

Motorized Stage

Goniometer Stage Ball screw □60:KGB06/KAB06

KGB06050T-LC

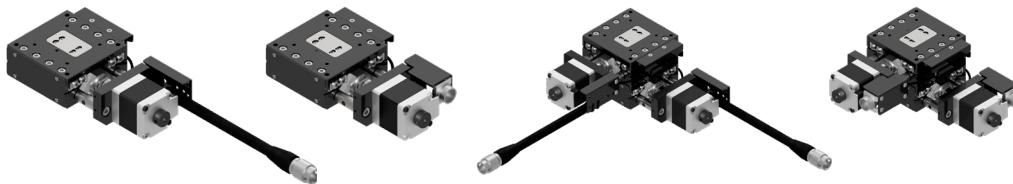
KGB06050M-LC

KAB06050T-LC

KAB06050M-LC

RoHS

Freely
customize
the motor



* The picture is an image.

KGB06050-C-LC

1 2 3 4 5 6 6 7 7

Cables P. 1-207 ~
Electrical specification P.1-KGB-013~

1 Axis

G	1-axis
A	2-axis

2 Stage table size

06	□60mm
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3 Height of center rotation (W.D.)

050	50mm
075	75mm
100	100mm
125	125mm

4 Connector specifications

T	Pig tail	
M	Panel mount	

5 Sensor cover location specification

L	Lposition	
R	Opposite hand	

6 Motor option

Code	Specification
C	Standard(5 Phase stepping motor)
G	High resolution
T	2 Phase stepping motor

7 Cable option (Motor: C, F, G, H, MG)

Code	Specification	Cable type	Cable type
A	2m	D214-2-2E	—
B	2m One end loose	D214-2-2EK	DS1-2C-2-2EK
C	4m	D214-2-4E	—
D	4m One end loose	D214-2-4EK	DS1-2C-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	DS1-2C-2-2RK
H	Robot cable 4m	D214-2-4R	—
J	Robot cable 4m one end loose	D214-2-4RK	DS1-2C-2-4RK
Blank	Cable is not included (Standard)	—	—

Note:For T-phase stepping, only one end rose (B, D, G, J) is supported.

6 Motor option

Code	Specification
ZA	αSTEP (AZ Series)

7 Cable option(for ZA)

Code	Specification
Blank	Sensor cable 2m One end loose wire
3	Sensor cable 3m One end loose wire
5	Sensor cable 5m One end loose wire
3A	3A:Screwdriver (3m cable set)
5A	3A:Screwdriver (5m cable set)

Motor option:Accessories when selecting ZA.

Cable option code	sensor cable model	motor cable model	Driver model
Blank	HR10AP-S-SB-6-2	—	—
3	HR10AP-S-SB-6-3	—	—
5	HR10AP-S-SB-6-5	—	—
3A	HR10AP-S-SB-6-3	CC030VZ2R2	AZD-K
5A	HR10AP-S-SB-6-5	CC050VZ2R2	AZD-K

Selection example

Desired specifications	Heights of the center of rotation 50mm KGB06050	+	Connector specification T Pigtail pigtail Sensor cover location specification L: L position KGB06050T-L	+	Motor option C: Standard KGB06050T-LC	+	Cable A: 2m KGB06050T-LC-A	▷ KGB06040T-LC-A ¥
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X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

1-KGB
001

Specification

SPEC									
Model			KGB06050□-LC	KGB06075□-LC	KGB06100□-LC	KGB06125□-LC	KAB06050□-LC	KAB06075□-LC	KAB06100□-LC
Opposite hand			KGB06050□-RC	KGB06075□-RC	KGB06100□-RC	KGB06125□-RC	KAB06050□-RC	KAB06075□-RC	KAB06100□-RC
Mechanical specification	Travel distance Upper/Lower axis		±8.5°	±5.5°	±5°	±4°	±8.5° /±5.5°	±5.5° /±5°	±5° /±4°
	Stage table size		60×60mm						
	Travel mechanism (Reduction ratio)		Ball φ6 Lead 1						
	Guide		Cross roller guide						
	Main material—Surface finishing		Aluminum—Black alumite processing						
Dimensional tolerance	Weight		0.52kg				1.04kg		
	Height of stage		25± 0.2mm				50± 0.4mm		
	Height of center rotation		50± 0.2mm	75± 0.2mm	100± 0.2mm	125± 0.2mm	50± 0.4mm	75± 0.4mm	100± 0.4mm
	Center of rotation precision		0.01mm				—		
Accuracy specification	Resolution/Pulse	Upper at the full	≒ 0.0021°	≒ 0.0014°	≒ 0.0011°	≒ 0.0009°	≒ 0.0021°	≒ 0.0014°	≒ 0.0011°
		Upper at the full	—				≒ 0.0014°	≒ 0.0011°	≒ 0.0009°
	MAX speed	Upper	31.4°/sec [15kHz]	21.5°/sec [15kHz]	16.4°/sec [15kHz]	13.2°/sec [15kHz]	31.4°/sec [15kHz]	21.5°/sec [15kHz]	16.4°/sec [15kHz]
	MAX speed	Lower	—				21.5°/sec [15kHz]	16.4°/sec [15kHz]	13.2°/sec [15kHz]
	Repeatability positioning accuracy		±0.001°						
	Load capacity		5kgf [49N]				4.5kgf [44.1N]		
	Moment stiffness		Pitch 0.30/yaw 0.10/roll 0.11 ["/N • cm]				Pitch 0.41/yaw 0.2/roll 0.41 ["/N • cm]		
Sensor	Lost motion		0.003°						
	Limit sensor		Available						
	Origin sensor		Available						
	Slit origin sensor		—						
Provided screw (Hexagon-headed bolt)			4 of M4—10						

* The SPEC varies depending on the motor.

- For the exact calculation formula for the movement amount, please refer to P.1-140.

- The maximum speed is the theoretical speed when driven at 15kHz for the full stroke travel pulse.

Resolution • MAX speed • Weight

Motor code		C	G	T	ZA
Specification		Standard	High resolution	2 Phase stepping motor	αSTEP (AZ)
Motor model ^{※1}		C005C-90215P-1	PK523HPMB-C1	SJA28N32-0674B-01	AZM24AK
Step angle		0.72°	0.36°	1.8°	0.36° ^{※2}
Resolution (Full)	KGB06050T/M	≒ 0.0021°	≒ 0.0010°	≒ 0.0052°	≒ 0.0010° ^{※2}
	KGB06075T/M	≒ 0.0014°	≒ 0.0007°	≒ 0.0036°	≒ 0.0007° ^{※2}
	KGB06100T/M	≒ 0.0011°	≒ 0.0005°	≒ 0.0027°	≒ 0.0005° ^{※2}
	KGB06125T/M	≒ 0.0009°	≒ 0.0004°	≒ 0.0022°	≒ 0.0004° ^{※2}
MAX speed	KGB06050T/M	31.4°/sec [15kHz]	26.1°/sec [25kHz]	26.1°/sec [5kHz]	31.4°/sec [30kHz]
	KGB06075T/M	21.5°/sec [15kHz]	17.9°/sec [25kHz]	17.9°/sec [5kHz]	21.5°/sec [30kHz]
	KGB06100T/M	16.4°/sec [15kHz]	13.7°/sec [25kHz]	13.7°/sec [5kHz]	16.4°/sec [30kHz]
	KGB06125T/M	13.2°/sec [15kHz]	11.0°/sec [25kHz]	11.0°/sec [5kHz]	13.2°/sec [30kHz]
Weight	KGB06*T/M	0.52kg	0.52kg	0.52kg	0.56kg
	KAB06*T/M	1.04kg	1.04kg	1.04kg	1.12kg

※1 Model is our own management model.

※2 1000P/R setting

※3 The weight of the pigtail/panel mount model is the same.

New

Motorized goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
ScrewWorm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

1-KGB
002



PART
COMMUNITY

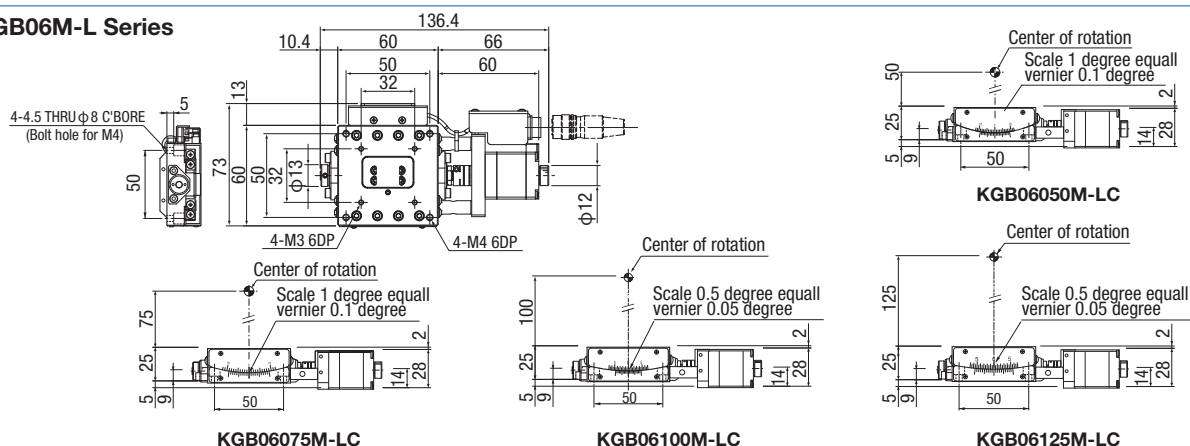
CAD DATA

New

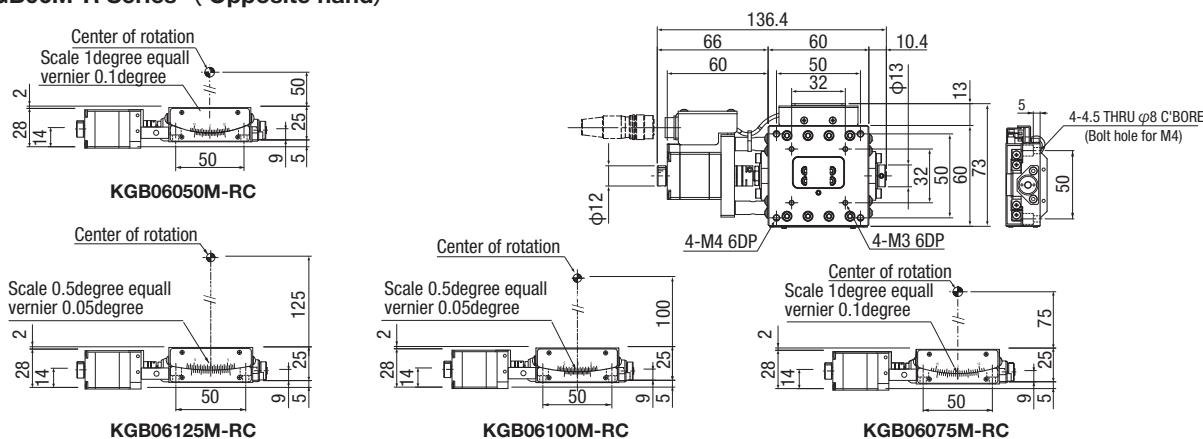
Motorized
goniometer
Stage

Dimensional outline drawings (1-axis)

KGB06M-L Series

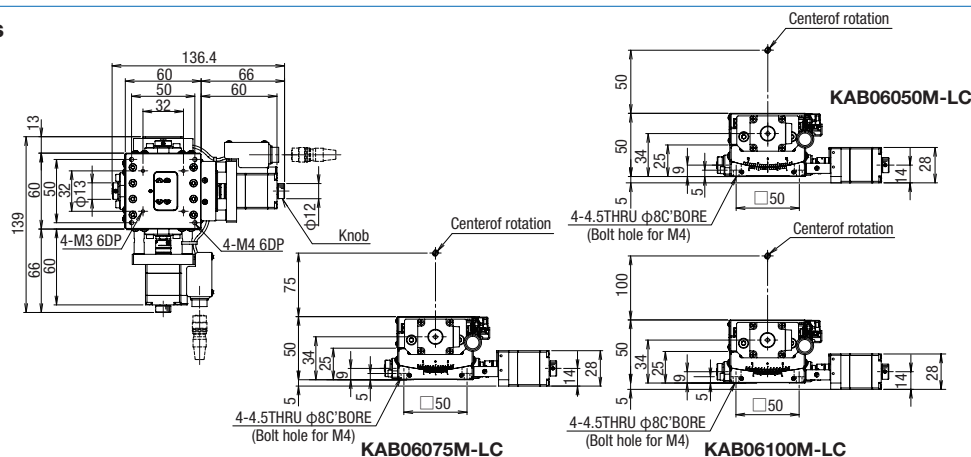


KGB06M-R Series (Opposite hand)



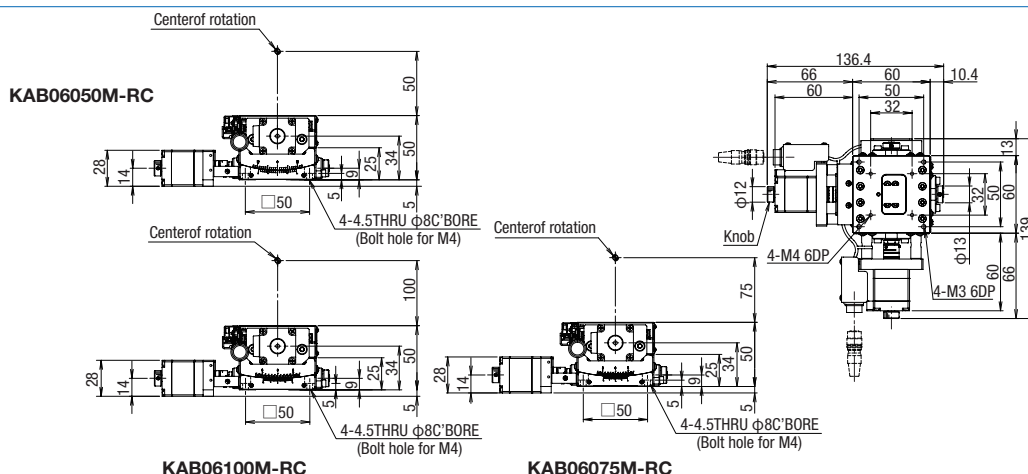
Dimensional outline drawings (2-axis)

KAB06M-L Series



KAB06M-R Series

(Opposite hand)



X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□ 40

□ 50

□ 60

□ 70

□ 80

□ 100

□ 120

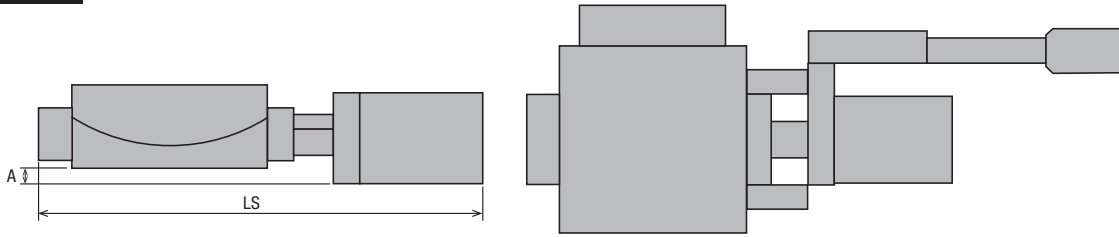
Other

1-KGB
004

Motorized Stage

Goniometer Stage Ball screw□60:KGB06

Dimensions



C Standard

Motor model C005C-90215P-1

G High resolution

Motor model PK523HPMB-C1

T 2 Phase stepping motor

Motor model SJA28N32-0674B-01

Model	Motor	Motor size	Connector		LS(mm)
KGB06050T-□□	C • G • T	□ 28	T	5	136.4
KGB06075T-□□					
KGB06100T-□□					
KGB06125T-□□					
KGB06050M-□□					
KGB06075M-□□			M		
KGB06100M-□□					
KGB06125M-□□					

ZA αSTEP (AZ)

Motor model AZM24AK

Model	Motor	Motor size	Connector	A(mm)	LS(mm)
KGB06050T-□ZA	ZA	□ 28	T	5	159.4
KGB06075T-□ZA					
KGB06100T-□ZA					
KGB06125T-□ZA					
KGB06050M-□ZA					
KGB06075M-□ZA			M		
KGB06100M-□ZA					
KGB06125M-□ZA					

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

1-KGB
005

New

Motorized
goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

☐ 40

☐ 50

☒ 60

☐ 70

☐ 80

☐ 100

☐ 120

Other

1-KGB

006

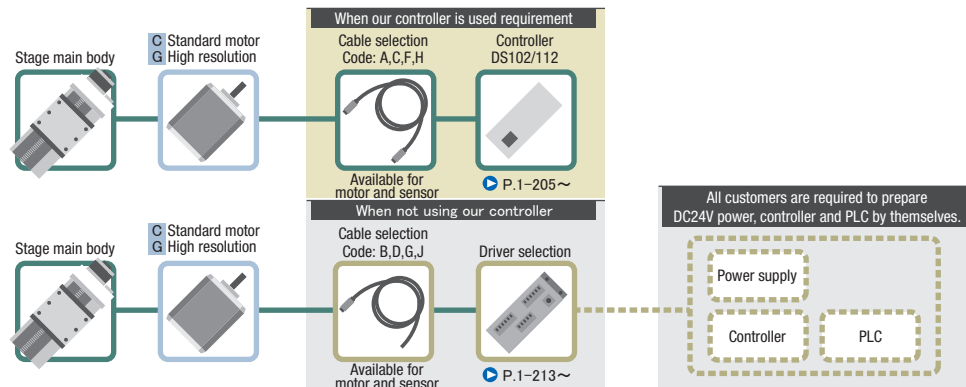
Motor option

C Standard motor

Motor model
C005C-90215P-1

G High resolution

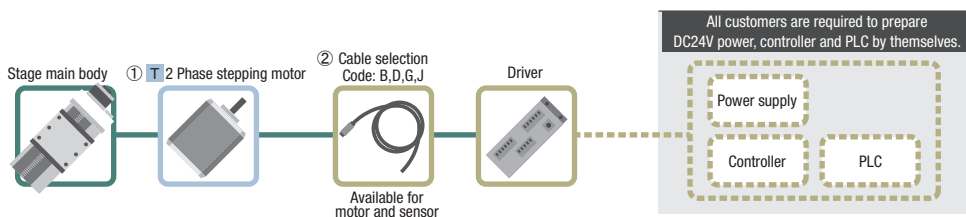
Motor model
PK523HPMB-C1



Motor option

T 2 Phase stepping motor

Motor model
SJA28N32-0674B-01

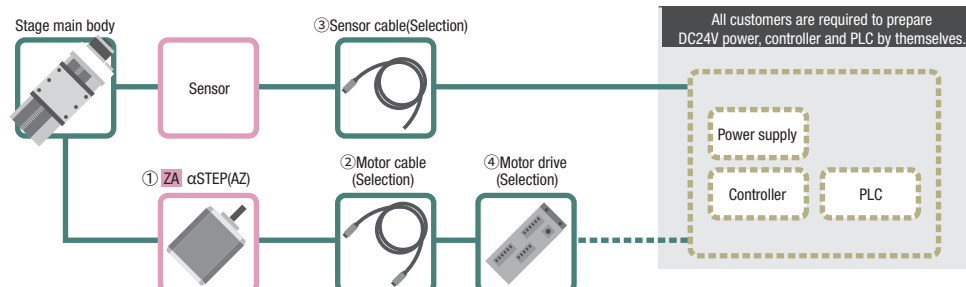


Code	① Motor model	② Motor + Sensor cable selection (common)
T	SJA28N32-0674B-01	B・D : DS1-2C-2-□EK G・J : DS1-2C-2-□RK

Motor option

ZA αSTEP (AZ Series)

Motor model
AZM24AK



Code	① Motor model	② Motor cable selection	③ Sensor cable selection	④ Driver selection
ZA	AZM24AK	3A : CC030VZ2R2 5A : CC050VZ2R2 Blank : 3・5 : None	3A・3 : HR10AP-S-SB-6-3 5A・5 : HR10AP-S-SB-6-5 Blank : HR10AP-S-SB-6-2	3A・5A : AZD-K Blank・3・5 : None

Motorized Stage

Goniometer Stage Ball screw □70:KGB07/KAB07

KGB07070AT-LC

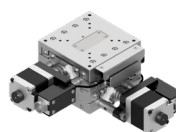
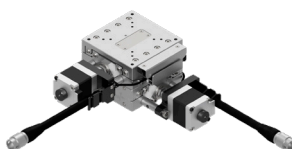
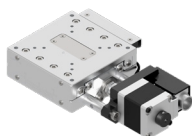
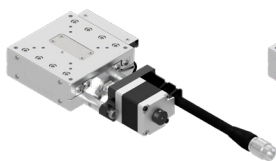
KGB07070AM-LC

KAB07070AT-LC

KAB07070AM-LC

RoHS

Freely
customize
the motor



* The picture is an image.

KGB07070 A T-LC- □

1

2

3

4

5

6

7

8

☑Cables P.1-207 ~

☑Electrical specification P.1- KGB-013~

1 Axis

G	1-axis
A	2-axis

2 Stage table size

07	□70mm
----	-------

3 Height of center rotation (W.D.)

070	70mm
096	96mm
122	122mm

4 Sensor logic

Code	CWLS	ORG	CCWLS
A	N.C.	N.C.	N.C.
B	N.O.	N.O.	N.O.
C	N.C.	N.O.	N.C.

5 Connector specifications

T	Pig tail	
M	Panel mount	

6 Sensor cover location specification

L	
R	

8 Cable option (Motor: C, F, G, H, MG)

Code	Specification	Cable type	2 phase Cable type
A	2m	D214-2-2E	—
B	2m One end loose	D214-2-2EK	DS1-2C-2-2EK
C	4m	D214-2-4E	—
D	4m One end loose	D214-2-4EK	DS1-2C-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	DS1-2C-2-2RK
H	Robot cable 4m	D214-2-4R	—
J	Robot cable 4m one end loose	D214-2-4RK	DS1-2C-2-4RK
Blank	Cable is not included (Standard)	—	—

Note:For T-phase stepping, only one end rose (B, D, G, J) is supported.

7 Motor option

Code	Specification
C	Standard(5 Phase stepping motor)
G	High resolution
T	2 Phase stepping motor

7 Motor option

Code	Specification
ZA	αSTEP (AZ Series)

8 Cable option(for motorless)

Code	Specification
Blank	Sensor cable 2m One end loose wire
3	Sensor cable 3m One end loose wire
5	Sensor cable 5m One end loose wire
3A	3A:Screwdriver (3m cable set)
5A	3A:Screwdriver (5m cable set)

Motor option: Accessories when ZA is selected.

Cable option code	Sensor cable model	Sensor cable model	Driver model
Blank	HR10AP-S-SB-6-2	—	—
3	HR10AP-S-SB-6-3	—	—
5	HR10AP-S-SB-6-5	—	—
3A	HR10AP-S-SB-6-3	CC030VZ2R2	AZD-K
5A	HR10AP-S-SB-6-5	CC050VZ2R2	AZD-K

Selection example

Desired specifications	Heights of the center of rotation 70mm	+	Sensor logic Connector type T: Pigtail L position	+	Motor option C: Standard	+	Cable A: 2m	KGB07070AT-LC-A
	KGB07070		KGB07070AT-L		KGB07070AT-LC		KGB07070AT-LC-A	

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

1-KGB
007

New

Motorized goniometer
Stage

Specification

SPEC							
Model		KGB07070A□-LC	KGB07096A□-LC	KGB07122A□-LC	KAB07070A□-LC	KAB07096A□-LC	
Opposite hand		KGB07070A□-RC	KGB07096A□-RC	KGB07122A□-RC	KAB07070A□-RC	KAB07096A□-RC	
Mechanical specification	Travel distance Upper/Lower axis		±5°	±4°	±3°	±5°/±4°	±4°/±3°
	Stage table size		70×70mm				
	Travel mechanism (Reduction ratio)		Ball φ6 Lead 1				
	Guide		Cross roller guide				
	Main material—Surface finishing		Aluminum—White alumite processing				
Dimensional tolerance	Weight		0.67kg			1.34kg	
	Height of stage		26± 0.2mm			52± 0.4mm	
	Height of center rotation		70± 0.2mm	96± 0.2mm	122± 0.2mm	70± 0.4mm	96± 0.4mm
	Center of rotation precision		0.01mm			—	
Accuracy specification	Resolution/Pulse	Upper at the full	≒0.0015°	≒0.0011°	≒0.0009°	≒0.0015°	≒0.0011°
		Upper at the full	—			≒0.0011°	≒0.0009°
	MAX speed	Upper	22.6°/sec [15kHz]	16.9°/sec [15kHz]	13.4°/sec [15kHz]	22.6°/sec [15kHz]	16.9°/sec [15kHz]
	MAX speed	Lower	—			16.9°/sec [15kHz]	13.4°/sec [15kHz]
	Repeatability positioning accuracy		±0.003°				
	Load capacity		5.0kgf [49N]			4.0kgf [39.2N]	
	Moment stiffness		Pitch 0.28/yaw 0.06/roll 0.06["/N・cm]			Pitch 0.34/yaw 0.12/roll 0.34["/N・cm]	
Lost motion		0.003°					
Sensor	Limit sensor		Available				
	Origin sensor		Available				
	Slit origin sensor		—				
Provided screw (Hexagon-headed bolt)			4 of M4—8				

※ Might be changed specification due to motors.

※ For the exact calculation formula for the movement amount, please refer to page 1-140.

※ The maximum speed is the theoretical speed when driven at 15kHz for the full stroke travel pulse.

Resolution・MAX speed・Weight

Motor code	C	G	T	ZA
Specification	Standard	High resolution	2 Phase stepping motor	αSTEP (AZ)
Motor model ^{*1}	C005C-90215P-1	PK523HPMB-C1	SJA28N32-0674B-01	AZM24AK
Step angle	0.72°	0.36°	1.8°	0.36°※2
Resolution (Full)	KGB07070□T/M	±0.0015°	±0.0008°	±0.0008°※2
	KGB07096□T/M	±0.0011°	±0.0006°	±0.0006°※2
	KGB07122□T/M	±0.0009°	±0.0004°	±0.0004°※2
MAX speed	KGB07070□T/M	22.6°/sec [15kHz]	18.9°/sec [25kHz]	22.6°/sec [30kHz]
	KGB07096□T/M	16.9°/sec [15kHz]	14.1°/sec [25kHz]	16.9°/sec [30kHz]
	KGB07122□T/M	13.4°/sec [15kHz]	11.2°/sec [25kHz]	13.4°/sec [30kHz]
Weight	KGB07□T/M	0.67kg	0.67kg	0.71kg
	KAB07□T/M	1.34kg	1.34kg	1.42kg

*1 Model is our own management model.

※ 2 1000P/R setting

※ 3 The weight of the pigtail/panel mount model is the same.

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

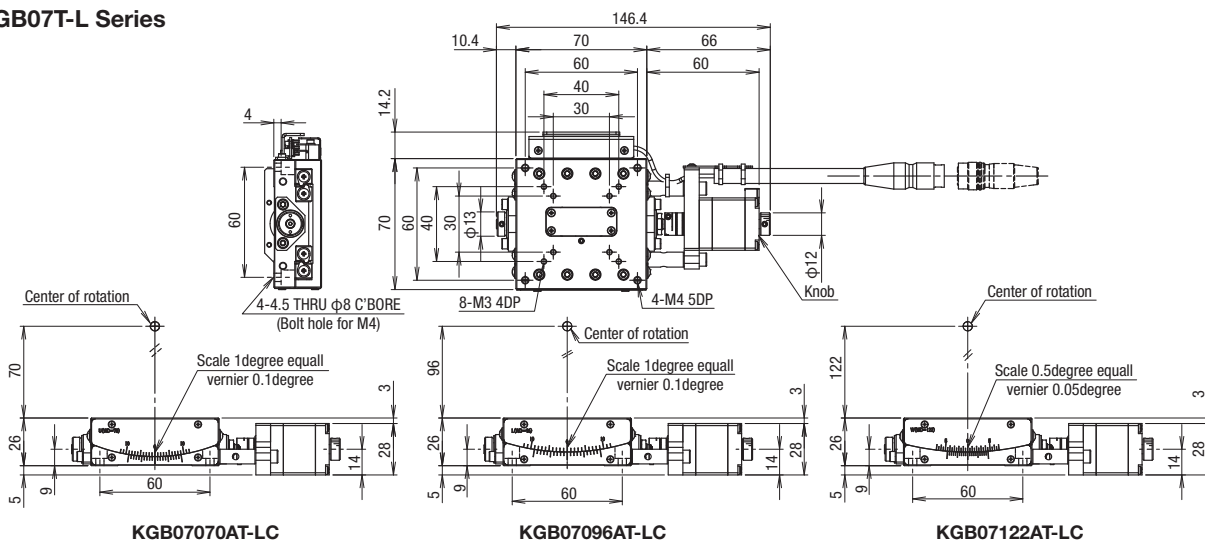
Other

**1-KGB
008**

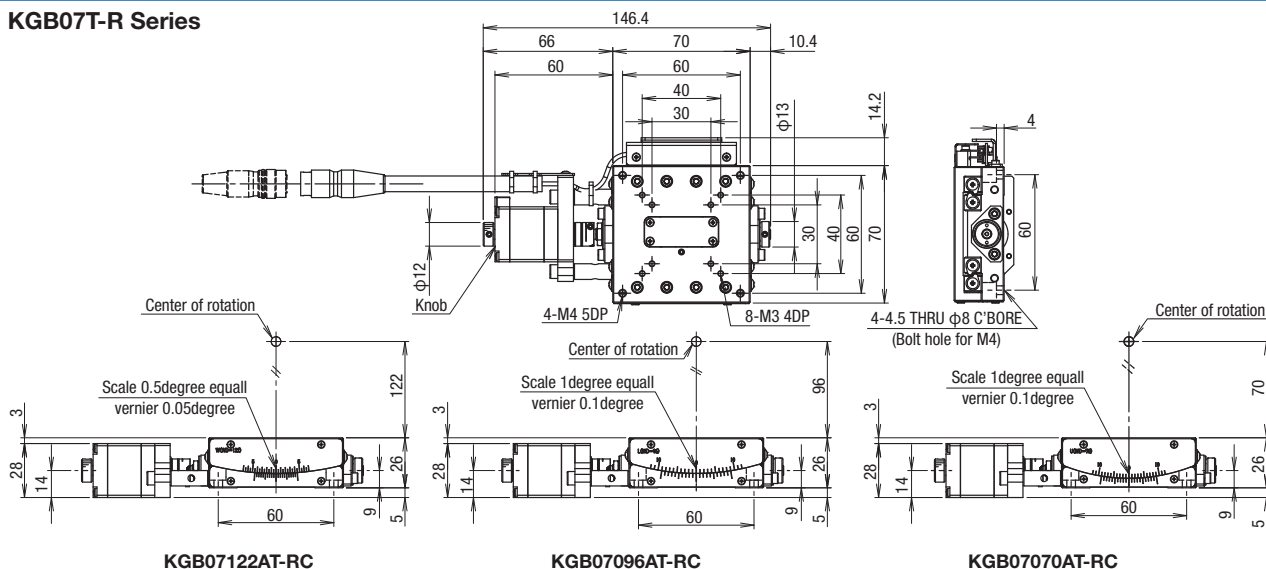
Goniometer Stage Ball screw□70:KGB07/KAB07

Dimensional outline drawings (1-axis)

KGB07T-L Series

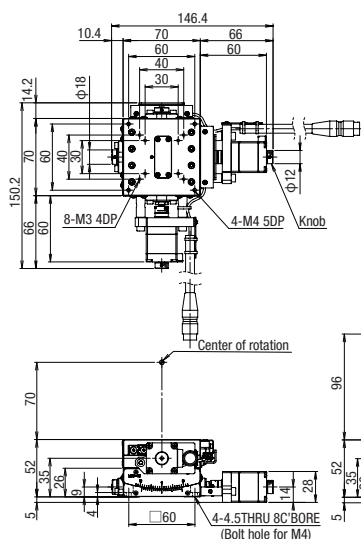


KGB07T-R Series

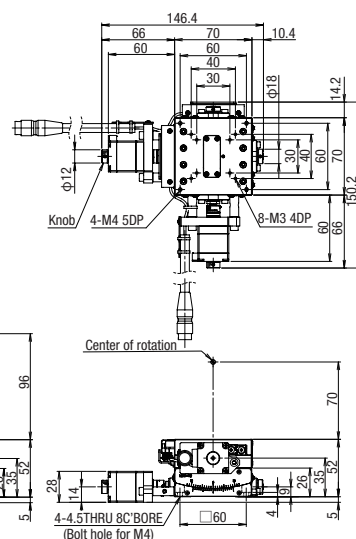


Dimensional outline drawings (2-axis)

KAB07T-L Series

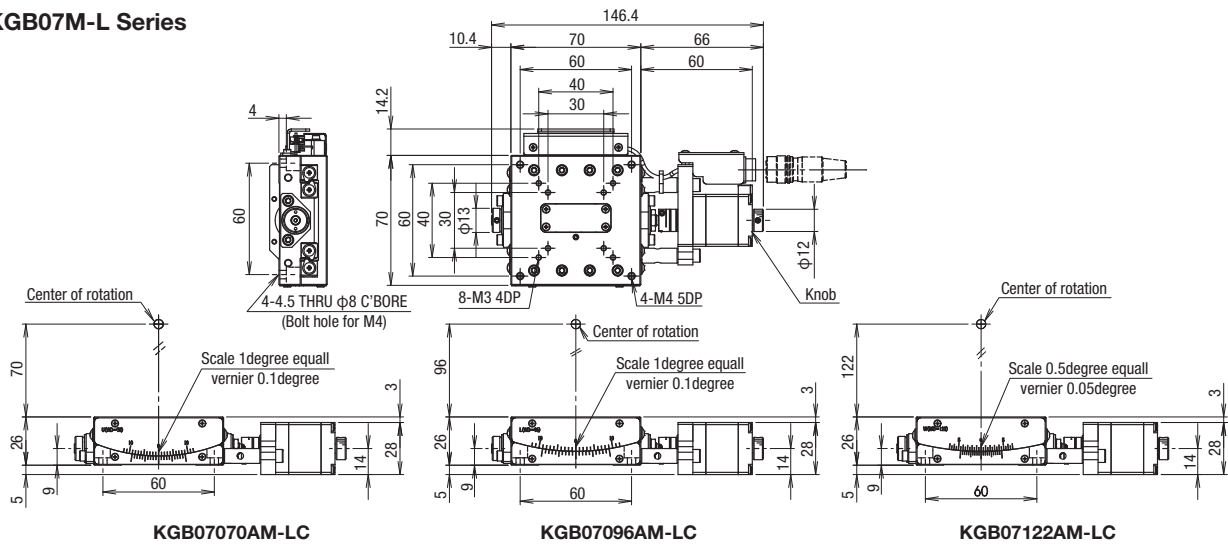


KAB07T-R Series

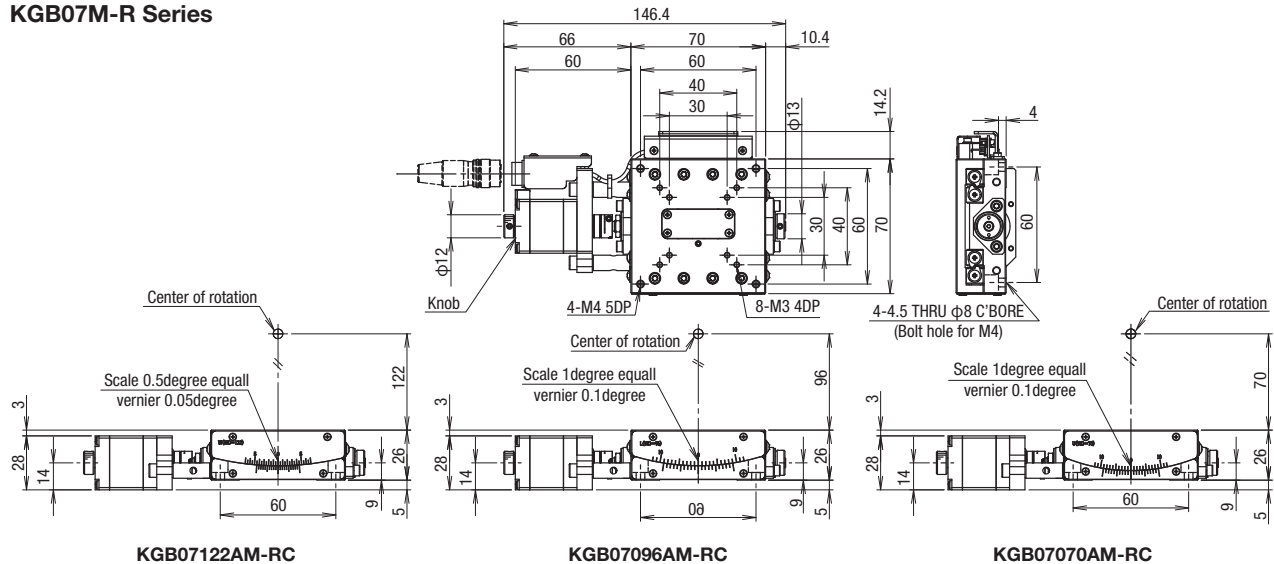


Dimensional outline drawings (1-axis)

KGB07M-L Series



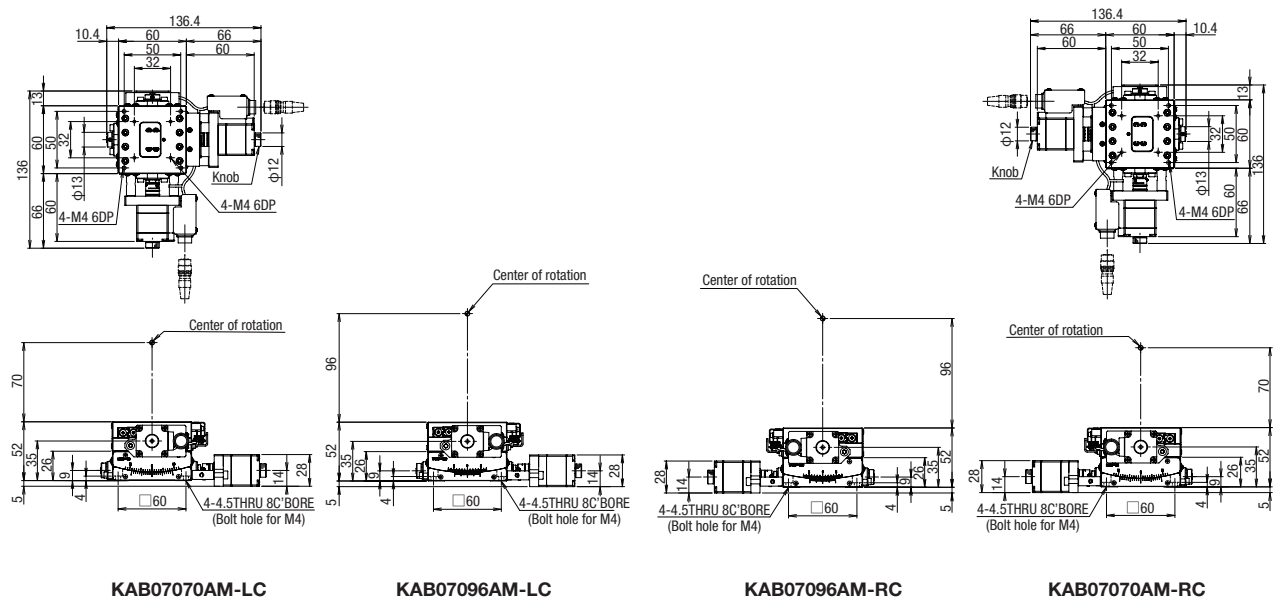
KGB07M-R Series



Dimensional outline drawings (2-axis)

KAB07M-L Series

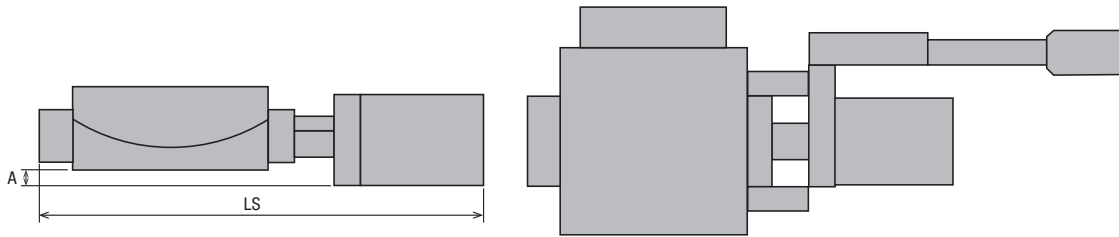
KAB07M-R Series



Motorized Stage

Goniometer Stage Ball screw□70:KGB07

Dimensions



C Standard

Motor model C005C-90215P-1

G High resolution

Motor model PK523HPMB-C1

T 2 Phase stepping motor

Motor model SJA28N32-0674B-01

Model	Motor	Motor size	Connector	A(mm)	LS(mm)		
KGB07070□T-□□	C • G • T	□ 28	T	5	146.4		
KGB07096□T-□□			M				
KGB07122□T-□□							
KGB07070□M-□□							
KGB07096□M-□□			M				
KGB07122□M-□□							

ZA αSTEP (AZ)

Motor model AZM24AK

Model	Motor	Motor size	Connector	A(mm)	LS(mm)
KGB07070□T-□□	ZA	□ 28	T	5	169.4
KGB07096□T-□□					
KGB07122□T-□□					
KGB07070□M-□□					
KGB07096□M-□□					
KGB07122□M-□□					

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

1-KGB
011

New

Motorized
goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□ 40

□ 50

□ 60

□ 70

□ 80

□ 100

□ 120

Other

1-KGB
012

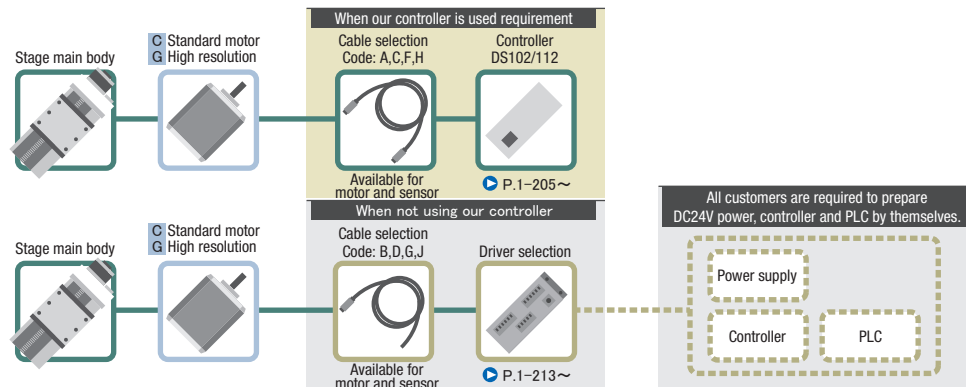
Motor option

C Standard motor

Motor model
C005C-90215P-1

G High resolution

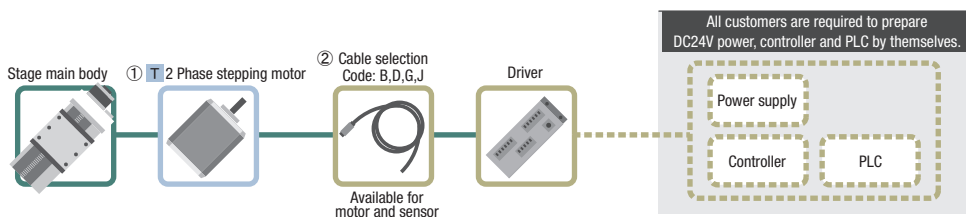
Motor model
PK523HPMB-C1



Motor option

T 2 Phase stepping motor

Motor model
SJA28N32-0674B-01

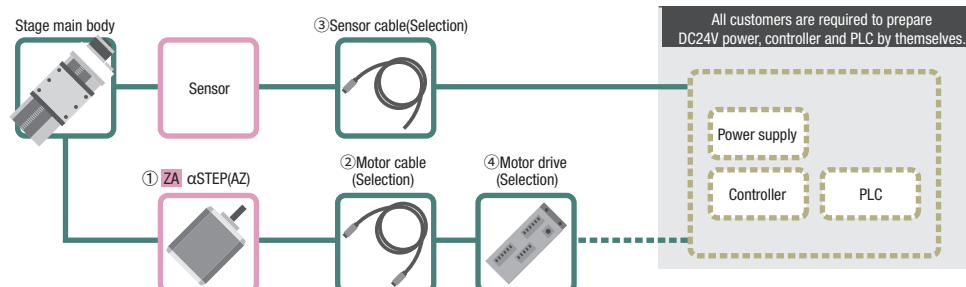


Code	① Motor model	② Motor/sensor cable selection	③ Driver selection
T	SJA28N32-0674B-01	B・D : DS1-2C-2-□EK G・J : DS1-2C-2-□RK	AD1421

Motor option

ZA αSTEP (AZ Series)

Motor model
AZM24AK



Code	① Motor model	② Motor cable selection	③ Sensor cable selection	④ Driver selection
ZA	AZM24AK	3A : CC030VZ2R2 5A : CC050VZ2R2 None・3・5 : None	3A・3 : HR10AP-S-SB-6-3 5A・5 : HR10AP-S-SB-6-5 Blank : HR10AP-S-SB-6-2	3A・5A : AZD-K None・3・5 : None

Motorized Stage

Electrical Specification: KGB Series

Motor • Electrical specification(5/2 Phase stepping motor)

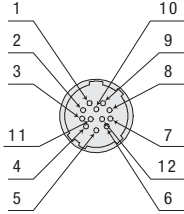
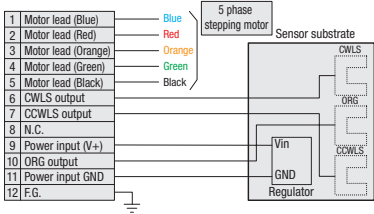
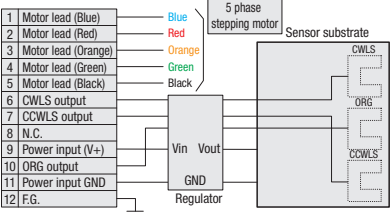
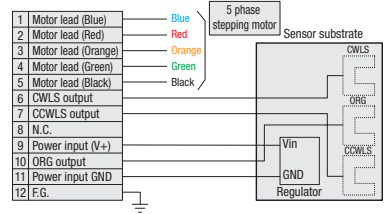
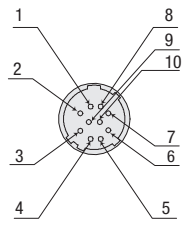
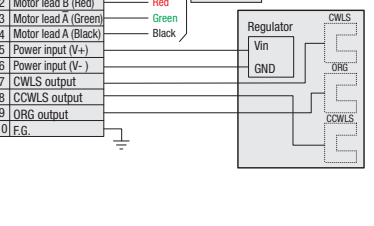
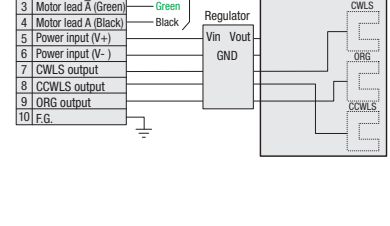
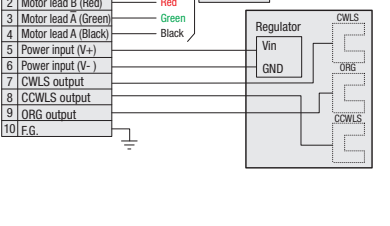
Motor code		C	G	T
Stage model		KGB06050/KGB06075/KGB06100/KGB06125/KGB07070/KGB07096/KGB07122		
Motor Specification(*1)	Type	5 phase stepping motor (0.75A/Phase)		2 phase stepping motor (0.67A/Phase)
	Feature	Standard	High resolution	—
	Model*2	C005C-90215P-1	PK523HPMB-C1	SJA28N32-0674B-01
	With electromagnetic brake	—	—	—
	Manufacturer	Oriental Motor Co., Ltd.		SURUGA SEIKI
	Step angle	0.72°	0.36°	1.8°
	mass	0.11kg		—
	Motor size	□28mm		—
		37mm		—
	Excitation (moment) maximum torque	0.048N • m	0.038N • m	0.059N • m
Connector	Driver model	CVD507-K-A9(Oriental Motor Co., Ltd.)		—
	Driver power input	DC24V±10% 1.4A(MAX)		—
	Brake power input	—		—
	Pig tail	HR10A-10J-12P(73) (HRS)		HR10A-10J-10P(73) (HRS)
Sensor board	Panel mount	HR10A-10R-12P(73) (HRS)		HR10A-10R-10P(73) (HRS)
	Receiving connector	HR10A-10P-12S(73) (HRS)		HR10A-10P-10S(73) (HRS)
	Limit sensor	Available		—
	Origin sensor	Available		—
Sensor board	Slit origin sensor	—		—
	Sensor	Photo microsensor EE-SX4320 (Omron Co., Ltd.)		—
	Power-supply voltage	DC5~24V±5%		—
	Current consumption	Total 60mA or less		—
	Control output	NPN open collector output DC30V 10mA or less		—
	Output logic	KGB06		On detection (light shield condition): Output transistor OFF (Non-continuity)
		Sensor logic option A		On detection : Output transistor OFF (Non-continuity)
		Sensor logic option B		On detection : Output transistor ON (Continuity)
		Sensor logic option C		When limit is detected: Output transistor OFF (Non-continuity) When returning to origin: Output transistor ON (Continuity)
	Output logic	KGB07		—
		—		—

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

*2 Model is our own management model.

* 2 axis gonio (KAB) also has the same electrical specifications.

Pin allocation • Connection diagram

Available for motor and sensor		60	70
C • G	Pin allocation Pigtail connector model HR10A-10J-12P(73) (HRS) Panel mount specification : Connector model HR10A-10R-12P(73) (HRS)		
	Connection diagram		
T	Pin allocation Pigtail connector model HR10A-10J-10P(73) (HRS) Panel mount specification : Connector model HR10A-10R-10P(73) (HRS)		
	Connection diagram		

New

Motorized gonimeter
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

40

50

60

70

80

100

120

Other

1-KGB

013

Motor Specification(αSTEP)

Motor code		ZA	
Stage model		KGB06050/KGB06075/KGB06100/KGB06125/KGB07070/KGB07096/KGB07122	
Motor Specification (1)	Type	αSTEP (AZ Series)	
	Feature	Small step-out, absolute	
	Model*2	AZM24AK	
	With electromagnetic brake	—	
	Manufacturer	Oriental Motor Co., Ltd.	
	Step angle	0.36° (1000P/R setting)	
	mass	0.15kg	
	Motor size	□ size	28mm
		L size	45mm
	Excitation (moment) maximum torque	0.095N · m	
Connector	Driver model	AZD-(Oriental Motor Co., Ltd.)	
	Driver power input	DC24V±5%	
	Brake power input	—	
	Pig tail	Motor: DF62B-13EP-2.2C (Hirose Electric Co., Ltd.) Sensor: HR10A-7J-6P(73) (Hirose Electric Co., Ltd.)	
Sensor board	Panel mount	Motor: DF62B-13EP-2.2C (Hirose Electric Co., Ltd.) Sensor: HR10A-7R-6P(73) (Hirose Electric Co., Ltd.)	
	Receiving connector	Motor: DF62C-13S-2.2C (Hirose Electric Co., Ltd.) Sensor: HR10A-7P-6S(73) (Hirose Electric Co., Ltd.)	
	Limit sensor	Available	
	Origin sensor	Available	
	Slit origin sensor	—	
	Sensor	Photo microsensor EE-SX4320 (Omron Co., Ltd.)	
	Power-supply voltage	DC5~24V±5%	
	Current consumption	Total 60mA or less	
	Control output	NPN open collector output DC30V 10mA or less	
	Output logic	KGB06	On detection (light shield condition): Output transistor OFF (Non-continuity)
		KGB07	Sensor logic option A On detection : Output transistor OFF (Non-continuity)
			Sensor logic option B On detection : Output transistor ON (Continuity)
			Sensor logic option C When limit is detected: Output transistor OFF (Non-continuity) When returning to origin: Output transistor ON (Continuity)

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

*2 Model is our own management model.

* 2 axis gonio (KAB) also has the same electrical specifications.

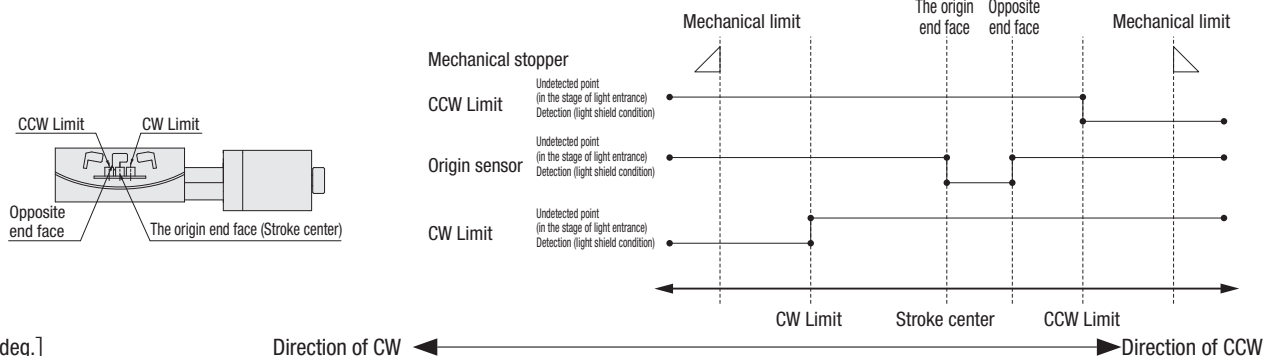
Pin allocation • Connection diagram

ZA	Motor	【Receiver cable】Model : CC030VZ2R2(3m)/CC050VZ2R2(5m)※Flexible cable Driver side Connector:55100-0670(Molex) Motor side Connector:DF62C-13S-2.2C(HIROSE ELECTRIC) Driver side Connector:J11DF-06V-KX (J.S.T.MFG.) 3m , 5m														
	Sensor	【Receiver cable】Model : HR10AP-S-SB-6-□ ※ □ : 2(2m)/3(3m)/5(5m) * Fixed Sensor side Connector (Female): HR10A-7P-6S (73) (HRS) ULAWM20276 AWG28 3P Black 2m +50 -0 mm, 3m +50 -0 mm, 5m +150 -0 mm *The shields are connected with the connector shell. <table><thead><tr><th>Pin</th><th>Signals</th></tr></thead><tbody><tr><td>1</td><td>CWLS</td></tr><tr><td>2</td><td>CCWLS</td></tr><tr><td>3</td><td>ORG</td></tr><tr><td>4</td><td>NORG</td></tr><tr><td>5</td><td>V+</td></tr><tr><td>6</td><td>V-</td></tr></tbody></table>	Pin	Signals	1	CWLS	2	CCWLS	3	ORG	4	NORG	5	V+	6	V-
Pin	Signals															
1	CWLS															
2	CCWLS															
3	ORG															
4	NORG															
5	V+															
6	V-															

Motorized Stage

Electrical specification: KGB06/ KGB07

Timing chart



Unit [deg.]	Direction of CW	Reference coordinate	CW Limit	The origin end face Stroke center	Opposite end face	CCW Limit
		Return to origin	8.7	0	2.5	8.7
		Return to origin	5.7	0	1.8	5.7
		Return to origin	5.2	0	1.4	5.2
		Return to origin	4.2	0	1.1	4.2
		Return to origin	5.3	0	2.1	5.3
		Return to origin	4.2	0	1.5	4.2
		Return to origin	3.2	0	1.3	3.2

* Return to origin means that is performed return to origin type 4 using DS102/DS112 series.

* The coordinate is a basis of design value. Dimension error may occur about plus or minus 0.5 deg.

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.

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.

■ KGB06/KAB06/KGB07/KAB07 recommended return to origin Return to origin sequence P.1-201~

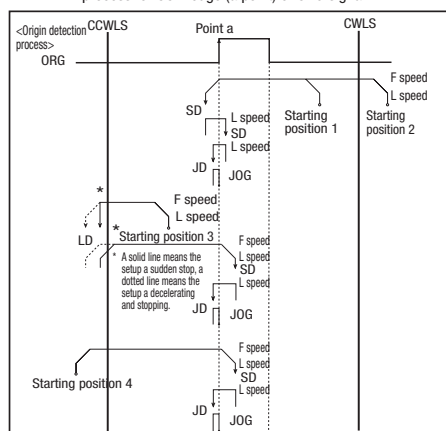
Type 3: Detect in the direction of CCW and perform detected process for CCW edge of ORG signal.

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

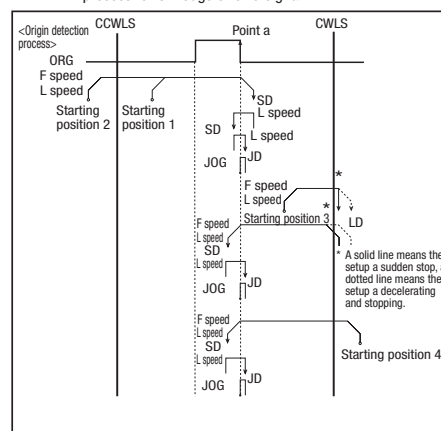
Type 9: After finished Type3, perform detected process for CCW edge of TIMING signal.

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

[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.



Ball Screw

Worm Gear

40

50

60

70

80

100

120

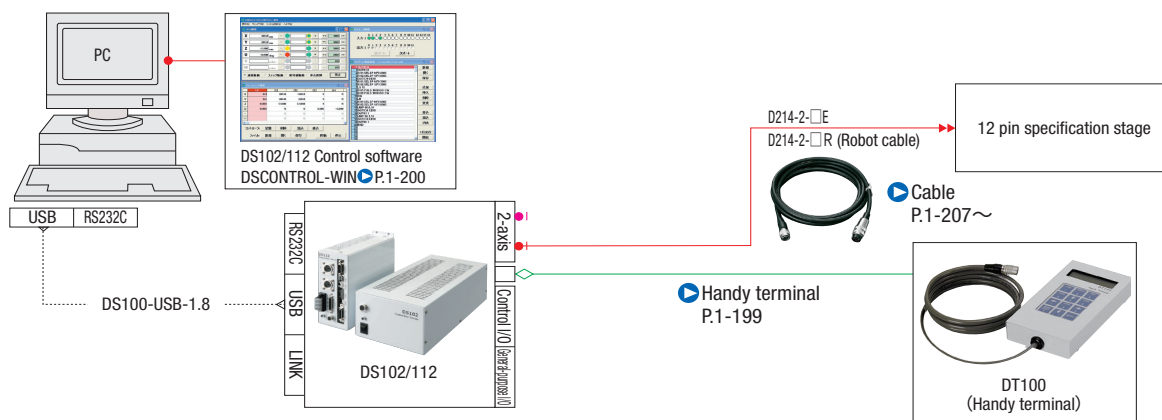
Other

1-KGB
015

Connectin example

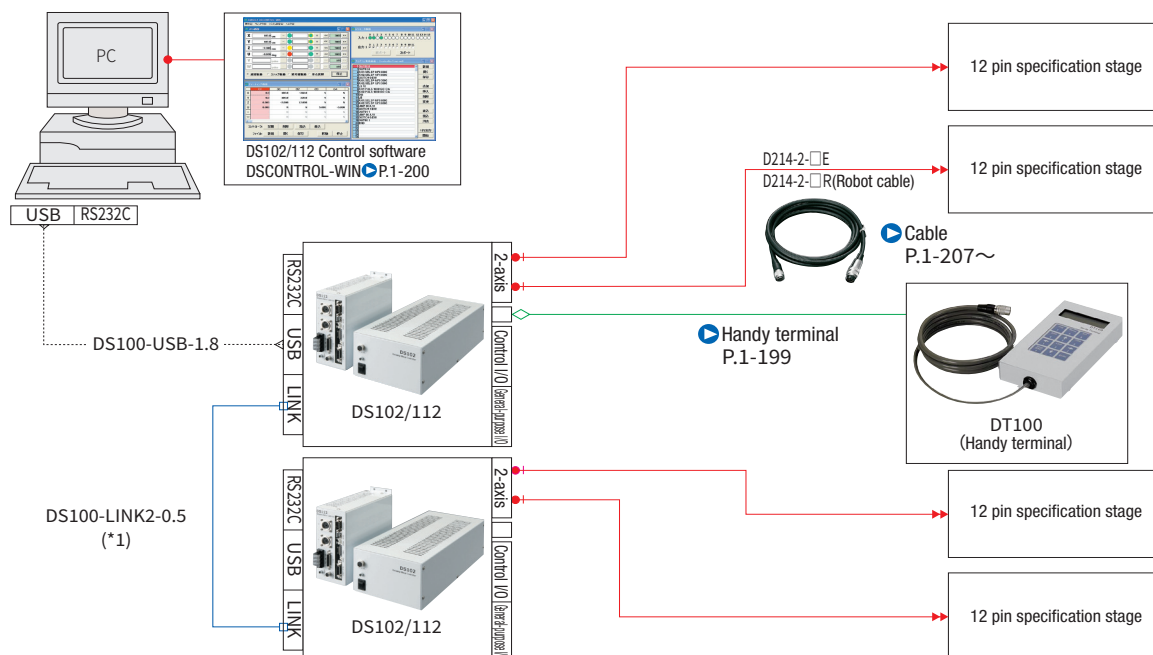
■ Connection example 1 Motorized Stage 1axis: When holding a terminal device (using control software)

*USB cable connection between PC and controller.



■ Connection example 2 Motorized Stage 4axis: When holding a terminal device (using control software)

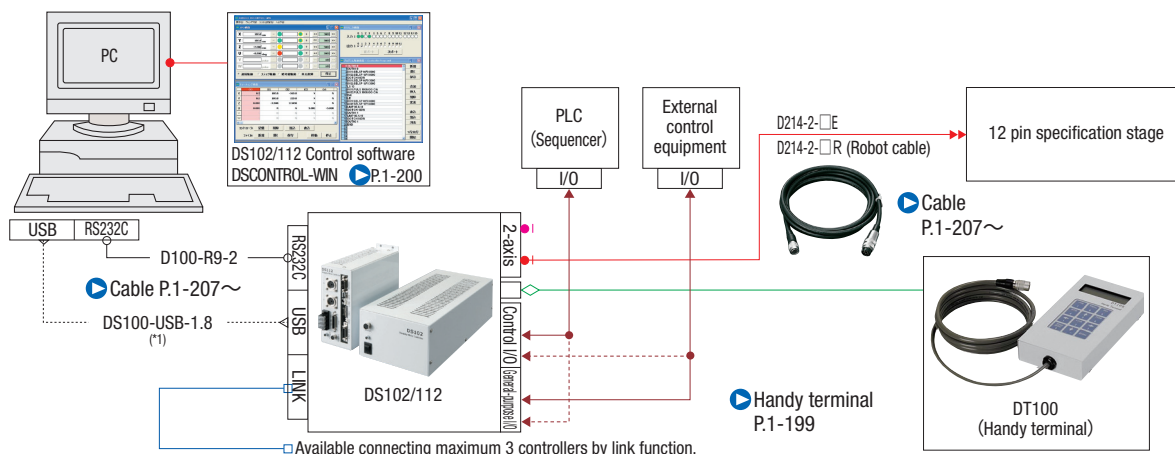
*USB cable connection between PC and controller.



(*1) It is possible to control up to 3 controllers (for a maximum of 6-axis control) with link function.

■ Connection example 3 When controlling from the PLC I/O Unit.

*USB cable connection between PC and controller.



(*1) Using the USB hub, it is controllable in a single PC up to four link networks (24-axis).

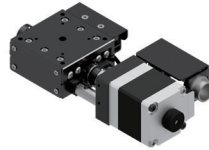
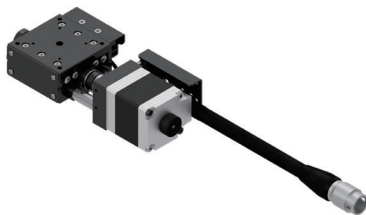
Motorized Stage

Goniometer Stage □40 : KGW04

1-axis

KGW04040T-LC

KGW04040M-LC



Freely
customize
the motor

RoHS

*All image is for illustrative purposes only.

K GW04040T - L C - □

1

2

3

4

5

6

7

PA - □

6

7

Cable P.1-207~
Electrical specification P.C-043~

1 Axis

G	1-axis
---	--------

2 Stage size

04	□40mm
----	-------

3 Height of center rotation (W.D.)

040	40mm
060	60mm

4 Connector specifications

T	Pigtail	
M	Panel Mount	

5 Sensor cover location specification

Blank	Specification
L	L position
R	Opposite hand

6 Motor option

Code	Specification
C	Standard
G	High resolution

7 Cable option (Motor : C・G)

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

6 Motor option

Code	Specification
PA	αSTEP (AR Series)
ZA	αSTEP (AZ Series)
EA	Motor for EtherCAT
UG	Servo motor(MINAS A6)
UA	Servo motor(J4)

7 Cable option (Motor : PA・ZA・EA・UG・UA)

Code	Specification
Blank	Sensor cable 2m One end loose wire
3	Sensor cable 3m One end loose wire
5	Sensor cable 5m One end loose wire
3A	Driver (Amplifier)/Cable set 3m
5A	Driver (Amplifier)/Cable set 5m

Driver (Amplifier)・Cable option

Code	*Combination Motor	Blank	3	5	3A	5A
		PA/ZA/EA/UG/UA	PA/ZA	EA/UG/UA	PA/ZA	EA/UG/UA
Cable	Sensor	2m	3m	5m	3m	5m
	Motor	Not included			3m	5m
	Encoder	Not included			—	3m
Driver (Amplifier)		Not included			Included	

*Motor driver (amplifier)/cable combination

Selection Example

Model	W.D. 40mm	+	Connector specs T : Pigtail/L position	+	Motor option G : High resolution	+	Cable A: 2m	+	▷ KGW04040T-LG-A
	KGW04040		KGW04040T-L		KGW04040T-LG		KGW04040T-LG-A		

Model	W.D. 60mm	+	Connector specs M : Panel Mount/Opposite hand	+	Motor option PA : αSTEP(AR Series)	+	Cable 3A: Driver/Cable set 3m	+	▷ KGW04060M-RPA-3A
	KGW04060		KGW04060M-R		KGW04060M-RPA		KGW04060M-RPA-3A		

Specification

SPEC				
Model	KGW04040T-LC	KGW04060T-LC	KGW04040M-LC	KGW04060M-LC
Opposite hand	KGW04040T-RC	KGW04060T-RC	KGW04040M-RC	KGW04060M-RC
Mechanical specification	Travel distance	±8°	±6°	±8°
	Stage surface size	40×40mm		
	Connector type	Pigtail		Panel Mount
	Travel mechanism (Reduction ratio)	Worm gear(1/240)		
	Guide	Cross Roller Guide		
	Main materials-Finishing	Aluminum - Black alumite finishing,Phosphor bronze - Black paint		
Dimensional tolerance	Weight	0.39kg		0.38kg
	Height of stage	20±0.2mm		
	Height of center rotation	40±0.2mm	60±0.2mm	40±0.2mm
	Runout accuracy of center rotation	0.01mm以内		
	Resolution/Pulse	0.003°(Full)		
	MAX speed	15°/sec[5kHz]		
Accuracy specification	Repeatability positioning accuracy	±0.005°		
	Load capacity	3kgf [29.4N]		
	Moment stiffness	Pitch 1.30/Yaw 1.16/Roll 0.27["/N・cm]		
	Lost motion	0.01°		
	Limit sensor	Available		
	Origin sensor	Available		
Sensor	Slit origin sensor	—		
	Provided screw (Hexagon-headed bolt)	4 of M3 - 6		

* Might be changed specification due to motors.

Resolution・MAX speed・Weight

Motor code		C	G
Type		Standard	High resolution
Motor model*3		C005C-90215P-1	PK523HPMB-C1
Step angle		0.72°	0.36°
Resolution		0.003°	0.0015°
MAX speed		15°/sec	
Weight	KGW04-T (Pigtail)	0.39kg	
	KGW04-M (Panel Mount)	0.38kg	

Motor code	PA	ZA	EA	UG	UA
Type	αSTEP (AR Series)	αSTEP (AZ Series)	Motor for EtherCAT	MINAS A6	J4
Motor model*3	ARM24SAK	AZM24AK	STM28W100A	MSMF5AZL1A2	HG-KR053
Resolution	0.0015°(1000P/R setting)			23 Bit encoder (8388608P/R)*1	22 Bit encoder (4194304P/R)*2
MAX speed	30°/sec			45°/sec	
Weight	KGW04-T (Pigtail)	0.43kg	0.40kg	0.64kg	0.66kg
	KGW04-M (Panel Mount)	0.42kg	0.39kg	0.63kg	0.65kg

*1 Optional encoder cable is for incremental system.

*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

*3 Model is our own management model.

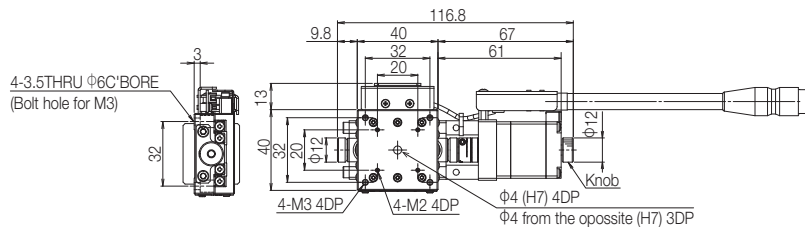
Motorized Stage

Goniometer Stage □40 : KGW04

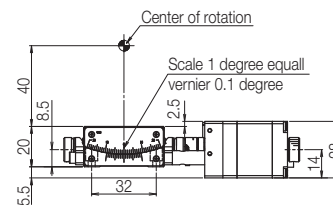
Dimensions

KGW04-L Series

Top view :KGW04□□□T-LC (Pigtail)

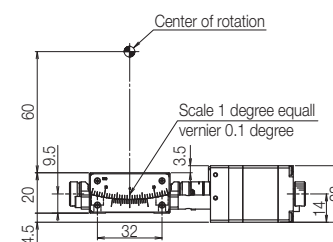
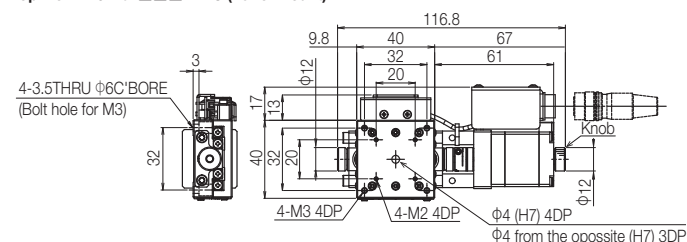


Side view :common



KGW04040T(M)-LC

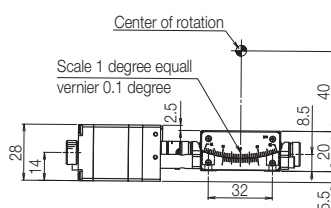
Top view :KGW04□□□M-LC (Panel Mount)



KGW04060T(M)-LC

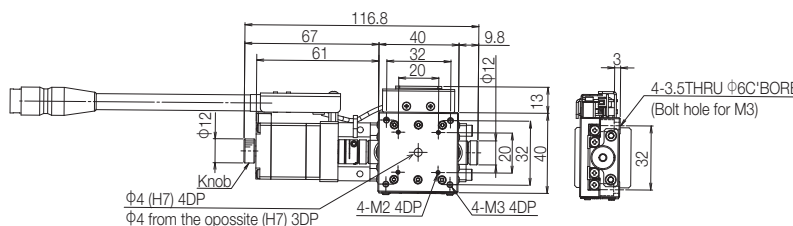
KGW04-R Series

Side view :common

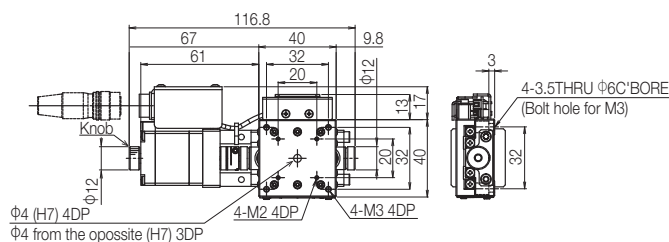


KGW04040T(M)-RC

Top view :KGW04□□□T-RC (Pigtail)



Top view :KGW04□□□M-RC (Panel Mount)



KGW04060T(M)-RC

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

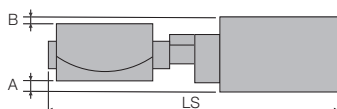
□100

□120

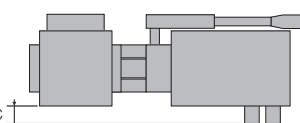
Other

Dimensions

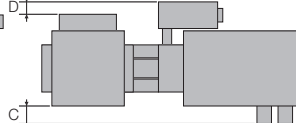
Side view



Top view :Connector :T(Pigtail)



Top view :Connector :M(Panel Mount)



C Standard motor

Motor Model C005C-90215P-1

G High resolution

Motor Model PK523HPMB-C1

Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	D(mm)	LS(mm)
KGW04040T-□□	C・G	□28	T	5.5	2.5	—	—	116.8
KGW04060T-□□				4.5	3.5			
KGW04040M-□□			M	5.5	2.5		4	
KGW04060M-□□				4.5	3.5			

EA Motor for EtherCAT

Motor Model STM28W100A

Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	D(mm)	LS(mm)
KGW04040T-L(R)EA	EA	□28	T	5.5	2.5	—	—	145.1
KGW04060T-L(R)EA				4.5	3.5			
KGW04040M-L(R)EA			M	5.5	2.5			
KGW04060M-L(R)EA				4.5	3.5			

PA αSTEP (AR Series)

Motor Model ARM24SAK

ZA αSTEP (AZ Series)

Motor Model AZM24AK

Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	D(mm)	LS(mm)
KGW04040T-L(R)PA	PA	□28	T	5.5	2.5	—	—	129.8
KGW04060T-L(R)PA				4.5	3.5			
KGW04040M-L(R)PA			M	5.5	2.5			
KGW04060M-L(R)PA				4.5	3.5			
KGW04040T-L(R)ZA	ZA	□28	T	5.5	2.5	—	—	139.3
KGW04060T-L(R)ZA				4.5	3.5			
KGW04040M-L(R)ZA			M	5.5	2.5			
KGW04060M-L(R)ZA				4.5	3.5			

UG Servo motor MINAS A6 (Panasonic)

Motor Model MSMF5AZL1A2

UA Servo motor J4 (Mitsubishi Electric corporation)

Motor Model HG-KR053

Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	D(mm)	LS(mm)
KGW04040T-L(R)UG	UG	□38	T	10.5	7.5	12	—	169.8
KGW04060T-L(R)UG				9.5	8.5			
KGW04040M-L(R)UG			M	10.5	7.5		4	
KGW04060M-L(R)UG				9.5	8.5			
KGW04040T-L(R)UA	UA	□40	T	11.8	8.8	8.8	—	164.2
KGW04060T-L(R)UA				10.8	9.8			
KGW04040M-L(R)UA			M	11.8	8.8		4	
KGW04060M-L(R)UA				10.8	9.8			

Motorized Stage

Goniometer Stage □40: KAW04 (2-axis)

2axes
KAW04040T-LC

KAW04040M-LC

RoHS

Freely
customize
the motor

*All image is for illustrative purposes only.

KAW04040T-L C-□

1

2

3

4

5

6

7

PA-□

6

7

Cable P.1-207~

Electrical specification P.C-043~

1 Axis

A	2-axes
---	--------

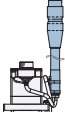
2 Stage size

04	□40mm
----	-------

3 Height of center rotation (W.D.)

040	40mm
-----	------

4 Connector specifications

T	Pigtail	
M	Panel Mount	

5 Sensor cover location specification

Blank	Specification
L	L position
R	Opposite hand

6 Motor option

Code	Specification
C	Standard
G	High resolution

7 Cable option (Motor: C・G)

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

6 Motor option

Code	Specification
PA	αSTEP (AR Series)
ZA	αSTEP (AZ Series)
EA	Motor for EtherCAT
UG	Servo motor(MINAS A6)
UA	Servo motor(J4)

7 Cable option (Motor: PA・ZA・EA・UG・UA)

Code	Specification
Blank	Sensor cable 2m One end loose wire
3	Sensor cable 3m One end loose wire
5	Sensor cable 5m One end loose wire
3A	Driver (Amplifier)/Cable set 3m
5A	Driver (Amplifier)/Cable set 5m

Driver (Amplifier)・Cable option

Code	*Combination Motor	Blank	3	5	3A	5A
		PA/ZA/EA/UG/UA	PA/ZA	EA/UG/UA	PA/ZA	EA/UG/UA
Cable	Sensor	2m	3m	5m	3m	5m
	Motor	Not included	—	3m	—	5m
	Encoder	Not included	—	3m	—	5m
Driver (Amplifier)		Not included	—	3m	—	5m

*Motor driver (amplifier)/cable combination

Selection Example

Model	W.D. 40mm KAW04040	+	Connector specs T: Pigtail/L position KAW04040T-L	+	Motor option G: High resolution KAW04040T-LG	+	Cable A: 2m KAW04040T-LG-A	+	▷ KAW04040T-LG-A
Model	W.D. 40mm KAW04040	+	Connector specs M: Panel Mount/Opposite hand KAW04040M-R	+	Motor option PA: αSTEP(AR Series) KAW04040M-RPA	+	Cable 3A: Driver/Cable set 3m KAW04040M-RPA-3A	+	▷ KAW04040M-RPA-3A

Specification

SPEC		
Model	KAW04040T-LC	KAW04040M-LC
Opposite hand	KAW04040T-RC	KAW04040M-RC
Mechanical specification	Travel distance Upper/Lower	±8°/±6°
	Stage surface size	40×40mm
	Connector type	Pigtail
	Travel mechanism (Reduction ratio)	Worm gear(1/240)
	Guide	Cross Roller Guide
	Main materials-Finishing	Aluminum - Black alumite finishing,Phosphor bronze - Black paint
Dimensional specification	Weight	0.78kg
	Height of stage	40±0.4mm
	Height of center rotation	40±0.4mm
	Runout accuracy of center rotation	—
Accuracy specification	Resolution/Pulse	0.003°(Full)
	MAX speed	Upper 15°/sec[5kHz]
		Lower 15°/sec[5kHz]
	Repeatability positioning accuracy	±0.005°
	Load capacity	2.5kgf [24.5N]
	Moment stiffness	Pitch 1.57/Yaw 2.32/Roll 1.57["/N・cm]
Sensor	Limit sensor	Available
	Origin sensor	Available
	Slit origin sensor	—
	Provided screw (Hexagon-headed bolt)	4 of M3 -6

* Might be changed specification due to motors.

Resolution・MAX speed・Weight

Motor code		C	G
Type		Standard	High resolution
Motor model*3		C005C-90215P-1	PK523HPMB-C1
Step angle		0.72°	0.36°
Resolution(Full)	Upper	0.003°	0.0015°
	Lower		
MAX speed	Upper	15°/sec	
	Lower		
Weight	KAW04-T (Pigtail)	0.78kg	
	KAW04-M (Panel Mount)	0.76kg	

Motor code		PA	ZA	EA	UG	UA	
Type		αSTEP (AR Series)	αSTEP (AZ Series)	Motor for EtherCAT	MINAS A6	J4	
Motor model*3		ARM24SAK	AZM24AK	STM28W100A	MSMF5AZL1A2	HG-KR053	
Resolution	Upper	0.0015° (1000P/R setting)			23 Bit encoder (8388608P/R)*1	22 Bit encoder (4194304P/R)*2	
	Lower						
MAX speed	Upper	30°/sec			45°/sec		
	Lower						
Weight	KAW04-T (Pigtail)	0.86kg	0.80kg	1.28kg	1.32kg		
	KAW04-M (Panel Mount)	0.84kg	0.78kg	1.26kg	1.30kg		

*1 Optional encoder cable is for incremental system.

*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

*3 Model is our own management model.

New

Motorized goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
ScrewWorm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

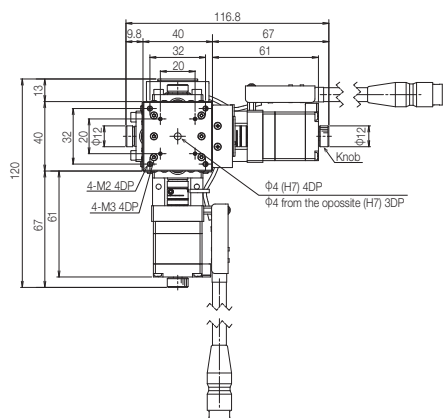
C
030

Goniometer Stage □40: KAW04 (2-axis)

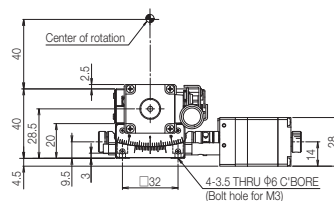
Dimensions

KAW04-L Series

Top view :KAW04040T-LC (Pigtail)

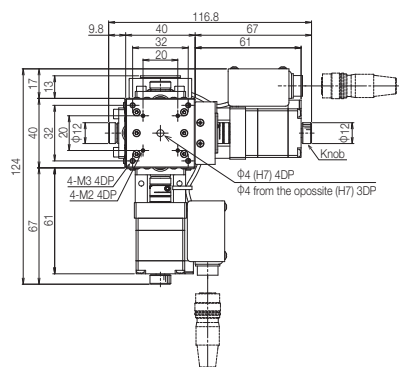


Side view :common



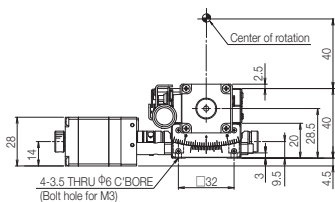
KAW04040T(M)-LC

Top view :KAW04040M-LC (Panel Mount)



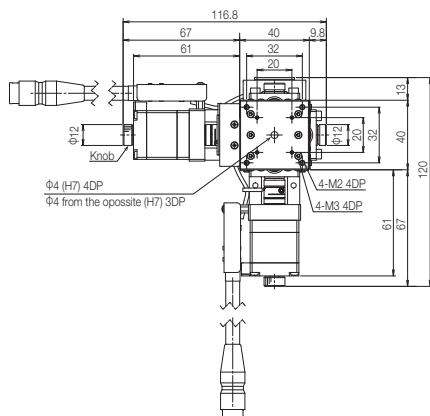
KAW04-R Series

Side view :common

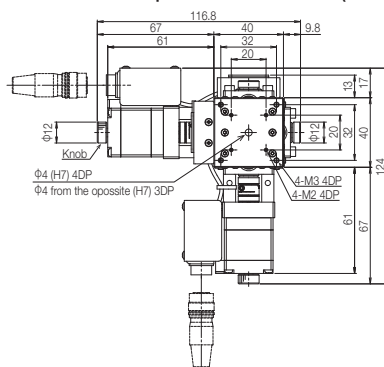


KAW04040T(M)-RC

Top view :KAW04040T-RC (Pigtail)



Top view :KAW04040M-RC (Panel Mount)



Ball Screw

Worm Gear

40

50

60

70

80

100

□120

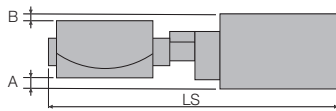
Other

C

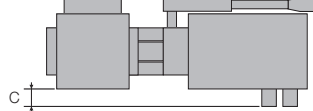
031

Dimensions

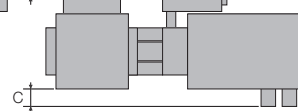
Side view



Top view :Connector :T(Pigtail)



Top view :Connector :M(Panel Mount)



C Standard motor

Motor Model C005C-90215P-1

G High resolution

Motor Model PK523HPMB-C1

Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	D(mm)	LS(mm)
KGW04040T-□□	C・G	□28	T	5.5	2.5	—	—	116.8
KGW04060T-□□				4.5	3.5			
KGW04040M-□□			M	5.5	2.5		4	
KGW04060M-□□				4.5	3.5			

EA Motor for EtherCAT

Motor Model STM28W100A

Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	D(mm)	LS(mm)
KGW04040T-L(R)EA	EA	□28	T	5.5	2.5	—	—	145.1
KGW04060T-L(R)EA				4.5	3.5			
KGW04040M-L(R)EA			M	5.5	2.5			
KGW04060M-L(R)EA				4.5	3.5			

PA αSTEP (AR Series)

Motor Model ARM24SAK

ZA αSTEP (AZ Series)

Motor Model AZM24AK

Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	D(mm)	LS(mm)
KGW04040T-L(R)PA	PA	□28	T	5.5	2.5	—	—	129.8
KGW04060T-L(R)PA				4.5	3.5			
KGW04040M-L(R)PA			M	5.5	2.5			
KGW04060M-L(R)PA				4.5	3.5			
KGW04040T-L(R)ZA	ZA	□28	T	5.5	2.5	—	—	139.3
KGW04060T-L(R)ZA				4.5	3.5			
KGW04040M-L(R)ZA			M	5.5	2.5			
KGW04060M-L(R)ZA				4.5	3.5			

UG Servo motor MINAS A6 (Panasonic)

Motor Model MSMF5AZL1A2

UA Servo motor J4 (Mitsubishi Electric corporation)

Motor Model HG-KR053

Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	D(mm)	LS(mm)
KGW04040T-L(R)UG	UG	□38	T	10.5	7.5	12	—	169.8
KGW04060T-L(R)UG				9.5	8.5			
KGW04040M-L(R)UG			M	10.5	7.5		4	
KGW04060M-L(R)UG				9.5	8.5			
KGW04040T-L(R)UA	UA	□40	T	11.8	8.8	8.8	—	164.2
KGW04060T-L(R)UA				10.8	9.8			
KGW04040M-L(R)UA			M	11.8	8.8		4	
KGW04060M-L(R)UA				10.8	9.8			

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

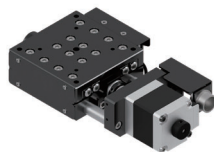
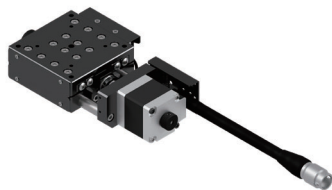
C
032

Goniometer Stage □60 : KGW06

■ 1軸

KGW06050T-LC

KGW06050M-LC



Freely
customize
the motor

RoHS

*All image is for illustrative purposes only.

K **GW06050T-L** **C** - □

1

2

3

4

5

6

7

PA - □

6

7

Cable P1-207~

Electrical specification P.C-043~

1 Axis

G	1-axis
---	--------

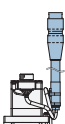
2 Stage size

06	□60mm
----	-------

3 Height of center rotation (W.D.)

050	50mm
075	75mm
100	100mm
125	125mm

4 Connector specifications

T	Pigtail	
M	Panel Mount	

5 Sensor cover location specification

Blank	Specification
L	L position
R	Opposite hand

6 Motor option

Code	Specification
C	Standard
G	High resolution

7 Cable option (Motor: C・G)

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

6 Motor option

Code	Specification
PA	αSTEP (AR Series)
ZA	αSTEP (AZ Series)
EA	Motor for EtherCAT
UG	Servo motor(MINAS A6)
UA	Servo motor(J4)

7 Cable option (Motor: PA・ZA・EA・UG・UA)

Code	Specification
Blank	Sensor cable 2m One end loose wire
3	Sensor cable 3m One end loose wire
5	Sensor cable 5m One end loose wire
3A	Driver (Amplifier)/Cable set 3m
5A	Driver (Amplifier)/Cable set 5m

Driver (Amplifier)・Cable option

Code	*Combination Motor	Blank	3	5	3A	5A
		PA/ZA/EA/UG/UA	PA/ZA/EA/UG/UA	PA/ZA/EA/UG/UA	PA/ZA/EA/UG/UA	PA/ZA/EA/UG/UA
	Sensor	2m	3m	5m	3m	5m
	Motor	Not included			3m	5m
	Encoder	Not included			3m	5m
Driver (Amplifier)		Not included			Included	

*Motor driver (amplifier)/cable combination

Selection Example

Model	W.D. 50mm KGW06050	+	Connector specs T: Pigtail/L position KGW06050T-L	+	Motor option G: High resolution KGW06050T-LG	+	Cable A: 2m KGW06050T-LG-A	+	▷ KGW06050T-LG-A
Model	W.D. 100mm KGW06100	+	Connector specs M: Panel Mount/Opposite hand KGW06100M-R	+	Motor option PA: αSTEP(AR Series) KGW06100M-RPA	+	Cable 3A: Driver/Cable set 3m KGW06100M-RPA-3A	+	▷ KGW06100M-RPA-3A

Specification

SPEC									
Model	KGW06050T-LC	KGW06075T-LC	KGW06100T-LC	KGW06125T-LC	KGW06050M-LC	KGW06075M-LC	KGW06100M-LC	KGW06125M-LC	
Opposite hand	KGW06050T-RC	KGW06075T-RC	KGW06100T-RC	KGW06125T-RC	KGW06050M-RC	KGW06075M-RC	KGW06100M-RC	KGW06125M-RC	
Mechanical specification	Travel distance	±10°	±8°	±6°	±5°	±10°	±8°	±6°	±5°
	Stage surface size	60×60mm				60×60mm			
	Connector type	Pigtail				Panel Mount			
	Travel mechanism (Reduction ratio)	Worm gear(1/160)	Worm gear(1/225)	Worm gear(1/292)	Worm gear(1/360)	Worm gear(1/160)	Worm gear(1/225)	Worm gear(1/292)	Worm gear(1/360)
	Guide	Cross Roller Guide				Cross Roller Guide			
Dimensional data	Main materials-Finishing	Aluminum - Black alumite finishing				Aluminum - Black alumite finishing			
	Weight	0.51kg				0.5kg			
	Height of stage	25±0.2mm				25±0.2mm			
	Height of center rotation	50±0.2mm	75±0.2mm	100±0.2mm	125±0.2mm	50±0.2mm	75±0.2mm	100±0.2mm	125±0.2mm
	Runout accuracy of center rotation	0.01mm以内				0.01mm以内			
Accuracy specification	Resolution/Pulse	0.0045°(Full)	0.0032°(Full)	0.002466°(Full)	0.002°(Full)	0.0045°(Full)	0.0032°(Full)	0.002466°(Full)	0.002°(Full)
	MAX speed	22.5°/sec[5kHz]	16°/sec[5kHz]	12.5°/sec[5kHz]	10°/sec[5kHz]	22.5°/sec[5kHz]	16°/sec[5kHz]	12.5°/sec[5kHz]	10°/sec[5kHz]
	Repeatability positioning accuracy	±0.003°				±0.003°			
	Load capacity	5kgf【49N】				5kgf【49N】			
	Moment stiffness	Pitch 0.30/Yaw 0.10/Roll 0.11["/N・cm]				Pitch 0.30/Yaw 0.10/Roll 0.11["/N・cm]			
Sensor	Lost motion	0.01°以内				0.01°以内			
	Limit sensor	Available				Available			
	Origin sensor	Available				Available			
	Slit origin sensor	-				-			
Provided screw (Hexagon-headed bolt)		4 of M4 - 10				4 of M4 - 10			

* Might be changed specification due to motors.

Resolution・MAX speed・Weight

Motor code		C	G
Type		Standard	High resolution
Motor model*3		C005C-90215P-1	PK523HPMB-C1
Step angle		0.72°	0.36°
Resolution (Full)	KGW06050	0.0045°	0.00225°
	KGW06075	0.0032°	0.0016°
	KGW06100	0.002466°	0.001233°
	KGW06125	0.002°	0.001°
MAX speed	KGW06050	22.5°/sec	
	KGW06075	16°/sec	
	KGW06100	12.5°/sec	
	KGW06125	10°/sec	
Weight	KGW06-T (Pigtail)	0.51kg	
	KGW06-M (Panel Mount)	0.50kg	

Motor code		PA	ZA	EA	UG	UA
Type		αSTEP (AR Series)	αSTEP (AZ Series)	Motor for EtherCAT	MINAS A6	J4
Motor model*3		ARM24SAK	AZM24AK	STM28W100A	MSMF5AZL1A2	HG-KR053
Resolution (Full)	KGW06050	0.00225° (1000P/R setting)			23 Bit encoder (8388608P/R)*1	22 Bit encoder (4194304P/R)*2
	KGW06075	0.0016°(1000P/R setting)				
	KGW06100	0.001233°(1000P/R setting)				
	KGW06125	0.001° (1000P/R setting)				
MAX speed	KGW06050	45°/sec			67.5°/sec	
	KGW06075	32°/sec			48°/sec	
	KGW06100	25°/sec			37.5°/sec	
	KGW06125	20°/sec			30°/sec	
Weight	KGW06-T (Pigtail)	0.55kg		0.52kg	0.76kg	0.78kg
	KGW06-M (Panel Mount)	0.54kg		0.51kg	0.75kg	0.77kg

*1 Optional encoder cable is for incremental system.

*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

*3 Model is our own management model.

New

Motorized
goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
ScrewWorm
Gear

□ 40

□ 50

□ 60

□ 70

□ 80

□ 100

□ 120

Other

C

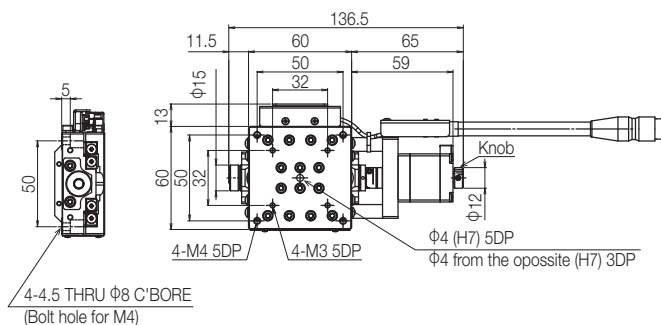
034

Goniometer Stage □60 : KGW06

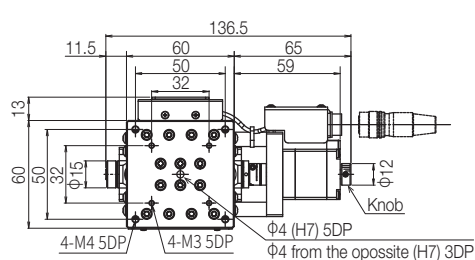
Dimensions

KGW06-L Series

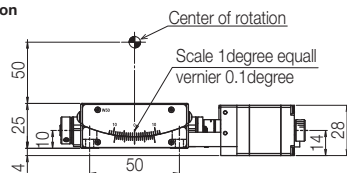
Top view :KGW06□□□T-LC (Pigtail)



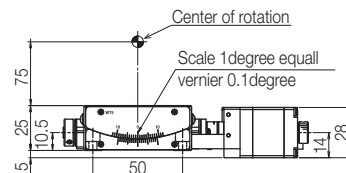
Top view :KGW06□□□M-LC (Panel Mount)



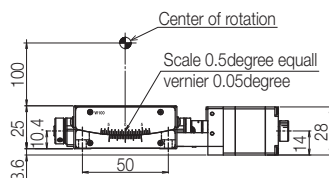
Side view :common



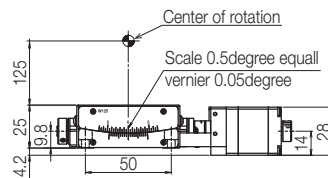
KGW06050T(M)-LC



KGW06075T(M)-LC



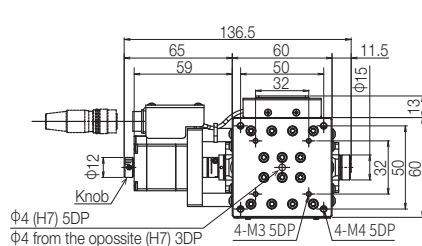
KGW06100T(M)-LC



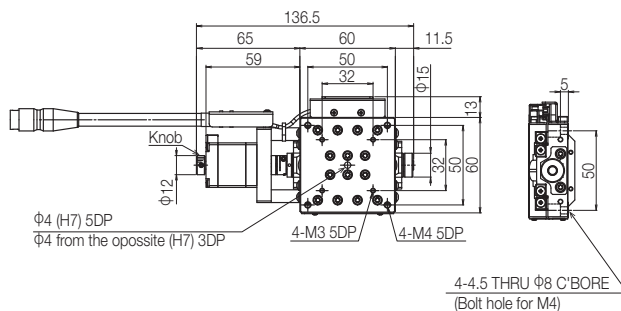
KGW06125T(M)-LC

KGW06-R Series

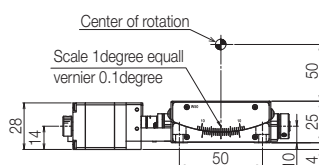
Top view :KGW06□□□M-RC (Panel Mount)



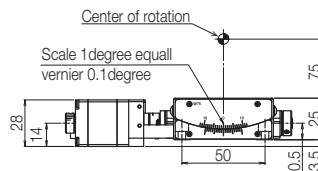
Top view :KGW06□□□T-RC (Pigtail)



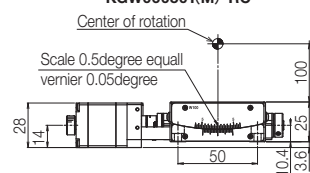
Side view :common



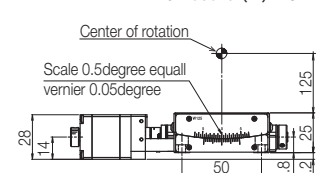
KGW06050T(M)-RC



KGW06075T(M)-RC



KGW06100T(M)-RC



KGW06125T(M)-RC

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball Screw

Worm Gear

□40

□50

□60

□70

□80

□100

□120

Other

C
035

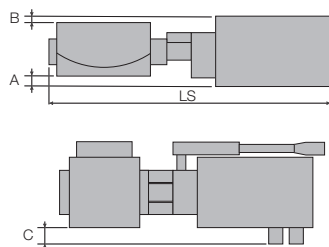
Dimensions

C Standard motor

Motor Model C005C-90215P-1

G High resolution

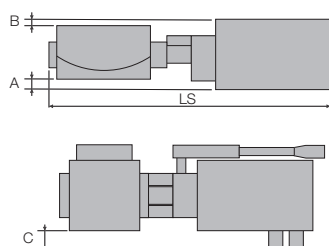
Motor Model PK523HPMB-C1



Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	LS(mm)
KGW06050□-□□	C・G	□28	T・M	4.1	—	—	136.5
KGW06075□-□□				3.5			
KGW06100□-□□				3.7			
KGW06125□-□□				4.2			

EA Motor for EtherCAT

Motor Model STM28W100A



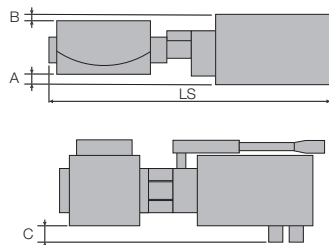
Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	LS(mm)
KGW06050□-□EA	EA	□28	T・M	4.1	—	—	162.8
KGW06075□-□EA				3.5			
KGW06100□-□EA				3.7			
KGW06125□-□EA				4.2			

PA αSTEP (AR Series)

Motor Model ARM24SAK

ZA αSTEP (AZ Series)

Motor Model AZM24AK



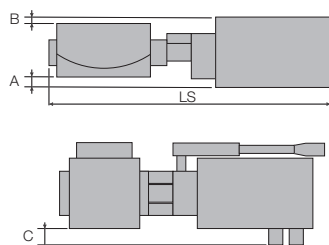
Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	LS(mm)
KGW06050□-□PA	AR	□28	T・M	4.1	—	—	147.5
KGW06075□-□PA				3.5			
KGW06100□-□PA				3.7			
KGW06125□-□PA				4.2			
KGW06050□-□ZA	ZA	□28	T・M	4.1	—	—	157
KGW06075□-□ZA				3.5			
KGW06100□-□ZA				3.7			
KGW06125□-□ZA				4.2			

UG Servo motor MINAS A6 (Panasonic)

Motor Model MSMF5AZL1A2

UA Servo motor J4 (Mitsubishi Electric corporation)

Motor Model HG-KR053



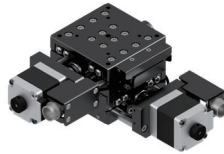
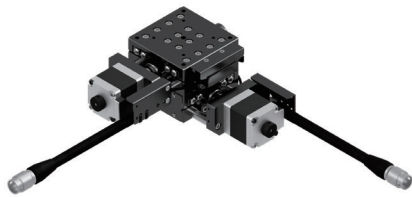
Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	LS(mm)
KGW06050□-□UG	UG	□38	T・M	9.1	4	2	187.5
KGW06075□-□UG				8.5	4.5		
KGW06100□-□UG				8.7	4.4		
KGW06125□-□UG				9.2	3.8		
KGW06050□-□UA	UA	□40	T・M	10.4	5.3	—	181.9
KGW06075□-□UA				9.8	5.8		
KGW06100□-□UA				10	5.7		
KGW06125□-□UA				10.5	5.1		

Motorized Stage

Goniometer Stage □60: KAW06 (2-axis)

■ 2 axis
KAW06050T-LC

KAW06050M-LC



Freely
customize
the motor

RoHS

*All image is for illustrative purposes only.

KAW06050T-LC-□

1

2

3

4

5

6

7

PA-□

6

7

☑ Cable P.1-207~
☑ Electrical specification P.C-043~

1 Axis

A	2-axes
---	--------

2 Stage size

06	□60mm
----	-------

3 Height of center rotation (W.D.)

050	50mm
075	75mm
100	100mm

4 Connector specifications

T	Pigtail	
M	Panel Mount	

5 Sensor cover location specification

Blank	Specification
L	L position
R	Opposite hand

6 Motor option

Code	Specification
C	Standard
G	High resolution

7 Cable option (Motor: C・G)

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

6 Motor option

Code	Specification
PA	αSTEP (AR Series)
ZA	αSTEP (AZ Series)
EA	Motor for EtherCAT
UG	Servo motor(MINAS A6)
UA	Servo motor(J4)

7 Cable option (Motor: PA・ZA・EA・UG・UA)

Code	Specification
Blank	Sensor cable 2m One end loose wire
3	Sensor cable 3m One end loose wire
5	Sensor cable 5m One end loose wire
3A	Driver (Amplifier)/Cable set 3m
5A	Driver (Amplifier)/Cable set 5m

Driver (Amplifier)・Cable option

Code	*Combination	Blank			3A		5A	
	Motor	PA/ZA/EA/UG/UA			PA/ZA	EA/UG/UA	PA/ZA	EA/UG/UA
Cable	Sensor	2m	3m	5m	3m			5m
	Motor	Not included			3m		5m	
	Encoder				—	3m	—	5m
Driver (Amplifier)		Not included			Included			

*Motor driver (amplifier)/cable combination

Selection Example

Model	W.D. 50mm KAW06050	+	Connector specs T: Pigtail/L position KAW06050T-L	+	Motor option G: High resolution KAW06050T-LG	+	Cable A: 2m KAW06050T-LG-A	+	▷ KAW06050T-LG-A
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Model	W.D. 100mm KAW06100	+	Connector specs M: Panel Mount/Opposite hand KAW06100M-R	+	Motor option PA: αSTEP(AR Series) KAW06100M-RPA	+	Cable 3A: Driver/Cable set 3m KAW06100M-RPA-3A	+	▷ KAW06100M-RPA-3A
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Specification

SPEC							
Model		KAW06050T-LC	KAW06075T-LC	KAW06100T-LC	KAW06050M-LC	KAW06075M-LC	KAW06100M-LC
Opposite hand		KAW06050T-RC	KAW06075T-RC	KAW06100T-RC	KAW06050M-RC	KAW06075M-RC	KAW06100M-RC
Mechanical specification	Travel distance Upper/Lower	±10°/±8°	±8°/±6°	±6°/±5°	±10°/±8°	±8°/±6°	±6°/±5°
	Stage surface size	60×60mm			60×60mm		
	Connector type	Pigtail			Panel Mount		
	Travel mechanism (Reduction ratio)	Upper Worm gear(1/160)	Worm gear(1/225)	Worm gear(1/292)	Worm gear(1/160)	Worm gear(1/225)	Worm gear(1/292)
		Lower Worm gear(1/225)	Worm gear(1/292)	Worm gear(1/360)	Worm gear(1/225)	Worm gear(1/292)	Worm gear(1/360)
	Guide	Cross Roller Guide			Cross Roller Guide		
Dimension	Main materials-Finishing	Aluminum - Black alumite finishing			Aluminum - Black alumite finishing		
	Weight	1.02kg			1.00kg		
	Height of stage	50±0.4mm			50±0.4mm		
	Height of center rotation	50±0.4mm	75±0.4mm	100±0.4mm	50±0.4mm	75±0.4mm	100±0.4mm
Accuracy specification	Runout accuracy of center rotation	—			—		
	Resolution/Pulse	Upper 0.0045°(Full)	0.0032°(Full)	0.002466°(Full)	0.0045°(Full)	0.0032°(Full)	0.002466°(Full)
		Lower 0.0032°(Full)	0.002466°(Full)	0.002°(Full)	0.0032°(Full)	0.002466°(Full)	0.002°(Full)
	MAX speed	Upper 22.5°/sec[5kHz]	16°/sec[5kHz]	12.5°/sec[5kHz]	22.5°/sec[5kHz]	16°/sec[5kHz]	12.5°/sec[5kHz]
		Lower 16°/sec[5kHz]	12.5°/sec[5kHz]	10°/sec[5kHz]	16°/sec[5kHz]	12.5°/sec[5kHz]	10°/sec[5kHz]
	Repeatability positioning accuracy	±0.003°以内			±0.003°以内		
Sensor	Load capacity	4.5kgf [44.1N]			4.5kgf [44.1N]		
	Moment stiffness	Pitch 0.41/Yaw 0.20/Roll 0.41["/N・cm]			Pitch 0.41/Yaw 0.20/Roll 0.41["/N・cm]		
	Lost motion	0.01°			0.01°		
	Limit sensor	Available			Available		
	Origin sensor	Available			Available		
Sensor	Slit origin sensor	—			—		
	Provided screw (Hexagon-headed bolt)	4 of M4 - 10			4 of M4 - 10		

* Might be changed specification due to motors.

Resolution・MAX speed・Weight

Motor code		C	G
Type		Standard	High resolution
Motor model*3		C005C-90215P-1	PK523HPMB-C1
Step angle		0.72°	0.36°
Resolution (Upper/Lower)	KAW06050	0.0045° 0.0032°	0.00225° 0.0016°
	KAW06075	0.0032° 0.002466°	0.0016° 0.001233°
	KAW06100	0.002466° 0.002°	0.001233° 0.001°
MAX speed (Upper/Lower)	KAW06050	22.5°/sec 16°/sec	
	KAW06075	16°/sec 12.5°/sec	
	KAW06100	12.5°/sec 10°/sec	
Weight	KAW06-T (Pigtail)	1.02kg	
	KAW06-M (Panel Mount)	1.00kg	

Motor code		PA	ZA	EA	UG	UA
Type		αSTEP (AR Series)	αSTEP (AZ Series)	Motor for EtherCAT	MINAS A6	J4
Motor model*3		ARM24SAK	AZM24AK	STM28W100A	MSMF5AZL1A2	HG-KR053
Resolution (Upper/Lower)	KAW06050	0.00225° 0.0016°(1000P/R setting)			23 Bit encoder (8388608P/R)*1	22 Bit encoder (4194304P/R)*2
	KAW06075	0.0016° 0.001233° (1000P/R setting)				
	KAW06100	0.001233° 0.001° (1000P/R setting)				
MAX speed (Upper/Lower)	KAW06050	45°/sec 32°/sec			67.5°/sec 48°/sec	
	KAW06075	32°/sec 25°/sec			48°/sec 37.5°/sec	
	KAW06100	25°/sec 20°/sec			37.5°/sec 30°/sec	
Weight	KAW06-T (Pigtail)	1.10kg		1.04kg	1.52kg	1.56kg
	KAW06-M (Panel Mount)	1.08kg		1.02kg	1.50kg	1.54kg

*1 Optional encoder cable is for incremental system.

*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

*3 Model is our own management model.

New

Motorized
Stage
goniometer

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
ScrewWorm
Gear

□ 40

□ 50

□ 60

□ 70

□ 80

□ 100

□ 120

Other

C

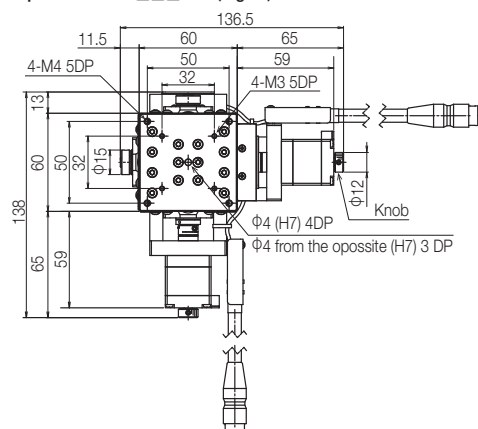
038

Goniometer Stage □60: KAW06 (2-axis)

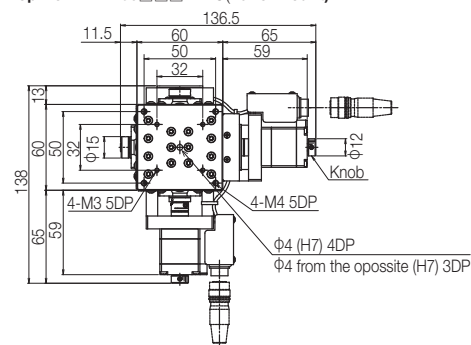
Dimensions

KAW06-L Series

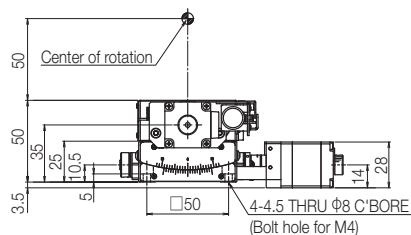
Top view :KAW06□□□T-LC (Pigtail)



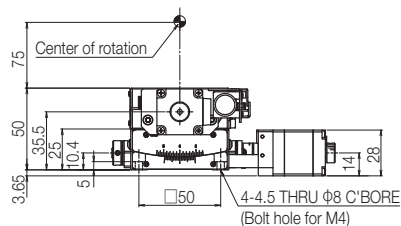
Top view :KAW06□□□M-LC (Panel Mount)



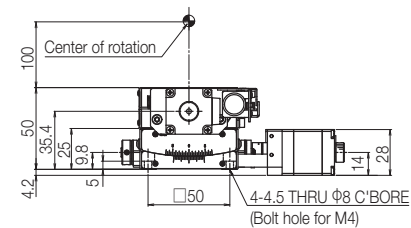
Side view :common



KAW06050T(M)-LC



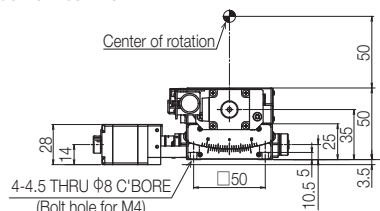
KAW06075T(M)-LC



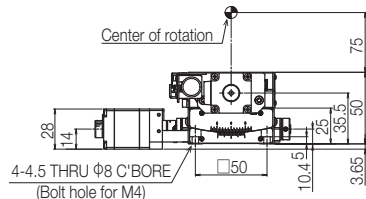
KAW06100T(M)-LC

KAW06-R Series

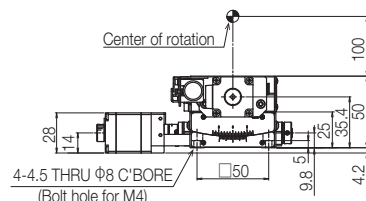
Side view :common



KAW06050T (M) -RC

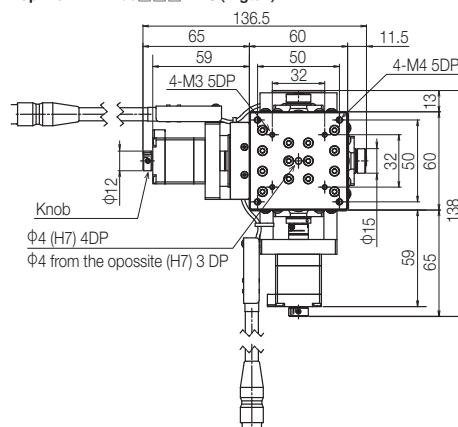


KAW06075T (M) -RC

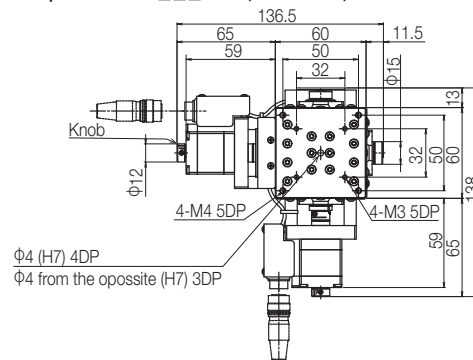


KAW06100T (M) -RC

Top view :KAW06□□□T-RC (Pigtail)



Top view :KAW06□□□M-RC (Panel Mount)



X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

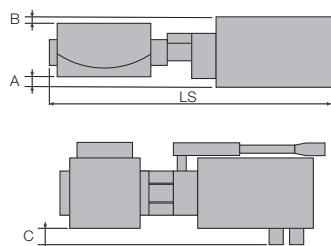
Dimensions

C Standard motor

Motor Model C005C-90215P-1

G High resolution

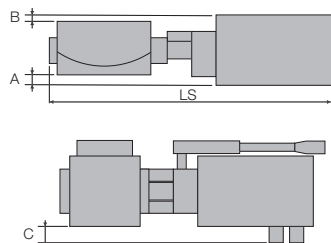
Motor Model PK523HPMB-C1



Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	LS(mm)
KGW06050□-□□	C・G	□28	T・M	4.1	—	—	136.5
KGW06075□-□□				3.5			
KGW06100□-□□				3.7			
KGW06125□-□□				4.2			

EA Motor for EtherCAT

Motor Model STM28W100A



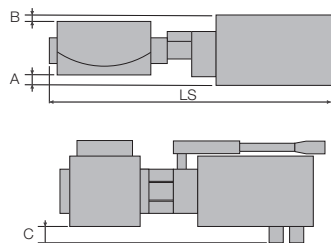
Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	LS(mm)
KGW06050□-□EA	EA	□28	T・M	4.1	—	—	162.8
KGW06075□-□EA				3.5			
KGW06100□-□EA				3.7			
KGW06125□-□EA				4.2			

PA αSTEP (AR Series)

Motor Model ARM24SAK

ZA αSTEP (AZ Series)

Motor Model AZM24AK



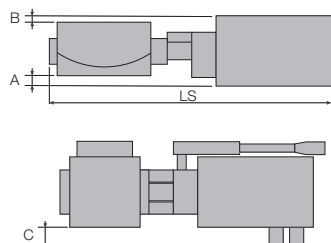
Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	LS(mm)
KGW06050□-□PA	AR	□28	T・M	4.1	—	—	147.5
KGW06075□-□PA				3.5			
KGW06100□-□PA				3.7			
KGW06125□-□PA				4.2			
KGW06050□-□ZA	ZA	□28	T・M	4.1	—	—	157
KGW06075□-□ZA				3.5			
KGW06100□-□ZA				3.7			
KGW06125□-□ZA				4.2			

UG Servo motor MINAS A6 (Panasonic)

Motor Model MSMF5AZL1A2

UA Servo motor J4 (Mitsubishi Electric corporation)

Motor Model HG-KR053



Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	LS(mm)
KGW06050□-□UG	UG	□38	T・M	9.1	4	2	187.5
KGW06075□-□UG				8.5	4.5		
KGW06100□-□UG				8.7	4.4		
KGW06125□-□UG				9.2	3.8		
KGW06050□-□UA	UA	□40	T・M	10.4	5.3	—	181.9
KGW06075□-□UA				9.8	5.8		
KGW06100□-□UA				10	5.7		
KGW06125□-□UA				10.5	5.1		

Motorized Stage

Goniometer Stage :KGW04/ KAW04/KGW06/ KAW06

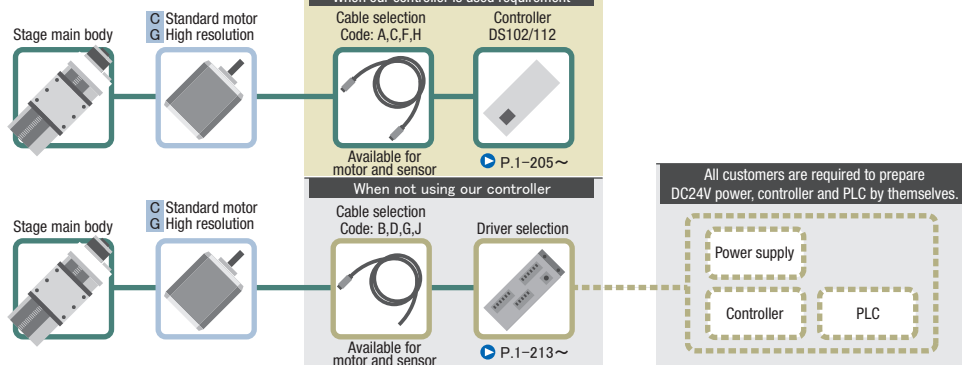
Motor option

C Standard motor

Motor model
C005C-90215P-1

G High resolution

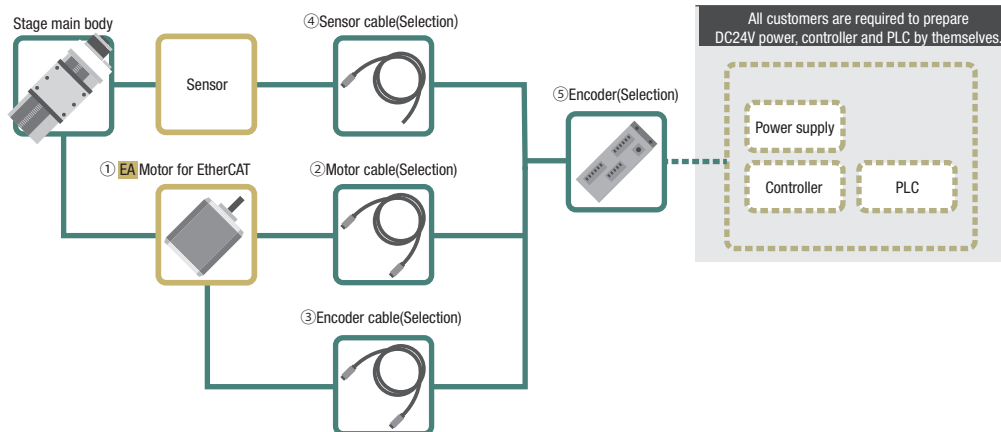
Motor model
PK523HPMB-C1



Motor option

EA Motor for EtherCAT

Motor model
STM28W100A



Code	① Motor model	② Motor cable selection	③ Encoder cable selection	④ Sensor cable selection	⑤ Driver selection
EA	STM28W100A	3A : D214-3-3R2 5A : D214-3-5R2 Blank * 3 * 5 : Not included	3A : D214-3-3RE2 5A : D214-3-5RE2 Blank * 3 * 5 : Not included	3A * 3 : HR10AP-S-SB-6-3 5A * 5 : HR10AP-S-SB-6-5 Blank : HR10AP-S-SB-6-2	3A * 5A : DS1000A-EC-28 Blank * 3 * 5 : Not included

Ball
Screw

Worm
Gear

40

50

60

70

80

100

120

Other

New

Motorized
goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□ 40

□ 50

□ 60

□ 70

□ 80

□ 100

□ 120

Other

C
042

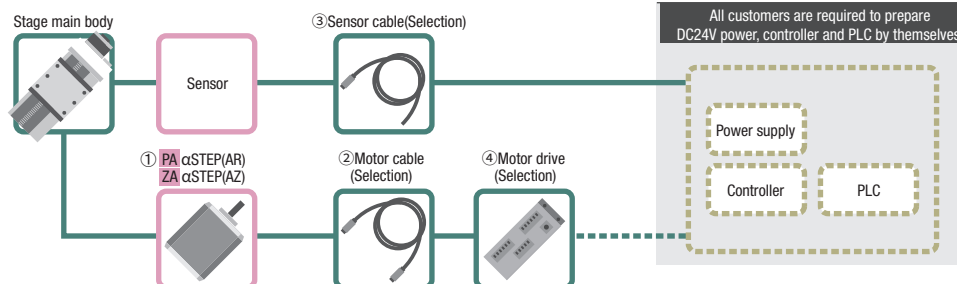
Motor option

PA αSTEP (AR Series)

Motor model
ARM24SAK

ZA αSTEP (AZ Series)

Motor model
AZM24AK



Code	① Motor model	② Motor cable selection	③ Sensor cable selection	④ Driver selection
PA	ARM24SAK	3A : CC030VA2R2 5A : CC050VA2R2 Blank • 3 • 5 : Not included	3A • 3 : HR10AP-S-SB-6-3 5A • 5 : HR10AP-S-SB-6-5 Blank : HR10AP-S-SB-6-2	3A • 5A : ARD-K Blank • 3 • 5 : Not included
ZA	AZM24AK	3A : CC030VZ2R2 5A : CC050VZ2R2 Blank • 3 • 5 : Not included		3A • 5A : AZD-K Blank • 3 • 5 : Not included

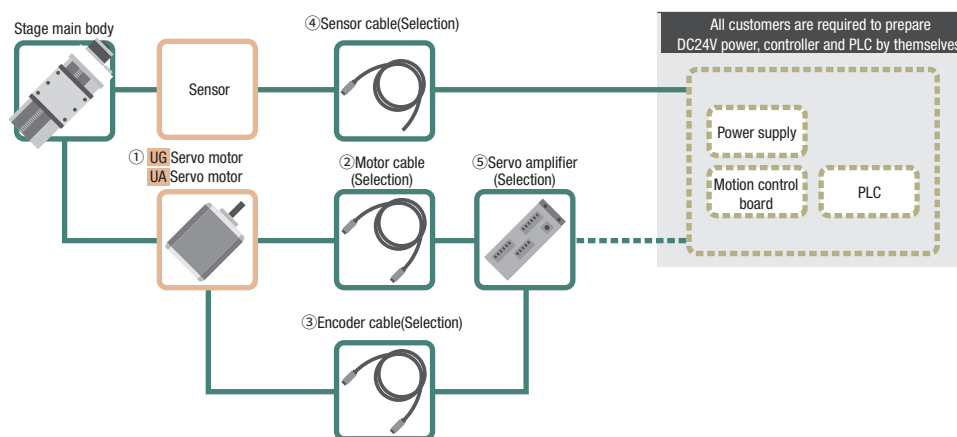
Motor option

UG Servo motor

Motor model
MSMF5AZL1A2

UA Servo motor

Motor model
HG-KR053



Code	① Motor model	② Motor cable selection	③ Encoder cable selection	④ Sensor cable selection	⑤ AC servo amplifier selection
UG	MSMF5AZL1A2	3A : MFMCA0030EED 5A : MFMCA0050EED Blank • 3 • 5 : Not included	3A : MFECA0030EAD 5A : MFECA0050EAD Blank • 3 • 5 : Not included	3A • 3 : HR10AP-S-SB-6-3 5A • 5 : HR10AP-S-SB-6-5 Blank : HR10AP-S-SB-6-2	3A • 5A : MADLT05SF Blank • 3 • 5 : Not included
UA	HG-KR053	3A : SVPJ-M-J3HF1-B-3-02S 5A : SVPJ-M-J3HF1-B-5-02S Blank • 3 • 5 : Not included	3A : SVEM-J3HF1-B-3 5A : SVEM-J3HF1-B-5 Blank • 3 • 5 : Not included		3A • 5A : MR-J4-10A Blank • 3 • 5 : Not included

Motorized Stage

Goniometer Stage :KGW04/ KAW04/KGW06/ KAW06

Motor ・ Electrical specification(5 phase stepping motor/αSTEP)

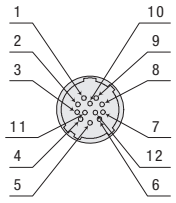
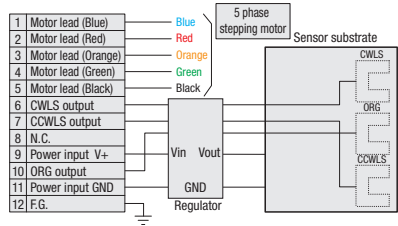
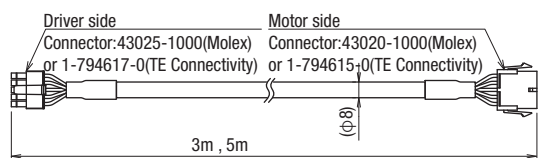
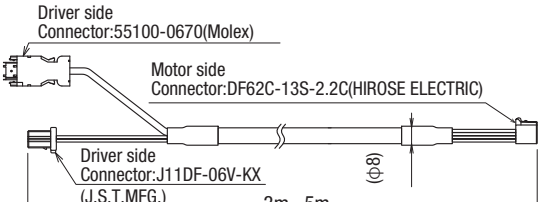
Motor code		C	G	PA	ZA
Model (*1)		KGW04/KGW06			
Motor Specification (*2)	Type	5 phase stepping motor (0.75A/Phase)		αSTEP (AR Series)	αSTEP (AZ Series)
	Feature	Standard		Small step-out ,incremental	Small step-out ,absolute
	Model (*3)	C005C-90215P-1		ARM24SAK	AZM24AK
	With electromagnetic brake	—			
	Manufacturer	Oriental Motor Co., Ltd.			
	Step angle	0.72°		0.36°	
	Mass	0.11kg		0.15kg	
	Motor size	□ size 28mm		□ size 28mm	
	Max. Holding Torque	0.048N・m		0.055N・m	0.095N・m
	Driver model	CVD507-K-A9		ARD-K	AZD-K
Input power (Voltage・frequency)		DC24V±10% 1.4A(MAX)		DC24V±10%	DC24V±5%
Connector	Pigtail	HR10A-10J-12P(73) (Hirose Electric Co., Ltd.)		Motor:43025-1000 (MOLEX) or 1-794617-0(TE Connectivity) Sensor:HR10A-7J-6P(73)(HRS)	Motor:DF62B-13EP-2.2C(HRS) Sensor:HR10A-7J-6P(73)(HRS)
	Panel Mount	HR10A-10R-12P(73) (Hirose Electric Co., Ltd.)		Motor:43025-1000 (MOLEX) or 1-794617-0(TE Connectivity) Sensor:HR10A-7R-6P(73)(HRS)	Motor:DF62B-13EP-2.2C(HRS) Sensor:HR10A-7R-6P(73)(HRS)
	Receiving connector	HR10A-10P-12S(73) (Hirose Electric Co., Ltd.)		Motor:43020-1000 (MOLEX) or 1-794615-0(TE Connectivity) Sensor:HR10A-7P-6S(73) (HRS)	Motor:DF62C-13S-2.2C(HRS) Sensor:HR10A-7P-6S(73)(HRS)
Sensor board	Limit sensor	Available			
	Origin sensor	Available			
	Slit origin sensor	—			
	Sensor model	Photo microsensor EE-SX4320 (Omron Co., Ltd.)			
	Power-supply voltage	DC5~24V±5%			
	Current consumption	Total 60mA or less			
	Control output	NPN open collector output DC30V 10mA or less			
	Output logic	On detection (light shield condition): Output transistor OFF (Non-continuity)			

(*1) The electric specification of 2-axis Goniometer Stage (KAW) is the same.

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

(*3) Model is our own management model.

Pin allocation ・ Connection diagram

Motor Code	KGW Series	
C・G	Available for motor and sensor	【Pin allocation (common)】 Pigtail : HR10A-10J-12P(73) (HRS) Panel Mount : HR10A-10R-12P(73) (HRS) 
		
PA	Motor	【Receiver cable】Model:CC030VA2R2(3m)/CC050VA2R2(5m) *Flexible cable 
ZA	Motor	【Receiver cable】Model:CC030VZ2R2(3m)/CC050VZ2R2(5m) *Flexible cable 

Ball Screw

Worm Gear

40

50

60

70

80

100

120

Other

Motor · Electrical specification(Motor for EtherCAT/Servo motor)

Motor code		EA	UG	UA
Model (*1)			KGW04/KGW06	
Motor Specification (*2)	Type	2 phase closed Loop stepping motor	Servo motor	Servo motor
	Feature	Small step-out ,incremental, EtherCAT	High speed	High speed
	Model (*3)	STM28W100A	MSMF5AZL1A2	HG-KR053
	With electromagnetic brake		—	
	Manufacturer	SURUGA SEIKI	Panasonic	Mitsubishi Electric corporation
	Step angle	0.36° (1000P/R setting)	Both absolute and incremental 23 bits encoder (8388608P/R) (*4)	Both absolute and incremental 22 bits encoder (4194304P/R) (*5)
	Mass	0.12kg	0.32kg	0.34kg
	Motor size	□ size L size	□38mm 72mm	□40mm 66.4mm
	Max. Holding Torque	0.085N · m	—	—
	Maximum torque	—	0.48N · m	0.56N · m
Connector	Driver model	DS1000A-EC-28	MADLT05SF	MR-J4-10A
	Input power (Voltage · frequency)	DC24V±10%	Three and Single phase AC200-240V 50/60Hz	Three and Single phase AC200-240V 50/60Hz
	Pigtail	Motor:B06B-ZESK-D (JST) Encoder:SM08B-GHS-TB (JST) Sensor:HR10A-7J-6P(73)(HRS) Driver I/O Connector Housing:PUDP-24V-S Driver I/O Contact:SPUD-002T-P0.5:SPUD-002T-P0.5	Motor: 172167-1 (TE Connectivity) Encoder: 172169-1 (TE Connectivity) Sensor:HR10A-7J-6P(73)(HRS)	Motor: Manufacturer standard Encoder: Manufacturer standard Sensor:HR10A-7J-6P(73) (HRS)
	Panel Mount	Motor:B06B-ZESK-D (JST) Encoder:SM08B-GHS-TB (JST) Sensor:HR10A-7R-6P(73)(HRS) Driver I/O Connector Housing:PUDP-24V-S Driver I/O Contact:SPUD-002T-P0.5	Motor: 172167-1 (TE Connectivity) Encoder: 172169-1 (TE Connectivity) Sensor:HR10A-7R-6P(73)(HRS)	Motor: Manufacturer standard Encoder: Manufacturer standard Sensor:HR10A-7R-6P(73)(HRS)
Sensor board	Receiving connector	Motor:ZER-06V-S (JST) Encoder:GHR-08V-S (JST) Sensor:HR10A-7P-6S(73)(HRS)	Motor: 172159-1 (TE Connectivity) Encoder: 172161-1 (TE Connectivity) Sensor:HR10A-7P-6S(73)(HRS)	Motor:JN4FT04SJ1-R (JST) Encoder: 1674320-1 (TE Connectivity) Sensor:HR10A-7P-6S(73)(HRS)
	Limit sensor		Available	
	Origin sensor		Available	
	Slit origin sensor		—	
	Sensor model		Photo microsensor EE-SX4320 (Omron Co., Ltd.)	
	Power-supply voltage		DC5~24V±5%	
	Current consumption		Total 60mA or less	
	Control output		NPN open collector output DC30V 10mA or less	
Sensor board	Output logic		On detection (light shield condition): Output transistor OFF (Non-continuity)	

(*1) (*2) (*3) See P.C-043

(*4) Optional encoder cable is for incremental system.

(*5) When constructing an absolute system, it is necessary to install a battery in the amplifier.

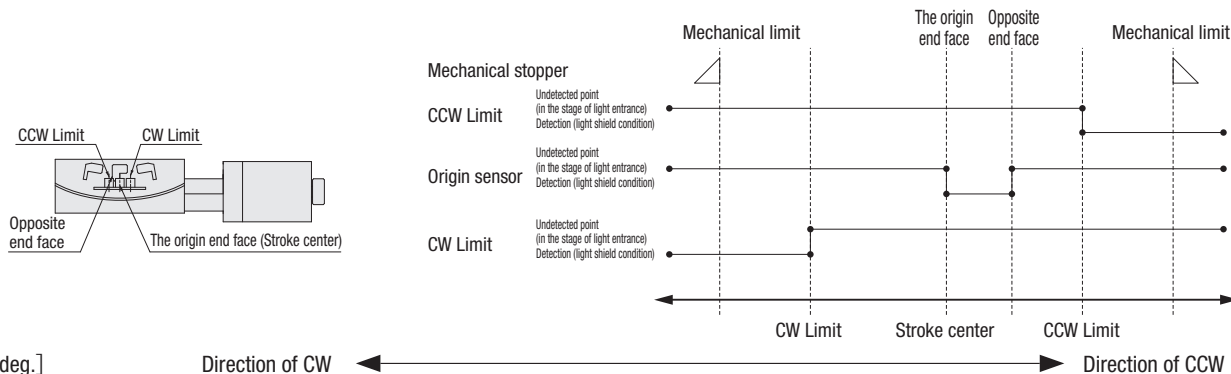
Pin allocation · Connection diagram

Motor Code	Motor · Encoder	Sensor (common)
EA	Motor [Receiver cable] Model:D214-3-3R2(3m)/D214-3-5R2(5m) *Flexible cable Driver side Connector:PAP-04V-S(J.S.T.MFG.) Contact:SPHD-002T-P0.5(J.S.T.MFG.) Motor side Connector:ZER-06V-S(J.S.T.MFG.) Contact:SZE-002T-P0.3(J.S.T.MFG.) 	Sensor (common) [Receiver cable] Model:HR10AP-S-SB-6-□ (□ is the length) *for fixing Sensor side Connector (Female): HR10A-7P-6S (73) (HRS) ULAWM20276 AWG28 3P Black 2m +50 -0 mm, 3m +50 -0 mm, 5m +150 -0 mm
	Encoder [Receiver cable] Model:D214-3-3RE2(3m)/D214-3-5RE2(5m) *Flexible cable Driver side Connector:PUDP-10V-S(J.S.T.MFG.) Contact:SPUD-002T-P0.5(J.S.T.MFG.) Motor side Connector:GHR-08V-S(J.S.T.MFG.) Contact:SSHL-002T-P0.2(J.S.T.MFG.) 	*The shields are connected with the connector shell.
UG	Motor [Receiver cable] Model:MFMCA0030EED(3m)/MFMCA0050EED(5m) *Flexible cable 	[Pin allocation] Pigtail:HR10A-7J-6P(73) (HRS) Panel Mount:HR10A-7R-6P(73) (HRS)
	Encoder [Receiver cable] Model:MFECA0030EAD(3m)/MFECA0050EAD(5m) *for fixing 	
UA	Motor [Receiver cable] Model:SVPM-J3HF1-B-□-02S Loose wire on the servo amplifier side *Flexible cable Motor side Connector: JN4FT04SJ1-R (JAE) NA3CTR-18-4(MISUMI) ULAWM2517 AWG18 	
	Encoder [Receiver cable] Model:SVEM-J3HF1-B-□ Receptacle : 36210-0100FD (3M) ShellKit : 36310-3200-008 (3M) *Flexible cable Motor (encoder)side Connector:1674320-1 (TE Connectivity) Servo amplifier side Receptacle : 36210-0100FD (3M) ShellKit : 36310-3200-008 (3M) NAMFSB-23-3P (MISUMI) ULAWM2576 AWG23 	【結線図】

Motorized Stage

Goniometer Stage :KGW04/ KAW04/KGW06/ KAW06

Timing chart



* Return to origin means that is performed return to origin type 4 using DS102/DS112 series.

* The coordinate is a basis of design value. Dimension error may occur about plus or minus 0.5 deg.

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 are different from the specification depending on the models. Therefore return to origin method other than recommendation may not be work correctly. Set to the way of recommendation return origin when using our controller.

■ KGW06/KAW06 recommended return to origin Return to origin sequence P.1-201~

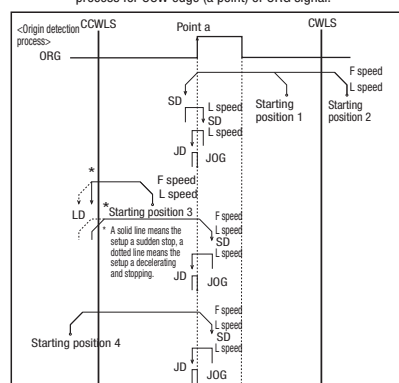
Type 3: Detect in the direction of CCW and perform detected process for CCW edge(a point) of ORG signal.

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

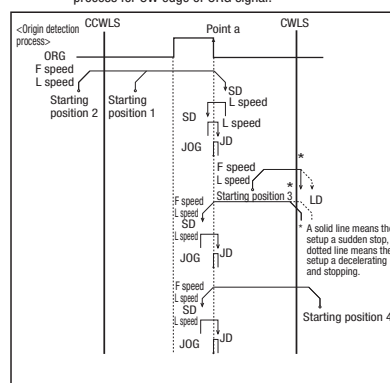
Type 9: After finished Type3, perform detected process for CCW edge of TIMING signal.

Type10: 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.



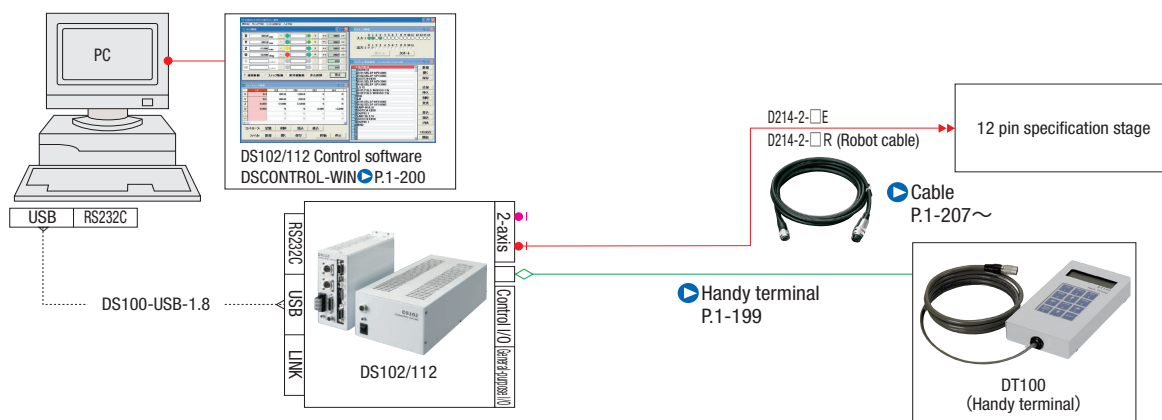
[Type4] Detect in the direction of CW and perform detected process for CW edge of ORG signal.



Connectin example

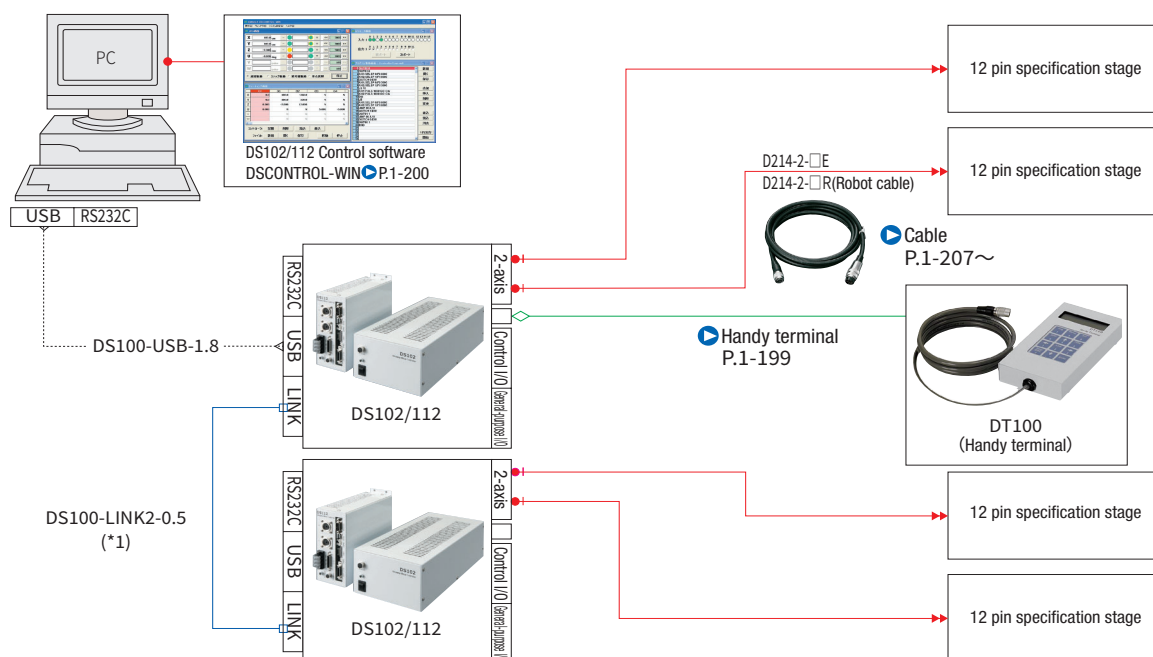
■ Connection example 1 Motorized Stage 1axis: When holding a terminal device (using control software)

*USB cable connection between PC and controller.



■ Connection example 2 Motorized Stage 4axis: When holding a terminal device (using control software)

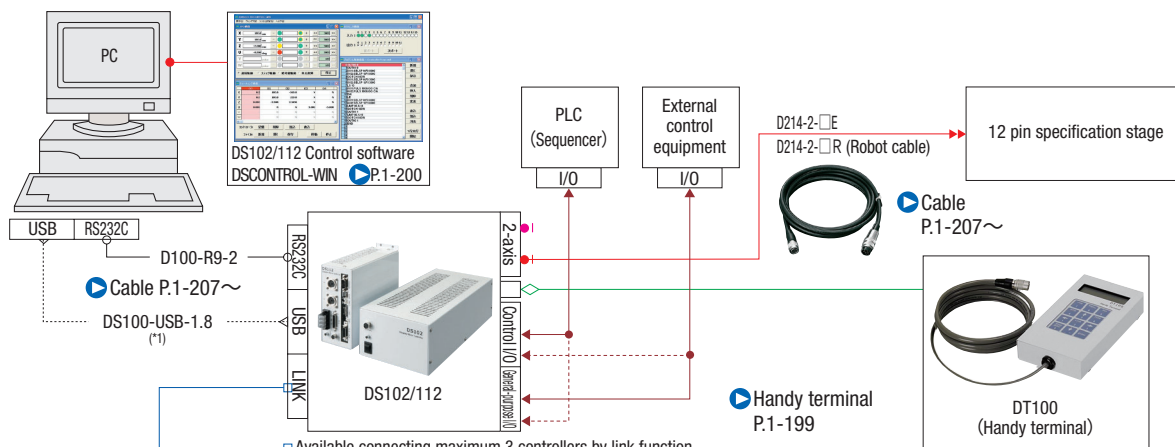
*USB cable connection between PC and controller.



(*1) It is possible to control up to 3 controllers (for a maximum of 6-axis control) with link function.

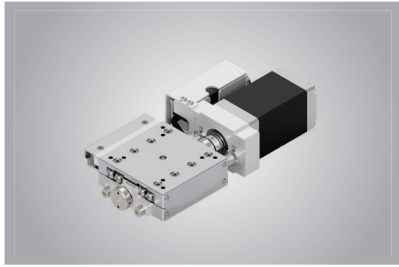
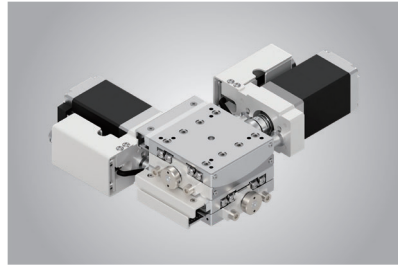
■ Connection example 3 When controlling from the PLC I/O Unit.

*USB cable connection between PC and controller.



(*1) Using the USB hub, it is controllable in a single PC up to four link networks (24-axis).

Goniometer Stage □50: KG05/KA05

1-axis
KG052-axis
KA05

RoHS

- Our high precision goniometer stages based on cross roller guide for travel guide and worm gear mechanism.
- High performance with runout accuracy of center rotation within 0.01 mm.
- Configuration 2-axis
Combination of 1-axis stage that is different center of rotation.

Model Selection code Option code

K **G05-W050A** **□** **-H** **5**

1 2 3 4 5

● Cable P.1-207~
● Electrical specification P.1-155~

1 Axis

G	1-axis
A	2-axis

2 Height of center rotation (W.D.)

050	50mm
068	68mm
086	86mm

*2 Unselectable 086 for 2-axis

3 Sensor cover location specification

Code	Specification
L	L position
R	Opposite hand

4 Motor option

Code	Specification
H	☐ 28 High resolution
G	☐ 42 High resolution

* There is no difference in accuracy specifications depending on the selected motor. Only the weight and external dimensions differ. For details, please check the CAD and external dimensions.

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.

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

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

Selection Example

Your spec	Number of axis	+	Height of center rotation (W.D.)	+	Sensor cover location	+	Attached cable	▷ KA05-W068AR-H
	2-axis		68mm		Opposite hand		2m	

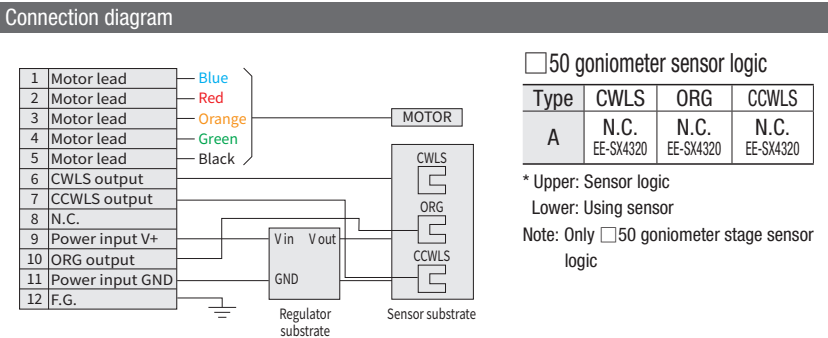
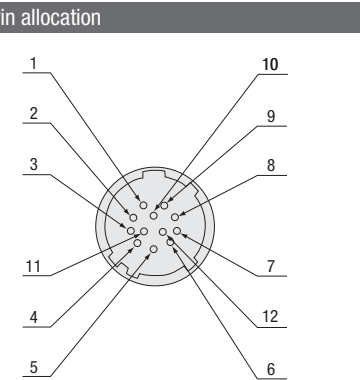
SPEC								
Number of axis			1-axis			2-axis		
Model			KG05-W050AL-H5	KG05-W068AL-H5	KG05-W086AL-H5	KA05-W050AL-H5	KA05-W068AL-H5	
(Opposite hand)			KG05-W050AR-H5	KG05-W068AR-H5	KG05-W086AR-H5	KA05-W050AR-H5	KA05-W068AR-H5	
Mechanical specification	Travel length Upper/Lower axis		±10°	±8°	±6°	±10°/±8°	±8°/±6°	
	Table size		50×50mm					
	Travel mechanism (Reduction ratio)		Upper	Worm gear (1/231)	Worm gear (1/300)	Worm gear (1/375)	Worm gear (1/231)	Worm gear (1/300)
			Lower				Worm gear (1/300)	Worm gear (1/375)
	Guide		Crossed roller guide					
	Main materials-Finishing		Brass/Phosphor bronze—Nickel chrome plating					
Dimensional tolerances	Weight		0.63kg			1.26kg		
	Height of stage		18±0.2mm			36±0.4mm		
	Height of center rotation		50±0.2mm	68±0.2mm	86±0.2mm	50±0.4mm	68±0.4mm	
	Runout accuracy of center rotation		Within 0.01mm			—		
Accuracy specification	Resolution/Pulse		0.001559°	0.0012°	0.00096°	0.001559°	0.0012°	
	Upper at the full Lower at the full					0.0012°	0.00096°	
	MAX speed		7.8°/sec [5kHz]	6°/sec [5kHz]	4.8°/sec [5kHz]	7.8°/sec [5kHz]	6°/sec [5kHz]	
	Upper Lower					6°/sec [5kHz]	4.8°/sec [5kHz]	
	Repeatability positioning accuracy		Within ±0.005°					
	Load capacity		3kgf [29.4N]			2.4kgf [23.5N]		
Sensor	Moment stiffness		Pitch 0.42/yaw 0.16/roll 0.23 ["/N・cm]			Pitch 0.65/yaw 0.32/roll 0.65 ["/N・cm]		
	Lost motion		Within 0.01°					
	Limit sensor		Installed					
	Origin sensor		Installed					
	Slit origin sensor		—					
	Provided screw (Hexagon-headed bolt)		4 of M3-6					

※ Might be changed specification due to motors.

Electrical Specification: KG05/KA05

Electrical specification			
Model		KG05-W050AL-G	KG05-W068AL-G
Opposite hand		KG05-W050AR-G	KG05-W068AR-G
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.)	
	Limit sensor	Installed	
Sensor	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 0.4V or less when the load current is 8mA	
	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.

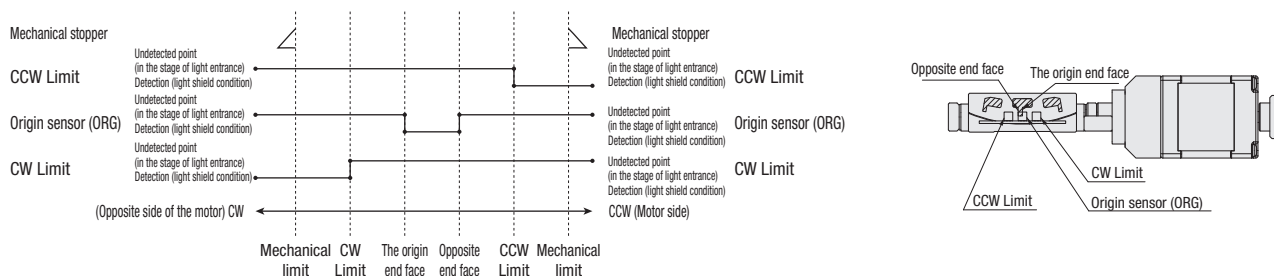


□50 goniometer sensor logic

Type	CWLS	ORG	CCWLS
A	N.C.	N.C.	N.C.
	EE-SX4320	EE-SX4320	EE-SX4320

* Upper: Sensor logic
Lower: Using sensor
Note: Only □50 goniometer stage sensor logic

Timing chart



Unit [deg]	Reference coordinate	Direction of CW	Direction of CCW
		CCW Limit	Origin
		Opposite end face	CCW Limit
KG05-W050A	Return to origin	10.3	0
KG05-W068A	Return to origin	8.3	0
KG05-W086A	Return to origin	6.3	0

- * 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 deg.

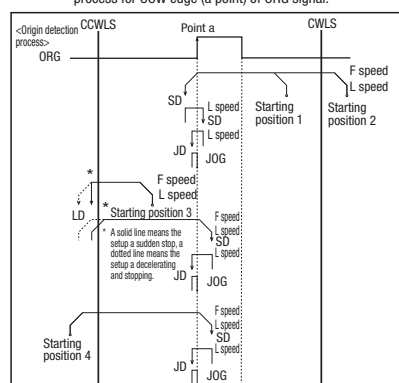
Method for return to origin

Suruga's motorized stages are different from the specification depending on the models. Therefore return to origin method other than recommendation may not be work correctly. Set to the way of recommendation return origin when using our controller.

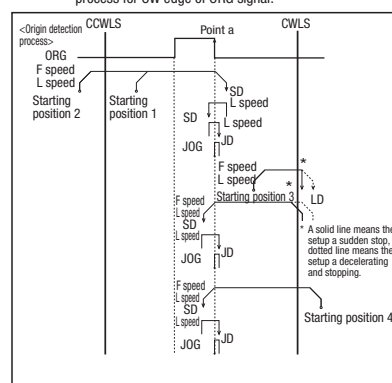
■ KG05/KA05 recommended return to origin Return to origin sequence P.1-201~

- 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

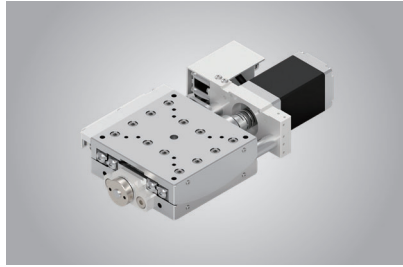
■ Controller P.1-197~

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

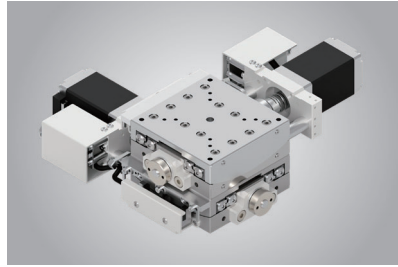


Goniometer Stage □70: KG07/KA07

1-axis
KG07



2-axis
KA07



RoHS

- Our high precision goniometer stages based on cross roller guide for travel guide and worm gear mechanism.
- 70*70mm has an additional sensor logic system.
- Configuration 2-axis Combination of 1-axis stage that is different center of rotation.

Model Selection code Option code
K G07-W070 □ □ - **H** **5**

● Cable P.1-207~
● Electrical specification P.1-161~

1 Axis

G	1-axis
A	2-axis

2 Height of center rotation (W.D.)

070	70mm
096	96mm
122	122mm

* KA07 is only W.D.70 and 96mm

3 Sensor logic

Type	CWLS	ORG	CCWLS
A	N.C.	N.C.	N.C.
B	N.O.	N.O.	N.O.
C	N.C.	N.O.	N.C.

4 Sensor cover location specification

Code	Specification
L	L position
R	Opposite hand

5 Motor option

Code	Specification
H	☐ 28 High resolution
G	☐ 42 High resolution

* There is no difference in accuracy specifications depending on the selected motor. Only the weight and external dimensions differ. For details, please check the CAD and external dimensions.

6 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 details of cable.

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

Selection Example

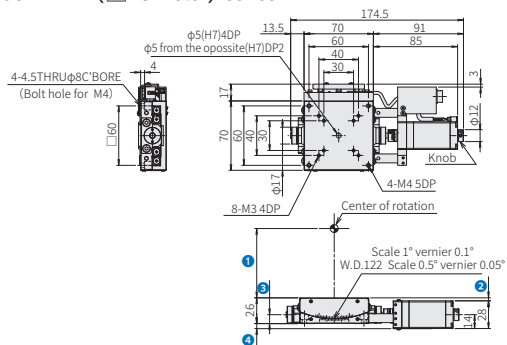
Your spec	Number of axis	+	Height of center rotation (W.D.)	+	Sensor cover location	+	Sensor logic	+	Attached cable	▷ KA07-W096BR-H
	2-axis		96mm		Opposite hand		Absolutely N.O.		2m	

SPEC						
Number of axis		1-axis			2-axis	
Model		KG07-W070AL-H5	KG07-W096AL-H5	KG07-W122AL-H5	KA07-W070AL-H5	KA07-W096AL-H5
(Opposite hand)		KG07-W070AR-H5	KG07-W096AR-H5	KG07-W122AR-H5	KA07-W070AR-H5	KA07-W096AR-H5
Mechanical specification	Travel length	Upper/Lower axis	±9°	±7°	±5°	±9°/±7°
	Table size		70×70mm			
	Travel mechanism (Reduction ratio)	Upper	Worm gear (1/235)	Worm gear (1/301)	Worm gear (1/375)	Worm gear (1/235)
		Lower				Worm gear (1/301)
	Guide		Crossed roller guide			
	Main materials-Finishing		Aluminum-White almite finish			
Dimensional tolerances	Weight		0.82kg		1.64kg	
	Height of stage		26±0.2mm		52±0.4mm	
	Height of center rotation		70±0.2mm	96±0.2mm	122±0.2mm	70±0.4mm
	Runout accuracy of center rotation		Within 0.01mm			96±0.4mm
Accuracy specification	Resolution (Pulse)	Upper at the full	0.001532°	0.001196°	0.00096°	0.001532°
		Lower at the full				0.001196°
	MAX speed	Upper	7.6°/sec [5kHz]	6°/sec [5kHz]	4.8°/sec [5kHz]	7.6°/sec [5kHz]
		Lower				6°/sec [5kHz]
	Repeatability positioning accuracy		Within ±0.003°			
	Load capacity		5kgf [49N]			4.2kgf [41.2N]
Moment stiffness		Pitch 0.17/yaw 0.06/roll 0.06 ["/N • cm]			Pitch 0.23/yaw 0.12/roll 0.23 ["/N • cm]	
Sensor	Lost motion		Within 0.006°			
	Limit sensor		Installed			
	Origin sensor		Installed			
	Slit origin sensor		-			
Provided screw (Hexagon-headed bolt)		4 of M4—8				

※ Might be changed specification due to motors.

Dimensional outline drawings (1-axis)

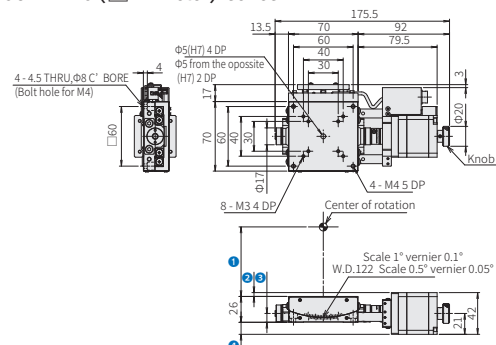
KG07-WL-H (□28 Motor) series



Model	1 W.D.	2	3	4
KG07-W070AL-H5	70	3.1	8.9	5.1
KG07-W096AL-H5	96	0.2	11.8	2.2
KG07-W122AL-H5	122	0.1	11.9	2.1

(mm)

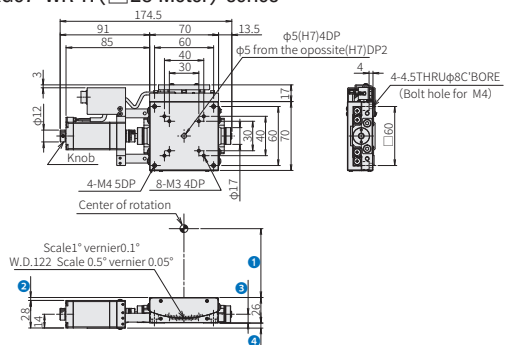
KG07-WL-G (□42 Motor) series



Model	1 W.D.	2	3	4
KG07-W070AL-G5	70	3.9	8.9	12.1
KG07-W096AL-G5	96	6.8	11.8	9.2
KG07-W122AL-G5	122	6.9	11.9	9.1

(mm)

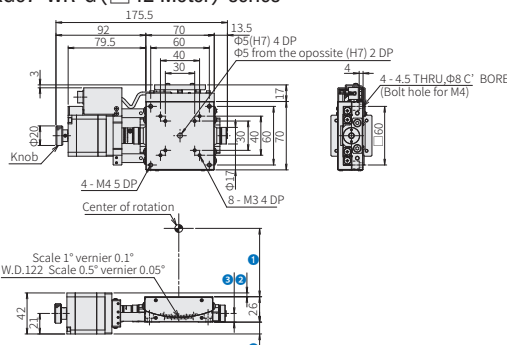
KG07-WR-H (□28 Motor) series



Model	1 W.D.	2	3	4
KG07-W070AR-H5	70	3.1	8.9	5.1
KG07-W096AR-H5	96	0.2	11.8	2.2
KG07-W122AR-H5	122	0.1	11.9	2.1

(mm)

KG07-WR-G (□42 Motor) series

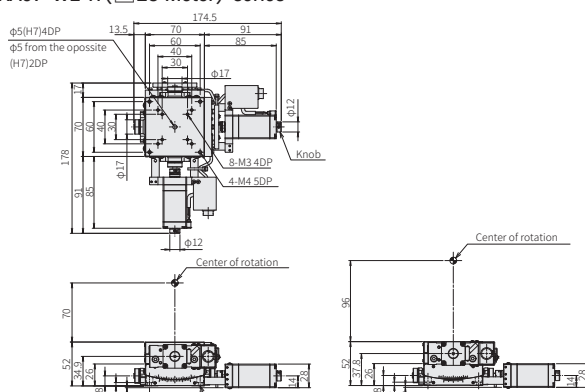


Model	1 W.D.	2	3	4
KG07-W070AR-G5	70	3.9	8.9	12.1
KG07-W096AR-G5	96	6.8	11.8	9.2
KG07-W122AR-G5	122	6.9	11.9	9.1

(mm)

Dimensional outline drawings (2-axis)

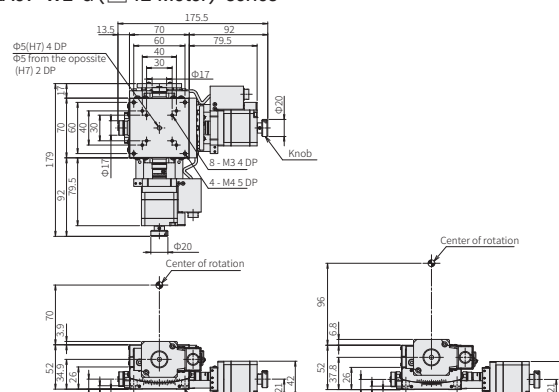
KA07-WL-H (□28 Motor) series



KA07-W050AL-H5

KA07-W068AL-H5

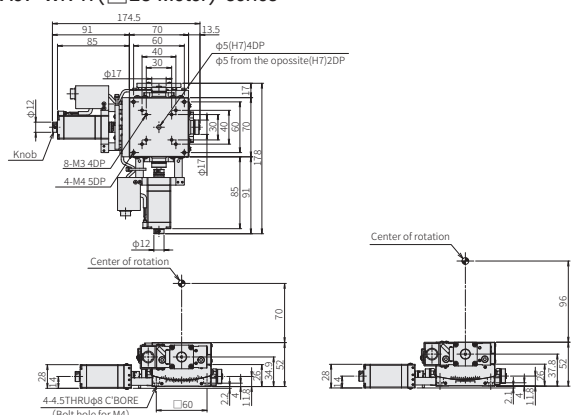
KA07-WL-G (□42 Motor) series



KA07-W050AL-G5

KA07-W068AL-G5

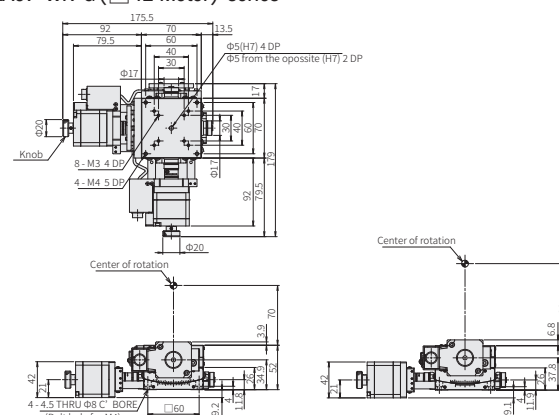
KA07-WR-H (□28 Motor) series



KA07-W050AR-H5

KA07-W068AR-H5

KA07-WR-G (□42 Motor) series



KA07-W050AR-G5

KA07-W068AR-G5

Motorized
goniometer

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

Electrical Specification: KG07/KA07

Electrical specification						
Model		KG07-W070AL-H	KG07-W096AL-H	KG07-122AL-H	KG07-W070AL-G	KG07-W096AL-G
Opposite hand		KG07-W070AR-H	KG07-W096AR-H	KG07-122AR-H	KG07-W070AR-G	KG07-W096AR-G
Motor (*1)	Type	5 phase stepping motor 0.75A/Phase (Oriental Motor Co., Ltd.)				
	Model (*2)	PK525HPMB-C1(□28mm)			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	Photo microsensor: EE-SX398,EE-SX498 (Omron Co., Ltd.)				
	Power voltage	DC5~24V ±10%				
	Consumption current	Total 85mA or less				
	Control output	NPN open collector output DC5V~24V 16mA or less Residual voltage 0.4V or less when the load current is 16mA				
	Output logic	EE-SX398: On detection (light shield condition): Output transistor ON (Continuity) EE-SX498: 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 the 2-axis KA07 series are the same.

Pin allocation

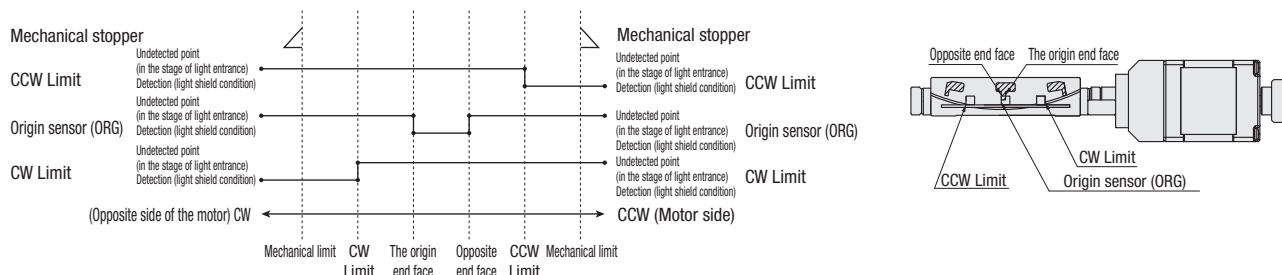
Connection diagram

□70 goniometer sensor logic

Type	CWLS	ORG	CCWLS
A	N.C.	N.C.	N.C.
B	N.O.	N.O.	N.O.
C	N.C.	N.O.	N.C.

* Upper: Sensor logic
Lower: Using sensor

Timing chart



Unit [deg]		Direction of CW		Direction of CCW	
	Reference coordinate	CW Limit	Origin	Opposite end face	CCW Limit
KG07-W070A	Return to origin	9.3	0	2.1	9.3
KG07-W096A	Return to origin	7.3	0	1.6	7.3
KG07-W122A	Return to origin	5.3	0	1.3	5.3

* 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 are different from the specification depending on the models. Therefore return to origin method other than recommendation may not be work correctly.
Set to the way of recommendation return origin when using our controller.

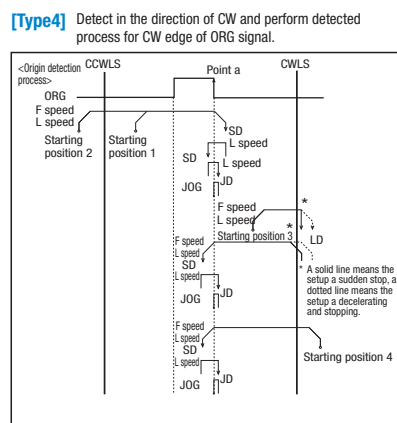
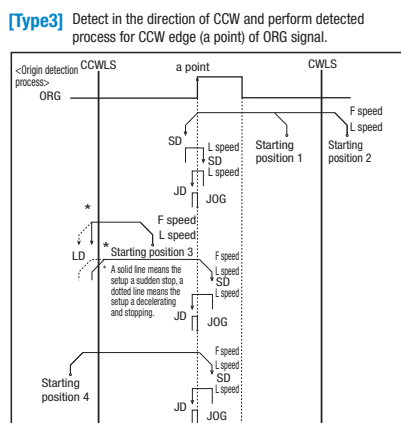
■ **KG07/KA07 recommended return to origin** **Return to origin sequence** ▶ P.1-201~

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

■ 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



DSI 12/102

