

Motorized Stage

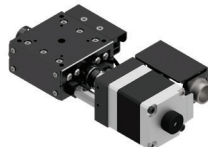
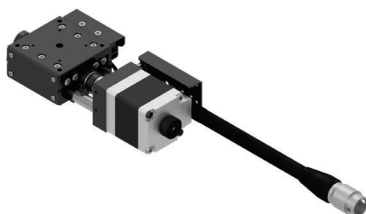
Goniometer Stage □40 : KGW04

Motorized goniometer
Stage

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
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2 Stage size

04	□40mm
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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		

C

025

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		
Dimensional tolerance	Main materials-Finishing	Aluminum - Black alumite finishing, Phosphor bronze - Black paint		
	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		
Accuracy specification	Resolution/Pulse	0.003°(Full)		
	MAX speed	15°/sec[5kHz]		
	Repeatability positioning accuracy	±0.005°		
	Load capacity	3kgf [29.4N]		
	Moment stiffness	Pitch 1.30/Yaw 1.16/Roll 0.27["/N・cm]		
Sensor	Lost motion	0.01°		
	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		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 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
026

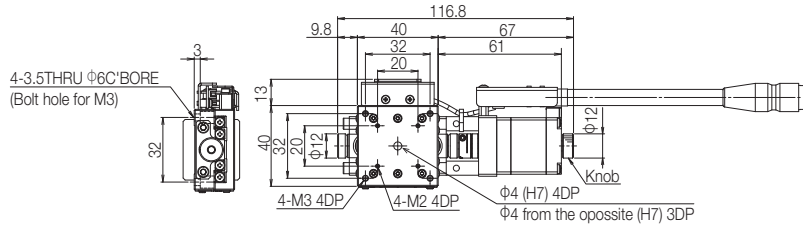
Motorized Stage

Goniometer Stage □40 : KGW04

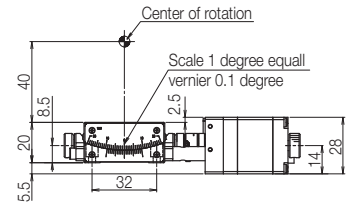
Dimensions

KGW04-L Series

Top view :KGW04□□□T-LC (Pigtail)

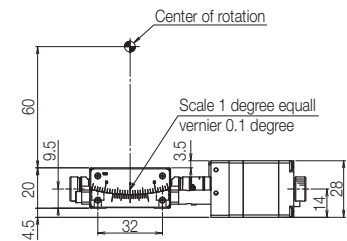
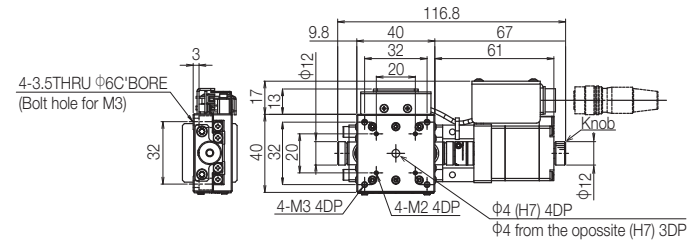


Side view :common



KGW04040T(M)-LC

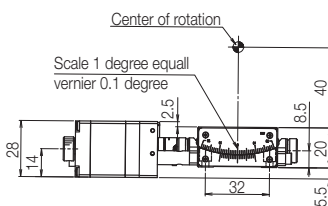
Top view :KGW04□□□M-LC (Panel Mount)



KGW04060T(M)-LC

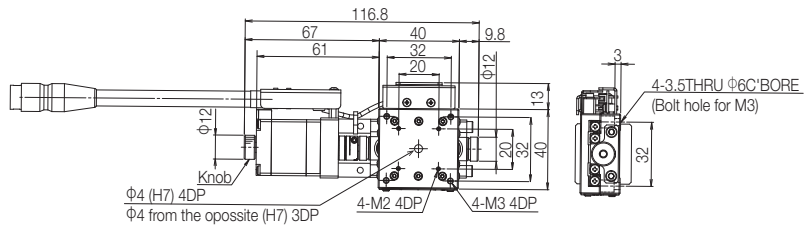
KGW04-R Series

Side view :common

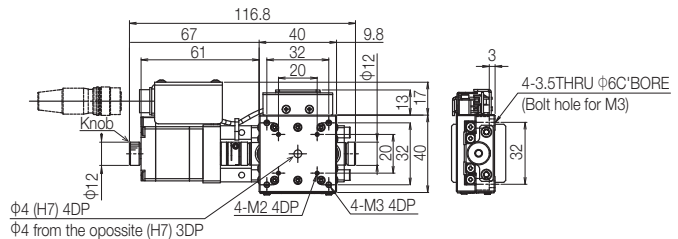


KGW04040T(M)-RC

Top view :KGW04□□□T-RC (Pigtail)



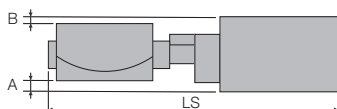
Top view :KGW04□□□M-RC (Panel Mount)



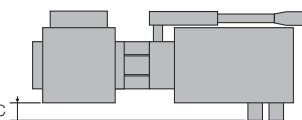
KGW04060T(M)-RC

Dimensions

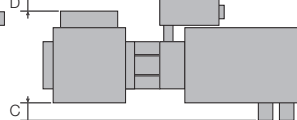
Side view



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
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
028

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-□

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

1 Axis

A	2-axes
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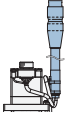
2 Stage size

04	□40mm
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3 Height of center rotation (W.D.)

040	40mm
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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	+	▷ KAW04040T-LG-A
	KAW04040		KAW04040T-L		KAW04040T-LG		KAW04040T-LG-A		

Model	W.D. 40mm	+	Connector specs M : Panel Mount/Opposite hand	+	Motor option PA : αSTEP(AR Series)	+	Cable 3A : Driver/Cable set 3m	+	▷ KAW04040M-RPA-3A
	KAW04040		KAW04040M-R		KAW04040M-RPA		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
Dimension	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	Lost motion	0.01°
	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.

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

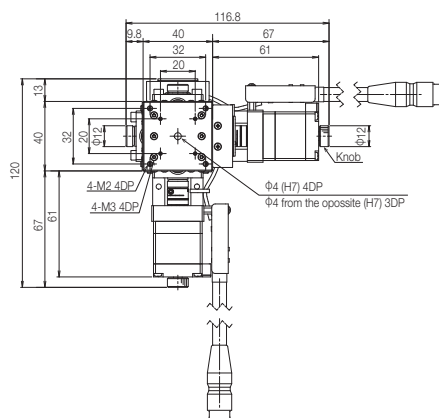
Motorized Stage

Goniometer Stage □40: KAW04 (2-axis)

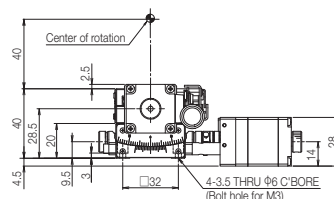
Dimensions

KAW04-L Series

Top view :KAW04040T-LC (Pigtail)

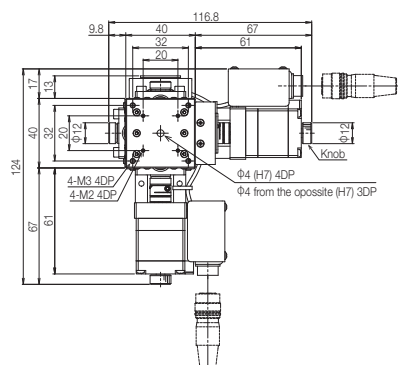


Side view :common



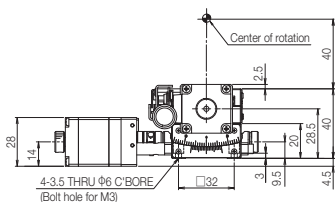
KAW04040T(M)-LC

Top view :KAW04040M-LC (Panel Mount)



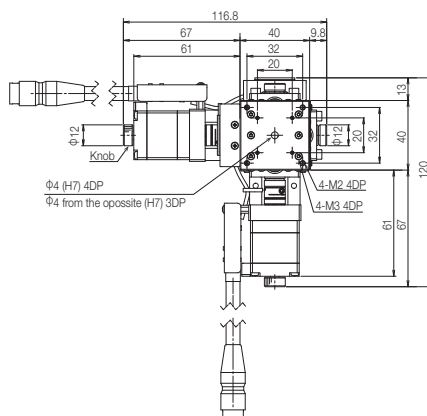
KAW04-R Series

Side view :common

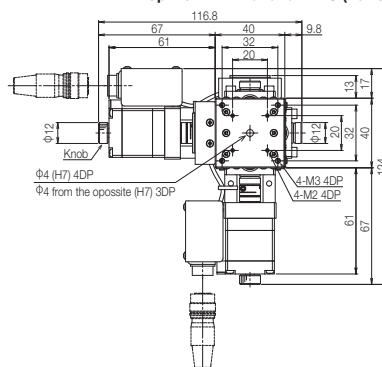


KAW04040T(M)-RC

Top view :KAW04040T-RC (Pigtail)



Top view :KAW04040M-RC (Panel Mount)



Motorized goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

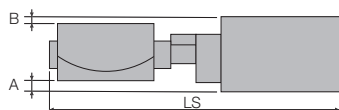
□100

□120

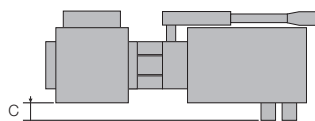
Other

Dimensions

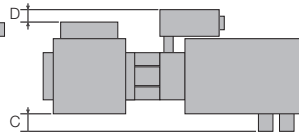
Side view



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
goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

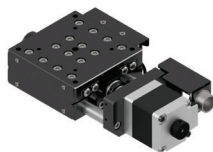
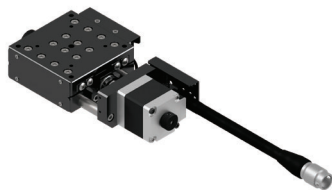
C
032

Motorized Stage

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				3m	5m
	Encoder				—	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

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
033

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.

Motorized goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
ScrewWorm
Gear☐ 40☐ 50☐ 60☐ 70☐ 80☐ 100☐ 120☐ OtherC
034

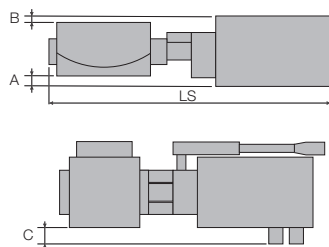
Dimensions

C Standard motor

Motor Model C005C-90215P-1

G High resolution

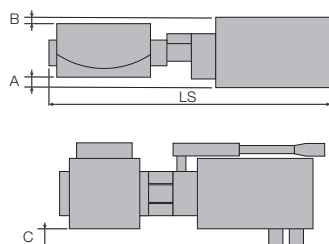
Motor Model PK523HPMB-C1



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



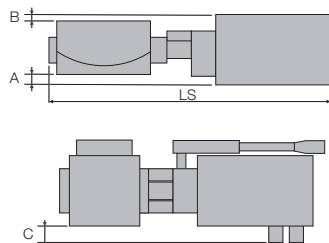
Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	LS(mm)
KGW06050□-□EA	EA	□28	T・M	4.1	—	—	162.8
KGW06075□-□EA				3.5			
KGW06100□-□EA				3.7			
KGW06125□-□EA				4.2			

PA αSTEP (AR Series)

Motor Model ARM24SAK

ZA αSTEP (AZ Series)

Motor Model AZM24AK



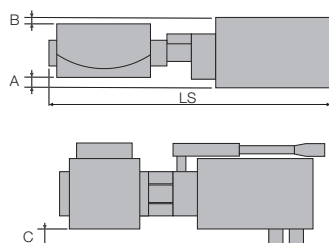
Model	Motor code	Motor size	Connector type	A(mm)	B(mm)	C(mm)	LS(mm)
KGW06050□-□PA	AR	□28	T・M	4.1	—	—	147.5
KGW06075□-□PA				3.5			
KGW06100□-□PA				3.7			
KGW06125□-□PA				4.2			
KGW06050□-□ZA	ZA	□28	T・M	4.1	—	—	157
KGW06075□-□ZA				3.5			
KGW06100□-□ZA				3.7			
KGW06125□-□ZA				4.2			

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
goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

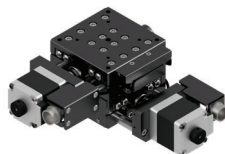
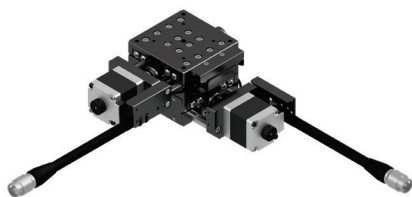
C
036

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 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			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
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

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

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		
Sensor	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 (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.

Motorized goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

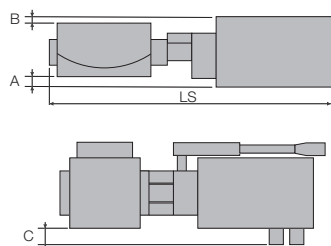
Other

C
038

Dimensions

C Standard motor

Motor Model C005C-90215P-1



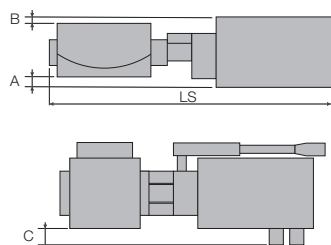
G High resolution

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

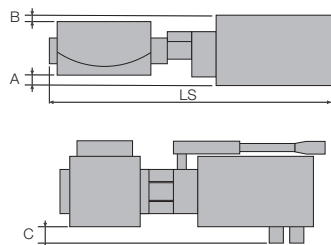
Motor Model STM28W100A



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



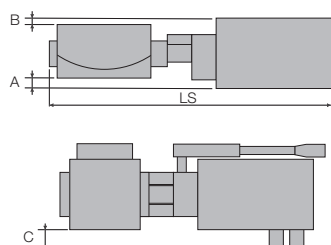
ZA αSTEP (AZ Series)

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
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
040

Motorized Stage

Goniometer Stage :KGW04/ KAW04/KGW06/ KAW06

Motorized goniometer
Stage

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

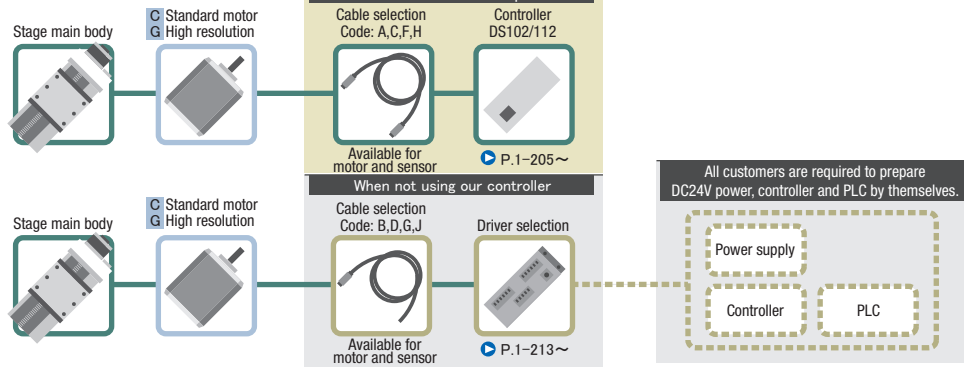
Motor option

C Standard motor

Motor model
C005C-90215P-1

G High resolution

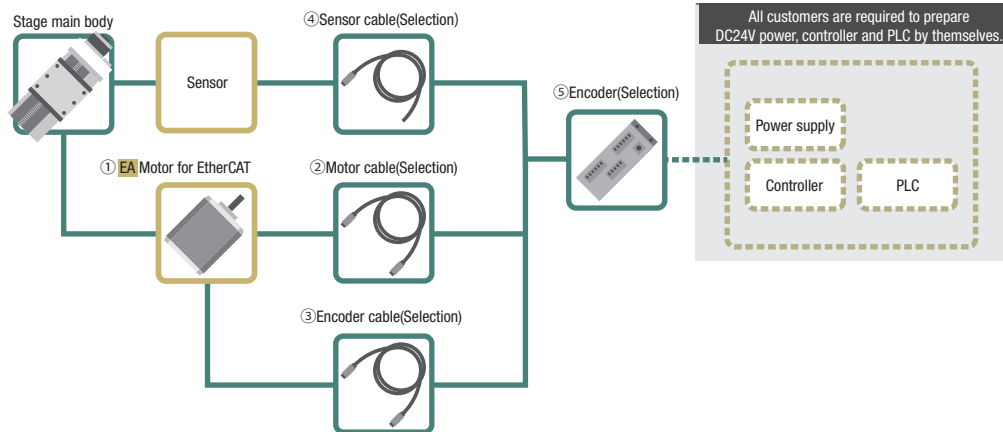
Motor model
PK523HPMB-C1



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	④ 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

40

50

60

70

80

100

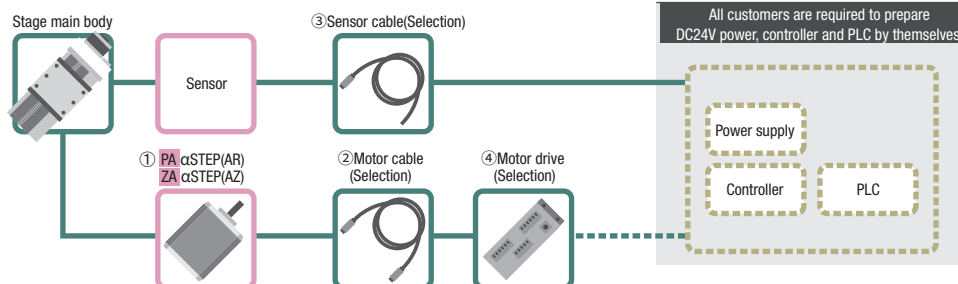
120

Other

C
041

Motor option

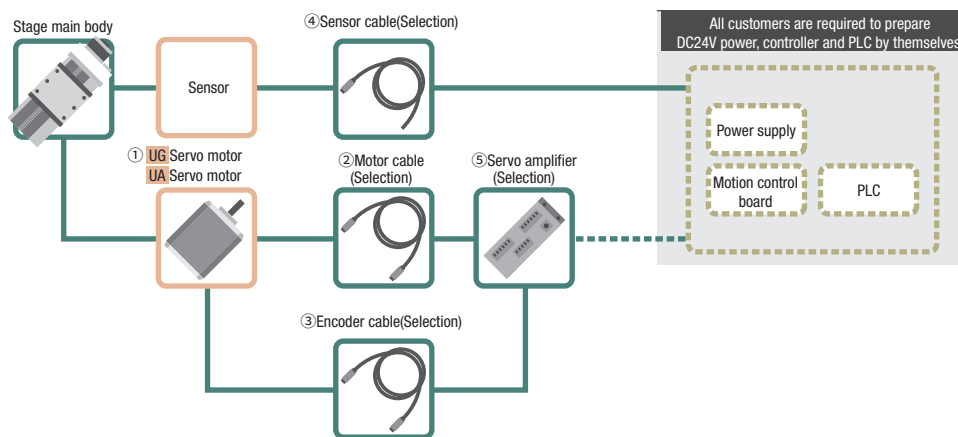
PA	αSTEP (AR Series) Motor model ARM24SAK
ZA	αSTEP (AZ Series) Motor model AZM24AK



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 : SVPM-J3HF1-B-3-02S 5A : SVPM-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

X

XY

Z

Horizontal
Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
Screw

Worm
Gear

□40

□50

□60

□70

□80

□100

□120

Other

Goniometer Stage :KGW04/ KAW04/KGW06/ KAW06

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

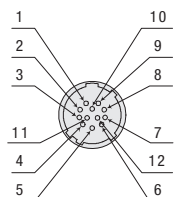
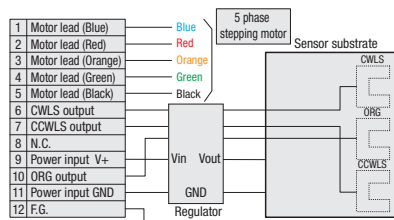
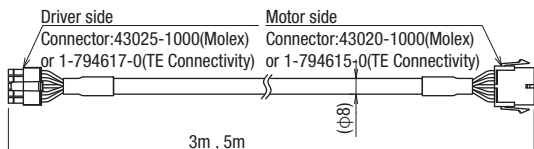
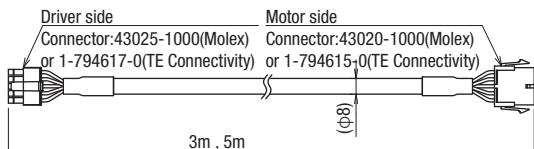
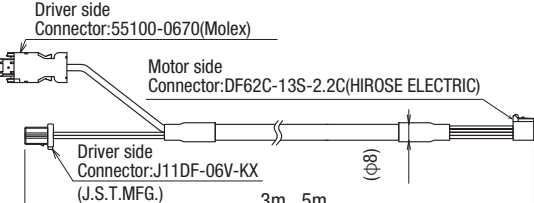
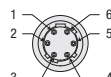
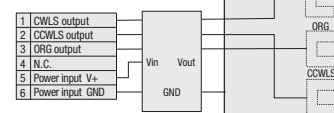
Motor code		C	G	PA	ZA
Model (*1)		KGW04/KGW06			
Motor Specification (*2)	Type	5 phase stepping motor (0.75A/Phase)		αSTEP (AR Series)	αSTEP (AZ Series)
	Feature	Standard		Small step-out, incremental	Small step-out, absolute
	Model (*3)	C005C-90215P-1		ARM24SAK	AZM24AK
	With electromagnetic brake	—			
	Manufacturer	Oriental Motor Co., Ltd.			
	Step angle	0.72°		0.36°(1000P/R setting)	
	Mass	0.11kg		0.15kg	
	Motor size	□ size 28mm		□ 28mm	
		L size 37mm		45mm	54.5mm
	Max. Holding Torque	0.048N · m		0.055N · m	0.095N · m
Connector	Driver model	CVD507-K-A9		ARD-K	AZD-K
	Input power (Voltage · frequency)	DC24V±10% 1.4A(MAX)		DC24V±10%	DC24V±5%
	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)
Sensor board	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)
	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			
Unit	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) 	【Pin allocation (common)】 														
		【Receiver cable】Model:CC030VA2R2(3m)/CC050VA2R2(5m) *Flexible cable 	<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  *The shields are connected with the connector shell. <table><tr><th>Pin</th><th>Signals</th></tr><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></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-																
PA	Motor	【Receiver cable】Model:CC030VA2R2(3m)/CC050VA2R2(5m) *Flexible cable 	<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  *The shields are connected with the connector shell. <table><tr><th>Pin</th><th>Signals</th></tr><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></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-																
ZA	Motor	【Receiver cable】Model:CC030V2R2(3m)/CC050V2R2(5m) *Flexible cable 	【Pin allocation (common)】 Pigtail:HR10A-7J-6P(73) (HRS) Panel Mount:HR10A-7R-6P(73) (HRS)  【結線図】 														

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

Ball
ScrewWorm
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.

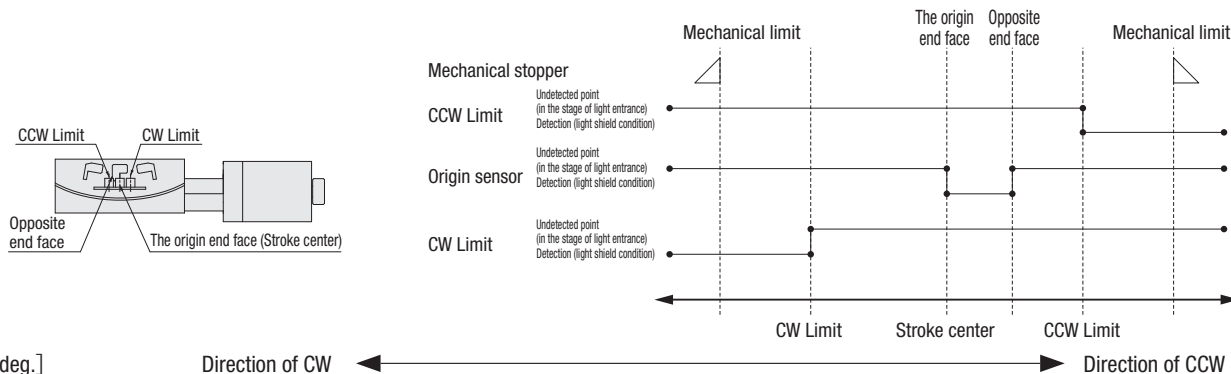
Pin allocation · Connection diagram

Motor Code	Motor・Encoder		Sensor (common)													
EA	Motor	【Receiver cable】Model:D214-3-3R2(3m)/D214-3-5R2(5m) *Flexible cable Driver side Motor side Connector:PAP-04V-S(J.S.T.MFG.) Connector:ZER-06V-S(J.S.T.MFG.) Contact:SPHD-002T-P0.5(J.S.T.MFG.) Contact:SZE-002T-P0.3(J.S.T.MFG.)	【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													
	Encoder	【Receiver cable】Model:D214-3-3RE2(3m)/D214-3-5RE2(5m) *Flexible cable Driver side Motor side Connector:PUDP-10V-S(J.S.T.MFG.) Connector:GHR-08V-S(J.S.T.MFG.) Contact:SPUD-002T-P0.5(J.S.T.MFG.) Contact:SSHL-002T-P0.2(J.S.T.MFG.)	*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
Pin	Signals															
1	CWLS															
2	CCWLS															
3	ORG															
4	NORG															
5	V+															
6	V-															
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 *Flexible cable Loose wire on the servo amplifier side Motor side Connector: JN4FT04SJ1-R (JAE) NA3CTR-18-4(MISUMI) ULAWM2517 AWG18	【結線図】													
	Encoder	【Receiver cable】Model:SVEM-J3HF1-B-□ *Flexible cable Servo amplifier side Receptacle : 36210-0100FD (3M) ShellKit : 36310-3200-008 (3M) Motor (encoder)side Connector:1674320-1 (TE Connectivity) NAMFSB-23-3P (MISUMI) ULAWM2576 AWG23														

Motorized Stage

Goniometer Stage :KGW04/ KAW04/KGW06/ KAW06

Timing chart



Unit [deg.]	Direction of CW ←————→ Direction of CCW				
	Reference coordinate	CW Limit	The origin end face Stroke center	Opposite end face	CCW Limit
KGW04040T(M)	Return to origin	8.5	0	2.5	8.5
KGW04060T(M)	Return to origin	6.5	0	2.1	6.5
KGW06050T(M)	Return to origin	10.5	0	2.5	10.5
KGW06075T(M)	Return to origin	8.3	0	1.8	8.3
KGW06100T(M)	Return to origin	6.3	0	1.4	6.3
KGW06125T(M)	Return to origin	5.2	0	1.1	5.2

* 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.

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~

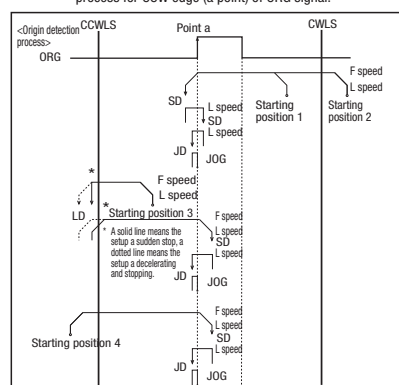
Type 3: Detect in the direction of CCW and perform detected process for CCW edge(a point) of ORG signal.

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

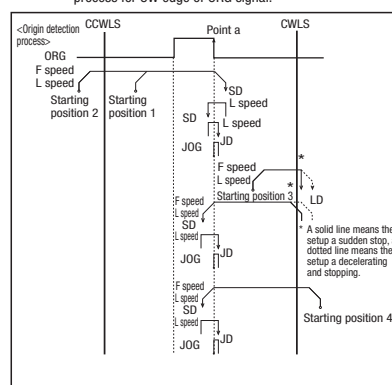
Type 9: After finished Type3, perform detected process for CCW edge of TIMING signal.

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.



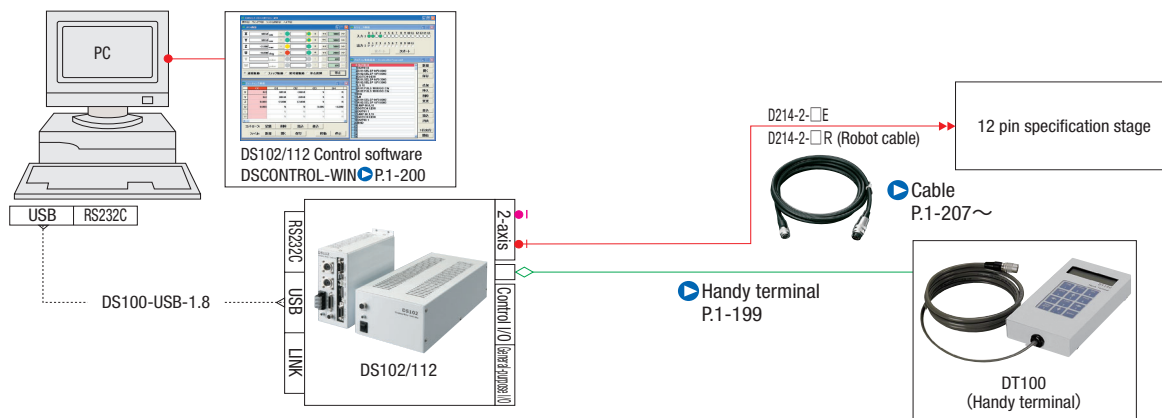
[Type4] Detect in the direction of CW and perform detected process for CW edge of ORG signal.



Connectin example

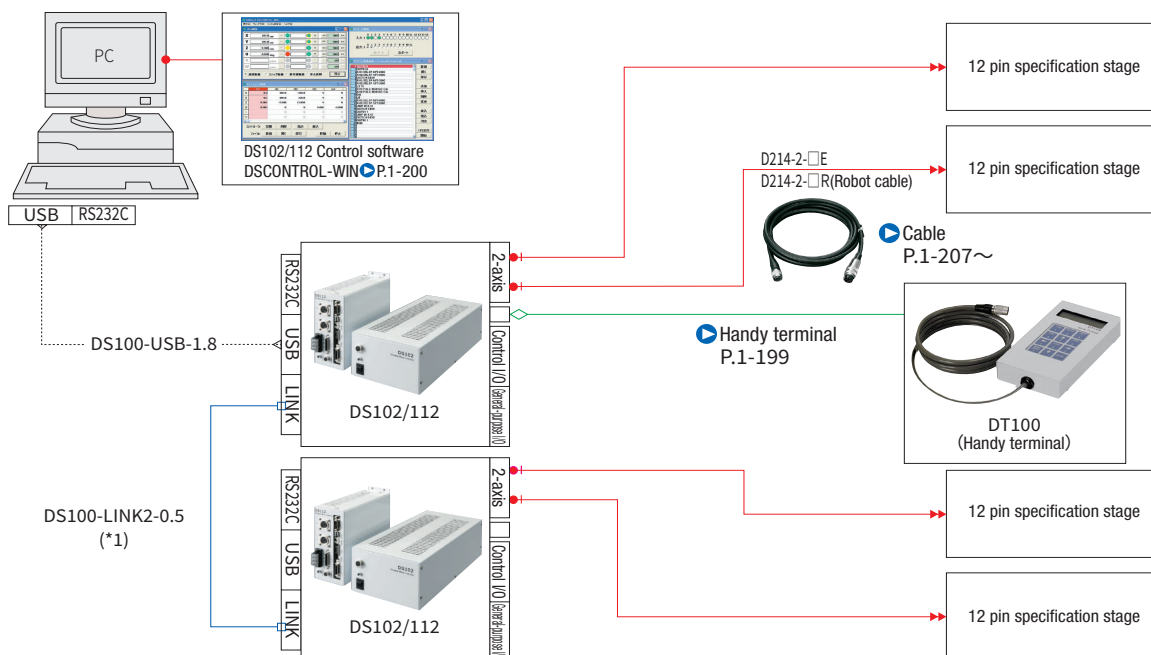
■ Connection example 1 Motorized Stage 1axis: When holding a terminal device (using control software)

*USB cable connection between PC and controller.



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

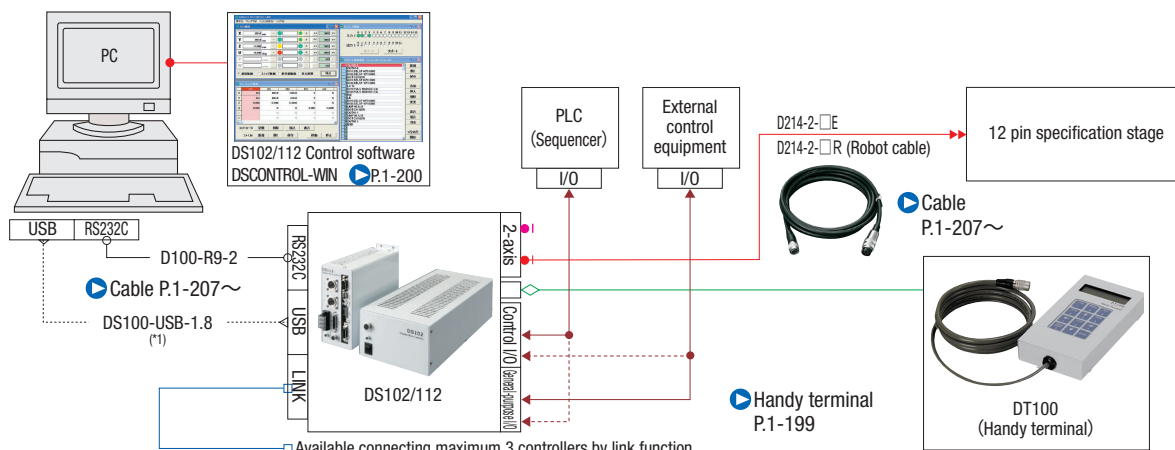
*USB cable connection between PC and controller.



(*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).