

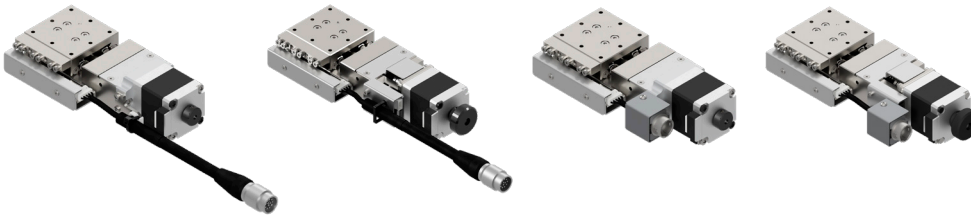
X-axis Linear Ball Guide: PG413/PG513/PG615/PG715

PG413T-LA-C

PG413T-LA-C4

PG413M-LA-C

PG413M-LA-C4



* The picture is an image.

PG413M-LA-C

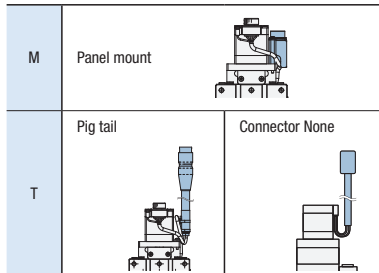
- ▶ Cables P.1-287~
- ▶ Electrical specification P.1-053~

1 Stage table size/Travel distance

Code	size	Travel distance
413	□40mm	13mm
513	□50mm	
615	□60mm	15mm
715	□70mm	

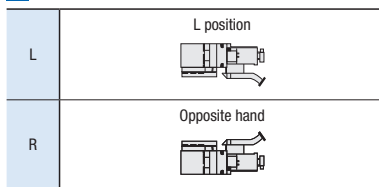
2 Connector specifications

Code	Specification	Application Motor					
M	Panel mount	C	D	E	T		
T	Pig tail	C	D	E	T		
	Connector None	MA	MB	PA	ZA	UA	



*No common connector: The motor cable and sensor cable are not consolidated into a common connector.

3 Sensor cover location



4 Sensor logic

A	All N.C.
B	All N.O.
C	N.C.ORG1 and ORG2 are N.O.

*ORG2 (slit origin sensor) is only available when 4 sensor specification is selected.

5 Motor option

Code	Specification
C	Standard(5 Phase stepping motor)
D	High-torque
E	High resolution
T	2 Phase stepping motor

* For Code T, 2-phase stepping motor, our controller (DS102/112) cannot be used.

6 Sensor options

Code	Specification	Application Motor								
		C	D	E	T	MA	MB	PA	ZA	UA
Blank	3 Sensor(CWLS,ORG1,CCWLS)	●	●	●	●	●	●	●	●	●
4	4 Sensor(CWLS,ORG1,CCWLS,ORG2)	●	●	●	●	●	●	●	●	●

7 Cable option

Code	Specification	Cable type	For 2 phase motor Cable type
Blank	Cable is not included (Standard)	—	—
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	D214-2-2RK	DS1-2C-2-4RK

* See pages 1-287 onwards for cable details.

* When connecting to our controllers (DS102/112), please select from codes A, C, F, or H.

* One end loose position to only stage opposite side.

* For Code T, 2-phase stepping, only one end rose (B, D, G, J) is supported.

* For 4 sensors, only the Code:Blank(no-cable) option is available.

* For 4 sensors, specify the 4-sensor compatible cable.(P.1-287)

5 Motor option

Code	Specification
MA	With electromagnetic brake(□42_100V)
MB	With electromagnetic brake(□42_200V)
PA	αSTEP (AR Series)
ZA	αSTEP (AZ Series)
UA	Servo motor(J4)

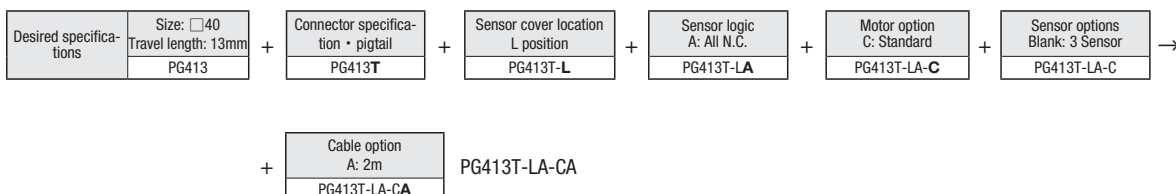
7 Cable option (Motor: MA, MB, PA, ZA, EA, UG, UA)

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 (3m Cable Set)
5A	Driver Amplifier (5m Cable Set)

products list [5] Motor [7] Cable/Driver combination

Code	Driver (amplifier) cable	Blank			3A		5A	
		Motor	MA	MB/PA	ZA/UA	3A	5A	3A
Cable	Sensor	2m	3m	5m	3m		5m	
	Motor	None			3m		5m	
	Electromagnetic brake	None			3m	—	5m	—
	Encoder	None			—	—	3m	5m
Driver (Amplifier)		None			Available			

Selection example



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

□40

□50

□60

□70

□80

□100

□120

□180

Other

1

013

Specification

		SPEC			
Model		PG413□-LA-C	PG513□-LA-C	PG615□-LA-C	PG715□-LA-C
(Opposite hand)		PG413□-RA-C	PG513□-RA-C	PG615□-RA-C	PG715□-RA-C
Mechanical specification	Travel distance	13mm		15mm	
	Stage table size	40×40mm	50×50mm	60×60mm	70×70mm
	Feed screw (Ball screw)	φ6 Lead 1			
	Guide	Linear Ball Guide			
	Main material— Surface finishing	Stainless—Electroless nickel plating			
Weight	Pig tail	0.50kg	0.61kg	0.73kg	0.86kg
	Panel mount	0.49kg	0.60kg	0.72kg	0.85kg
Accuracy specification	Resolution/Pulse	2μm(Full)/1μm(Half)			
	MAX speed	10mm/sec			
	Uni-directional positioning accuracy	6μm			
	Repeatability positioning accuracy	±0.5μm			
	Load capacity	10kgf [98N]			
	Moment stiffness	Pitch 0.22/yaw 0.17/ roll 0.12 ["/N · cm]	Pitch 0.14/yaw 0.10/ roll 0.06 ["/N · cm]	Pitch 0.08/yaw 0.07/ roll 0.03 ["/N · cm]	Pitch 0.03/yaw 0.03/ roll 0.01 ["/N · cm]
	Lost motion	1μm			
	Backlash	0.5μm			
	Straightness	1μm			
	Parallelism	15μm			
Sensor	Motion parallelism	5μm			
	Pitching/Yawing	15"/10"			
	Limit sensor	Available			
	Origin sensor (ORG1)	Available			
Slit origin sensor(ORG2)	- *When selecting the 4 sensor option: Available				
Provided screw (Hexagon-headed bolt)		4 of M3-8		4 of M4-8	

* The SPEC varies depending on the motor.

⊗ When using the Z-axis, a normal load of 5 kgf should be used as a guide. It depends on load, Max speed, etc.

Resolution • MAX speed • Weight

Motor code		C		D		E		T		
Type		Standard		High-torque		High resolution		2 Phase stepping motor		
Motor model* 1	3 Sensor	C005C-90215P-1		PK525HPB-C1		PK523HPMB-C1		SJA28N32-0674B-01		
	4 Sensor	PK523HPB-C15		PK525HPB		PK523HPMB		—		
Step angle		0.72°		0.36°		1.8°		—		
Resolution	Full/Half	2μm/1μm		1μm/0.5μm		5μm/2.5μm		—		
	Micro step (1/20 On resolution)	0.1μm		0.05μm		—		—		
MAX speed		10mm/sec		30mm/sec		25mm/sec		10mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PG413	Pig tail	0.50kg	0.54kg	0.59kg	0.63kg	0.50kg	0.54kg	0.50kg	—
		Panel mount	0.49kg	0.53kg	0.58kg	0.62kg	0.49kg	0.53kg	0.49kg	—
	PG513	Pig tail	0.61kg	0.65kg	0.70kg	0.74kg	0.61kg	0.65kg	0.61kg	—
		Panel mount	0.60kg	0.64kg	0.69kg	0.73kg	0.60kg	0.64kg	0.60kg	—
	PG615	Pig tail	0.73kg	0.77kg	0.82kg	0.86kg	0.73kg	0.77kg	0.73kg	—
		Panel mount	0.72kg	0.76kg	0.81kg	0.85kg	0.72kg	0.76kg	0.72kg	—
	PG715	Pig tail	0.86kg	0.90kg	0.95kg	0.99kg	0.86kg	0.90kg	0.86kg	—
		Panel mount	0.85kg	0.89kg	0.94kg	0.98kg	0.85kg	0.89kg	0.85kg	—
	Motor code		MA • MB		PA		ZA		UA	
Type		With electromagnetic brake □42mm		αSTEP (AR)		αSTEP (AZ)		AC servo motor(J4)		
Motor model* 1	3 Sensor	PKE545MC-A1		ARM24SAK		AZM24AK		HG-KR053		
	4 Sensor	—		—		—		—		
Step angle		0.72°		—		—		—		
Resolution	Full/Half	2μm/1μm		1μm(Set to 1000P/R)		1μm(Set to 1000P/R)		22 Bit encoder		
	Micro step (1/20 On resolution)	0.1μm		—		—		—		
MAX speed		20mm/sec		35mm/sec		40mm/sec		50mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PG413	Connector None	0.91kg	1.00kg	0.54kg	—	0.54kg	—	0.84kg	—
			PG513	1.02kg	1.11kg	0.65kg	—	0.65kg	—	0.95kg
	PG615	1.14kg	1.23kg	0.77kg	—	0.77kg	—	1.07kg	—	
	PG715	1.27kg	1.36kg	0.90kg	—	0.90kg	—	1.20kg	—	

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

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

Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

□40

□50

□60

□70

□80

□100

□120

□180

Other

1

014

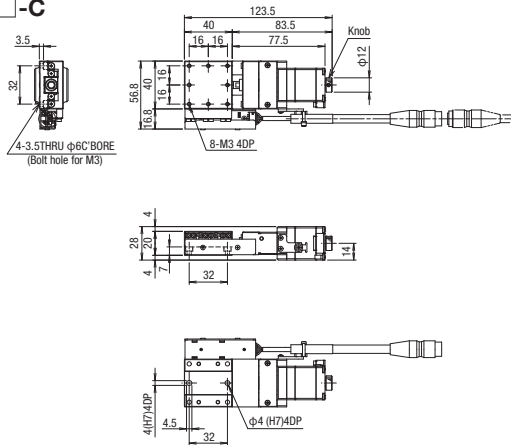
Motorized Stage

X-axis Linear Ball Guide: PG413/PG513

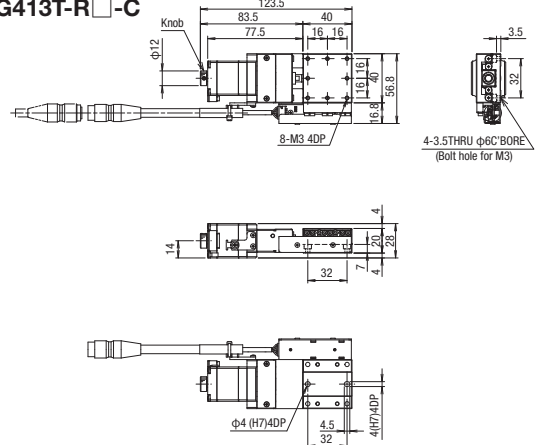
Motorized Stage

Dimensions

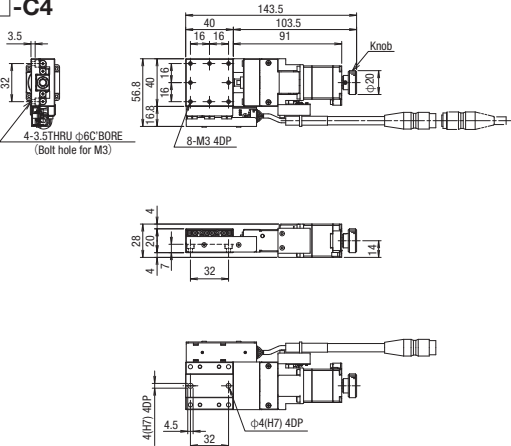
PG413T-L□-C



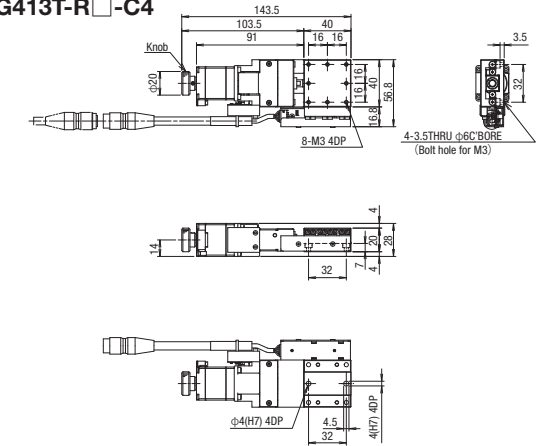
PG413T-R□-C



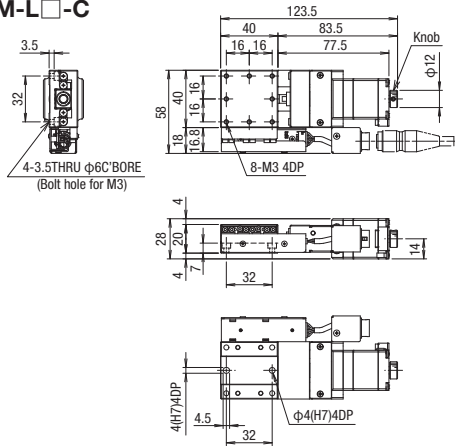
PG413T-L□-C4



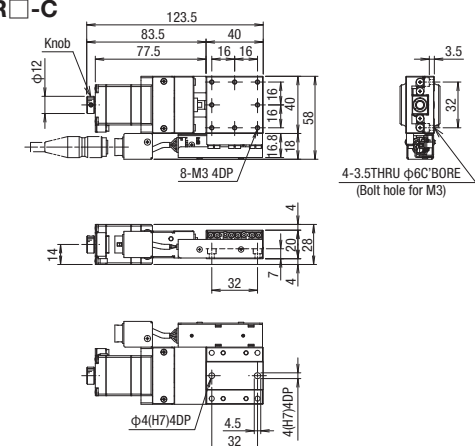
PG413T-R□-C4



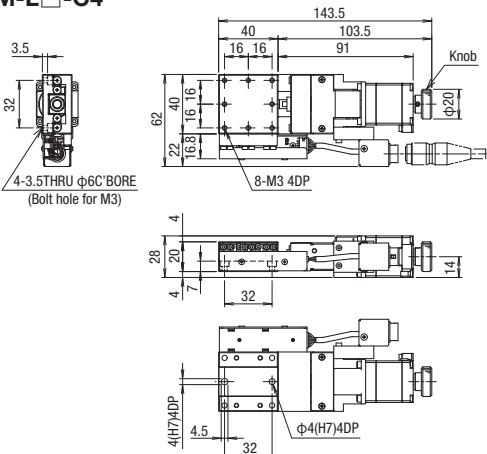
PG413M-L□-C



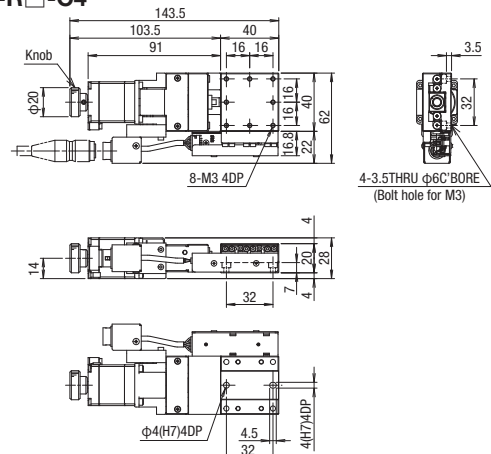
PG413M-R□-C



PG413M-L□-C4



PG413M-R□-C4



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

40

50

60

70

80

100

120

180

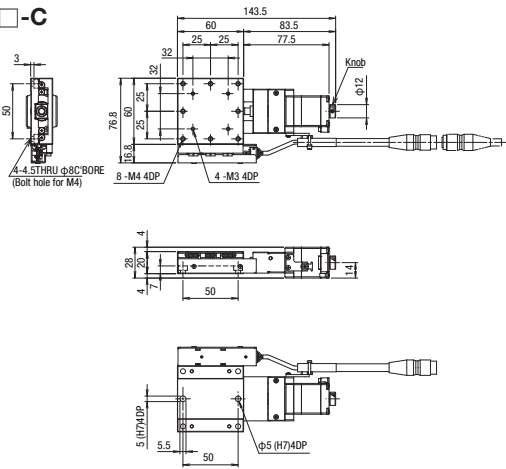
Other

Motorized Stage

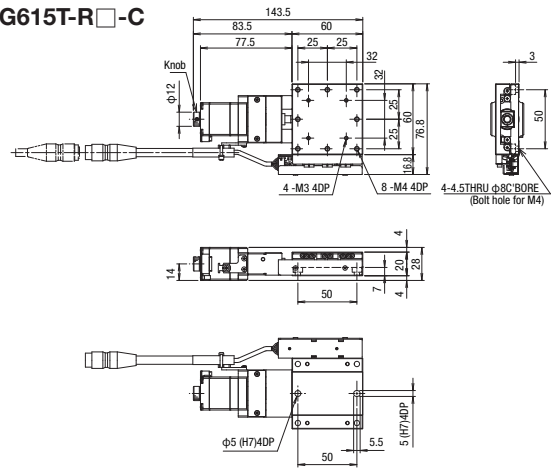
X-axis Linear Ball Guide: PG615/PG715

Dimensions

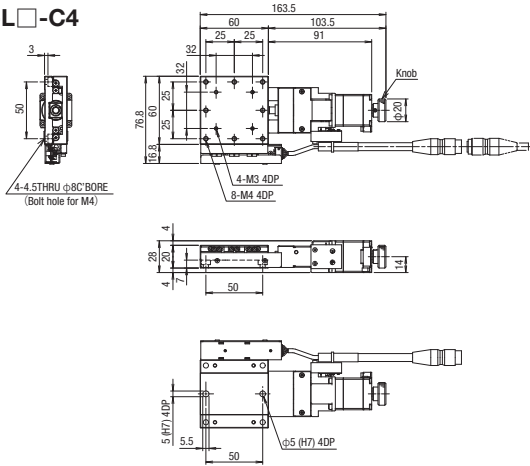
PG615T-L□-C



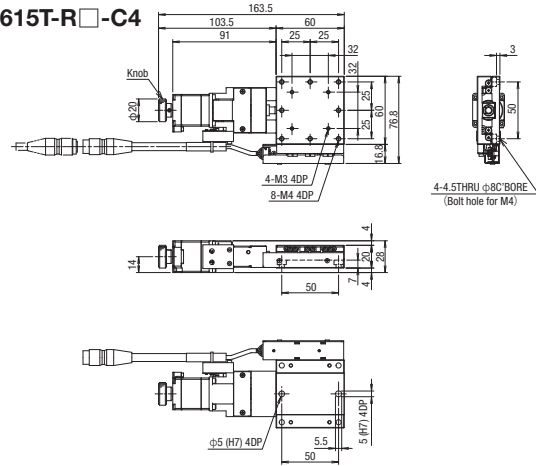
PG615T-R□-C



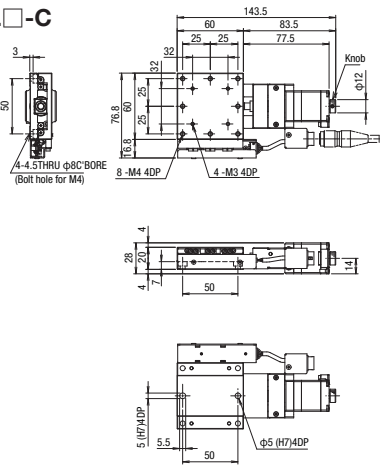
PG615T-L□-C4



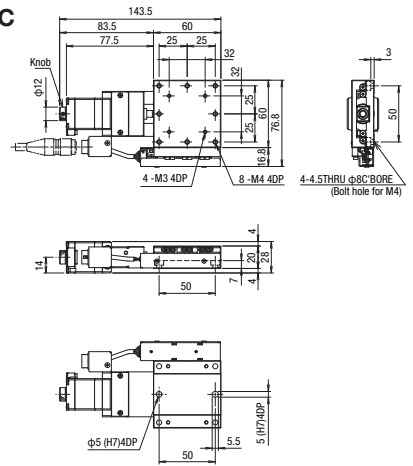
PG615T-R□-C4



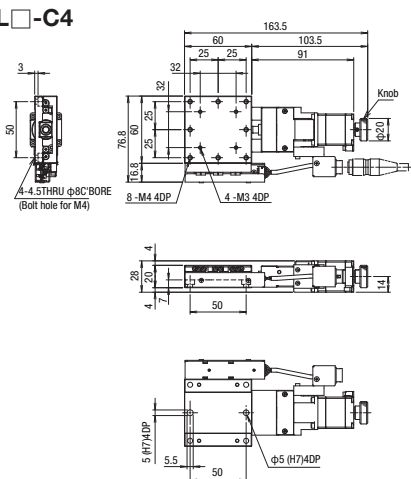
PG615M-L□-C



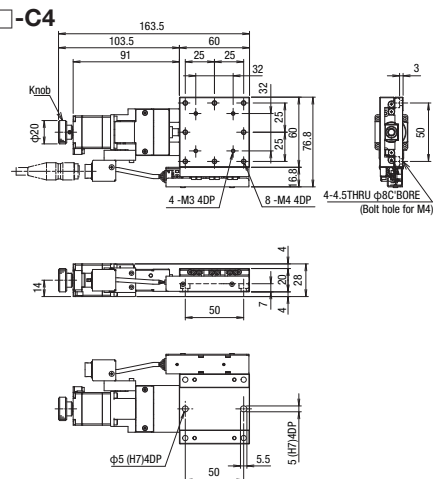
PG615M-R□-C



PG615M-L□-C4



PG615M-R□-C4



Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

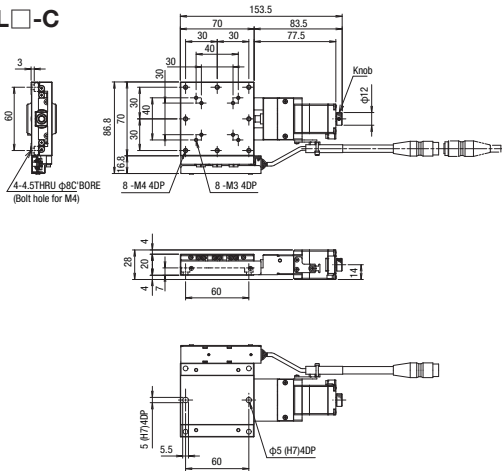
□120

□180

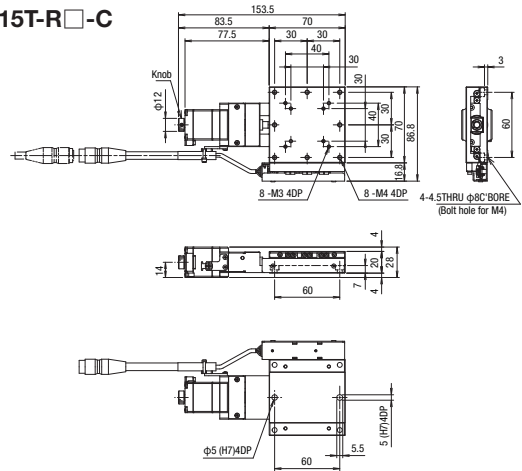
Other

Dimensions

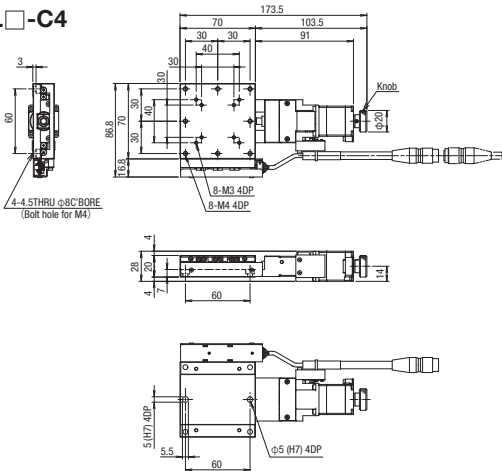
PG715T-L □ -C



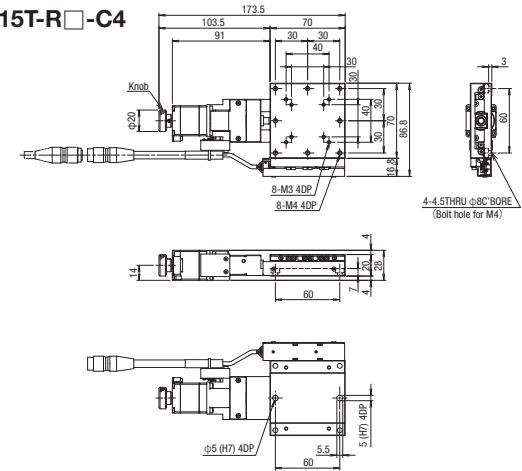
PG715T-R □ -C



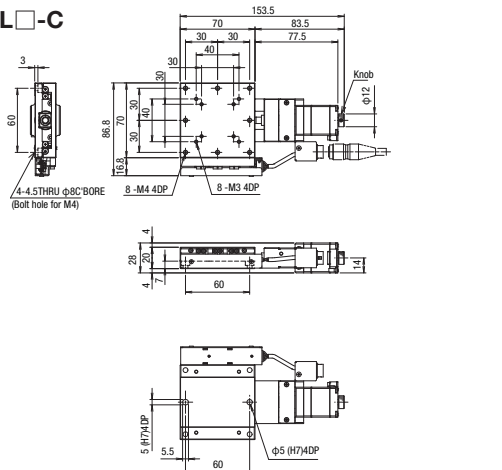
PG715T-L □ -C4



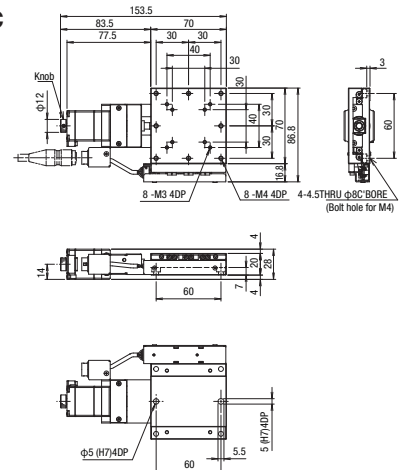
PG715T-R □ -C4



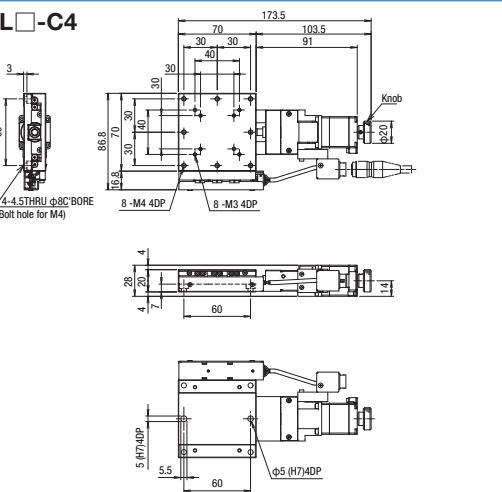
PG715M-L □ -C



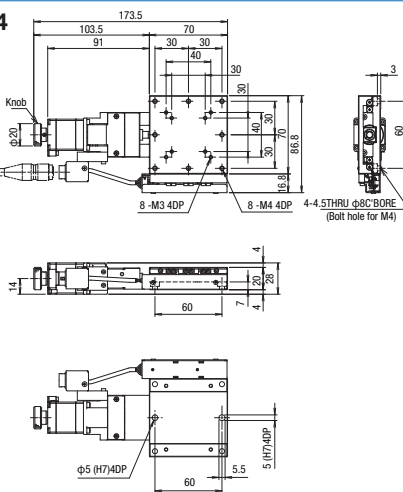
PG715M-R □ -C



PG715M-L □ -C4



PG715M-R □ -C4



Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

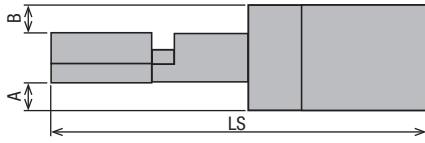
018

Motorized Stage

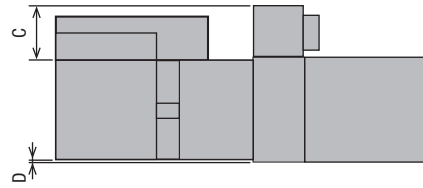
X-axis Linear Ball Guide: PG413/PG513/PG615/PG715

Dimensions

Side View



Top view Connector : T/M Common



C Standard motor

Motor model: C005C-90215P-1
Motor model: PK523HPB-C15

D High-torque

Motor model: PK525HPB-C1
Motor model: PK525HPB

E High resolution

Motor model: PK523HPMB-C1
Motor model: PK523HPMB

T 2 Phase stepping motor

Motor model: SJA28N32-0674B-01

*Motor model: Upper 3 sensors/Lower 4 sensors

Model	Motor	Motor size	Connector	A(mm)		B(mm)		C(mm)		D(mm)		LS(mm)			
				3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor		
PG413	C • E • T	□ 28	T	4	4	4	4	16.8	16.8	0	0	123.5	143.5		
PG513			M					18.0	22.0					133.5	153.5
PG615			T					16.8	16.8						
			M					16.8	17.0						
PG715			T					16.8	16.8			143.5	163.5		
			M					16.8	16.8						
			T					16.8	16.8						
			M					16.8	16.8						

Model	Motor	Motor size	Connector	A(mm)		B(mm)		C(mm)		D(mm)		LS(mm)	
				3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
PG413	D	□ 28	T	4	4	4	4	16.8	16.8	0	0	143	163
PG513			M					18.0	22.0				
PG615			T					16.8	16.8				
			M					16.8	17.0				
PG715			T					16.8	16.8			163	183
			M					16.8	16.8				
			T					16.8	16.8				
			M					16.8	16.8				

MA MB With electromagnetic brake

Motor model: PKE545MC-A1

*Included driver When selecting MA: 100V, When selecting MB: 200V

Model	Motor	Motor size	Connector	A(mm)		B(mm)		C(mm)		D(mm)		LS(mm)	
				3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
PG413	MA • MB	□ 42	T	11	11	11	11	16.8	16.8	0	0	173	180
PG513													
PG615												193	200
PG715												203	210

PA αSTEP (AR Series)

Motor model: ARM24SAK

ZA αSTEP (AZ Series)

Motor model: AZM24AK

Model	Motor	Motor size	Connector	A(mm)		B(mm)		C(mm)		D(mm)		LS(mm)	
				3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
PG413	PA	□ 28	T	4	—	4	—	16.8	—	0	—	144	—
PG513												154	
PG615												164	
PG715												174	
PG413	ZA	□ 28	T	4	—	4	—	16.8	—	0	—	153.5	—
PG513												163.5	
PG615												173.5	
PG715												183.5	

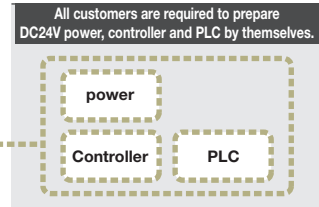
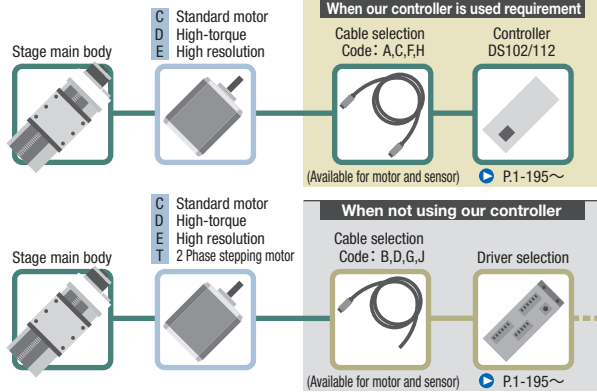
UA Servo motor (J4[Mitsubishi Electric corporation])

Motor model: HG-KR053

Model	Motor	Motor size	Connector	A(mm)		B(mm)		C(mm)		D(mm)		LS(mm)	
				3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
PG413	UA	□ 40	T	10	—	10	—	16.8	—	0	—	175.9	—
PG513												185.9	
PG615												195.9	
PG715												205.9	

Motor option

- C Standard motor**
Motor model
C005C-90215P-1 (3 sensor)
PK523HPB-C15 (4 sensor)
- D High-torque**
Motor model
PK525HPB-C1 (3 sensor)
PK523HPB (4 sensor)
- E High resolution**
Motor model
PK523HPMB-C1 (3 sensor)
PK523HPMB (4 sensor)
- T 2 Phase stepping motor**
Motor model *Only 3 sensor
SJA28N32-0674B-01



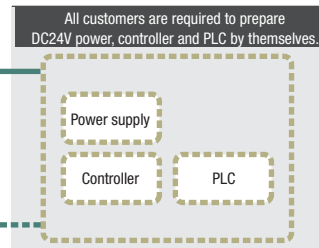
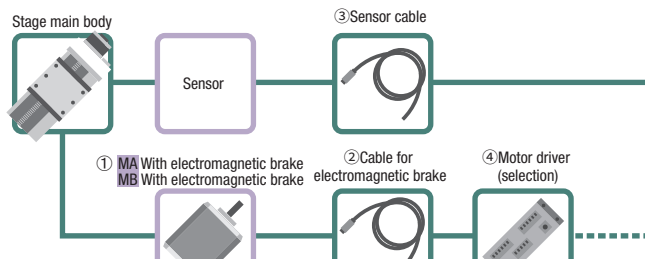
Code	①Motor model	②Motor + Sensor cable selection
C	3 Sensor C005C-90215P-1	A · B · C · D : D214-2-□E(K)
	4 Sensor PK523HPB-C15	F · G · H · J : D214-2-□R(K)
D	3 Sensor PK525HPB-C1	A · B · C · D : D214-2-□E(K)
	4 Sensor PK525HPB	F · G · H · J : D214-2-□R(K)

Code	①Motor model	②Motor + Sensor cable selection
E	3 Sensor PK523HPMB-C1	A · B · C · D : D214-2-□E(K)
	4 Sensor PK523HPMB	F · G · H · J : D214-2-□R(K)
T	3 Sensor SJA28N32-0674B-01	B · D : DS1-2C-2-□EK
	4 Sensor —	G · J : DS1-2C-2-□RK

* For 4 sensors, only the Code:Blank (no-cable) option is available.

Motor option

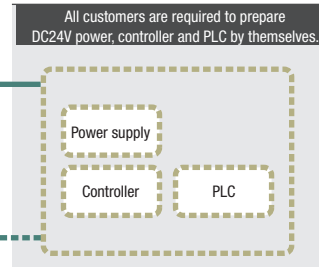
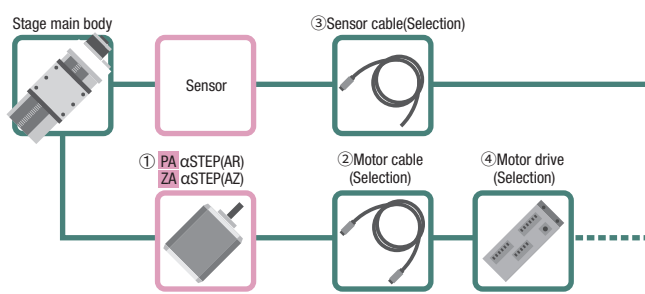
- MA With electromagnetic brake**
Motor model
PKE545MC-A1
*Driver
MA : 100V
MB : 200V



Code	①Motor model	②Motor + Sensor cable selection	③Motor + Sensor cable selection	④Driver selection
MA MB	PKE545MC-A1	3A : CC030VPFB 5A : CC050VPFB Blank · 3 · 5 : Not included	3A · 3 : PG-H-ASSY5-3000 5A · 5 : PG-H-ASSY5-5000 None : PG-H-ASSY5-2000	[MA]3A · 5A : RKSD503M-A [MB]3A · 5A : RKSD503M-C Blank · 3 · 5 : Not included

Motor option

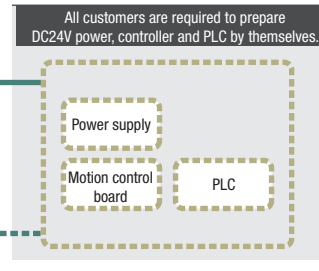
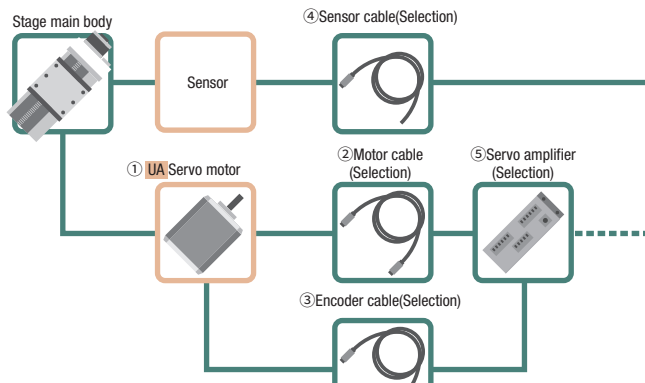
- PA αSTEP (AR Series)**
Motor model
ARM24SAK
- ZA αSTEP (AZ Series)**
Motor model
AZM24AK



Code	①Motor model	②Motor + Sensor cable selection	③Motor + Sensor cable selection	④Driver selection
PA	ARM24SAK	3A : CC030VA2R2 5A : CC050VA2R2 Blank · 3 · 5 : Not included	3A · 3 : PG-H-ASSY5-3000 5A · 5 : PG-H-ASSY5-5000 Blank : PG-H-ASSY5-2000	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

- UA Servo motor**
Motor model
HG-KR053



Code	Motor model	Motor + Sensor cable selection	Encoder cable 3m	Motor + Sensor cable selection	AC servo amplifier
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 · 3 : PG-H-ASSY5-3000 5A · 3 : PG-H-ASSY5-5000 Blank : PG-H-ASSY5-2000	3A · 5A : MR-J4-10A Blank · 3 · 5 : Not included

- Motorized Stage
- X
- XY
- Z
- Horizontal Z
- Z
- XYZ
- Goniometer
- Rotary
- Unit
- Controller
- KXT Linear Ball
- PG Linear Ball
- KXG/KXL Linear Ball
- Cross Roller
- Slide Guide
- 40
- 50
- 60
- 70
- 80
- 100
- 120
- 180
- Other

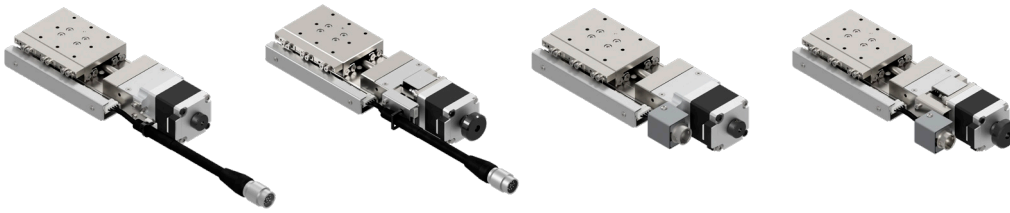
X-axis Linear Ball Guide: PG430/PG530/PG650/PG750

PG430T-LA-C

PG430T-LA-C4

PG430M-LA-C

PG430M-LA-C4



* The picture is an image.

PG430M-LA-C

- 1
- 2
- 3
- 4
- 5
- 5
- 6
- 6
- 7
- 7

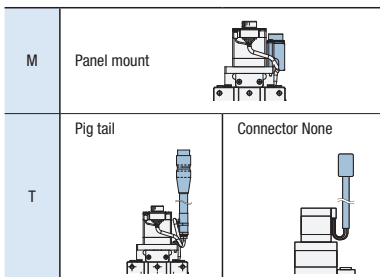
- ▶ Cables P.1-287~
- ▶ Electrical specification P.1-053~

1 Stage table size/Travel distance

Code	size	Travel distance
430	40x60mm	30mm
530	50x70mm	
650	60x100mm	50mm
750	70x110mm	

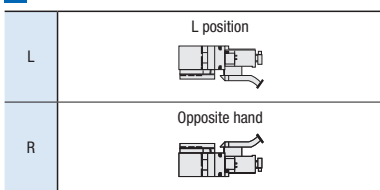
2 Connector specifications

Code	Specification	Application Motor					
M	Panel mount	C	D	E	T		
T	Pig tail	C	D	E	T		
	Connector None	MA	MB	PA	ZA	UA	



*No common connector: The motor cable and sensor cable are not consolidated into a common connector.

3 Sensor cover location



4 Sensor logic

A	All N.C.
B	All N.O.
C	N.C.ORG1 and ORG2 are N.O.

*ORG2 (slit origin sensor) is only supported when 4-sensor specification is selected.

5 Motor Option

Code	Specification
C	Standard(5 Phase stepping motor)
D	High-torque
E	High resolution
T	2 Phase stepping motor

*For Code T, 2-phase stepping motor, our controller (DS102/112) cannot be used.

6 Sensor options

Code	Specification	Application Motor								
		C	D	E	T	MA	MB	PA	ZA	UA
Blank	3 Sensor(CWLS,ORG1,CCWLS)	●	●	●	●	●	●	●	●	●
4	4 Sensor(CWLS,ORG1,CCWLS,ORG2)	●	●	●	●	●	●	●	●	●

7 Cable option

Code	Specification	Cable type	For 2 phase motor Cable type
Blank	Cable is not included (Standard)	—	—
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

* See pages 1-287 onwards for cable details.

* When connecting to our controllers (DS102/112), please select from codes A, C, F, or H.

* One end loose position to only stage opposite side.

* For Code T, 2-phase stepping, only one end rose (B, D, G, J) is supported.

* For 4 sensors, only the Code:Blank(no-cable) option is available.

* For 4 sensors, specify the 4-sensor compatible cable.(P.1-287)

5 Motor option

Code	Specification
MA	With electromagnetic brake(□42_100V)
MB	With electromagnetic brake(□42_200V)
PA	αSTEP (AR Series)
ZA	αSTEP (AZ Series)
UA	Servo motor(J4)

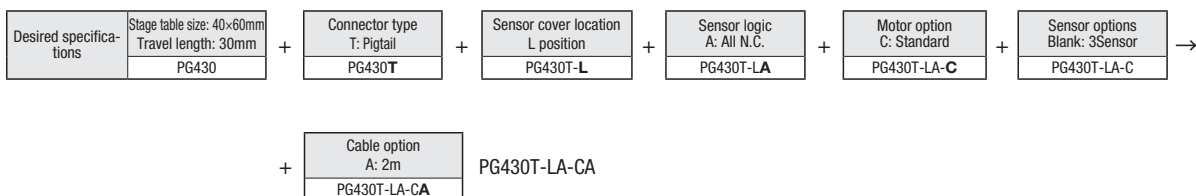
7 Cable option (Motor: MA, MB, PA, ZA, EA, UG, UA)

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 (3m Cable Set)
5A	Driver Amplifier (5m Cable Set)

products list [5] Motor [7] Cable/Driver combination

Code	Driver (amplifier) cable	Blank	3	5	3A			5A			
	Motor	MA · MB/PA · ZA/UA	MA · MB PA · ZA	UA	MA · MB PA · ZA	UA	MA · MB PA · ZA	UA			
Cable	Sensor	2m	3m	5m	3m			5m			
	Motor					3m			5m		
	Electromagnetic brake	None				3m	—	—	5m	—	—
	Encoder					—	—	3m	—	—	5m
Driver (Amplifier)					Available						

Selection example



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

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

- Slide Guide

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

Specification

		SPEC			
Model		PG430□-LA-C	PG530□-LA-C	PG650□-LA-C	PG750□-LA-C
(Opposite hand)		PG430□-RA-C	PG530□-RA-C	PG650□-RA-C	PG750□-RA-C
Mechanical specification	Travel distance	30mm		50mm	
	Stage table size	40×60mm	50×70mm	60×100mm	70×110mm
	Feed screw (Ball screw)	φ6 Lead 1			
	Guide	Linear Ball Guide			
	Main material— Surface finishing	Stainless—Electroless nickel plating			
Weight	Pig tail	0.64kg	0.77kg	1.09kg	1.26kg
	Panel mount	0.63kg	0.76kg	1.08kg	1.25kg
Accuracy specification	Resolution/Pulse	2μm(Full)/1μm(Half)			
	MAX speed	10mm/sec			
	Uni-directional positioning accuracy	12μm			
	Repeatability positioning accuracy	±0.5μm			
	Load capacity	10kgf [98N]			
	Moment stiffness	Pitch 0.24/yaw 0.18/ roll 0.26 ["/N · cm]	Pitch 0.12/yaw 0.13/ roll 0.1 ["/N · cm]	Pitch 0.05/yaw 0.05/ roll 0.05 ["/N · cm]	Pitch 0.03/yaw 0.03/ roll 0.03 ["/N · cm]
	Lost motion	1μm			
	Backlash	0.5μm			
	Straightness	2μm			
	Parallelism	15μm			
Sensor	Motion parallelism	10μm			
	Pitching/Yawing	20"/15"			
	Limit sensor	Available			
	Origin sensor (ORG1)	Available			
Slit origin sensor(ORG2)	- *When selecting the 4 sensor option: Available				
Provided screw (Hexagon-headed bolt)		4 of M3-8		4 of M4-8	

* The SPEC varies depending on the motor.

⊗When using the Z-axis, a normal load of 5 kgf should be used as a guide. It depends on load, Max speed, etc.

Resolution · MAX speed · Weight

Motor code		C		D		E		T		
Type		Standard		High-torque		High resolution		2 Phase stepping motor		
Motor model* 1	3 Sensor	C005C-90215P-1		PK525HPB-C1		PK523HPMB-C1		SJA28N32-0674B-01		
	4 Sensor	PK523HPB-C15		PK525HPB		PK523HPMB		—		
Step angle		0.72°		0.36°		1.8°		—		
Resolution	Full/Half	2μm/1μm		1μm/0.5μm		5μm/2.5μm		—		
	Micro step (1/20 On resolution)	0.1μm		0.05μm		—		—		
MAX speed		10mm/sec		30mm/sec		25mm/sec		10mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PG430	Pig tail	0.64kg	0.68kg	0.73kg	0.77kg	0.64kg	0.68kg	0.64kg	—
		Panel mount	0.63kg	0.67kg	0.72kg	0.76kg	0.63kg	0.67kg	0.63kg	—
	PG530	Pig tail	0.77kg	0.81kg	0.86kg	0.90kg	0.77kg	0.81kg	0.77kg	—
		Panel mount	0.76kg	0.80kg	0.85kg	0.89kg	0.76kg	0.80kg	0.76kg	—
	PG650	Pig tail	1.09kg	1.13kg	1.18kg	1.22kg	1.09kg	1.13kg	1.09kg	—
		Panel mount	1.08kg	1.12kg	1.17kg	1.21kg	1.08kg	1.12kg	1.08kg	—
	PG750	Pig tail	1.26kg	1.30kg	1.35kg	1.39kg	1.26kg	1.30kg	1.26kg	—
Panel mount		1.25kg	1.29kg	1.34kg	1.38kg	1.25kg	1.29kg	1.25kg	—	

Motor code		MA · MB		PA		ZA		UA		
Type		With electromagnetic brake □42mm		αSTEP (AR)		αSTEP (AZ)		AC servo motor(J4)		
Motor model* 1	3 Sensor	PKE545MC-A1		ARM24SAK		AZM24AK		HG-KR053		
	4 Sensor	—		—		—		—		
Step angle		0.72°		—		—		—		
Resolution	Full/Half	2μm/1μm		1μm(Set to 1000P/R)		1μm(Set to 1000P/R)		22 Bit encoder (4194304P/R) ^{※2}		
	Micro step (1/20 On resolution)	0.1μm		—		—		—		
MAX speed		20mm/sec		35mm/sec		40mm/sec		50mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PG430	Connector None	1.05kg	1.14kg	0.68kg	—	0.68kg	—	0.98kg	—
			1.18kg	1.27kg	0.81kg	—	0.81kg	—	1.11kg	—
	PG650	None	1.50kg	1.59kg	1.13kg	—	1.13kg	—	1.43kg	—
			1.67kg	1.76kg	1.30kg	—	1.30kg	—	1.60kg	—

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

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

Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

□40

□50

□60

□70

□80

□100

□120

□180

Ohter

1

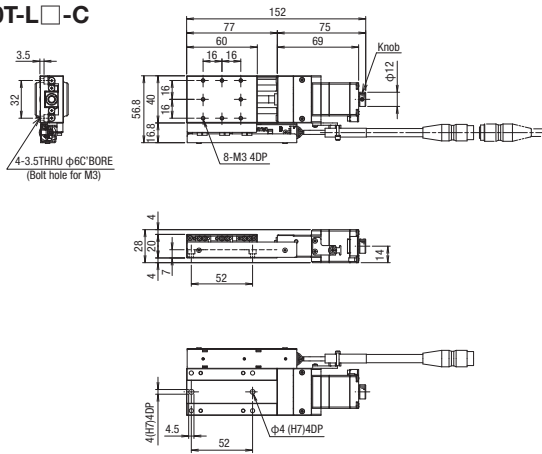
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Motorized Stage

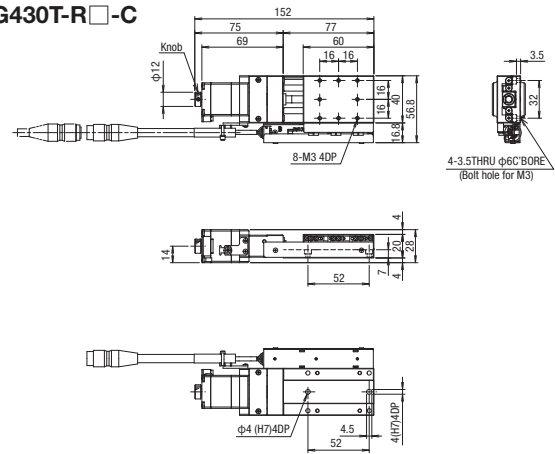
X-axis Linear Ball Guide: PG430/PG530

Dimensions

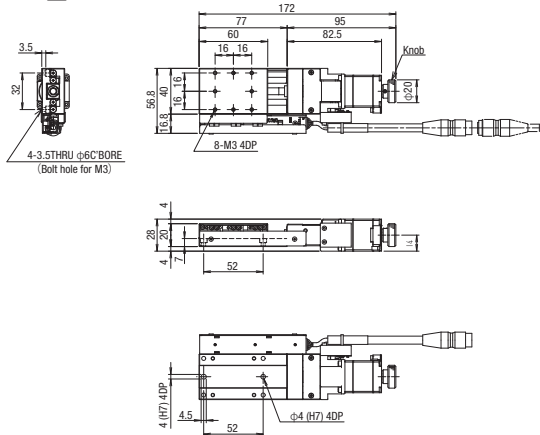
PG430T-L □ -C



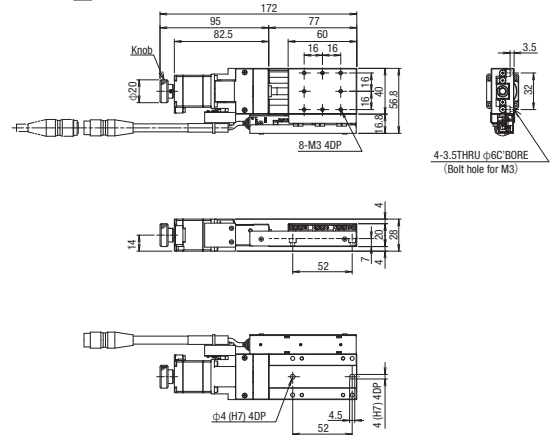
PG430T-R □ -C



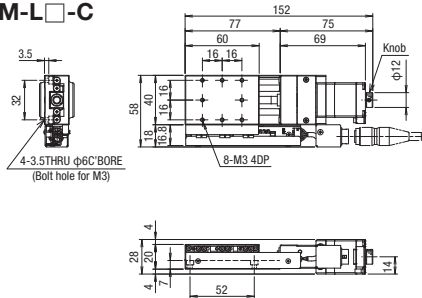
PG430T-L □ -C4



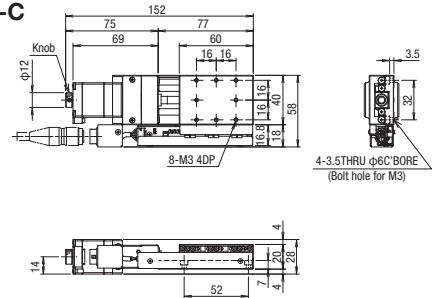
PG430T-R □ -C4



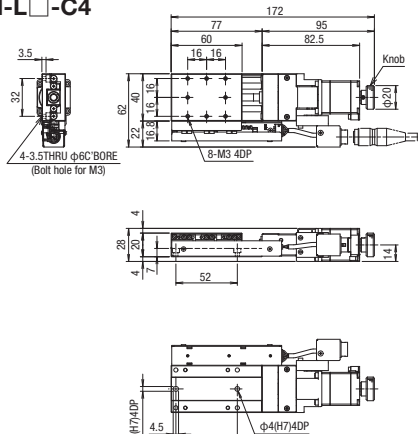
PG430M-L □ -C



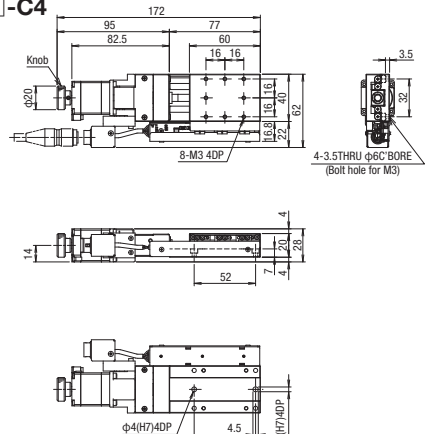
PG430M-R □ -C



PG430M-L □ -C4



PG430M-R □ -C4



Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

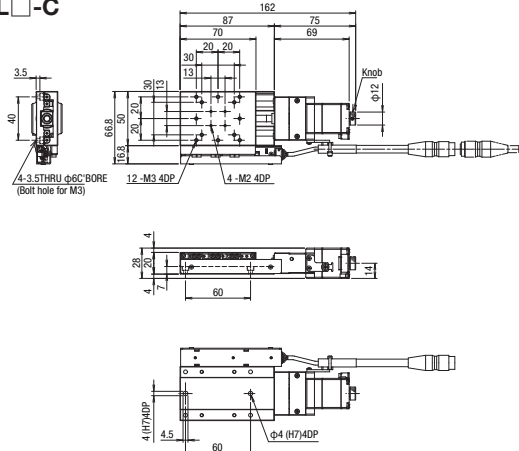
□120

□180

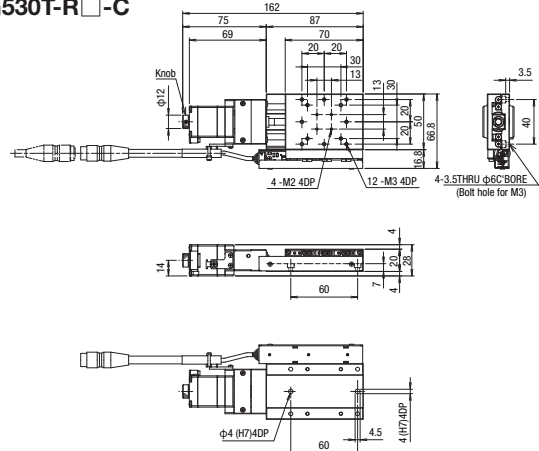
Other

Dimensions

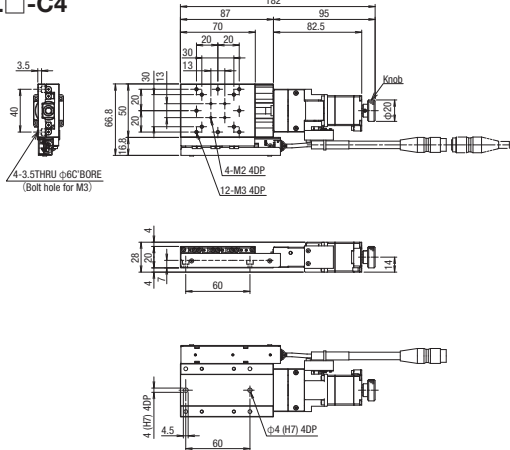
PG530T-L □ -C



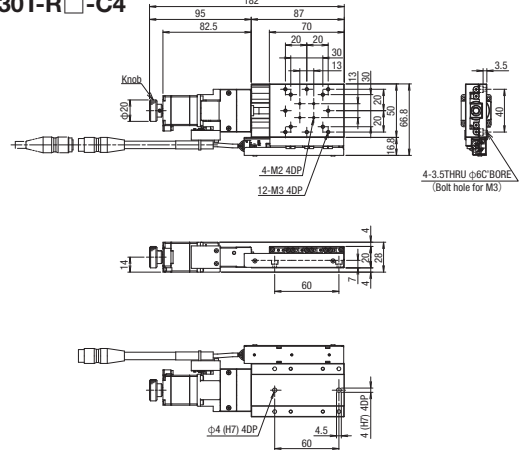
PG530T-R □ -C



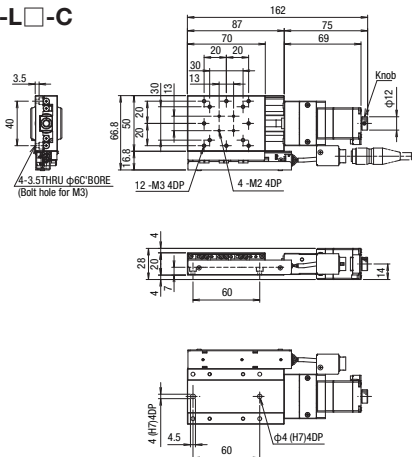
PG530T-L □ -C4



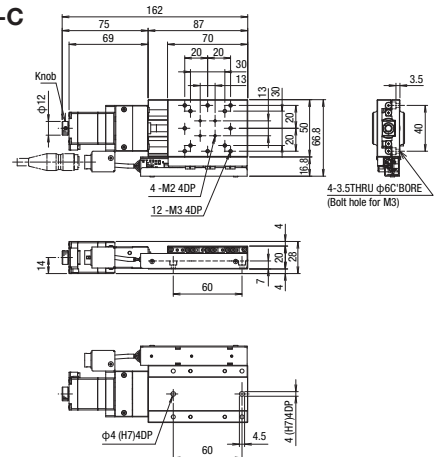
PG530T-R □ -C4



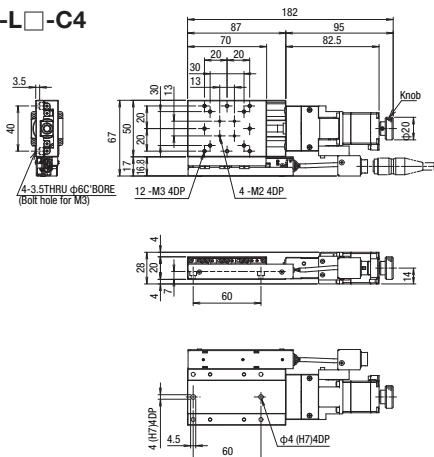
PG530M-L □ -C



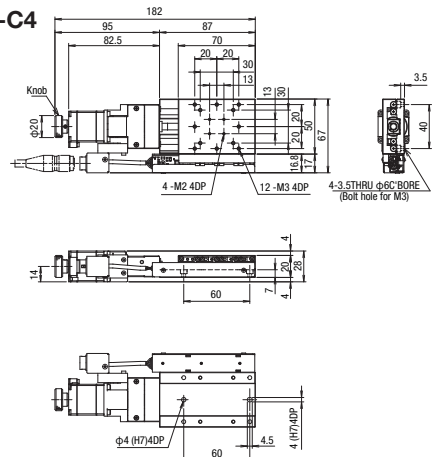
PG530M-R □ -C



PG530M-L □ -C4



PG530M-R □ -C4



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

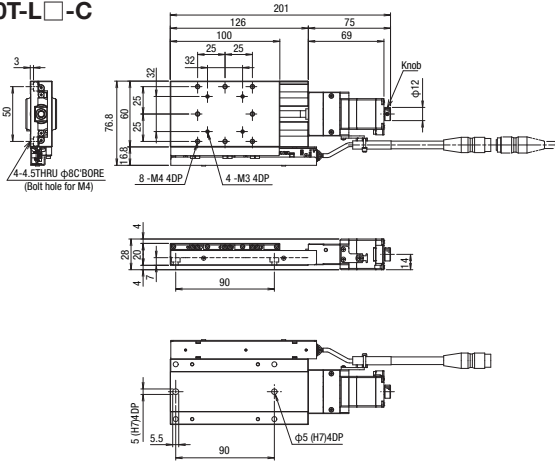
Other

Motorized Stage

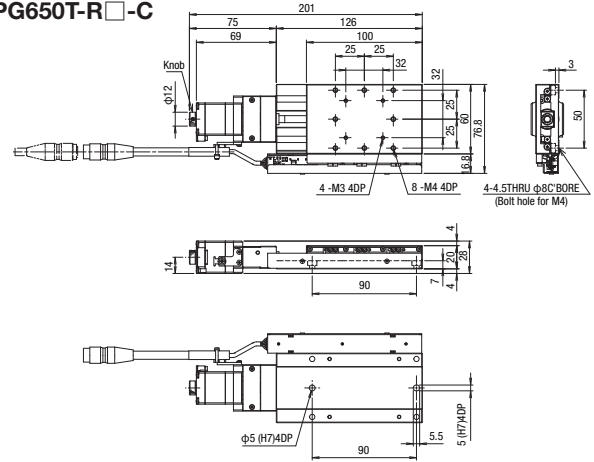
X-axis Linear Ball Guide: PG650/PG750

Dimensions

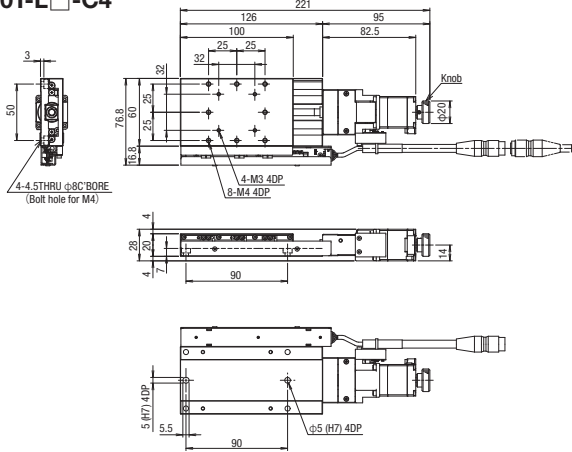
PG650T-L□-C



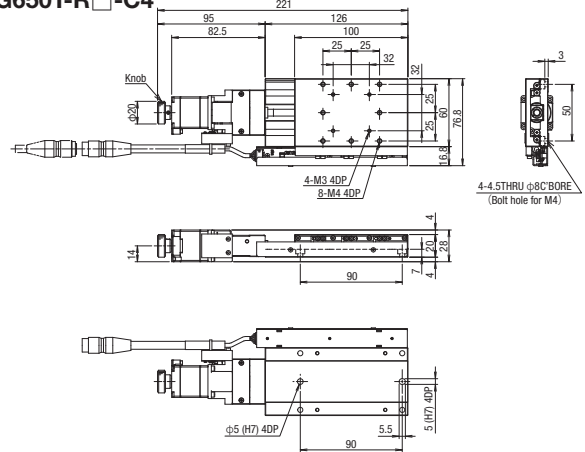
PG650T-R□-C



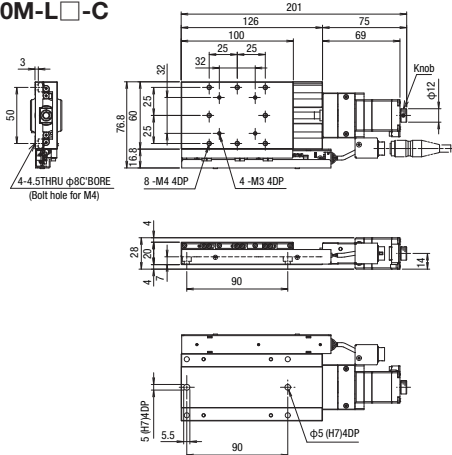
PG650T-L□-C4



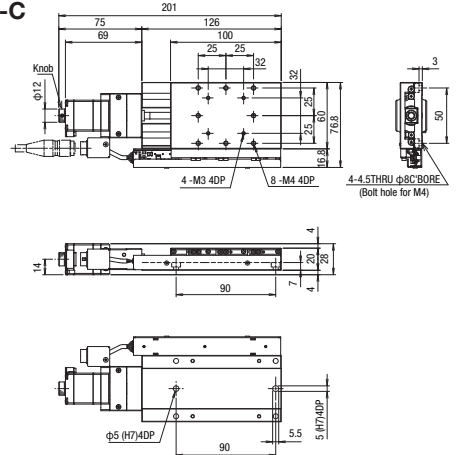
PG650T-R□-C4



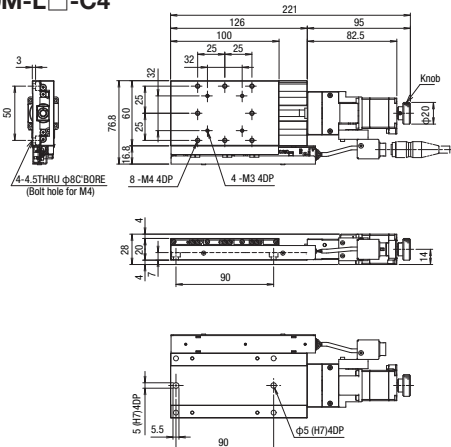
PG650M-L□-C



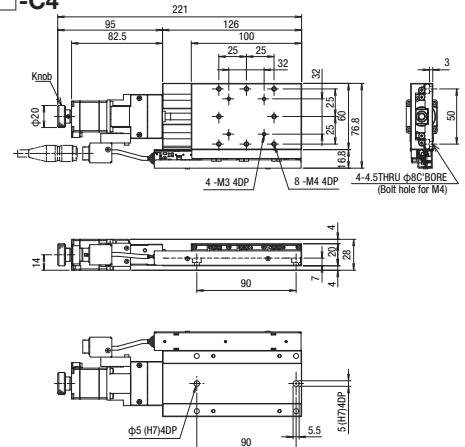
PG650M-R□-C



PG650M-L□-C4



PG650M-R□-C4



Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

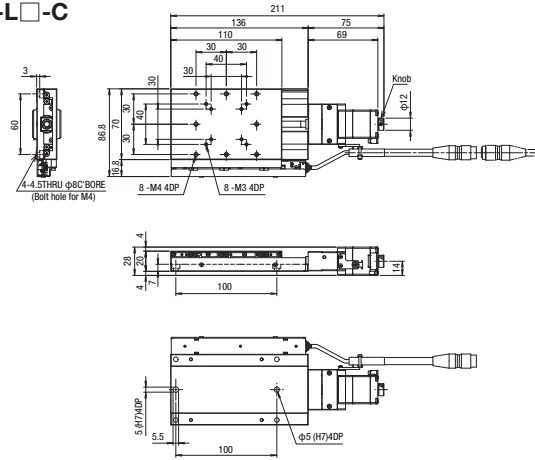
□120

□180

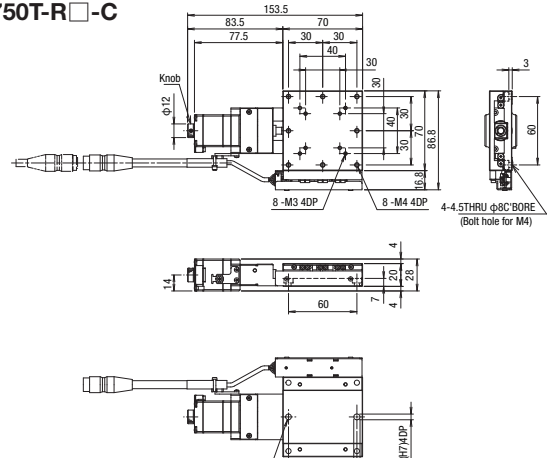
Other

Dimensions

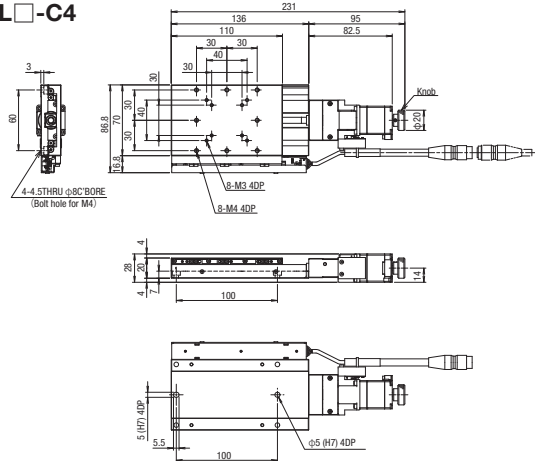
PG750T-L□-C



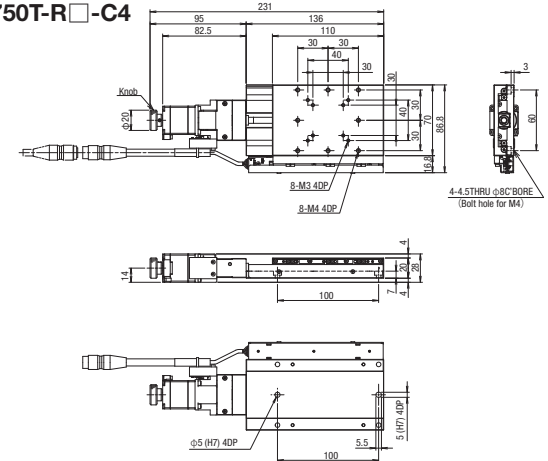
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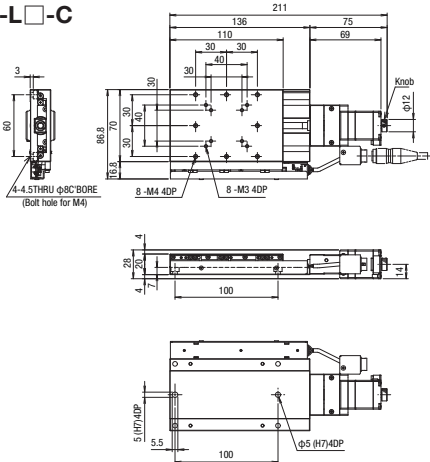
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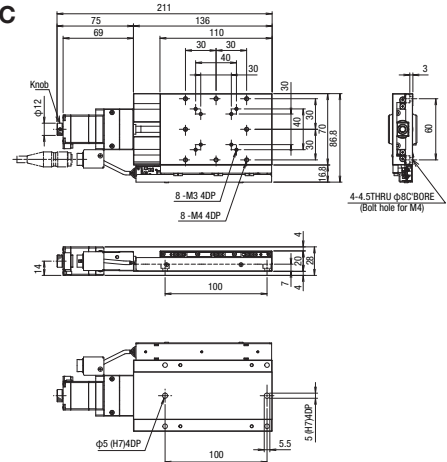
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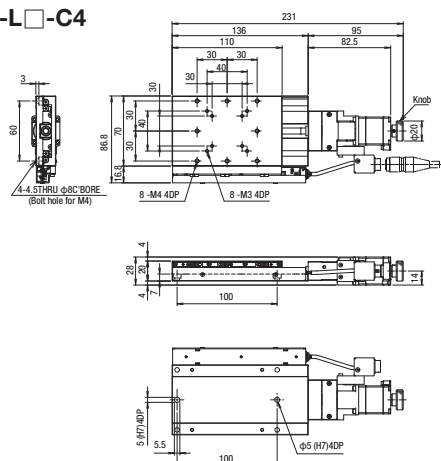
PG750M-L□-C



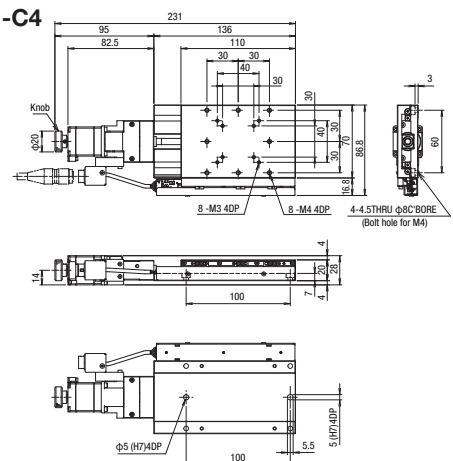
PG750M-R□-C



PG750M-L□-C4



PG750M-R□-C4



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

□ 40

□ 50

□ 60

□ 70

□ 80

□ 100

□ 120

□ 180

Ohter

1

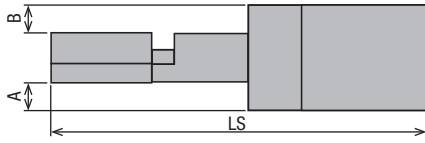
026

Motorized Stage

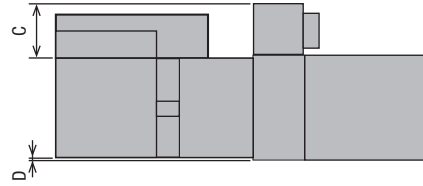
X-axis Linear Ball Guide: PG430/PG530/PG650/PG750

外形寸法图

Side view



Top view Connector : T/M Common



C Standard motor

Motor model C005C-90215P-1
Motor model PK523HPB-C15

D High-torque

Motor model PK525HPB-C1
Motor model PK525HPB

E High resolution

Motor model PK523HPMB-C1
Motor model PK523HPMB

T 2 Phase stepping motor

Motor model SJA28N32-0674B-01

*Motor type: Upper 3 sensors/Lower 4 sensors

Model	Motor	Motor size	Connector	A(mm)		B(mm)		C(mm)		D(mm)		LS(mm)	
				3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
PG430	C • E • T	□ 28	T	4	4	4	4	16.8	16.8	0	0	152	172
PG530			M					18.0	22.0				
			T					16.8	16.8				
PG650			M					16.8	17.0				
			T					16.8	16.8				
PG750			M					16.8	16.8				
			T					16.8	16.8				

Model	Motor	Motor size	Connector	A(mm)		B(mm)		C(mm)		D(mm)		LS(mm)	
				3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
PG430	D	□ 28	T	4	4	4	4	16.8	16.8	0	0	171.5	191.5
PG530			M					18.0	22.0				
			T					16.8	16.8				
PG650			M					16.8	17.0				
			T					16.8	16.8				
PG750			M					16.8	16.8				
			T					16.8	16.8				

MA MB With electromagnetic brake

Motor model PKE545MC-A1

*Included driver: MA selected: 100V, MB selected: 200V

Model	Motor	Motor size	Connector	A(mm)		B(mm)		C(mm)		D(mm)		LS(mm)	
				3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
PG430	MA • MB	□ 28	T	11	11	11	11	16.8	16.8	0	0	201.5	208.5
PG530												211.5	218.5
PG650												250.5	257.5
PG750												260.5	267.5

PA αSTEP (AR Series)

Motor model ARM24SAK

ZA αSTEP (AZ Series)

Motor model AZM24AK

Model	Motor	Motor size	Connector	A(mm)		B(mm)		C(mm)		D(mm)		LS(mm)	
				3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
PG430	PA	□ 28	T	4	—	4	—	16.8	—	0	—	172.5	—
PG530												182.5	
PG650												221.5	
PG750												231.5	
PG430	ZA	□ 28	T	4	—	4	—	16.8	—	0	—	182	—
PG530												192	
PG650												231	
PG750												241	

UA Servo motor (J4[Mitsubishi Electric corporation])

Motor model HG-KR053

Model	Motor	Motor size	Connector	A(mm)		B(mm)		C(mm)		D(mm)		LS(mm)	
				3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
PG430	UA	□ 40	T	10	—	10	—	16.8	—	0	—	204.4	—
PG530												214.4	
PG650												253.4	
PG750												263.4	

Motor option

C Standard motor
 Motor model
 C005C-90215P-1 (3 sensor)
 PK523HPB-C15 (4 sensor)

D High-torque
 Motor model
 PK525HPB-C1 (3 sensor)
 PK525HPB (4 sensor)

E High resolution
 Motor model
 PK523HPMB-C1 (3 sensor)
 PK523HPMB (4 sensor)

T 2 Phase stepping motor
 Motor model *Only 3 sensor
 SJA28N32-0674B-01

When our controller is used requirement

Stage main body → Sensor → Cable selection (Code: A,C,F,H) → Controller (DS102/112)

(Available for motor and sensor) P.1-195~

When not using our controller

Stage main body → Sensor → Cable selection (Code: B,D,G,J) → Driver selection

(Available for motor and sensor) P.1-195~

All customers are required to prepare DC24V power, controller and PLC by themselves.

power
Controller
PLC

Code	①Motor model	②Motor・Sensor cable selection	Code	①Motor model	②Motor・Sensor cable selection
C	3 Sensor	C005C-90215P-1	E	3 Sensor	PK523HPMB-C1
	4 Sensor	PK523HPB-C15		4 Sensor	PK523HPMB
D	3 Sensor	PK525HPB-C1	T	3 Sensor	SJA28N32-0674B-01
	4 Sensor	PK525HPB		4 Sensor	—

* For 4 sensors, only the Code:Blank (no-cable) option is available.

Motor option

MA With electromagnetic brake
 Motor model
 PKE545MC-A1

*Driver
 MA: 100V
 MB: 200V

Stage main body → Sensor → ③ Sensor cable → ④ Motor driver (selection)

① MA With electromagnetic brake
 MB With electromagnetic brake

② Cable for electromagnetic brake

All customers are required to prepare DC24V power, controller and PLC by themselves.

Power supply
Controller
PLC

Code	①Motor model	②Motor cable selection	③Sensor cable selection	Driver selection
MA・MB	PKE545MC-A1	3A : CC030VPFB 5A : CC050VPFB Blank・3・5 : Not included	3A・3 : PG-H-ASSY5-3000 5A・5 : PG-H-ASSY5-5000 Blank : PG-H-ASSY5-2000	[MA]3A・5A : RKSD503M-A [MB]3A・5A : RKSD503M-C Blank・3・5 : Not included

Motor option

PA αSTEP (AR Series)
 Motor model
 ARM24SAK

ZA αSTEP (AZ Series)
 Motor model
 AZM24AK

Stage main body → Sensor → ③ Sensor cable (Selection) → ④ Motor drive (Selection)

① PA αSTEP(AR)
 ZA αSTEP(AZ)

② Motor cable (Selection)

All customers are required to prepare DC24V power, controller and PLC by themselves.

Power supply
Controller
PLC

Code	①Motor model	②Motor cable selection	③Sensor cable selection	Driver selection
PA	ARM24SAK	3A : CC030VA2R2 5A : CC050VA2R2 Blank・3・5 : Not included	3A・3 : PG-H-ASSY5-3000 5A・5 : PG-H-ASSY5-5000 Blank : PG-H-ASSY5-2000	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

UA Servo motor
 Motor model
 HG-KR053

Stage main body → Sensor → ④ Sensor cable (Selection) → ⑤ Servo amplifier (Selection)

① UA Servo motor

② Motor cable (Selection)

③ Encoder cable (Selection)

All customers are required to prepare DC24V power, controller and PLC by themselves.

Power supply
Motion control board
PLC

Code	①Motor model	②Motor cable selection	③Encoder cable 3m	④Sensor cable selection	⑤ Servo amplifier selection
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・3 : PG-H-ASSY5-3000 5A・3 : PG-H-ASSY5-5000 Blank : PG-H-ASSY5-2000	3A・5A : MR-J4-10A Blank・3・5 : Not included

- Motorized Stage
- X
 - XY
 - Z
 - Horizontal Z
 - Z
 - XYZ
 - Goniometer
 - Rotary
 - Unit
 - Controller
 - KXT Linear Ball
 - PG Linear Ball
 - KXG/KXL Linear Ball
 - Cross Roller
 - Slide Guide
 - 40
 - 50
 - 60
 - 70
 - 80
 - 100
 - 120
 - 180
 - Ohter

X-axis Linear Ball Guide: PMG413/PMG513/PMG615/PMG715

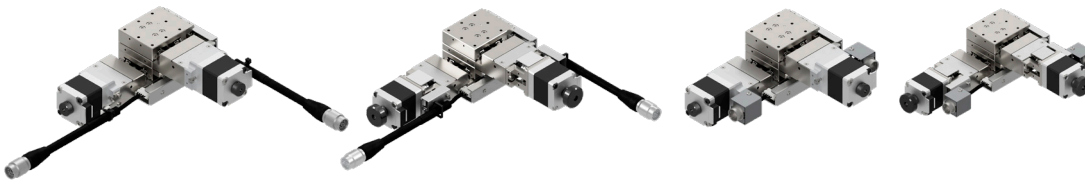
PMG413T-LA-C

PMG413T-LA-C4

PMG413M-LA-C

PMG413M-LA-C4

RoHS



* The picture is an image.

PMG413M-LA-C

*A dedicated hex wrench is included to secure the lower axis of the XY.

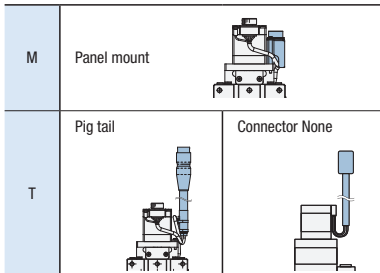
- ▶ Cables P.1-287~
- ▶ Electrical specification P.1-053~

1 Stage table size/Travel distance

Code	size	Travel distance
413	□40mm	13mm
513	□50mm	
615	□60mm	15mm
715	□70mm	

2 Connector specifications

Code	Specification	Application Motor					
M	Panel mount	C	D	E	T		
T	Pig tail	C	D	E	T		
	Connector None	MA	MB	PA	ZA	UA	



*No common connector: The motor cable and sensor cable are not consolidated into a common connector.

3 Identification

L	Sensor cover location specification	
R	Sensor cover location specification	

4 Sensor logic

A	All N.C.
B	All N.O.
C	N.C.ORG1 and ORG2 are N.O.

*ORG2 (slit origin sensor) is only supported when 4-sensor specification is selected.

5 Motor Option

Code	Specification
C	Standard(5 Phase stepping motor)
D	High-torque
E	High resolution
T	2 Phase stepping motor

*For Code T, 2-phase stepping motor, our controller (DS102/112) cannot be used.

6 Sensor options

Code	Specification	Application Motor								
		C	D	E	T	MA	MB	PA	ZA	UA
Blank	3 Sensor(CWLS,ORG1,CCWLS)	●	●	●	●	●	●	●	●	●
4	4 Sensor(CWLS,ORG1,CCWLS,ORG2)	●	●	●	●	●	●			

7 Cable option

Code	Specification	Cable type	For 2-phase motor Cable type
Blank	Cable is not included (Standard)	—	—
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

* See pages 1-287 onwards for cable details.

* When connecting to our controllers (DS102/112), please select from codes A, C, F, or H.

* One end loose position to only stage opposite side.

* For Code T, 2-phase stepping, only one end rose (B, D, G, J) is supported.

* For 4 sensors, only the Code: Blank(no-cable) option is available.

* For 4 sensors, specify the 4-sensor compatible cable.(P.1-287)

5 Motor option

Code	Specification
MA	With electromagnetic brake(□42_100V)
MB	With electromagnetic brake(□42_200V)
PA	αSTEP (AR Series)
ZA	αSTEP (AZ Series)
UA	Servo motor(J4)

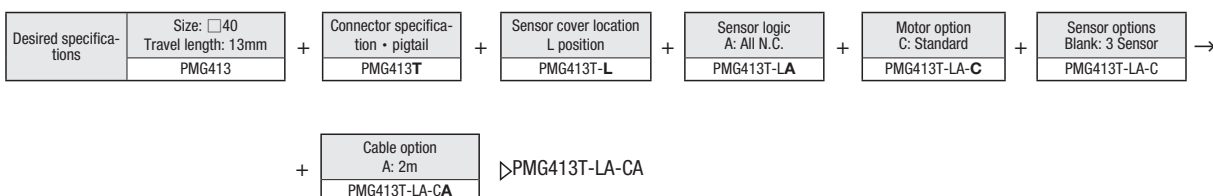
7 Cable option (Motor: MA, MB, PA, ZA, EA, UG, UA)

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 (3m Cable Set)
5A	Driver Amplifier (5m Cable Set)

products list [5] Motor [7] Cable/Driver combination

Code	Driver (amplifier) cable	Blank	3	5	3A			5A			
	Motor	MA · MB/PA · ZA/UA	3m	5m	MA · MB	PA · ZA	UA	MA · MB	PA · ZA	UA	
Cable	Sensor	2m	3m	5m	3m			5m			
	Motor	None				3m			5m		
	Electromagnetic brake	None				3m	—	—	5m	—	—
	Encoder	None				—	—	3m	—	—	5m
Driver (Amplifier)	None				Available						

Selection example



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

□40

□50

□60

□70

□80

□100

□120

□180

Other

1

029

Specification

		SPEC							
Model		PMG413□-LA-C		PMG513□-LA-C		PMG615□-LA-C		PMG715□-LA-C	
(Opposite hand)		PMG413□-RA-C		PMG513□-RA-C		PMG615□-RA-C		PMG715□-RA-C	
Mechanical specification	Travel distance	13mm				15mm			
	Stage table size	40×40mm		50×50mm		60×60mm		70×70mm	
	Feed screw (Ball screw)	φ6 Lead 1							
	Guide	Linear Ball Guide							
Main material— Surface finishing		Stainless—Electroless nickel plating							
Weight	Pig tail	1.00kg	1.08kg	1.22kg	1.26kg	1.46kg	1.48kg	1.72kg	1.72kg
	Panel mount	0.98kg	1.06kg	1.20kg	1.24kg	1.44kg	1.52kg	1.70kg	1.70kg
Resolution/Pulse	2μm(Full)/1μm(Half)								
MAX speed	10mm/sec								
Load capacity	9.51kgf [93.2N]		9.40kgf [92.1N]		9.28kgf [90.9N]		9.15kgf [89.7N]		
Squareness	5μm/Full stroke								
Limit sensor	Available								
Origin sensor (ORG1)	Available								
Slit origin sensor(ORG2)	- *When selecting the 4 sensor option: Available								
Provided screw (Hexagon-headed bolt)	4 of M3-8				4 of M4-8				
Single axis accuracy	Uni-directional positioning accuracy	6μm							
	Repeatability positioning accuracy	±0.5μm							
	Lost motion	1μm							
	Backlash	0.5μm							
	Straightness	1μm							
	Pitching/Yawing	15"/10"							

* The SPEC varies depending on the motor.

Resolution • MAX speed • Weight

Motor code		C		D		E		T		
Type		Standard		High-torque		High resolution		2 Phase stepping motor		
Motor model* 1	3 Sensor	C005C-90215P-1		PK525HPB-C1		PK523HPMB-C1		SJA28N32-0674B-01		
	4 Sensor	PK523HPB-C15		PK525HPB		PK523HPMB		—		
Step angle		0.72°				0.36°		1.8°		
Resolution	Full/Half	2μm/1μm				1μm/0.5μm		5μm/2.5μm		
	Micro step (1/20 On resolution)	0.1μm				0.05μm		—		
MAX speed		10mm/sec		30mm/sec		25mm/sec		10mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PMG413	Pig tail	1.00kg	1.08kg	1.18kg	1.26kg	1.00kg	1.08kg	1.00kg	—
		Panel mount	0.98kg	1.06kg	1.16kg	1.24kg	0.98kg	1.06kg	0.98kg	—
	PMG513	Pig tail	1.22kg	1.30kg	1.40kg	1.48kg	1.22kg	1.30kg	1.22kg	—
		Panel mount	1.20kg	1.28kg	1.38kg	1.46kg	1.20kg	1.28kg	1.20kg	—
	PMG615	Pig tail	1.46kg	1.54kg	1.64kg	1.72kg	1.46kg	1.54kg	1.46kg	—
		Panel mount	1.44kg	1.52kg	1.62kg	1.70kg	1.44kg	1.52kg	1.44kg	—
	PMG715	Pig tail	1.72kg	1.80kg	1.90kg	1.98kg	1.72kg	1.80kg	1.72kg	—
Panel mount		1.70kg	1.78kg	1.88kg	1.96kg	1.70kg	1.78kg	1.70kg	—	

Motor code		MA • MB		PA		ZA		UA		
Type		With electromagnetic brake□42mm		αSTEP (AR)		αSTEP (AZ)		AC servo motor(J4)		
Motor model* 1	3 Sensor	PKE545MC-A1		ARM24SAK		AZM24AK		HG-KR053		
	4 Sensor	—		—		—		—		
Step angle		0.72°		—		—		—		
Resolution	Full/Half	2μm/1μm		1μm(Set to 1000P/R)		1μm(Set to 1000P/R)		22 Bit encoder(4194304P/R)*2		
	Micro step (1/20 On resolution)	0.1μm		—		—		—		
MAX speed		20mm/sec		35mm/sec		40mm/sec		50mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PMG413	Connector None	1.82kg	2.00kg	1.08kg	—	1.08kg	—	1.68kg	—
			PMG513	2.04kg	2.22kg	1.30kg	—	1.30kg	—	1.90kg
	PMG615		2.28kg	2.46kg	1.54kg	—	1.54kg	—	2.14kg	—
PMG715	2.54kg		2.72kg	1.80kg	—	1.80kg	—	2.40kg	—	

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

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

Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

□40

□50

□60

□70

□80

□100

□120

□180

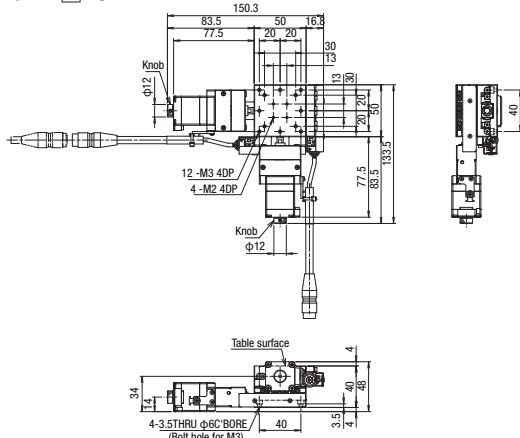
Other

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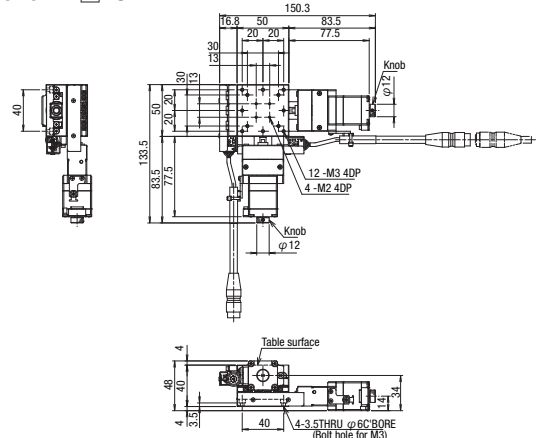
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Dimensions

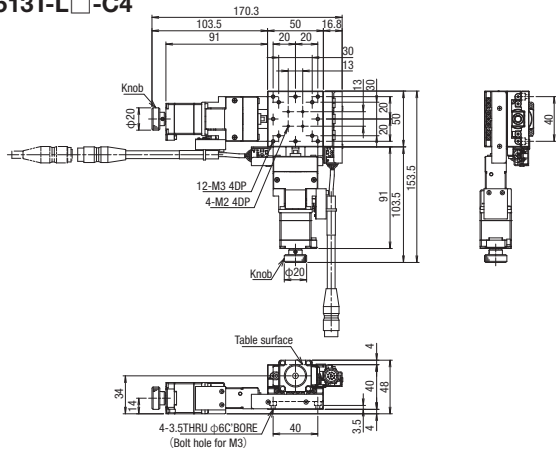
PMG513T-L □ -C



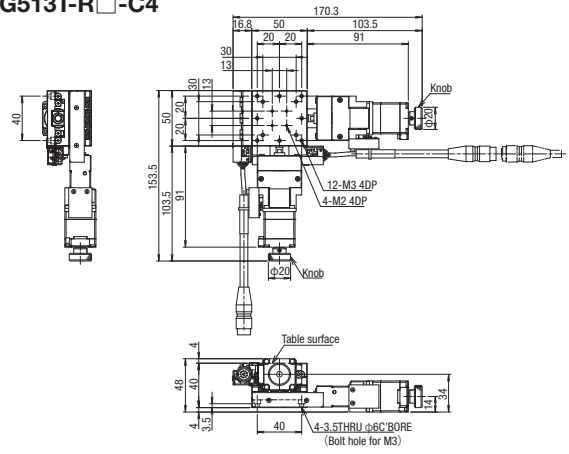
PMG513T-R □ -C



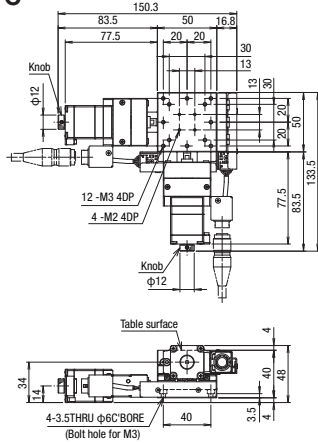
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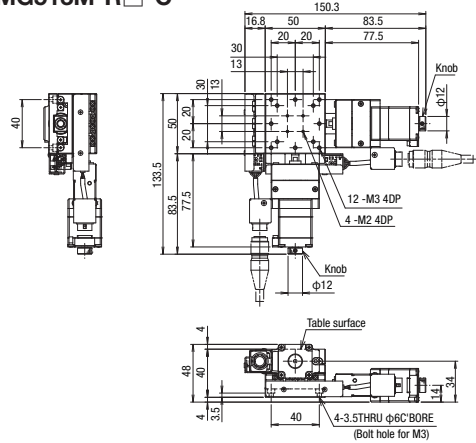
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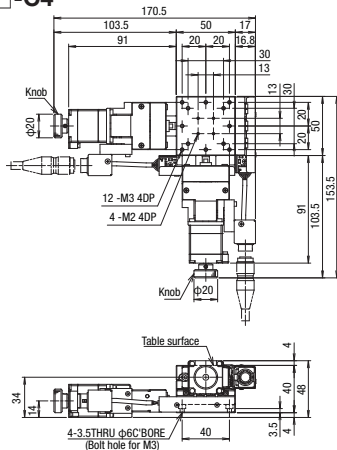
PMG513M-L □ -C



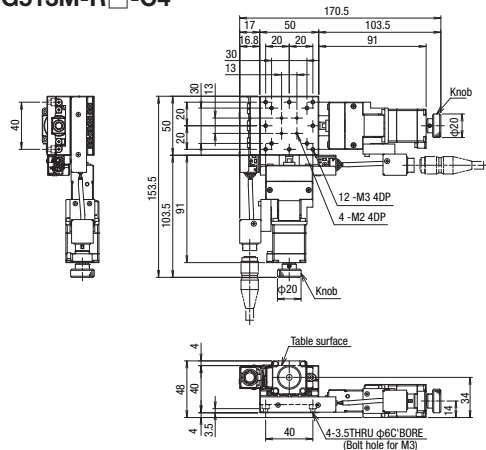
PMG513M-R □ -C



PMG513M-L □ -C4



PMG513M-R □ -C4



Motorized Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

□ 40

□ 50

□ 60

□ 70

□ 80

□ 100

□ 120

□ 180

Other

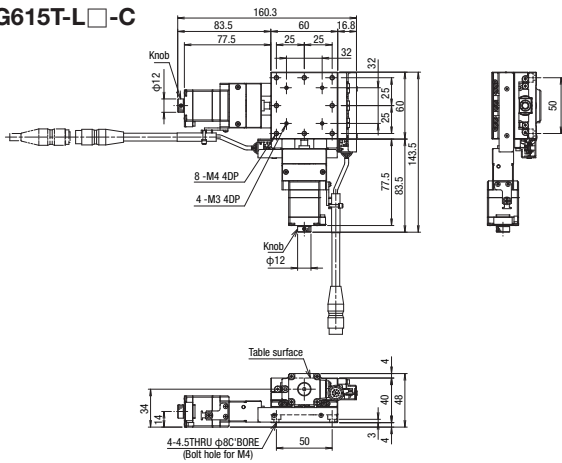
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032

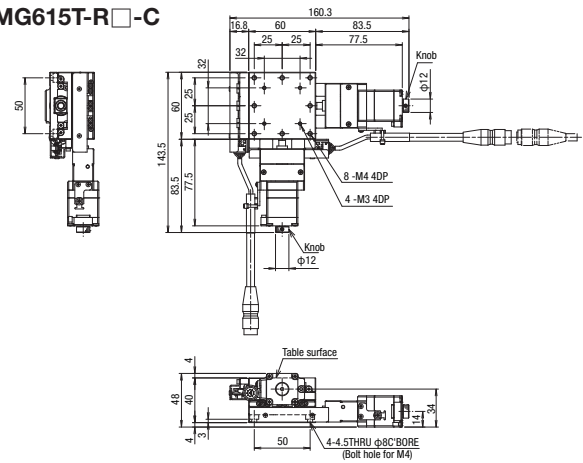
XY-axis Linear Ball Guide: PMG615/PMG715

Dimensions

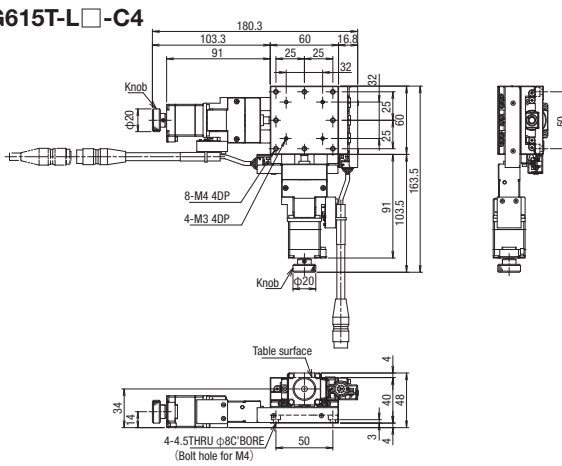
PMG615T-L □ -C



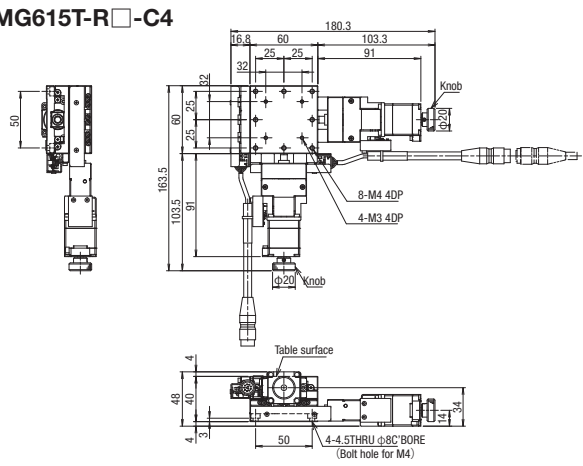
PMG615T-R □ -C



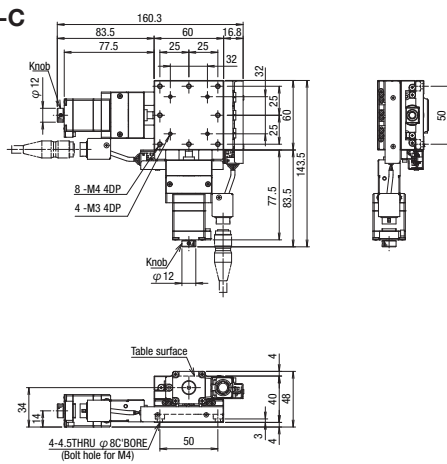
PMG615T-L □ -C4



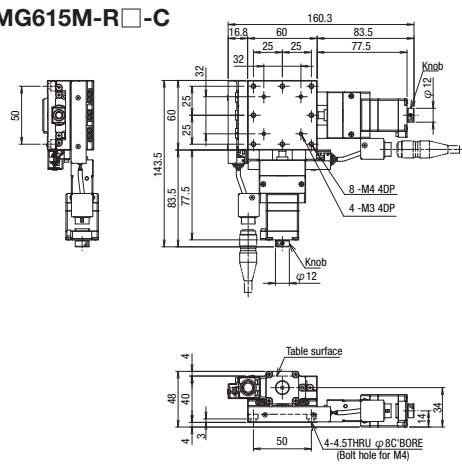
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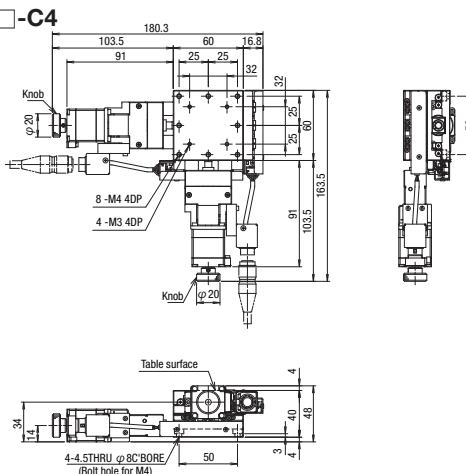
PMG615M-L □ -C



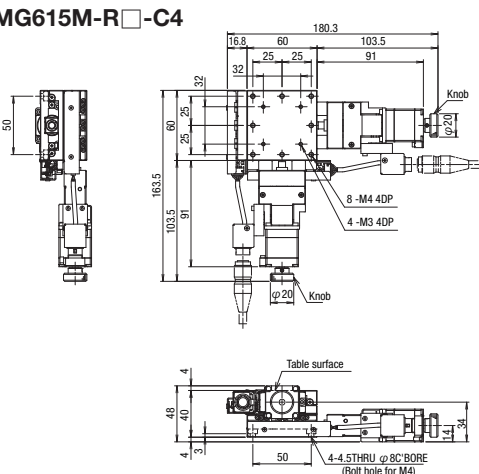
PMG615M-R □ -C



PMG615M-L □ -C4

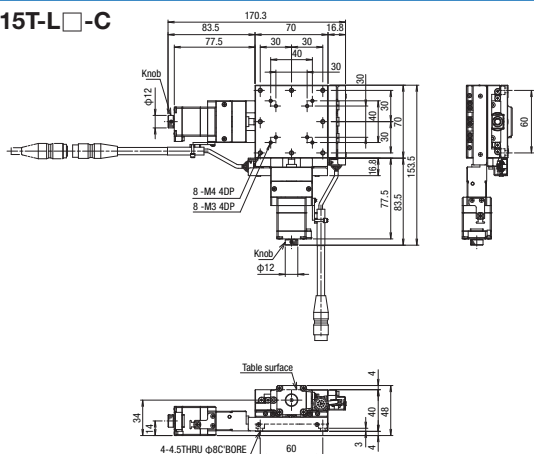


PMG615M-R □ -C4

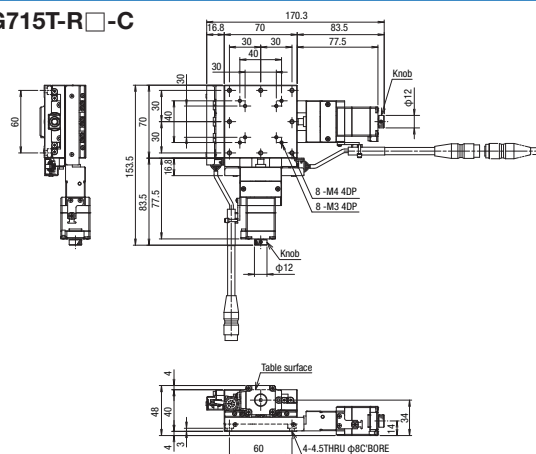


Dimensions

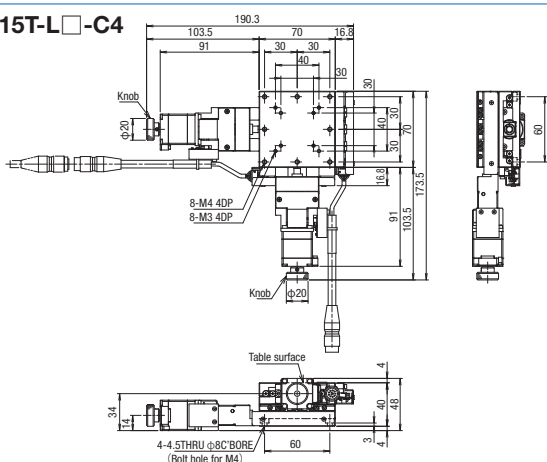
PMG715T-L □ -C



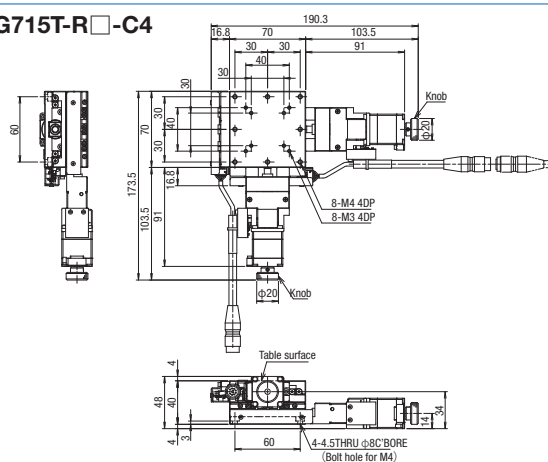
PMG715T-R □ -C



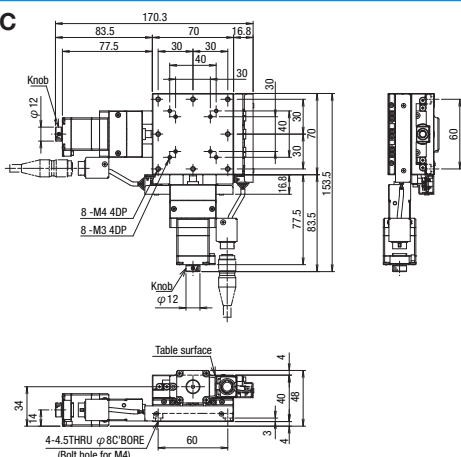
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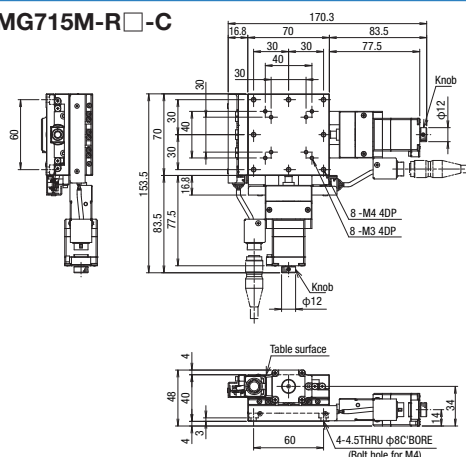
PMG715T-R □ -C4



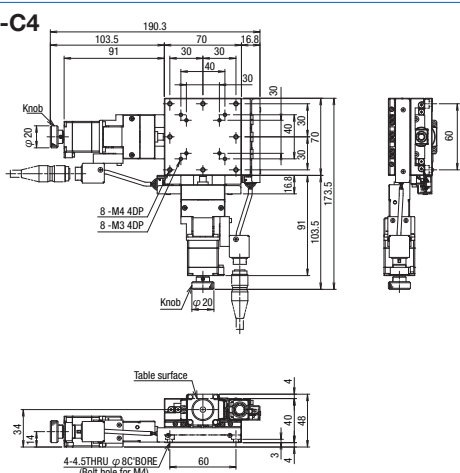
PMG715M-L □ -C



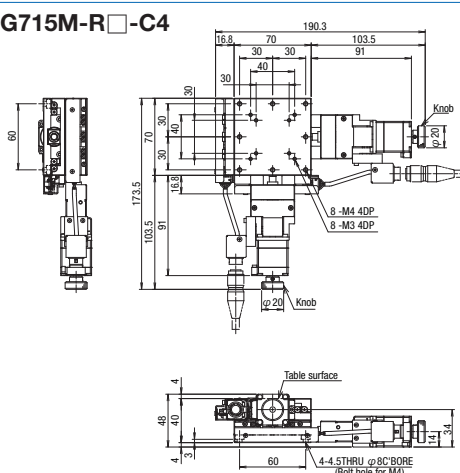
PMG715M-R □ -C



PMG715M-L □ -C4



PMG715M-R □ -C4



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

X-axis Linear Ball Guide: PMG430/PMG530/PMG650/PMG750

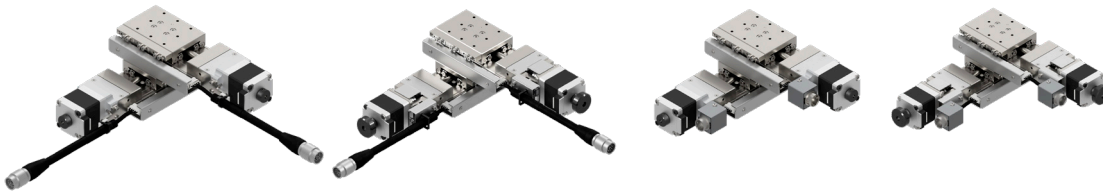
PMG430T-LA-C

PMG430T-LA-C4

PMG430M-LA-C

PMG430M-LA-C4

RoHS



* The picture is an image.

PMG430M-LA-C

*A dedicated hex wrench is included to secure the lower axis of the XY.

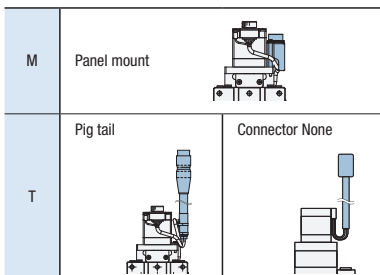
- ▶ Cables P.1-287~
- ▶ Electrical specification P.1-053~

1 Stage table size/Travel distance

Code	size	Travel distance
430	40×60mm	30mm
530	50×70mm	
650	60×100mm	50mm
750	70×110mm	

2 Connector specifications

Code	Specification	Application Motor					
M	Panel mount	C	D	E	T		
T	Pig tail	C	D	E	T		
	Connector None	MA	MB	PA	ZA	UA	



*No common connector: The motor cable and sensor cable are not consolidated into a common connector.

3 Identification

L	Sensor cover location specification	
R	Sensor cover location specification	

4 Sensor logic

A	All N.C.
B	All N.O.
C	N.C.ORG1 and ORG2 are N.O.

*ORG2 (slit origin sensor) is only supported when 4-sensor specification is selected.

5 Motor Option

Code	Specification
C	Standard(5 Phase stepping motor)
D	High-torque
E	High resolution
T	2 Phase stepping motor

*For Code T, 2-phase stepping motor, our controller (DS102/112) cannot be used.

6 Sensor options

Code	Specification	Application Motor								
		C	D	E	T	MA	MB	PA	ZA	UA
Blank	3 Sensor(CWLS,ORG1,CCWLS)	●	●	●	●	●	●	●	●	●
4	4 Sensor(CWLS,ORG1,CCWLS,ORG2)	●	●	●	●	●	●	●	●	●

7 Cable option

Code	Specification	Cable type	For 2-phase motor Cable type
Blank	Cable is not included (Standard)	—	—
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

* See pages 1-287 onwards for cable details.

* When connecting to our controllers (DS102/112), please select from codes A, C, F, or H.

* One end loose position to only stage opposite side.

* For CodeT, 2-phase stepping, only one end rose (B, D, G, J)is supported.

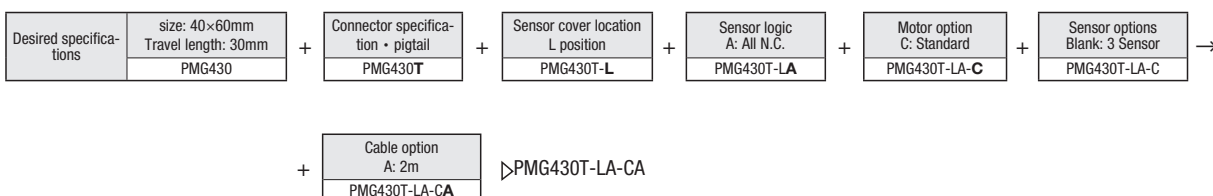
* For 4 sensors, only the Code:Blank(no-cable) option is available.

* For 4 sensors, specify the 4-sensor compatible cable.(P.1-287)

products list [5] Motor [7] Cable/Driver combination

Code	Driver (amplifier) cable	Blank			3A			5A			
		Motor	3	5	MA • MB	PA • ZA	UA	MA • MB	PA • ZA	UA	
Cable	Sensor	2m	3m	5m	3m			5m			
	Motor	None						3m			
	Electromagnetic brake	None						3m	—	5m	—
Driver (Amplifier)	Encoder	None						—	—	3m	—
		None						Available			

Selection example



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

035

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

036

Specification

		SPEC								
Model		PMG430□-LA-C		PMG530□-LA-C		PMG650□-LA-C		PMG750□-LA-C		
(Opposite hand)		PMG430□-RA-C		PMG530□-RA-C		PMG650□-RA-C		PMG750□-RA-C		
Mechanical specification	Travel distance	30mm				50mm				
	Stage table size	40×60mm		50×70mm		60×100mm		70×110mm		
	Feed screw (Ball screw)	φ6 Lead 1								
	Guide	Linear Ball Guide								
	Main material— Surface finishing	Stainless—Electroless nickel plating								
Weight	Pig tail	1.40kg	1.72kg	2.49kg	2.92kg					
	Panel mount	1.38kg	1.70kg	2.47kg	2.90kg					
Accuracy specification	Resolution/Pulse	2μm(Full)/1μm(Half)								
	MAX speed	10mm/sec								
	Load capacity	Panel mount	9.25kgf [90.7N]	9.06kgf [88.8N]	8.61kgf [84.4N]	8.35kgf [81.8N]				
	Squareness	10μm/Full stroke								
Sensor	Limit sensor	Available								
	Origin sensor (ORG1)	Available								
	Slit origin sensor(ORG2)	- *When selecting the 4 sensor option: Available								
Provided screw (Hexagon-headed bolt)		4 of M3-8				4 of M4-8				
Single axis accuracy specification	Uni-directional positioning accuracy	12μm								
	Repeatability positioning accuracy	±0.5μm								
	Lost motion	1μm								
	Backlash	0.5μm								
	Straightness	2μm								
	Pitching/Yawing	20"/15"								

* The SPEC varies depending on the motor.
 Note : PMG430,530,650,750 includes spacer for XY mouting.

Resolution • MAX speed • Weight

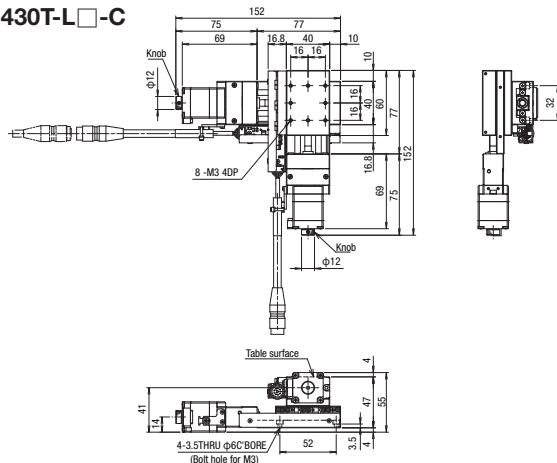
Motor code		C		D		E		T		
Type		Standard		High-torque		High resolution		2 Phase stepping motor		
Motor model* 1	3 Sensor	C005C-90215P-1		PK525HPB-C1		PK523HPMB-C1		SJA28N32-0674B-01		
	4 Sensor	PK523HPB-C15		PK525HPB		PK523HPMB		—		
Step angle		0.72°				0.36°		1.8°		
Resolution	Full/Half	2μm/1μm				1μm/0.5μm		5μm/2.5μm		
	Micro step (1/20 On resolution)	0.1μm				0.05μm		—		
MAX speed		10mm/sec		30mm/sec		25mm/sec		10mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PMG430	Pig tail	1.40kg	1.48kg	1.58kg	1.66kg	1.40kg	1.48kg	1.40kg	—
		Panel mount	1.38kg	1.46kg	1.56kg	1.64kg	1.38kg	1.46kg	1.38kg	—
	PMG530	Pig tail	1.72kg	1.80kg	1.90kg	1.98kg	1.72kg	1.80kg	1.72kg	—
		Panel mount	1.70kg	1.78kg	1.88kg	1.96kg	1.70kg	1.78kg	1.70kg	—
	PMG650	Pig tail	2.49kg	2.57kg	2.67kg	2.75kg	2.49kg	2.57kg	2.49kg	—
		Panel mount	2.47kg	2.55kg	2.65kg	2.73kg	2.47kg	2.55kg	2.47kg	—
	PMG750	Pig tail	2.92kg	3.00kg	3.10kg	3.18kg	2.92kg	3.00kg	2.92kg	—
		Panel mount	2.90kg	2.98kg	3.08kg	3.16kg	2.90kg	2.98kg	2.90kg	—
	Motor code		MA • MB		PA		ZA		UA	
Type		With electromagnetic brake □ 42mm		αSTEP (AR)		αSTEP (AZ)		AC servo motor(J4)		
Motor model* 1	3 Sensor	PKE545MC-A1		ARM24SAK		AZM24AK		HG-KR053		
	4 Sensor	—		—		—		—		
Step angle		0.72°		—		—		—		
Resolution	Full/Half	2μm/1μm		—		—		—		
	Micro step (1/20 On resolution)	0.1μm		1μm(Set to 1000P/R)		1μm(Set to 1000P/R)		22 Bit encoder(4194304P/R)*2		
MAX speed		20mm/sec		35mm/sec		40mm/sec		50mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PMG430	Connector None	2.22kg	2.40kg	1.48kg	—	1.48kg	—	2.08kg	—
			2.54kg	2.72kg	1.80kg	—	1.80kg	—	2.40kg	—
	PMG650	None	3.31kg	3.49kg	2.57kg	—	2.57kg	—	3.17kg	—
			3.74kg	3.92kg	3.00kg	—	3.00kg	—	3.60kg	—

*1 Model numbers include Suruga Seiki's proprietary management codes.
 *2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

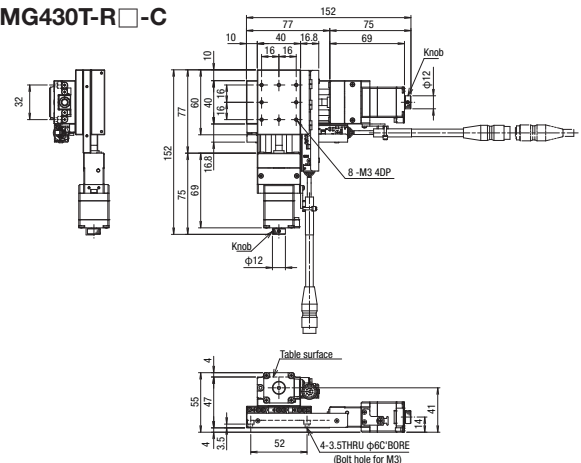
XY-axis Linear Ball Guide: PMG430/PMG530

Dimensions

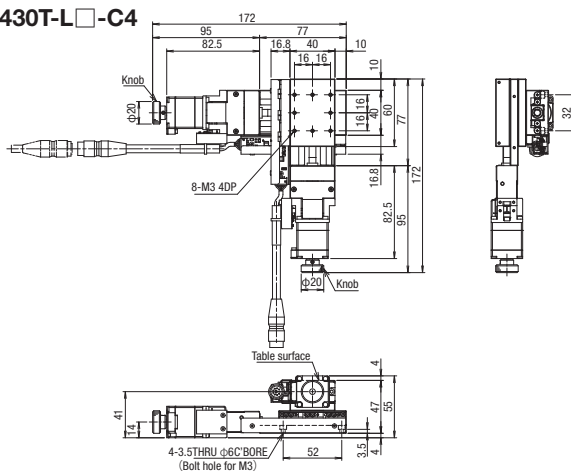
PMG430T-L□-C



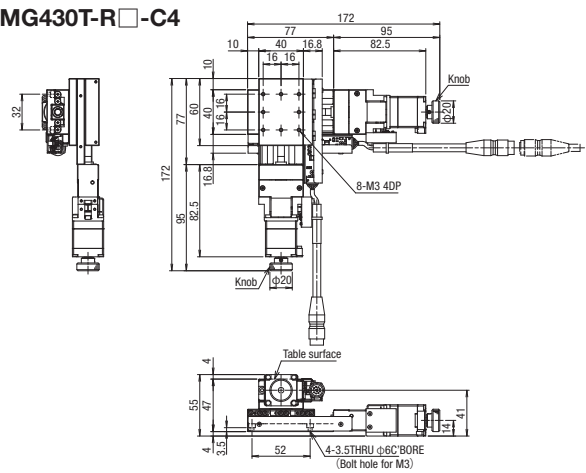
PMG430T-R□-C



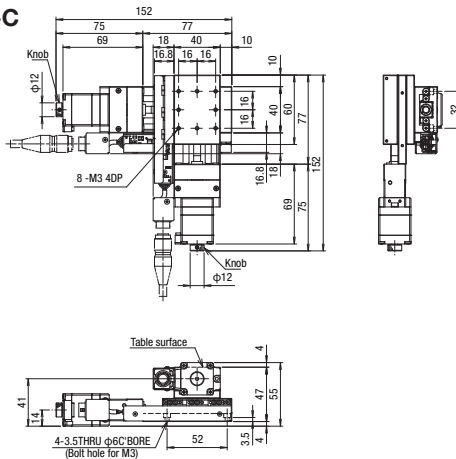
PMG430T-L□-C4



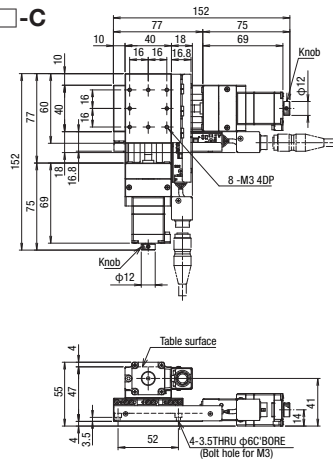
PMG430T-R□-C4



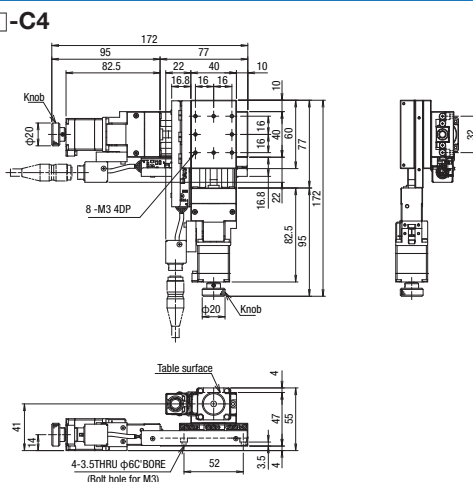
PMG430M-L□-C



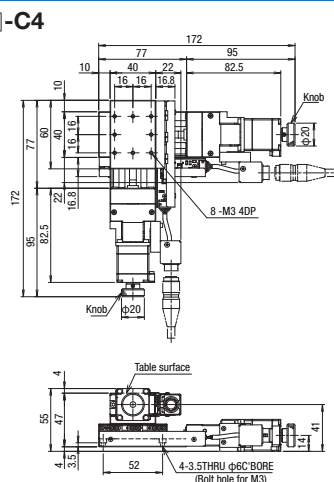
PMG430M-R□-C



PMG430M-L□-C4

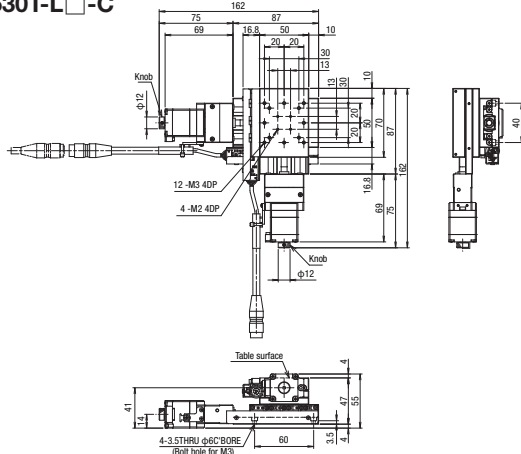


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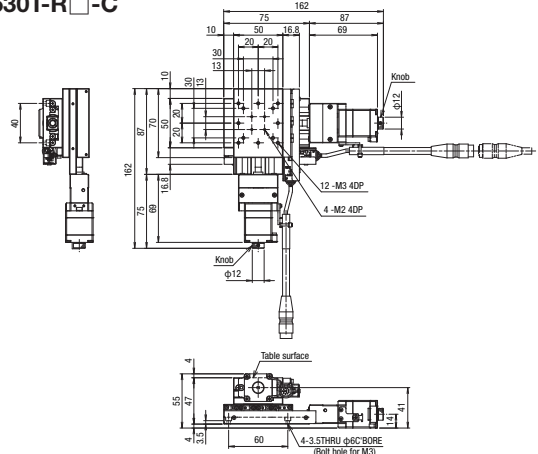


Dimensions

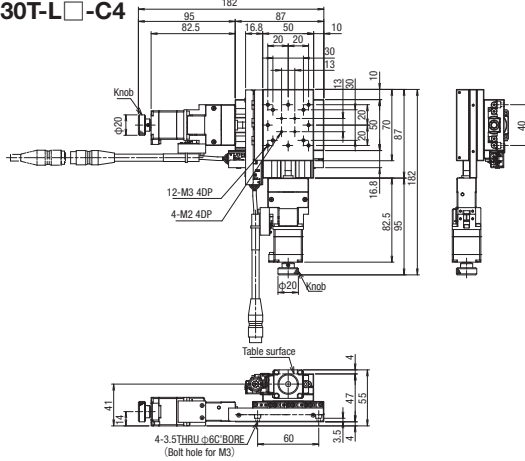
PMG530T-L □ -C



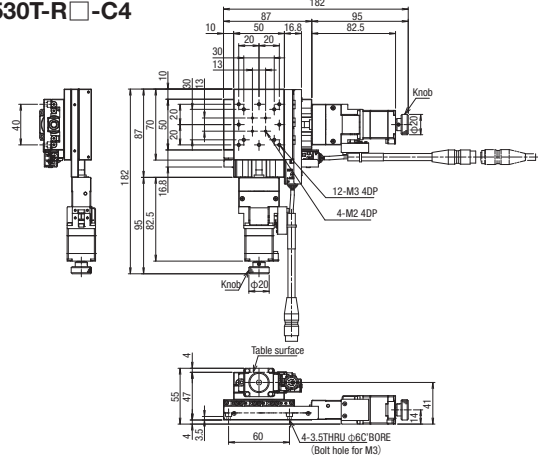
PMG530T-R □ -C



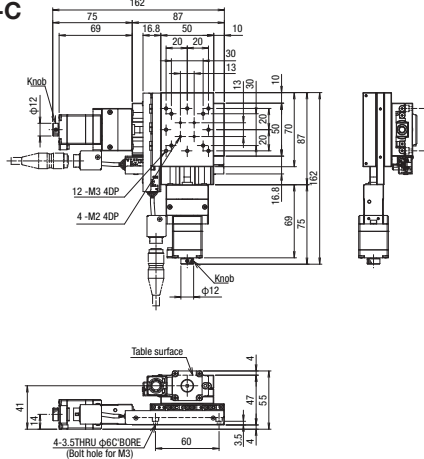
PMG530T-L □ -C4



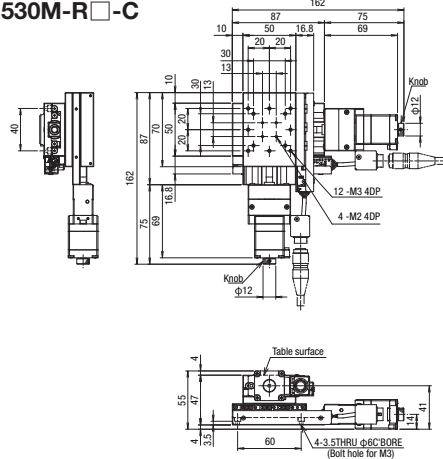
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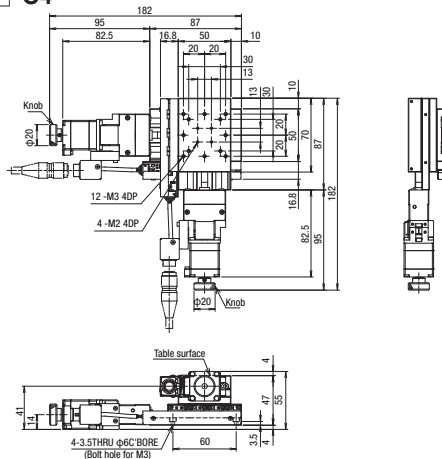
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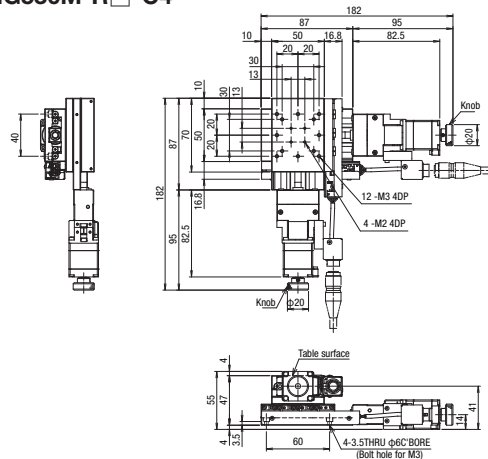
PMG530M-R □ -C



PMG530M-L □ -C4



PMG530M-R □ -C4



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

XXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

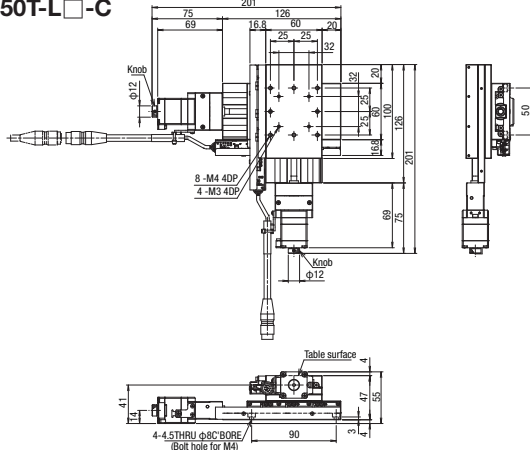
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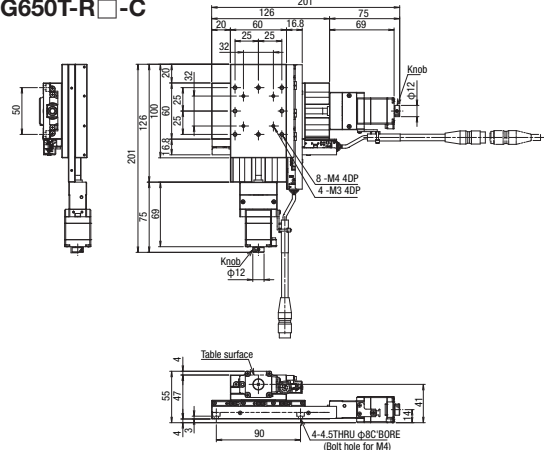
XY-axis Linear Ball Guide: PMG650/PMG750

Dimensions

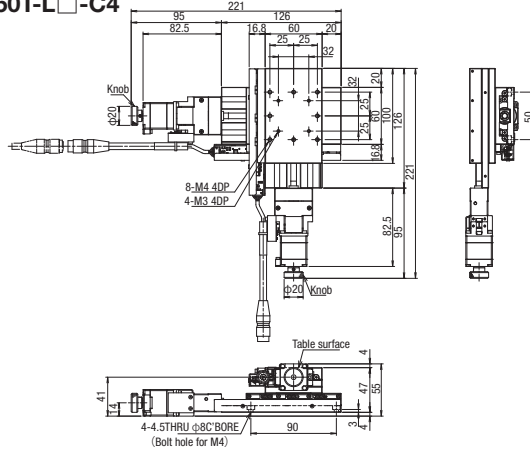
PMG650T-L □ -C



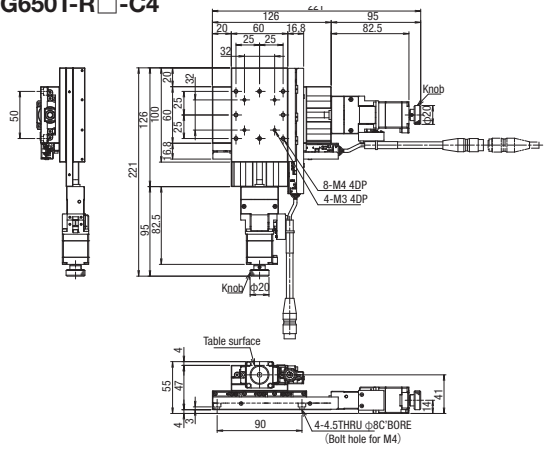
PMG650T-R □ -C



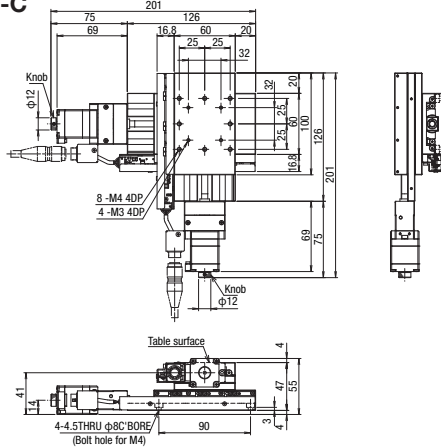
PMG650T-L □ -C4



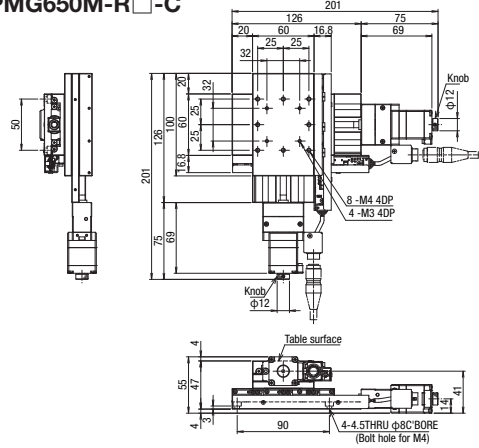
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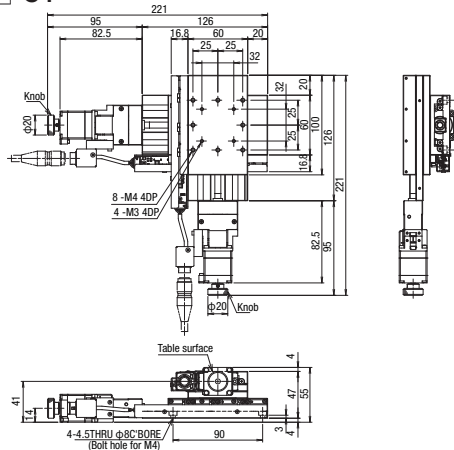
PMG650M-L □ -C



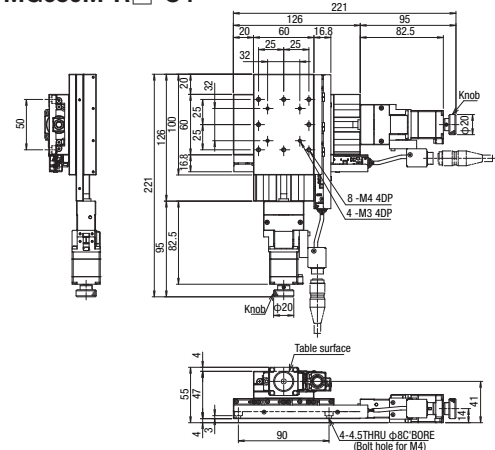
PMG650M-R □ -C



PMG650M-L □ -C4



PMG650M-R □ -C4



X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross Roller

Slide Guide

□40

□50

□60

□70

□80

□100

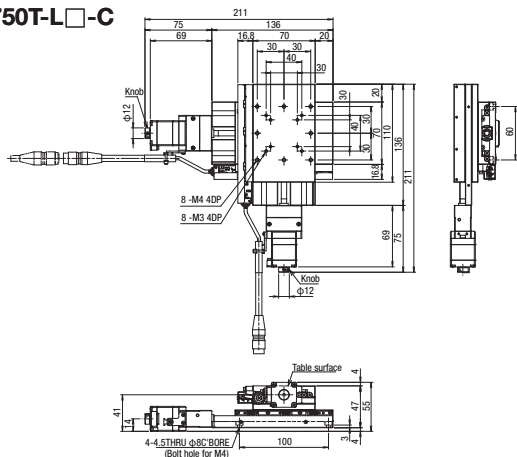
□120

□180

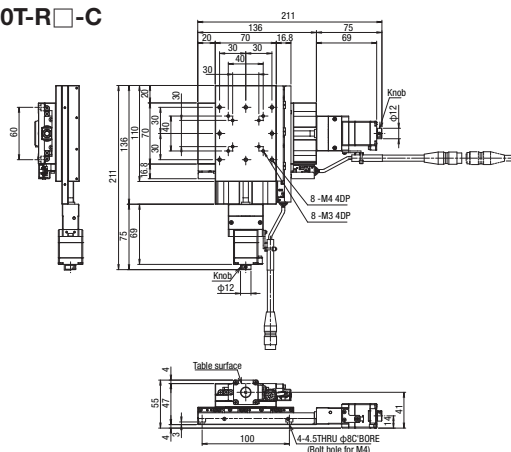
Other

Dimensions

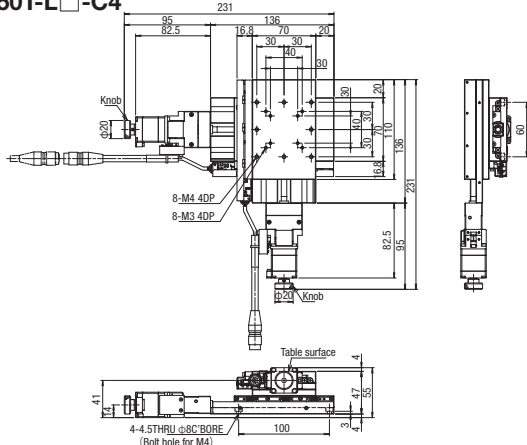
PMG750T-L □ -C



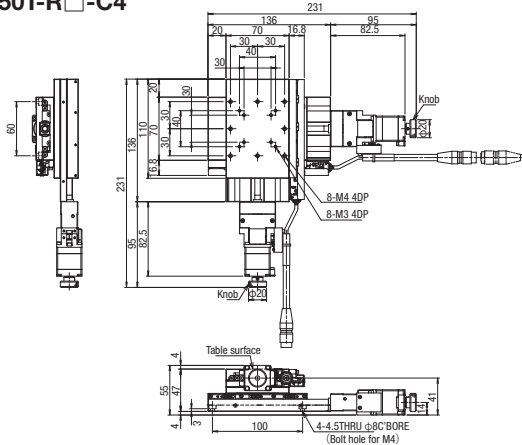
PMG750T-R □ -C



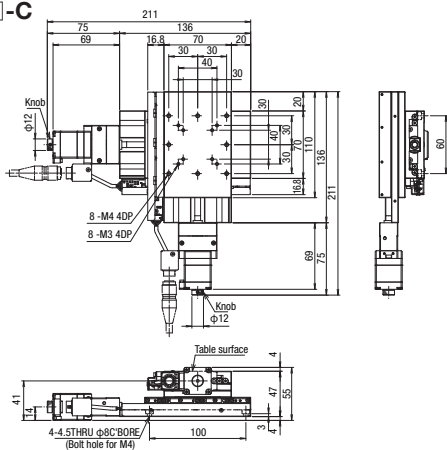
PMG750T-L □ -C4



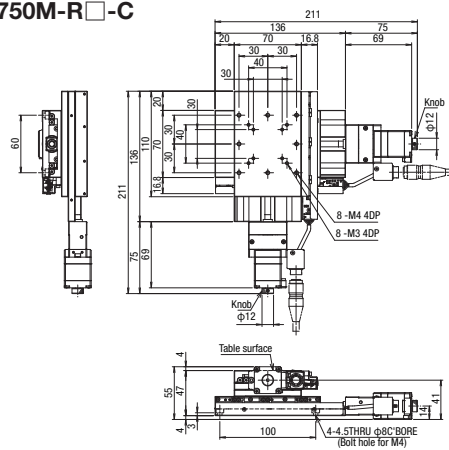
PMG750T-R □ -C4



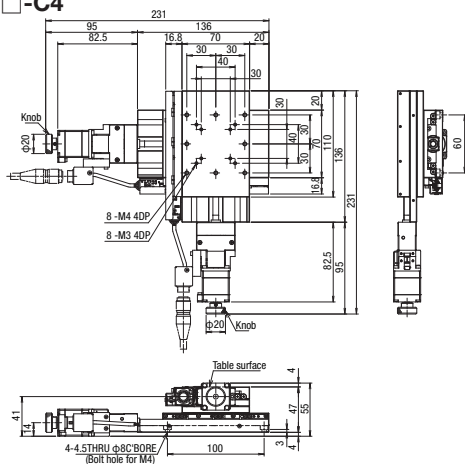
PMG750M-L □ -C



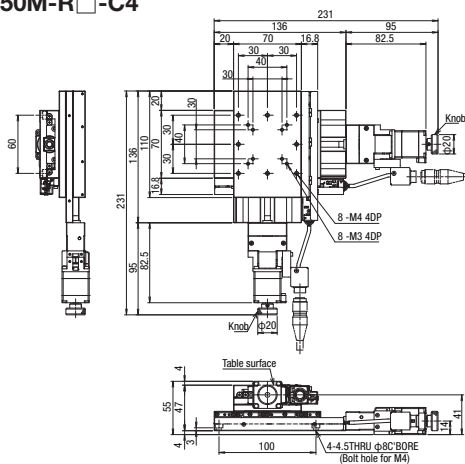
PMG750M-R □ -C



PMG750M-L □ -C4



PMG750M-R □ -C4



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

□ 40

□ 50

□ 60

□ 70

□ 80

□ 100

□ 120

□ 180

Other

1

040

X-axis Linear Ball Guide: PZG413/PZG513/PZG615/PZG715

PZG413T-LA-C



PZG413T-LA-C4



PZG413M-LA-C



PZG413M-LA-C4



RoHS

* The picture is an image.

PZG413M-LA-C

1 2 3 4 5 5 6 6 7 7

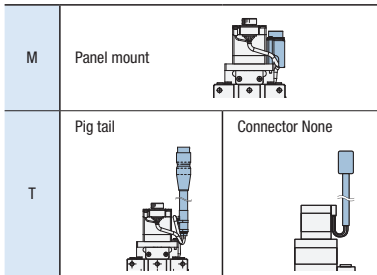
- 🔗 Cables P.1-287~
- 🔗 Electrical specification P.1-053~

1 Stage table size/Travel distance

Code	size	Travel distance
413	□40mm	13mm
513	□50mm	
615	□60mm	15mm
715	□70mm	

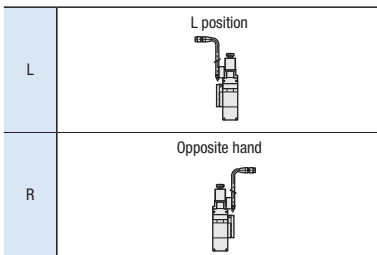
2 Connector specifications

Code	Specification	Application Motor					
M	Panel mount	C	D	E	T		
T	Pig tail	C	D	E	T		
	Connector None	MA	MB	PA	ZA	UA	



*No common connector: The motor cable and sensor cable are not consolidated into a common connector.

3 Sensor cover location



4 Sensor logic

A	All N.C.
B	All N.O.
C	N.C.ORG1 and ORG2 are N.O.

*ORG2 (slit origin sensor) is only supported when 4-sensor specification is selected.

5 Motor option

Code	Specification
C	Standard(5 Phase stepping motor)
D	High-torque
E	High resolution
T	2 Phase stepping motor

*For Code T, 2-phase stepping motor, our controller (DS102/112) cannot be used.

6 Sensor options

Code	Specification	Application Motor								
		C	D	E	T	MA	MB	PA	ZA	UA
Blank	3 Sensor(CWLS,ORG1,CCWLS)	●	●	●	●	●	●	●	●	●
4	4 Sensor(CWLS,ORG1,CCWLS,ORG2)	●	●	●	●	●	●			

7 Cable option

Code	Specification	Cable type	For 2-phase motor Cable type
Blank	Cable is not included (Standard)	—	—
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

- * See pages 1-287 onwards for cable details.
- * When connecting to our controllers (DS102/112), please select from codes A, C, F, or H.
- * One end loose position to only stage opposite side.
- * For Code T, 2-phase stepping, only one end rose (B, D, G, J) is supported.
- * For 4 sensors, only the Code:Blank(no-cable) option is available.
- * For 4 sensors, specify the 4-sensor compatible cable.(P.1-287)

5 Motor option

Code	Specification
MA	With electromagnetic brake(□42_100V)
MB	With electromagnetic brake(□42_200V)
PA	αSTEP (AR Series)
ZA	αSTEP (AZ Series)
UA	Servo motor(J4)

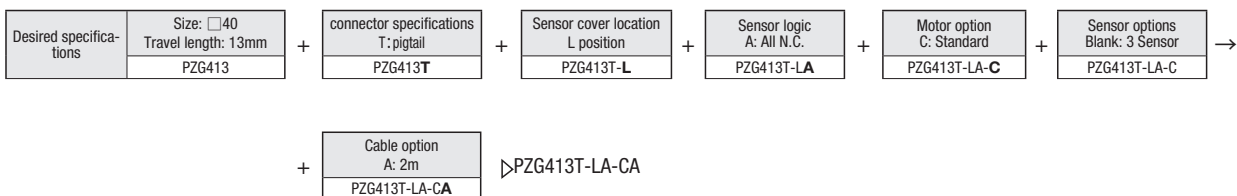
7 Cable option (Motor: MA, MB, PA, ZA, EA, UG, UA)

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 (3m Cable Set)
5A	Driver Amplifier (5m Cable Set)

products list [5] Motor [7] Cable/Driver combination

Code	Driver (amplifier) cable	Blank	3			5A				
			MA · MB/PA · ZA/UA	MA · MB PA · ZA	UA	MA · MB PA · ZA	UA			
Cable	Sensor	2m	3m	5m	3m			5m		
	Motor				3m			5m		
	Electromagnetic brake	None			3m	—	—	5m	—	—
	Encoder	None			—	—	3m	—	—	5m
Driver (Amplifier)		None			Available					

Selection example



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

042

Specification

		SPEC				
Model		PZG413□-LA- C	PZG513□-LA- C	PZG615□-LA- C	PZG715□-LA- C	
(Opposite hand)		PZG413□-RA- C	PZG513□-RA- C	PZG615□-RA- C	PZG715□-RA- C	
Mechanical specification	Travel distance	13mm		15mm		
	Stage table size	40×40mm	50×50mm	60×60mm	70×70mm	
	Feed screw (Ball screw)	φ6 Lead 1				
	Guide	Linear Ball Guide				
Accuracy specification	Main material- Surface finishing	Stainless-Electroless nickel plating				
	Weight	Pig tail	0.58kg	0.77kg	0.91kg	1.12kg
		Panel mount	0.57kg	0.76kg	0.90kg	1.11kg
Sensor specification	Resolution/Pulse	2μm(Full)/1μm(Half)				
	MAX speed	10mm/sec				
	Load capacity	5kgf [49N]				
	Limit sensor	Available				
	Origin sensor (ORG1)	Available				
	Slit origin sensor(ORG2)	- *When selecting the 4 sensor option: Available				
	Provided screw (Hexagon-headed bolt)	4 of M3-10		4 of M4-12	4 of M3-12	
Single axis accuracy specification	Uni-directional positioning accuracy	6μm				
	Repeatability positioning accuracy	±0.5μm				
	Lost motion	1μm				
	Backlash	0.5μm				
	Straightness	1μm				
	Pitching/Yawing	15"/10"				

* The SPEC varies depending on the motor.

Resolution · MAX speed · Weight

Motor code		C		D		E		T		
Type		Standard		High-torque		High resolution		2 Phase stepping motor		
Motor model* 1	3 Sensor	C005C-90215P-1		PK525HPB-C1		PK523HPMB-C1		SJA28N32-0674B-01		
	4 Sensor	PK523HPB-C15		PK525HPB		PK523HPMB		—		
Step angle		0.72°		0.36°		1.8°		—		
Resolution	Full/Half	2μm/1μm		1μm/0.5μm		5μm/2.5μm		—		
	Micro step (1/20 On resolution)	0.1μm		0.05μm		—		—		
MAX speed		10mm/sec		30mm/sec		25mm/sec		10mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PZG413	Pig tail	0.58kg	0.62kg	0.67kg	0.71kg	0.58kg	0.62kg	0.58kg	—
		Panel mount	0.57kg	0.61kg	0.66kg	0.70kg	0.57kg	0.61kg	0.57kg	—
	PZG513	Pig tail	0.77kg	0.81kg	0.86kg	0.90kg	0.77kg	0.81kg	0.77kg	—
		Panel mount	0.76kg	0.80kg	0.85kg	0.89kg	0.76kg	0.80kg	0.76kg	—
	PZG615	Pig tail	0.91kg	0.95kg	1.00kg	1.04kg	0.91kg	0.95kg	0.91kg	—
		Panel mount	0.90kg	0.94kg	0.99kg	1.03kg	0.90kg	0.94kg	0.90kg	—
	PZG715	Pig tail	1.12kg	1.16kg	1.21kg	1.25kg	1.12kg	1.16kg	1.12kg	—
Panel mount		1.11kg	1.15kg	1.20kg	1.24kg	1.11kg	1.15kg	1.11kg	—	
Motor code		MA · MB		PA		ZA		UA		
Type		With electromagnetic brake □ 42mm		αSTEP (AR)		αSTEP (AZ)		AC servo motor(J4)		
Motor model* 1	3 Sensor	PKE545MC-A1		ARM24SAK		AZM24AK		HG-KR053		
	4 Sensor	—		—		—		—		
Step angle		0.72°		—		—		—		
Resolution	Full/Half	2μm/1μm		1μm(Set to 1000P/R)		1μm(Set to 1000P/R)		22 Bit encoder(4194304P/R)*2		
	Micro step (1/20 On resolution)	0.1μm		—		—		—		
MAX speed		20mm/sec		35mm/sec		40mm/sec		50mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PZG413	Connector None	0.99kg	1.08kg	0.62kg	—	0.62kg	—	0.92kg	—
			1.18kg	1.27kg	0.81kg	—	0.81kg	—	1.11kg	—
	PZG615	None	1.32kg	1.41kg	0.95kg	—	0.95kg	—	1.25kg	—
	PZG715		1.53kg	1.62kg	1.16kg	—	1.16kg	—	1.46kg	—

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

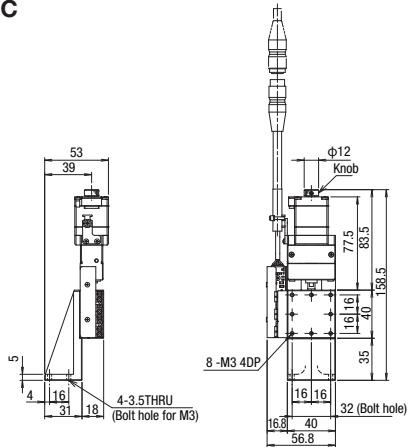
*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

Motorized Stage

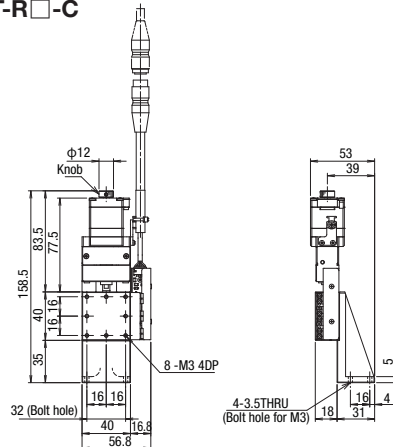
Z-axis Linear Ball Guide: PZG413/PZG513

Dimensions

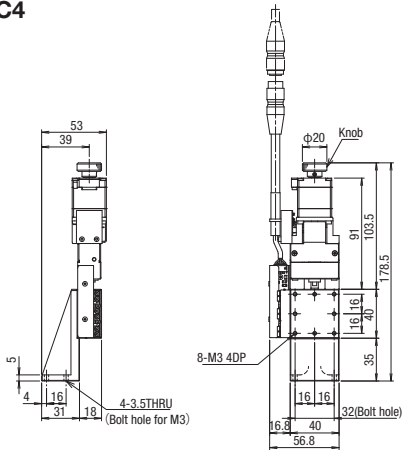
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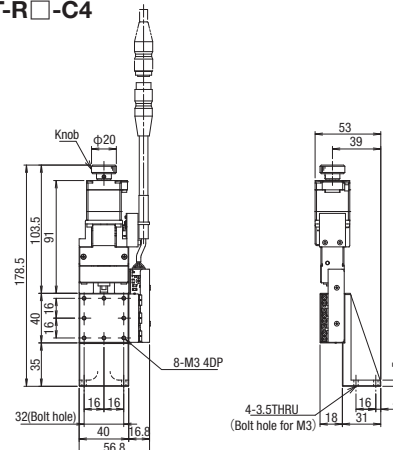
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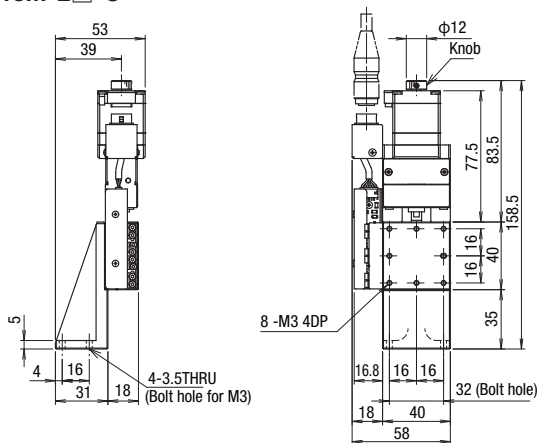
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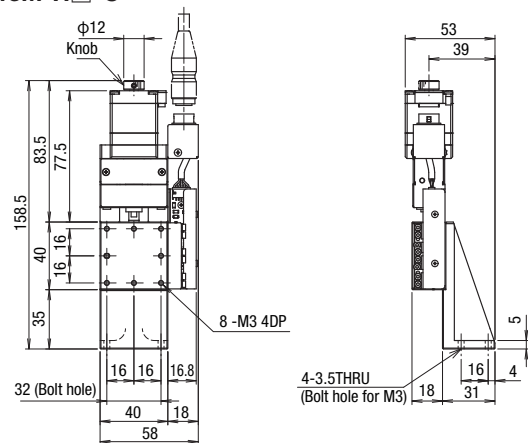
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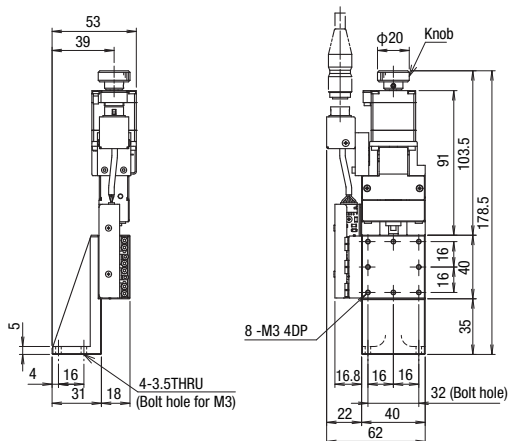
PZG413M-L□-C



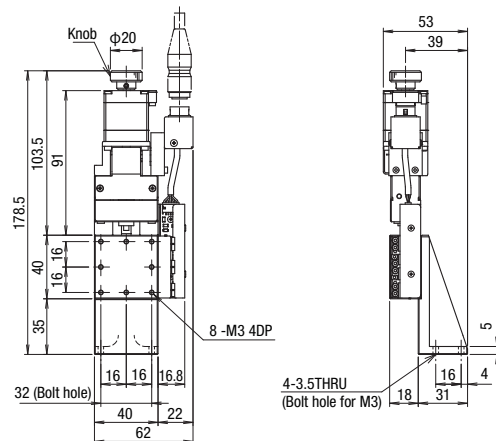
PZG413M-R□-C



PZG413M-L□-C4



PZG413M-R□-C4



Motorized Stage

X

XY

Z

Horizontal Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT Linear Ball

PG Linear Ball

KXG/KXL Linear Ball

Cross Roller

Slide Guide

40

50

60

70

80

100

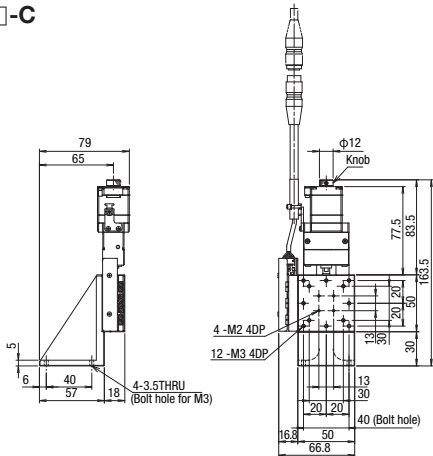
120

180

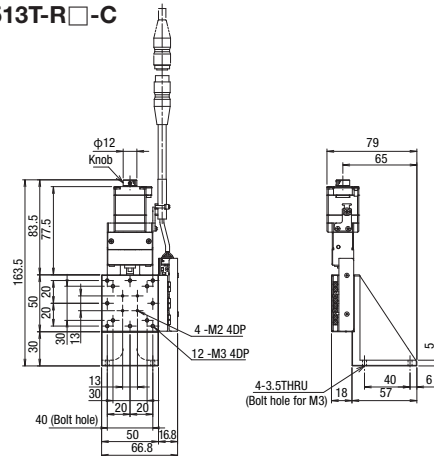
Other

Dimensions

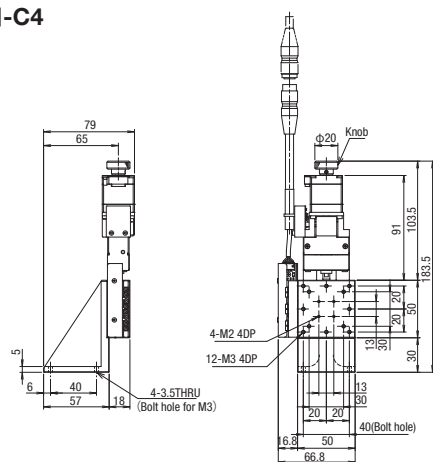
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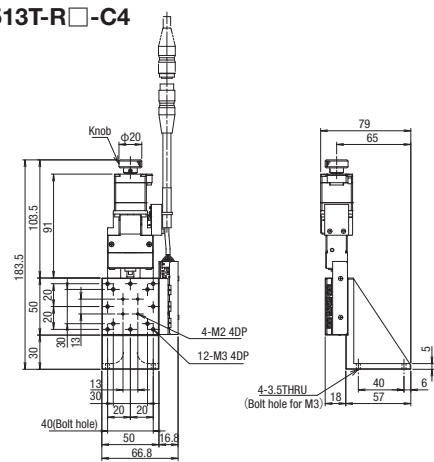
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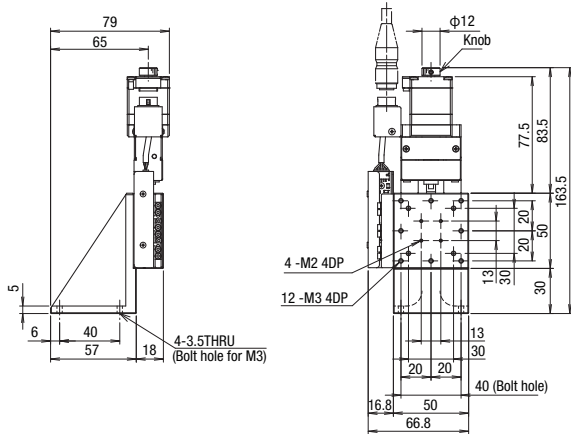
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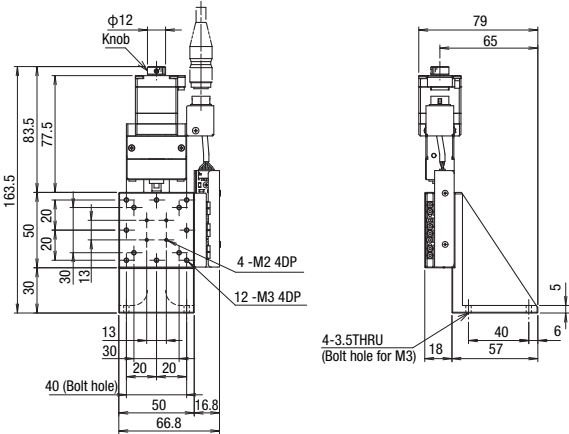
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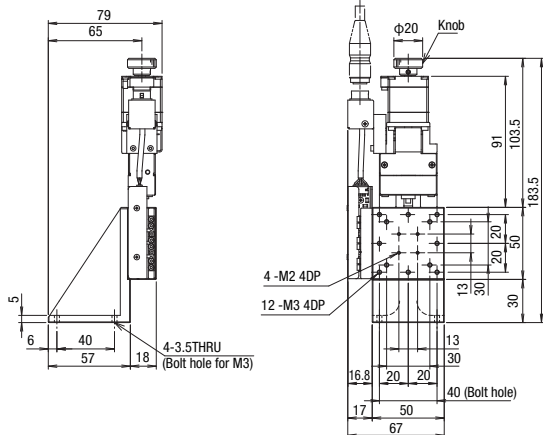
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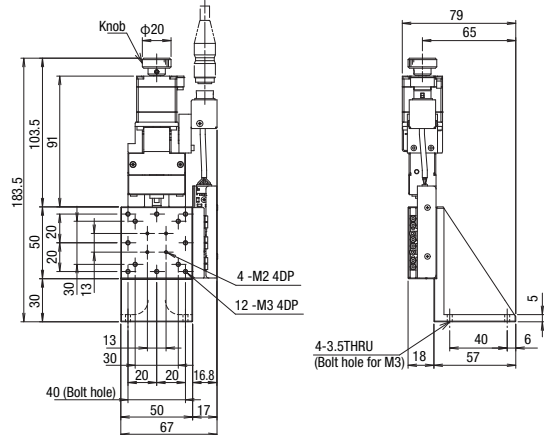
PZG513M-R□-C



PZG513M-L□-C4



PZG513M-R□-C4



Motorizec Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

044

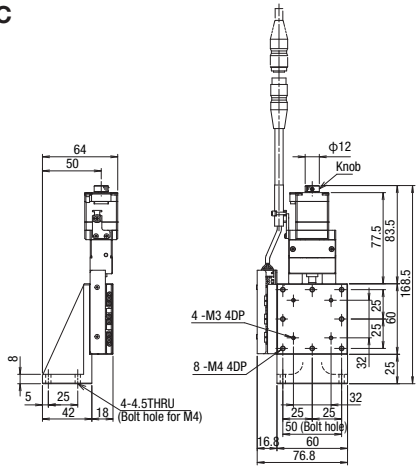
Motorized Stage

Z-axis Linear Ball Guide: PZG615/PZG715

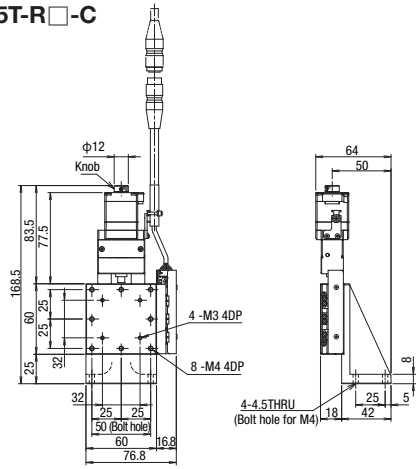
Motorized Stage

Dimensions

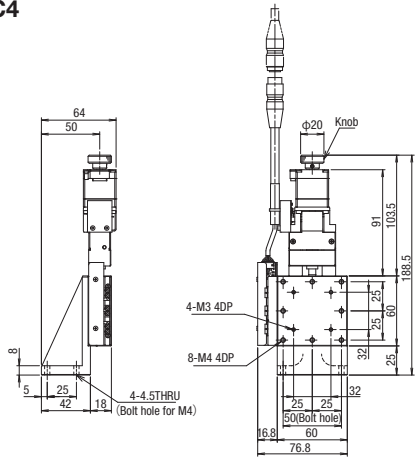
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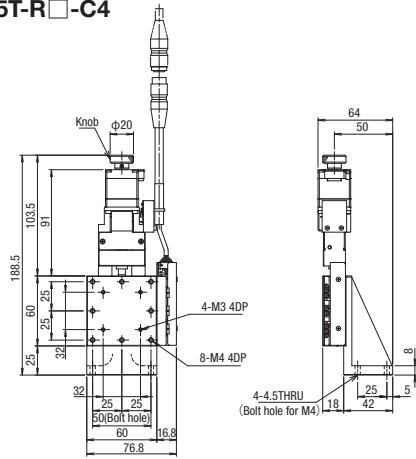
PZG615T-R□-C



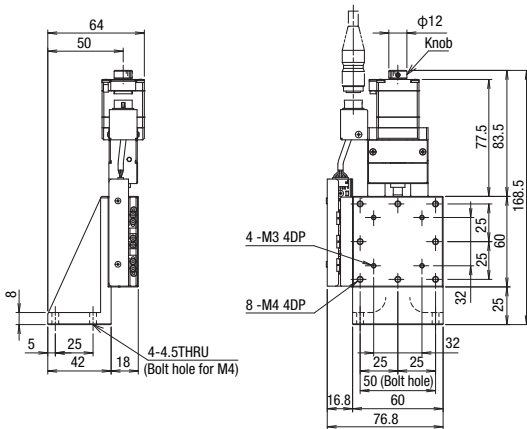
PZG615T-L□-C4



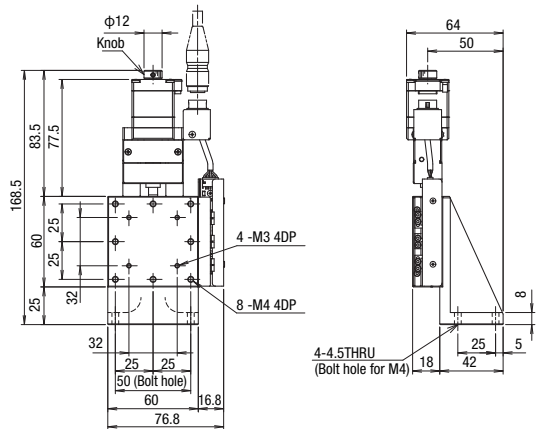
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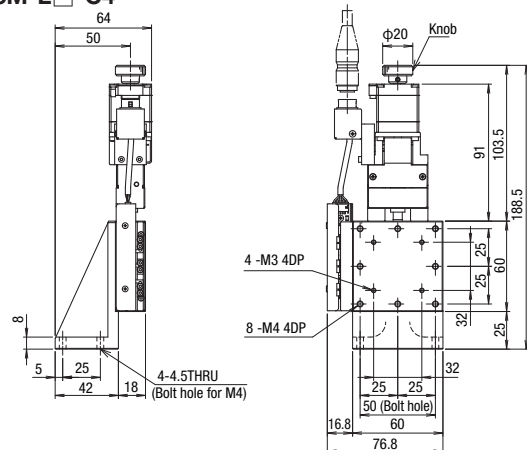
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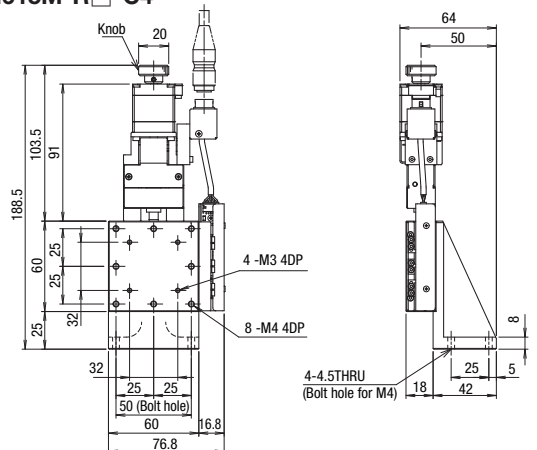
PZG615M-R□-C



PZG615M-L□-C4



PZG615M-R□-C4



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

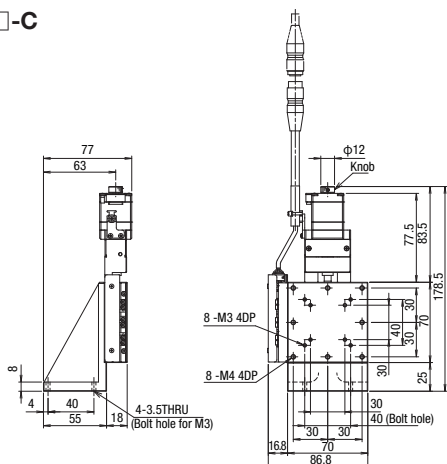
□120

□180

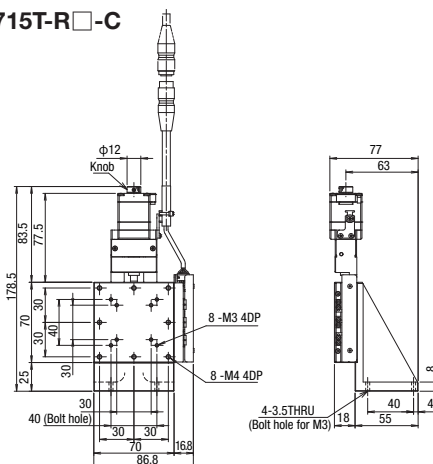
Other

Dimensions

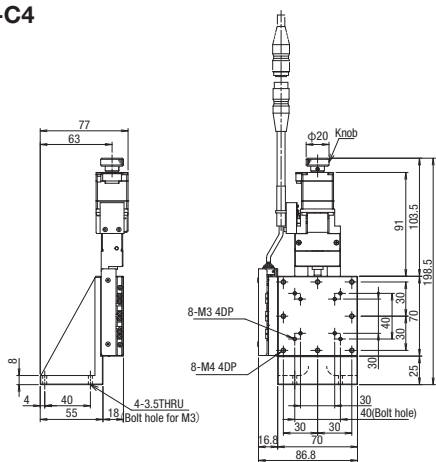
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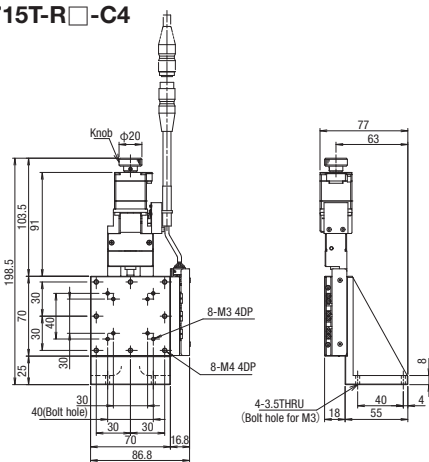
PZG715T-R□-C



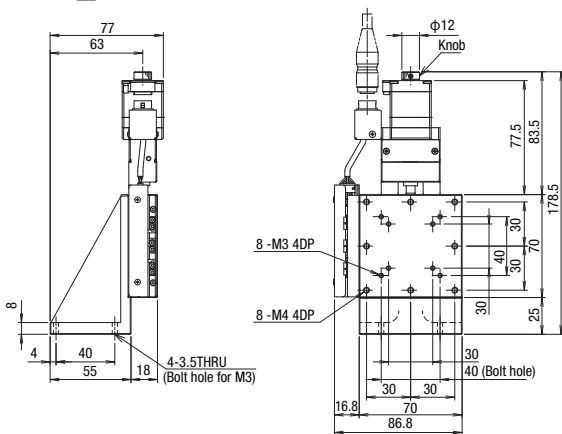
PZG715T-L□-C4



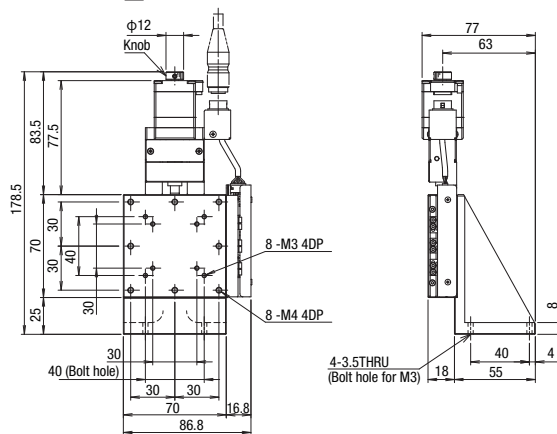
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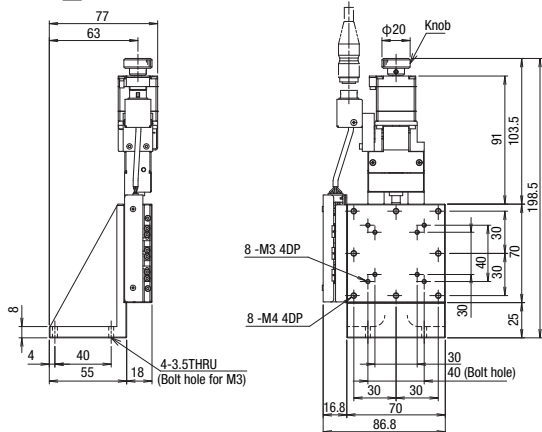
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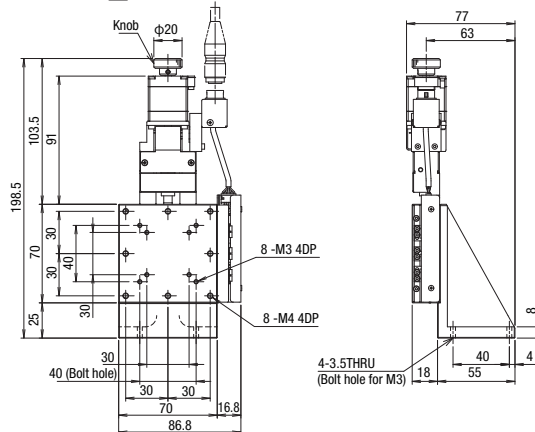
PZG715M-R□-C



PZG715M-L□-C4



PZG715M-R□-C4



Motorizec Stage

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

□40

□50

□60

□70

□80

□100

□120

□180

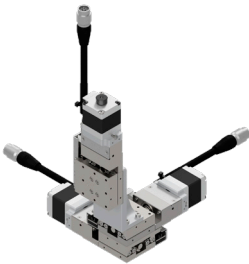
Other

1

046

XYZ-axis Linear Ball Guide: PMZG413/PMZG513/PMZG615/PMZG715

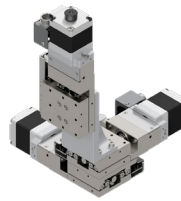
PMZG413T-LA-C



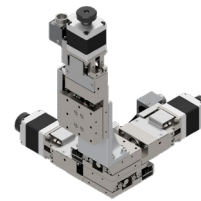
PMZG413T-LA-C4



PMZG413M-LA-C



PMZG413M-LA-C4



RoHS

* The picture is an image.

PMZG413M-LA-C

1 2 3 4 5 6 6 7 7

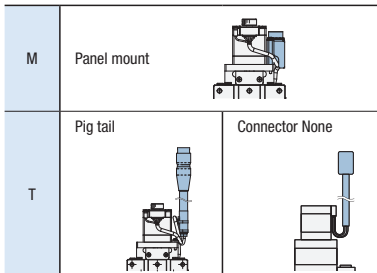
- ▶ Cables P.1-287~
- ▶ Electrical specification P.1-053~

1 Stage table size/Travel distance

Code	size	Travel distance
413	□40mm	13mm
513	□50mm	
615	□60mm	15mm
715	□70mm	

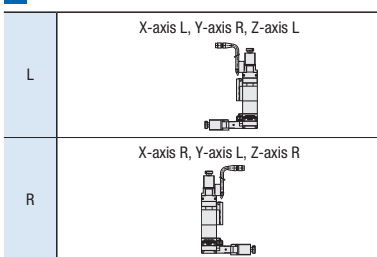
2 Connector specifications

Code	Specification	Application Motor					
M	Panel mount	C	D	E	T		
T	Pig tail	C	D	E	T		
	Connector None	MA	MB	PA	ZA	UA	



*No common connector: The motor cable and sensor cable are not consolidated into a common connector.

3 Sensor cover location



*Motor code is UA, Y axis will be reversed.

4 Sensor logic

A	All N.C.
B	All N.O.
C	N.C.ORG1 and ORG2 are N.O.

*ORG2 (slit origin sensor) is only supported when 4-sensor specification is selected.

5 Motor option

Code	Specification
C	Standard(5 Phase stepping motor)
D	High-torque
E	High resolution
T	2 Phase stepping motor

*For Code T, 2-phase stepping motor, our controller (DS102/112) cannot be used.

6 Sensor options

Code	Specification	Application Motor								
		C	D	E	T	MA	MB	PA	ZA	UA
Blank	3 Sensor(CWLS,ORG1,CCWLS)	●	●	●	●	●	●	●	●	●
4	4 Sensor(CWLS,ORG1,CCWLS,ORG2)	●	●	●	●	●	●	●	●	●

7 Cable option

Code	Specification	Cable type	For 2-phase motor Cable type
Blank	Cable is not included (Standard)	—	—
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

- * See pages 1-287 onwards for cable details.
- * When connecting to our controllers (DS102/112), please select from codes A, C, F, or H.
- * One end loose position to only stage opposite side.
- * For Code T, 2-phase stepping, only one end rose (B, D, G, J) is supported.
- * For 4 sensors, only the Code:Blank(no-cable) option is available.
- * For 4 sensors, specify the 4-sensor compatible cable.(P.1-287)

5 Motor option

Code	Specification
MA	With electromagnetic brake(□42_100V)
MB	With electromagnetic brake(□42_200V)
PA	αSTEP (AR Series)
ZA	αSTEP (AZ Series)
UA	Servo motor(J4)

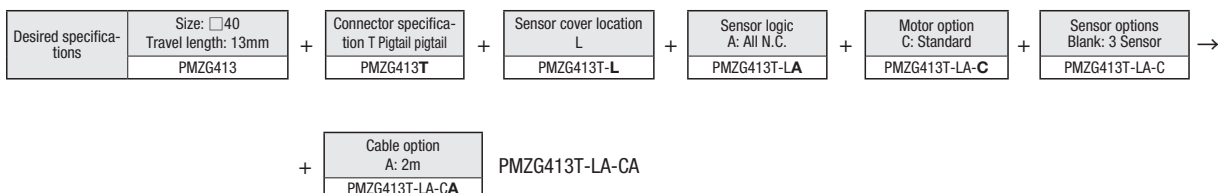
7 Cable option (Motor: MA, MB, PA, ZA, EA, UG, UA)

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 (3m Cable Set)
5A	Driver Amplifier (5m Cable Set)

products list [5] Motor [7] Cable/Driver combination

Code	Driver (amplifier) cable	Blank			3A				5A						
		MA	MB	PA	ZA	UA	MA	MB	PA	ZA	UA				
Cable	Sensor	2m	3m	5m	3m				5m						
	Motor	3m													
	Electromagnetic brake	None													
	Encoder	—	—	—	3m	—	—	—	—	—	—	5m			
Driver (Amplifier)	None											Available			

Selection example



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

□40

□50

□60

□70

□80

□100

□120

□180

Other

X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT

Linear Ball

PG

Linear Ball

KXG/KXL

Linear Ball

Cross

Roller

Slide

Guide

40

50

60

70

80

100

120

180

Other

1

048

Specification

		SPEC							
Model		PMZG413□-LA- C		PMZG513□-LA- C		PMZG615□-LA- C		PMZG715□-LA- C	
(Opposite hand)		PMZG413□-RA- C		PMZG513□-RA- C		PMZG615□-RA- C		PMZG715□-RA- C	
Mechanical specification	Travel distance	13mm				15mm			
	Stage table size	40×40mm		50×50mm		60×60mm		70×70mm	
	Feed screw (Ball screw)	φ6 Lead 1							
	Guide	Linear Ball Guide							
	Main material— Surface finishing	Stainless—Electroless nickel plating							
Weight	Pig tail	1.58kg	1.70kg	1.85kg	1.97kg	1.58kg	1.70kg	1.58kg	—
	Panel mount	1.55kg	1.67kg	1.82kg	1.94kg	1.55kg	1.67kg	1.55kg	—
Accuracy	Resolution/Pulse	2μm(Full)/1μm(Half)							
	MAX speed	10mm/sec							
	Load capacity	5kgf[49N]							
	Squareness	5μm/Full stroke (XY-axis)							
Sensor	Limit sensor	Available							
	Origin sensor (ORG1)	Available							
	Slit origin sensor(ORG2)	- *When selecting the 4 sensor option: Available							
Provided screw (Hexagon-headed bolt)		4 of M3-8				4 of M4-8			
Single axis accuracy	Uni-directional positioning accuracy	6μm							
	Repeatability positioning accuracy	±0.5μm							
	Lost motion	1μm							
	Backlash	0.5μm							
	Straightness	1μm							
	Pitching/Yawing	15"/10"							

* The SPEC varies depending on the motor.

Resolution · MAX speed · Weight

Motor code		C		D		E		T		
Type		Standard		High-torque		High resolution		2 Phase stepping motor		
Motor model* 1	3 Sensor	C005C-90215P-1		PK525HPB-C1		PK523HPMB-C1		SJA28N32-0674B-01		
	4 Sensor	PK523HPB-C15		PK525HPB		PK523HPMB		—		
Step angle		0.72°				0.36°		1.8°		
Resolution	Full/Half	2μm/1μm				1μm/0.5μm		5μm/2.5μm		
	Micro step (1/20 On resolution)	0.1μm				0.05μm		—		
MAX speed		10mm/sec		30mm/sec		25mm/sec		10mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PMZG413	Pig tail	1.58kg	1.70kg	1.85kg	1.97kg	1.58kg	1.70kg	1.58kg	—
		Panel mount	1.55kg	1.67kg	1.82kg	1.94kg	1.55kg	1.67kg	1.55kg	—
	PMZG513	Pig tail	1.99kg	2.11kg	2.26kg	2.38kg	1.99kg	2.11kg	1.99kg	—
		Panel mount	1.96kg	2.08kg	2.23kg	2.35kg	1.96kg	2.08kg	1.96kg	—
	PMZG615	Pig tail	2.37kg	2.49kg	2.64kg	2.76kg	2.37kg	2.49kg	2.37kg	—
		Panel mount	2.34kg	2.46kg	2.61kg	2.73kg	2.34kg	2.46kg	2.34kg	—
	PMZG715	Pig tail	2.84kg	2.96kg	3.11kg	3.23kg	2.84kg	2.96kg	2.84kg	—
Panel mount		2.81kg	2.93kg	3.08kg	3.20kg	2.81kg	2.93kg	2.81kg	—	

Motor code		MA · MB		PA		ZA		UA		
Type		With electromagnetic brake□42mm		αSTEP (AR)		αSTEP (AZ)		AC servo motor(J4)		
Motor model* 1	3 Sensor	PKE545MC-A1		ARM24SAK		AZM24AK		HG-KR053		
	4 Sensor	—		—		—		—		
Step angle		0.72°		—		—		—		
Resolution	Full/Half	2μm/1μm		1μm(Set to 1000P/R)		1μm(Set to 1000P/R)		22 Bit encoder (4194304P/R)*2		
	Micro step (1/20 On resolution)	0.1μm		—		—		—		
MAX speed		20mm/sec		35mm/sec		40mm/sec		50mm/sec		
Weight	Number of sensors		3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor
	PMZG413	Connector None	2.81kg	3.08kg	1.70kg	—	1.70kg	—	2.60kg	—
			3.22kg	3.49kg	2.11kg	—	2.11kg	—	3.01kg	—
	PMZG615	None	3.60kg	3.87kg	2.49kg	—	2.49kg	—	3.39kg	—
4.07kg			4.34kg	2.96kg	—	2.96kg	—	3.86kg	—	

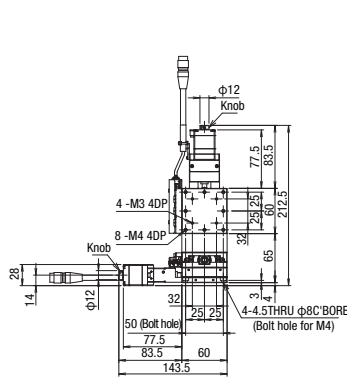
*1 Model numbers include Suruga Seiki's proprietary management codes.

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

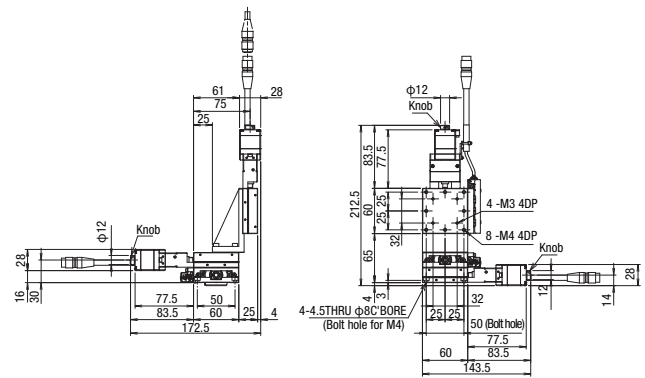
XYZ-axis Linear Ball Guide: PMZG615/PMZG715

Dimensions

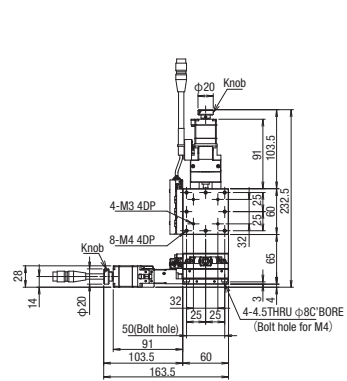
PMZG615T-L□-C



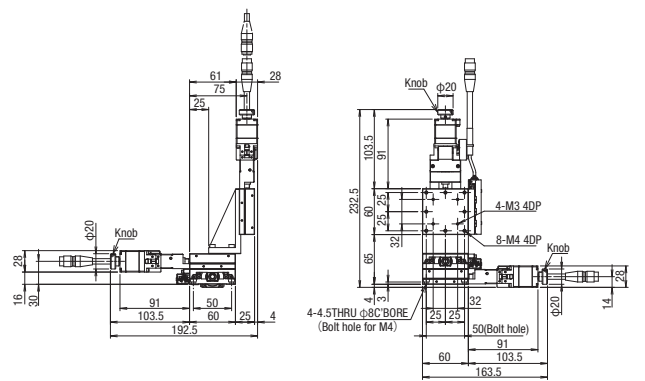
PMZG615T-R□-C



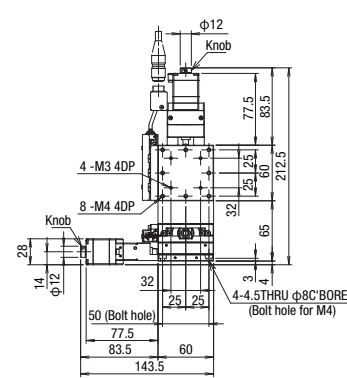
PMZG615T-L□-C4



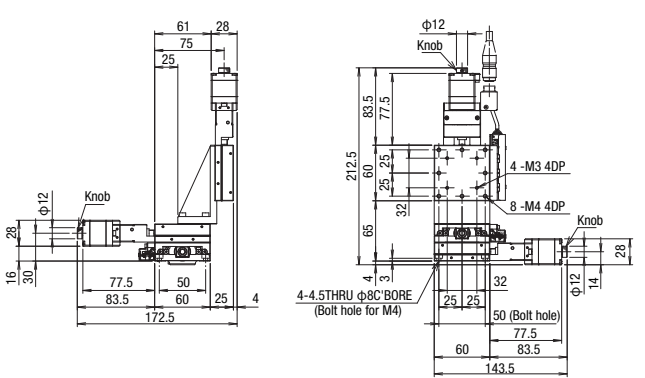
PMZG615T-R□-C4



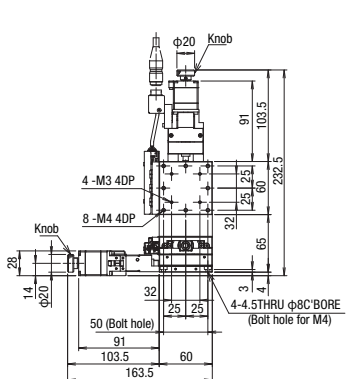
PMZG615M-L□-C



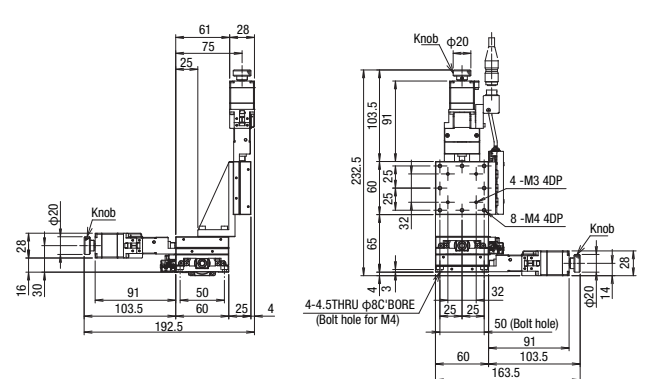
PMZG615M-R□-C



PMZG615M-L□-C4



PMZG615M-R□-C4



X

XY

Z

Horizontal

Z

XYZ

Goniometer

Rotary

Unit

Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□40

□50

□60

□70

□80

□100

□120

□180

Other

Electrical Specification: PG Series

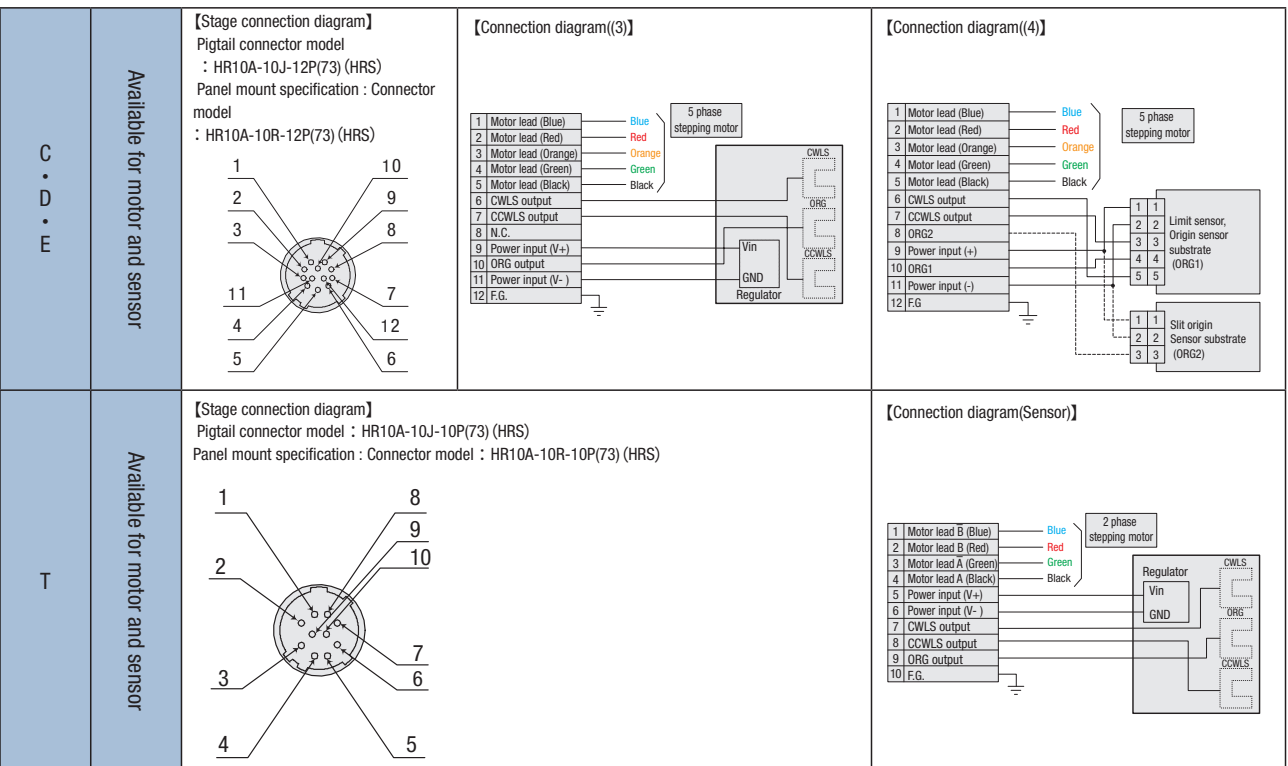
Electrical Specification

Motor code		C		D		E		T					
Model (*1)		3 Sensor		4 Sensor		3 Sensor		4 Sensor		3 Sensor			
Motor Specification (*2)	Type	5 phase stepping motor (0.75A/Phase)								2 phase stepping motor (0.67A/Phase)			
	Feature	Standard				High-torque		High resolution					
	Model*1	C005C-90215P-1		PK523HPB-C15		PK525HPB-C1		PK525HPB		PK523HPMB			
	Step angle	0.72°				0.36°		1.8°					
	Resolution	Full/Half	2µm/1µm				1µm/0.5µm		5µm/2.5µm				
		Micro step (1/20 On resolution)	0.1µm				0.05µm		—				
	With electromagnetic brake	—											
	Manufacturer	Oriental Motor Co., Ltd.								SURUGA SEIKI			
	mass	□size	0.11kg		0.2kg		0.11kg		0.11kg				
		L size	37mm		42mm		56.5mm		61.5mm		37mm		42mm
Excitation (moment) maximum torque	0.048N · m		—		0.073N · m		—		0.038N · m		—		
Driver model	CVD507-K-A9												
Driver power input	DC24V±10% 1.4A(MAX)												
Brake power input	—												
Motor	Pig tail	Motor	HR10A-10J-12P(73)(HRS)				HR10A-10J-10P(73)(HRS)						
		Electromagnetic brake	—				—						
	Panel mount	Motor	HR10A-10R-12P(73)(HRS)				HR10A-10R-10P(73)(HRS)						
		Electromagnetic brake	—				—						
	Receiving connector	Motor	HR10A-10P-12S(73)(HRS)				HR10A-10P-10S(73)(HRS)						
		Electromagnetic brake	—				—						
Sensor	Pig tail	CW Limit Sensor	HR10A-10J-12P(73)(HRS)				HR10A-10J-10P(73)(HRS)						
		Origin sensor (ORG1)	—				—						
	Panel mount	CW Lim Sensor	HR10A-10R-12P(73)(HRS)				HR10A-10R-10P(73)(HRS)						
		Origin sensor (ORG1)	—				—						
	Receiving connector	Slit origin (ORG2)	—		Same as above		—		Same as above		—		
		CW Limit	HR10A-10P-12S(73)(HRS)				HR10A-10P-10S(73)(HRS)						
	Origin sensor (ORG1)	—				—							
	Slit origin (ORG2)	—				—							
	Sensor board	Limit sensor	Available		Available		Available		Available		Available		
		Origin sensor (ORG1)	Available		Available		Available		Available		Available		
Slit origin sensor (ORG2)		—		Available		—		Available		—			
Sensor		Photo microsensor EE-SX4320 (Omron Co., Ltd.)											
Power-supply voltage		DC5~24V±5%											
Current consumption		Total 60mA or less (100mA or less per 4 sensor)											
Control output		NPN open collector output DC30V 10mA or less											
Output logic	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	Limit continuity: On detection: Output transistor OFF (Non-continuity) Origin continuity: On detection: Output transistor ON (continuity)											

* The electric specification of XY (PMG), Z (PZG), XYZ (PMZG) are the same.

*1 See page P.1-297~ for details of single motor specification.*2 Model numbers include Suruga Seiki's proprietary management codes.

Pin allocation · Connection diagram



* Cables P.1-287~

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

Electrical Specification (With electromagnetic brake motor)

Motor code		MA		MB			
Model (*1)		3 Sensor	4 Sensor	3 Sensor	4 Sensor		
Motor Specification (*2)	Type	5 phase stepping motor (0.35A/Phase)					
	Feature	With electromagnetic brake □42mm					
	Model*1	PKE545MC-A1					
	Step angle	0.72°					
	Resolution	Full/Half	2µm/1µm				
		Micro step (1/20 On resolution)	0.1µm				
	With electromagnetic brake	Available					
	Manufacturer	Oriental Motor Co., Ltd.					
	mass	0.52kg					
	Motor size	□size	□42mm				
	L size	75mm					
Excitation (moment) maximum torque		0.27N · m					
Driver model		RKSD503M-A		RKSD503M-C			
Driver power input		Single phase AC100-120V 50/60Hz		Single phase AC200-240V 50/60Hz			
Brake power input		DC24V±5% 0.08A					
Connector	Motor	Model	5557-06R-210 (MOLEX)				
		Electromagnetic brake	5557-02R-210 (MOLEX)				
	Receiving connector	Motor	5559-06P-210 (MOLEX)				
		Electromagnetic brake	5559-02P-210 (MOLEX)				
	Sensor	Model	CW Limit Sensor	S5B-ZR-SM4-TF (LF) (SN) (JST)			
			Origin sensor (ORG1)	—	PM-L25 One end loose	—	PM-L25 One end loose
			Slit origin(ORG2)	—	—	—	—
		Receiving connector	CW Limit Sensor	ZHR-5 (JST)			
			Origin sensor (ORG1)	—			
			Slit origin(ORG2)	—			
Sensor board	Limit sensor	Available	Available	Available	Available		
	Origin sensor (ORG1)	Available	Available	Available	Available		
	Slit sensor(ORG2)	—	Available	—	Available		
	Sensor	Photo microsensor EE-SX4320 (Omron Co., Ltd.)					
	Power-supply voltage	DC5~24V±5%					
	Current consumption	Total 80mA or less					
	Control output	NPN open collector output DC30V 10mA or less					
	Output logic	Sensor logic option A	continuity: On detection : Output transistor OFF (Non-continuity)				
Sensor logic option B		continuity: On detection : Output transistor ON (continuity)					
Sensor logic option C		limit continuity: On detection : Output transistor OFF (Non-continuity) Origin continuity: On detection: Output transistor ON (continuity)					

* The electric specification of XY (PMG), Z (PZG), XYZ (PMZG) are the same.
 * 2 P.1-297~ for details of single motor specification.
 * 3 The model numbers are Suruga Seiki's proprietary management codes.

Pin allocation • Connection diagram

Motor • Electromagnetic brake

[Mating cable] Model:CC030VFPB(3m)/CC050VFPB(5m) *For fixed use

MA • MB

Sensor

[Connector diagram(3 sensor)]

Power input (+)	Brown	1	1
Power input (-)	Blue	2	2
CCWLS output	Black	3	3
ORG1 output	Yellow	4	4
CWLS output	White	5	5

Limit sensor, Origin sensor substrate (ORG1)

[Connector diagram (4sensor)]

Power input (+)	Brown	1	1
Power input (-)	Blue	2	2
CCWLS output	Black	3	3
ORG1 output	Yellow	4	4
CWLS output	White	5	5

Limit sensor, Origin sensor substrate (ORG1)

Power input (+)	Brown		
Power input (-)	Blue		
ORG2 output (OUT1)	Black		
ORG2 output (OUT2)	White		

Slit origin sensor (ORG2)

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

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

Electrical Specification: PG Series

Electrical Specification

		PA	ZA
Motor code		3 Sensor	
Model			
Type		αSTEP (AR Series)	αSTEP (AZ Series)
Feature		Small step-out ,incremental	Small step-out ,absolute
Model*1		ARM24SAK	AZM24AK
With electromagnetic brake		-	
Manufacturer		Oriental Motor Co., Ltd.	
Step angle		0.36°(1000P/R Setting)	
mass		0.15kg	
Motor size		□28mm	
Motor size		□45mm	
L size		54.5mm	
Excitation (moment) maximum torque		0.055N · m	0.095N · m
Driver model		ARD-K	AZD-K
Driver power input		DC24V±10%	DC24V±5%
Brake power input		-	
Motor			
Model		43025-1000 (MOLEX)	DF62B-13EP-2. 2C ((HRS)
Receiving connector		43020-1000 (MOLEX)	DF62C-13S-2. 2C ((HRS)
Sensor			
Model		S5B-ZR-SM4-TF (LF) (SN) (JST)	
Receiving connector		-	
CW Limit Sensor		-	
Origin sensor (ORG1)		-	
Slit origin(ORG2)		-	
CW Limit Sensor		-	
Origin sensor (ORG1)		ZHR-5 (JST)	
Slit origin(ORG2)		-	
Limit sensor		Available	Available
Origin sensor (ORG1)		Available	Available
Slit origin sensor(ORG2)		-	-
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		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 limit continuity:On detection: Output transistor OFF (Non-continuity)	
		Origin continuity:On detection: Output transistor ON (continuity)	

* The electric specification of XY (PMG), Z (PZG), XYZ (PMZG) are the same.

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

Pin allocation · Connection diagram

		PA	ZA																																										
Motor		<p>【Receiver cable】Model:CC030VA2R2(3m)/CC050VA2R2(5m)*Flexible cable</p>	<p>【Receiver cable】Model:CC030VZ2R2(3m)/CC050VZ2R2(5m)*Flexible cable</p>																																										
Sensor		<p>【Connector diagram(3 sensor)】</p> <table border="1"> <tr> <td>Power input (+)</td> <td>Brown</td> <td>1</td> <td>1</td> <td rowspan="5">Limit sensor, Origin sensor substrate (ORG1)</td> </tr> <tr> <td>Power input (-)</td> <td>Blue</td> <td>2</td> <td>2</td> </tr> <tr> <td>CCWLS output</td> <td>Black</td> <td>3</td> <td>3</td> </tr> <tr> <td>ORG1 output</td> <td>Yellow</td> <td>4</td> <td>4</td> </tr> <tr> <td>CWLS output</td> <td>White</td> <td>5</td> <td>5</td> </tr> </table>	Power input (+)	Brown	1	1	Limit sensor, Origin sensor substrate (ORG1)	Power input (-)	Blue	2	2	CCWLS output	Black	3	3	ORG1 output	Yellow	4	4	CWLS output	White	5	5	<p>【Connector diagram(3 sensor)】</p> <table border="1"> <tr> <td>Power input (+)</td> <td>Brown</td> <td>1</td> <td>1</td> <td rowspan="5">Limit sensor, Origin sensor substrate (ORG1)</td> </tr> <tr> <td>Power input (-)</td> <td>Blue</td> <td>2</td> <td>2</td> </tr> <tr> <td>CCWLS output</td> <td>Black</td> <td>3</td> <td>3</td> </tr> <tr> <td>ORG1 output</td> <td>Yellow</td> <td>4</td> <td>4</td> </tr> <tr> <td>CWLS output</td> <td>White</td> <td>5</td> <td>5</td> </tr> </table>	Power input (+)	Brown	1	1	Limit sensor, Origin sensor substrate (ORG1)	Power input (-)	Blue	2	2	CCWLS output	Black	3	3	ORG1 output	Yellow	4	4	CWLS output	White	5	5
Power input (+)	Brown	1	1	Limit sensor, Origin sensor substrate (ORG1)																																									
Power input (-)	Blue	2	2																																										
CCWLS output	Black	3	3																																										
ORG1 output	Yellow	4	4																																										
CWLS output	White	5	5																																										
Power input (+)	Brown	1	1	Limit sensor, Origin sensor substrate (ORG1)																																									
Power input (-)	Blue	2	2																																										
CCWLS output	Black	3	3																																										
ORG1 output	Yellow	4	4																																										
CWLS output	White	5	5																																										

Electrical Specification

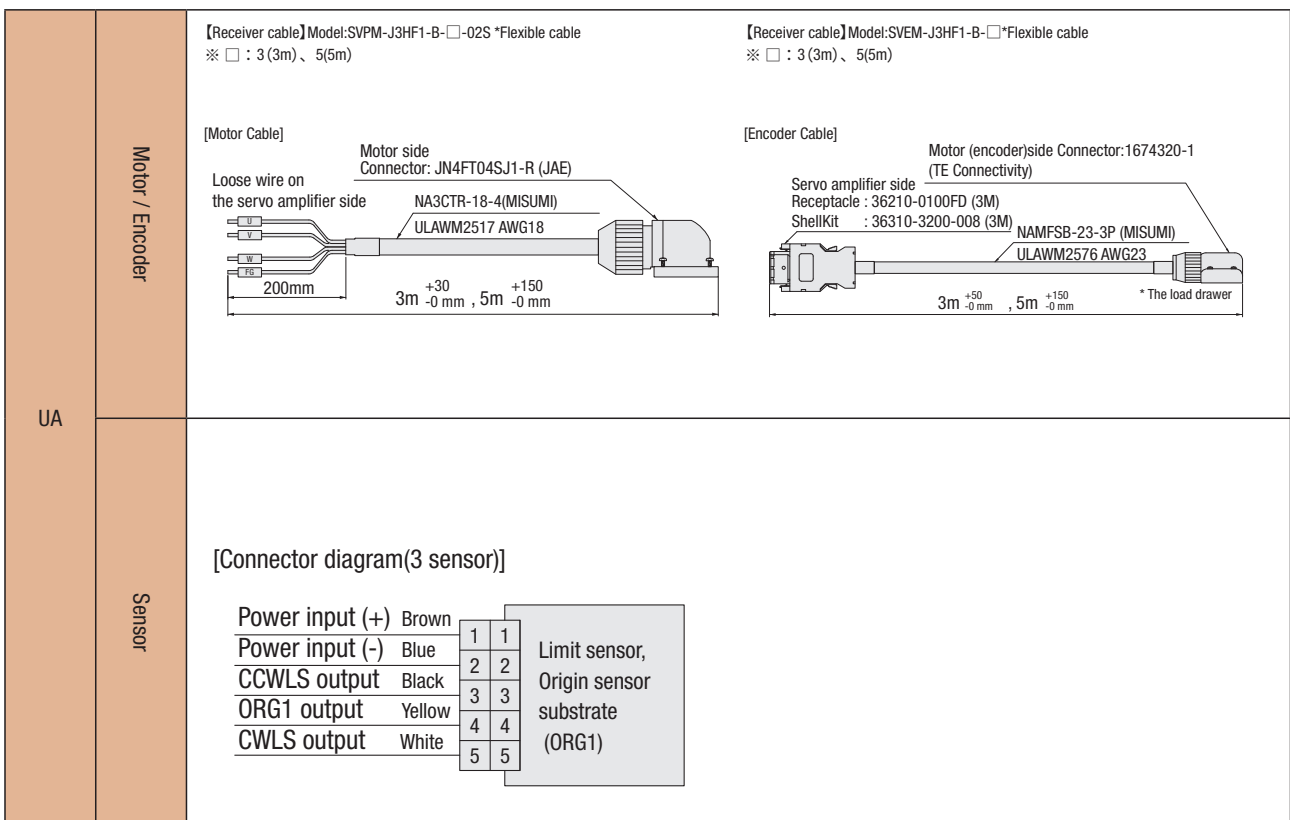
Motor code		UA		
Model (*1)		3 Sensor		
Motor Specification (*1)	Type	Servo motor J4(Mitsubishi Electric corporation)		
	Feature	High speed		
	Model	HG-KR053		
	With electromagnetic brake	-		
	Manufacturer	Mitsubishi Electric corporation		
	Step angle	Both absolute and incremental(4194304P/R) *2		
	mass	0.34kg		
	Motor size	□ size	□ 40mm	
		L size	66.4mm	
	Excitation (moment) maximum torque	0.56N · m		
Driver model	MR-J4-10A			
Driver power input	Three and Single phase AC200-240V 50/60Hz			
Brake power input	-			
Connector	Motor	Model	Manufacturer standard	
		Encoder	JN4FT04SJ1-R (JAE)	
	Receiving connector	Motor	1674320-1 (TEConnectivity)	
		Encoder	S5B-ZR-SM4-TF (LF) (SN) (JST)	
	Sensor	Model	CW Limit Sensor	-
			Origin sensor (ORG1)	ZHR-5 (JST)
		Receiving connector	Slit origin(ORG2)	-
			CW Limit Sensor	-
			Origin sensor (ORG1)	-
			Slit origin(ORG2)	-
Sensor board	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	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	limit continuity:On detection: Output transistor OFF (Non-continuity) Origin continuity:On detection: Output transistor ON (continuity)	

* The electric specification of XY (PMG), Z (PZG), XYZ (PMZG) are the same.

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

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

Pin allocation · Connection diagram



KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

Cross
Roller

Slide
Guide

□ 40

□ 50

□ 60

□ 70

□ 80

□ 100

□ 120

□ 180

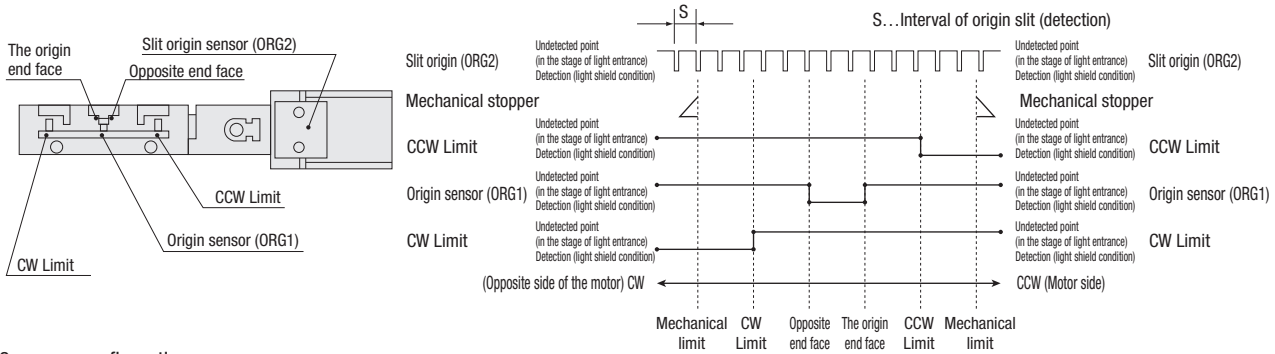
Ohter

1

056

Electrical Specification: PG Series

Timing chart



3-sensor configuration

Unit [mm]	Reference coordinate	Mechanical limit	CW Limit	Opposite end face	Origin	CCW Limit	Mechanical limit
PG413, PG513	Return to origin	7.5	7	2	0	7	7.5
PG615-PG715	Return to origin	8.5	8	2	0	8	8.5
PG430-PG530	Return to origin	16	15.5	2	0	15.5	16
PG650-PG750	Return to origin	26	25.5	2	0	25.5	26

* Return to origin means that is performed return to origin type 3 using DS102/DS112 series.
 * The coordinate is a basis of design value. Dimension error may occur about plus or minus 0.5 mm.

4-sensor configuration

Unit [mm]	Reference coordinate	Mechanical limit	CW Limit	Opposite end face	Origin	CCW Limit	Mechanical limit
PG413, PG513	Return to origin	8.0	7.5	2	0	6.5	7.0
PG615-PG715	Return to origin	9.0	8.5	2	0	7.5	8.0
PG430-PG530	Return to origin	16.5	16.0	2	0	15.0	15.5
PG650-PG750	Return to origin	26.5	26.0	2	0	25.0	25.5

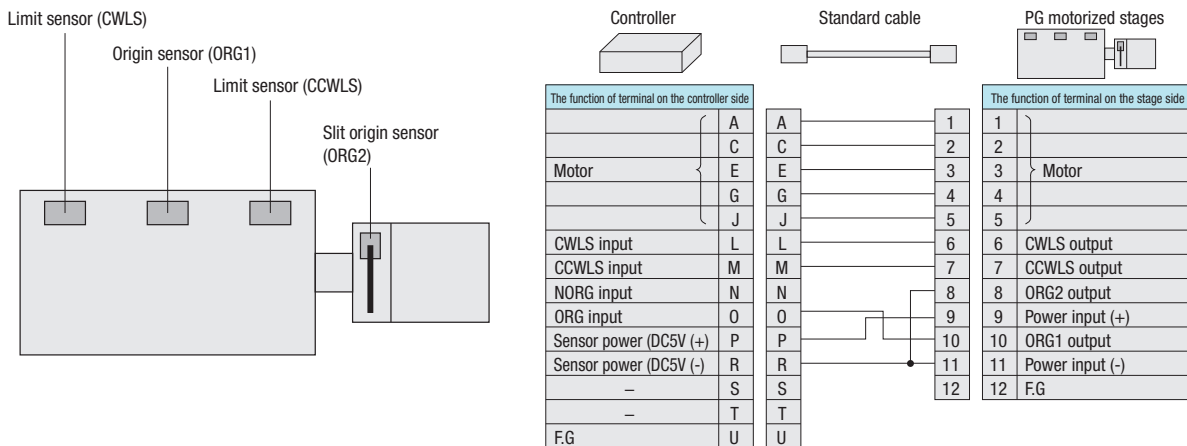
Common Slit origin (detection) interval S=1

* Return to origin means that is performed return to origin type 3 using DS102/DS112 series.
 * The coordinate is a basis of design value. Dimension error may occur about plus or minus 0.5 mm.

4 standardization of sensor specifications (PG)

PG series have built-in sensors as below.

The connecting diagram that connected to our controller using standard attached cable is shown as below.



The CWLS(pin#6) and CCWLS(pin#7) on the motorized stage side are connected to CWLS(Lpin) and CCWLS(Mpin) of controller as usual. However ORG2 output (Pin#8) is connected to DC5V(-) and ORG1 output (pin#10) will be connected to ORG. In other words, the sensor of ORG2 does not work on this wire connection, only ORG1 sensor is recognized by the controller as origin signal. As a result, return to origin should be done without the slit origin sensor as same as function of motorized stages that have only three sensors (CWLS, CCWLS and ORG).

Note: Cables for Slit Origin Sensor (ORG2)

* See page P.1-287~

When using the Slit Origin Sensor (ORG2) in a 4-sensor configuration, a "4-Sensor Compatible Cable" is required. Please note that the recommended homing method also differs for this setup. When ordering, please select "Cable Code: Blank (No Cable)" for the stage model and purchase the 4-Sensor Compatible Cable separately.

X
XY
Z
Horizontal Z
XYZ
Goniometer
Rotary
Unit
Controller

KXT
Linear Ball

PG
Linear Ball

KXG/KXL
Linear Ball

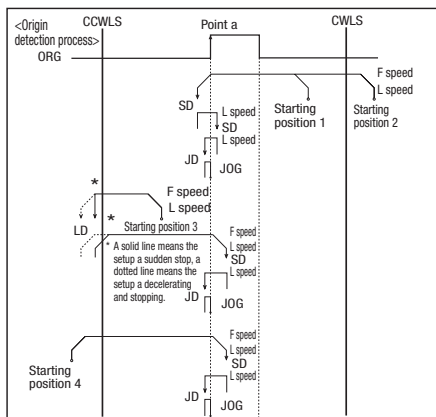
Cross
Roller

Slide
Guide

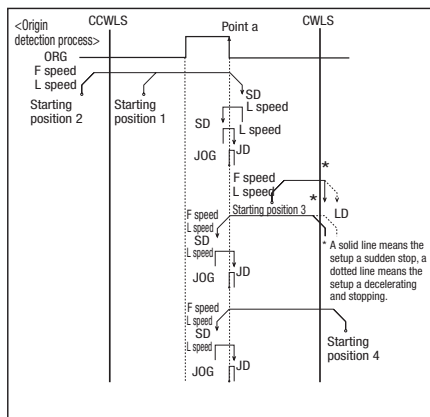
- 40
- 50
- 60
- 70
- 80
- 100
- 120
- 180
- Other**

PG series recommendation return to origin method

[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.

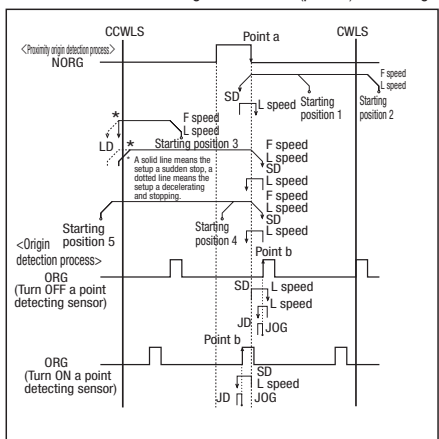


[Type9]
After finished Type3, perform detected process for CCW edge of TIMING signal.

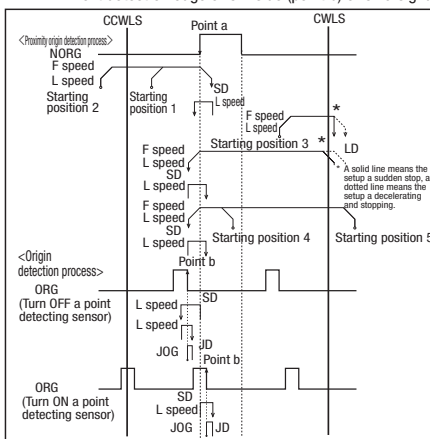
[Type10]
After finished Type4, perform detected process for CW edge of TIMING signal.

● Select return to origin type from the followings when use the slit origin sensor (ORG2).

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



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



[Type7]
After finished type1, perform detected process for CCW edge (point c) of TIMING signal.

[Type8]
After finished type2, perform detected process for CW edge (point c) of TIMING signal.

Return to origin sequence ▶ P.1-281~