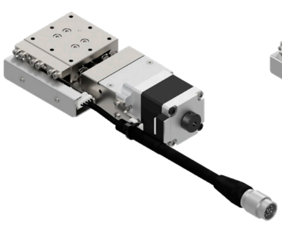
New

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

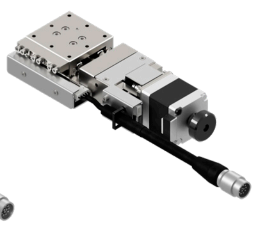
RoHS

Freely customize the motor

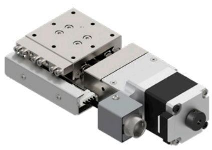
PG413T-LA-C



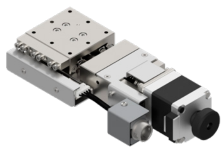
PG413T-LA-C4



PG413M-LA-C



PG413M-LA-C4



* The picture is an image.

PG413 M - L A - C □ □

1 2 3 4 5 5 6 6 7 7

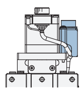
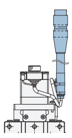
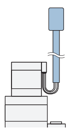
Cables, Positioning pin P. 1-207 ～
Electrical specification P.1- PG-041～

1 Stage table size/Travel distance

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

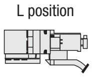
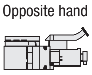
2 Connector specifications

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

M	Panel mount 	
T	Pig tail 	Connector None 

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

3 Sensor cover location

L	L position 
R	Opposite hand 

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.

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)

6 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

*One end loose position to only stage opposite side.
Note: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.(P1-PG-045,P.1-207～)

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 ③ Motor ④ Cable/Driver combination

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

Selection example

Desired specifications	Size: □40 Travel length: 13mm	+	Connector specification • pigtail	+	Sensor cover location L position	+	Sensor logic A: All N.C.	+	Motor option C: Standard	+	Sensor options Blank: 3 Sensor	→
	PG413		PG413**T**		PG413T-**L**		PG413T-L**A**		PG413T-LA-**C**		PG413T-LA-C	

\+ Cable option A: 2m — PG413T-LA-C**A** → PG413T-LA-CA

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
	Weight – 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			
	Motion parallelism	5μm			
	Pitching/Yawing	15″/10″			
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	

* 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	—

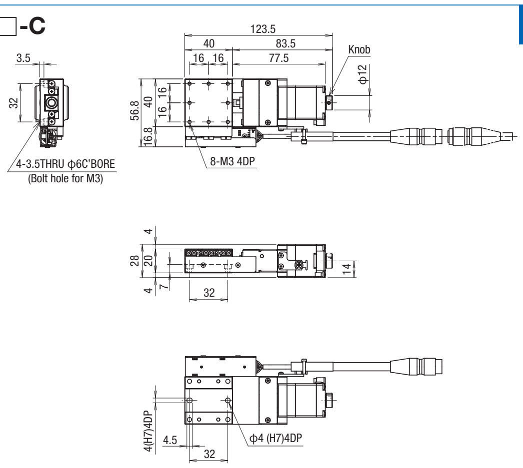
*1 Model is our own management model.
*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

New

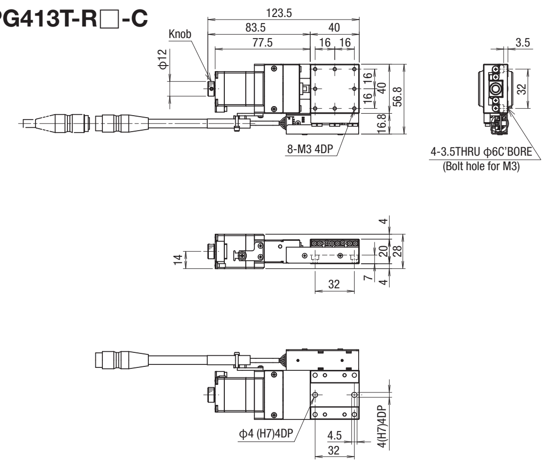
X-axis Linear Ball Guide：PG413/PG513

Dimensions

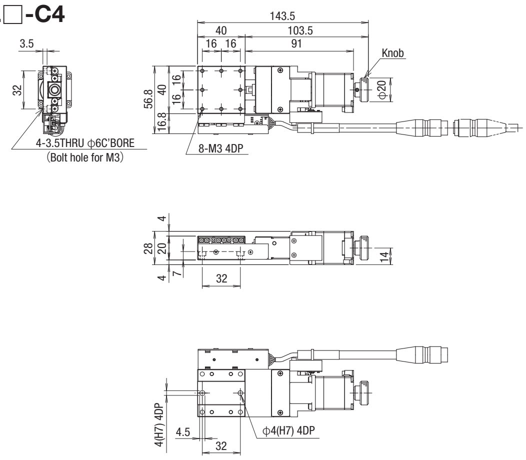
PG413T-L□-C



PG413T-R□-C



PG413T-L□-C4



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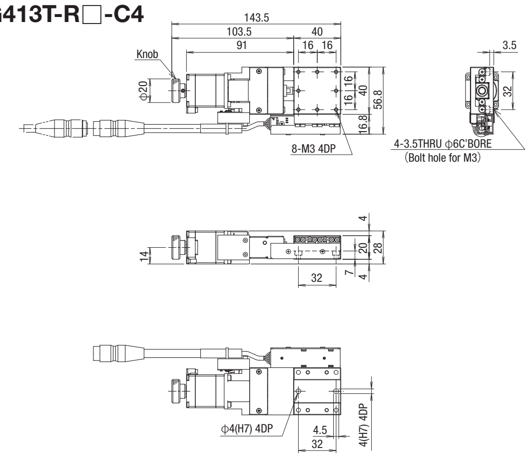

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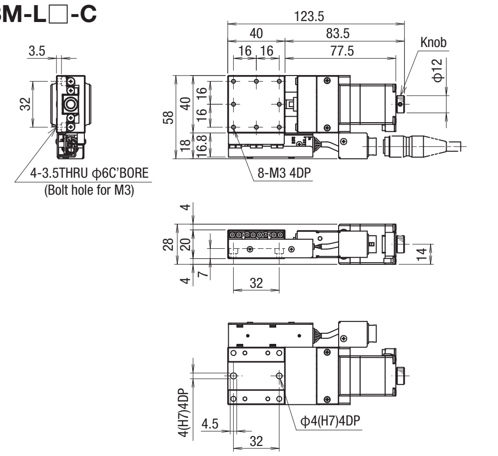

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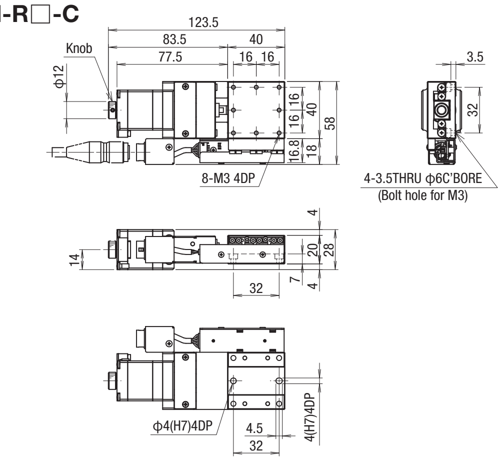

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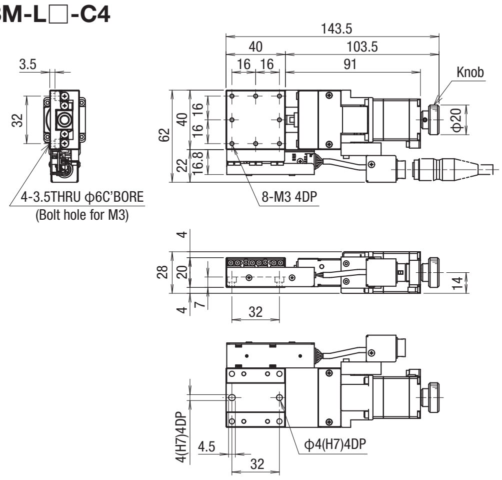

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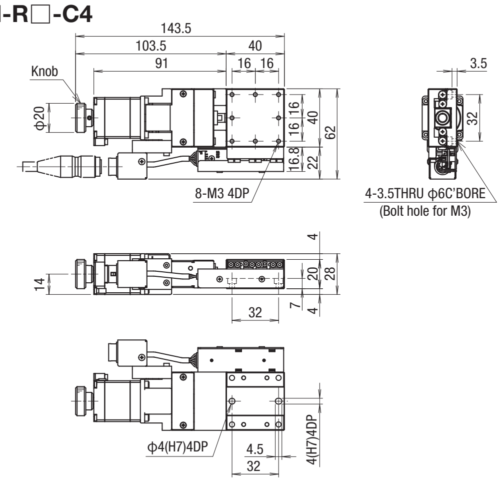
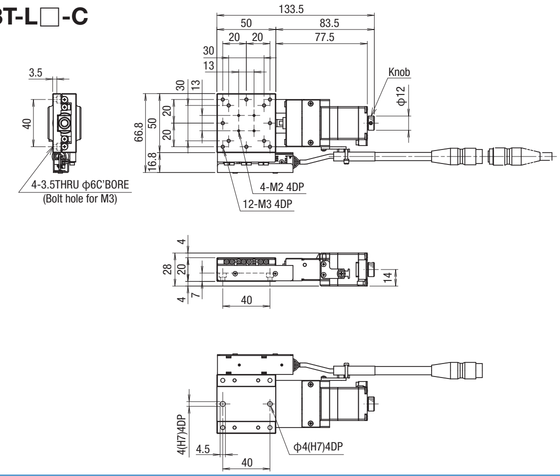


New

Dimensions

PG513T-L□-C



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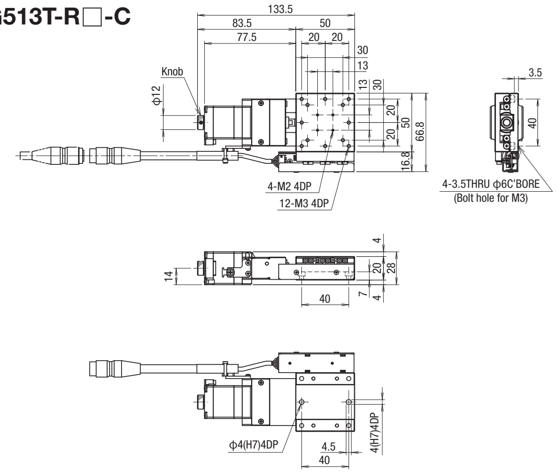

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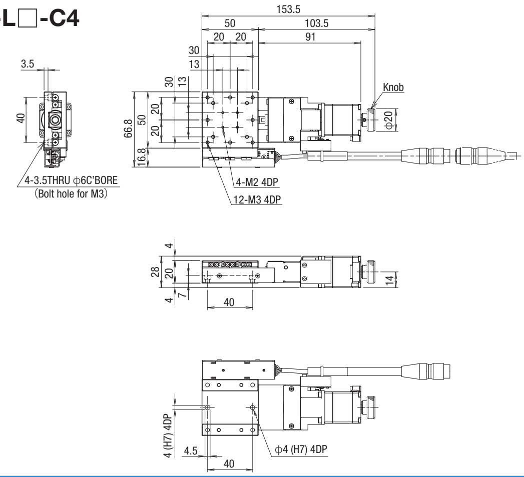

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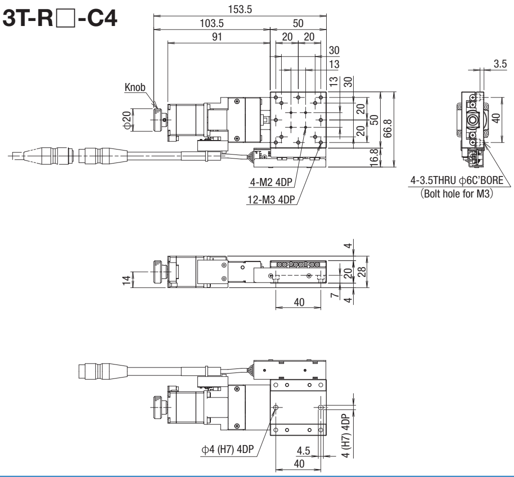

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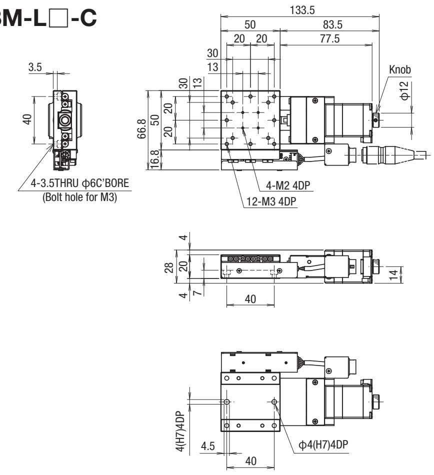

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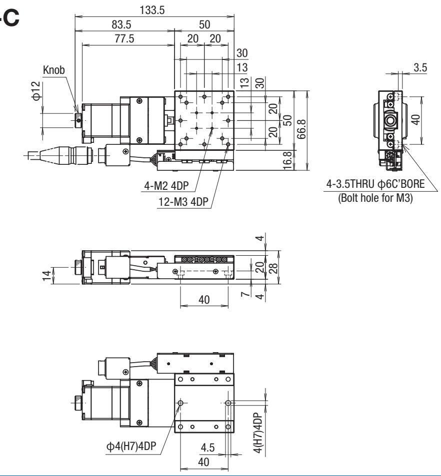

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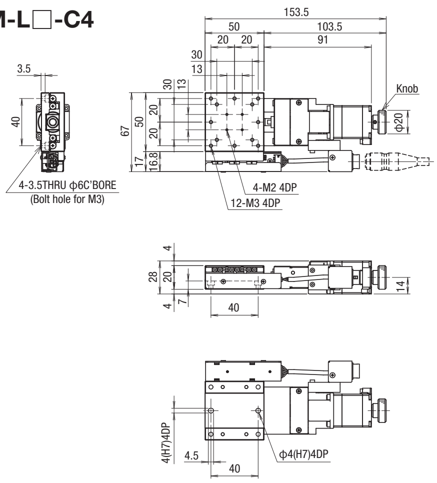

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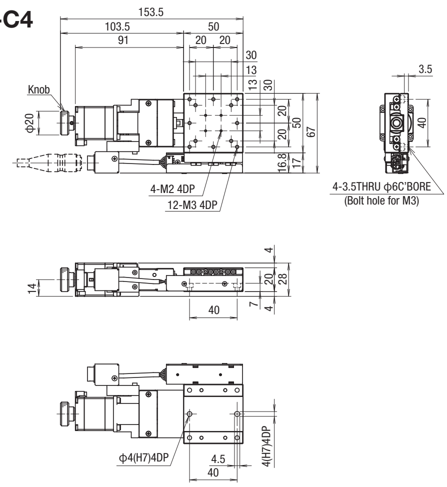
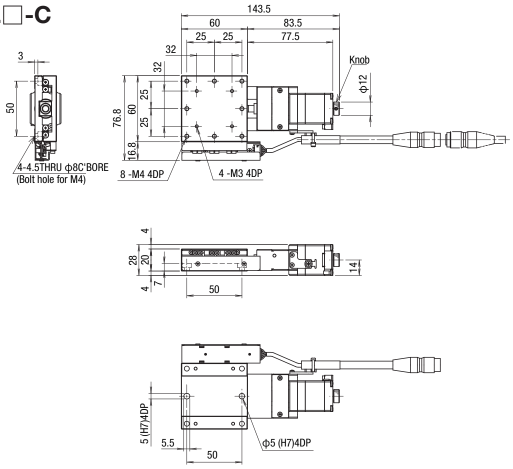


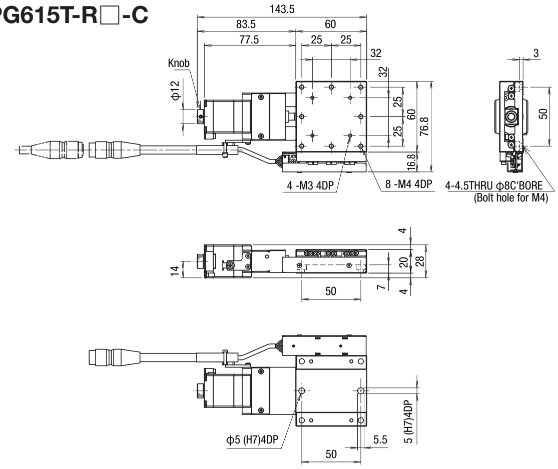
X-axis Linear Ball Guide：PG615/PG715

Dimensions

PG615T-L□-C



PG615T-R□-C



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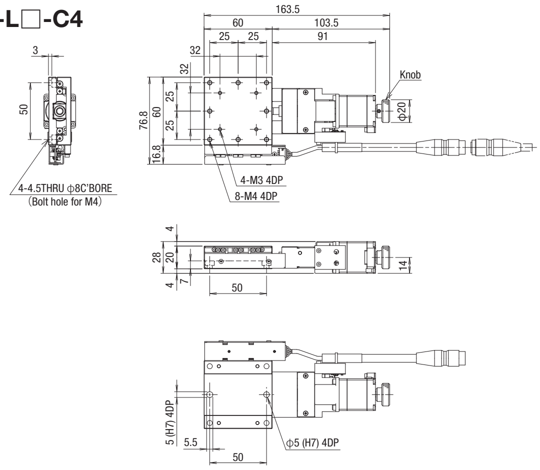

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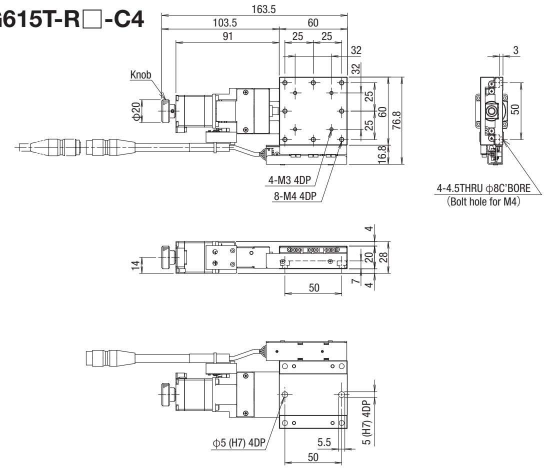

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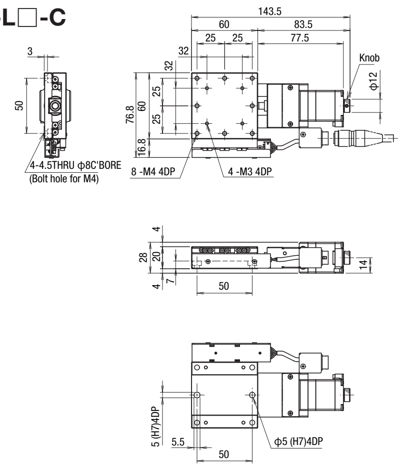

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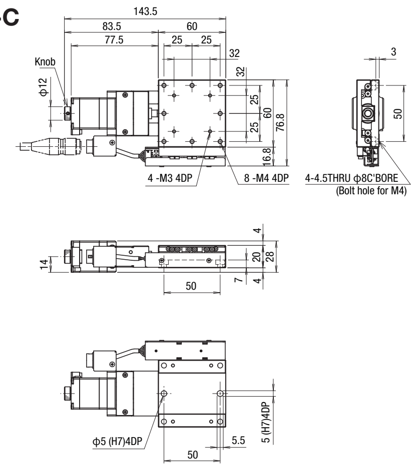

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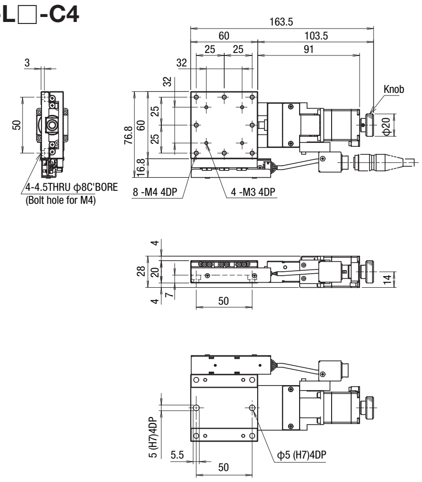

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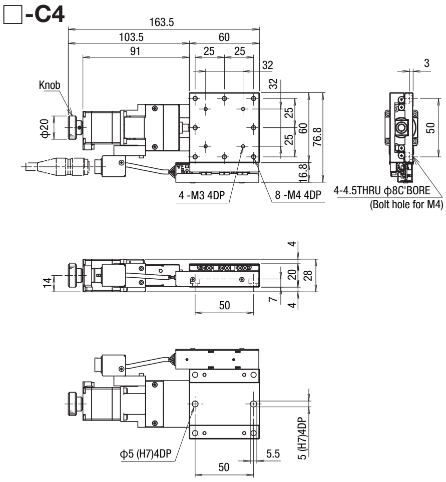
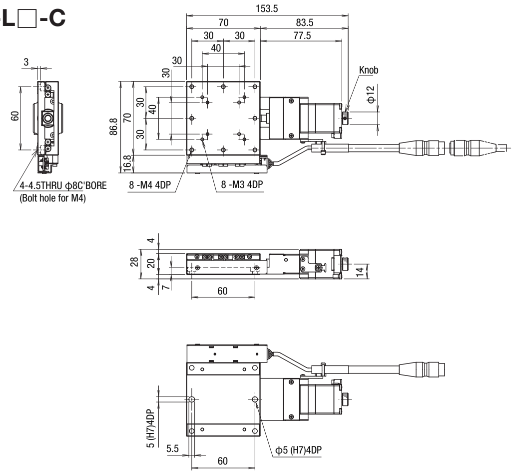


Dimensions

PG715T-L□-C



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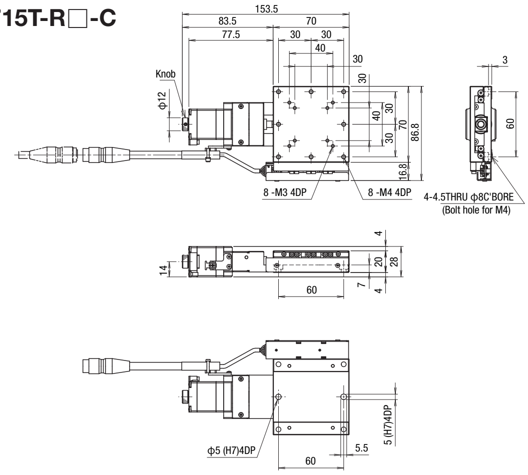

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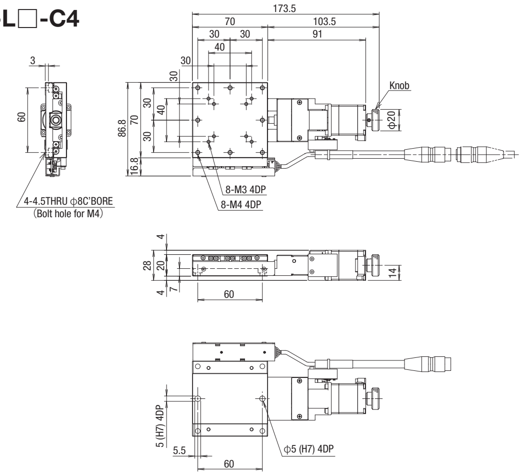

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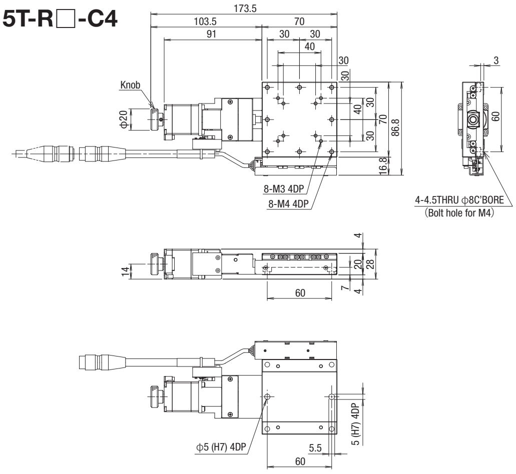

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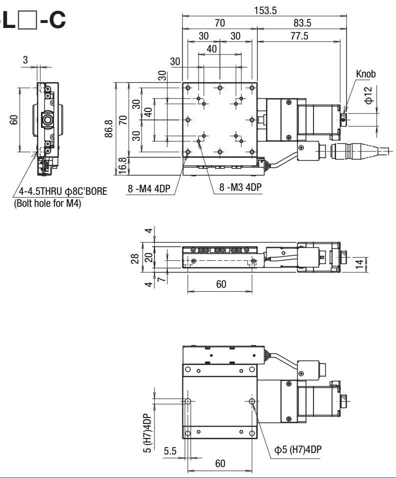
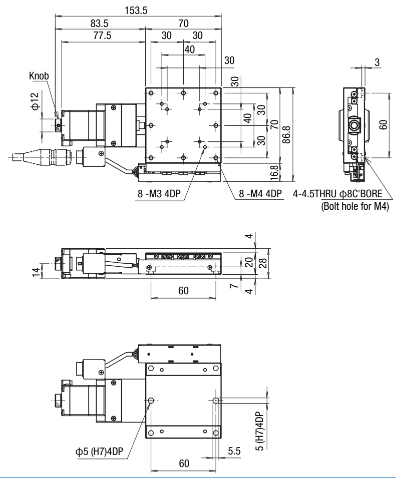


PG715M-R□-C



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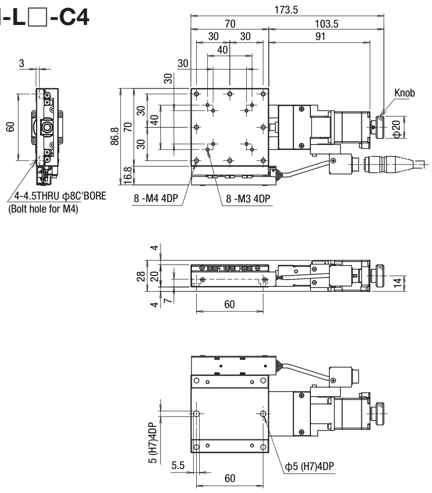

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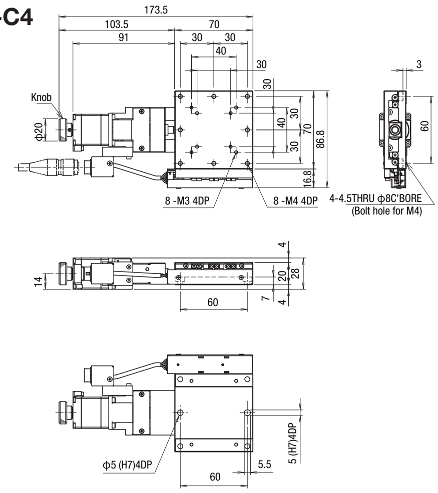


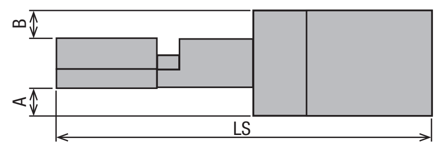
New

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

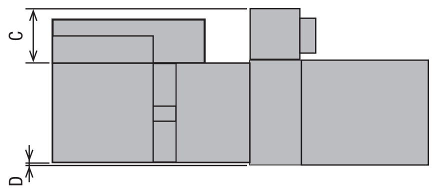
PART COMMUNITY CAD DATA

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
			M					18.0	22.0				
PG513			T					16.8	16.8			133.5	153.5
			M					16.8	17.0				
PG615			T					16.8	16.8			143.5	163.5
			M					16.8	16.8				
PG715			T					16.8	16.8			153.5	173.5
			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
			M					18.0	22.0				
PG513			T					16.8	16.8			153	173
			M					16.8	17.0				
PG615			T					16.8	16.8			163	183
			M					16.8	16.8				
PG715			T					16.8	16.8			173	193
			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	1	1	173	180
PG513										0	0	183	190
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	

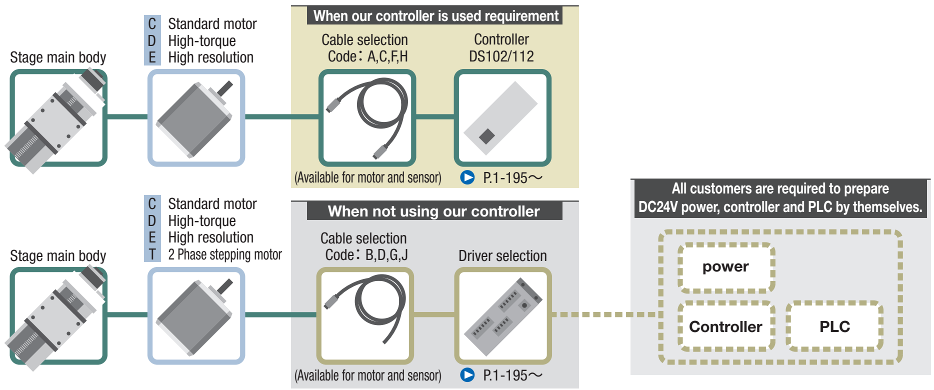
Motor option

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

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



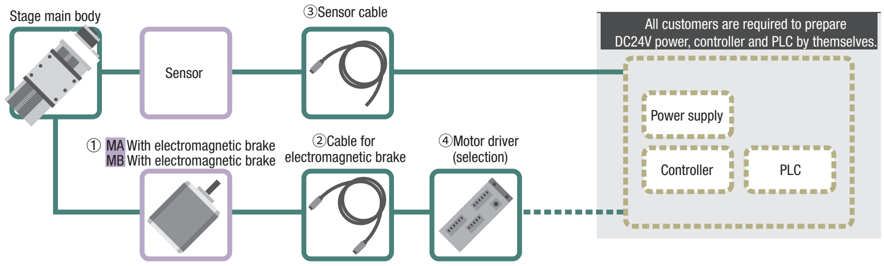
Code	①Motor model		②Motor・Sensor cable selection
C	3 Sensor	C005C-90215P-1	A・B・C・D：D214-2-□E(K) F・G・H・J：D214-2-□R(K)
	4 Sensor*	PK523HPB-C15	
D	3 Sensor	PK525HPB-C1	A・B・C・D：D214-2-□E(K) F・G・H・J：D214-2-□R(K)
	4 Sensor*	PK525HPB	

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

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

Motor option

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

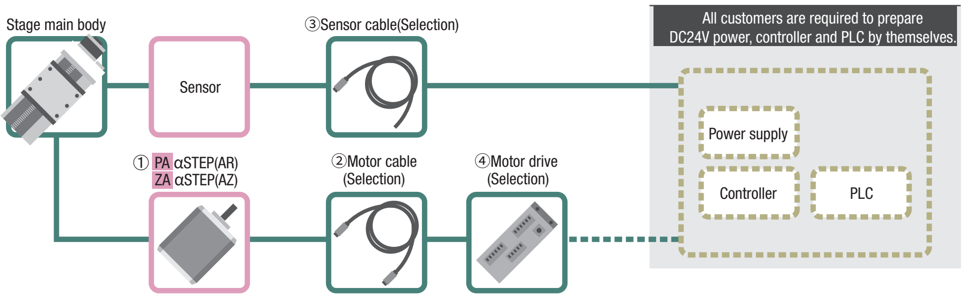


Code	①Motor model	②Motor・Sensor cable selection	③Motor・Sensor cable selection	④Driver selection
MA・MB	PKE545MC-A1	3A：CC030VPFB 5A：CC050VPFB Blank・3・5：Not included	3A・3：PG-H-ASSY5-3000 5A・5：PG-H-ASSY5-5000 None：PG-H-ASSY5-2000	[MA]3A・5A：RKSD503M-A [MB]3A・5A：RKSD503M-C Blank・3・5：Not included

Motor option

PA αSTEP (AR Series)
Motor model
ARM24SAK

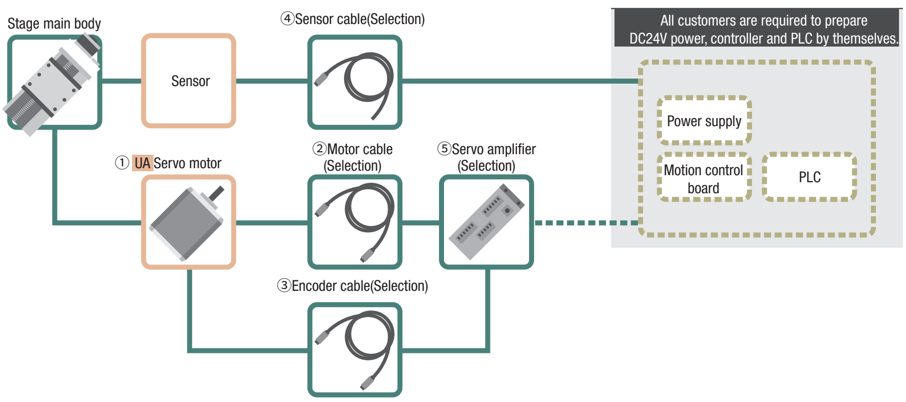
ZA αSTEP (AZ Series)
Motor model
AZM24AK



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



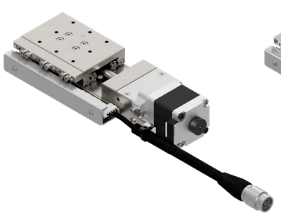
Code	Motor model	Motor・Sensor cable selection	Encoder cable 3m	Motor・Sensor cable selection	AC servo amplifier
UA	HG-KR053	3A：SVPM-J3HF1-B-3-02S 5A：SVPM-J3HF1-B-5-02S Blank・3・5：Not included	3A：SVEM-J3HF1-B-3 5A：SVEM-J3HF1-B-5 Blank・3・5：Not included	3A・3：PG-H-ASSY5-3000 5A・3：PG-H-ASSY5-5000 Blank：PG-H-ASSY5-2000	3A・5A：MR-J4-10A Blank・3・5：Not included

New

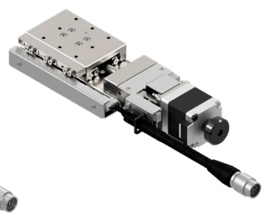
Motorized Stage
X
XY
Z
Horizontal Z
XYZ
Goniometer
Rotary
Unit
Controller
Linear Ball
CAVE-X Linear ball
Cross Roller
Slide Guide
□40
□50
□60
□70
□80
□100
□120
Other

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

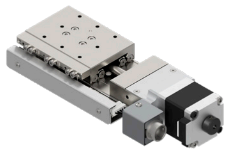
PG430T-LA-C



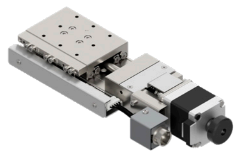
PG430T-LA-C4



PG430M-LA-C



PG430M-LA-C4



RoHS

Freely customize the motor

* The picture is an image.

PG 430 M - LA - C □ □

1 2 3 4 5 5 6 6 7 7

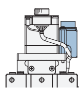
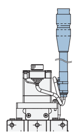
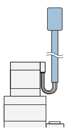
Cables, Positioning pin P. 1-207～
Electrical specification P.1- PG-041～

1 Stage table size/Travel distance

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

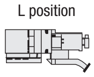
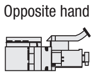
2 Connector specifications

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

M	Panel mount 	
T	Pig tail 	Connector None 

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

3 Sensor cover location

L	L position 
R	Opposite hand 

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.

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)

6 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

*One end loose position to only stage opposite side.
Note: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.(P1-PG-045,P.1-207～)

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 ③ Motor ④ Cable/Driver combination

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

Selection example

Desired specifica-tions	Stage table size: 40×60mm Travel length: 30mm	+	Connector type T: Pigtail	+	Sensor cover location L position	+	Sensor logic A: All N.C.	+	Motor option C: Standard	+	Sensor options Blank: 3Sensor	→
	PG430		PG430**T**		PG430T-**L**		PG430T-L**A**		PG430T-LA-**C**		PG430T-LA-C	

+ Cable option A: 2m — PG430T-LA-C**A** → PG430T-LA-CA

Specification

SPEC						
Model (Opposite hand)			PG430□-LA-C / PG430□-RA-C	PG530□-LA-C / PG530□-RA-C	PG650□-LA-C / PG650□-RA-C	PG750□-LA-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			
	Motion parallelism		10μm			
	Pitching/Yawing		20″/15″			
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	

* 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	0.89kgf	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	—
	PG530		1.18kg	1.27kg	0.81kg	—	0.81kg	—	1.11kg	—
	PG650		1.50kg	1.59kg	1.13kg	—	1.13kg	—	1.43kg	—
	PG750		1.67kg	1.76kg	1.30kg	—	1.30kg	—	1.60kg	—

*1 Model is our own management model.
*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

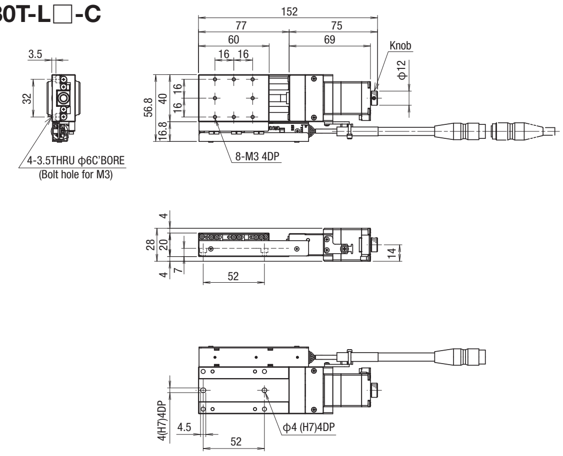
New
Motorized Stage
X
XY
Z
Horizontal Z
XYZ
Goniometer
Rotary
Unit
Controller
Linear Ball
CAVE-X Linear ball
Cross Roller
Slide Guide
□40
□50
□60
□70
□80
□100
□120
Other

New

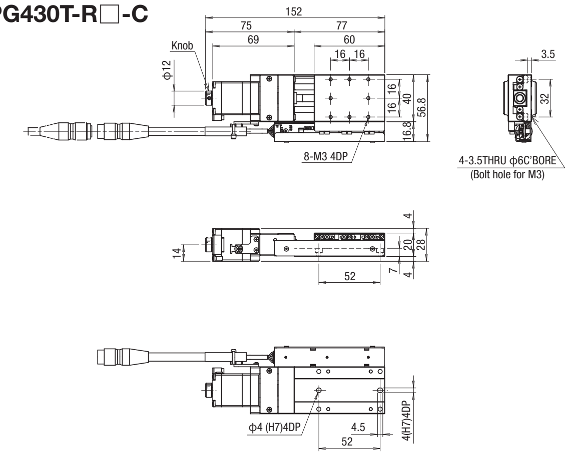
X-axis Linear Ball Guide：PG430/PG530

Dimensions

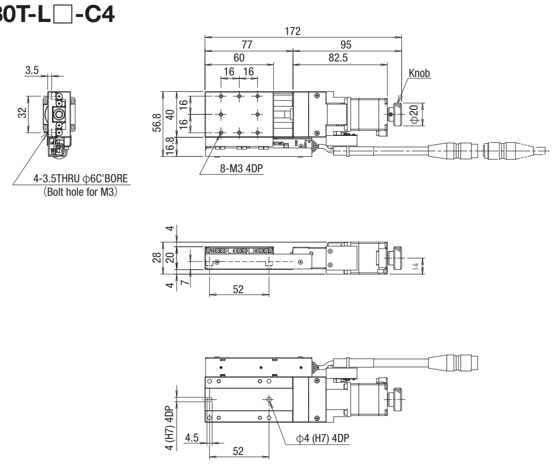
PG430T-L□-C



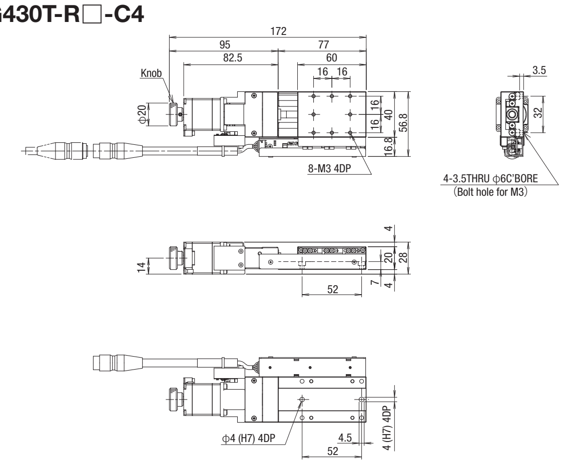
PG430T-R□-C



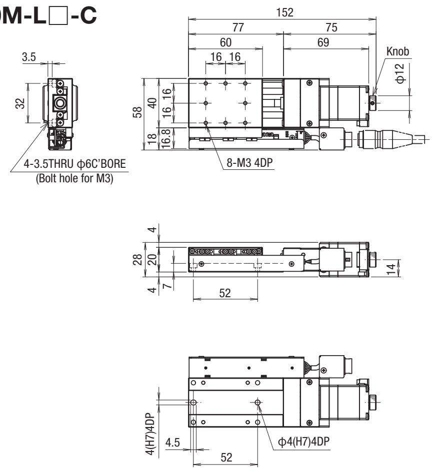
PG430T-L□-C4



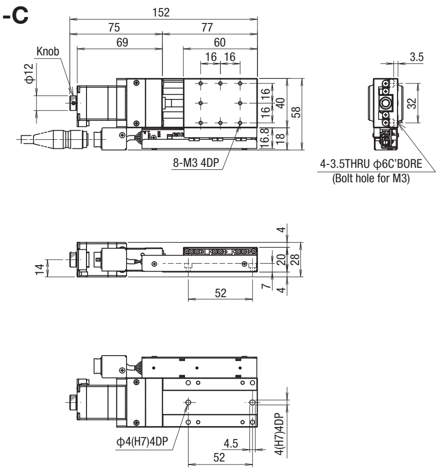
PG430T-R□-C4



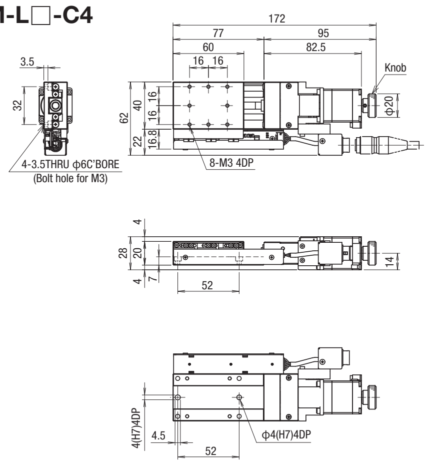
PG430M-L□-C



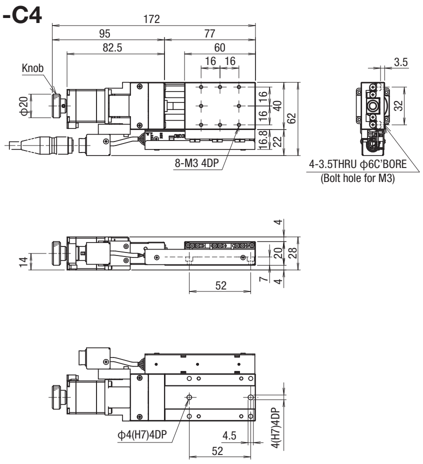
PG430M-R□-C



PG430M-L□-C4

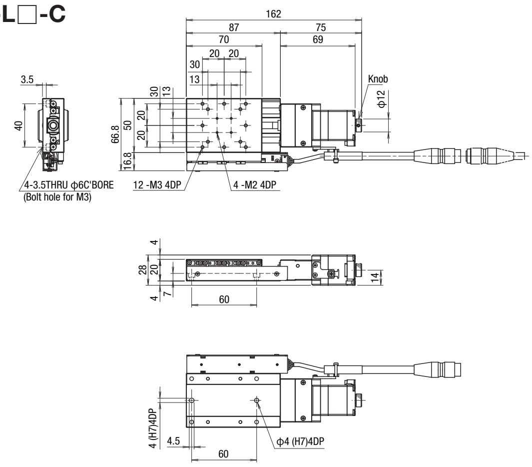


PG430M-R□-C4

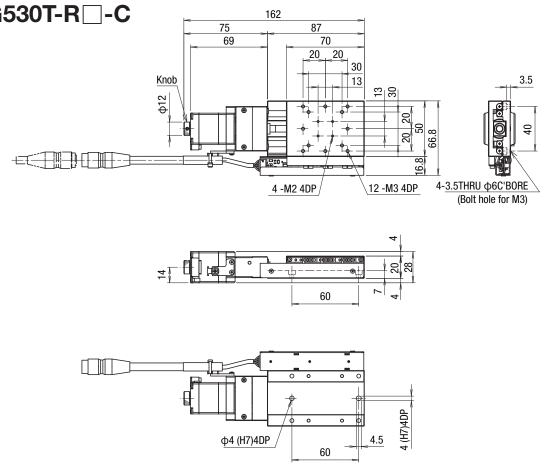


Dimensions

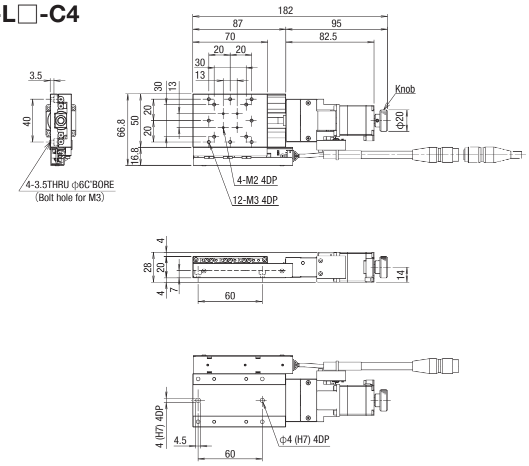
PG530T-L□-C



PG530T-R□-C



PG530T-L□-C4



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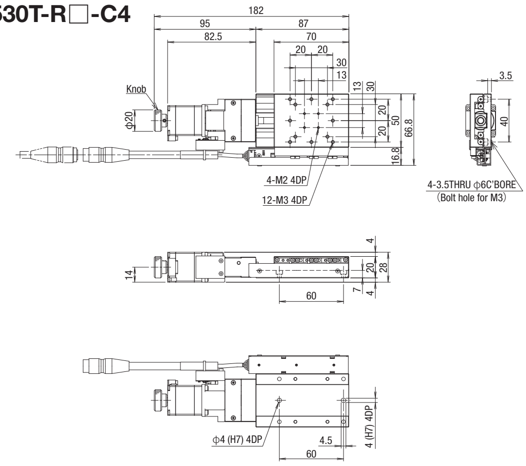
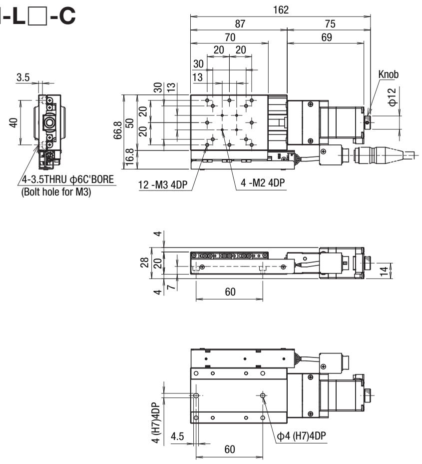


PG530M-L□-C



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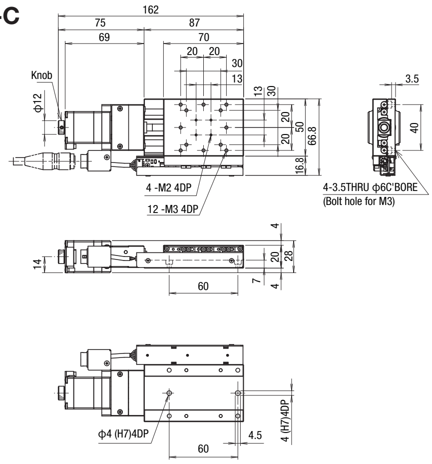

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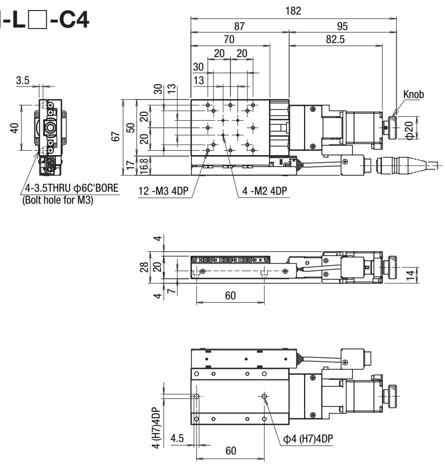

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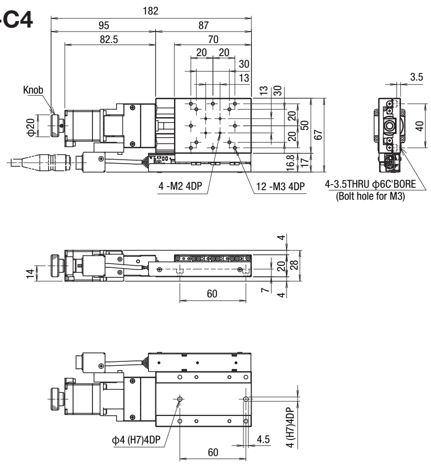
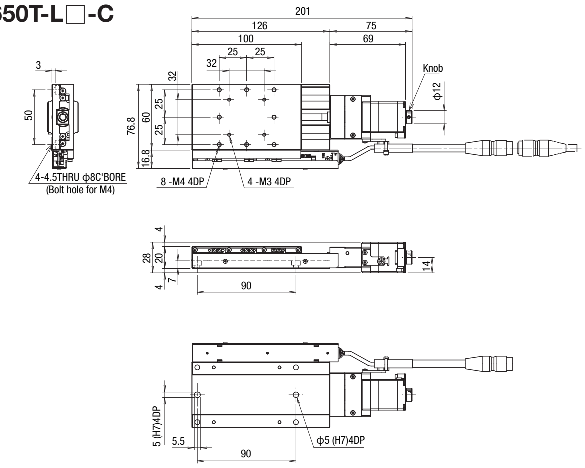


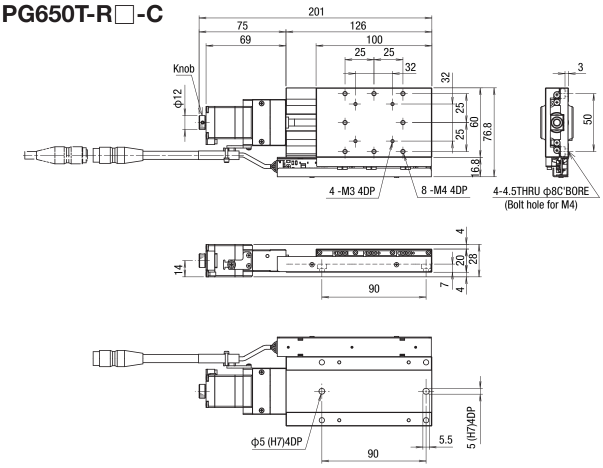
X-axis Linear Ball Guide：PG650/PG750

Dimensions

PG650T-L□-C



PG650T-R□-C



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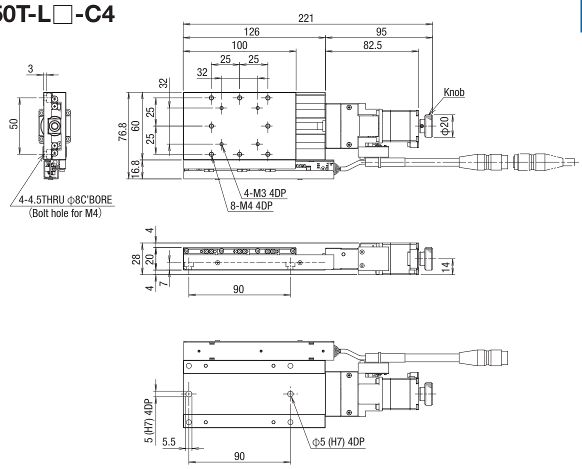

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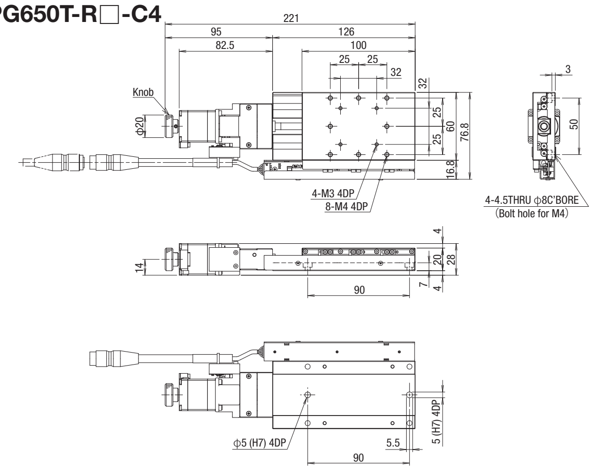

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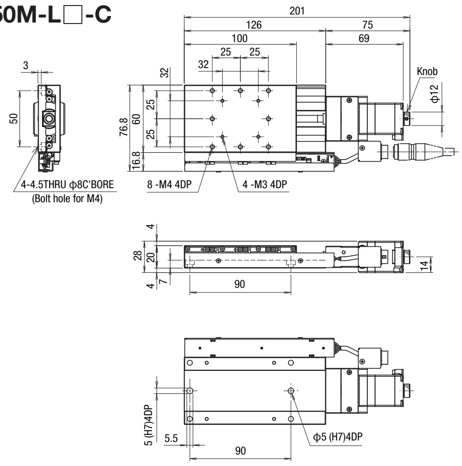

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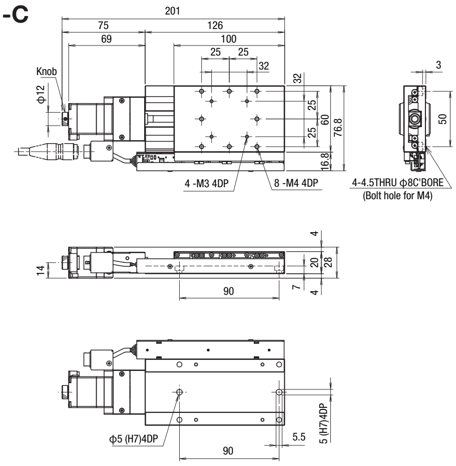

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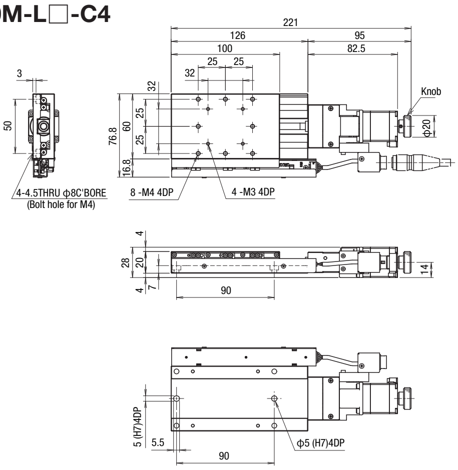

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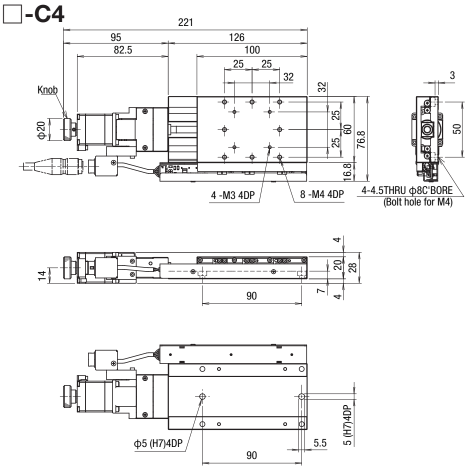
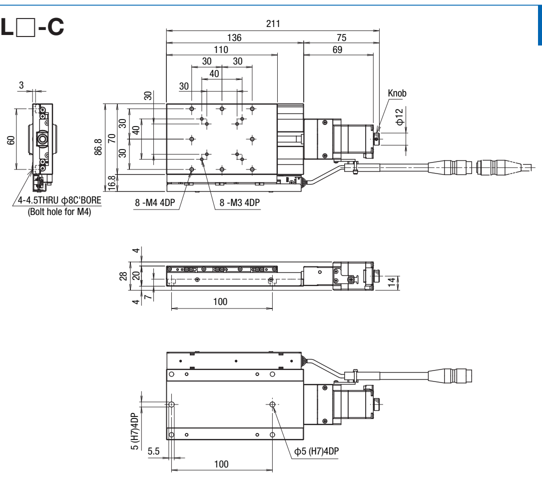
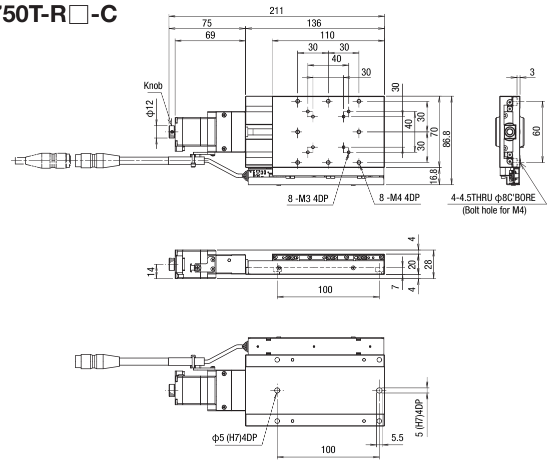


Dimensions

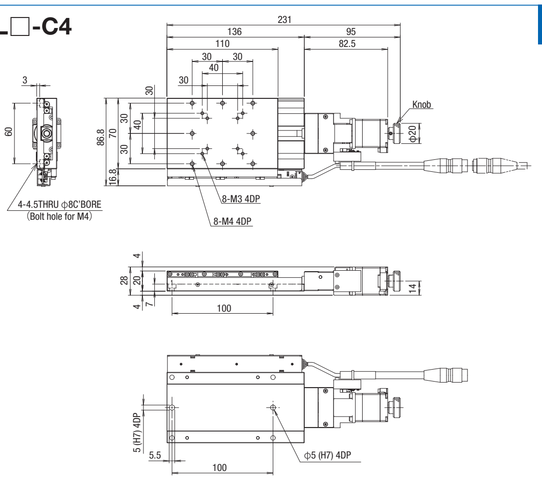
PG750T-L□-C



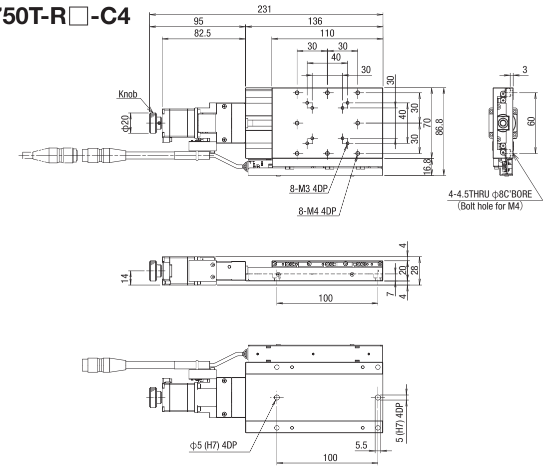
PG750T-R□-C



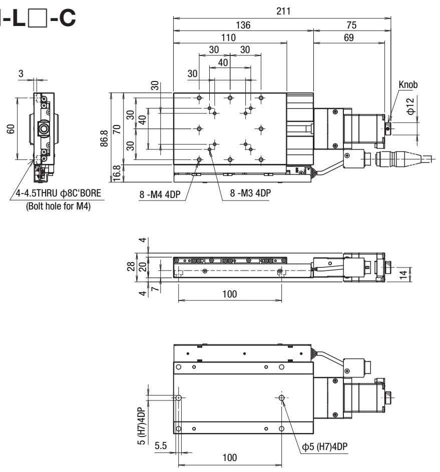
PG750T-L□-C4



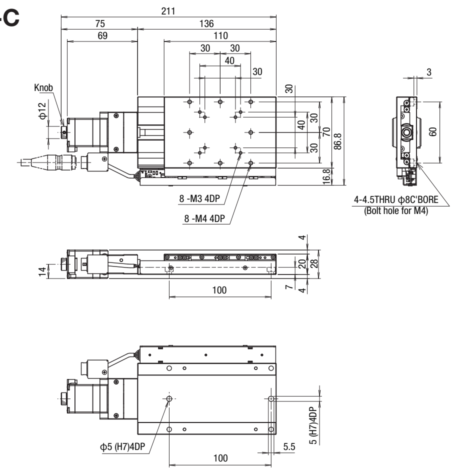
PG750T-R□-C4



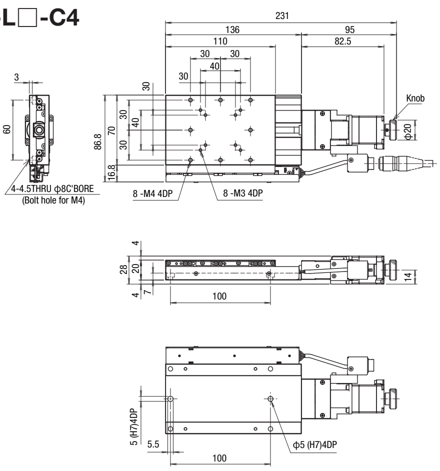
PG750M-L□-C



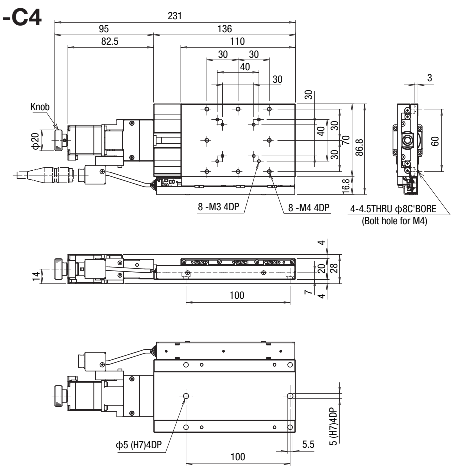
PG750M-R□-C



PG750M-L□-C4



PG750M-R□-C4

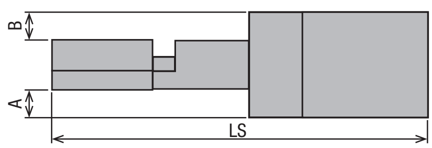


X-axis Linear Ball Guide : PG430/PG530/PG650/PG750

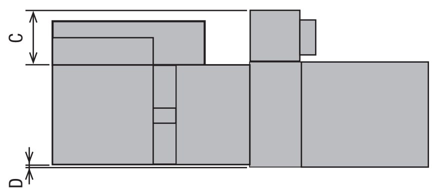
PART COMMUNITY CAD DATA

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 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
			M					18.0	22.0				
PG530			T					16.8	16.8			162	182
			M					16.8	17.0				
PG650			T					16.8	16.8			201	221
			M					16.8	16.8				
PG750			T					16.8	16.8			211	231
			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
PG430	D	□28	T	4	4	4	4	16.8	16.8	0	0	171.5	191.5
			M					18.0	22.0				
PG530			T					16.8	16.8			181.5	201.5
			M					16.8	17.0				
PG650			T					16.8	16.8			220.5	240.5
			M					16.8	16.8				
PG750			T					16.8	16.8			230.5	250.5
			M					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		T	11	11	11	11	16.8	16.8	1	1	201.5	208.5
PG530										0	0	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	

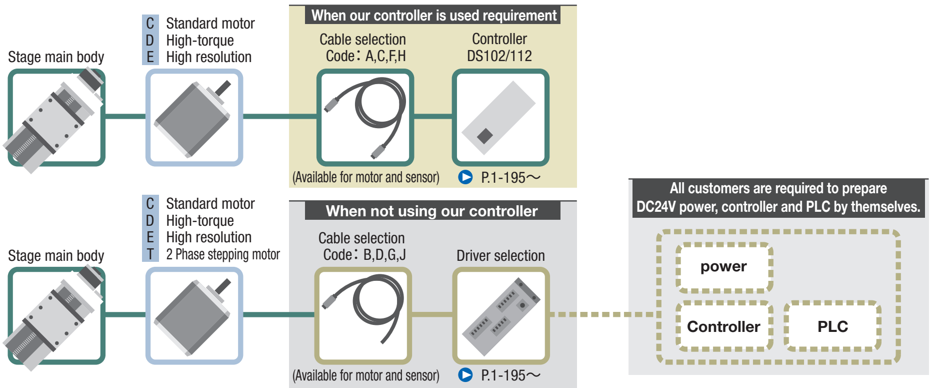
Motor option

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



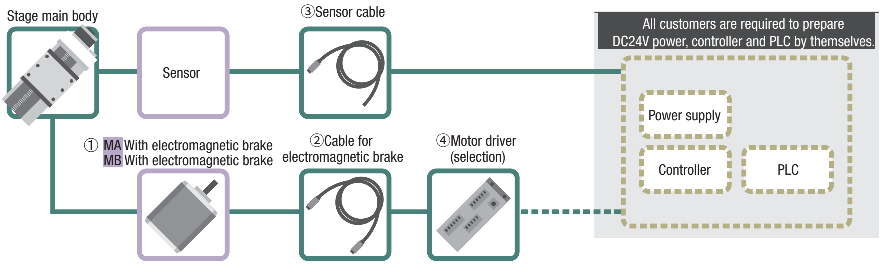
Code		①Motor model	②Motor・Sensor cable selection
C	3 Sensor	C005C-90215P-1	A・B・C・D：D214-2-□E(K) F・G・H・J：D214-2-□R(K)
	4 Sensor*	PK523HPB-C15	
D	3 Sensor	PK525HPB-C1	A・B・C・D：D214-2-□E(K) F・G・H・J：D214-2-□R(K)
	4 Sensor*	PK525HPB	

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

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

Motor option

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

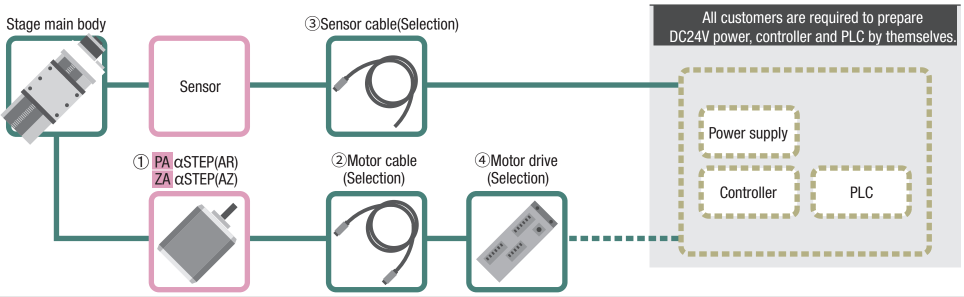


Code	①Motor model	②Motor cable selection	③Sensor cable selection	Driver selection
MA・MB	PKE545MC-A1	3A：CC030VPFB 5A：CC050VPFB Blank・3・5：Not included	3A・3：PG-H-ASSY5-3000 5A・5：PG-H-ASSY5-5000 Blank：PG-H-ASSY5-2000	[MA]3A・5A：RKSD503M-A [MB]3A・5A：RKSD503M-C Blank・3・5：Not included

Motor option

PA αSTEP (AR Series)
Motor model
ARM24SAK

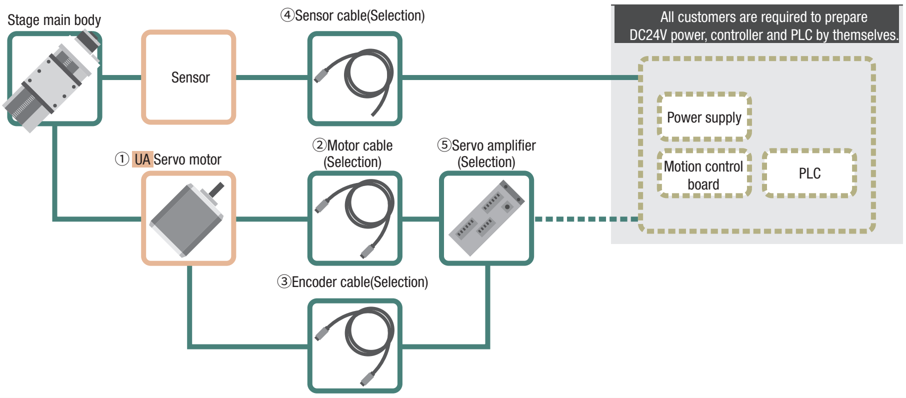
ZA αSTEP (AZ Series)
Motor model
AZM24AK



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

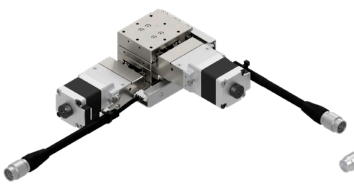


Code	①Motor model	②Motor cable selection	③Encoder cable 3m	④Sensor cable selection	⑤ Servo amplifier selection
UA	HG-KR053	3A：SVPM-J3HF1-B-3-02S 5A：SVPM-J3HF1-B-5-02S Blank・3・5：Not included	3A：SVEM-J3HF1-B-3 5A：SVEM-J3HF1-B-5 Blank・3・5：Not included	3A・3：PG-H-ASSY5-3000 5A・5：PG-H-ASSY5-5000 Blank：PG-H-ASSY5-2000	3A・5A：MR-J4-10A Blank・3・5：Not included

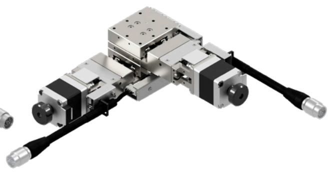
New

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

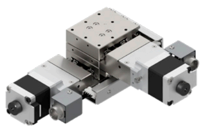
PMG413T-LA-C



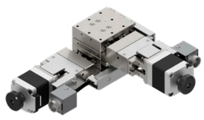
PMG413T-LA-C4



PMG413M-LA-C



PMG413M-LA-C4



RoHS

* The picture is an image.

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

PMG 413 M - L A - C □ □

1 2 3 4 5 5 6 6 7 7

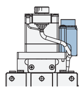
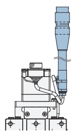
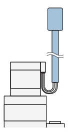
Cables, Positioning pin P. 1-207～
Electrical specification P.1- PG-041～

1 Stage table size/Travel distance

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

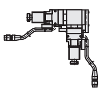
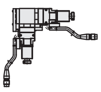
2 Connector specifications

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

Code		
M	Panel mount 	
T	Pig tail 	Connector None 

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

3 identification

Code	
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.

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)

6 6 Sensor options

Code	Specification	C	D	E	T	MA	MB	PA	ZA	UA
		Application Motor								
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

*One end loose position to only stage opposite side.
Note: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.(P1-PG-045,P.1-207～)

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 ③ Motor ④ Cable/Driver combination

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

Selection example

Desired specifica-tions	Size: □40 Travel length: 13mm	+	Connector specifica-tion・pigtail	+	Sensor cover location L position	+	Sensor logic A: All N.C.	+	Motor option C: Standard	+	Sensor options Blank: 3 Sensor	→
	PMG413		PMG413**T**		PMG413T-**L**		PMG413T-L**A**		PMG413T-LA-**C**		PMG413T-LA-C	

+ Cable option A: 2m — PMG413T-LA-C**A** ▷PMG413T-LA-CA

X
XY
Z
Horizontal Z
XYZ
Goniometer
Rotary
Unit
Controller
Linear Ball
CAVE-X Linear ball
Cross Roller
Slide Guide
□40
□50
□60
□70
□80
□100
□120
Other

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	1.22kg	1.46kg	1.72kg
		Panel mount	0.98kg	1.20kg	1.44kg	1.70kg
Accuracy specification	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			
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		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	—

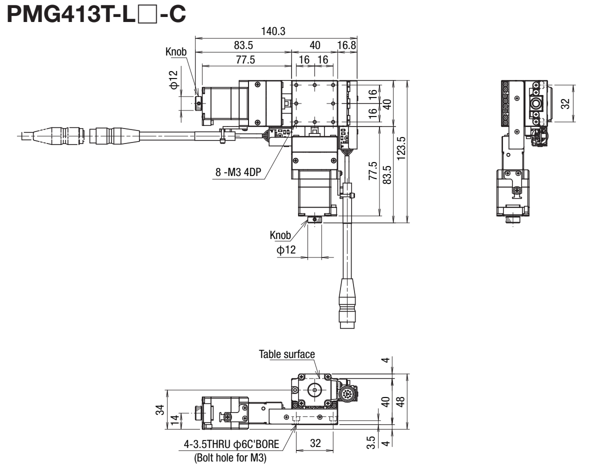
*1 Model is our own management model.
*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

New
Motorized Stage
X
XY
Z
Horizontal Z
XYZ
Goniometer
Rotary
Unit
Controller
Linear Ball
CAVE-X Linear ball
Cross Roller
Slide Guide
□40
□50
□60
□70
□80
□100
□120
Other

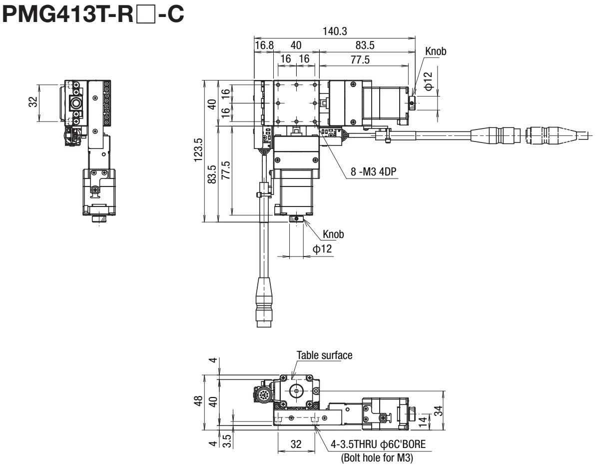
XY-axis Linear Ball Guide：PMG413/PMG513

Dimensions

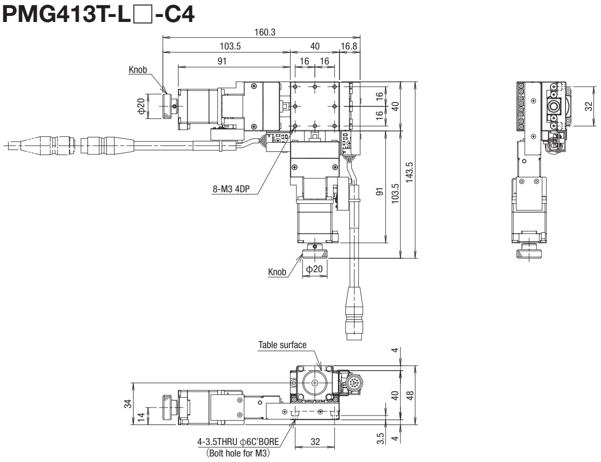
PMG413T-L□-C



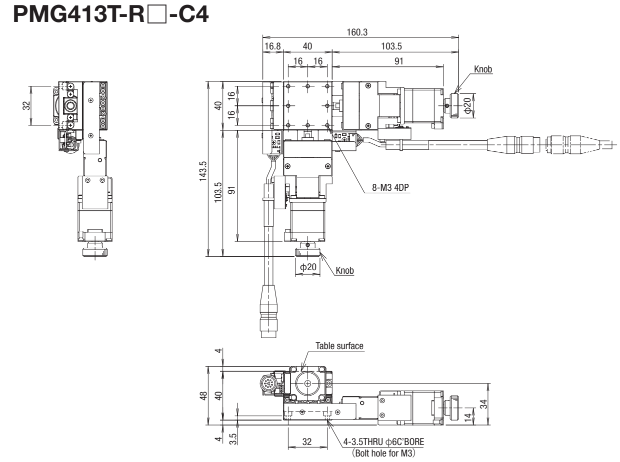
PMG413T-R□-C



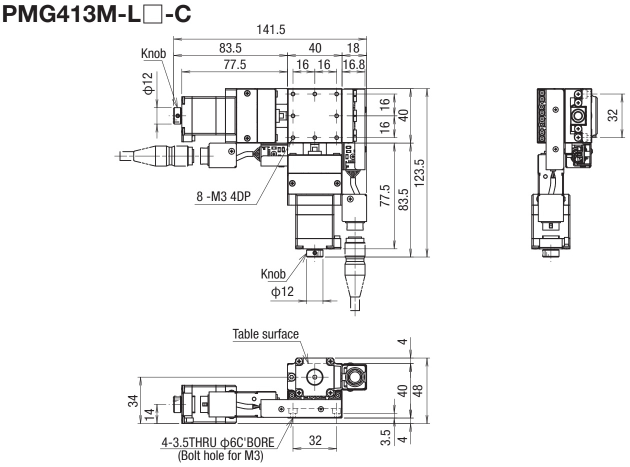
PMG413T-L□-C4



PMG413T-R□-C4



PMG413M-L□-C



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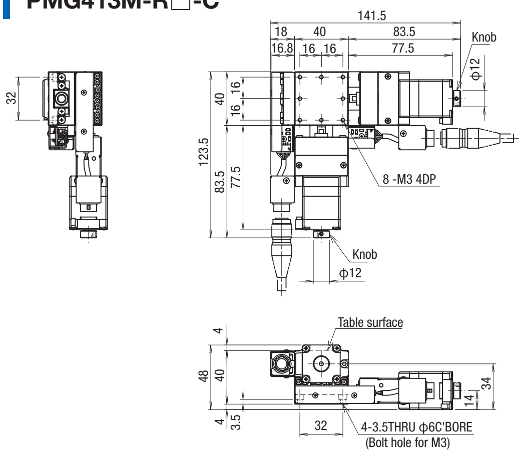

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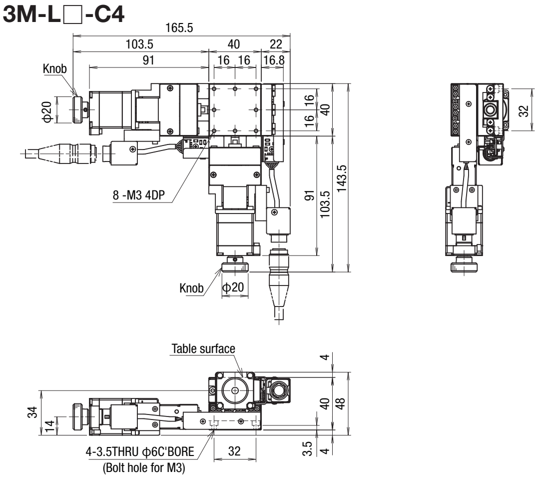

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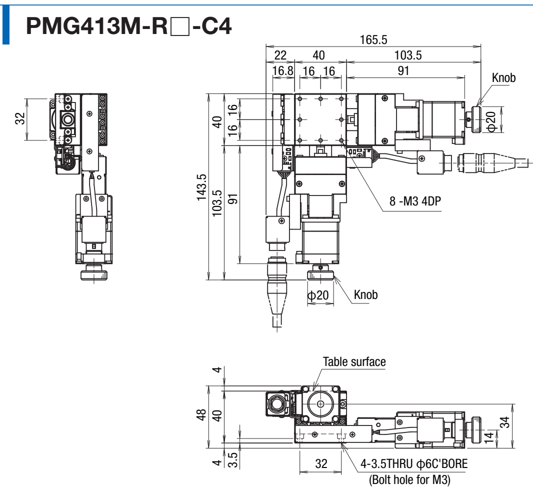
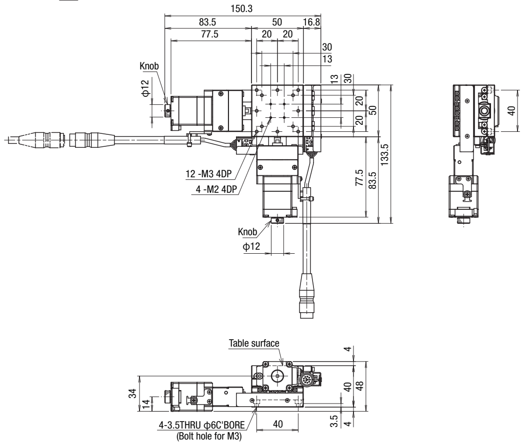


Dimensions

PMG513T-L□-C



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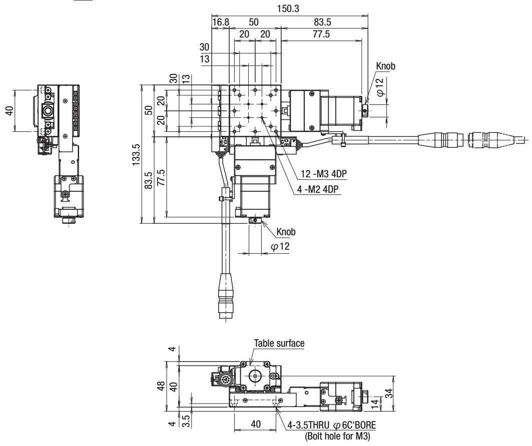

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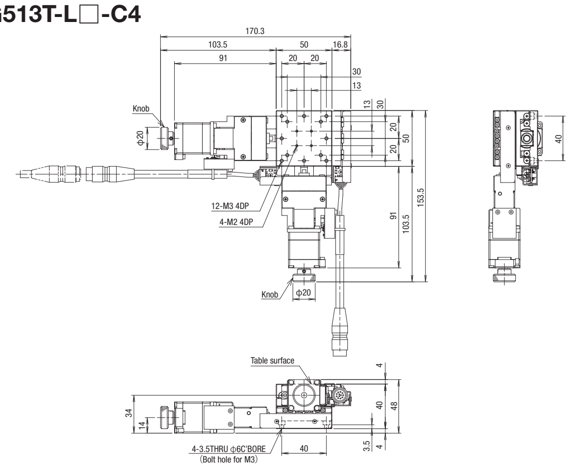

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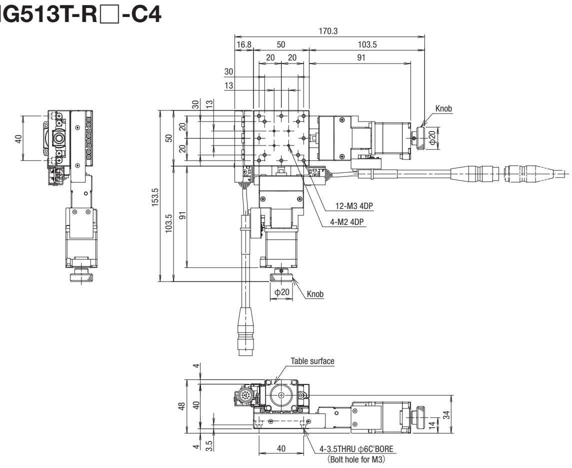

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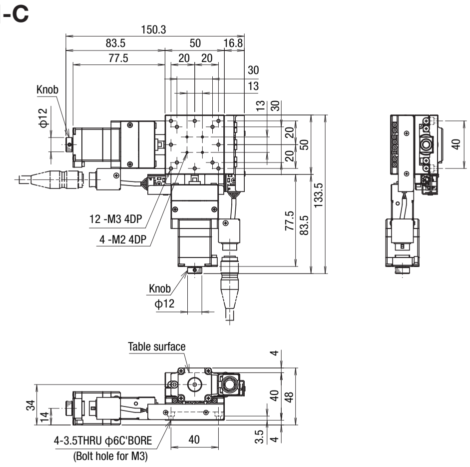

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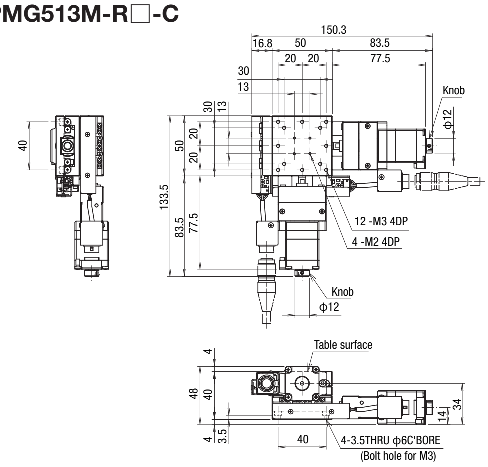

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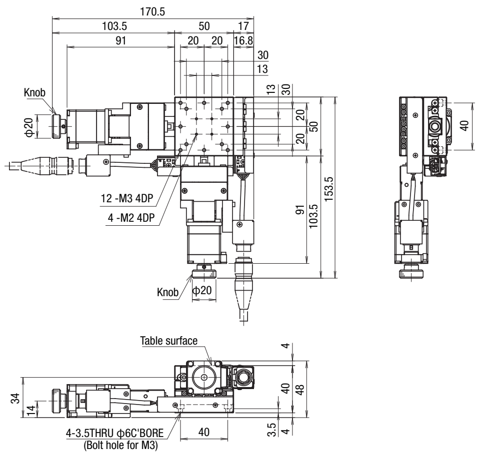

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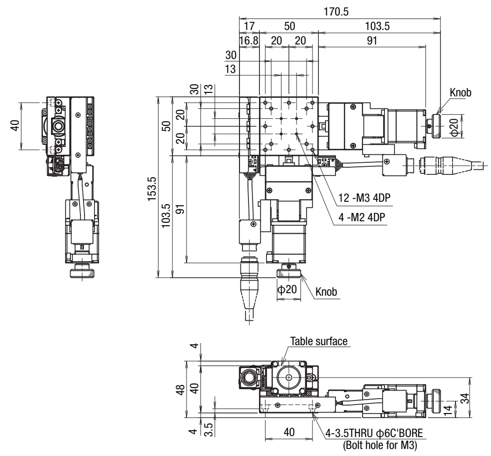
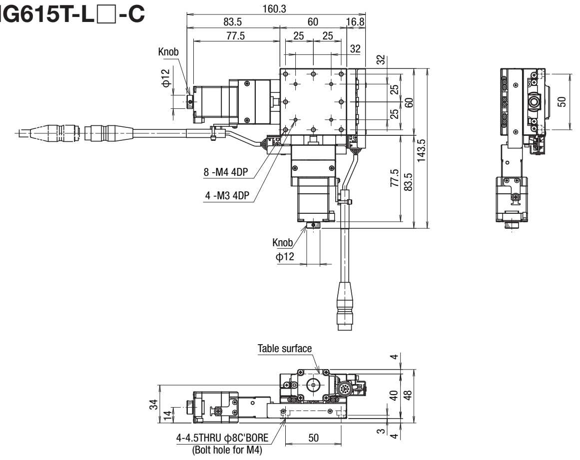


XY-axis Linear Ball Guide：PMG615/PMG715

Dimensions

PMG615T-L□-C



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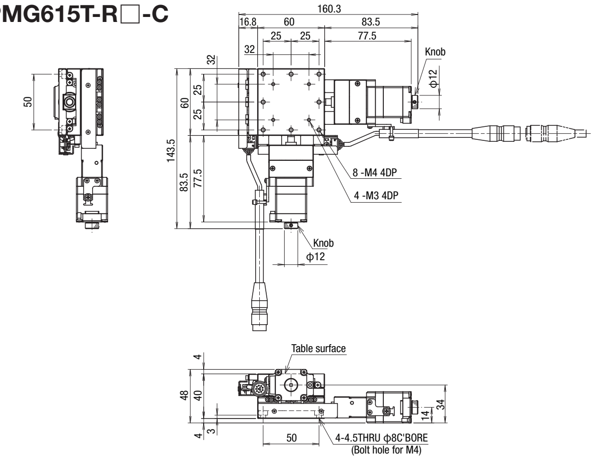

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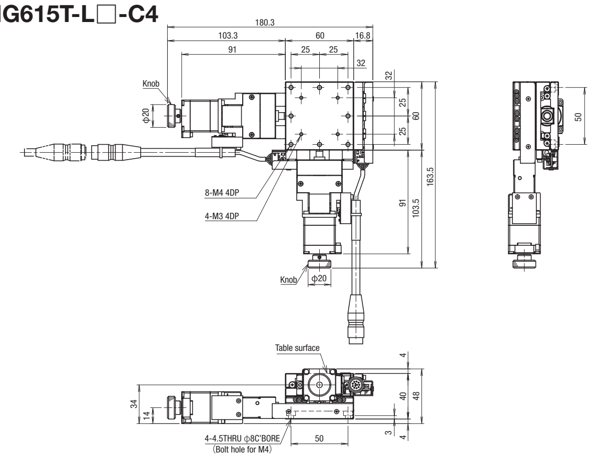

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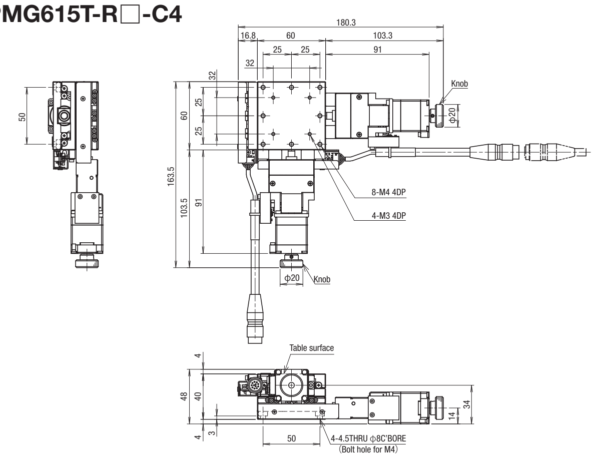

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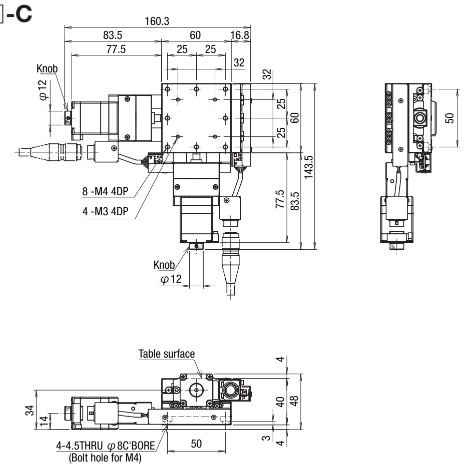

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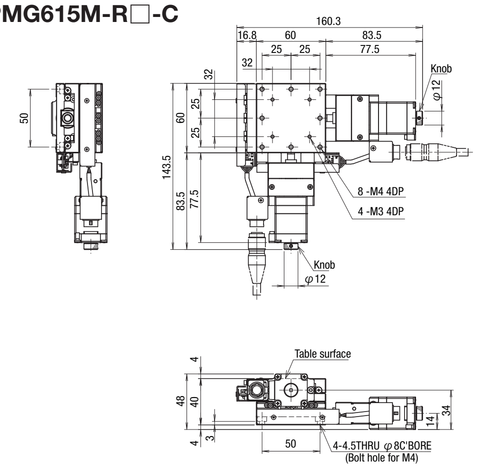

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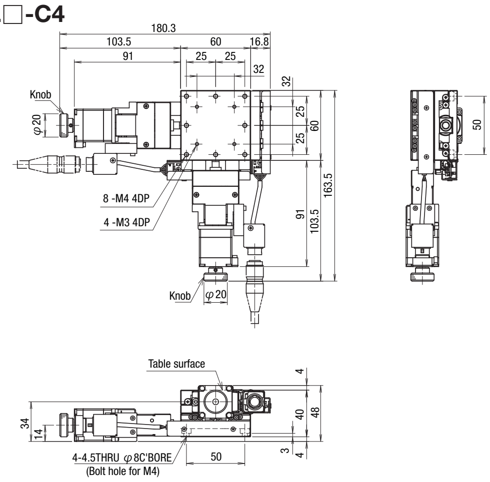

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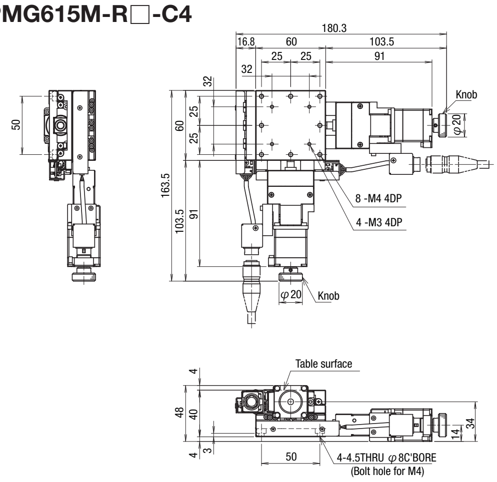
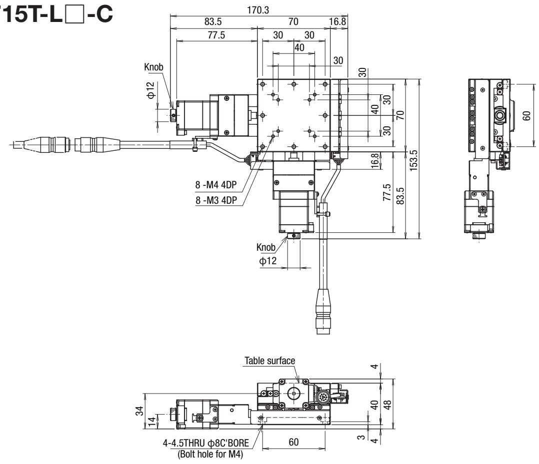


URL:https://eng.surugaseiki.com/ Email:e-ost@suruga-g.co.jp
TEL.+81-6403-4513 FAX.+81-6403-4514

Dimensions

PMG715T-L□-C



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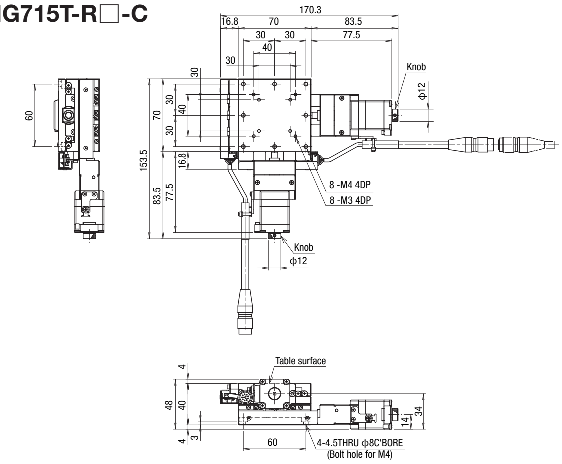

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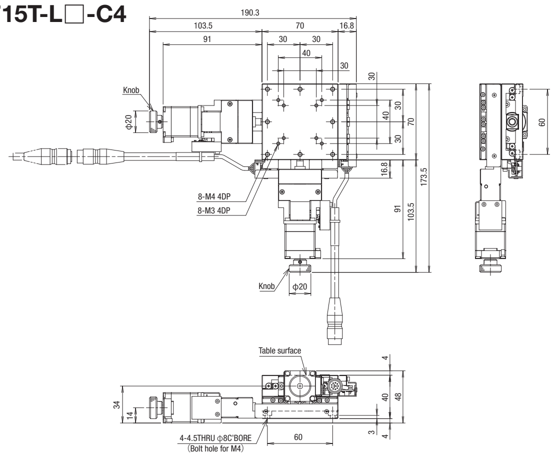
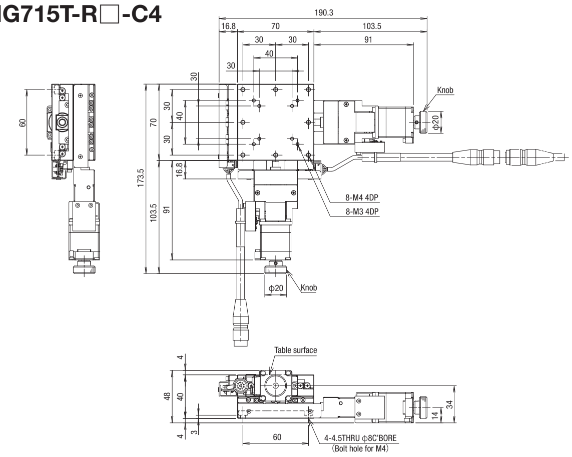
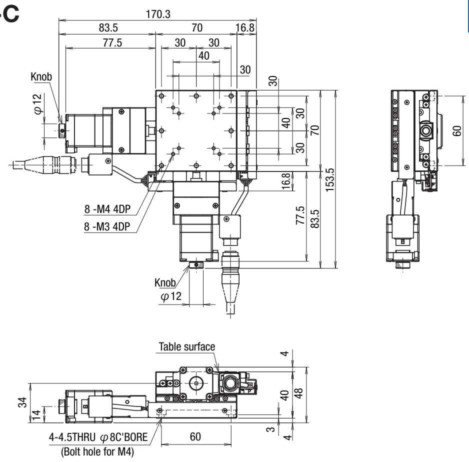


PMG715T-R□-C4



PMG715M-L□-C



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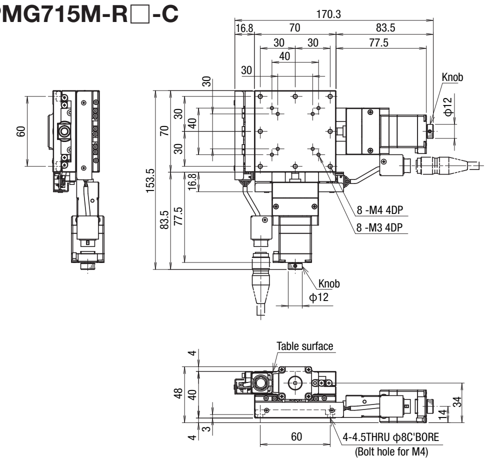

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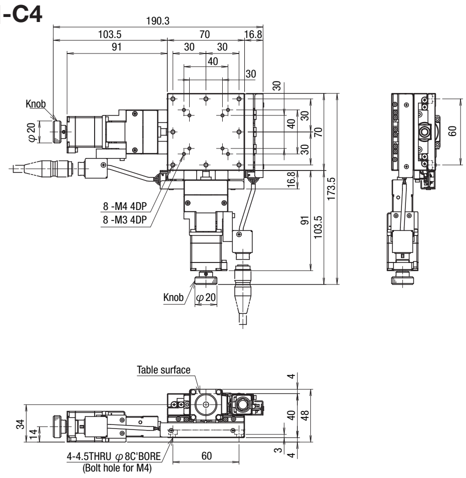

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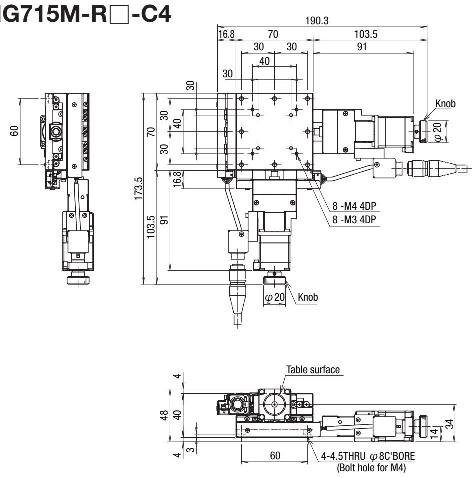
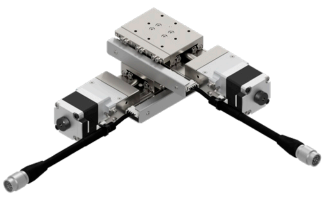


New

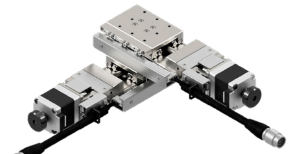
X-axis Linear Ball Guide：PMG430/PMG530/PMG650/PMG750

RoHS

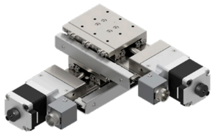
PMG430T-LA-C



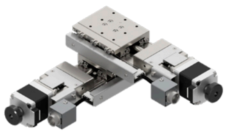
PMG430T-LA-C4



PMG430M-LA-C



PMG430M-LA-C4



* The picture is an image.

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

PMG 430 M - L A - C □ □

1 (430) 2 (M) 3 (L) 4 (A) 5 5 (C) 6 6 (□) 7 7 (□)

Cables, Positioning pin P. 1-207 ～
Electrical specification P.1- PG-041～

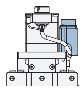
1 Stage table size/Travel distance

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

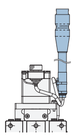
2 Connector specifications

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

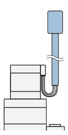
M — Panel mount



T — Pig tail



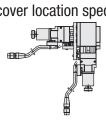
Connector None



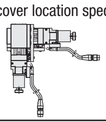
*No common connector: The motor cable and sensor cable are not consolidated into a common connector.

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.

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)

6 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

*One end loose position to only stage opposite side.
Note: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.(P1-PG-045,P.1-207～)

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 ③ Motor ④ Cable/Driver combination

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

Selection example

Desired specifications	Connector specification・pigtail	Sensor cover location L position	Sensor logic A: All N.C.	Motor option C: Standard	Sensor options Blank: 3 Sensor	Cable option A: 2m
size: 40×60mm Travel length: 30mm — PMG430	PMG430**T**	PMG430T-**L**	PMG430T-L**A**	PMG430T-LA-**C**	PMG430T-LA-C	PMG430T-LA-C**A**

▷PMG430T-LA-CA

Specification

SPEC						
Model (Opposite hand)			PMG430□-LA-C PMG430□-RA-C	PMG530□-LA-C PMG530□-RA-C	PMG650□-LA-C PMG650□-RA-C	PMG750□-LA-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	—

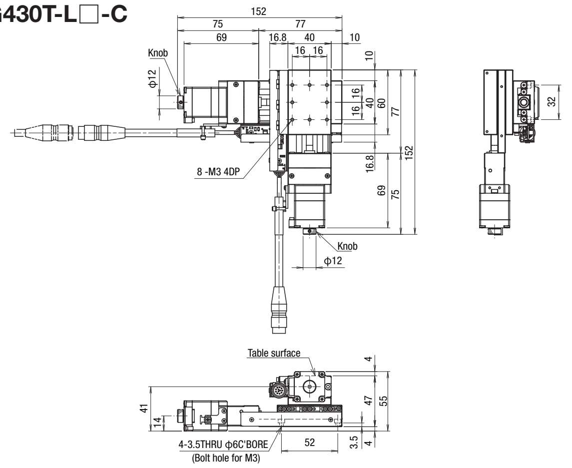
Motor code			MA・MB		PA		ZA		UA	
Type			With electromagnetic brake□42mm		αSTEP (AR)		αSTEP (AZ)		AC servo motor(J4)	
Motor model* 1	3 Sensor		PKE545MC-A1		ARM24SAK		AZM24AK		HG-KR053	
	4 Sensor				—		—		—	
Step angle			0.72°		—		—		—	
Resolution	Full/Half		2μm/1μm		1μm(Set to 1000P/R)		1μm(Set to 1000P/R)		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
	PMG430	Connector None	2.22kg	2.40kg	1.48kg	—	1.48kg	—	2.08kg	—
	PMG530		2.54kg	2.72kg	1.80kg	—	1.80kg	—	2.40kg	—
	PMG650		3.31kg	3.49kg	2.57kg	—	2.57kg	—	3.17kg	—
	PMG750		3.74kg	3.92kg	3.00kg	—	3.00kg	—	3.60kg	—

*1 Model is our own management model.
*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

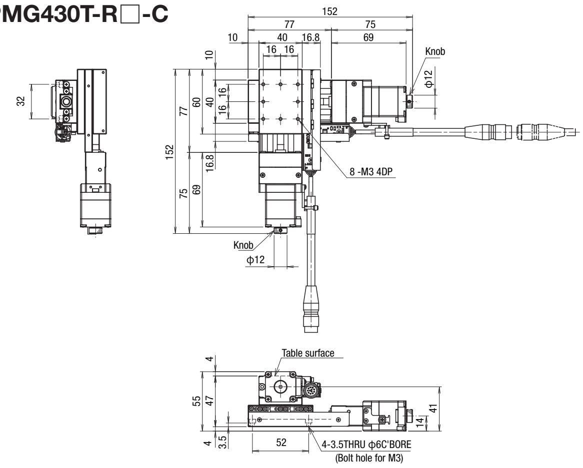
XY-axis Linear Ball Guide：PMG430/PMG530

Dimensions

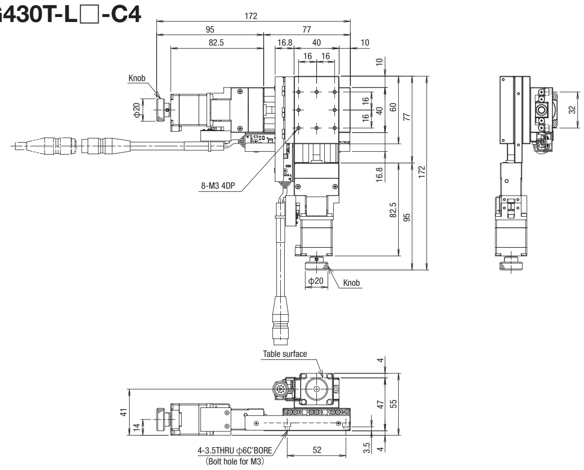
PMG430T-L□-C



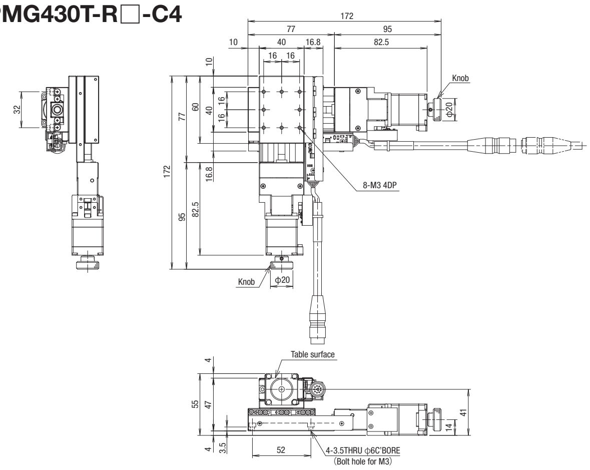
PMG430T-R□-C



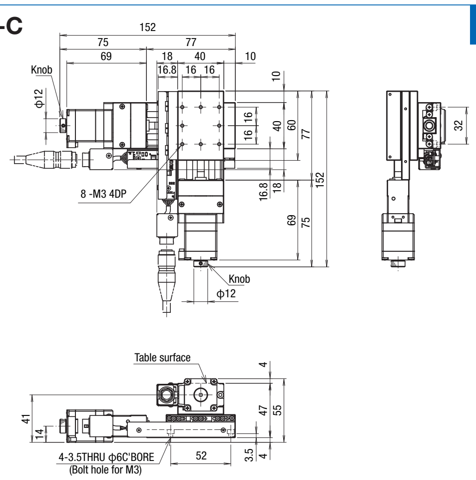
PMG430T-L□-C4



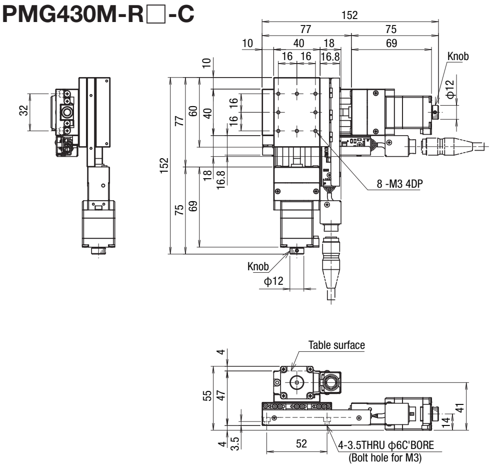
PMG430T-R□-C4



PMG430M-L□-C



PMG430M-R□-C



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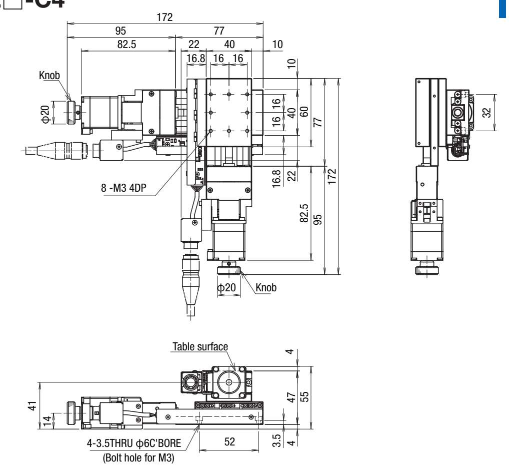

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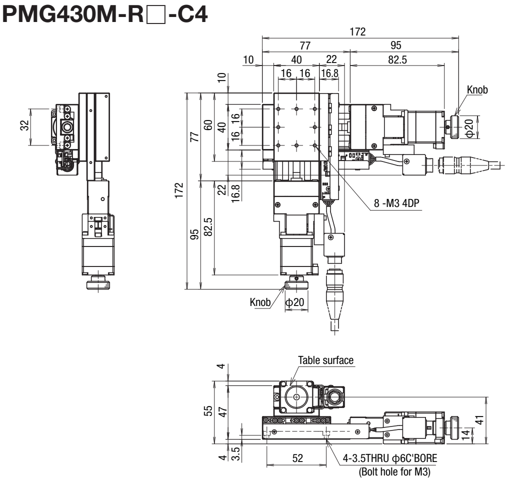
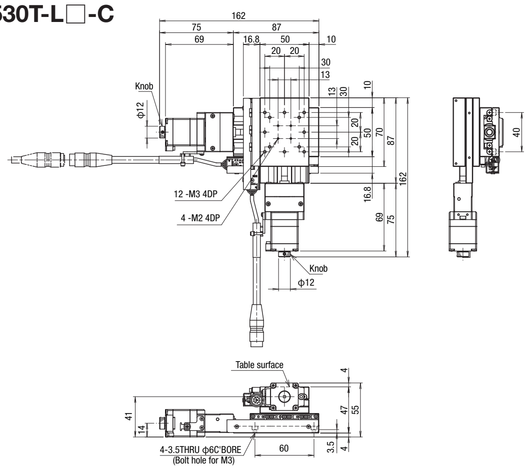


Dimensions

PMG530T-L□-C



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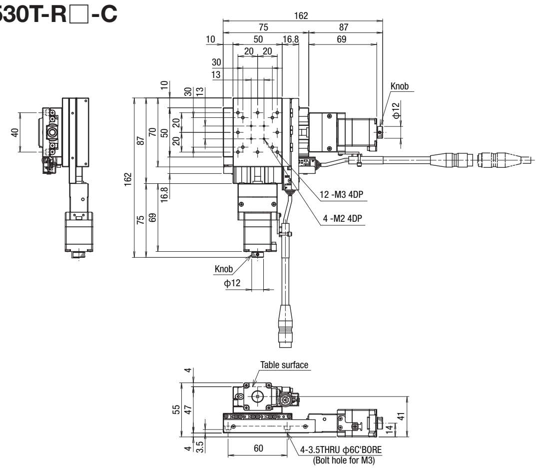

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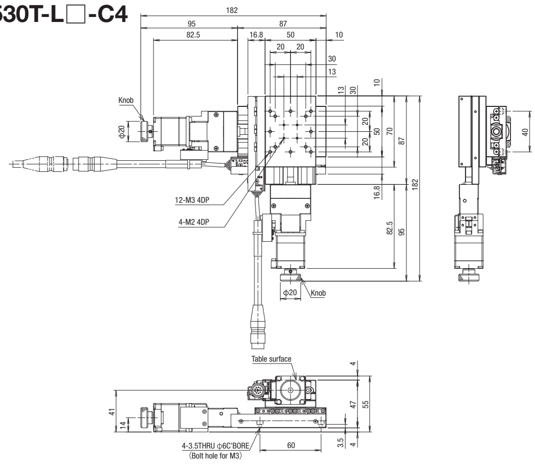

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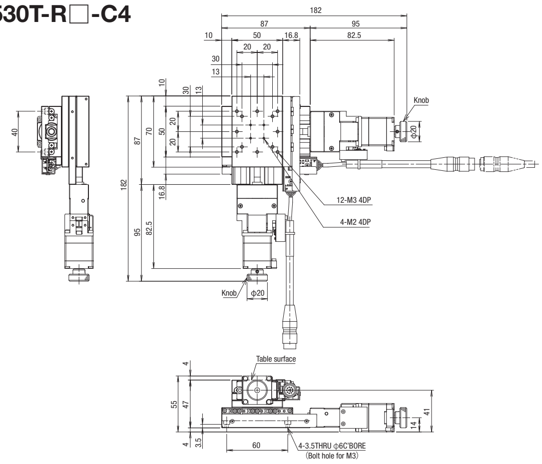

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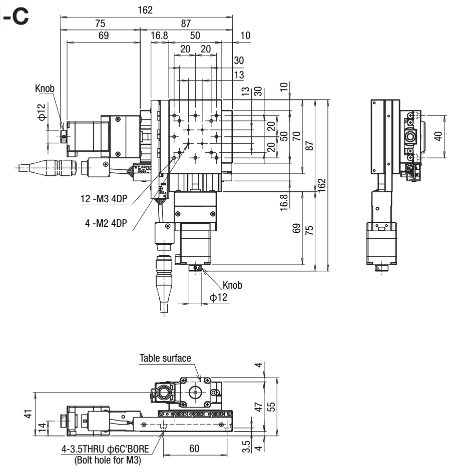

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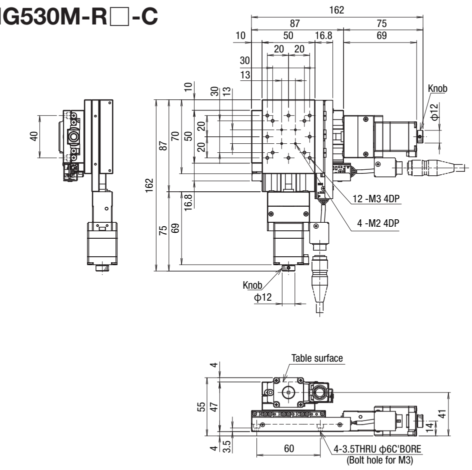

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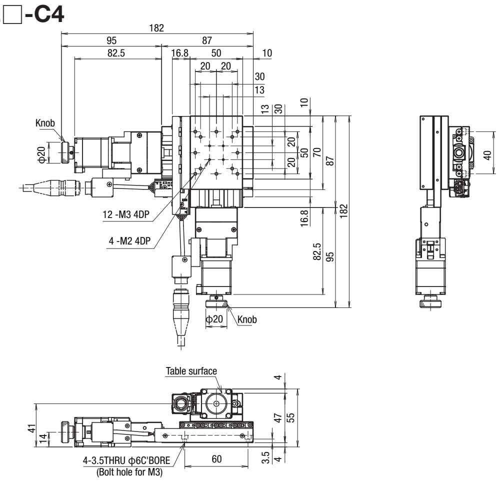
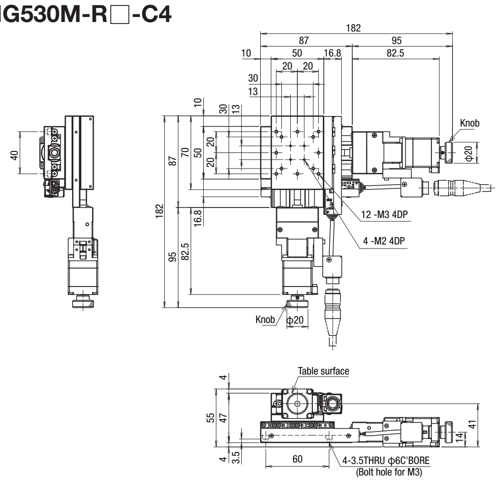


PMG530M-R□-C4

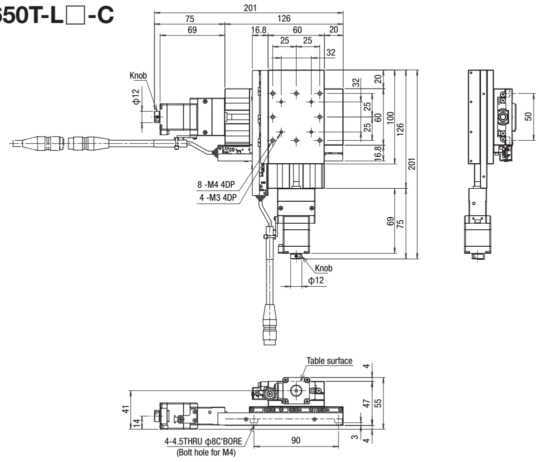


New

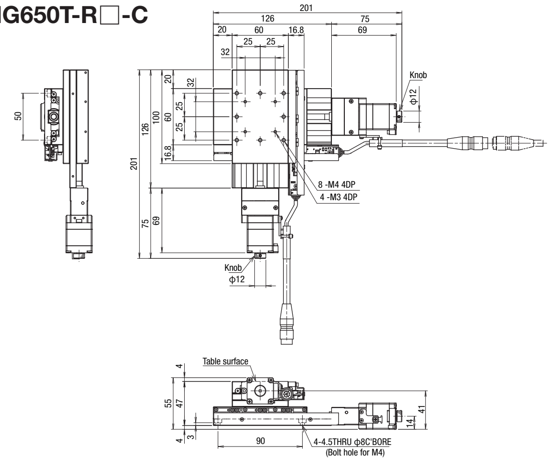
XY-axis Linear Ball Guide：PMG650/PMG750

Dimensions

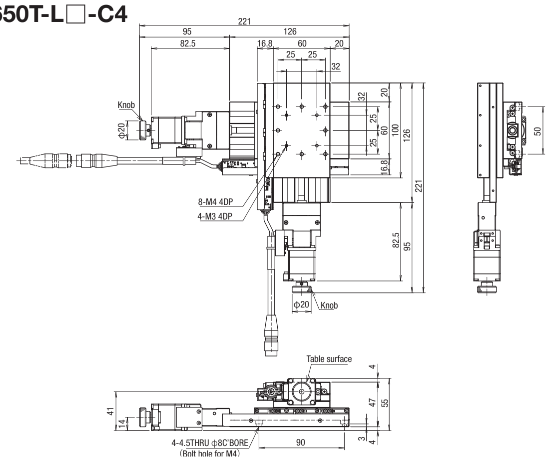
PMG650T-L□-C



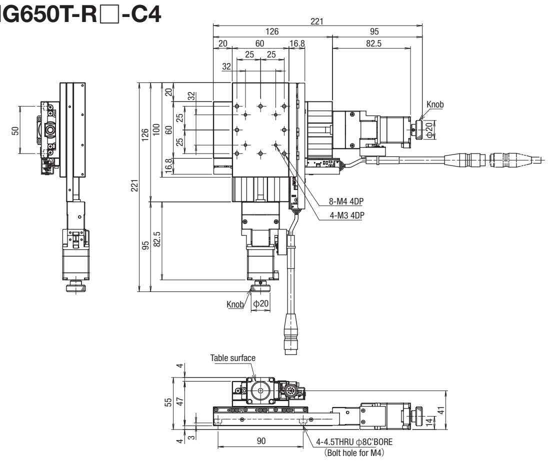
PMG650T-R□-C



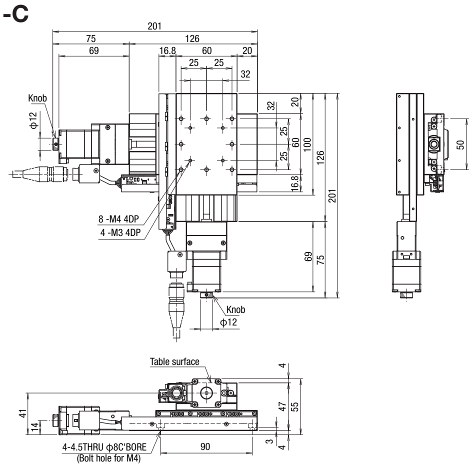
PMG650T-L□-C4



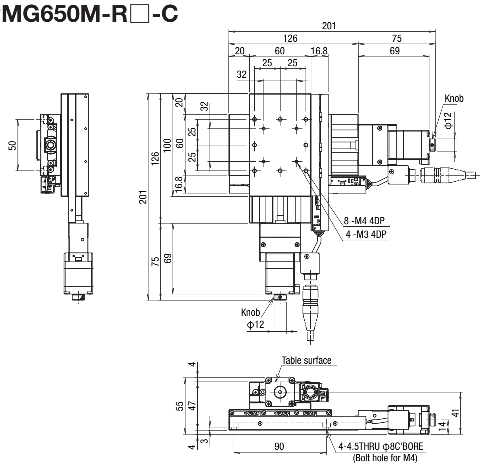
PMG650T-R□-C4



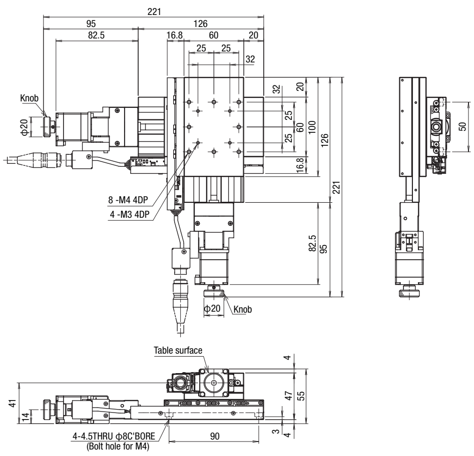
PMG650M-L□-C



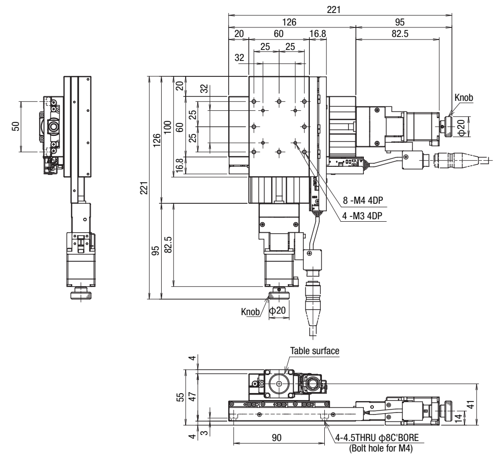
PMG650M-R□-C



PMG650M-L□-C4



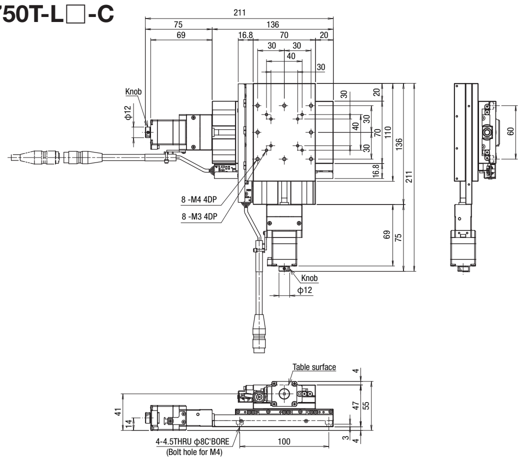
PMG650M-R□-C4



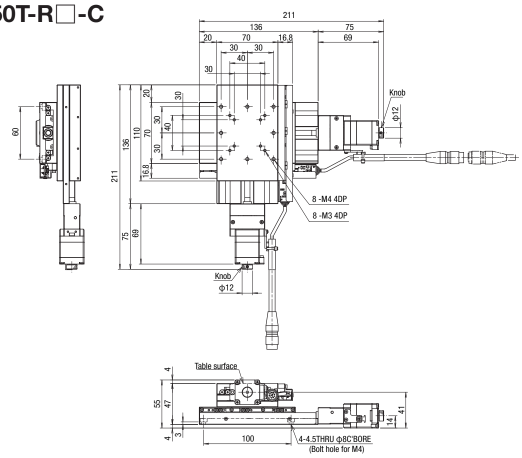
URL:https://eng.surugaseiki.com/ Email:e-ost@suruga-g.co.jp
TEL.+81-6403-4513 FAX.+81-6403-4514

Dimensions

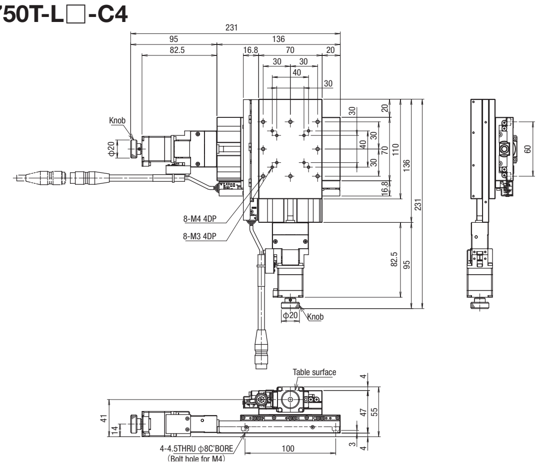
PMG750T-L□-C



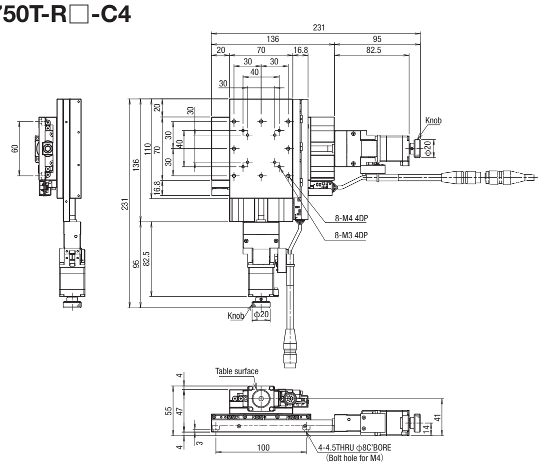
PMG750T-R□-C



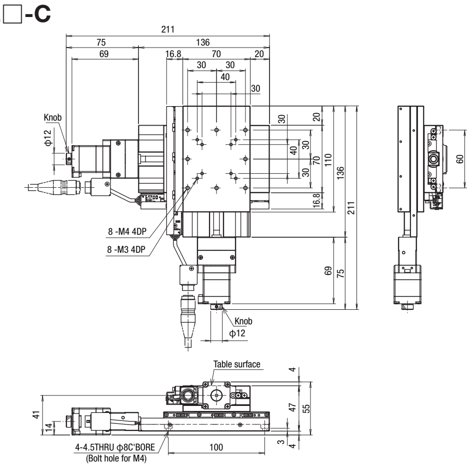
PMG750T-L□-C4



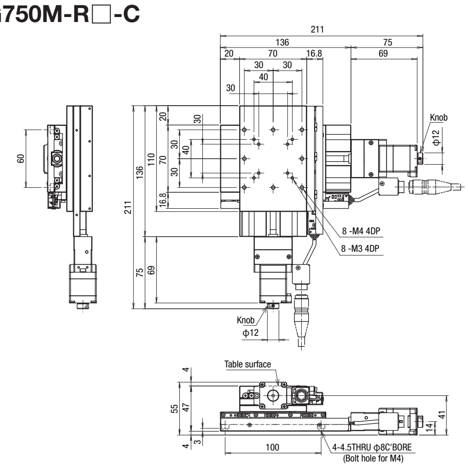
PMG750T-R□-C4



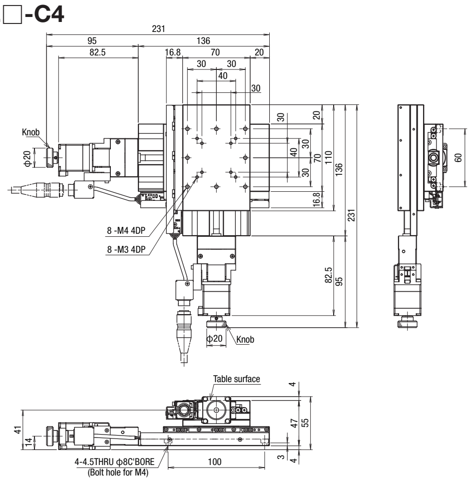
PMG750M-L□-C



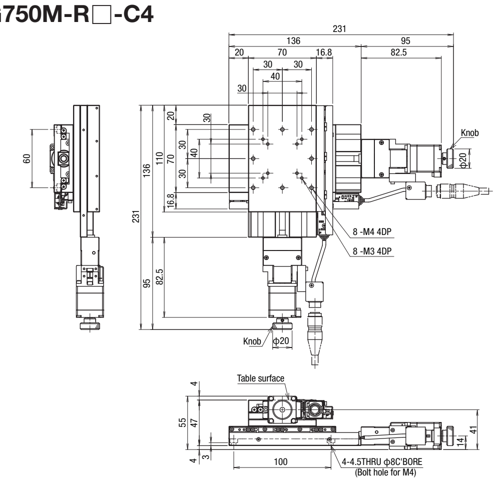
PMG750M-R□-C



PMG750M-L□-C4



PMG750M-R□-C4



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

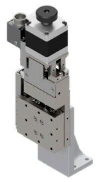
RoHS

PZG413T-LA-C

PZG413T-LA-C4

PZG413M-LA-C

PZG413M-LA-C4



* The picture is an image.

PZG413 M - L A - C □ □

1 2 3 4 5 5 6 6 7 7

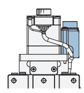
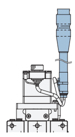
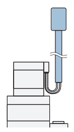
Cables, Positioning pin P. 1-207～
Electrical specification P.1- PG-041～

1 Stage table size/Travel distance

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

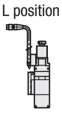
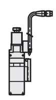
2 Connector specifications

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

M	Panel mount 	
T	Pig tail 	Connector None 

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

3 Sensor cover location

L	L position 
R	Opposite hand 

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.

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)

6 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

*One end loose position to only stage opposite side.
Note: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.(P1-PG-045,P.1-207～)

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 ③ Motor ④ Cable/Driver combination

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

Selection example

Desired specifications	Size: □40 Travel length: 13mm	connector specifications T：pigtail	Sensor cover location L position	Sensor logic A: All N.C.	Motor option C: Standard	Sensor options Blank: 3 Sensor	Cable option A: 2m
	PZG413	PZG413**T**	PZG413T-**L**	PZG413T-L**A**	PZG413T-LA-**C**	PZG413T-LA-C	PZG413T-LA-C**A**

▷PZG413T-LA-CA

Specification

SPEC						
Model (Opposite hand)			PZG413□-LA- C PZG413□-RA- C	PZG513□-LA- C PZG513□-RA- C	PZG615□-LA- C PZG615□-RA- C	PZG715□-LA- 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			
	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
Accuracy specification	Resolution/Pulse		2μm(Full)/1μm(Half)			
	MAX speed		10mm/sec			
	Load capacity		5kgf【49N】			
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 M3–10		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	—

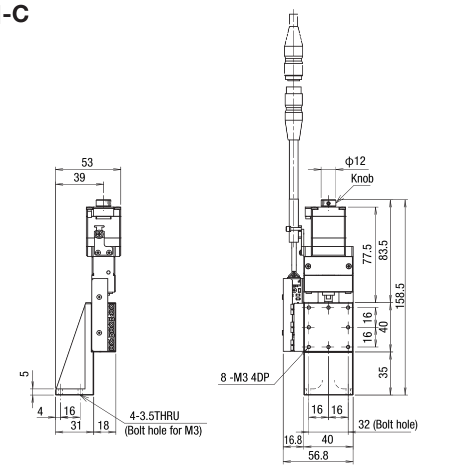
Motor code			MA・MB		PA		ZA		UA	
Type			With electromagnetic brake□42mm		αSTEP (AR)		αSTEP (AZ)		AC servo motor(J4)	
Motor model* 1	3 Sensor		PKE545MC-A1		ARM24SAK		AZM24AK		HG-KR053	
	4 Sensor				—		—		—	
Step angle			0.72°		—		—		—	
Resolution	Full/Half		2μm/1μm		1μm(Set to 1000P/R)		1μm(Set to 1000P/R)		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	—
	PZG513		1.18kg	1.27kg	0.81kg	—	0.81kg	—	1.11kg	—
	PZG615		1.32kg	1.41kg	0.95kg	—	0.95kg	—	1.25kg	—
	PZG715		1.53kg	1.62kg	1.16kg	—	1.16kg	—	1.46kg	—

*1 Model is our own management model.
*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

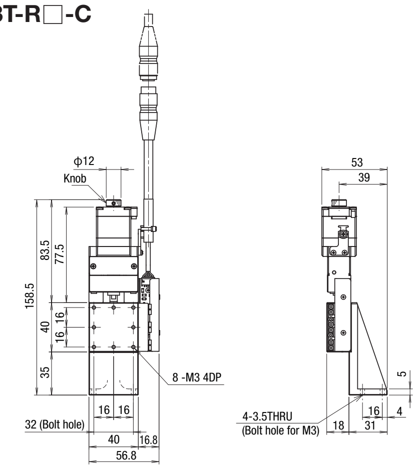
Z-axis Linear Ball Guide：PZG413/PZG513

Dimensions

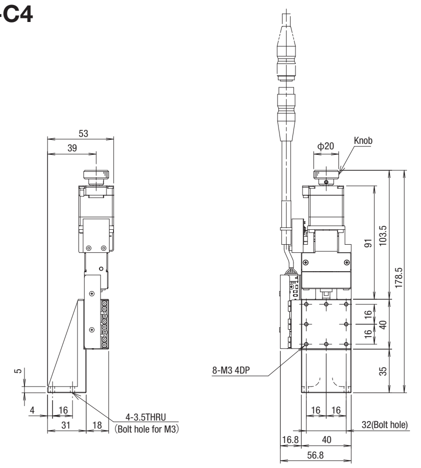
PZG413T-L□-C



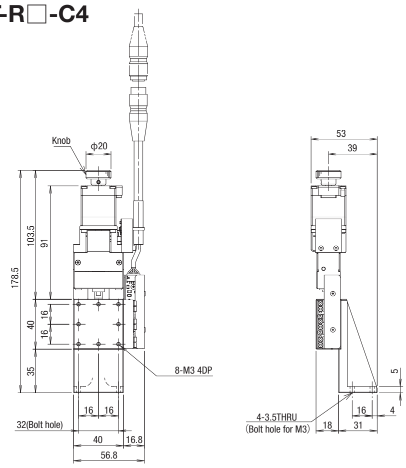
PZG413T-R□-C



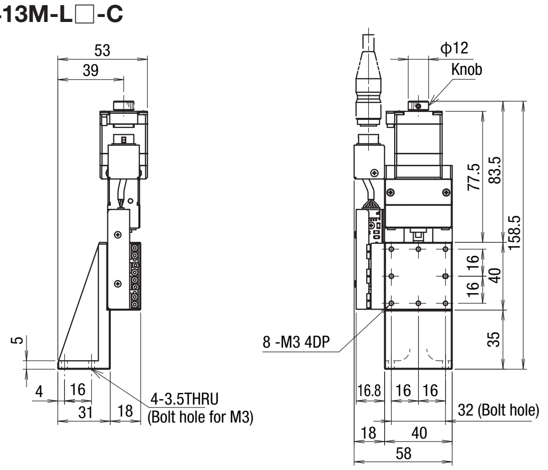
PZG413T-L□-C4



PZG413T-R□-C4



PZG413M-L□-C



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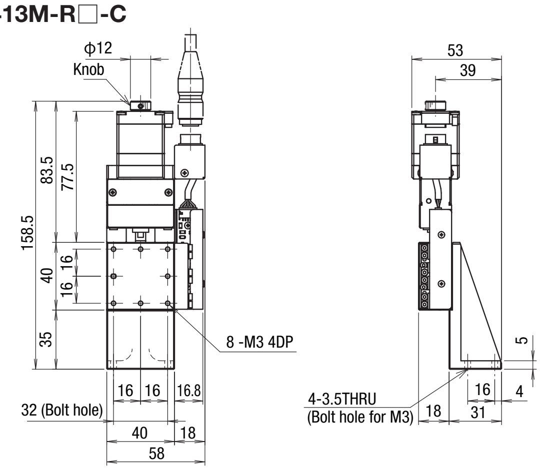

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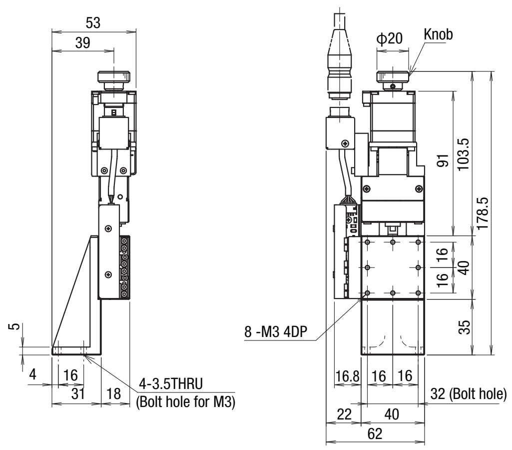

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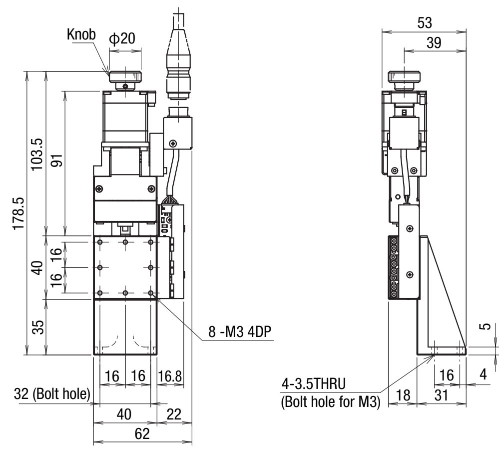
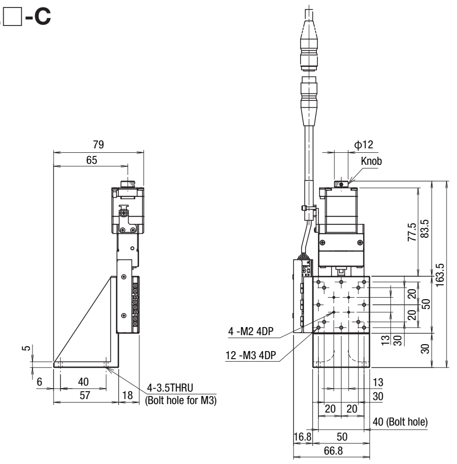


CAD DATA

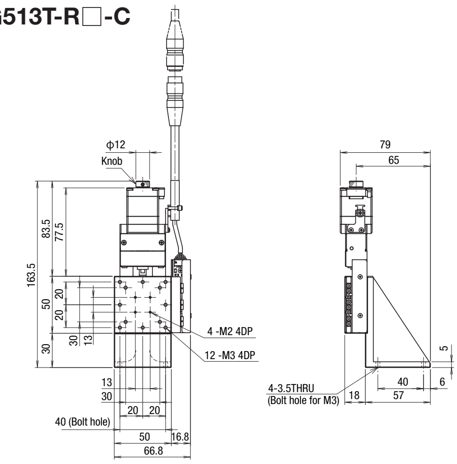
New

Dimensions

PZG513T-L□-C



PZG513T-R□-C



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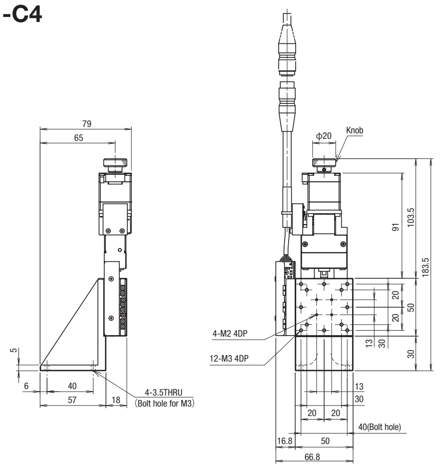
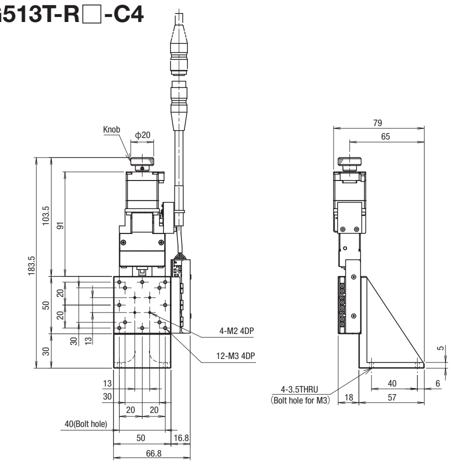


PZG513T-R□-C4



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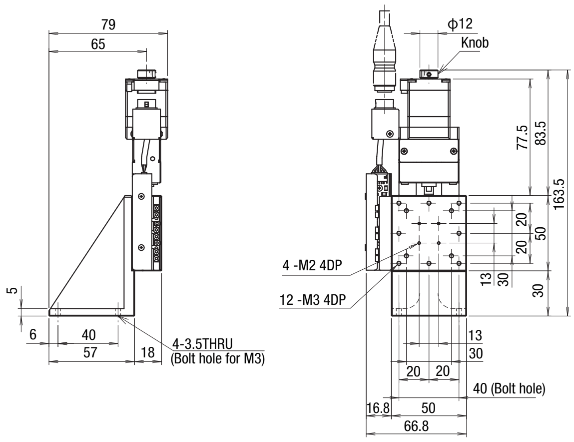

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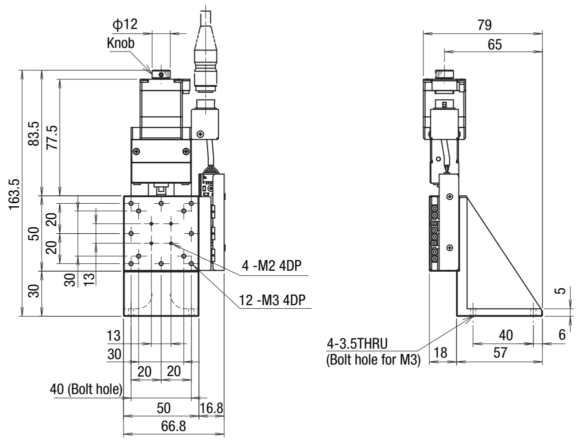
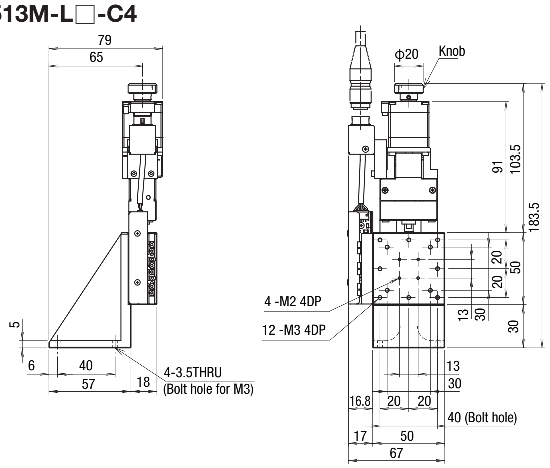
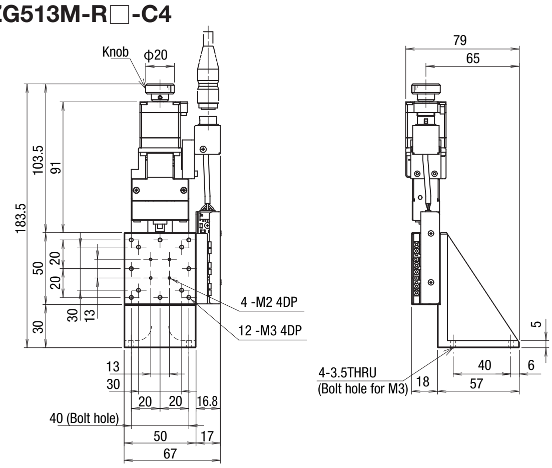


PZG513M-L□-C4



PZG513M-R□-C4

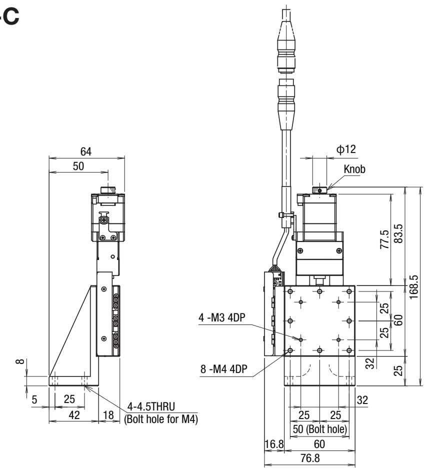


Motorized Stage
X
XY
Z
Horizontal Z
XYZ
Goniometer
Rotary
Unit
Controller
Linear Ball
CAVE-X Linear ball
Cross Roller
Slide Guide
□40
□50
□60
□70
□80
□100
□120
Other

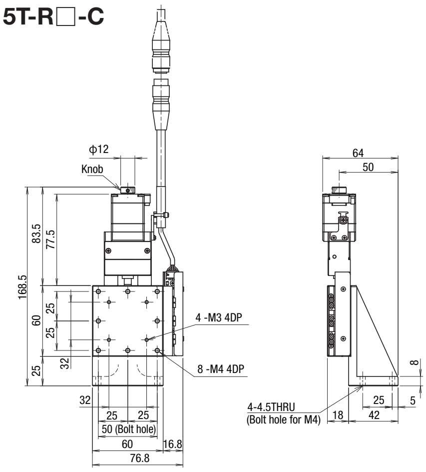
Z-axis Linear Ball Guide：PZG615/PZG715

Dimensions

PZG615T-L□-C



PZG615T-R□-C



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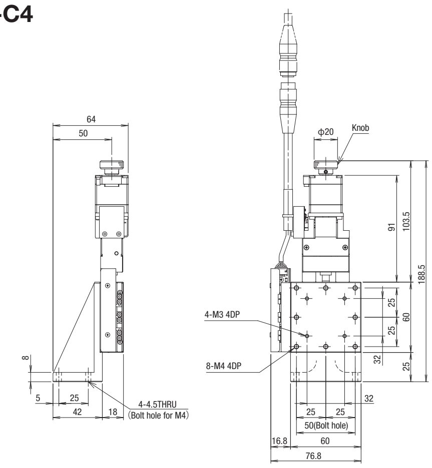
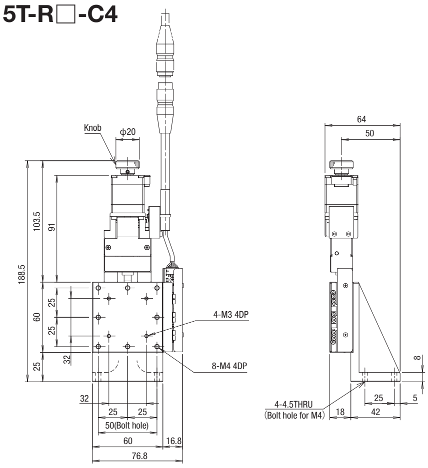
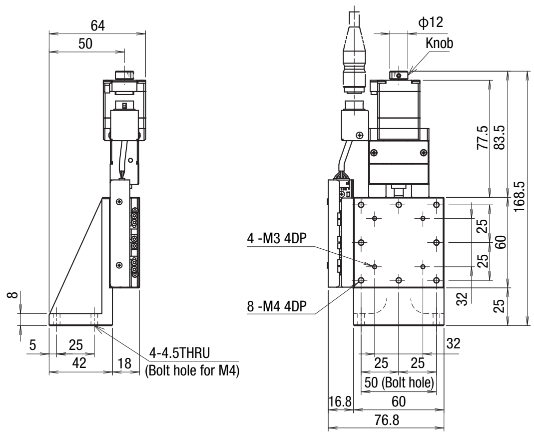


PZG615T-R□-C4



PZG615M-L□-C



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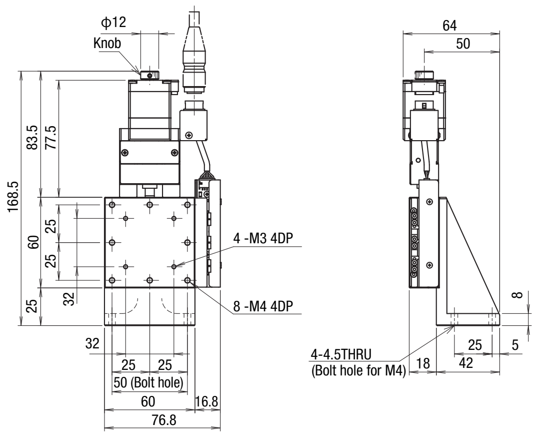

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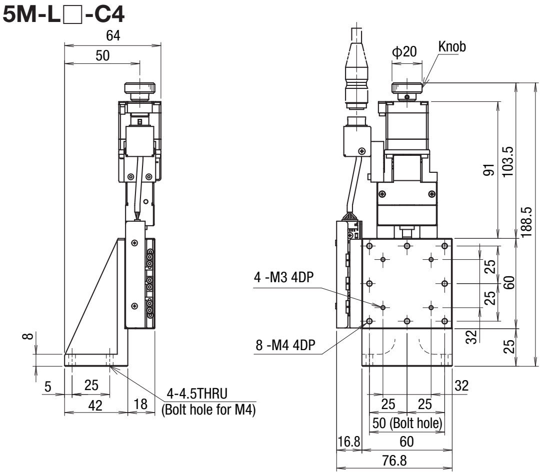

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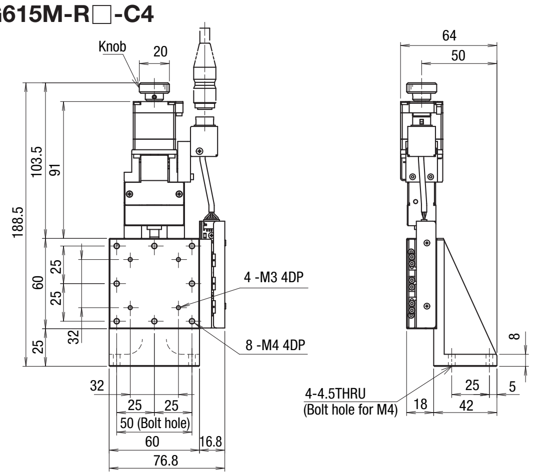
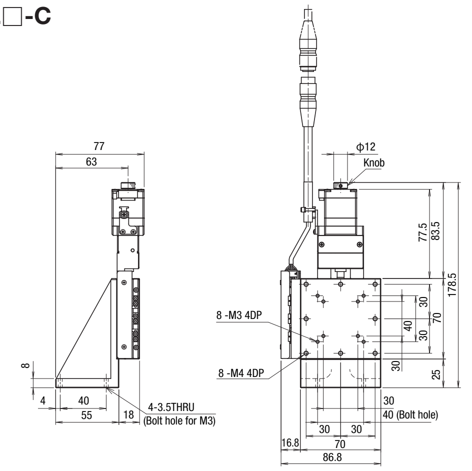


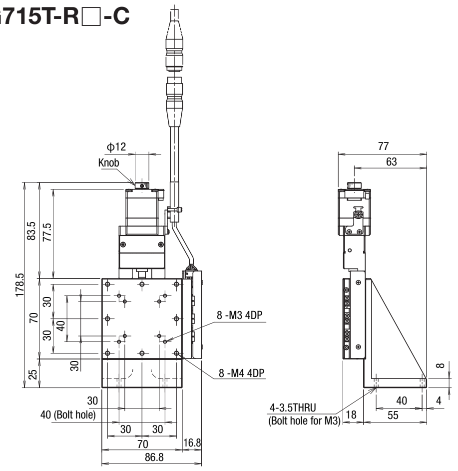
CAD DATA

Dimensions

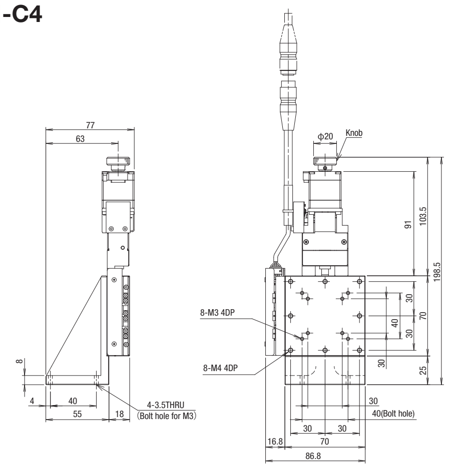
PZG715T-L□-C



PZG715T-R□-C



PZG715T-L□-C4



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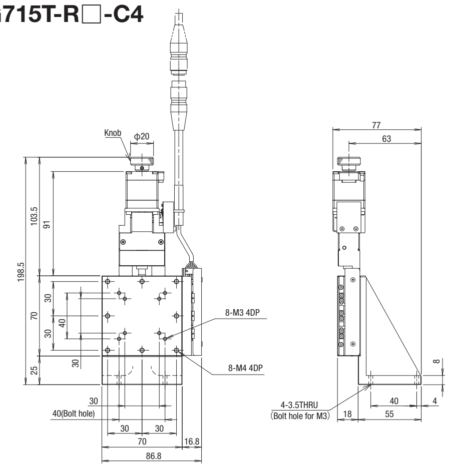
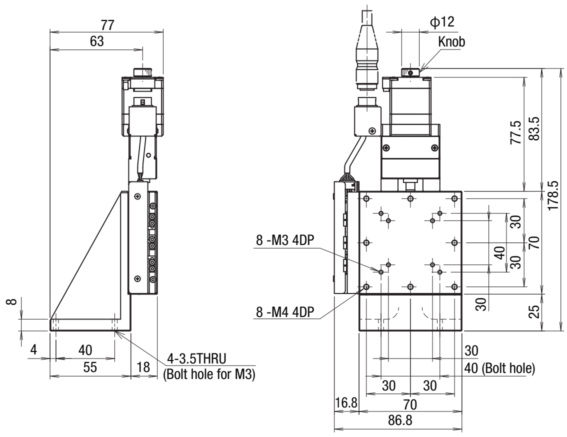


PZG715M-L□-C



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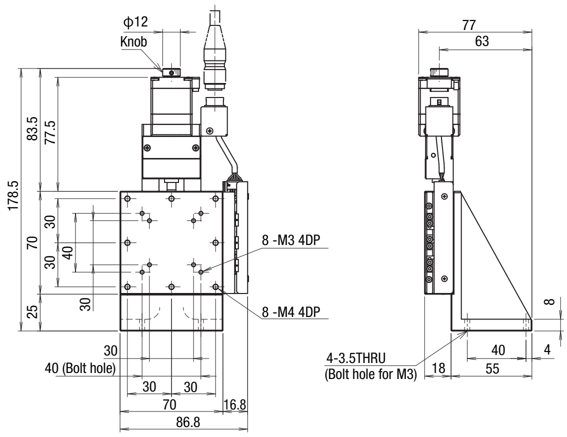

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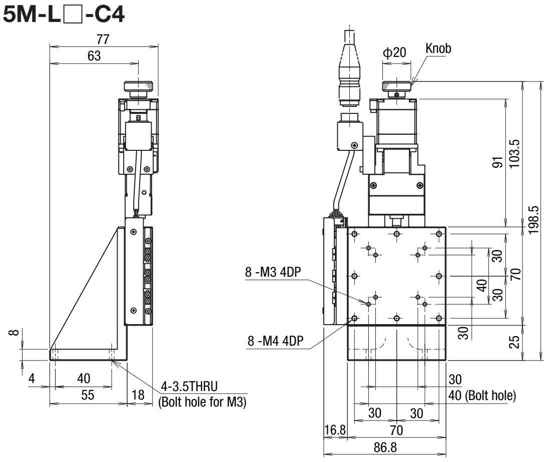
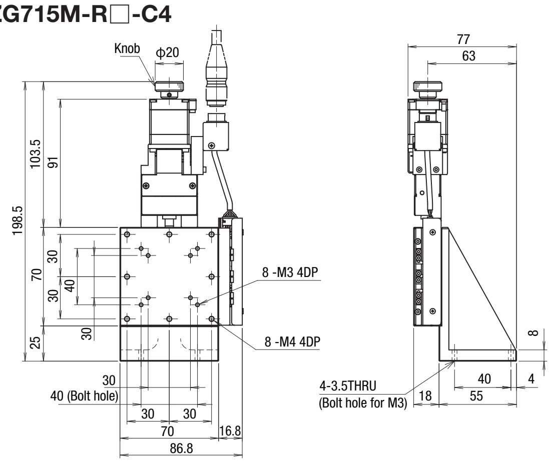


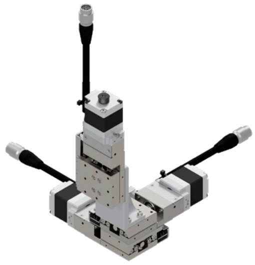
PZG715M-R□-C4



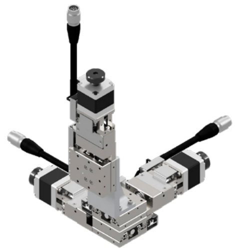
XYZ-axis Linear Ball Guide：PMZG413/PMZG513/PMZG615/PMZG715

RoHS

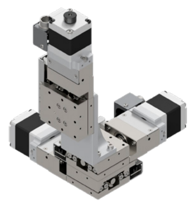
PMZG413T-LA-C



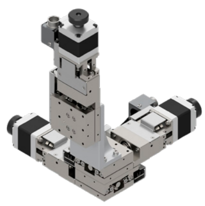
PMZG413T-LA-C4



PMZG413M-LA-C



PMZG413M-LA-C4



* The picture is an image.

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

PMZG413 M - L A - C □ □

1 (413) 2 (M) 3 (L) 4 (A) 5 5 (C) 6 6 (□) 7 7 (□)

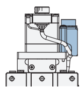
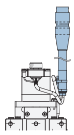
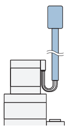
➲Cables, Positioning pin P. 1-207 ～
➲Electrical specification P.1- PG-041～

1 Stage table size/Travel distance

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

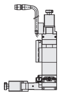
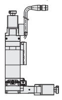
2 Connector specifications

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

M	Panel mount 	
T	Pig tail 	Connector None 

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

3 Sensor cover location

L	X-axis L, Y-axis R, Z-axis L 
R	X-axis R, Y-axis L, Z-axis R 

*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.

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)

6 6 Sensor options

Code	Specification	C	D	E	T	MA	MB	PA	ZA	UA
		Application Motor								
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

*One end loose position to only stage opposite side.
Note: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.(P1-PG-045,P.1-207～)

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 ③ Motor ④ Cable/Driver combination

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

Selection example

Desired specifications	Size: □40 Travel length: 13mm	+	Connector specification T Pigtail pigtail	+	Sensor cover location L	+	Sensor logic A: All N.C.	+	Motor option C: Standard	+	Sensor options Blank: 3 Sensor	→
	PMZG413		PMZG413**T**		PMZG413T-**L**		PMZG413T-L**A**		PMZG413T-LA-**C**		PMZG413T-LA-C	

+ Cable option A: 2m — PMZG413T-LA-C**A** → PMZG413T-LA-CA

Specification

SPEC						
Model (Opposite hand)			PMZG413□-LA- C PMZG413□-RA- C	PMZG513□-LA- C PMZG513□-RA- C	PMZG615□-LA- C PMZG615□-RA- C	PMZG715□-LA- 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	1.99kg	2.37kg	2.84kg
		Panel mount	1.55kg	1.96kg	2.34kg	2.81kg
Accuracy specification	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 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
	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	—

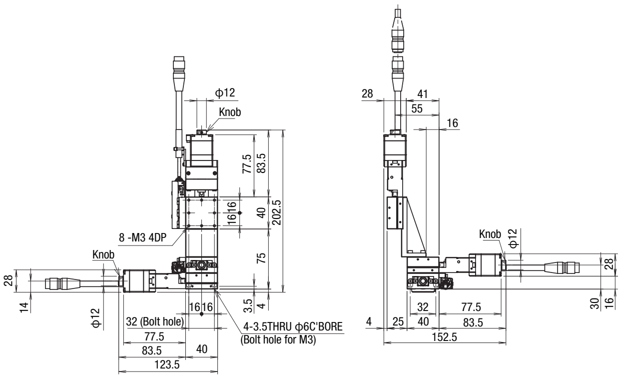
Motor code			MA・MB		PA		ZA		UA	
Type			With electromagnetic brake□42mm		αSTEP (AR)		αSTEP (AZ)		AC servo motor(J4)	
Motor model* 1	3 Sensor		PKE545MC-A1		ARM24SAK		AZM24AK		HG-KR053	
	4 Sensor				—		—		—	
Step angle			0.72°		—		—		—	
Resolution	Full/Half		2μm/1μm		1μm(Set to 1000P/R)		1μm(Set to 1000P/R)		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	—
	PMZG513		3.22kg	3.49kg	2.11kg	—	2.11kg	—	3.01kg	—
	PMZG615		3.60kg	3.87kg	2.49kg	—	2.49kg	—	3.39kg	—
	PMZG715		4.07kg	4.34kg	2.96kg	—	2.96kg	—	3.86kg	—

*1 Model is our own management model.
*2 When constructing an absolute system, it is necessary to install a battery in the amplifier.

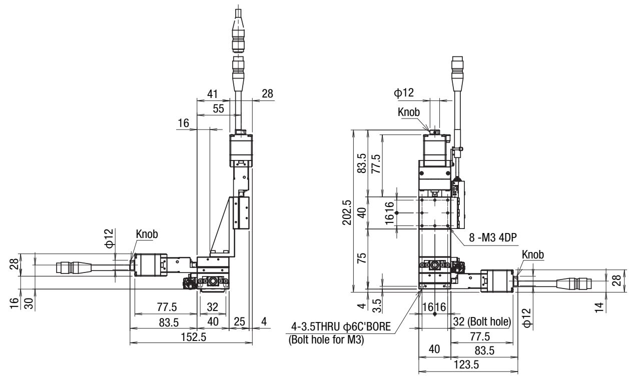
XYZ-axis Linear Ball Guide：PMZG413/PMZG513

Dimensions

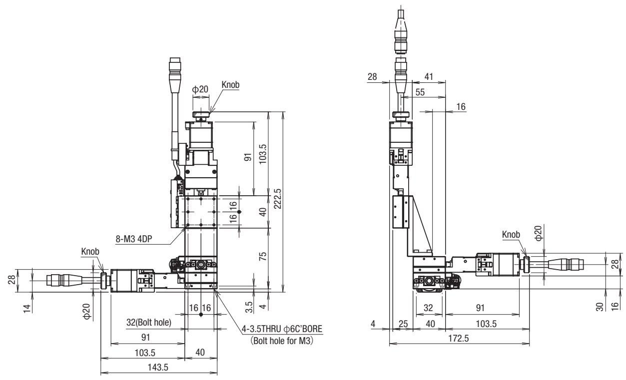
PMZG413T-L□-C



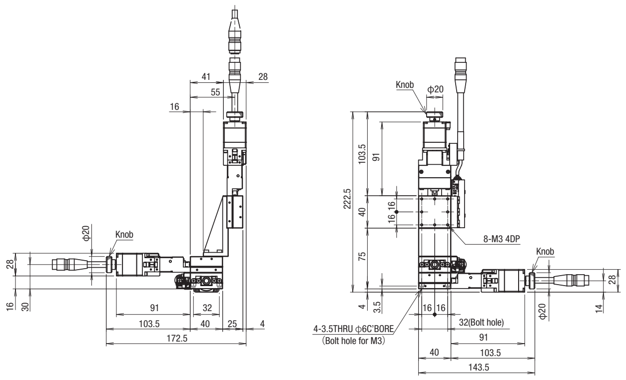
PMZG413T-R□-C



PMZG413T-L□-C4



PMZG413T-R□-C4



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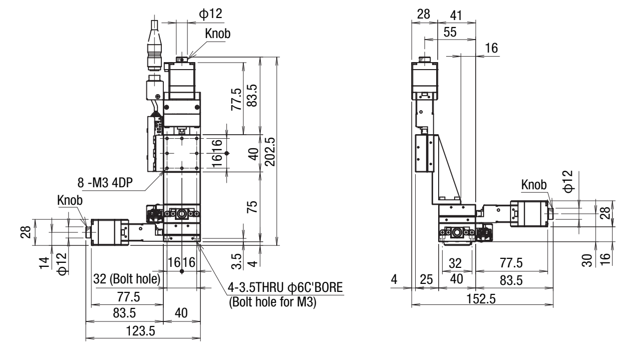

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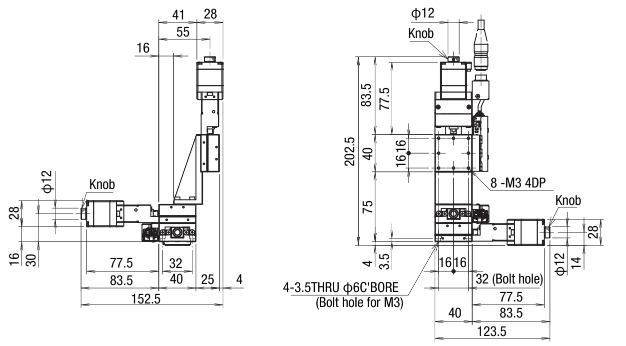

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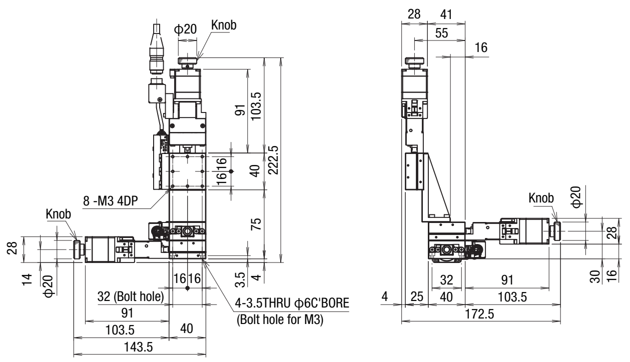

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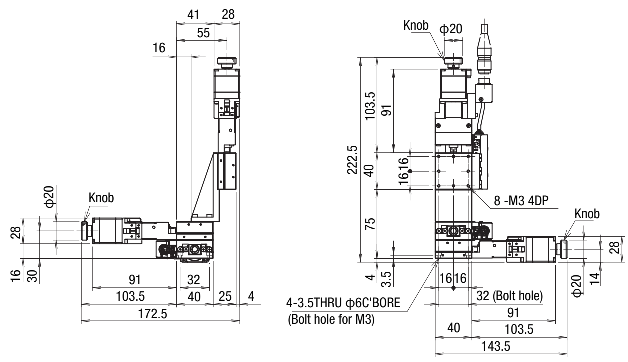
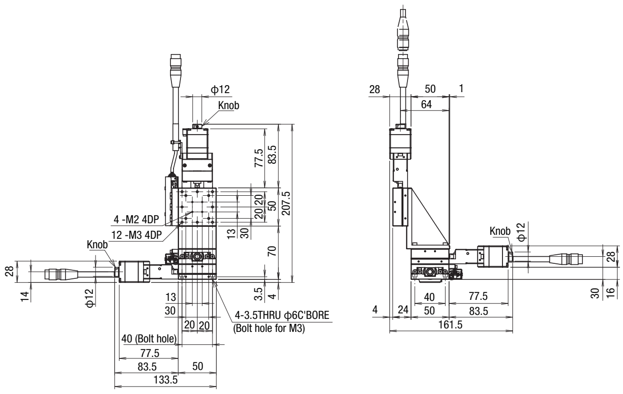


Dimensions

PMZG513T-L□-C



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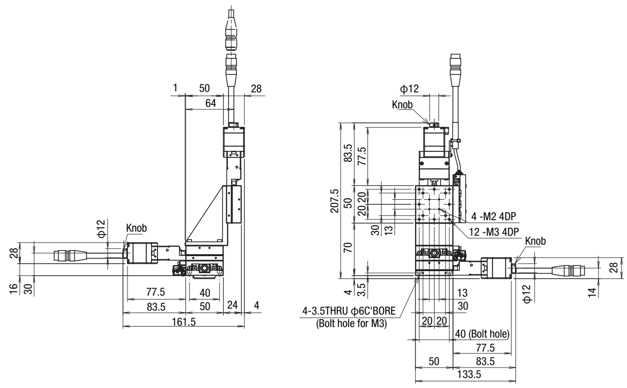

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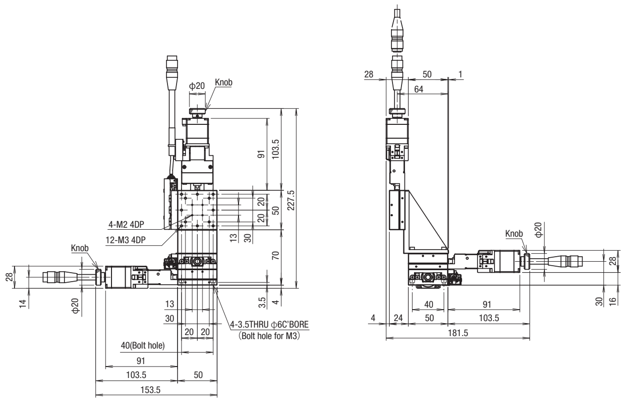

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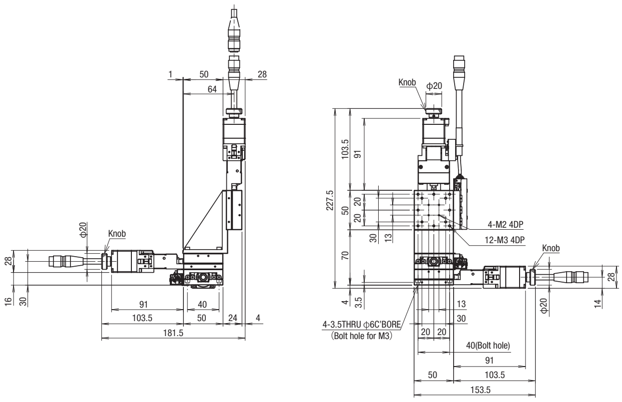

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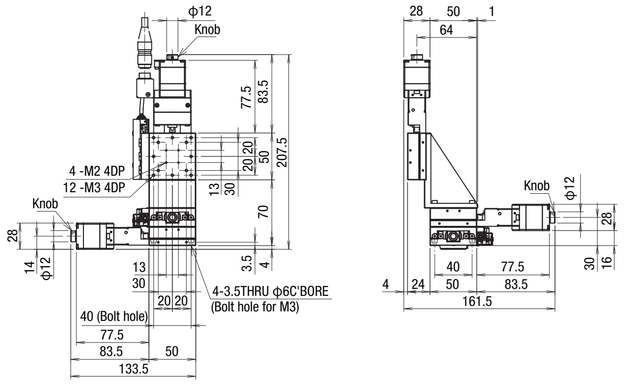

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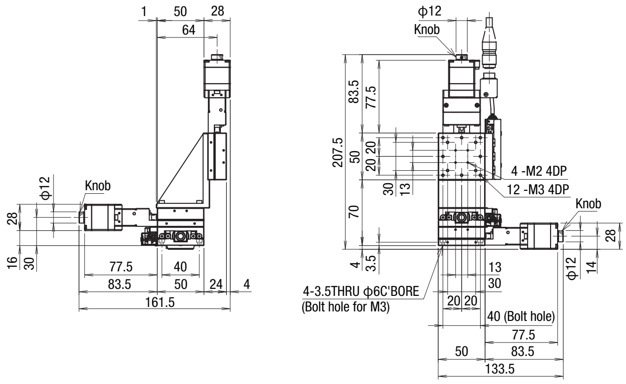

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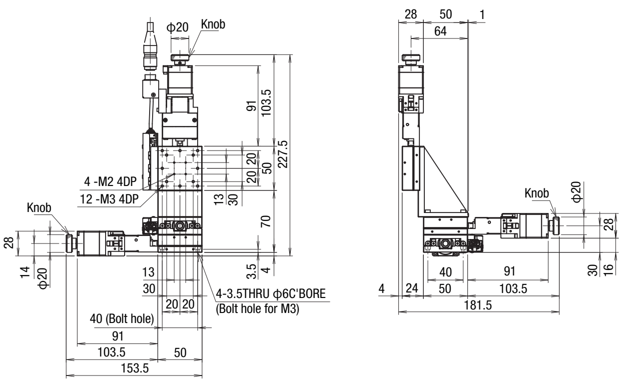

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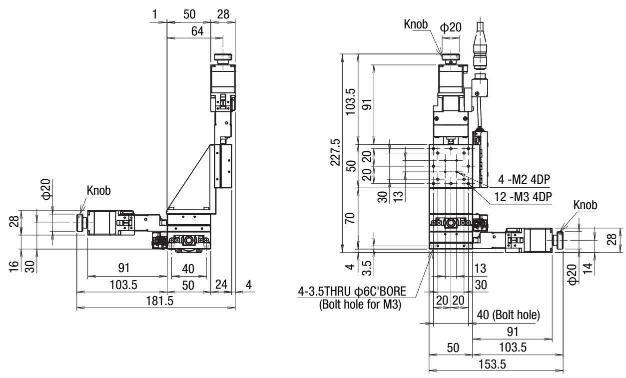
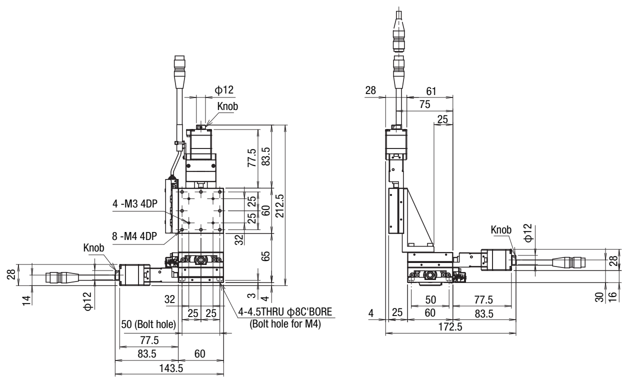


New

XYZ-axis Linear Ball Guide：PMZG615/PMZG715

Dimensions

PMZG615T-L□-C



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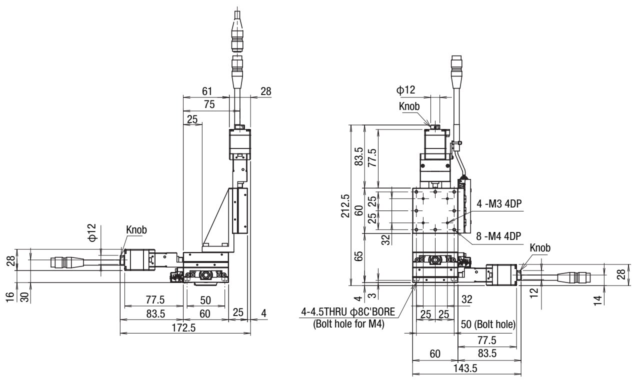
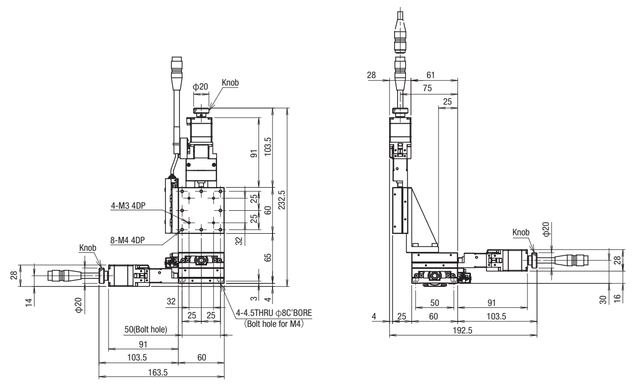


PMZG615T-L□-C4



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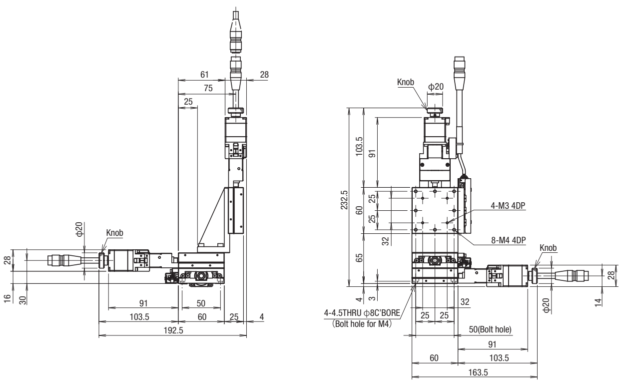
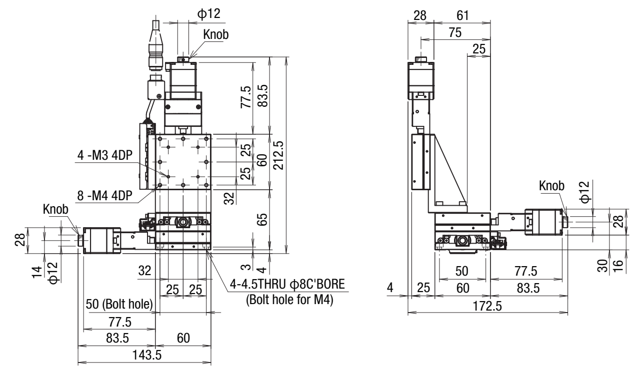


PMZG615M-L□-C



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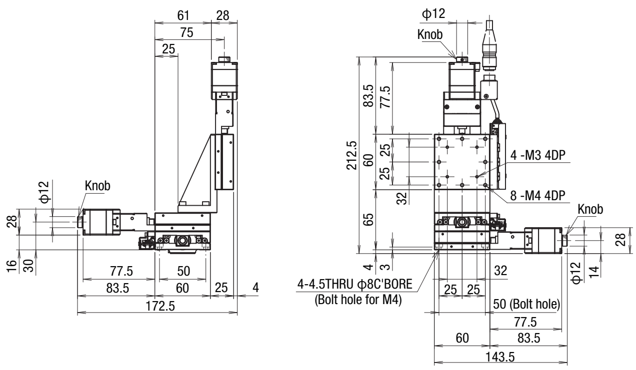

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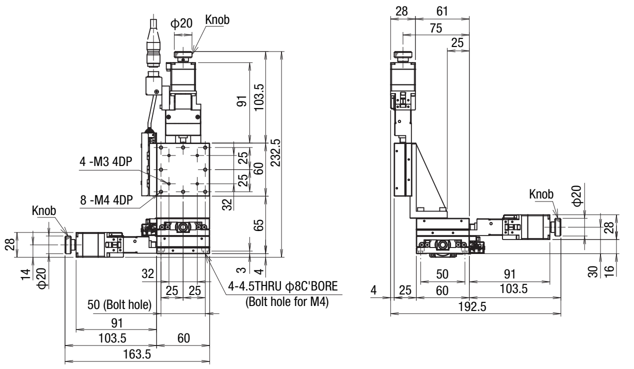

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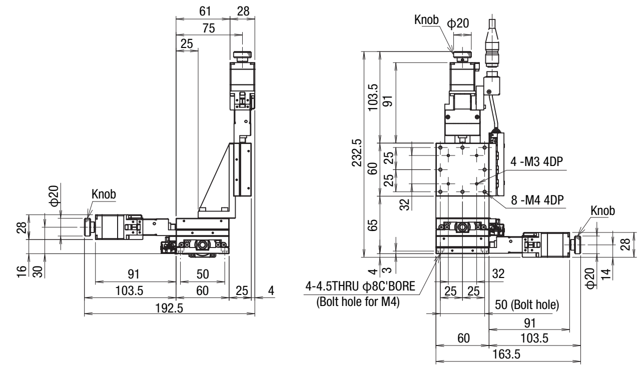
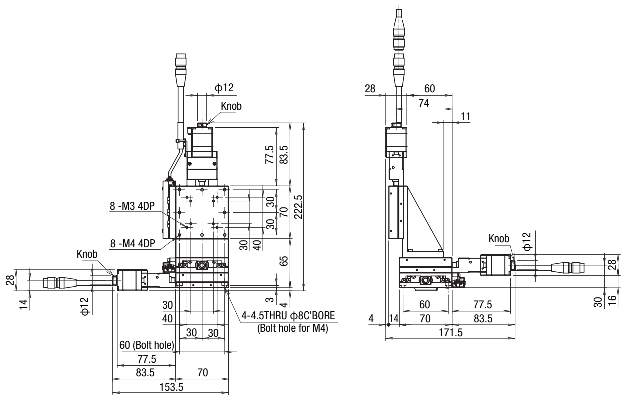


Dimensions

PMZG715T-L□-C



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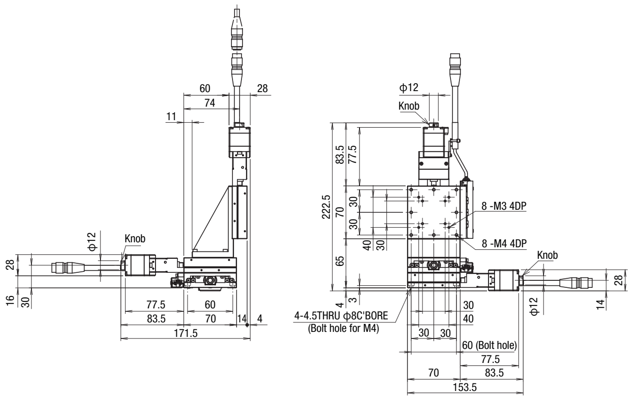

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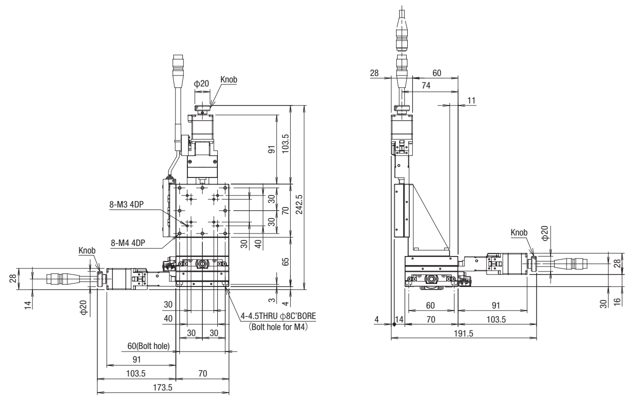

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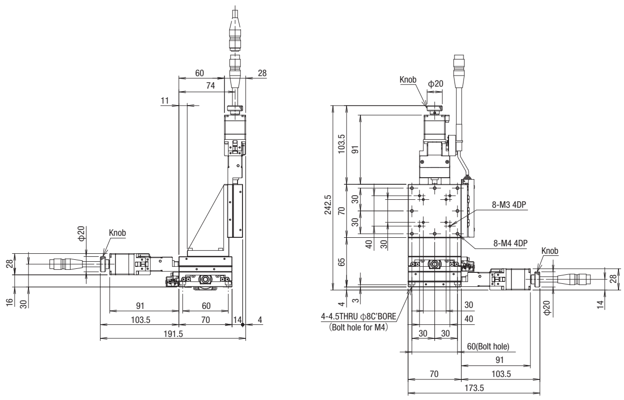

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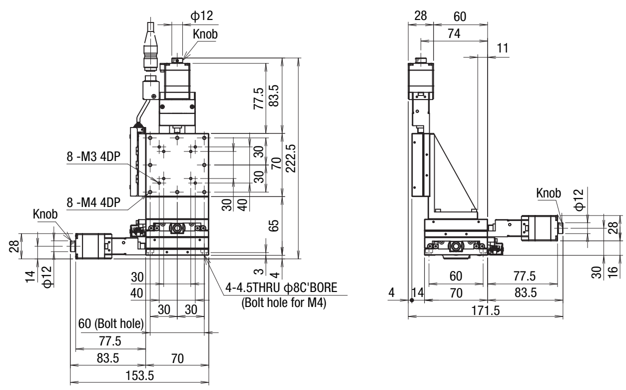

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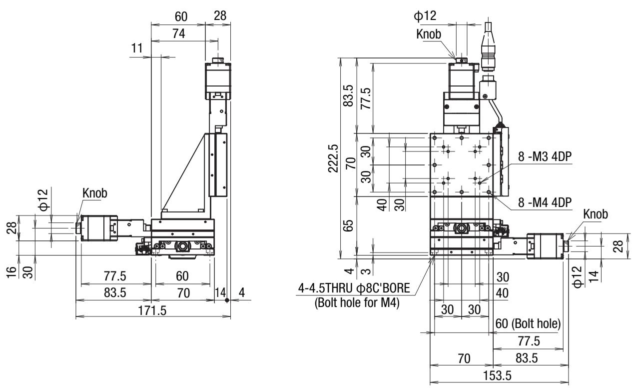

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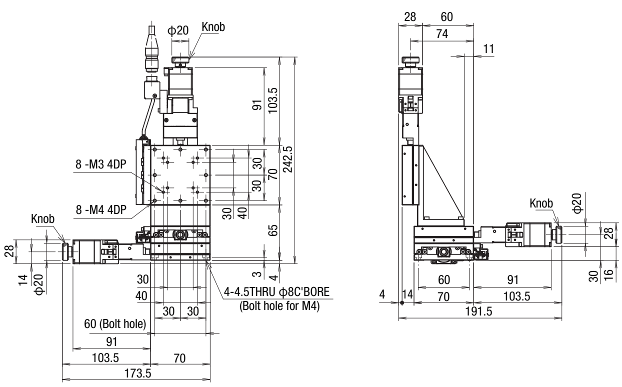

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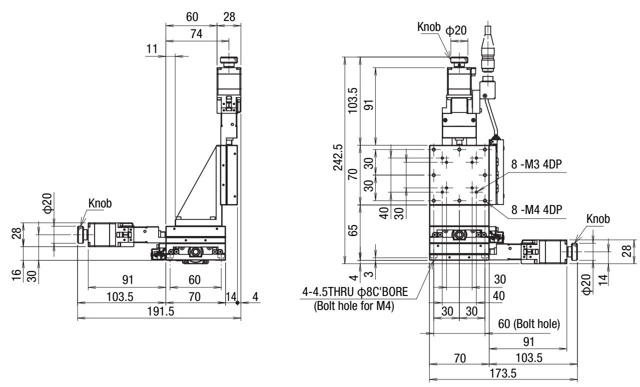


Electrical Specification: PG Series

Motor Specification

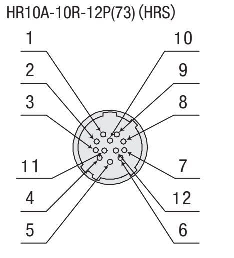
Motor code	C		D		E		T
Model (*1)	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor	4 Sensor	3 Sensor
Motor Specification (*2) – Type	5 phase stepping motor (0.75A/Phase)						2 phase stepping motor (0.67A/Phase)
Feature	Standard		High-torque		High resolution		—
Model*1	C005C-90215P-1	PK523HPB-C15	PK525HPB-C1	PK525HPB	PK523HPMB-C1	PK523HPMB	SJA28N32-0674B-01
Step angle	0.72°				0.36°		1.8°
Resolution – Full/Half	2μm/1μm				1μm/0.5μm		5μm/2.5μm
Resolution – Micro step (1/20 On resolution)	0.1μm				0.05μm		—
With electromagnetic brake	—						
Manufacturer	Oriental Motor Co., Ltd.						SURUGA SEIKI
mass	0.11kg		0.2kg		0.11kg		0.11kg
Motor size – □size	□28mm						
Motor size – L size	37mm	42mm	56.5mm	61.5mm	37mm	42mm	37mm
Excitation (moment) maximum torque	0.048N・m		0.073N・m		0.038N・m		0.059N・m
Driver model	CVD507-K-A9						—
Driver power input	DC24V±10%　1.4A(MAX)						—
Brake power input	—						
Connector – Motor – Pig tail – Motor	HR10A-10J-12P(73)(HRS)						HR10A-10J-10P(73)(HRS)
Connector – Motor – Pig tail – Electromagnetic brake	—						
Connector – Motor – Panel mount – Motor	HR10A-10R-12P(73)(HRS)						HR10A-10R-10P(73)(HRS)
Connector – Motor – Panel mount – Electromagnetic brake	—						
Connector – Motor – Receiving connector – Motor	HR10A-10P-12S(73)(HRS)						HR10A-10P-10S(73)(HRS)
Connector – Motor – Receiving connector – Electromagnetic brake	—						
Connector – Sensor – Pig tail – CW Limit Sensor / Origin sensor (ORG1)	HR10A-10J-12P(73)(HRS)						HR10A-10J-10P(73)(HRS)
Connector – Sensor – Pig tail – Slit origin(ORG2)	—	Same as above	—	Same as above	—	Same as above	—
Connector – Sensor – Panel mount – CW Lim Sensor / Origin sensor (ORG1)	HR10A-10R-12P(73)(HRS)						HR10A-10R-10P(73)(HRS)
Connector – Sensor – Panel mount – Slit origin(ORG2)	—	Same as above	—	Same as above	—	Same as above	—
Connector – Sensor – Receiving connector – CW Limit / Origin sensor (ORG1)	HR10A-10P-12S(73)(HRS)						HR10A-10P-10S(73)(HRS)
Connector – Sensor – Receiving connector – Slit origin(ORG2)	—	Same as above	—	Same as above	—	Same as above	—
Sensor board – Limit sensor	Available	Available	Available	Available	Available	Available	Available
Origin sensor (ORG1)	Available	Available	Available	Available	Available	Available	Available
Slit origin sensor(ORG2)	—	Available	—	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)						
Output logic – Sensor logic option B	On detection:Output transistor ON (continuity)						
Output logic – Sensor logic option C	Limit continuity:On detection :Output transistor OFF (Non-continuity) Origin continuity: On detection:Output transistor ON (continuity)						

*1 The electric specification of XY (PMG), Z (PZG), XYZ (PMZG) are the same. *2 See page▶P.1-213~ for details of single motor specification.*3 Model is our own management model.

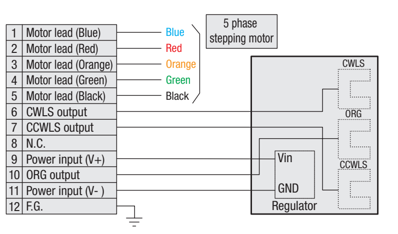
Pin allocation・Connection diagram

C・D・E — Available for motor and sensor

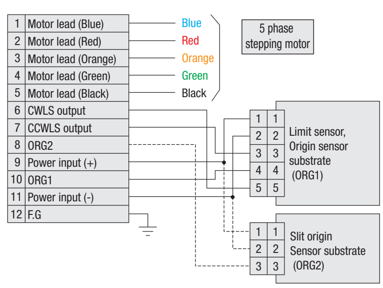
【Stage connection diagram】
Pigtail connector model
：HR10A-10J-12P(73) (HRS)
Panel mount specification : Connector model
：HR10A-10R-12P(73) (HRS)



【Connection diagram((3))】

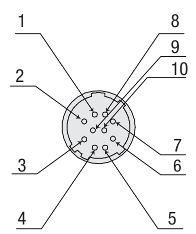


【Connection diagram((4))】

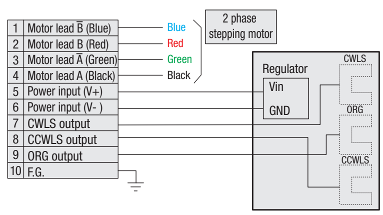


T — Available for motor and sensor

【Stage connection diagram】
Pigtail connector model：HR10A-10J-10P(73) (HRS)
Panel mount specification : Connector model：HR10A-10R-10P(73) (HRS)



【Connection diagram(Sensor)】



* Cables ▶ P. 1-207 ～

URL:https://eng.surugaseiki.com/ Email:e-ost@suruga-g.co.jp
TEL.+81-6403-4513 FAX.+81-6403-4514

Motor・Electromagnetic brake

			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	Motor	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)				
			Slit origin(ORG2)	—	PM-L25 One end loose	—	PM-L25 One end loose
		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 origin 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)		

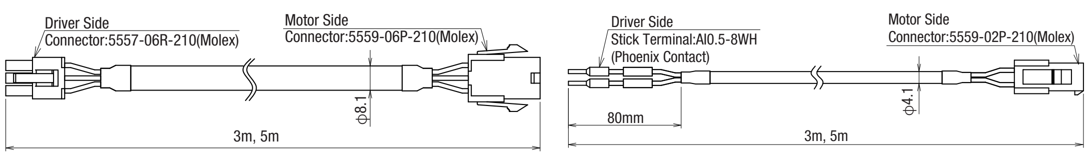
* The electric specification of XY (PMG), Z (PZG), XYZ (PMZG) are the same.
※2 ▶ P.1-213～ for details of single motor specification.
*3 Model is our own management model.

Pin allocation・Connection diagram

MA・MB

Motor・Electromagnetic brake

【Mating cable】Model:CC030VPFB(3m)/CC050VPFB(5m) *For fixed use



Sensor

[Connector diagram(3 sensor)]

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	

[Connector diagram (4sensor)]

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	Slit origin sensor (ORG2)
Power input (-)	Blue	
ORG2 output (OUT1)	Black	
ORG2 output (OUT2)	White	

Electrical Specification: PG Series

Motor Specification

				PA	ZA
Motor code				PA	ZA
Model (*1)				3 Sensor	
Motor Specification (*2)		Type		αSTEP (AR Series)	αSTEP (AZ Series)
Motor Specification (*2)		Feature		Small step-out ,incremental	Small step-out ,absolute
Motor Specification (*2)		Model*1		ARM24SAK	AZM24AK
Motor Specification (*2)		With electromagnetic brake		—	
Motor Specification (*2)		Manufacturer		Oriental Motor Co., Ltd.	
Motor Specification (*2)		Step angle		0.36°(1000P/R Setting)	
Motor Specification (*2)		mass		0.15kg	
Motor Specification (*2)		Motor size	□size	□28mm	
Motor Specification (*2)		Motor size	L size	45mm	54.5mm
Motor Specification (*2)		Excitation (moment) maximum torque		0.055N・m	0.095N・m
Motor Specification (*2)		Driver model		ARD-K	AZD-K
Motor Specification (*2)		Driver power input		DC24V±10%	DC24V±5%
Motor Specification (*2)		Brake power input		—	
Connector	Motor	Model		43025-1000 (MOLEX)	DF62B-13EP-2. 2C ((HRS)
Connector	Motor	Receiving connector		43020-1000 (MOLEX)	DF62C-13S-2. 2C ((HRS)
Connector	Sensor	Model	CW Limit Sensor	S5B-ZR-SM4-TF (LF) (SN) (JST)	
Connector	Sensor	Model	Origin sensor (ORG1)		
Connector	Sensor	Model	Slit origin(ORG2)	—	
Connector	Sensor	Receiving connector	CW Limit Sensor	ZHR-5 (JST)	
Connector	Sensor	Receiving connector	Origin sensor (ORG1)		
Connector	Sensor	Receiving connector	Slit origin(ORG2)	—	
Sensor board		Limit sensor		Available	Available
Sensor board		Origin sensor (ORG1)		Available	Available
Sensor board		Slit origin sensor(ORG2)		—	—
Sensor board		Sensor		Photo microsensor EE-SX4320 (Omron Co., Ltd.)	
Sensor board		Power-supply voltage		DC5～24V±5%	
Sensor board		Current consumption		Total 60mA or less	
Sensor board		Control output		NPN open collector output DC30V 10mA or less	
Sensor board		Output logic	Sensor logic option A	On detection: Output transistor OFF (Non-continuity)	
Sensor board		Output logic	Sensor logic option B	On detection: Output transistor ON (continuity)	
Sensor board		Output logic	Sensor logic option C	limit continuity:On detection: Output transistor OFF (Non-continuity) Origin continuity:On detection: Output transistor ON (continuity)	

*1 The electric specification of XY (PMG), Z (PZG), XYZ (PMZG) are the same.
*2 P.1-213～ for details of single motor specification.
*3 Model is our own management model.

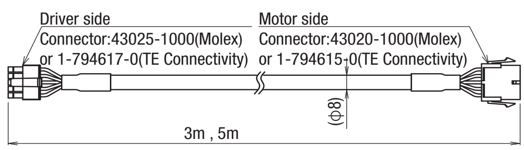
Pin allocation・Connection diagram

PA・ZA

Motor

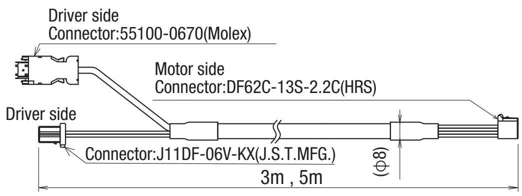
PA

【Receiver cable】Model:CC030VA2R2(3m)/CC050VA2R2(5m)*Flexible cable



ZA

【Receiver cable】Model:CC030VZ2R2(3m)/CC050VZ2R2(5m)*Flexible cable



Sensor

PA

[Connector diagram(3 sensor)]

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	

ZA

[Connector diagram(3 sensor)]

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	

Motor・Electromagnetic brake

Motor code				UA
Model (*1)				3 Sensor
Motor Specification (*2)	Type			Servo motor J4(Mitsubishi Electric corporation)
Motor Specification (*2)	Feature			High speed
Motor Specification (*2)	Model*1			HG-KR053
Motor Specification (*2)	With electromagnetic brake			—
Motor Specification (*2)	Manufacturer			Mitsubishi Electric corporation
Motor Specification (*2)	Step angle			Both absolute and incremental(4194304P/R)
Motor Specification (*2)	mass			0.34kg
Motor Specification (*2)	Motor size		□size	□40mm
Motor Specification (*2)	Motor size		L size	66.4mm
Motor Specification (*2)	Excitation (moment) maximum torque			0.56N・m
Motor Specification (*2)	Driver model			MR-J4-10A
Motor Specification (*2)	Driver power input			Three and Single phase AC200-240V 50/60Hz
Motor Specification (*2)	Brake power input			—
Connector	Motor	Model	Motor	Manufacturer standard
Connector	Motor	Model	Encoder	Manufacturer standard
Connector	Motor	Receiving connector	Motor	JN4FT04SJ1-R (JAE)
Connector	Motor	Receiving connector	Encoder	1674320-1 (TEConnectivity)
Connector	Sensor	Model	CW Limit Sensor	S5B-ZR-SM4-TF (LF) (SN) (JST)
Connector	Sensor	Model	Origin sensor (ORG1)	S5B-ZR-SM4-TF (LF) (SN) (JST)
Connector	Sensor	Model	Slit origin(ORG2)	—
Connector	Sensor	Receiving connector	CW Limit Sensor	ZHR-5 (JST)
Connector	Sensor	Receiving connector	Origin sensor (ORG1)	ZHR-5 (JST)
Connector	Sensor	Receiving connector	Slit origin(ORG2)	—
Sensor board	Limit sensor			Available
Sensor board	Origin sensor			Available
Sensor board	Slit origin sensor			—
Sensor board	Sensor			Photo microsensor EE-SX4320 (Omron Co., Ltd.)
Sensor board	Power-supply voltage			DC5～24V±5%
Sensor board	Current consumption			Total 60mA or less
Sensor board	Control output			NPN open collector output DC30V 10mA or less
Sensor board	Output logic	Sensor logic option A		On detection: Output transistor OFF (Non-continuity)
Sensor board	Output logic	Sensor logic option B		On detection: Output transistor ON (continuity)
Sensor board	Output logic	Sensor logic option C		limit continuity:On detection: Output transistor OFF (Non-continuity) Origin continuity:On detection: Output transistor ON (continuity)

*1 The electric specification of XY (PMG), Z (PZG), XYZ (PMZG) are the same.
*2 P.1-213～ for details of single motor specification.
*3 Model is our own management model.
*4 When constructing an absolute system, it is necessary to install a battery in the amplifier.

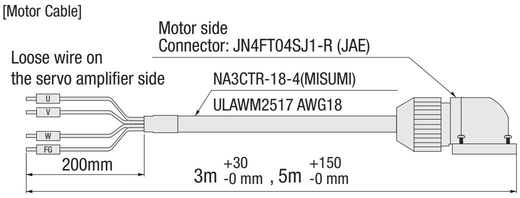
Pin allocation・Connection diagram

UA

Encoder

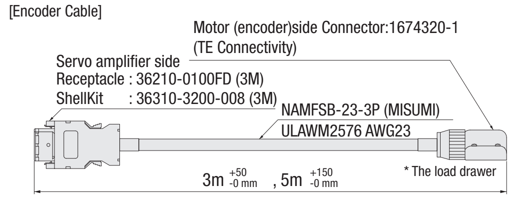
【Receiver cable】Model:SVPM-J3HF1-B-□-02S *Flexible cable
※□：3 (3m)、5(5m)

[Motor Cable]



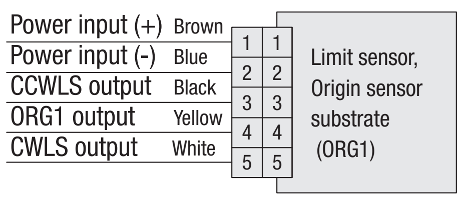
【Receiver cable】Model:SVEM-J3HF1-B-□*Flexible cable
※□：3 (3m)、5(5m)

[Encoder Cable]



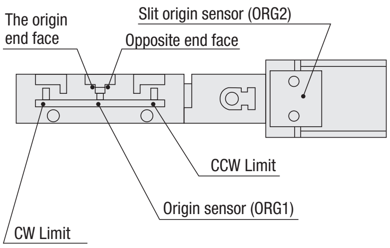
Sensor

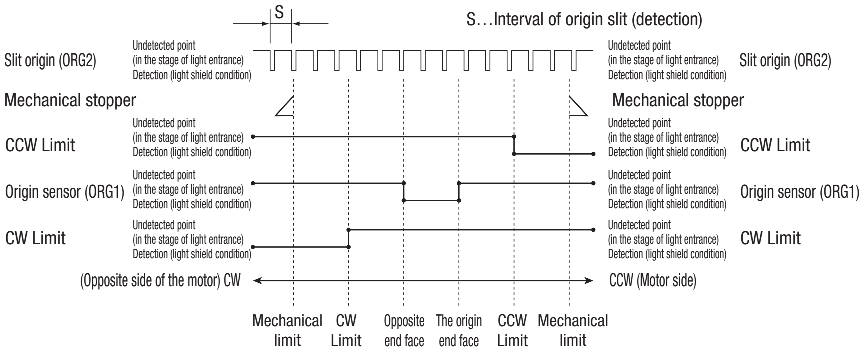
[Connector diagram(3 sensor)]



Electrical Specification: PG Series

Timing chart





PA and UA are 3-sensor specifications

Unit [mm] Direction of CW ◀ ▶ Direction of CCW

	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.

4compatible with sensor specifications

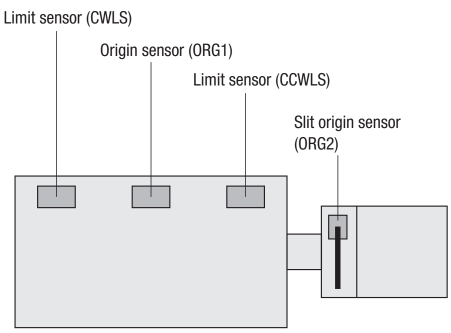
Unit [mm] Direction of CW ◀ ▶ Direction of CCW

	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						

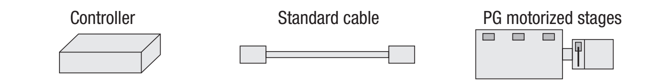
* Return to origin means that is performed return to origin type 3 using DS102/DS112 series.
* The coordinate is a basis of design value. Dimension error may occur about plus or minus 0.5 mm.

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 function of terminal on the controller side

Motor	A	A
	C	C
	E	E
	G	G
	J	J
CWLS input	L	L
CCWLS input	M	M
NORG input	N	N
ORG input	O	O
Sensor power (DC5V (+)	P	P
Sensor power (DC5V (-)	R	R
–	S	S
–	T	T
F.G	U	U

The function of terminal on the stage side

1	1	Motor
2	2	
3	3	
4	4	
5	5	
6	6	CWLS output
7	7	CCWLS output
8	8	ORG2 output
9	9	Power input (+)
10	10	ORG1 output
11	11	Power input (-)
12	12	F.G

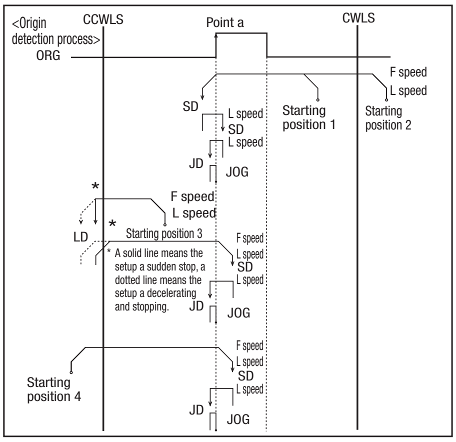
The CWLS(pin#6) and CCWLS(pin#7) on the motorized stage side are connected to CWLS(Lpin) and CCWLS(Mpin) of controller as usual. However ORG2 output (Pin#8) is connected to DC5V(-) and ORG1 output (pin#10) will be connected to ORG. n other words, the sensor of ORG2 does not work on this wire connection, 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).

●About a correspondence cable for a slit origin sensor (ORG2)! ※See page ▶P.1-207、209〜for details.

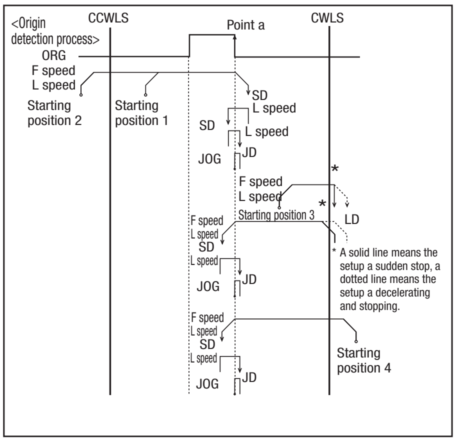
This series are included four sensors as standard. In case of using four sensors with slit origin sensor (ORG2), you need the cable for four sensors. Should be selected cable code 5 (without cable), and order the cable for four.
When use all of 4 sensors, please select the cable for 4 sensors from page ▶P.1-207~.

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.

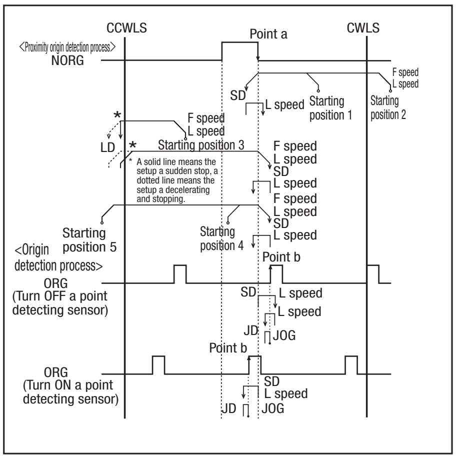


[Type9]
After finished Type3, perform detected process for CCW edge of TIMING signal.

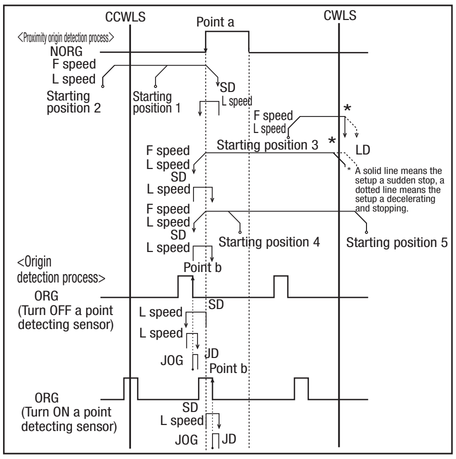
[Type10]
After finished Type4, perform detected process for CW edge of TIMING signal.

●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.1-201～

Driver selection

■ Driver ▶ P.1-205～

DC24 type input

Model	CVD507-K-A9	CRD5107P
Divisions	Micro step (1/250 On resolution)	Micro step (1/250 On resolution)

For Stepping motor controller

■ Controller ▶P.1-197～

power	General-purpose input/ output port	Driver type (Divisions)	
		Normal（Full/Half)	Micro step (1/250 On resolution)
AC100-240V	None	DS102ANR	DS102AMS
	Installed	DS102ANR-IO	DS102AMS-IO
DC24V	None	DS112ANR	DS112AMS
	Installed	DS112ANR-IO	DS112AMS-IO


DS112/102