

Horizontal Z-axis Cross Roller Guide: KHC06004/KHC07004/KS332

Motorized Stage

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear Ball

CAVE-X
Linear ball

Cross Roller

Slide Guide

φ40

φ50

φ60

φ70

φ80

φ100

φ120

Other

KHC06004F



KHC07004F



KS332-8NC



KS332-12C



■ KHE series/Low-price motorized horizontal Z stage
▶ P.1-113~



※ Can be used for KHC
▶ See page P.009



▶ Cable P.1-207~
▶ Electrical specification P.1-119~

1 Table size

06	60mm
07	70mm

2 Travel

04F	4mm
-----	-----

3 Travel

8N	8mm
12	12mm

4 Cable option

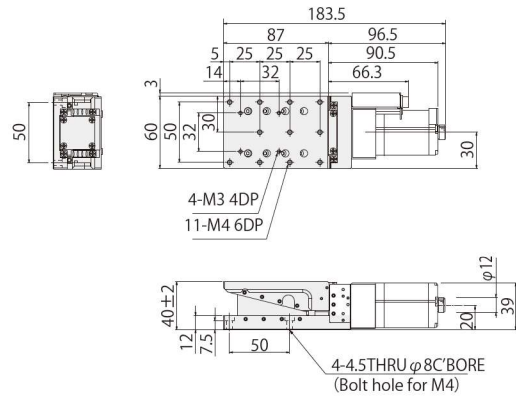
Code	Specification	Cable type
Blank	2m	D214-2-2E
1	2m One end loose	D214-2-2EK
2	4m	D214-2-4E
3	4m One end loose	D214-2-4EK
4	Only connector (Cable is not included)	—
5	Cable is not included (Standard)	—
6	Robot cable 2m	D214-2-2R
7	Robot cable 4m	D214-2-4R
8	Robot cable 4m one end loose	D214-2-4RK
9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

* One end loose position to only stage opposite side.
* 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).

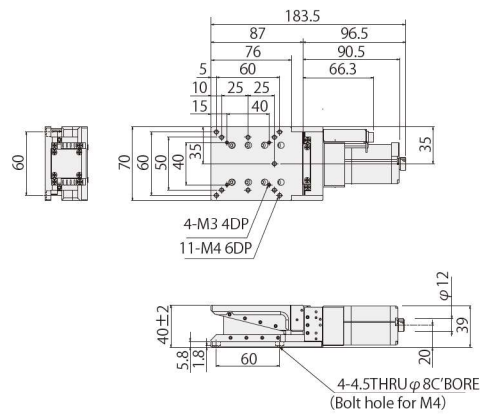
Model	SPEC			
	KHC06004F	KHC07004F	KS332-8NC-5	KS332-12C-5
Travel length	4mm		8mm	12mm
Table size	60×60mm	70×70mm	80×100mm	120×120mm
Feed screw	Ball screw φ8 lead 1		Ball screw φ6 lead 1	Ball screw φ8 lead 1
Guide	Wedge type Crossed roller guide			
Main materials-Finishing	Aluminum—Black almite finishing	Aluminum—White almite finish	Aluminum—Black almite finishing	
Weight	1.14kg	1.18kg	2.0kg	3.6kg
Resolution (Pulse)	0.25 μm (Full)/0.125 μm (Half)		≒0.73 μm (Full)/0.365 μm (Half)	
MAX speed	2.5mm/sec		≒3.7mm/sec	
Uni-directional positioning accuracy	Within 7 μm		—	
Repeatability positioning accuracy	Within ±0.5 μm			
Load capacity	7kgf [68.6N]		20kgf [196N]	
Moment stiffness	Pitch 0.2/yaw 0.04/ roll 0.14 ["/N · cm]		Pitch 0.24/yaw 0.12/ roll 0.03 ["/N · cm]	Pitch 0.20/yaw 0.11/ roll 0.01 ["/N · cm]
Lost motion	Within 1 μm			
Parallelism	Within 50 μm			
Limit sensor	Installed			
Origin sensor	Installed			
Slit origin sensor	—			
Provided screw (Hexagon-headed bolt)	4 of M4—12		4 of M4—16	4 of M6—16

Dimensional outline drawings

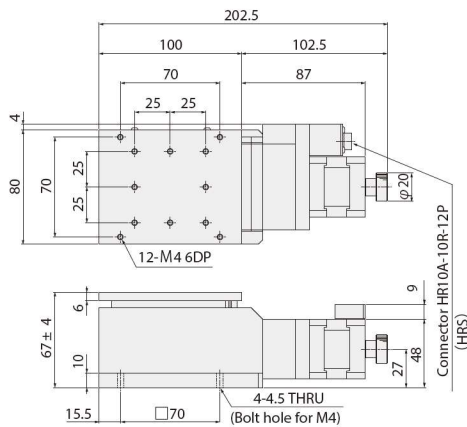
KHC06004F



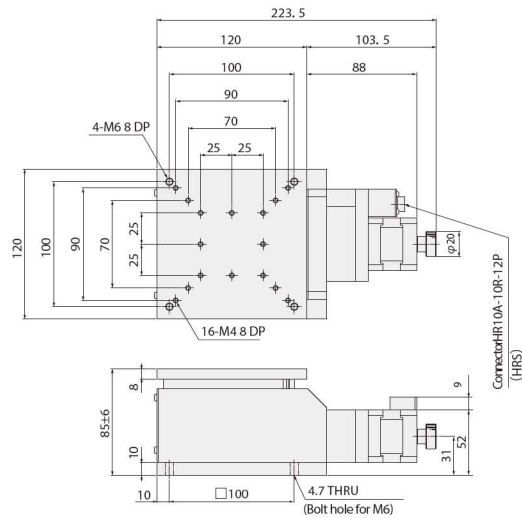
KHC07004F



KS332-8NC



KS332-12C



Motorized Stage

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear Ball

CAVE-X
Linear ball

Cross Roller

Slide Guide

φ40

φ50

φ60

φ70

φ80

φ100

φ120

Other

Electrical Specification: KHC06004F/KHC07004F/KS332-8NC/KS332-12C

Electrical specification

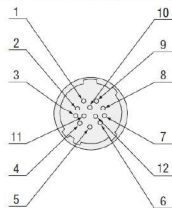
Models		KHC06004F	KHC07004F	KS332-8NC	KS332-12C
Motor (*1)	Type	5 phase stepping motor 0.75A/Phase (Oriental Motor Co.,Ltd.)			
	Model	PK525HPB-C1 (□28mm)		PK544PB-C18	
	Step angle	0.72°		0.72°	
Connector	Model(*2)	HR10A-10J-12P (73) (Hirose Electric Co.,Ltd.)		HR10A-10R-12P (73) (Hirose Electric Co.,Ltd.)	
	applicable connector on acceptance side	HR10A-10P-12S (73) (Hirose Electric Co.,Ltd.)		HR10A-10P-12S (73) (Hirose Electric Co.,Ltd.)	
	Limit sensor	Installed			
Sensor	Origin sensor (ORG1)	Installed			
	Slit origin sensor (ORG2)	—			
	Model	Micro photosensor EE-SX4320(omuron Co.,Ltd.)		Limited switch AV4044 (Panasonic) 0.1A 30V DC Photo microsensor EE-SX671 (Omuron Co.,Ltd.)	
	Power voltage	DC5~24V ±10%			
	Consumption current	Total 60mA or less		35mA 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		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)		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.

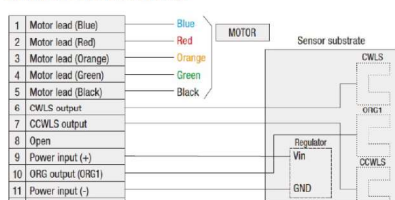
Pin allocation

KH06004F/KH07004F



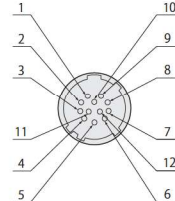
Connection diagram

KHC06004F/KHC07004F



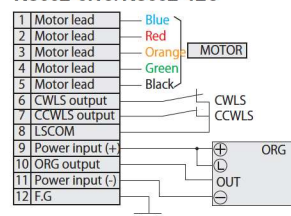
Pin allocation

KS332-8NC/KS332-12C



Connection diagram

KS332-8NC/KS332-12C



X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

Linear Ball

CAVE-X Linear ball

Cross Roller

Slide Guide

φ40

φ50

φ60

φ70

φ80

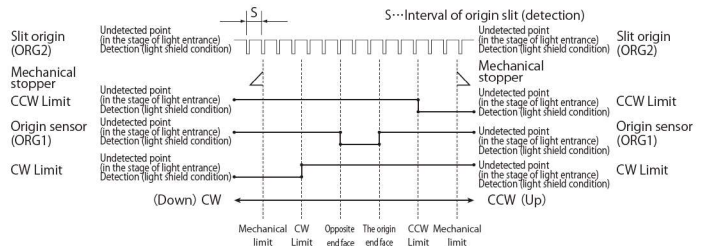
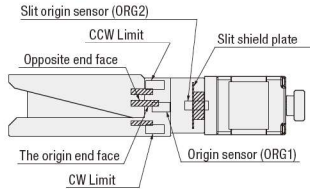
φ100

φ120

Other

Timing chart

KHC06004F/KHC07004F

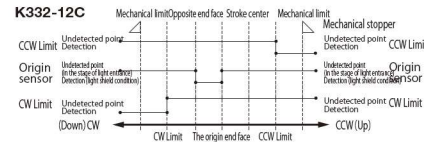
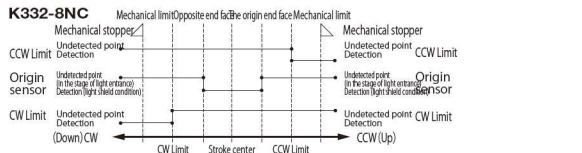
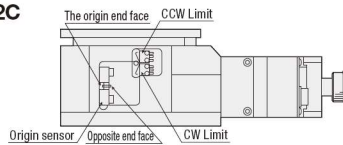


Unit [mm] Direction of CW ← → Direction of CCW

	Reference coordinate	Mechanical limit	CW Limit	Opposite end face	The origin end face stroke center	CCW Limit	Mechanical limit
KHC06004F	Return to origin	2.5	2.2	1.5	0	2.2	2.5
KHC07004F	Return to origin	2.5	2.2	1.5	0	2.2	2.5

*Return to origin means that is performed return to origin type 3 using DS102/DS112/D200 controller.
 * The coordinate value should be on the design. Dimension error may occur about plus or minus 0.5 deg.

KS332-8NC/KS332-12C



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
KS332-8NC	Return to origin	—	4.9	2.2	0.4	0	4.1	—
	Stroke center	—	4.5	1.8	—	0.4	4.5	—

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
KS332-12C	Return to origin	—	7.6	2.2	1.1	0	5.4	—
	Stroke center	—	6.5	1.1	—	1.1	6.5	—

*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 deg.

*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 deg.

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.

■ **KHC06004F/KHC07004F/KS332-8NC/KS332-12C 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.

Adaptive driver · Stepping motor controller

■ **Driver** ▶ P.1-205~

DC24 type input.....SD5107P3-A22 (Full/Half) / CRD5107P (1~1/250 16 steps) / DFC5107P
 AC100V input.....RKD507-A (1~1/250 16 steps)

■ **Controller** ▶ P.1-197~

AC100-240V input Without general I/O port.....DS102NR (Full/Half) / DS102MS (1~1/250 16 steps)
 With general I/O port.....DS102NR-IO (Full/Half) / DS102MS-IO (1~1/250 16 steps)

DC24V input Without general I/O port.....DS112NR (Full/Half) / DS112MS (1~1/250 16 steps)
 With general I/O port.....DS112NR-IO (Full/Half) / DS112MS-IO (1~1/250 16 steps)

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

Linear Ball

CAVE-X Linear ball

Cross Roller

Slide Guide

- φ40
- φ50
- φ60
- φ70
- φ80
- φ100
- φ120
- Other