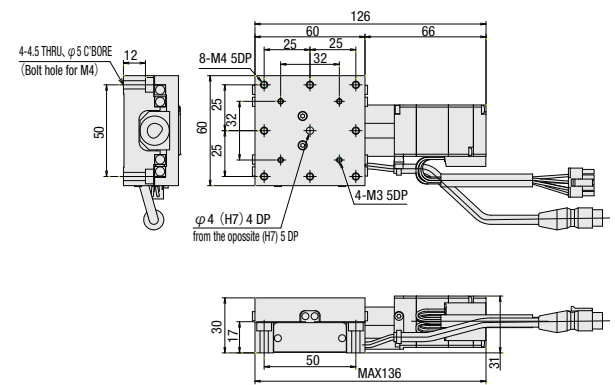
KXC06020-F



KXC06020-G



KXC06020-PA



Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

□120

Other

1

084

XY-axis Cross Roller Guide: KYC04015/KYC06020

Motorized Stage

RoHS

KYC04015-C



KYC04015-PA



KYC06020-C



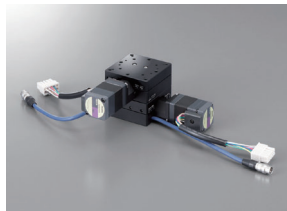
KYC06020-F



KYC06020-G



KYC06020-PA



Cable P.1-207~
 Electrical specification P.1-091~

1 Table size

04	☐ 40mm
06	☐ 60mm

* Not available 04020 and 06015

2 Travel length

015	15mm
020	20mm

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 KYC04, can be chosen only C and PA.

4 Cable option

Code	Specification	Cable type
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
Blank	Cable is not included (Standard)	—
P	Cable for α step 3m	—

* One end loose position to only stage opposite side.

* If you choose the option specification, please add the difference to standard price.

* See page P.1-207, 209~ for more cable details.

* 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

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

☐ 40

☐ 50

☐ 60

☐ 70

☐ 80

☐ 100

☐ 120

Other

SPEC

Model			KYC04015-C	KYC04015-PA	KYC06020-C	KYC06020-F	KYC06020-G	KYC06020-PA
Mechanical specification	Travel length		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		0.63kg	0.73kg	0.90kg	1.10kg	0.90kg	1.00kg
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		4.5kgf [44.1N]					
	Perpendicularity		Within 7.5μm/Full stroke		Within 10μm/Full stroke			
	Pitching/Yawing		Within 25″/Within 20″		Within 20″/Within 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 accuracy specification	Uni-directional positioning accuracy		Within 10μm		Within 5μm			
	Repeatability positioning accuracy		Within ±0.5μm		Within ±0.3μm			
	Lost motion		Within 1μm					
	Backlash		Within 0.5μm					
	Straightness		Within 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.



PART
COMMUNITY

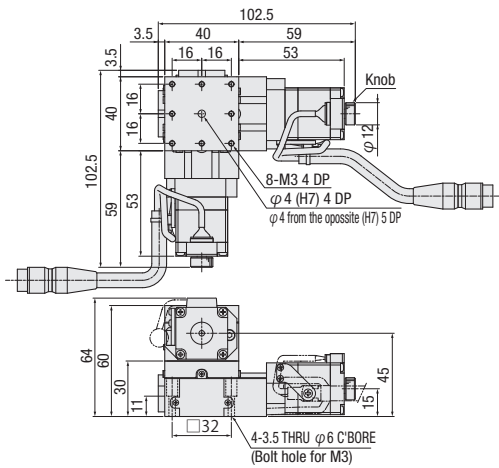
CAD
DATA

SURUGA
SEIKI

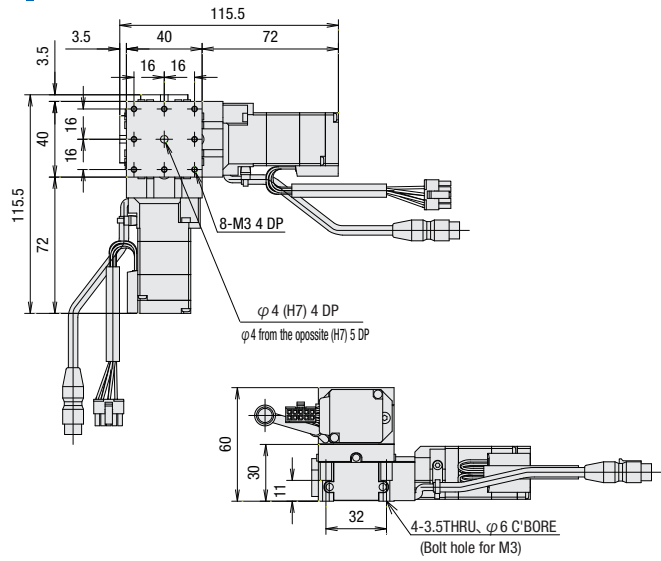
CAD
3D・2D

Dimensional outline drawings

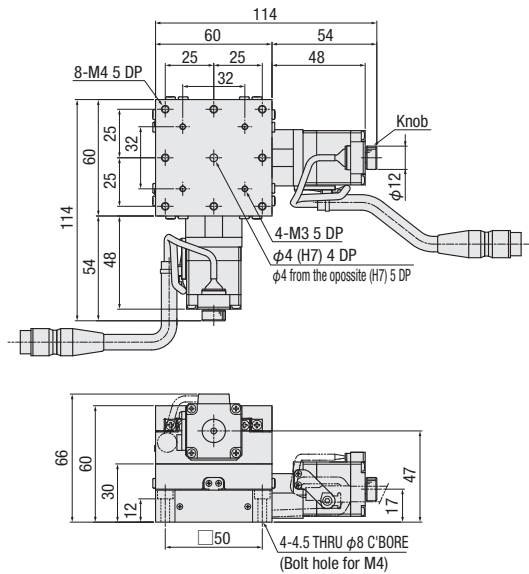
KYC04015-C



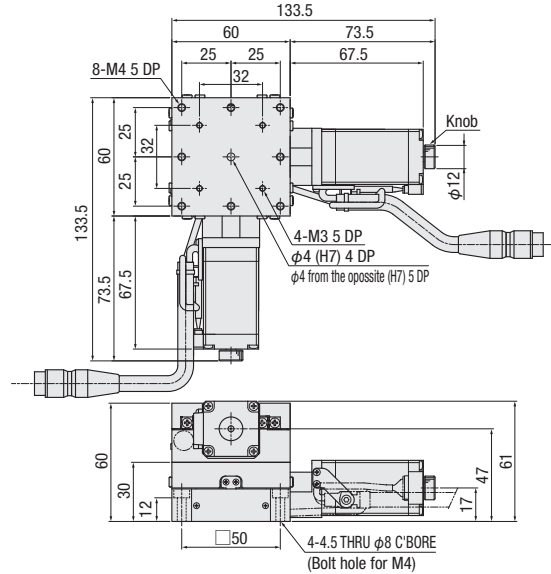
KYC04015-PA



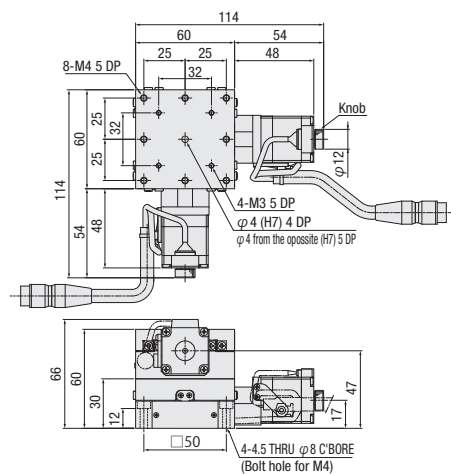
KYC06020-C



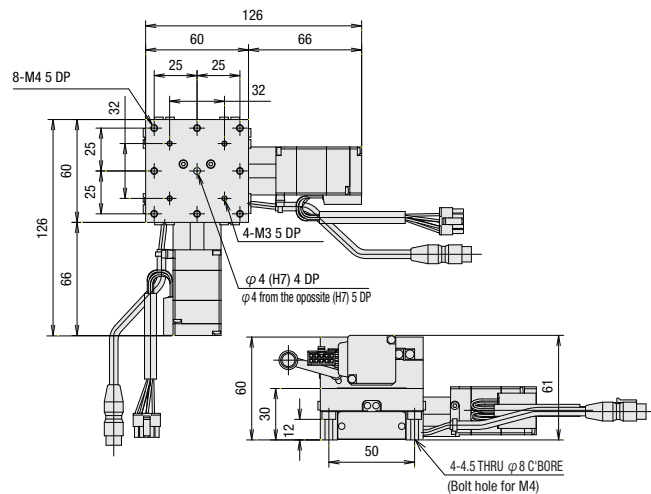
KYC06020-F



KYC06020-G



KYC06020-PA



Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

□120

Other

1

086

Z-axis Cross Roller Guide: KZC04015/KZC06020

RoHS

KZC04015-C



KZC04015-PA



KZC06020-C



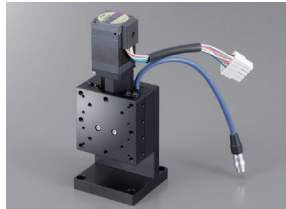
KZC06020-F



KZC06020-G



KZC06020-PA



Model	Selection code	Option code
KZC	04015-	□ □
	1 2	3 4

Cable P.1-207~
 Electrical specification P.1-091~

1 Table size

04	□40mm
06	□60mm

* Not available 04020 and 06015

2 Travel length

015	15mm
020	20mm

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 KZC04, can be chosen only C and PA.

4 Cable option

Code	Specification	Cable type
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
Blank	Cable is not included (Standard)	—
P	Cable for α step 3m	—

* One end loose position to only stage opposite side.

* If you choose the option specification, please add the difference to standard price.

* See page P.1-207, 209~ for more cable details.

* Please select "Code A, C, F or H" when connect with stepping motor controller(DS102/112).

SPEC								
Model		KZC04015-C	KZC04015-PA	KZC06020-C	KZC06020-F	KZC06020-G	KZC06020-PA	
Mechanical specification	Travel length		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					
Accuracy specification	Weight		0.38kg	0.43kg	0.80kg	0.90kg	0.80kg	0.85kg
	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]					
	Vertical degree		Within 7.5μm/Full stroke		Within 10μm/Full stroke			
	Pitching/Yawing		Within 25″/Within 20″		Within 20″/Within 15″			
	Sensor	Limit sensor		Installed				
Origin sensor		Installed						
Slit origin sensor		—						
Provided screw (Hexagon-headed bolt)		4 of M3—8		4 of M4—10				
Stage accuracy specification	Uni-directional positioning accuracy		Within 10μm		Within 5μm			
	Repeatability positioning accuracy		Within ±0.5μm		Within ±0.3μm			
	Lost motion		Within 1μm					
	Backlash		Within 0.5μm					
	Straightness		Within 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.

Dimensional outline drawings



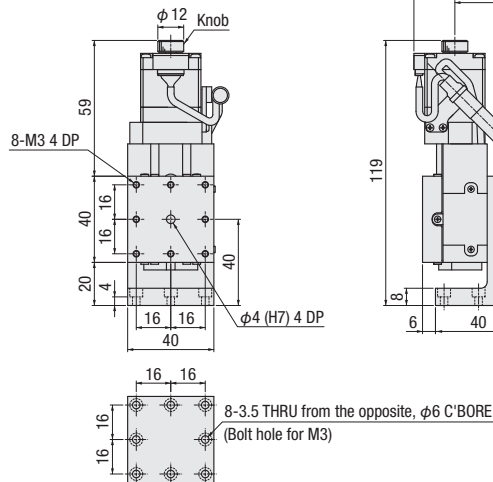
PART
COMMUNITY

CAD
DATA

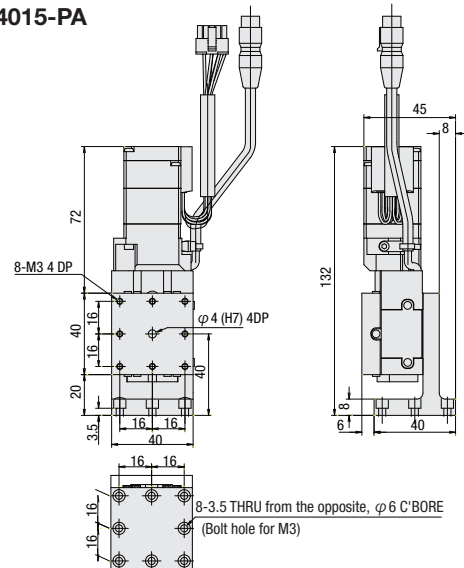
SURUGA
SEIKI

CAD
3D・2D

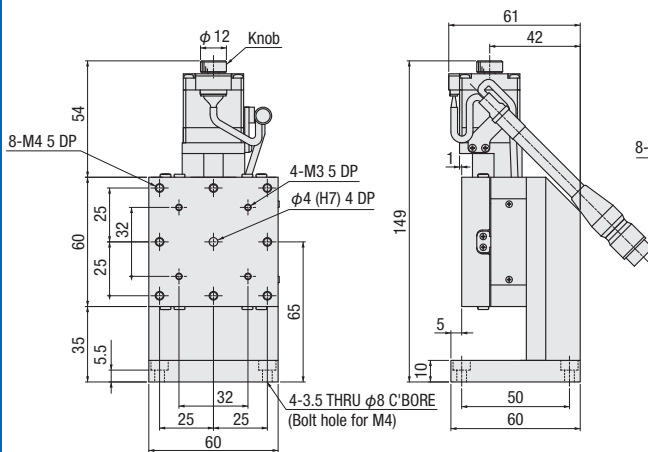
KZC04015-C



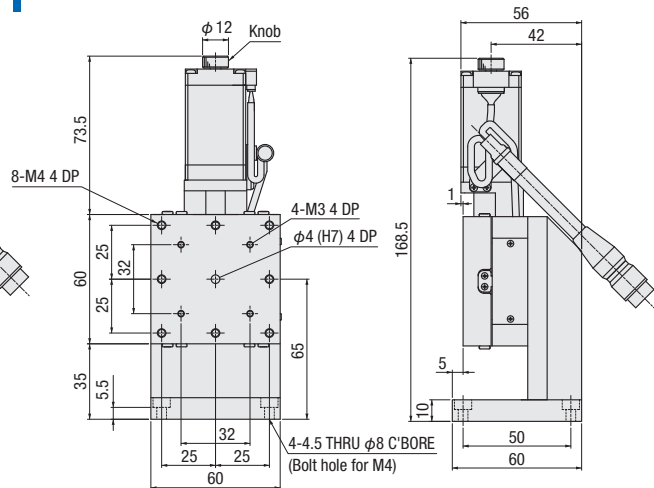
KZC04015-PA



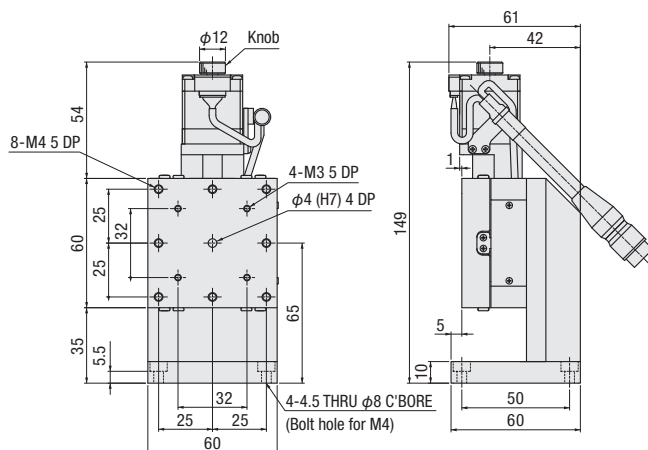
KZC06020-C



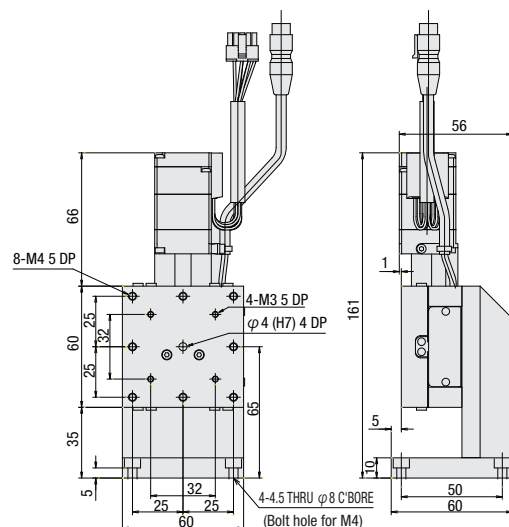
KZC06020-F



KZC06020-G



KZC06020-PA



Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

40

50

60

70

80

100

120

Other

1

088

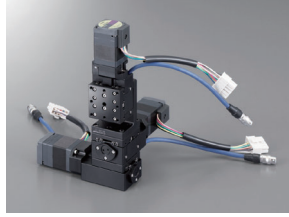
XYZ-axis Cross Roller Guide: KWC04015/KWC06020

RoHS

KWC04015-C



KWC04015-PA



KWC06020-LC



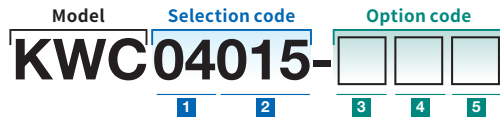
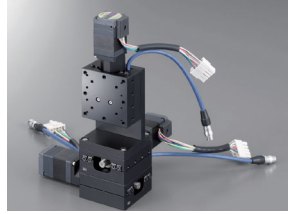
KWC06020-LF



KWC06020-LG



KWC06020-LPA



► Cable P.1-207~
► Electrical specification P.1-091~

1 Table size

04	□40mm
06	□60mm

* Not available 04020 and 06015

2 Travel length

015	15mm
020	20mm

3 Sensor cover location specification

L	L Specification
R	R Opposite hand

* 04015 for only L position

4 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.

5 Cable option

Code	Specification	Cable type
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
Blank	Cable is not included (Standard)	—
P	Cable for α step 3m	—

* One end loose position to only stage opposite side.

* If you choose the option specification, please add the difference to standard price.

* See page P.1-207,209~ for cable details.

* Please select "Code A, C, F or H" when connect with stepping motor controller(DS102/112).

SPEC

Model		KWC04015-C	KWC04015-PA	KWC06020-LC	KWC06020-LF	KWC06020-LG	KWC06020-LPA
(Opposite hand)		—		KWC06020-RC	KWC06020-RF	KWC06020-RG	KWC06020-RPA
Mechanical specification	Travel length	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
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]				
	Pitching/Yawing		Within 25″/Within 20″		Within 20″/Within 15″		
Sensor	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		Within 10μm		Within 5μm		
	Repeatability positioning accuracy		Within ±0.5μm		Within ±0.3μm		
	Lost motion		Within 1μm				
	Backlash		Within 0.5μm				
	Straightness		Within 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.

Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

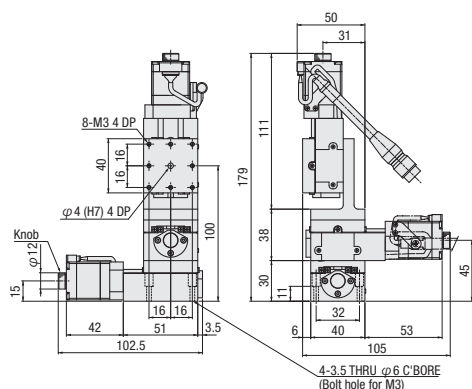
□100

□120

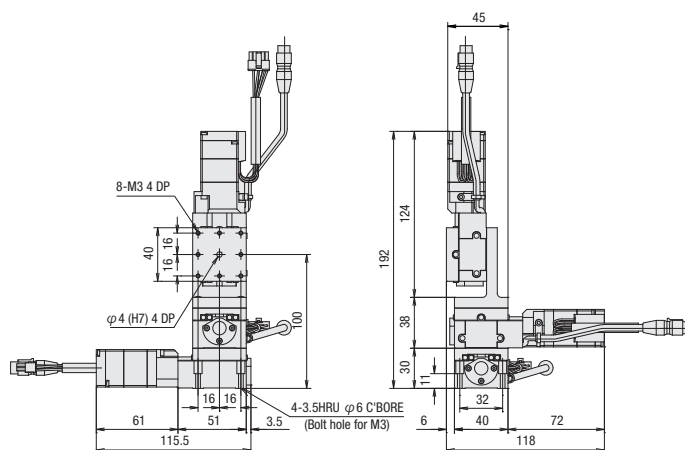
Other

Dimensional outline drawings

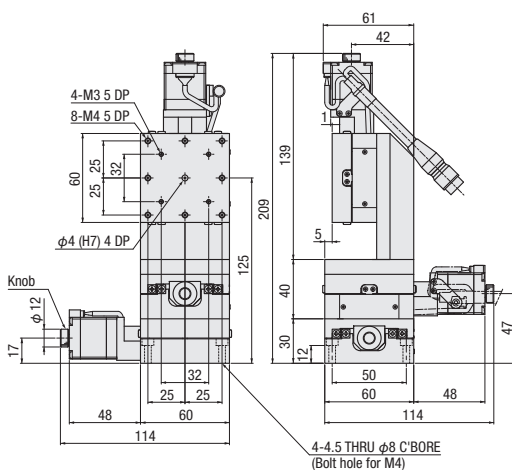
KWC04015-C



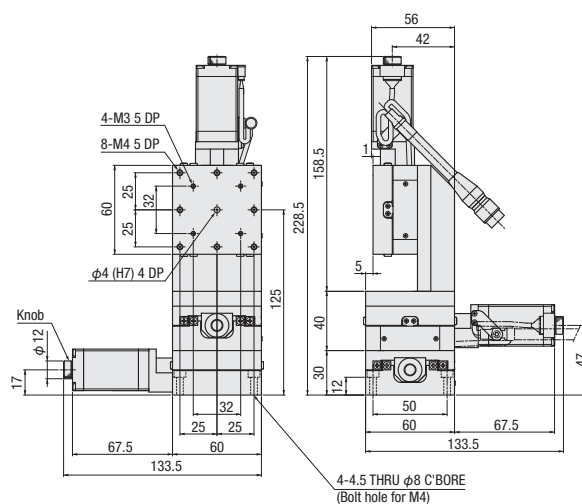
KWC04015-PA



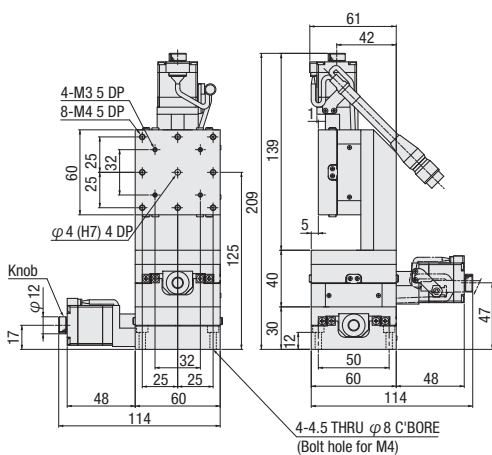
KW C06020-LC



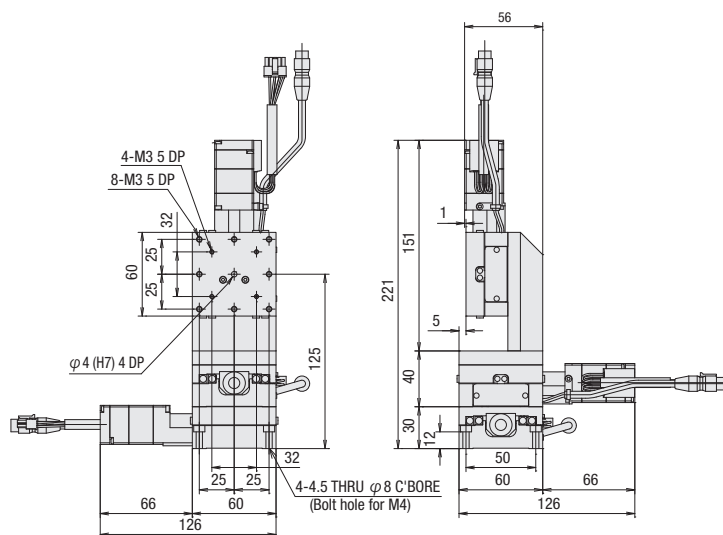
KWC06020-LF



KWC06020-LG



KWC06020-LPA



Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear Ball

CAVE-X
Linear ball

Cross Roller

Slide Guide

40

50

□60

70

80

☐ 100

120

Other

1

090

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)	ARM24SAK (□28mm)	
	Step angle	0.72°			0.36°	0.36° (Set to 1000P/R)	
	Driver type	▶ P.1-205~				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.1-213~ for details of single motor specification.

*2 Model is our own management model.

Available sensor DC5V~24V.

This stages have DC5V~24V correspondence sensor. 24V correspondence sensor amplifier substrateK-PCBA24 is not necessary.

It used to require the K-PCBA24 when the former products are driven by use of a motion control board or programmable logic controller (PLC) without our controller.

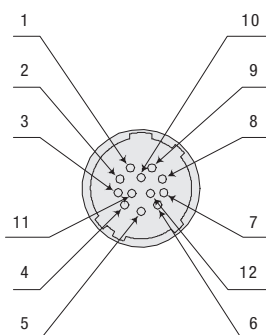
Note

Must be wired without sensor amplifier substrate when our customer who uses the former stages KS101-15, -20 and amplifier substrates will be replaced with KXC04 and KXC06 stages.

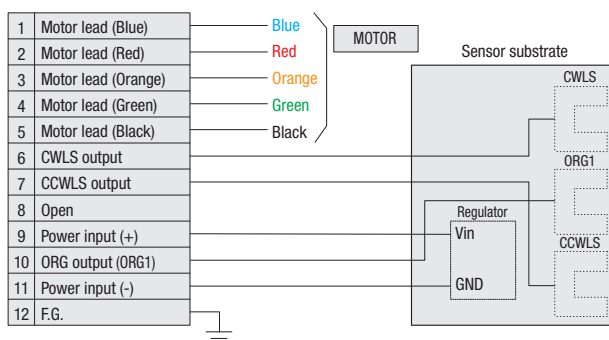
We have variety of harness that can be jumped between input and output connector of sensor amplifier substrate for taking advantage of existing cables that using sensor amplifier substrate.

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

Pin allocation (The same)

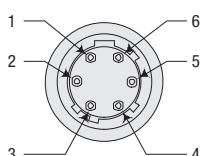


Connection diagram (The same)

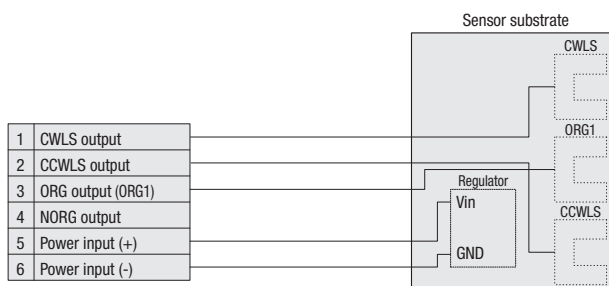


Motor code: PA (α step) Motor cable model: CC030VA2R2 ▶ P.1-211

Pin allocation (Sensor)

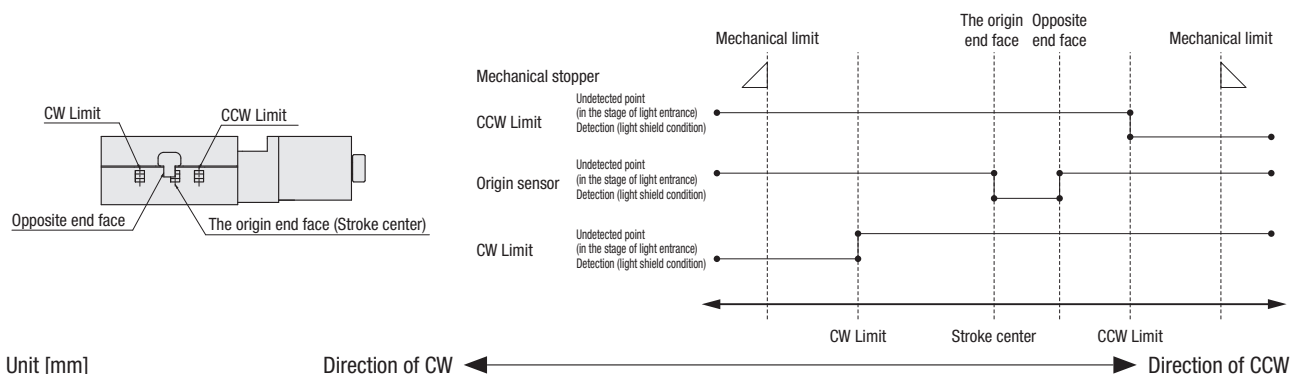


Connection diagram (Sensor)



※Other side cable specification See page ▶ P.1-212

Timing chart



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

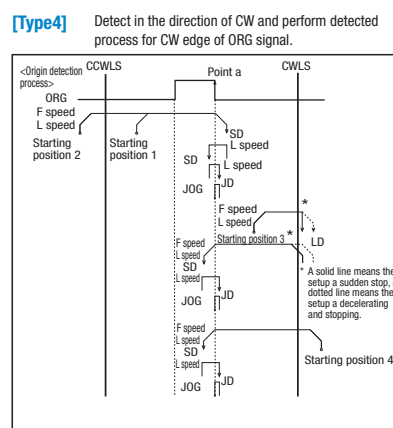
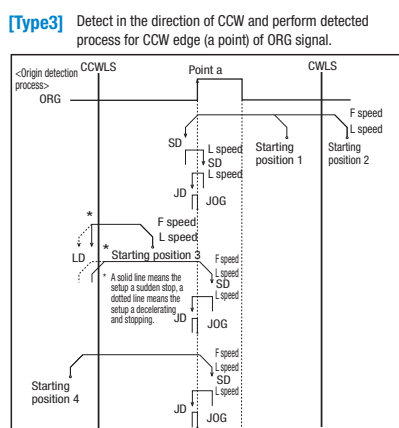
■ KXC04015/KXC06020 recommended return to origin Return to origin sequence P.1-201~

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.



Adaptive driver

■ Driver P.1-205~

DC24V type input

Model	CVD507-K-A9	CRD5107P
Divisions	1~1/250 (16 steps)	1~1/250 (16 steps)

Adaptive stepping motor controller

■ Controller P.1-197~

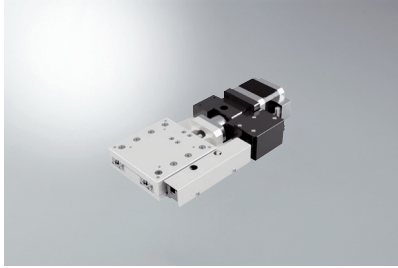
Input power	General-purpose input/output port	Driver type	
		Full/Half	1~1/250 (16 steps)
AC100-240V	Without	DS102ANR	DS102AMS
	With	DS102ANR-IO	DS102AMS-IO
DC24V	Without	DS112ANR	DS112AMS
	With	DS112ANR-IO	DS112AMS-IO



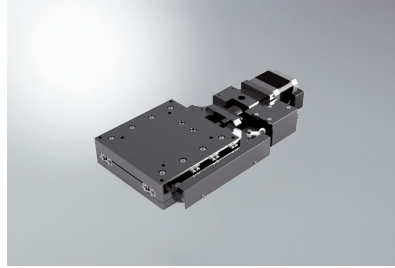
DS112/102

Thin Type X-axis Cross Roller Guide: KX0725/KX0830/KX1040/KX1250

KX0725-LG



KX1040-LG



RoHS

Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

40

50

60

70

80

100

120

Other

Model Selection code Option code
K X0725-LG 5
1 2 3 4 5

Cable P.1-207~
Electrical specification P.1-099~

1 Axis

X	X-axis
---	--------

2 Table size

07	70mm
08	80mm
10	100mm
12	120mm

3 Travel length

25	25mm
30	30mm
40	40mm
50	50mm

* Selectable only 0725, 0830, 1040, 1250 in combination with 2 and 3.

4 Sensor cover location specification

L	L position
R	Opposite hand

5 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.

* See page P.1-207, 209~ for more cable details.

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

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		
	Weight		1.0kg	1.2kg	1.6kg	2.2kg
Accuracy specification	Resolution (Pulse)	Full/Half	1μm/0.5μm			
		Microstep	0.05μm (1/20 on resolution)			
	MAX speed		10mm/sec			
	Uni-directional positioning accuracy		Within 5μm			
	Repeatability positioning accuracy		Within ±0.3μm			
	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		Within 1μm			
	Backlash		Within 0.5μm			
	Straightness		Within 1μm			
	Parallelism		Within 30μm			
	Motion parallelism		Within 10μm		Within 15μm	
Pitching/Yawing		Within 20°/Within 15°				
Sensor	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	

Dimensional outline drawings



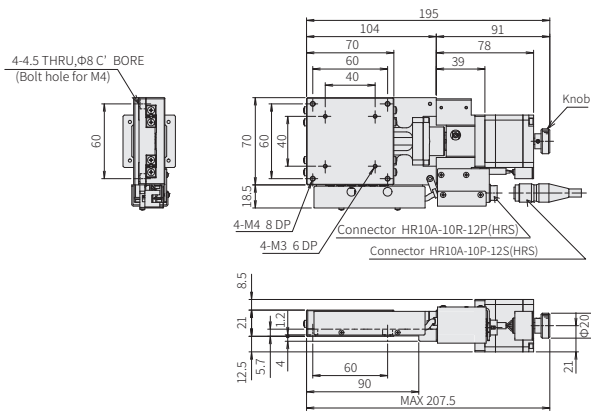
PART
COMMUNITY

CAD
DATA

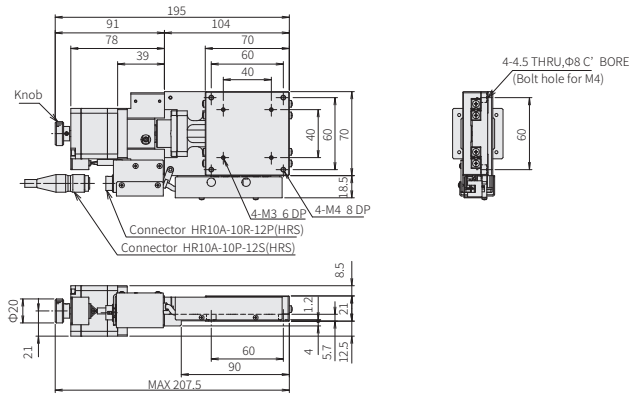
SURUGA
SEIKI

CAD
3D・2D

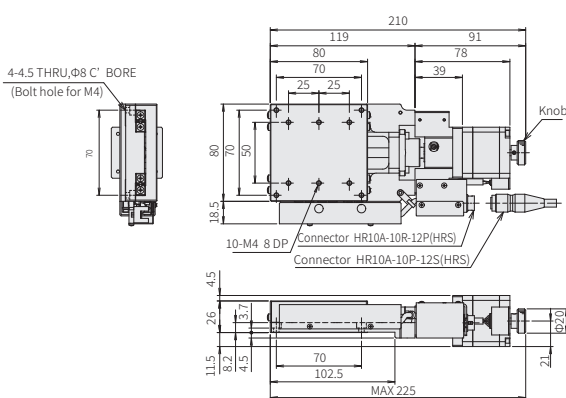
KX0725-LG



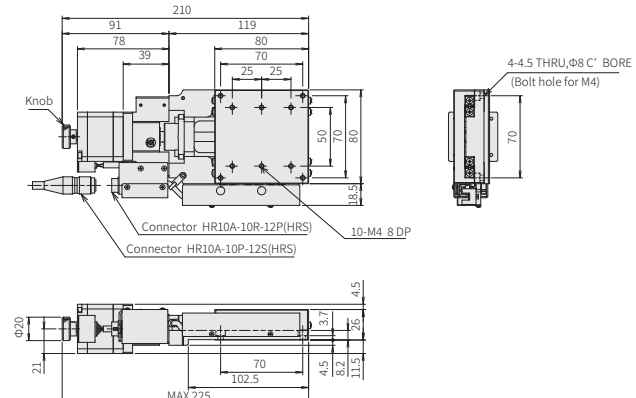
KX0725-RG



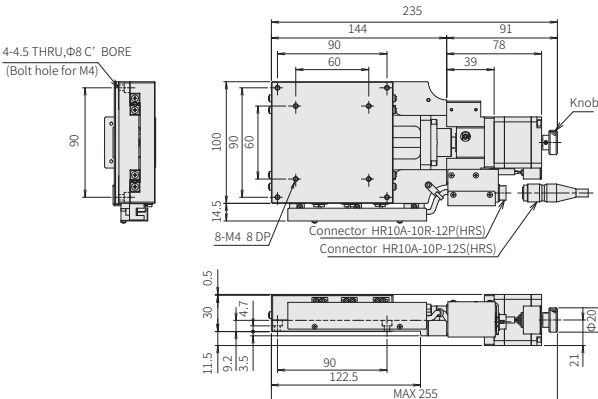
KX0830-LG



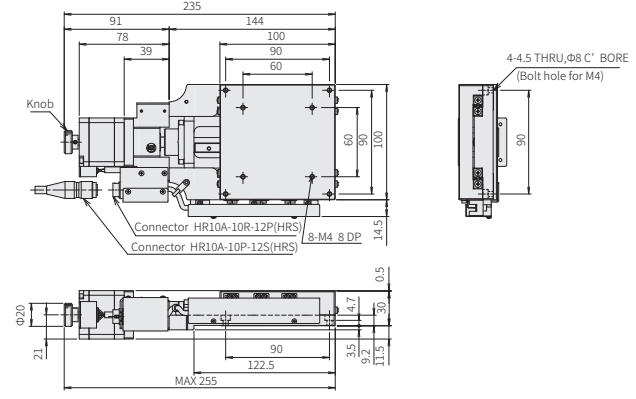
KX0830-RG



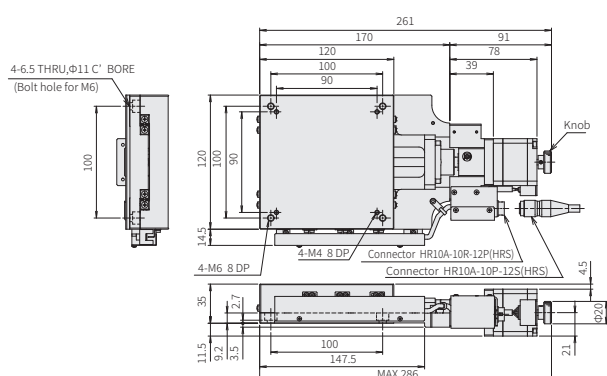
KX1040-LG



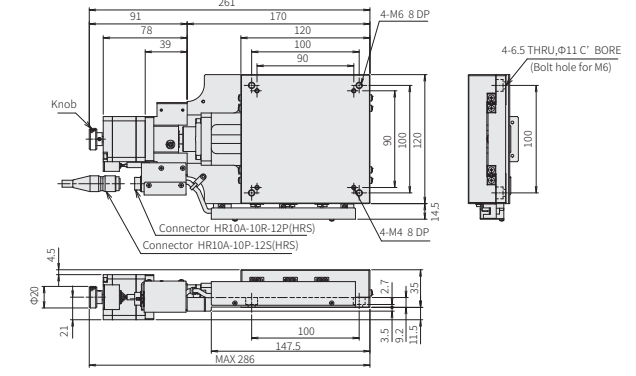
KX1040-RG



KX1250-LG



KX1250-RG



Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

40

50

60

70

80

100

120

Other

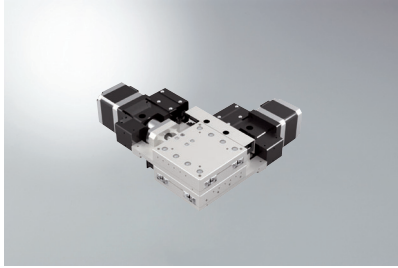
Motorized Stage

Thin Type XY-axis Cross Roller Guide: KY0725/KY0830/KY1040/KY1250

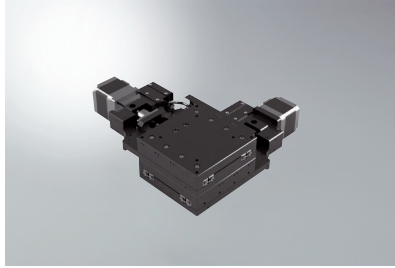
Motorized Stage

RoHS

KY0725-LG



KY1040-LG



X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Model Selection code Option code
K **Y0725-LG** **5**
1 2 3 4 5

Cable P.1-207~
Electrical specification P.1-099~

1 Axis

Y	XY-axis
---	---------

2 Table size

07	☐ 70mm
08	☐ 80mm
10	☐ 100mm
12	☐ 120mm

3 Travel length

25	25mm
30	30mm
40	40mm
50	50mm

* Selectable only 0725, 0830, 1040, 1250 in combination with **2** and **3**.

4 Sensor cover location specification

L	L position
R	Opposite hand

5 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.

* See page P.1-207, 209~ for more cable details.

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

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

☐ 40

☐ 50

☐ 60

☐ 70

☐ 80

☐ 100

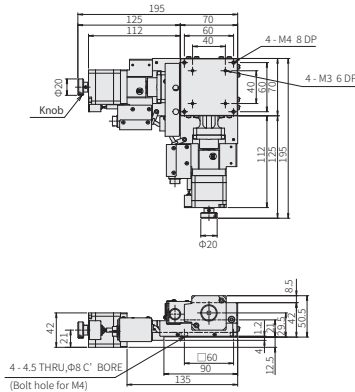
☐ 120

Other

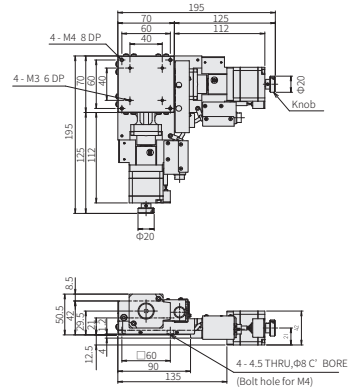
SPEC						
Model		KY0725-LG5	KY0830-LG5	KY1040-LG5	KY1250-LG5	
(Opposite hand)		KY0725-RG5	KY0830-RG5	KY1040-RG5	KY1250-RG5	
Mechanical specification	Travel length		25mm	30mm	40mm	50mm
	Table size		70×70mm	80×80mm	100×100mm	120×120mm
	Feed screw		Ball screwφ6 lead 1	Ball screwφ8 lead 1		
	Guide		Crossed roller guide			
	Main materials-Finishing		Aluminum—White almite finish	Aluminum—Black almite finishing		
Weight		2.0kg	2.4kg	3.2kg	4.4kg	
Accuracy specification	Resolution (Pulse)	Full/Half	1μm/0.5μm			
		Microstep	0.05μm (1/20 on resolution)			
	MAX speed		10mm/sec			
	Load capacity		10kgf [98N]	15kgf [147N]	20kgf [196N]	25kgf [245N]
	Perpendicularity		Within 30μm/Full stroke			
Sensor	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
Style and accuracy specification	Uni-directional positioning accuracy		Within 5μm			
	Repeatability positioning accuracy		Within ±0.3μm			
	Lost motion		Within 1μm			
	Backlash		Within 0.5μm			
	Straightness		Within 1μm			
	Pitching/Yawing		Within 20″/Within 15″			

Dimensional outline drawings

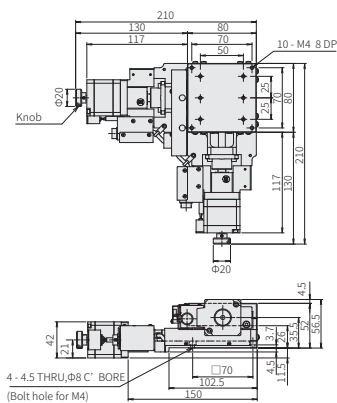
KY0725-LG



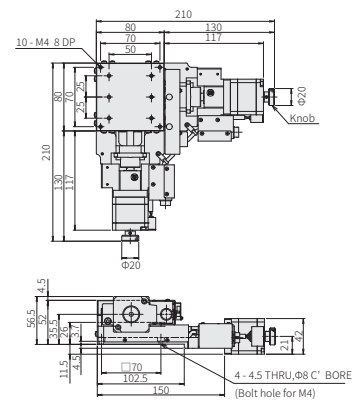
KY0725-RG



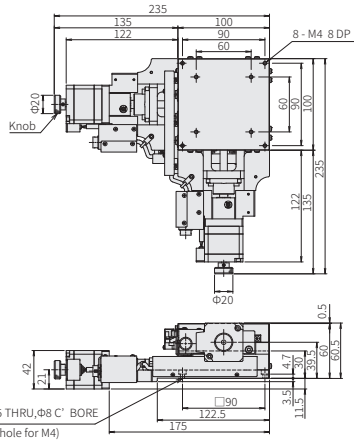
KY0830-LG



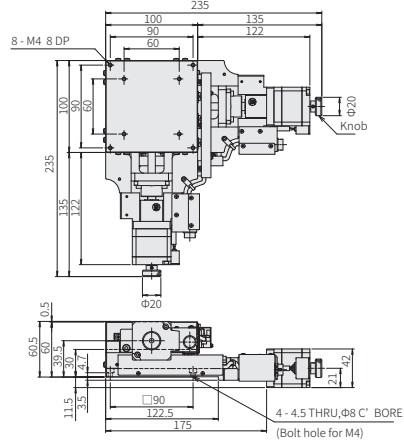
KY0830-RG



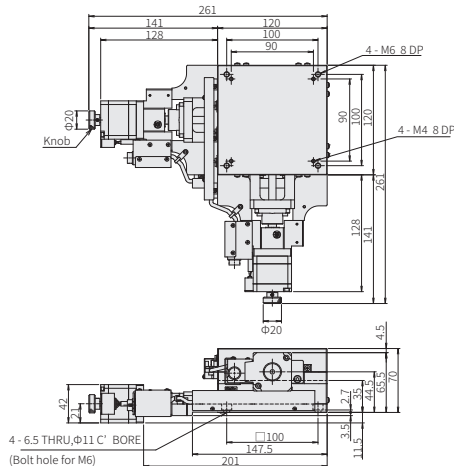
KY1040-LG



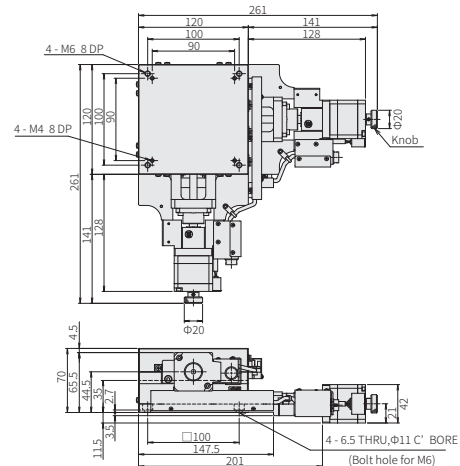
KY1040-RG



KY1250-LG



KY1250-RG



Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

□120

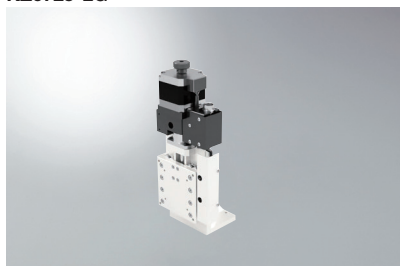
Other

Thin Type Z-axis Cross Roller Guide: KZ0725/KZ0830/KZ1040/KZ1250

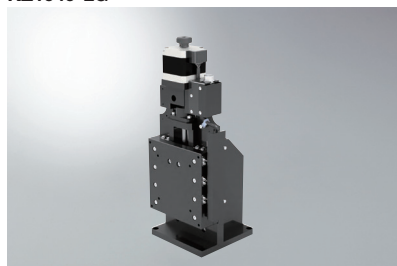
Motorized Stage

RoHS

KZ0725-LG



KZ1040-LG



X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear Ball

CAVE-X
Linear ball

Cross Roller

Slide Guide

40

50

60

70

80

100

120

Other

Model Selection code Option code
K **Z0725-LG** **5**

1

2

3

4

5

▶ Cable P.1-207~

▶ Electrical specification P.1-099~

1 Axis

Z Z-axis

2 Table size

07	70mm
08	80mm
10	100mm
12	120mm

3 Travel length

25	25mm
30	30mm
40	40mm
50	50mm

* Selectable only 0725, 0830, 1040, 1250 in combination with **2** and **3**.

4 Sensor cover location specification

L	L position
R	Opposite hand

5 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.

* See page P.1-207, 209~ for more cable details.

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

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	Ball screwφ8 lead 1		
	Guide	Crossed roller guide			
	Main materials-Finishing	Aluminum—White almite finish	Aluminum—Black almite finishing		
	Weight	1.3kg	1.5kg	2.6kg	4.0kg
Accuracy specification	Resolution (Pulse)	Full/Half	1μm/0.5μm		
		Microstep	0.05μm (1/20 on resolution)		
	MAX speed	10mm/sec			
	Load capacity (Excitation)	5kgf [49N]	7.5kgf [73.5N]		
	Vertical degree	Within 20μm	Within 25μm	Within 30μm	Within 40μm
	Pitching/Yawing	Within 20″/Within 15″			
	Uni-directional positioning accuracy	Within 15μm			
	Repeatability positioning accuracy	Within ±0.3μm			
	Lost motion	Within 1μm			
	Straightness	Within 2μm			
Sensor	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

Dimensional outline drawings



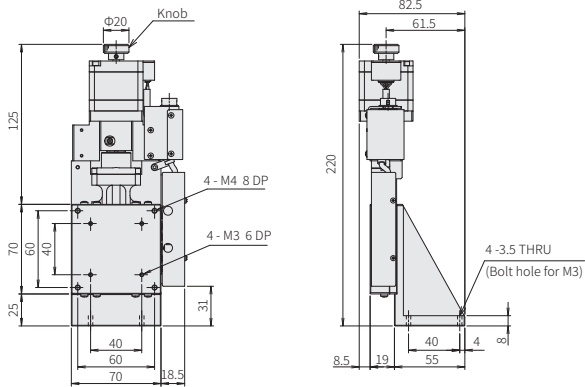
PART
COMMUNITY

CAD
DATA

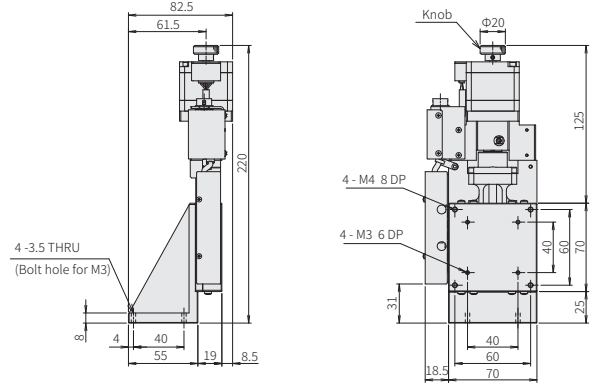
SURUGA
SEIKI

CAD
3D·2D

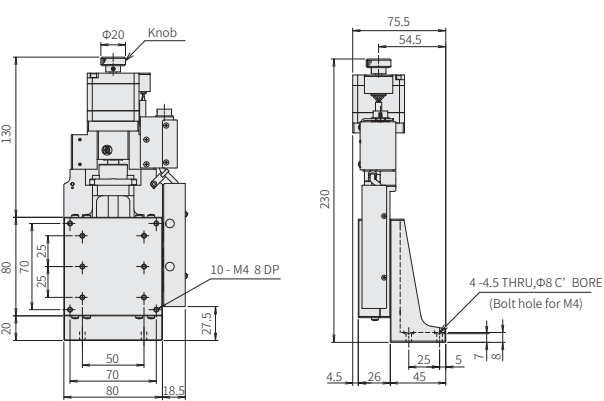
KZ0725-LG



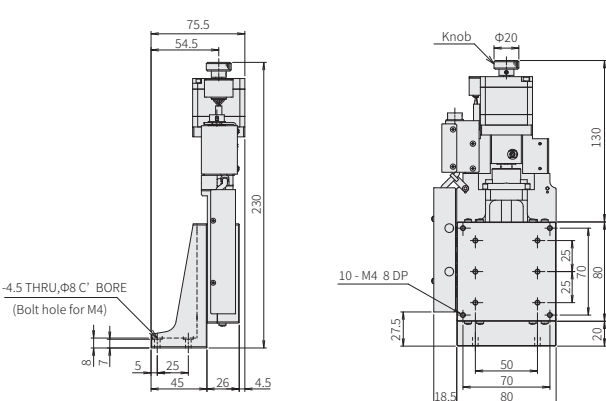
KZ0725-RG



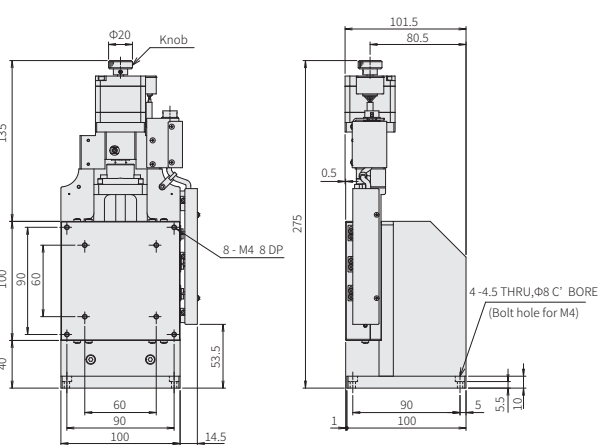
KZ0830-LG



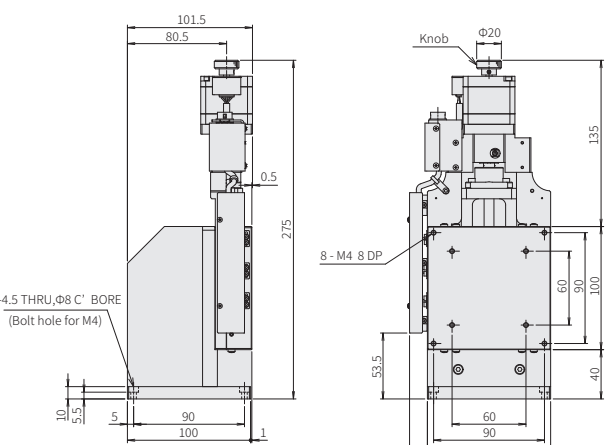
KZ0830-RG



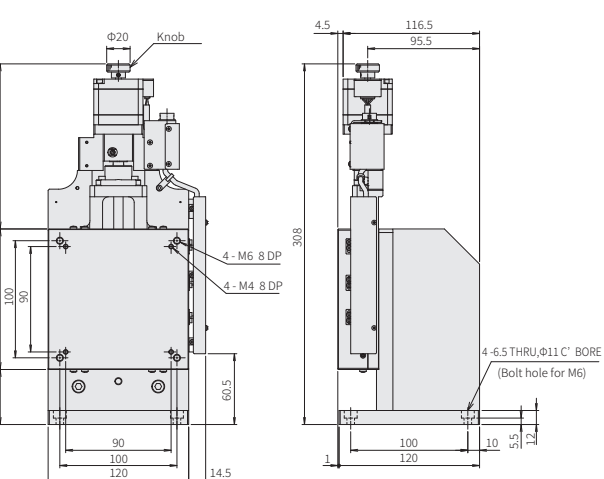
KZ1040-LG



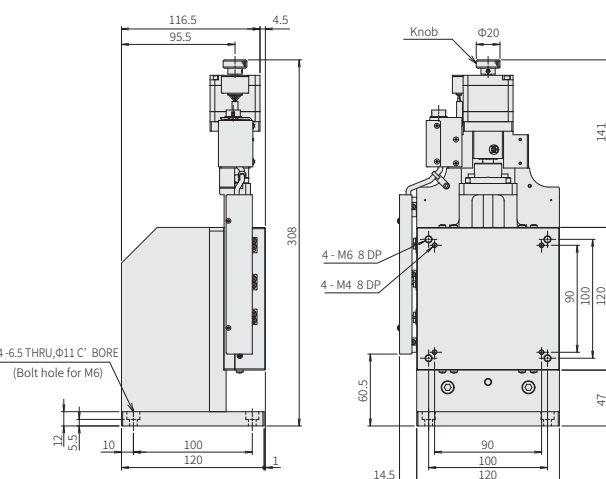
KZ1040-RG



KZ1250-LG



KZ1250-RG



Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

□120

Other

1

098

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 swithing plate will be set as below.

The dip switch 1 and 2 is used for logic setting of origin sensor ORG1.

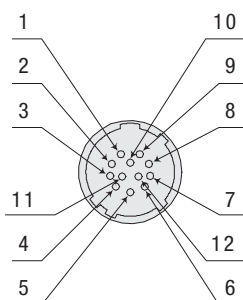
{ On detection (light shield condition): Output transistor OFF (Non-continuity): 1=ON,2=OFF
On detection (light shield condition): Output transistor ON (Continuity): 1=OFF,2=ON

*1 See page P.1-213~ for details of single motor specification

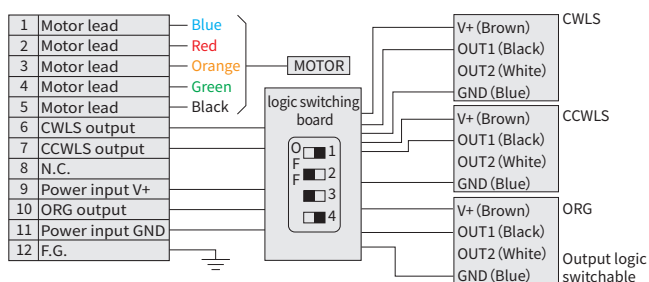
*2 Motor model is our own management model.

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

Pin allocation



Connection diagram



* Dip switch number 3 and 4 are not used.

X

XY

7

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear Ball

CAVE-X
Linear ball

Cross Roller

Slide Guide

40

50

60

□70

80

100

120

Other

1

100



X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear Ball

CAVE-X

Linear ball

Cross Roller

Slide Guide

40

50

60

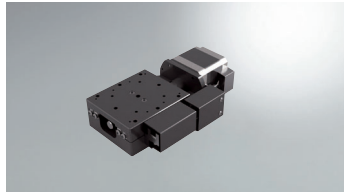
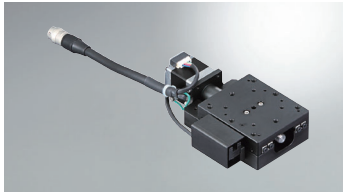
70

80

100

120

Other



RoHS

Model Selection code Option code

KS101-30L -

1 2 3 4 5

- ▶ Cable P.1-207~
- ▶ Electrical specification P.1-107~

1	X-axis
2	Travel
30	30mm

Code	Specification
L	L position
R	Opposite hand

Code	Specification
C	Standard
G	High resolution
PA	☐ 28 α step (DC)
QA	☐ 42 α step (AC)

* Must be choosen the cable from 2A~5B for PA and QA.

Code	Specification	Cable type
Blank	2m	D214-2-2E
1	2m One end loose	D214-2-2E
2	4m	D214-2-4E
3	4m One end loose	D214-2-4E
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	D214-2-4R
9	Robot cable 2m one end loose	D214-2-2R
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.
- * If you choose the option specification, please add the difference to standard price.
- * See page  P.1-207, 209~ for more cable details.
- * Please select "blank, 2, 6 and 7" when connect with stepping motor controller(DS102/112).

* The price includes a driver for a step. Motor cable sold separately. Please order from cable option 2A,5A,2R and 5R. Sensor cable attached only receiving connector. See page P.1-107~.

Dimensional outline drawings



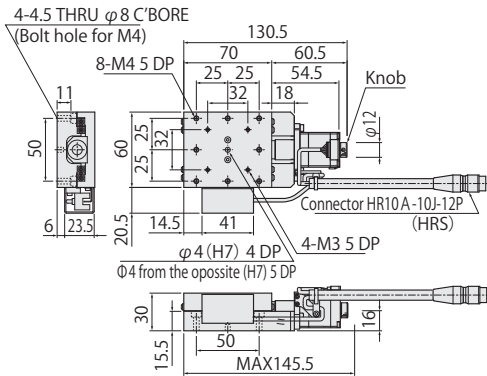
CAD COMMUNITY

CAD DATA

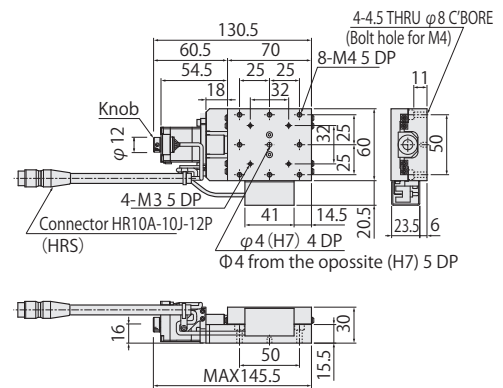
SURUGA SEIKI

CAD 3D·2D

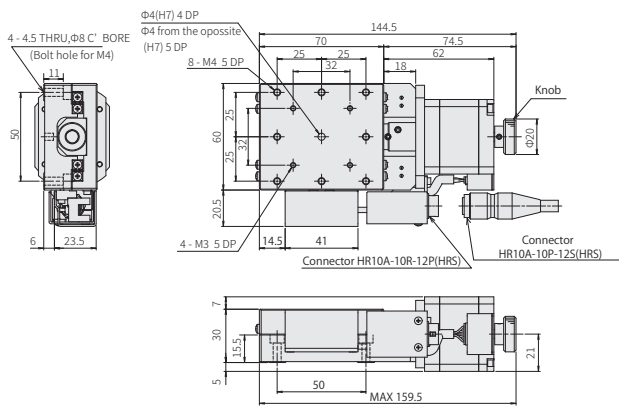
KS101-30LC



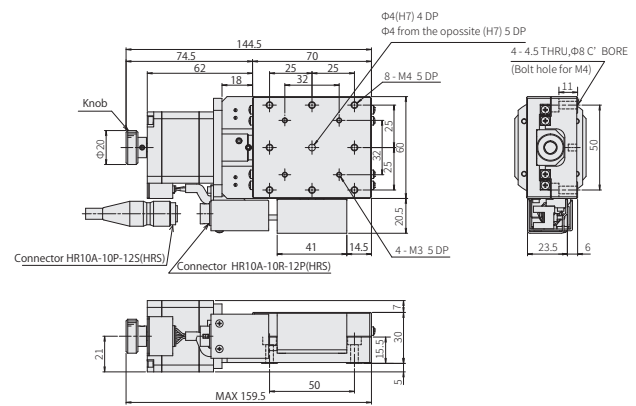
KS101-30RC



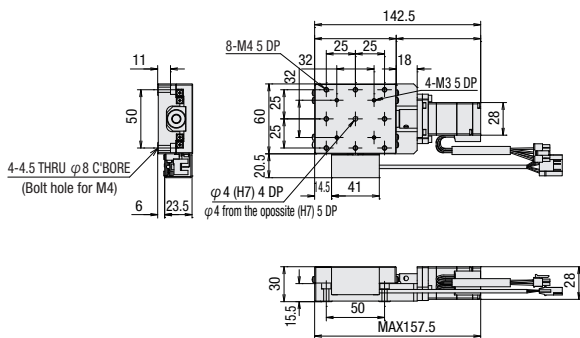
KS101-30LG



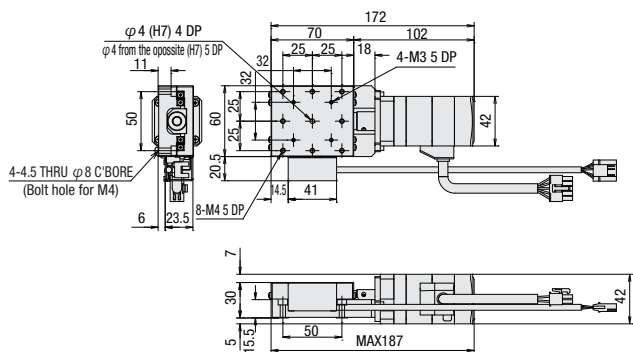
KS101-30RG



KS101-30LPA



KS101-30LQA



Motorized Stage

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear Ball

CAVE-X Linear ball

Cross Roller

Slide Guide

☐ 40

☐ 50

☐ 60

☐ 70

☐ 80

☐ 100

☐ 120

☐ Other

1

102

XY-axis Cross Roller Guide: KS201-30

RoHS

KS201-30LC



KS201-30LG



KS201-30RC



KS201-30RG



Model Selection code Option code
KS 201-30L **5**

● Cable P.1-207~
 ● Electrical specification P.1-107~

1 Axis

2	XY-axis
---	---------

2 Travel

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

3 Sensor cover location specification

Code	Specification
L	L position
R	Opposite hand

4 Motor option

C	Standard
G	High resolution

5 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.
 * See page P.1-207, 209~ for more cable details.
 * Please select "blank, 2, 6 and 7" when connect with stepping motor controller(DS102/112).

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		—	0.05μm (1/20 on resolution)
	Load capacity		20mm/sec	10mm/sec
	Perpendicularity		4.5kgf [44.1N]	
Sensor	Pitching/Yawing		Within 15μm/Full stroke	
	Limit sensor		Within 25°/Within 20°	
	Origin sensor		Installed	
	Slit origin sensor		Installed	
	Provided screw (Hexagon-headed bolt)		—	
Single axis accuracy specification	Uni-directional positioning accuracy		4 of M4—16	
	Repeatability positioning accuracy		Within 5μm	
	Lost motion		Within ±0.3μm	
	Backlash		Within 1μm	
	Straightness		Within 0.5μm	

Motorized Stage

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear Ball

CAVE-X Linear ball

Cross Roller

Slide Guide

40

50

60

70

80

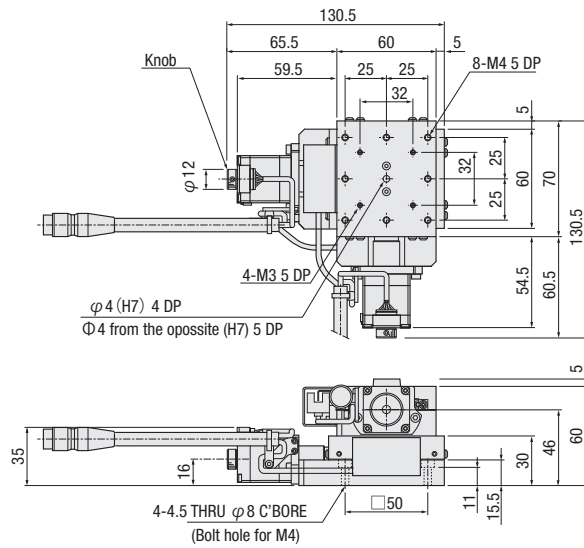
100

120

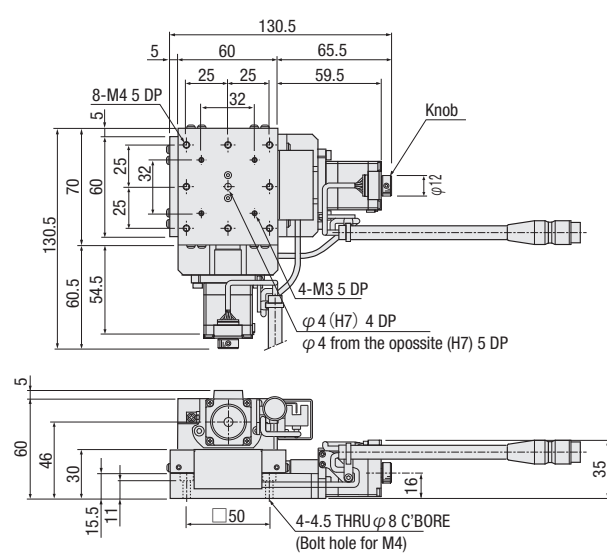
Other

Dimensional outline drawings

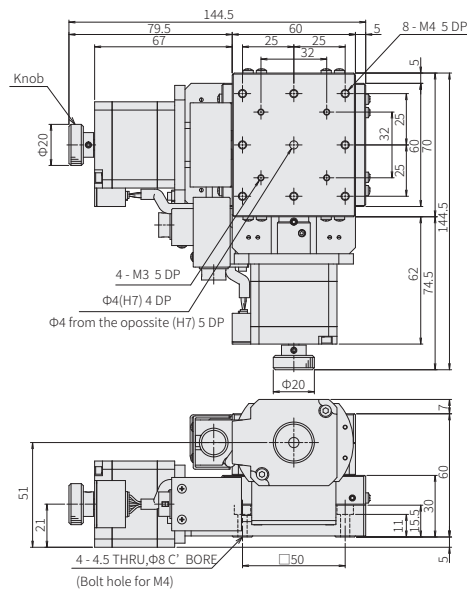
KS201-30LC



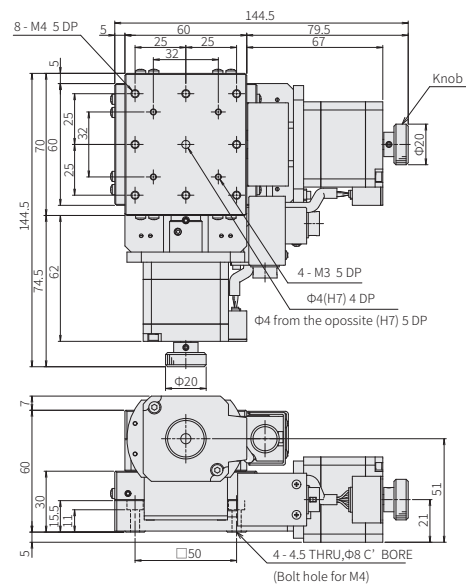
KS201-30RC



KS201-30LG



KS201-30RG



Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

☐ 40

☐ 50

☐ 60

☐ 70

☐ 80

☐ 100

☐ 120

Other

1

104

Z-axis Cross Roller Guide: KS301-30

RoHS

KS301-30LC



KS301-30LG



KS301-30RC



KS301-30RG



Model Selection code Option code
KS 301-30L **5**

► Cable P.1-207~
 ► Electrical specification P.1-107~

1 Axis

3	Z-axis
---	--------

2 Travel

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

3 Sensor cover location specification

Code	Specification
L	L position
R	Opposite hand

4 Motor option

C	Standard
G	High resolution

5 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.
 * See page P.1-207, 209~ for more cable details.
 * Please select "blank, 2, 6 and 7" when connect with stepping motor controller(DS102/112).

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)	2μm/1μm	1μm/0.5μm
	MAX speed	20mm/sec	10mm/sec
	Load capacity (Excitation)	3.0kgf [29.4N]	
	Vertical degree	Within 15μm/Full stroke	
Sensor	Pitching/Yawing	Within 25°/Within 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	Within 5μm	
	Repeatability positioning accuracy	Within ±0.3μm	
	Lost motion	Within 1μm	
	Backlash	Within 0.5μm	
	Straightness	Within 3μm	

Motorized Stage

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear Ball

CAVE-X Linear ball

Cross Roller

Slide Guide

40

50

60

70

80

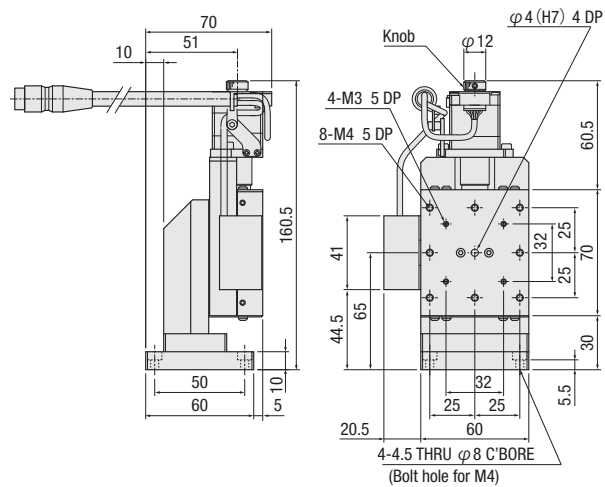
100

120

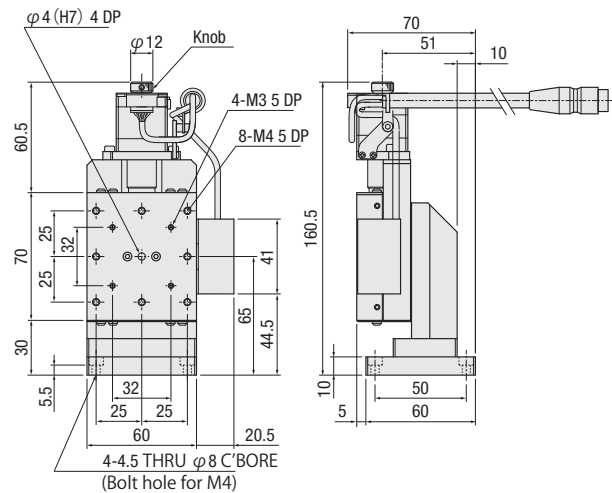
Other

Dimensional outline drawings

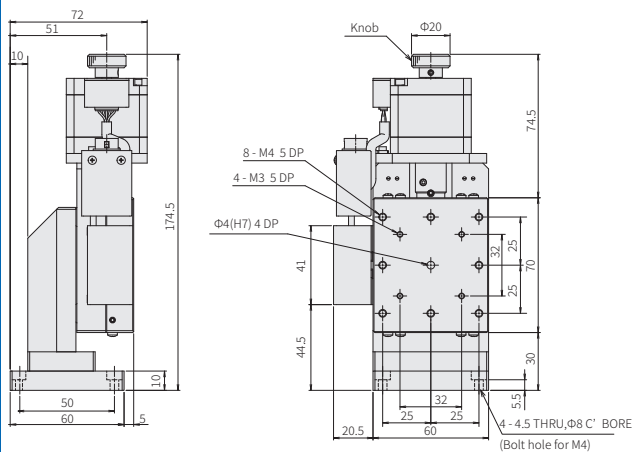
KS301-30LC



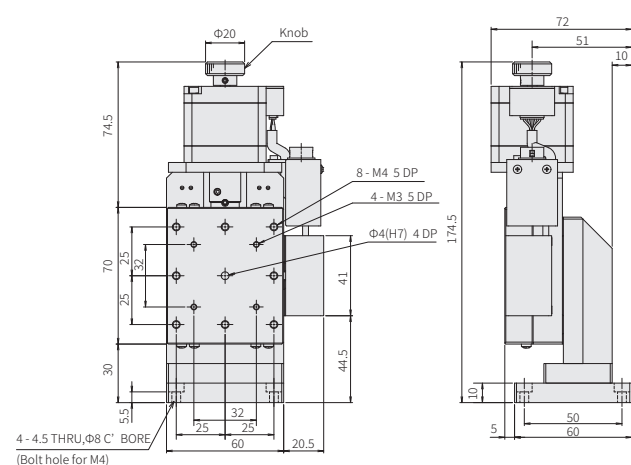
KS301-30RC



KS301-30LG



KS301-30RG



Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

☐ 40

☐ 50

☐ 60

☐ 70

☐ 80

☐ 100

☐ 120

Other

1

106

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 motor (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)	
	Driver type	P.1-205~		ARD-K	ARD-A
Connector	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.)	
	Cpmpatible receiving contact	—		170205-1 (Tyco Electronics Japan G.K.)	
Sensor	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 less50mA 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)				

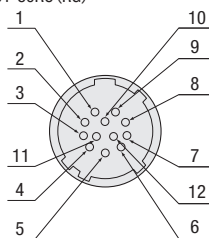
*1 See page P.1-213~ for details of single motor specification

*2 Model is our own management model.

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

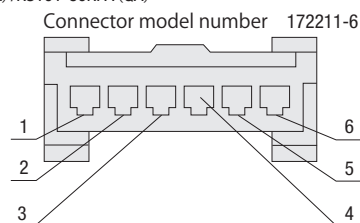
Pin allocation

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



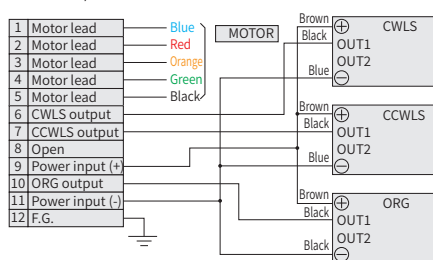
Pin allocation (sensor)

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



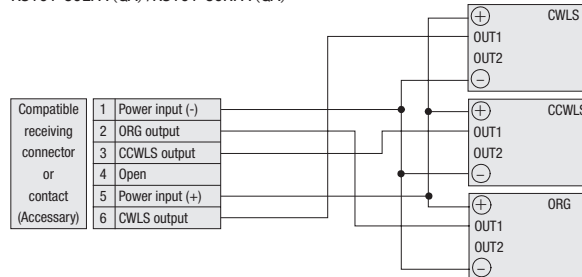
Connection diagram

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

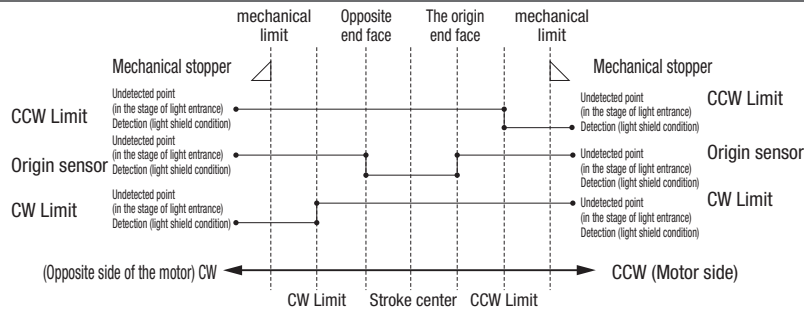
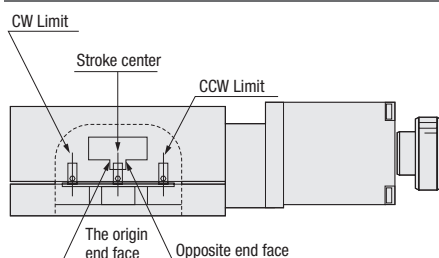


Connection diagram (sensor)

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



Timing chart



Unit [mm]	Direction of CW			Direction of CCW				
	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.

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.1-201~

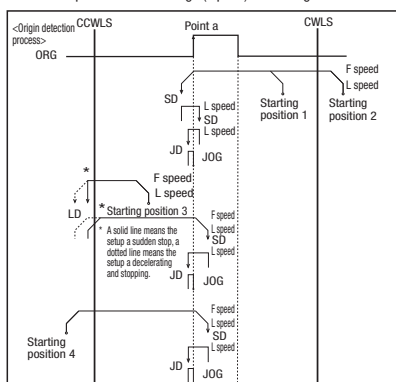
Type 3: Detect in the direction of CCW and perform detected process for CCW edge(a point) of ORG signal.

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

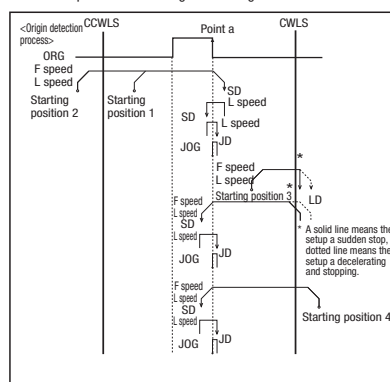
Type 9: After finished Type3, perform detected process for CCW edge of TIMING signal.

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.



Adaptive driver

Driver ▶ P.1-205~

DC24V type input

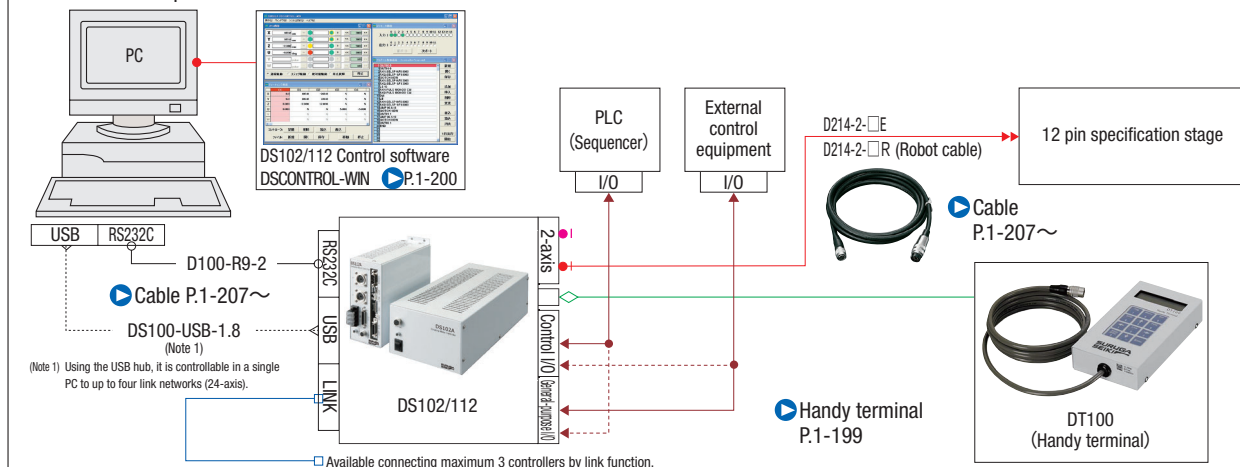
Model	CVD507-K-A9	CRD5107P
Divisions	1~1/250 (16 steps)	1~1/250 (16 steps)

Adaptive stepping motor controller

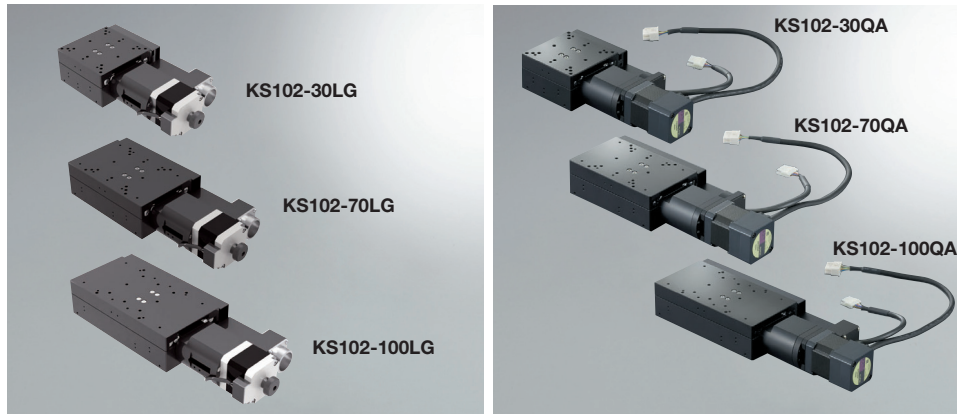
Controller ▶ P.1-197~

Input power	General-purpose input/output port	Driver type	
		Full/Half	1~1/250 (16 steps)
AC100-240V	Without	DS102ANR	DS102AMS
	With	DS102ANR-IO	DS102AMS-IO
DC24V	Without	DS112ANR	DS112AMS
	With	DS112ANR-IO	DS112AMS-IO

Connectin example



X-axis Cross Roller Guide: KS102



RoHS

* This is for illustrative purpose.

Model	Selection code	Option code
KS102-30	L G-5	
1	2	3 4 5

[Cable P.1-207~](#)
[Electrical specification P.1-111~](#)

1 Axis

1	X-axis
---	--------

2 Travel

30	30mm
70	70mm
100	100mm

3 Sensor cover location specification

Code	Specification
L	L position
R	Opposite hand

* The sensor cover position code is blank when the α -step motor is selected.

4 Motor option

Code	Specification
G	Standard
QA	$\square$ 42 α step (AC)

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

5 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.

* If you choose the option specification, please add the difference to standard price.

* See page [P.1-207, 209~](#) for more cable details.

* 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	100mm
	Table size	80×80mm	80×130mm	80×160mm	80×80mm	80×130mm
	Feed screw	Ball screwφ8 lead 1				
	Guide	Crossed roller guide				
	Main materials-Finishing	Aluminum-Black almite finishing				
Accuracy specification	Weight	1.4kg	1.8kg	2.2kg	1.6kg	2.0kg
	Resolution (Pulse)	Full/Half Microstep	1μm/0.5μm 0.05μm (1/20 on resolution)		1μm (Set to 1000P/R) -	
	MAX speed	10mm/sec				
	Uni-directional positioning accuracy	Within 5μm		Within 10μm	Within 5μm Within 10μm	
	Repeatability positioning accuracy	Within ±0.3μm				
	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]
	Lost motion	Within 1μm				
	Backlash	Within 0.5μm				
	Parallelism	Within 30μm				
	Motion parallelism	Within 10μm	Within 15μm		Within 10μm	Within 15μm
	Pitching/Yawing	Within 25°/Within 15°	Within 25°/Within 20°		Within 25°/Within 15°	Within 25°/Within 20°
Sensor	Limit sensor	Installed				
	Origin sensor	Installed				
	Slit origin sensor	Installed				
Provided screw (Hexagon-headed bolt)		4 of M4—20				

* The price 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 conector. See page [P.1-111~](#).

* The controller for α step drive is not supplied.

Dimensional outline drawings



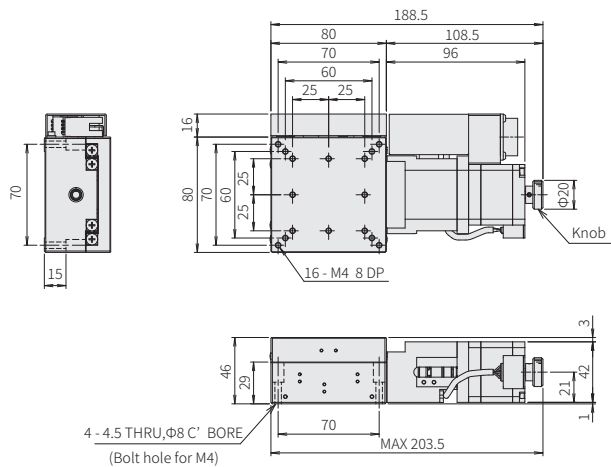
PART
COMMUNITY

CAD
DATA

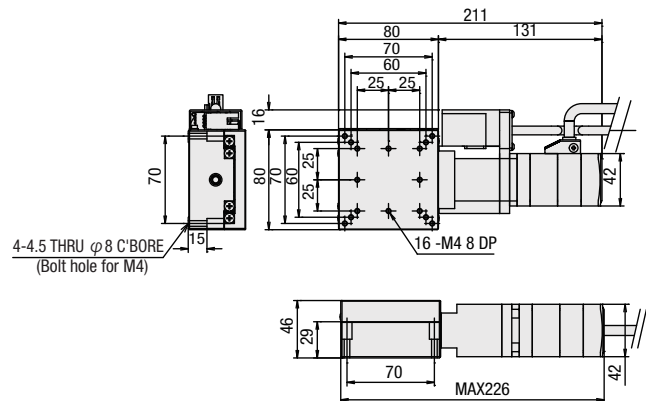
SURUGA
SEIKI

CAD
3D·2D

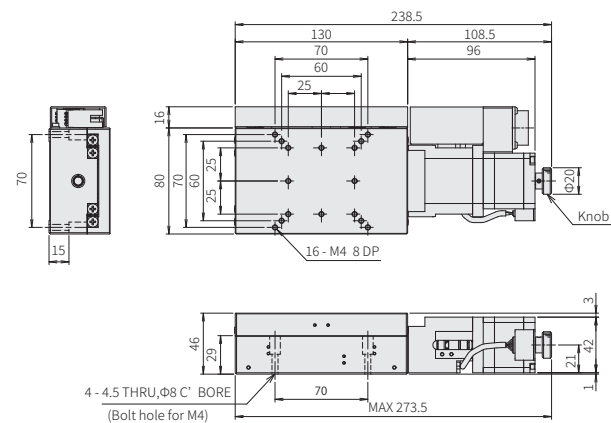
KS102-30LG



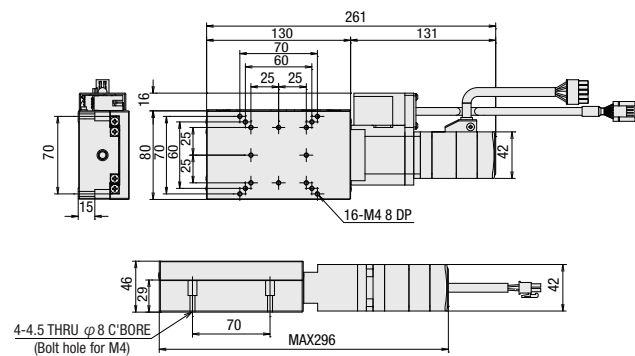
KS102-30QA



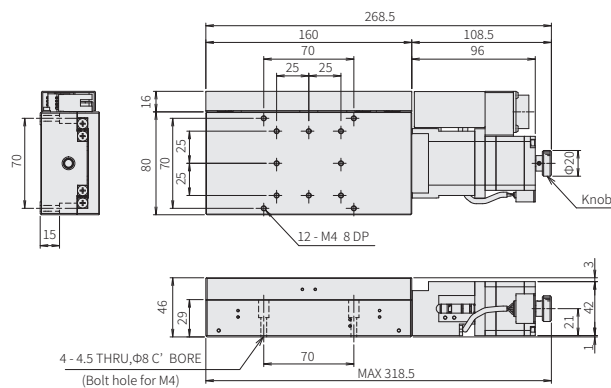
KS102-70LG



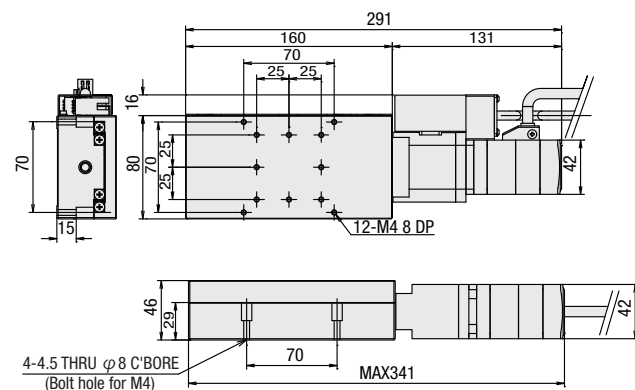
KS102-70QA



KS102-100LG



KS102-100QA



Motorized Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear
Ball

CAVE-X
Linear ball

Cross
Roller

Slide
Guide

☐ 40

☐ 50

☐ 60

☐ 70

☒ 80

☐ 100

☐ 120

Other

1

110

Electrical Specification: KS102

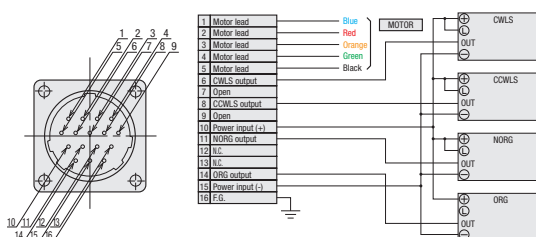
Electrical specification

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	PK544PMB-C18 (□ 42mm) Model is our own management model.			ARM46AC (□42mm)		
	Step angle	0.36°			0.36° (Set to 1000P/R)		
	Driver type	🔵 P.1-205～			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.1-213~ for details of single motor specification.

Pin allocation

Connection diagram

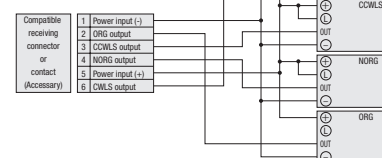
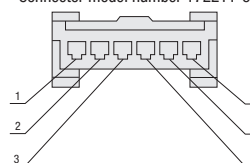


Pin allocation (sensor)

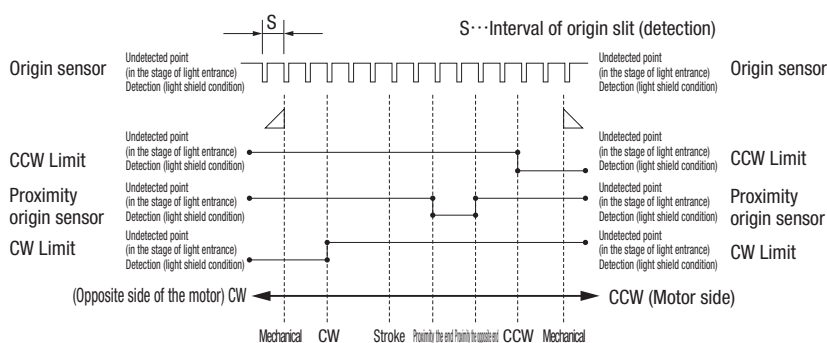
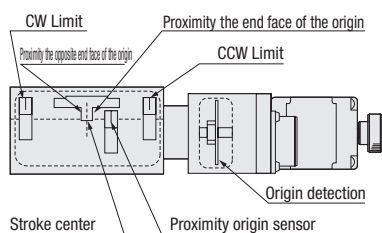
Connection diagram (sensor)

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.

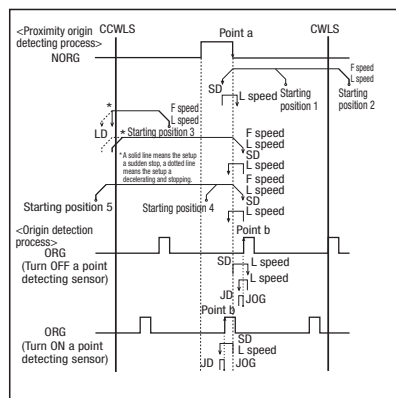
Method for return to origin

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.

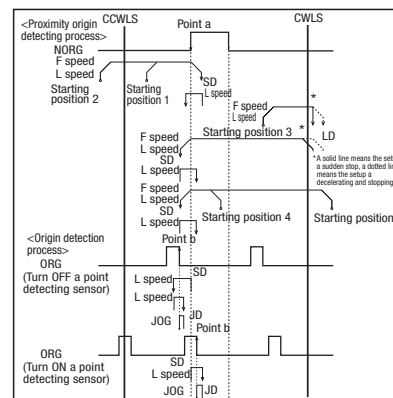
KS102 recommended return to origin Return to origin sequence P.1-201~

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.

[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(point a) of NORG signal.
Next detect on edge of CW side (point b) of ORG signal.



Adaptive driver

Driver P.1-205~

DC24V type input

Model	CVD507-K-A9	CRD5107P
Divisions	1~1/250 (16 steps)	1~1/250 (16 steps)

Adaptive stepping motor controller

Controller P.1-197~

Input power	General-purpose input/output port	Driver type	
		Full/Half	1~1/250 (16 steps)
AC100-240V	Without	DS102ANR	DS102AMS
	With	DS102ANR-IO	DS102AMS-IO
DC24V	Without	DS112ANR	DS112AMS
	With	DS112ANR-IO	DS112AMS-IO

Connectin example

