



**ELECTRIC  
ACTUATORS**

**NEW**

# Compact series

**KRF**

Stepper / Servo Driver Controller

**TSC/TLC/THC**



For details, visit THK at [www.thk.com](http://www.thk.com)

\* Product information is updated regularly on the THK website.

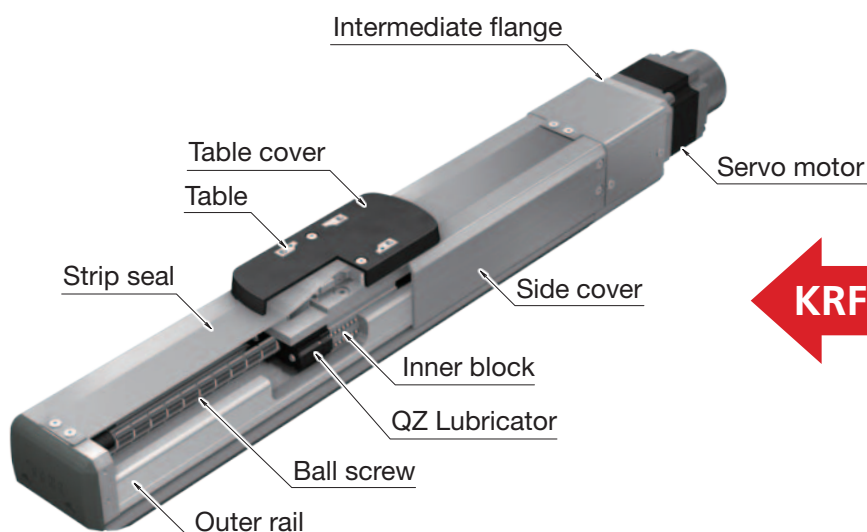
**THK CO., LTD.**  
TOKYO, JAPAN

CATALOG No.374-5E

## Compact Series

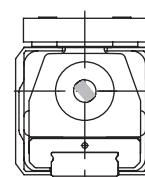
## KRF

# Fully enclosed actuator, designed for dedicated controller.



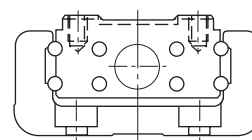
- √ Outer rail of KR/SKR with proven history adopted
- √ Single axis actuator with high moment rigidity

ES



Full-cover structure

KR/SKR

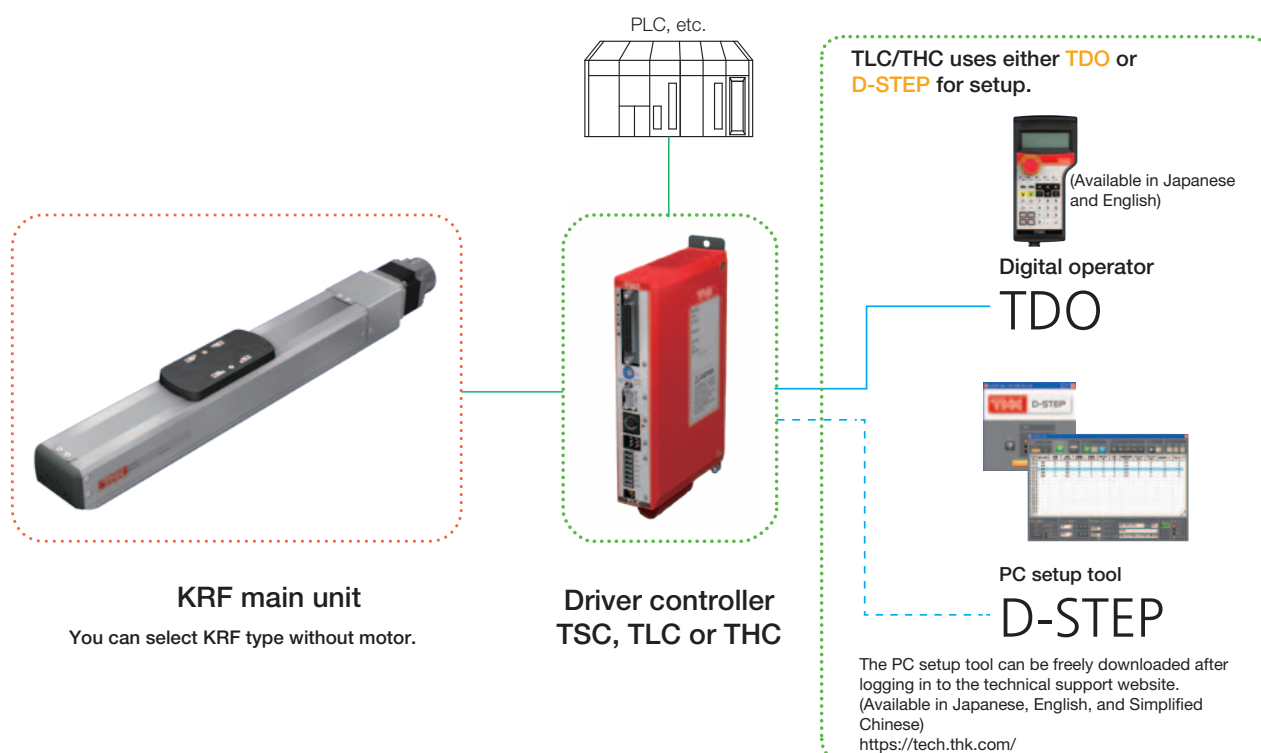


Equivalent load for four directions, with high rigidity

Supported size (guideline)

KR/SKR	15	20	26	33
KRF	3	4	5	6

## System Configuration



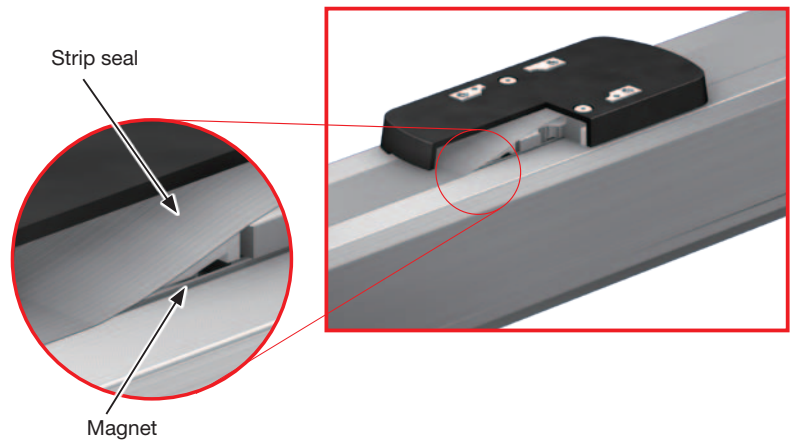
## Features

### 1 Fully enclosed design

Strip seals on the side cover and upper surface using magnetic attraction method provide a fully enclosed structure.

It prevents any damage by entering of foreign materials from outside.

As well, the top surface of the strip seal is less likely to generate dust by avoiding the contact. (Excluding KRF3)

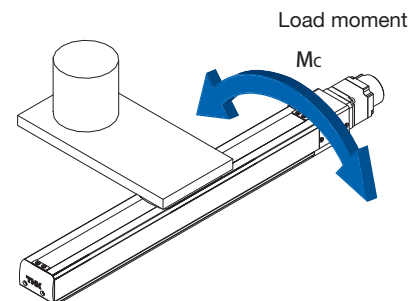
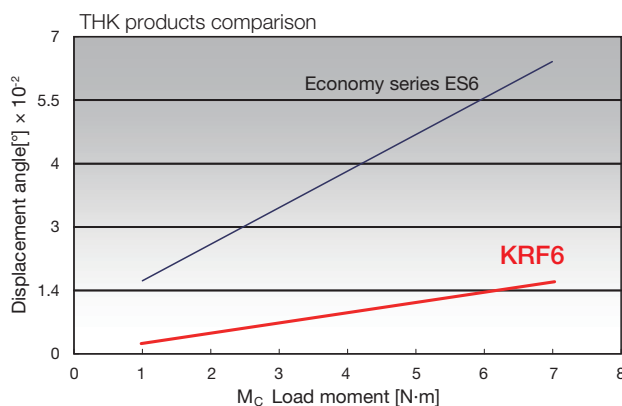


#### Magnetic attraction method

The magnet built in the side cover attracts the strip seal and prevents it from lifting, reducing the development of clearance.

### 2 High rigidity

The KRF series employs an outer rail with a U-shaped cross section, enabling it to accommodate a sizable moment load. The actuator body's high rigidity allows for a compact, space-saving design.



Layout example of cantilever configuration

### 3 Easy setup

Setup is easy by combining with dedicated driver controller.



Stepper  
Driver controller  
TSC



Servo  
Driver controller  
50W  
TLC



Servo  
Driver controller  
100W  
THC

## Lineup List (Stepper Driver Controller TSC Specification)



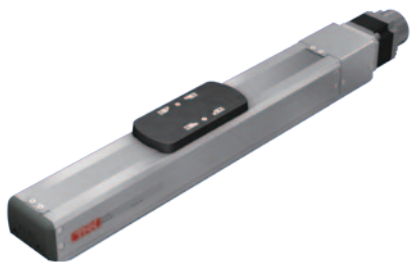
Model	Ball screw lead [mm]	Stroke [mm]	Motor size	Maximum load capacity *1 [kg]		
				Horizontal	Wall mount	Vertical
KRF3	6	50 to 300	Stepper motor □28	3	3	1.5
KRF4	6	50 to 300	Stepper motor □35	6.5	6	4
KRF5	6	50 to 550	Stepper motor □42	20	14.5	7.5
	10	50 to 550		10	10	6

\*1 Maximum load capacity and maximum speed vary dependent on usage conditions.

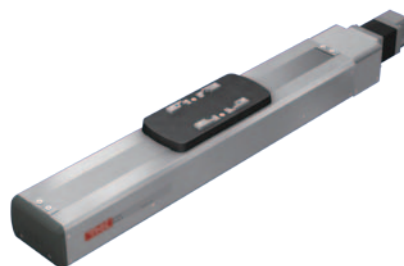
For details, see "Basic Specifications" and "Speed and Load Capacity: Relationship Diagram" of each model.

## Series Specifications (Servo Driver Controller TLC/THC Specification)

[KRF4, 5]



[KRF6]



Model	Ball screw lead [mm]	Stroke [mm]	Rated speed *1 [mm/s]	Motor capacity [W]	Used driver controller	Maximum load capacity *2 [kg]			
						Horizontal	Wall mount	Vertical	
KRF4	6	50 to 300	300	50	TLC	6	5.5	4	
KRF5	6	50 to 550				500	19	14	6
	10		15				12.5	3.5	
KRF6	6	50 to 800	300	100	THC	35	24	10	
	10		500			30	22	5	

\*1 Indicates the speed at the rated revolution of the motor (3,000 min<sup>-1</sup>).

\*2 The maximum load capacity indicates the capacity at the rated speed under 0.5 G for horizontal and wall mount and 0.3 G for vertical.

\*3 The maximum speed indicates the speed at the revolution of the motor (3,000 min<sup>-1</sup>) or the speed restricted by the permissible revolution of the ball screw.

	Maximum speed for each stroke *1 [mm/s]																
	Stroke																
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
	300																
	300																
	300										250						
	500										430						



	Maximum speed for each stroke *3 [mm/s]																
	Stroke [mm]																
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
	300																
	300										250						
	500										430						
	300											260	220	200	170	150	
	500											440	380	330	290	260	

## Model Configuration

### KRF (type with motor)

When combining with dedicated driver controller



Model	Ball screw lead	Stroke	Design symbol	Control device type	Option	Motor size / motor rated output
KRF6R	06	0050	A	TH	MR-GR	M10
(1)	(2)	(3)	(4)	(5)	(6)	(7)
KRF3	06: 6 mm	0050: 50 mm	A	TS: TSC	No symbol: None	28P : Stepper motor □28
KRF4	10: 10 mm	0100: 100 mm		TL: TLC	MR: Motor right return*	35P : Stepper motor □35
KRF5		0150: 150 mm		TH: THC	ML: Motor left return*	42P : Stepper motor □42
KRF6		0200: 200 mm			MD: Motor down return*	M05 : 50W
KRF4R		0250: 250 mm			GR: Gray cover	M10 : 100W
KRF5R		0300: 300 mm			SB: Slider base	28PB : Stepper motor □28 with brake
KRF6R		0350: 350 mm			□1□2: Sensor	35PB : Stepper motor □35 with brake
		0400: 400 mm				42PB : Stepper motor □42 with brake
		0450: 450 mm				M05B : 50W with brake
		0500: 500 mm				M10B : 100W with brake
		0550: 550 mm				
		0600: 600 mm				
		0650: 650 mm				
		0700: 700 mm				
		0750: 750 mm				
		0800: 800 mm				
R represents motor return.	KRF3, KRF4, and KRF4R have ball screw lead of 6mm only.		Control device you can select differ depending on models. KRF3 : TSC only KRF4 : TSC, TLC KRF5 : TSC, TLC KRF6 : THC KRF4/5R: TLC KRF6R : THC *Separate order for the control device is required.	Specify the option symbol by writing in the order of description from left adding "-". *This is valid only when selecting KRF□R for model (1).		Motors differ depending on models. KRF3 : "28P", "28PB" KRF4 : "35P", "35PB", "M05", "M05B" KRF5 : "42P", "42PB", "M05", "M05B" KRF6 : "M10", "M10B" KRF4R: "M05", "M05B" KRF5R: "M05", "M05B" KRF6R: "M10", "M10B"
		Maximum stroke differs depending on models. KRF3: 300mm KRF4: 300mm KRF5: 550mm KRF6: 800mm		Change the cover color to gray You can change the color of housing cover to gray. Standard: red      When GR is selected: gray		

### Sample model configuration

When combining with dedicated controller (TSC)	KRF4-06-0200A-TS-GR-SB-R6/35PD00S3
When combining with dedicated controller (TLC)	KRF4-06-0150A-TL-GR-SB-R6/M05BRD00F3
When combining with dedicated controller (THC)	KRF6-10-0800A-TH-GR-R6/M10RS02D1H3

### Pages for detailed description

(6) Options	SB: With slider base → P. 13
	□1□2: Sensor → P. 14
	GR: Change the cover color to gray → P. 15

Motor cable orientation	Home position	Power supply voltage	Cable type and length
L	D00	D1	F3
(8)	(9)	(10)	(11)
No symbol: When selecting TSC	D00 : Motor side R00 : Reverse motor side	No symbol: When selecting TSC or TLC	No symbol: None
R : Right	S02 : Motor side	D1: 100 V	S3 : Standard 3 m
L : Left	S03 : Reverse motor side	D2: 200 V	S5 : Standard 5 m
U : Up			SA : Standard 10 m
D : Down			F3 : Standard 3 m
			F5 : Standard 5 m
			FA : Standard 10 m
			H3 : High flex 3 m
			H5 : High flex 5 m
			HA : High flex 10 m

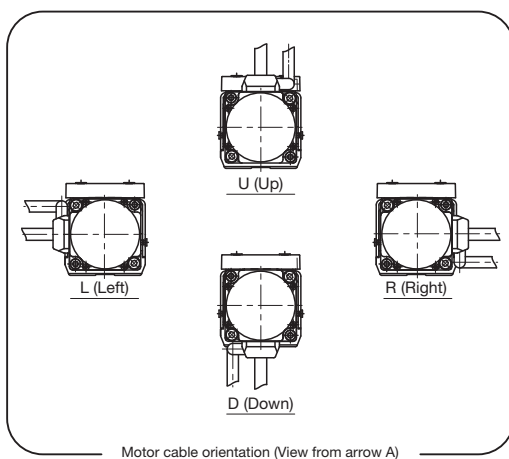
If you select "MR" as an option, "R" cannot be selected.  
If you select "ML" as an option, "L" cannot be selected.  
If you select "MD" as an option, "U" cannot be selected.

S0 \* (external sensor specification) only when selecting THC.

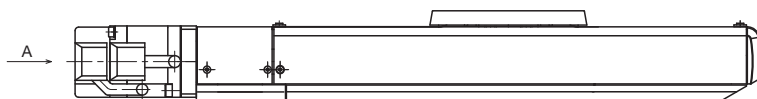
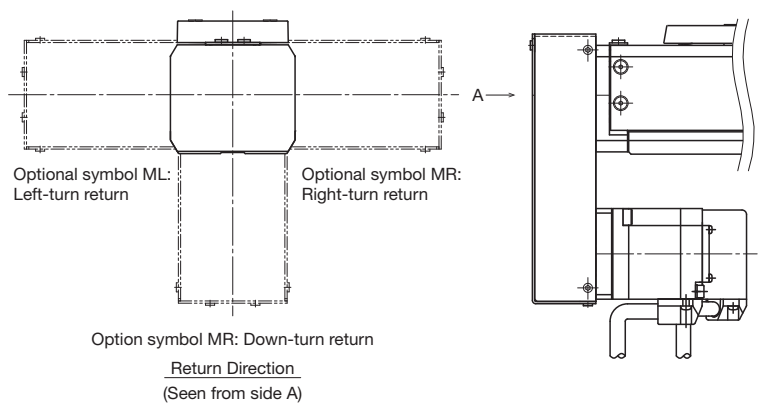
Only when selecting THC

Indicates the type and length of attached cables. Cables you can select differ depending on controllers.  
TSC : "S" \*  
TLC : "F" \*, "H" \*  
THC : "F" \*, "H" \*

### Motor cable orientation



### Folded direction







# KRF3 TSC specifications

## Model Configuration

Model	Ball screw lead	Stroke	Design symbol	Control device type	Option	Motor size	Home position	Cable type and length
KRF3	06	0150	A	TS	GR-SB	28P	D00	S3

<b>KRF3</b>	<b>06</b> : 6 mm	<b>0050</b> : 50mm to <b>0300</b> : 300 mm	<b>A</b>	<b>TS</b> : TSC	<b>No symbol</b> : None <b>GR</b> : Gray cover <b>SB</b> : Slider base <b>□<sub>1</sub>□<sub>2</sub></b> : Sensor	<b>28P</b> : Stepper motor □28 <b>28PB</b> : Stepper motor □28 with brake	<b>D00</b> : Motor side <b>R00</b> : Reverse motor side	<b>No symbol</b> : None <b>S3</b> : Standard 3 m <b>S5</b> : Standard 5 m <b>SA</b> : Standard 10 m
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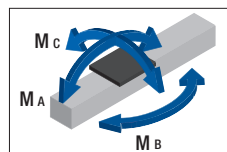
## Basic Specifications

Control device type				TSC
Motor size				□28
Ball screw lead [mm]				6
Maximum load capacity [kg]	Acceleration and deceleration rate	Horizontal mount	0.3G	3
		Wall mount		3
		Vertical mount		1.5
Electromagnetic brake retention [N]				42
Running life *1 [km]		Horizontal/wall mount		10,000
		Vertical mount		5,000
Positioning repeatability [mm]				±0.020
Lost motion [mm]				0.1
Static permissible moment *2 [N·m]				MA: 12.1 MB: 12.1 MC: 32.3

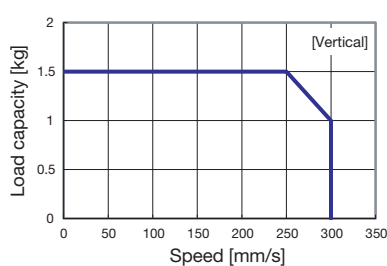
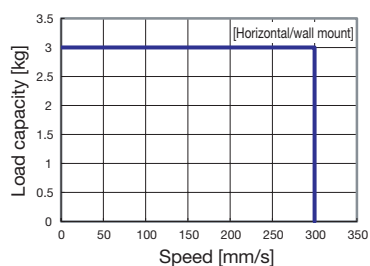
\*1 Conditions for calculation of the values above:  
Under maximum load capacity at permissible overhang length.  
Stroke 75 mm

\*2 Moment standards for M<sub>A</sub> and M<sub>C</sub> are the top face of the table, and that for M<sub>B</sub> is the center of the table.

Static Permissible Moment

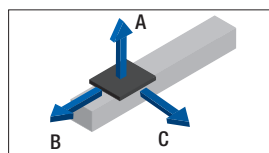


## Speed and Load Capacity: Relationship Diagram

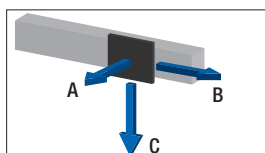


## Permissible Overhang Length\*

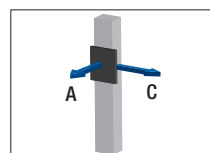
Horizontal use



Wall use



Vertical use



Horizontal mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	1.5	290	50	150
	3	130	20	60

Wall mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	1.5	120	40	310
	3	40	10	100

Vertical mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	C
6	0.5	110	110
	1.5	40	40

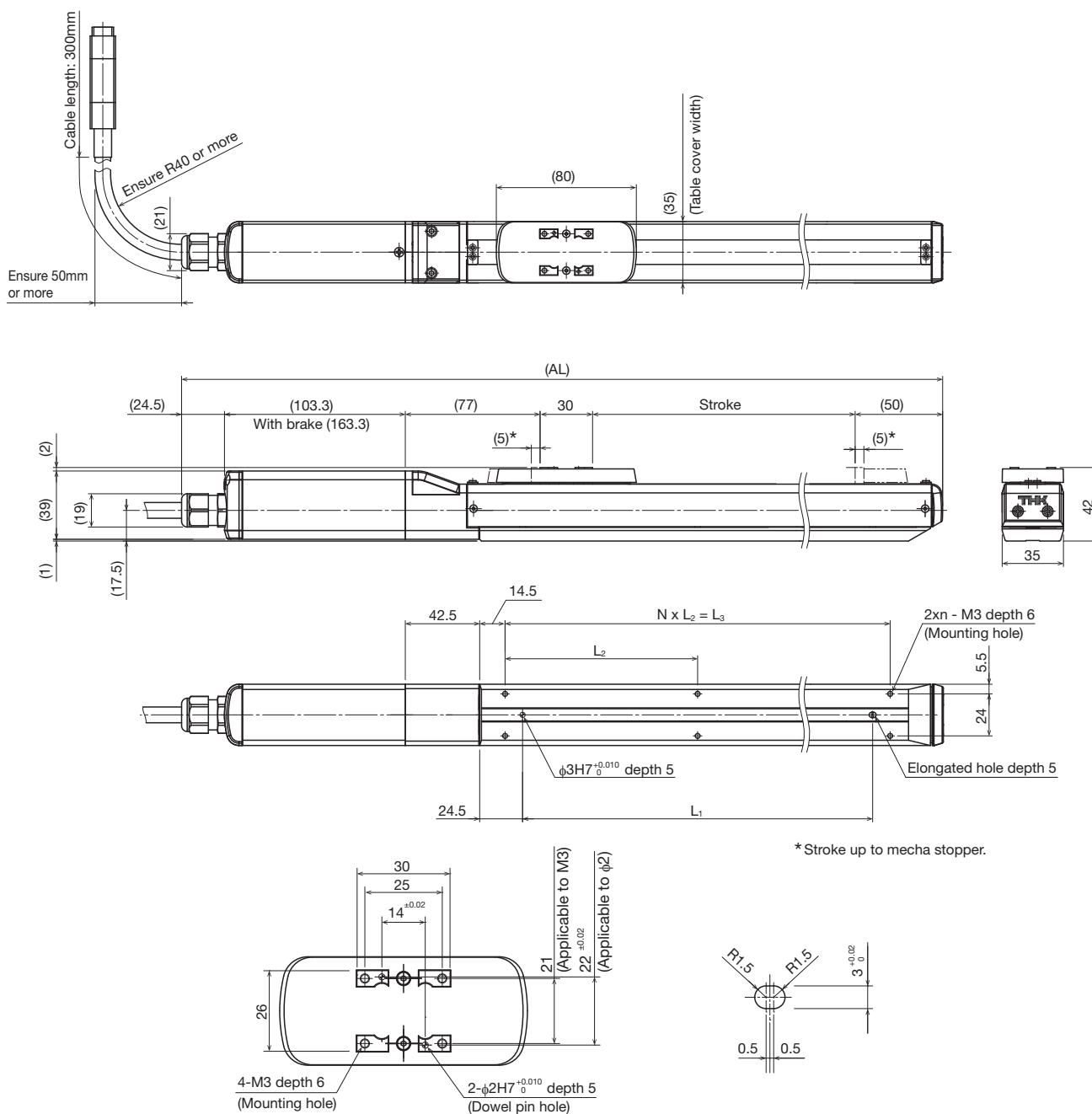
\* This value is the overhang length whose running life is 10,000 km for horizontal direction/wall mount and 5,000 km for vertical direction.  
A permissible value of the applied load in each direction.



## KRF3 + TSC



## Dimensions



Detailed Diagram: Table

Detailed Diagram: Elongated Hole

Stroke [mm]		50	100	150	200	250	300
(Stroke between mecha stoppers)		(60)	(110)	(160)	(210)	(260)	(310)
Maximum speed <sup>*1, *2</sup> [mm/s]	Ball screw lead: 6 mm	300					
Dimensions [mm]	AL <sup>*3</sup>	334.8(394.8)	384.8(444.8)	434.8(494.8)	484.8(544.8)	534.8(594.8)	584.8(644.8)
	L <sub>1</sub>	100	150	200	250	300	350
	L <sub>2</sub>	120	85	110	135	105	120
	L <sub>3</sub>	120	170	220	270	315	360
Mounting pitch count	N	1	2	2	2	3	3
Mounting hole count	n	2	3	3	3	4	4
Weight <sup>*3</sup> [kg]		1.1(1.3)	1.2(1.5)	1.3(1.6)	1.4(1.7)	1.5(1.8)	1.7(1.9)

<sup>\*1</sup> Load capacity and maximum speed vary dependent on usage conditions. For details, see "Speed and Load Capacity: Relationship Diagram".

<sup>\*2</sup> Dependent on permissible rotational speed of ball screw.

<sup>\*3</sup> Values when a brake is installed are shown in parentheses.



# KRF4 TSC specifications

## Model Configuration

Model	Ball screw lead	Stroke	Design symbol	Control device type	Option	Motor size	Home position	Cable type and length
KRF4	06	0150	A	TS	GR-SB	35P	D00	S3

<b>KRF4</b>	<b>06</b> : 6 mm	<b>0050</b> : 50mm to <b>0300</b> : 300 mm	<b>A</b>	<b>TS</b> : TSC	No symbol: None <b>GR</b> : Gray cover <b>SB</b> : Slider base $\square_1 \square_2$ : Sensor	<b>35P</b> : Stepper motor $\square 35$ <b>35PB</b> : Stepper motor $\square 35$ with brake	<b>D00</b> : Motor side <b>R00</b> : Reverse motor side	No symbol: None <b>S3</b> : Standard 3 m <b>S5</b> : Standard 5 m <b>SA</b> : Standard 10 m
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## Basic Specifications

Control device type				TSC
Motor size				□35
Ball screw lead [mm]				6
Maximum load capacity [kg]	Acceleration and deceleration rate	Horizontal mount	0.3G	6.5
		Wall mount		6
		Vertical mount	0.2G	4
Electromagnetic brake retention [N]				251
Running life *1 [km]		Horizontal/wall mount		10,000
		Vertical mount		5,000
Positioning repeatability [mm]				±0.020
Lost motion [mm]				0.1
Static permissible moment *2 [N·m]				Ma: 31 Mb: 21.2 Mc: 52.7

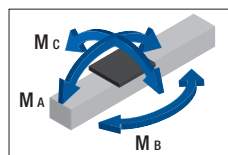
\*1 Conditions for calculation of the values above:

Under maximum load capacity at permissible overhang length.

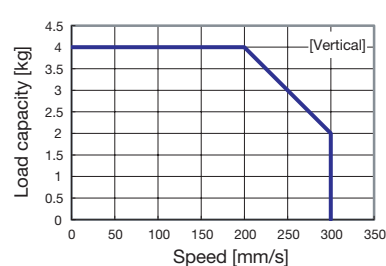
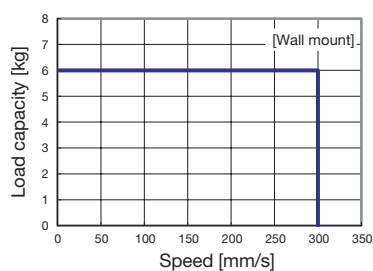
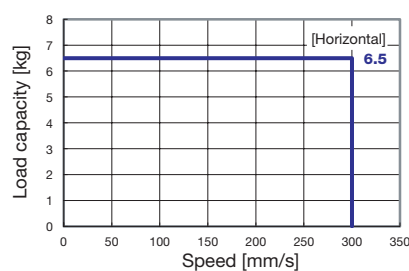
Stroke 75 mm

\*2 Moment standards for MA and MC are the top face of the table, and that for MB is the center of the table.

Static Permissible Moment

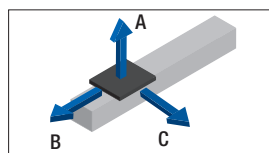


## Speed and Load Capacity: Relationship Diagram

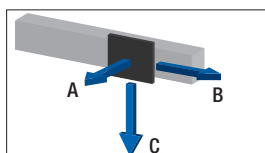


## Permissible Overhang Length\*

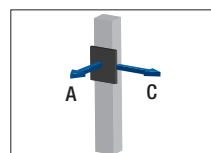
Horizontal use



Wall use



Vertical use



Horizontal mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	3	330	60	160
	6.5	140	20	60

Wall mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	3	140	50	380
	6	50	20	110

Vertical mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	C
6	2	100	100
	4	30	30

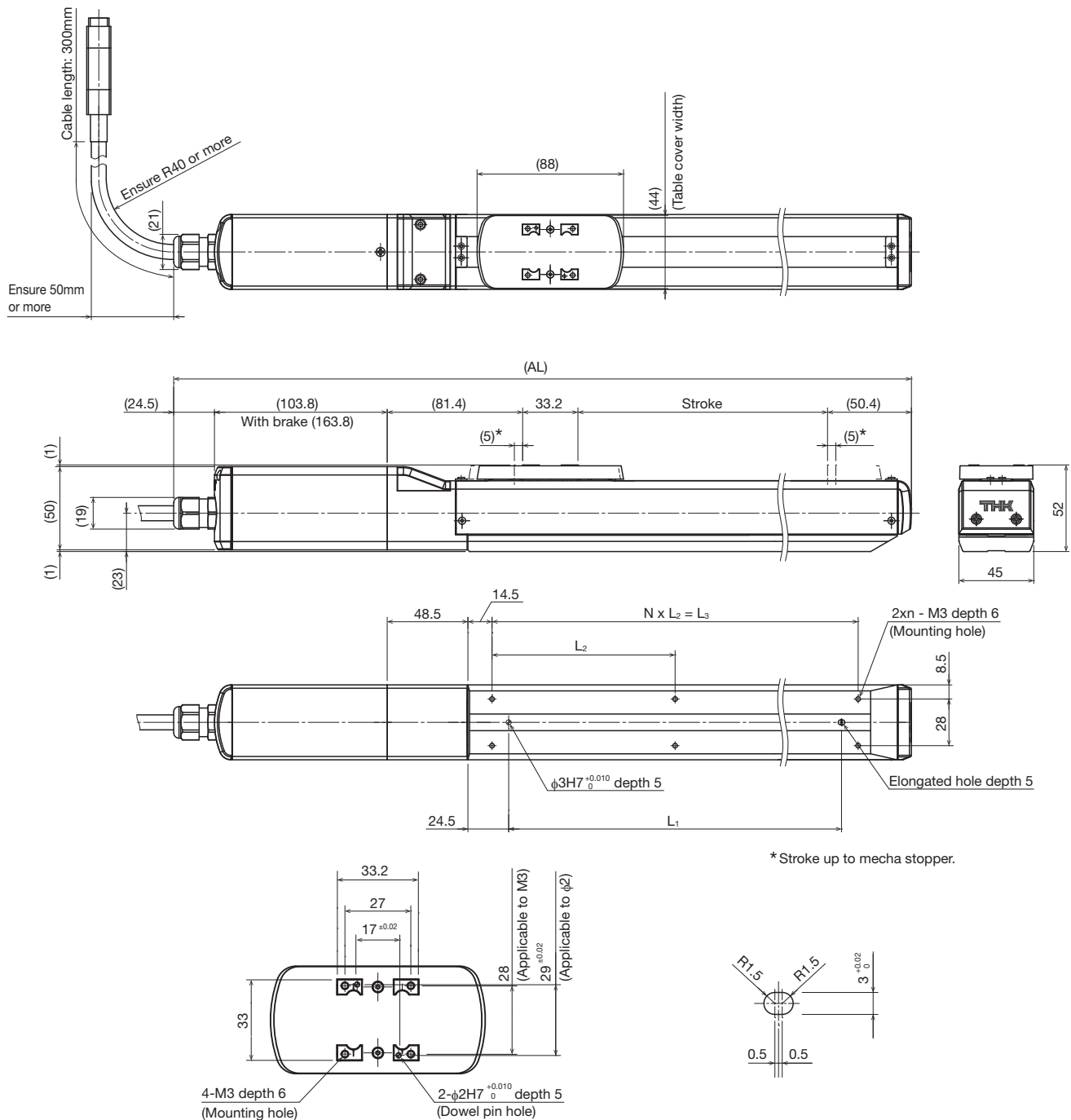
\* This value is the overhang length whose running life is 10,000 km for horizontal direction/wall mount and 5,000 km for vertical direction.

A permissible value of the applied load in each direction.

## KRF4 + TSC



## Dimensions



Detailed Diagram: Table

Detailed Diagram: Elongated Hole

Stroke [mm]		50	100	150	200	250	300
(Stroke between mecha stoppers)		(60)	(110)	(160)	(210)	(260)	(310)
Maximum speed *1, *2 [mm/s]	Ball screw lead: 6 mm	300					
Dimensions [mm]	AL *3	343.3(403.3)	393.3(453.3)	443.3(503.3)	493.3(553.3)	543.3(603.3)	593.3(653.3)
	L1	100	150	200	250	300	350
	L2	120	85	110	90	105	120
	L3	120	170	220	270	315	360
Mounting pitch count	N	1	2	2	3	3	3
Mounting hole count	n	2	3	3	4	4	4
Weight *3 [kg]		1.7(2.1)	1.9(2.3)	2.1(2.5)	2.3(2.7)	2.5(3.0)	2.7(3.2)

\*1 Load capacity and maximum speed vary dependent on usage conditions. For details, see "Speed and Load Capacity: Relationship Diagram".

\*2 Dependent on permissible rotational speed of ball screw.

\*3 Values when a brake is installed are shown in parentheses.

# KRF5 TSC specifications



## Model Configuration

Model	Ball screw lead	Stroke	Design symbol	Control device type	Option	Motor size	Home position	Cable type and length
KRF5	06	0150	A	TS	GR-SB	42P	D00	S3

<b>KRF5</b>	<b>06:</b> 6 mm <b>10:</b> 10 mm	<b>0050:</b> 50mm to <b>0550:</b> 550 mm	<b>A</b>	<b>TS:</b> TSC	<b>No symbol:</b> None <b>GR:</b> Gray cover <b>SB:</b> Slider base <b>□<sub>1</sub>□<sub>2</sub>:</b> Sensor	<b>42P :</b> Stepper motor □42 <b>42PB:</b> Stepper motor □42 with brake	<b>D00:</b> Motor side <b>R00 :</b> Reverse motor side	<b>No symbol:</b> None <b>S3:</b> Standard 3 m <b>S5:</b> Standard 5 m <b>SA:</b> Standard 10 m
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## Basic Specifications

Control device type				TSC	
Motor size				□42	
Ball screw lead [mm]				6	10
Maximum load capacity [kg]	Acceleration and deceleration rate	Horizontal mount	0.3G	20	10
		Wall mount		14.5	10
		Vertical mount		7.5	6
Electromagnetic brake retention [N]				251	151
Running life *1 [km]		Horizontal/wall mount		10,000	
		Vertical mount		5,000	
Positioning repeatability [mm]				±0.020	
Lost motion [mm]				0.1	
Static permissible moment *2 [N·m]				MA: 84 MB: 48.4 Mc: 105.8	

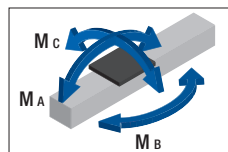
\*1 Conditions for calculation of the values above:

Under maximum load capacity at permissible overhang length.

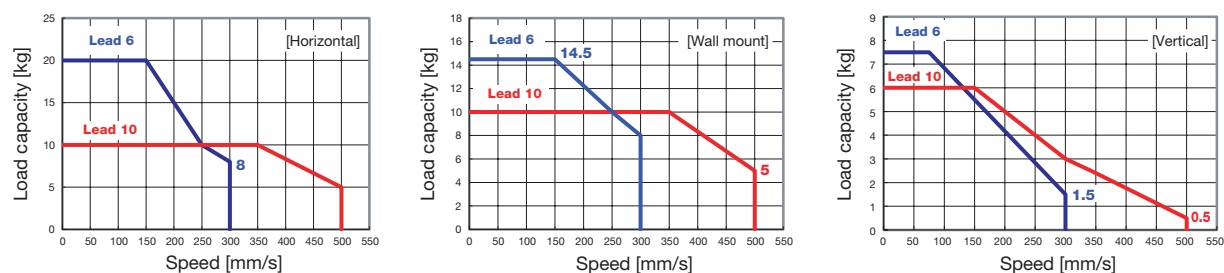
Stroke 275 mm

\*2 Moment standards for MA and MC are the top face of the table, and that for MB is the center of the table.

Static Permissible Moment

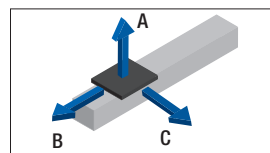


## Speed and Load Capacity: Relationship Diagram

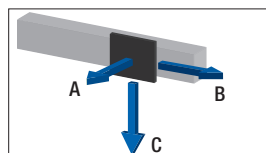


## Permissible Overhang Length\*

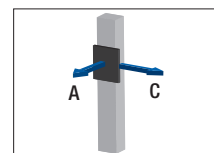
Horizontal use



Wall use



Vertical use



Horizontal mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	10	470	50	150
	20	210	20	60
10	5	700	110	280
	10	320	40	130

Wall mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	7	180	60	680
	14.5	60	20	150
10	5	250	80	700
	10	100	20	210

Vertical mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	C
6	3.5	160	160
	7.5	60	60
10	3	210	210
	6	90	90

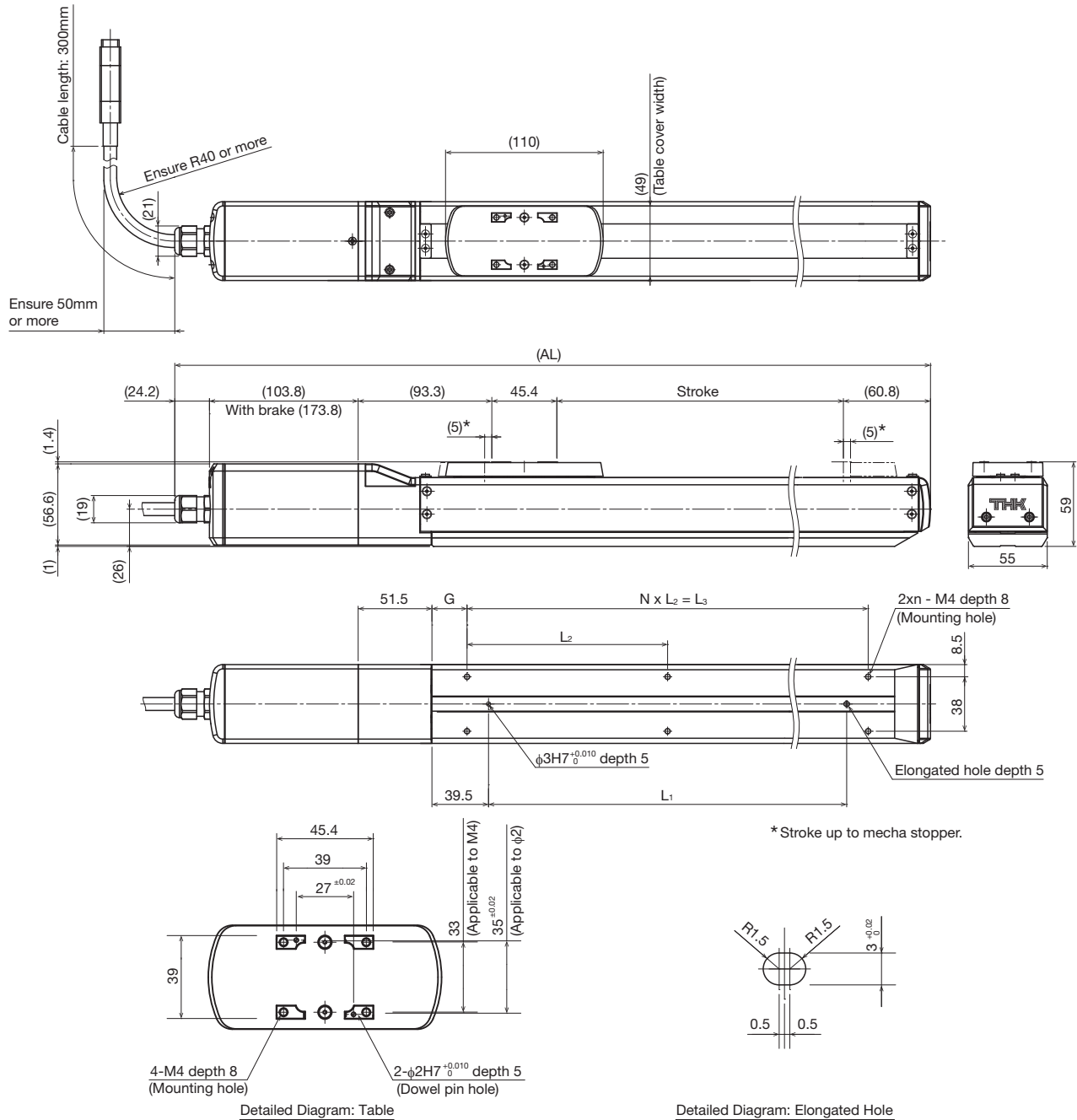
\* This value is the overhang length whose running life is 10,000 km for horizontal direction/wall mount and 5,000 km for vertical direction.

A permissible value of the applied load in each direction.

## KRF5 + TSC



## Dimensions



Stroke [mm] (Stroke between mecha stoppers)		50 (60)	100 (110)	150 (160)	200 (210)	250 (260)	300 (310)	350 (360)	400 (410)	450 (460)	500 (510)	550 (560)
Maximum speed <sup>*1, *2</sup> [mm/s]	Ball screw lead: 6 mm	300										250
	Ball screw lead: 10 mm	500										430
Dimensions [mm]	AL <sup>*3</sup>	377.5 (447.5)	427.5 (497.5)	477.5 (547.5)	527.5 (597.5)	577.5 (647.5)	627.5 (697.5)	677.5 (747.5)	727.5 (797.5)	777.5 (847.5)	827.5 (897.5)	877.5 (947.5)
	L <sub>1</sub>	100	150	200	250	300	350	400	450	500	550	600
	L <sub>2</sub>	140	100	120	140	115	130	110	120	135	120	130
	L <sub>3</sub>	140	200	240	280	345	390	440	480	540	600	650
	G	19.5	14.5	19.5	24.5	17	19.5	19.5	24.5	19.5	14.5	14.5
Mounting pitch count	N	1	2	2	2	3	3	4	4	4	5	5
Mounting hole count	n	2	3	3	3	4	4	5	5	5	6	6
Weight <sup>*3</sup> [kg]		2.8 (3.3)	3.1 (3.6)	3.4 (3.9)	3.7 (4.2)	4.0 (4.5)	4.4 (4.8)	4.7 (5.1)	5.0 (5.4)	5.3 (5.7)	5.6 (6.1)	5.9 (6.4)

<sup>\*1</sup> Load capacity and maximum speed vary dependent on usage conditions. For details, see "Speed and Load Capacity: Relationship Diagram".

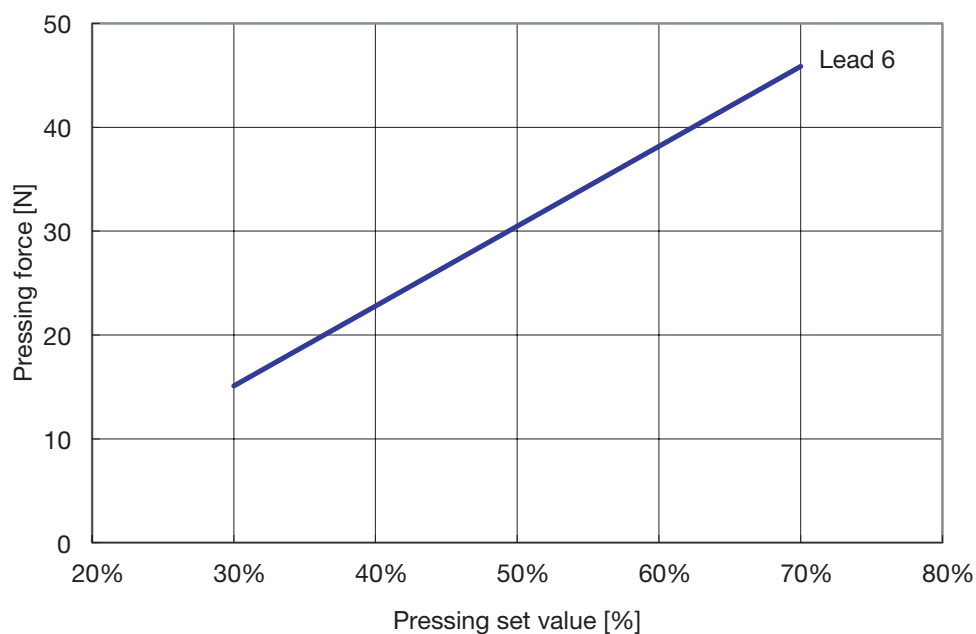
<sup>\*2</sup> Dependent on permissible rotational speed of ball screw.

<sup>\*3</sup> Values when a brake is installed are shown in parentheses.

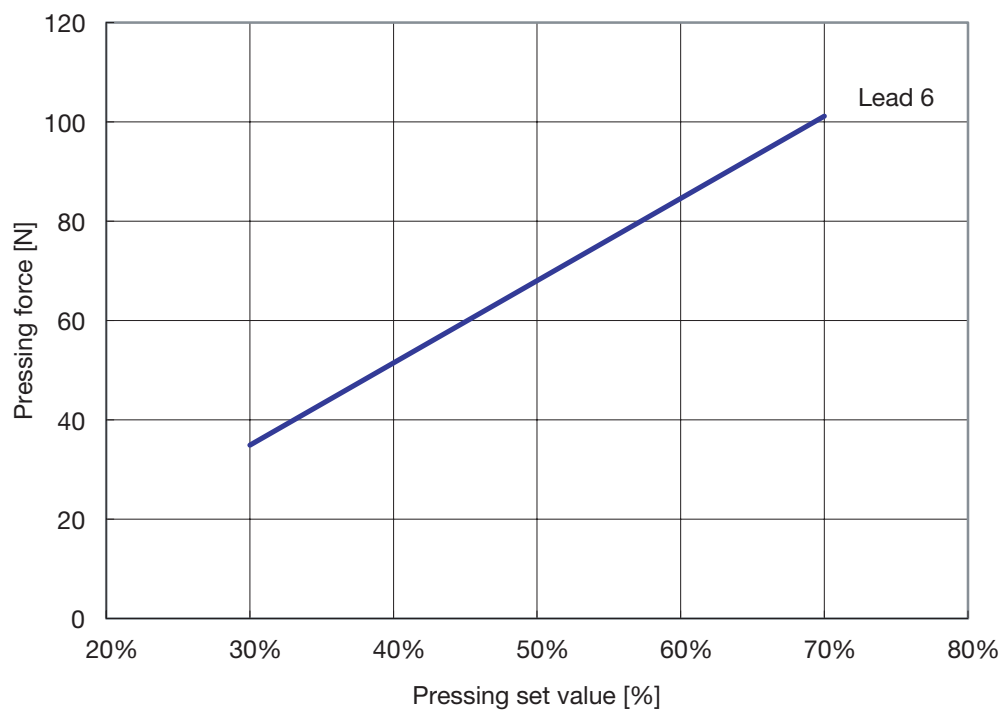
## Pressing Force and Pressing Set Value for TSC specification: Relationship Diagram

Pressing force may vary depending on the pressing set value. Refer to the relationship diagram below.

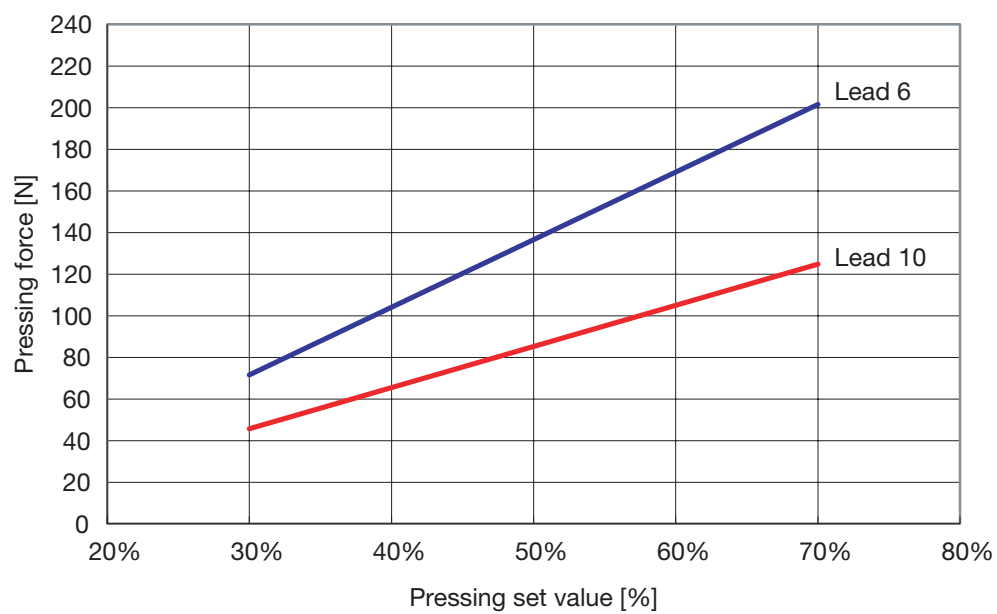
### ■ KRF3



### ■ KRF4



■ KRF5





# KRF4

## TLC specifications



### Model Configuration

Model	Ball screw lead	Stroke	Design symbol	Control device	Option	Motor rated output	Motor cable orientation	Home position	Cable type and length
KRF4	06	0150	A	TL	GR-SB-R6	M05	L	D00	F3

<b>KRF4</b>	<b>06</b> : 6 mm	<b>0050</b> : 50 mm to <b>0300</b> : 300 mm	<b>A</b>	<b>TL</b> : TLC	No symbol: Red cover <b>GR</b> : Gray cover <b>SB</b> : Slider base <input type="checkbox"/> 1 <input type="checkbox"/> 2: Sensor	<b>M05</b> : 50W <b>M05B</b> : 50W with brake	<b>R</b> : Right <b>L</b> : Left <b>U</b> : Up <b>D</b> : Down	<b>D00</b> : Motor side <b>R00</b> : Reverse motor side	No symbol: None <b>F3</b> : Standard 3 m <b>F5</b> : Standard 5 m <b>FA</b> : Standard 10 m <b>H3</b> : High flex 3 m <b>H5</b> : High flex 5 m <b>HA</b> : High flex 10 m
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Note: If the GR is not included in the model configuration, cover will be red.

### Basic Specifications

Control device type				TLC
Motor rated output [W]				50
Ball screw lead [mm]				6
Rated speed *1 [mm/s]				300
Maximum load capacity *2 [kg]	Acceleration and deceleration rate	Horizontal mount	0.5G	6
		Wall mount		5.5
		Vertical mount	0.3G	4
Rated thrust *3 [N]				133
Maximum thrust *4 [N]				241
Electromagnetic brake retention [N]				268
Running life *5 [km]		Horizontal and on wall		10,000
		Vertical		5,000
Positioning repeatability [mm]				±0.02
Lost motion [mm]				0.1
Static permissible moment *6 [N·m]				MA: 31   Mb: 21.2   Mc: 52.7

<sup>\*1</sup> Based on rated motor speed (3,000 min<sup>-1</sup>).

<sup>\*2</sup> At rated speed.

<sup>\*3</sup> At rated motor torque.

<sup>\*4</sup> Dependent on maximum motor torque and permissible load.

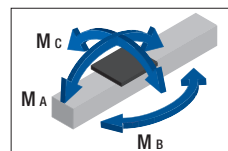
<sup>\*5</sup> The conditions for calculation are as follows:

Conditions: Under maximum load capacity at permissible overhang length  
Stroke 75mm

<sup>\*6</sup> Moment standards:

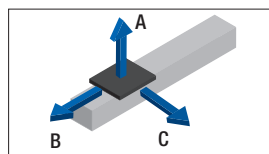
MA and Mc: top of table; MB: center of table.

Static Permissible Moment

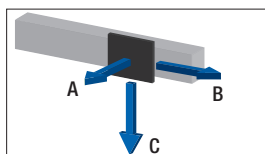


### Permissible Overhang Length\*

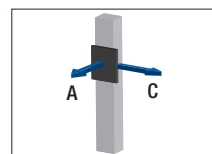
Horizontal use



Wall use



Vertical use



Horizontal mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	3	250	60	160
	6	110	20	60

Wall mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	2.5	140	60	280
	5.5	50	20	100

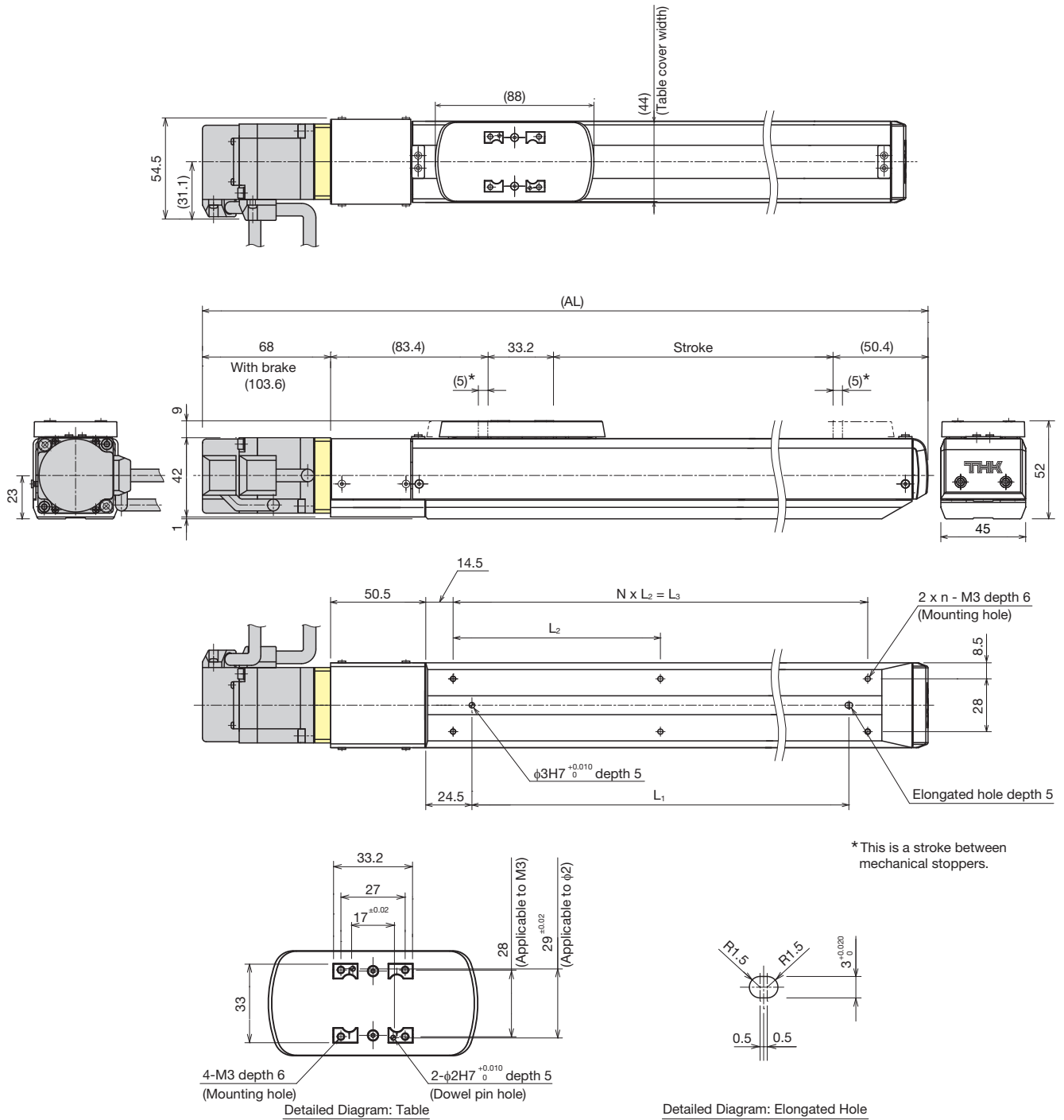
Vertical mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	C
6	2	100	100
	4	30	30

\* This value is the overhang length whose running life is 10,000 km for horizontal and wall mount, and 5,000 km for vertical direction.  
A permissible value of the applied load in each direction.

**KRF4 + TLC****Motor rated output  
50W**

## Dimensions



Stroke [mm]		50	100	150	200	250	300
(Stroke between mechanical stoppers)		(60)	(110)	(160)	(210)	(260)	(310)
Maximum speed *1 [mm/s]	Ball screw lead: 6mm	300					
Dimensions [mm]	AL *2	285(320.6)	335(370.6)	385(420.6)	435(470.6)	485(520.6)	535(570.6)
	L1	100	150	200	250	300	350
	L2	120	85	110	90	105	120
	L3	120	170	220	270	315	360
Mounting pitch count	N	1	2	2	3	3	3
Mounting hole count	n	2	3	3	4	4	4
Weight *2 [kg]		1.6(1.8)	1.8(2.0)	2.0(2.2)	2.2(2.4)	2.4(2.6)	2.7(2.9)

\*1 Dependent on motor speed (3,000min<sup>-1</sup>) and permissible rotational speed of the ball screw.

\*2 Values when a brake is installed are shown in parentheses.

# KRF4R TLC specifications



## Model Configuration

Model	Ball screw lead	Stroke	Design symbol	Control device type	Option	Motor rated output	Motor cable orientation	Home position	Cable type and length
KRF4R	06	0150	A	TL	ML-GR	M05	R	D00	F3
KRF4R	06: 6 mm	0050: 50 mm to 0300: 300 mm	A	TL: TLC	No symbol: None MR: Motor right return ML: Motor left return MD: Motor down return GR: Gray cover SB: Slider base □1□2: Sensor	M05 : 50W M05B : 50W with brake	R : Right L : Left U : Up D : Down	D00: Motor side R00: Reverse motor side	No symbol: None F3 : Standard 3 m F5 : Standard 5 m FA : Standard 10 m H3 : High flex 3 m H5 : High flex 5 m HA : High flex 10 m

## Basic Specifications

Control device type				TLC		
Motor rated output [W]				50		
Ball screw lead [mm]				6		
Rated speed *1 [mm/s]				300		
Maximum load capacity *2 [kg]	Acceleration and deceleration rate	Horizontal mount	0.5G	6		
		Wall mount		5.5		
		Vertical mount		4		
Rated thrust *3 [N]				133		
Maximum thrust *4 [N]				241		
Electromagnetic brake retention [N]				268		
Running life *5 [km]		Horizontal/wall mount		10,000		
		Vertical mount		5,000		
Positioning repeatability [mm]				±0.02		
Lost motion [mm]				0.1		
Static permissible moment *6 [N·m]				MA: 31 MB: 21.2 Mc: 52.7		

\*1 Based on rated motor speed (3,000min<sup>-1</sup>).

\*2 At rated speed.

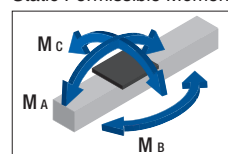
\*3 At rated motor torque.

\*4 Dependent on maximum motor torque and permissible load.

\*5 The conditions for calculation are as follows:  
Under maximum load capacity at permissible overhang length.  
Stroke 75 mm

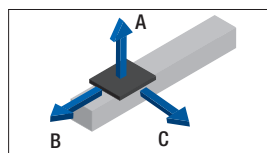
\*6 Moment standards for MA and MC are the top face of the table, and that for MB is the center of the table.

Static Permissible Moment

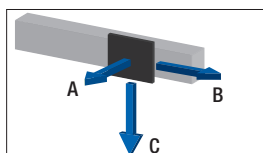


## Permissible Overhang Length\*

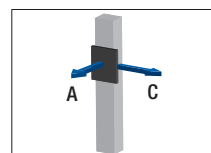
Horizontal use



Wall use



Vertical use



Horizontal mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	3	250	60	160
	6	110	20	60

Wall mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	2.5	140	60	280
	5.5	50	20	100

Vertical mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	C
6	2	100	100
	4	30	30

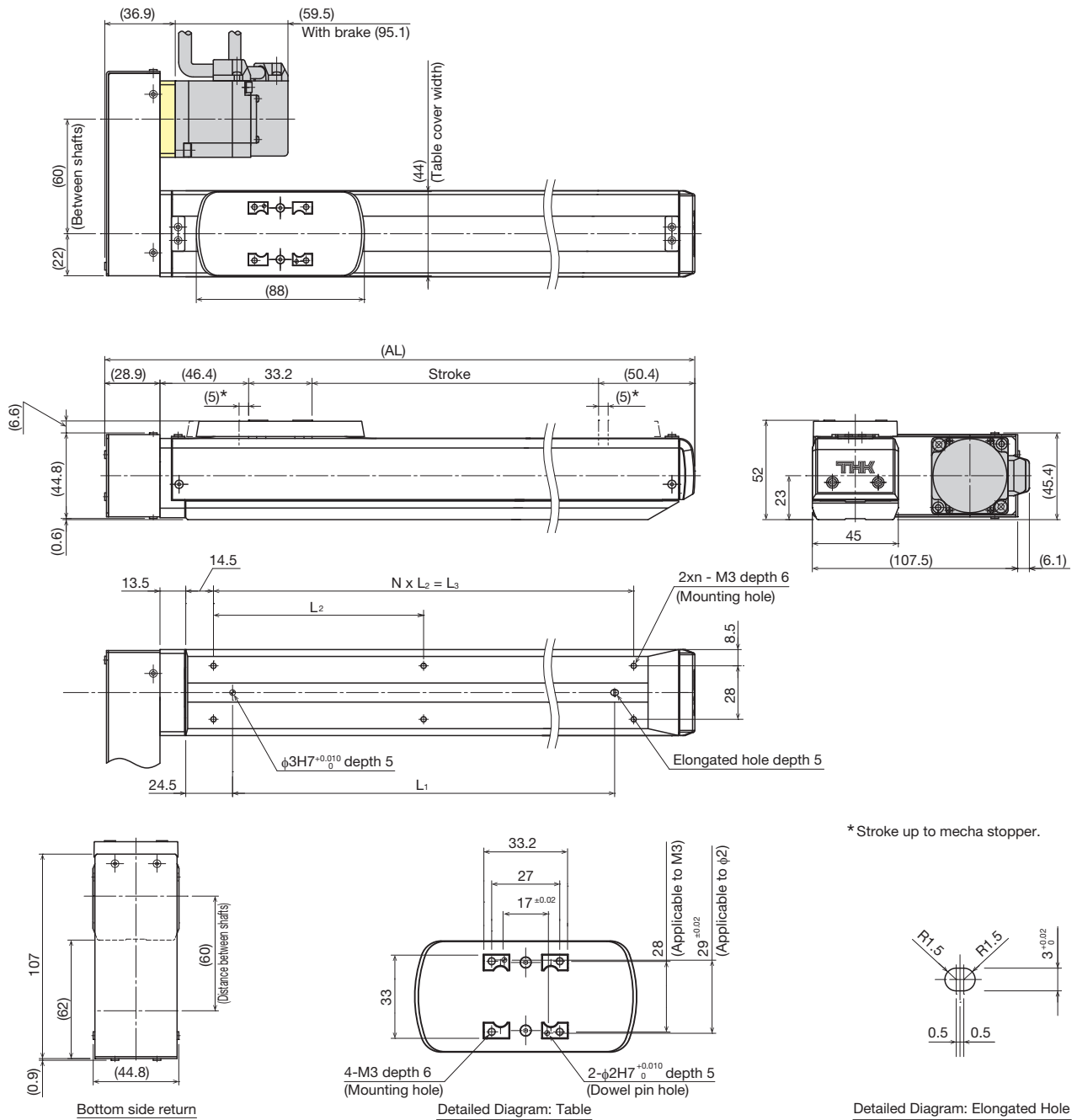
\* This value is the overhang length whose running life is 10,000 km for horizontal direction/wall mount and 5,000 km for vertical direction.

A permissible value of the applied load in each direction.

KRF4R + TLC


**Motor rated output**  
**50W**

## Dimensions



Stroke [mm]		50	100	150	200	250	300
(Stroke between mecha stoppers)		(60)	(110)	(160)	(210)	(260)	(310)
Maximum speed *1 [mm/s]	Ball screw lead: 6 mm	300					
Dimensions [mm]	AL *2	209	259	309	359	409	459
	L <sub>1</sub>	100	150	200	250	300	350
	L <sub>2</sub>	120	85	110	90	105	120
	L <sub>3</sub>	120	170	220	270	315	360
Mounting pitch count	N	1	2	2	3	3	3
Mounting hole count	n	2	3	3	4	4	4
Weight *2 [kg]		1.6(1.8)	1.8(2.0)	2.0(2.2)	2.3(2.5)	2.5(2.7)	2.7(2.9)

\*1 The maximum speed is the value restricted by the motor rotational speed (at 3,000min<sup>-1</sup>), or by the permissible rotational speed of the ball screw.

\*2 Values when a brake is installed are shown in parentheses.

# KRF5

## TLC specifications



### Model Configuration

Model	Ball screw lead	Stroke	Design symbol	Control device	Option	Motor rated output	Motor cable orientation	Home position	Cable type and length
KRF5	06	0150	A	TL	GR-SB-R6	M05	L	D00	F3

<b>KRF5</b>	<b>06</b> : 6 mm <b>10</b> : 10 mm	<b>0050</b> : 50 mm to <b>0550</b> : 550 mm	<b>A</b>	<b>TL</b> : TLC	No symbol: Red cover <b>GR</b> : Gray cover <b>SB</b> : Slider base <input type="checkbox"/> 1 <input type="checkbox"/> 2: Sensor	<b>M05</b> : 50W <b>M05B</b> : 50W with brake	<b>R</b> : Right <b>L</b> : Left <b>U</b> : Up <b>D</b> : Down	<b>D00</b> : Motor side <b>R00</b> : Reverse motor side	No symbol: None <b>F3</b> : Standard 3 m <b>F5</b> : Standard 5 m <b>FA</b> : Standard 10 m <b>H3</b> : High flex 3 m <b>H5</b> : High flex 5 m <b>HA</b> : High flex 10 m
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Note: If the GR is not included in the model configuration, cover will be red.

### Basic Specifications

Control device type				TLC	
Motor rated output [W]				50	
Ball screw lead [mm]				6	10
Rated speed * <sup>1</sup> [mm/s]				300	500
Maximum load capacity * <sup>2</sup> [kg]	Acceleration and deceleration rate	Horizontal mount	0.5 G	19	15
		Wall mount		14	12.5
		Vertical mount		0.3G	6
Rated thrust * <sup>3</sup> [N]				133	80
Maximum thrust * <sup>4</sup> [N]				402	241
Electromagnetic brake retention [N]				268	161
Running life * <sup>5</sup> [km]		Horizontal and on wall		10,000	
		Vertical		5,000	
Positioning repeatability [mm]				±0.02	
Lost motion [mm]				0.1	
Static permissible moment * <sup>6</sup> [N·m]				MA: 84 MB: 48.4 MC: 105.8	

\*<sup>1</sup> Based on rated motor speed (3,000 min<sup>-1</sup>).

\*<sup>2</sup> At rated speed.

\*<sup>3</sup> At rated motor torque.

\*<sup>4</sup> Dependent on maximum motor torque and permissible load.

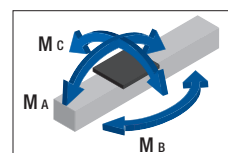
\*<sup>5</sup> The conditions for calculation are as follows:

Conditions: Under maximum load capacity at permissible overhang length  
Stroke 275mm

\*<sup>6</sup> Moment standards:

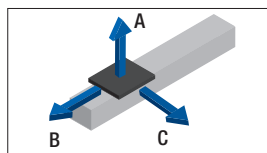
MA and MC: top of table; MB: center of table.

#### Static Permissible Moment

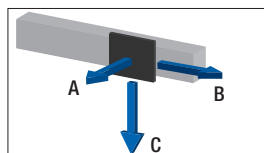


### Permissible Overhang Length\*

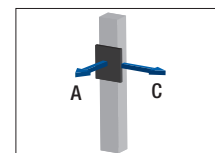
Horizontal use



Wall use



Vertical use



Horizontal mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	9.5	350	50	150
	19	150	20	60
10	7.5	310	70	180
	15	130	20	60

Wall mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	7	180	60	500
	14	60	20	130
10	6	170	70	390
	12.5	60	20	120

Vertical mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	C
6	3	210	210
	6	90	90
10	1.5	390	390
	3.5	180	180

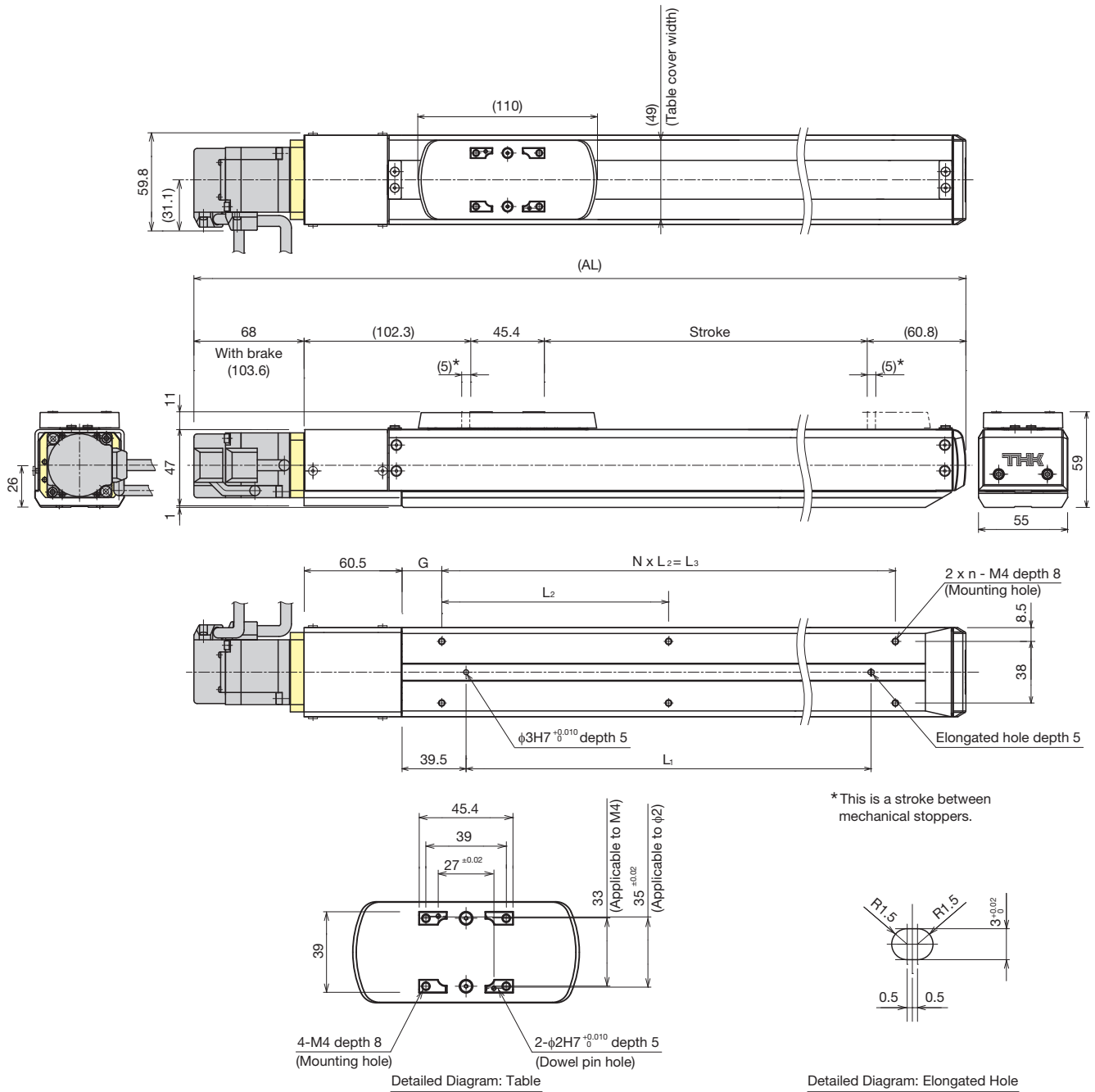
\* This value is the overhang length whose running life is 10,000 km for horizontal and wall mount, and 5,000 km for vertical direction.

A permissible value of the applied load in each direction.

KRF5 + TLC


**Motor rated output**  
**50W**

## Dimensions



Stroke [mm] (Stroke between mechanical stoppers)		50	100	150	200	250	300	350	400	450	500	550
		(60)	(110)	(160)	(210)	(260)	(310)	(360)	(410)	(460)	(510)	(560)
Maximum speed *1 [mm/s]	Ball screw lead: 6mm	300										250
	Ball screw lead: 10mm	500										430
Dimensions [mm]	AL *2	326.5 (362.1)	376.5 (412.1)	426.5 (462.1)	476.5 (512.1)	526.5 (562.1)	576.5 (612.1)	626.5 (662.1)	676.5 (712.1)	726.5 (762.1)	776.5 (812.1)	826.5 (862.1)
	L <sub>1</sub>	100	150	200	250	300	350	400	450	500	550	600
	L <sub>2</sub>	140	100	120	140	115	130	110	120	135	120	130
	L <sub>3</sub>	140	200	240	280	345	390	440	480	540	600	650
	G	19.5	14.5	19.5	24.5	17	19.5	19.5	24.5	19.5	14.5	14.5
Mounting pitch count	N	1	2	2	2	3	3	4	4	4	5	5
Mounting hole count	n	2	3	3	3	4	4	5	5	5	6	6
Weight *2 [kg]		2.6 (2.8)	2.9 (3.1)	3.2 (3.4)	3.5 (3.7)	3.8 (4.0)	4.1 (4.3)	4.4 (4.6)	4.7 (4.9)	5.0 (5.2)	5.3 (5.5)	5.6 (5.8)

\*1 Dependent on motor speed (3,000min<sup>-1</sup>) and permissible rotational speed of the ball screw.

\*2 Values when a brake is installed are shown in parentheses.

# KRF5R TLC specifications



## Model Configuration

Model	Ball screw lead	Stroke	Design symbol	Control device	Option	Motor rated output	Motor cable orientation	Home position	Cable type and length
KRF5R	06	0150	A	TL	ML-GR	M05	R	D00	F3

<b>KRF5R</b>	<b>06</b> : 6 mm <b>10</b> : 10 mm	<b>0050</b> : 50mm to <b>0550</b> : 550 mm	<b>A</b>	<b>TL</b> : TLC	<b>No symbol</b> : None <b>MR</b> : Motor right return <b>ML</b> : Motor left return <b>MD</b> : Motor down return <b>GR</b> : Gray cover <b>SB</b> : Slider base <b>□1□2</b> : Sensor	<b>M05</b> : 50W <b>M05B</b> : 50W with brake	<b>R</b> : Right <b>L</b> : Left <b>U</b> : Up <b>D</b> : Down	<b>D00</b> : Motor side <b>R00</b> : Reverse motor side	<b>No symbol</b> : None <b>F3</b> : Standard 3 m <b>F5</b> : Standard 5 m <b>FA</b> : Standard 10 m <b>H3</b> : High flex 3 m <b>H5</b> : High flex 5 m <b>HA</b> : High flex 10 m
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## Basic Specifications

Control device type				TLC		
Motor rated output [W]				50		
Ball screw lead [mm]				6	10	
Rated speed * <sup>1</sup> [mm/s]				300	500	
Maximum load capacity * <sup>2</sup> [kg]	Acceleration and deceleration rate	Horizontal mount	0.5 G	19	15	
		Wall mount		14	12.5	
		Vertical mount		0.3G	6	3.5
Rated thrust * <sup>3</sup> [N]				133	80	
Maximum thrust * <sup>4</sup> [N]				402	241	
Electromagnetic brake retention [N]				268	161	
Running life * <sup>5</sup> [km]		Horizontal/wall mount		10,000		
		Vertical mount		5,000		
Positioning repeatability [mm]				±0.02		
Lost motion [mm]				0.1		
Static permissible moment * <sup>6</sup> [N·m]				MA: 84	MB: 48.4	MC: 105.8

\*<sup>1</sup> Based on rated motor speed (3,000min<sup>-1</sup>).

\*<sup>2</sup> At rated speed.

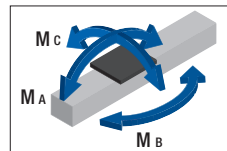
\*<sup>3</sup> At rated motor torque.

\*<sup>4</sup> Dependent on maximum motor torque and permissible load.

\*<sup>5</sup> The conditions for calculation are as follows:  
Under maximum load capacity at permissible overhang length.  
Stroke 275 mm

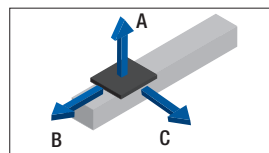
\*<sup>6</sup> Moment standards for MA and MC are the top face of the table, and that for MB is the center of the table.

Static Permissible Moment

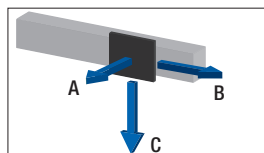


## Permissible Overhang Length\*

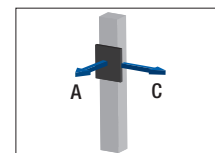
Horizontal use



Wall use



Vertical use



Horizontal mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	9.5	350	50	150
	19	150	20	60
10	7.5	310	70	180
	15	130	20	60

Wall mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	7	180	60	500
	14	60	20	130
10	6	170	70	390
	12.5	60	20	120

Vertical mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	C
6	3	210	210
	6	90	90
10	1.5	390	390
	3.5	180	180

\* This value is the overhang length whose running life is 10,000 km for horizontal direction/wall mount and 5,000 km for vertical direction.  
A permissible value of the applied load in each direction.

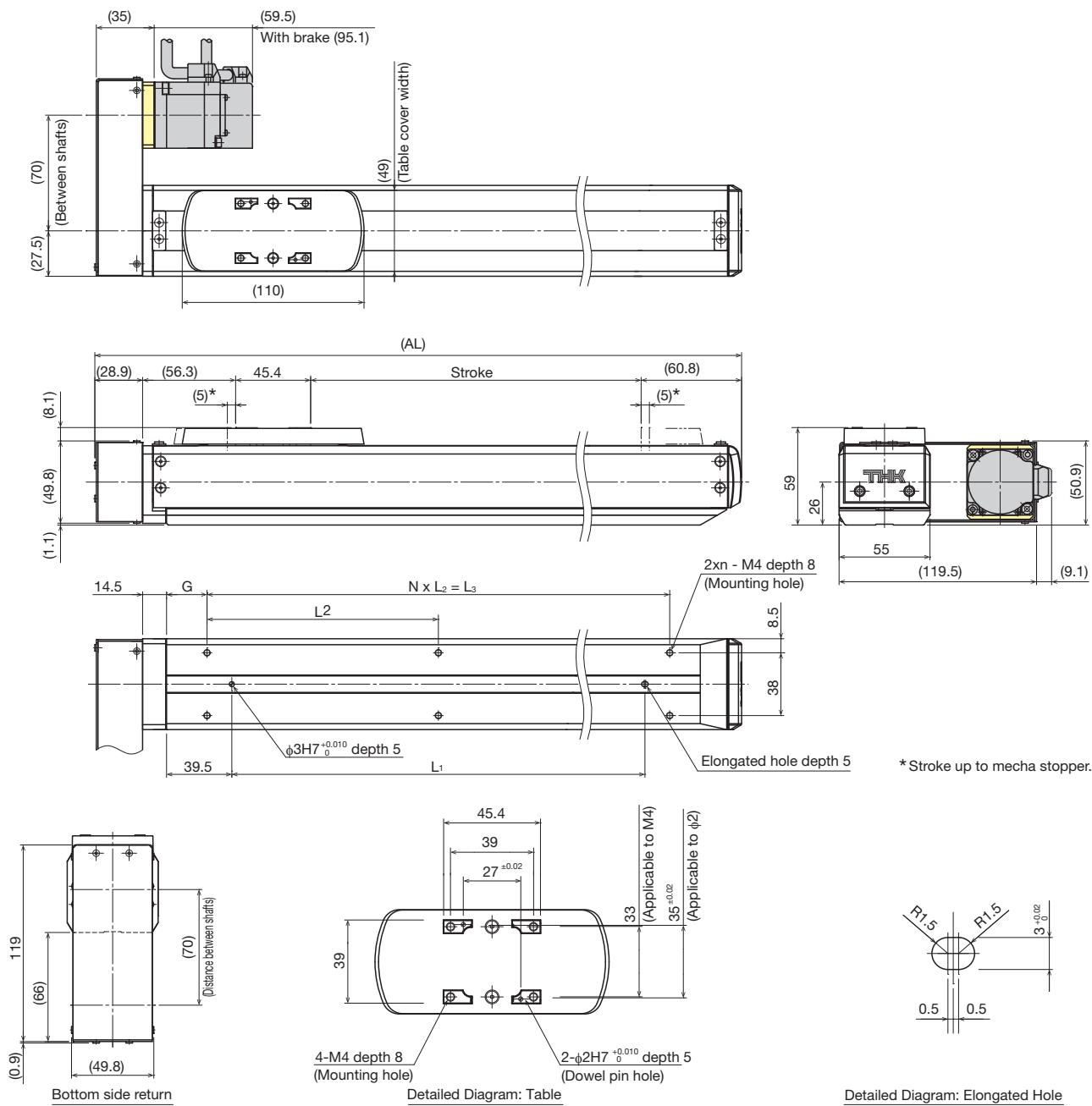


## KRF5R + TLC



Motor rated output **50W**

## Dimensions



Stroke [mm] (Stroke between mecha stoppers)		50 (60)	100 (110)	150 (160)	200 (210)	250 (260)	300 (310)	350 (360)	400 (410)	450 (460)	500 (510)	550 (560)
Maximum speed *1 [mm/s]	Ball screw lead: 6 mm	300										250
	Ball screw lead: 10 mm	500										430
Dimensions [mm]	AL	241.5	291.5	341.5	391.5	441.5	491.5	541.5	591.5	641.5	691.5	741.5
	L1	100	150	200	250	300	350	400	450	500	550	600
	L2	140	100	120	140	115	130	110	120	135	120	130
	L3	140	200	240	280	345	390	440	480	540	600	650
	G	19.5	14.5	19.5	24.5	17	19.5	19.5	24.5	19.5	14.5	14.5
Mounting pitch count	N	1	2	2	2	3	3	4	4	4	5	5
Mounting hole count	n	2	3	3	3	4	4	5	5	5	6	6
Weight *2 [kg]		2.5 (2.7)	2.8 (3.0)	3.1 (3.3)	3.5 (3.7)	3.8 (4.0)	4.1 (4.3)	4.4 (4.6)	4.7 (4.9)	5.0 (5.2)	5.3 (5.5)	5.6 (5.8)

\*1 The maximum speed is the value restricted by the motor rotational speed (at 3,000min<sup>-1</sup>), or by the permissible rotational speed of the ball screw.

\*2 Values when a brake is installed are shown in parentheses.



# KRF6

## THC specifications

### Model Configuration

Model	Ball screw lead	Stroke	Design symbol	Control device	Option	Motor rated output	Motor cable orientation	Home position	Power supply voltage	Cable type and length
KRF6 -	06 -	0150	A -	TH -	GR-SB-R6 /	M10	L	D00	D1	F3
<b>KRF6</b>	<b>06</b> : 6 mm <b>10</b> : 10 mm	<b>0050</b> : 50 mm to <b>0800</b> : 800 mm	<b>A</b>	<b>TH</b> : THC	<b>No symbol</b> : Red cover <b>GR</b> : Gray cover <b>SB</b> : Slider base <b>□1□2</b> : Sensor	<b>M10</b> : 100W <b>M10B</b> : 100W with brake	<b>R</b> : Right <b>L</b> : Left <b>U</b> : Up <b>D</b> : Down	<b>D00</b> : Motor side <b>R00</b> : Reverse motor side <b>S02</b> : Motor side <b>S03</b> : Reverse motor side	<b>D1</b> : 100 V <b>D2</b> : 200 V	<b>No symbol</b> : None <b>F3</b> : Standard 3 m <b>F5</b> : Standard 5 m <b>FA</b> : Standard 10 m <b>H3</b> : High flex 3 m <b>H5</b> : High flex 5 m <b>HA</b> : High flex 10 m

Note: If the GR is not included in the model configuration, cover will be red.

### Basic Specifications

Control device type				THC	
Motor rated output [W]				100	
Ball screw lead [mm]				6	10
Rated speed *1 [mm/s]				300	500
Maximum load capacity *2 [kg]	Acceleration and deceleration rate	Horizontal mount	0.5 G	35	30
		Wall mount		24	22
		Vertical mount		10	5
Rated thrust *3 [N]				266	160
Maximum thrust *4 [N]				796	478
Electromagnetic brake retention [N]				268	161
Running life *5 [km]		Horizontal and on wall		10,000	
		Vertical		5,000	
Positioning repeatability [mm]				±0.02	
Lost motion [mm]				0.1	
Static permissible moment *6 [N·m]				MA: 166 MB: 103.8 Mc: 179.5	

\*<sup>1</sup> Based on rated motor speed (3,000 min<sup>-1</sup>).

\*<sup>2</sup> At rated speed.

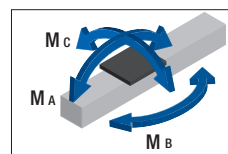
\*<sup>3</sup> At rated motor torque.

\*<sup>4</sup> Dependent on maximum motor torque and permissible load.

\*<sup>5</sup> The conditions for calculation are as follows:  
Conditions: Under maximum load capacity at permissible overhang length  
Stroke 275mm

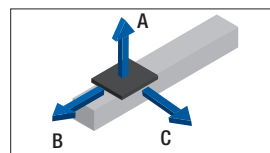
\*<sup>6</sup> Moment standards:  
MA and MC: top of table; MB: center of table.

#### Static Permissible Moment

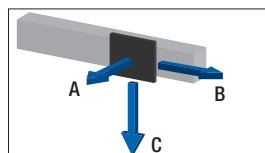


### Permissible Overhang Length\*

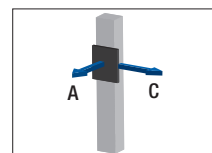
Horizontal use



Wall use



Vertical use



Horizontal mount		[mm]		
Ball screw Lead [mm]	Load mass [kg]	A	B	C
6	17.5	390	50	160
	35	170	10	60
10	15	320	60	170
	30	130	10	50

Wall mount		[mm]		
Ball screw Lead [mm]	Load mass [kg]	A	B	C
6	12	200	70	600
	24	70	20	140
10	11	200	80	460
	22	70	30	120

Vertical mount		[mm]	
Ball screw Lead [mm]	Load mass [kg]	A	C
6	5	240	240
	10	100	100
10	2.5	510	510
	5	230	230

\* This value is the overhang length whose running life is 10,000 km for horizontal and wall mount, and 5,000 km for vertical direction.  
A permissible value of the applied load in each direction.

### Dimensions

Stroke [mm] (Stroke between mechanical stoppers)		50 (70)	100 (120)	150 (170)	200 (220)	250 (270)	300 (320)	350 (370)	400 (420)
Maximum speed * <sup>1</sup> [mm/s]	Ball screw lead: 6mm	300							
	Ball screw lead: 10mm	500							
Dimensions [mm]	AL * <sup>2</sup>	361 (396.6)	411 (446.6)	461 (496.6)	511 (546.6)	561 (596.6)	611 (646.6)	661 (696.6)	711 (746.6)
	L <sub>1</sub>	100	150	200	200	250	250	300	350
	L <sub>2</sub>	100	200	200	200	200	200	200	200
	L <sub>3</sub>	100	200	200	200	200	400	400	400
	L <sub>4</sub>	-	-	-	-	100	-	-	-
	G	50	25	50	75	50	25	50	75
Mounting pitch count	N	1	1	1	1	1	2	2	2
	n	2	2	2	2	3	3	3	3
Weight * <sup>2</sup> [kg]		3.2 (3.4)	3.6 (3.8)	4.0 (4.2)	4.5 (4.7)	4.9 (5.1)	5.3 (5.5)	5.7 (5.9)	6.1 (6.3)

\*<sup>1</sup> Dependent on motor speed (3,000min<sup>-1</sup>) and permissible rotational speed of the ball screw.

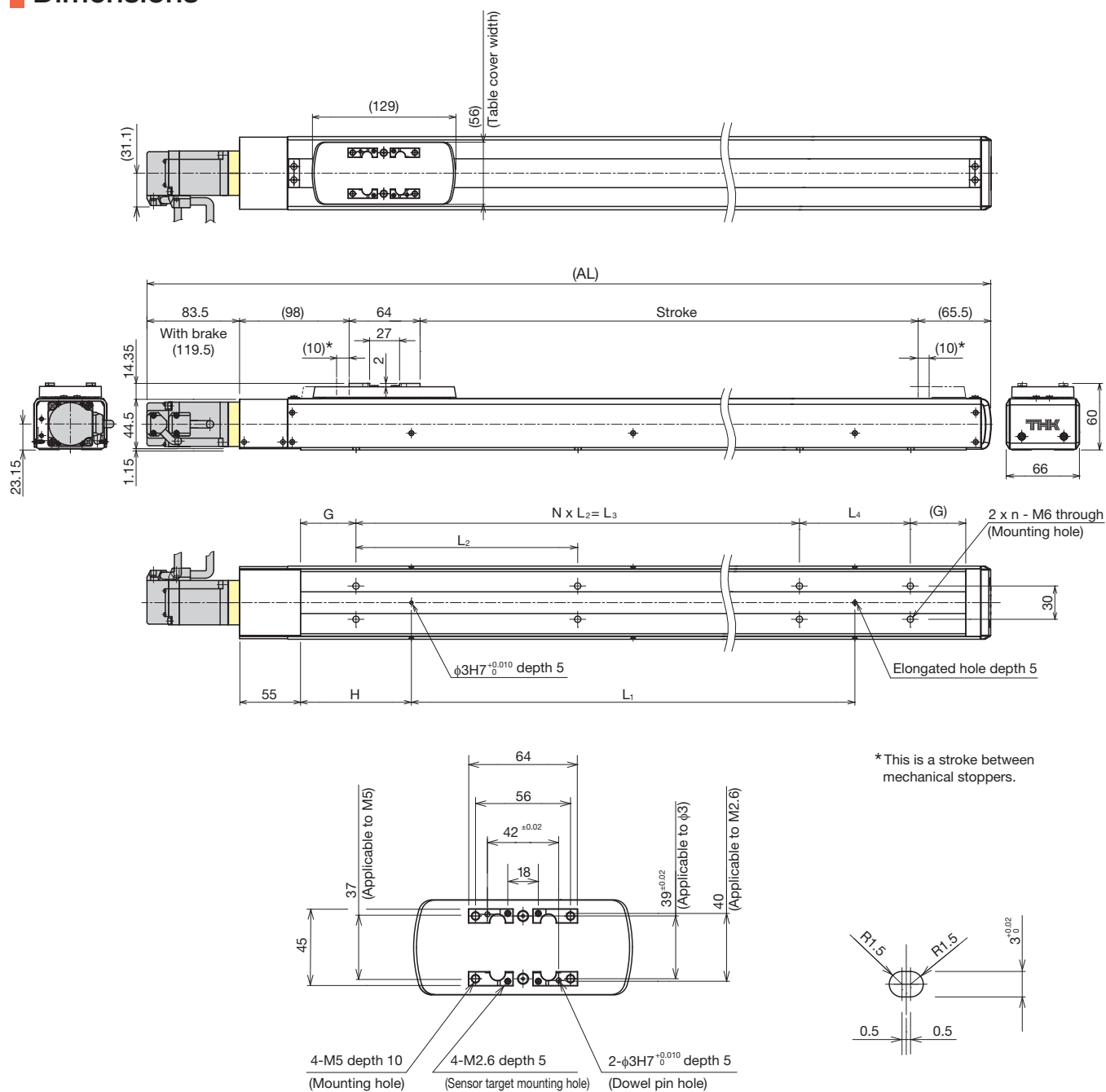
\*<sup>2</sup> Values when a brake is installed are shown in parentheses.

## KRF6 + THC



Motor rated output  
**100W**

## Dimensions



### Detailed Diagram: Table

### Detailed Diagram: Elongated Hole

Stroke [mm] (Stroke between mechanical stoppers)		450 (470)	500 (520)	550 (570)	600 (620)	650 (670)	700 (720)	750 (770)	800 (820)
Maximum speed *1 [mm/s]	Ball screw lead: 6mm	300			260	220	200	170	150
	Ball screw lead: 10mm	500			440	380	330	290	260
Dimensions [mm]	AL *2	761(796.6)	811(846.6)	861(896.6)	911(946.6)	961(996.6)	1011(1046.6)	1061(1096.6)	1111(1146.6)
	L <sub>1</sub>	400	450	500	550	600	650	700	750
	L <sub>2</sub>	200	200	200	200	200	200	200	200
	L <sub>3</sub>	400	600	600	600	600	800	800	800
	L <sub>4</sub>	100	-	-	-	100	-	-	-
	G	50	25	50	75	50	25	50	75
	H	100	100	100	100	100	100	100	100
Mounting pitch count	N	2	3	3	3	3	4	4	4
Mounting hole count	n	4	4	4	4	5	5	5	5
Weight *2 [kg]		6.5 (6.7)	6.9 (7.1)	7.3 (7.5)	7.7 (7.9)	8.1 (8.3)	8.5 (8.7)	8.9 (9.1)	9.3 (9.5)

\*1 Dependent on motor speed ( $3,000\text{min}^{-1}$ ) and permissible rotational speed of the ball screw.

\*2 Values when a brake is installed are shown in parentheses.



# KRF6R

## THC specifications

### Model Configuration

Model	Ball screw lead	Stroke	Design symbol	Control device type	Option	Motor rated output	Motor cable orientation	Home position	Power supply voltage	Cable type and length
KRF6R	06	0150	A	TH	ML-GR	M10	R	D00	D1	F3
<b>KRF6R</b>	<b>06</b> : 6 mm <b>10</b> : 10 mm	<b>0050</b> : 50 mm to <b>0800</b> : 800 mm	<b>A</b>	<b>TH</b> : THC	<b>No symbol</b> : None <b>MR</b> : Motor right return <b>ML</b> : Motor left return <b>MD</b> : Motor down return <b>GR</b> : Gray cover <b>SB</b> : Slider base <input type="checkbox"/> <input type="checkbox"/> <b>2</b> : Sensor	<b>M10</b> : 100W <b>M10B</b> : 100W with brake	<b>R</b> : Right <b>L</b> : Left <b>U</b> : Up <b>D</b> : Down	<b>D00</b> : Motor side <b>R00</b> : Reverse motor side <b>S02</b> : Motor side <b>S03</b> : Reverse motor side	<b>D1</b> : 100 V <b>D2</b> : 200 V	<b>No symbol</b> : None <b>F3</b> : Standard 3 m <b>F5</b> : Standard 5 m <b>FA</b> : Standard 10 m <b>H3</b> : High flex 3 m <b>H5</b> : High flex 5 m <b>HA</b> : High flex 10 m

### Basic Specifications

Control device type		THC	
Motor rated output [W]		100	
Ball screw lead [mm]		6	10
Rated speed <sup>*1</sup> [mm/s]		300	500
Maximum load capacity <sup>*2</sup> [kg]	Acceleration and deceleration rate	Horizontal mount	0.5G
		Wall mount	0.3G
		Vertical mount	0.3G
Rated thrust <sup>*3</sup> [N]		266	160
Maximum thrust <sup>*4</sup> [N]		796	478
Electromagnetic brake retention [N]		268	161
Running life <sup>*5</sup> [km]	Horizontal/wall mount	10,000	
	Vertical mount	5,000	
Positioning repeatability [mm]		±0.02	
Lost motion [mm]		0.1	
Static permissible moment <sup>*6</sup> [N·m]		MA: 166 MB: 103.8 MC: 179.5	

<sup>\*1</sup> Based on rated motor speed (3,000min<sup>-1</sup>).

<sup>\*2</sup> At rated speed.

<sup>\*3</sup> At rated motor torque.

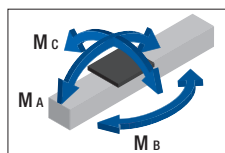
<sup>\*4</sup> Dependent on maximum motor torque and permissible load.

<sup>\*5</sup> The conditions for calculation are as follows:

Under maximum load capacity at permissible overhang length.  
Stroke 275 mm

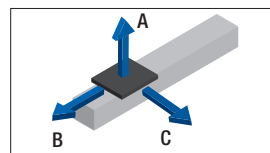
<sup>\*6</sup> Moment standards for MA and MC are the top face of the table, and that for MB is the center of the table.

Static Permissible Moment



### Permissible Overhang Length\*

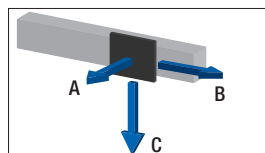
Horizontal use



Horizontal mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	17.5	390	50	160
	35	170	10	60
10	15	320	60	170
	30	130	10	50

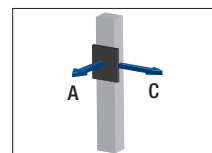
Wall use



Wall mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	B	C
6	12	200	70	600
	24	70	20	140
10	11	200	80	460
	22	70	30	120

Vertical use



Vertical mount [mm]

Ball screw lead [mm]	Load mass [kg]	A	C
6	5	240	240
	10	100	100
10	2.5	510	510
	5	230	230

\* This value is the overhang length whose running life is 10,000 km for horizontal direction/wall mount and 5,000 km for vertical direction.

A permissible value of the applied load in each direction.

### Dimensions

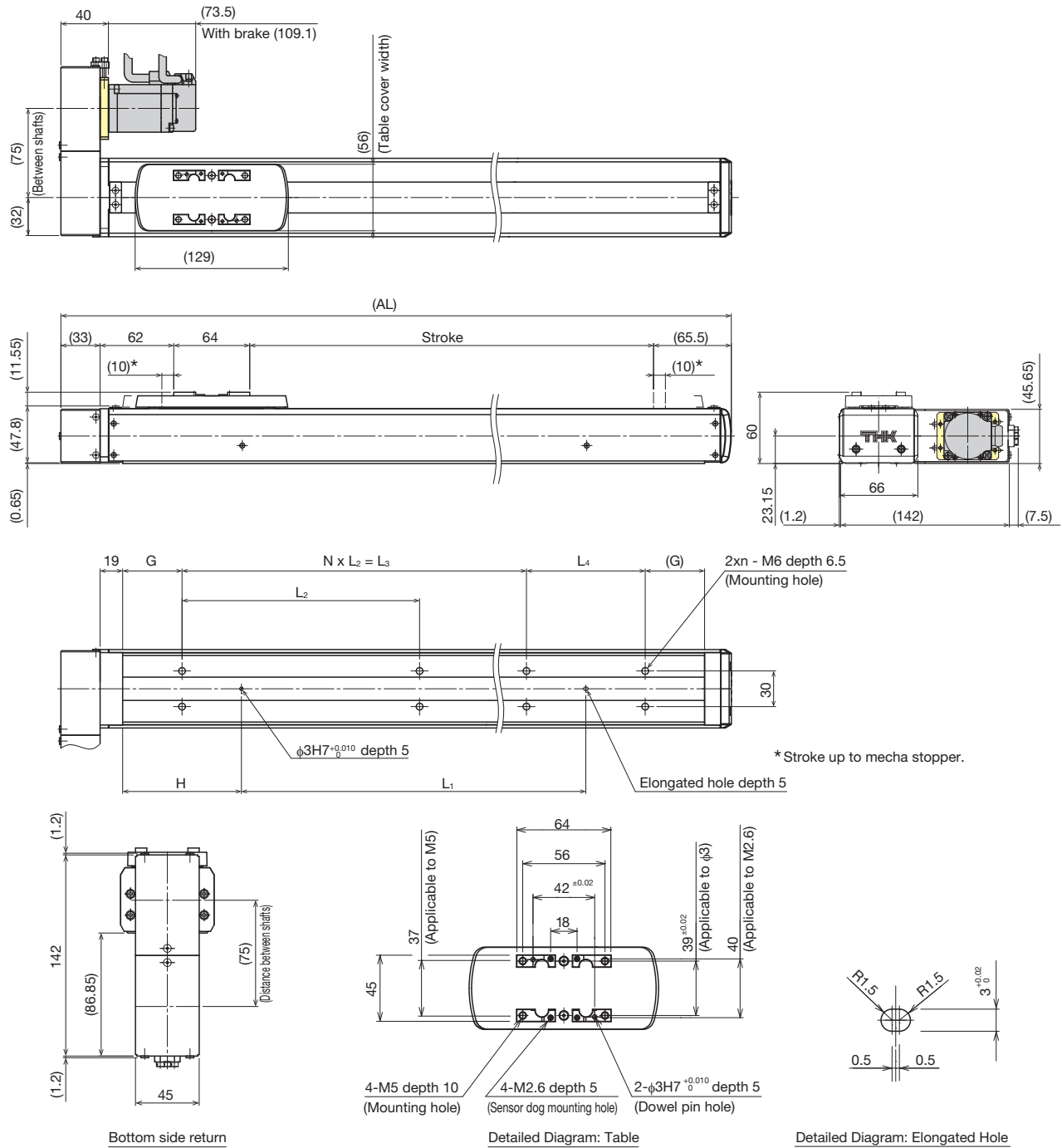
Stroke [mm] (Stroke between mecha stoppers)		50 (70)	100 (120)	150 (170)	200 (220)	250 (270)	300 (320)	350 (370)	400 (420)
Maximum speed <sup>*1</sup> [mm/s]	Ball screw lead: 6 mm	300							
	Ball screw lead: 10 mm	500							
Dimensions [mm]	AL	276	326	376	426	476	526	576	626
	L <sub>1</sub>	100	150	200	200	250	250	300	350
	L <sub>2</sub>	100	200	200	200	200	200	200	200
	L <sub>3</sub>	100	200	200	200	200	400	400	400
	L <sub>4</sub>	—	—	—	—	100	—	—	—
	G	50	25	50	75	50	25	50	75
Mounting pitch count	H	50	50	50	75	75	100	100	100
	N	1	1	1	1	1	2	2	2
Mounting hole count		2	2	2	2	3	3	3	3
Weight <sup>*2</sup> [kg]		4.0(4.2)	4.4(4.6)	4.8(5.0)	5.2(5.4)	5.6(5.8)	6.0(6.2)	6.4(6.6)	6.8(7.0)

<sup>\*1</sup> The maximum speed is the value restricted by the motor rotational speed (at 3,000min<sup>-1</sup>), or by the permissible rotational speed of the ball screw.

<sup>\*2</sup> Values when a brake is installed are shown in parentheses.

**KRF6R + THC****Motor rated output  
100W**

## Dimensions



Stroke [mm] (Stroke between mecha stoppers)		450 (470)	500 (520)	550 (570)	600 (620)	650 (670)	700 (720)	750 (770)	800 (820)
Maximum speed *1 [mm/s]	Ball screw lead: 6 mm	300			260	220	200	170	150
	Ball screw lead: 10mm	500			440	380	330	290	260
Dimensions [mm]	AL	676	726	776	826	876	926	976	1026
	L <sub>1</sub>	400	450	500	550	600	650	700	750
	L <sub>2</sub>	200	200	200	200	200	200	200	200
	L <sub>3</sub>	400	600	600	600	600	800	800	800
	L <sub>4</sub>	100	-	-	-	100	-	-	-
	G	50	25	50	75	50	25	50	75
	H	100	100	100	100	100	100	100	100
Mounting pitch count	N	2	3	3	3	3	4	4	4
Mounting hole count	n	4	4	4	4	5	5	5	5
Weight *2 [kg]		7.2(7.4)	7.7(7.9)	8.0(8.3)	8.5(8.7)	8.9(9.1)	9.3(9.5)	9.7(9.9)	10.1(10.3)

\*1 The maximum speed is the value restricted by the motor rotational speed (at 3,000min<sup>-1</sup>), or by the permissible rotational speed of the ball screw.

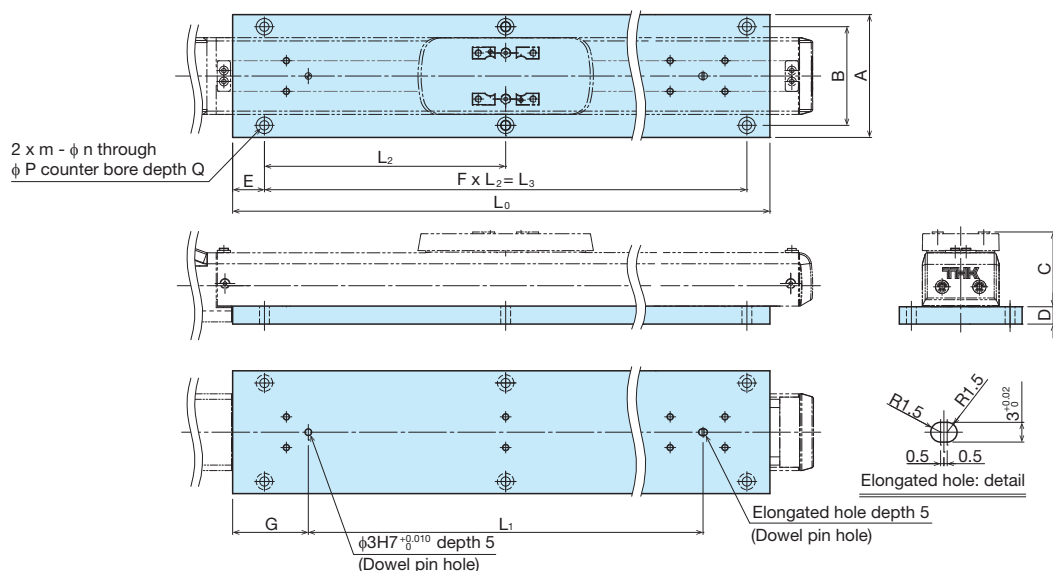
\*2 Values when a brake is installed are shown in parentheses.

## Options

## SB: Slider base

THK provides slider bases for installing the KRF main unit from the top face.

\* The product is shipped with this optional assembled.



Unit: mm

Model	A	B	C	D
KRF3	56	45	34.1	7.9
KRF4 / KRF4R	70	55	42.1	9.9
KRF5 / KRF5R	80	65	49.1	9.9
KRF6 / KRF6R	90	78	60	10

Note) When the slider base is mounted on KRF6, the height of KRF6 will be 10mm higher than the standard product due to the thickness of slider base.

Stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
KRF3	L <sub>0</sub>	145	195	245	295	345	395	-	-	-	-	-	-	-	-	-
	L <sub>1</sub>	100	150	200	250	300	350	-	-	-	-	-	-	-	-	-
	L <sub>2</sub>	120	85	110	135	105	120	-	-	-	-	-	-	-	-	-
	L <sub>3</sub>	120	170	220	270	315	360	-	-	-	-	-	-	-	-	-
	E	14.5						-	-	-	-	-	-	-	-	-
	F	1	2	2	2	3	3	-	-	-	-	-	-	-	-	-
	G	24.5						-	-	-	-	-	-	-	-	-
	m	2	3	3	3	4	4	-	-	-	-	-	-	-	-	-
	n	4.5						-	-	-	-	-	-	-	-	-
	P	8						-	-	-	-	-	-	-	-	-
	Q	4.4						-	-	-	-	-	-	-	-	-
KRF4 KRF4R	L <sub>0</sub>	142	192	242	292	342	392	-	-	-	-	-	-	-	-	-
	L <sub>1</sub>	100	150	200	250	300	350	-	-	-	-	-	-	-	-	-
	L <sub>2</sub>	120	85	110	135	105	120	-	-	-	-	-	-	-	-	-
	L <sub>3</sub>	120	170	220	270	315	360	-	-	-	-	-	-	-	-	-
	E	14.5						-	-	-	-	-	-	-	-	-
	F	1	2	2	2	3	3	-	-	-	-	-	-	-	-	-
	G	24.5						-	-	-	-	-	-	-	-	-
	m	2	3	3	3	4	4	-	-	-	-	-	-	-	-	-
	n	4.5						-	-	-	-	-	-	-	-	-
	P	8						-	-	-	-	-	-	-	-	-
	Q	4.4						-	-	-	-	-	-	-	-	-
KRF5 KRF5R	L <sub>0</sub>	180	230	280	330	380	430	480	530	580	630	680	-	-	-	-
	L <sub>1</sub>	100	150	200	250	300	350	400	450	500	550	600	-	-	-	-
	L <sub>2</sub>	140	100	120	140	115	130	110	120	135	120	130	-	-	-	-
	L <sub>3</sub>	140	200	240	280	345	390	440	480	540	600	650	-	-	-	-
	E	19.5	15	19.5	24.5	17	19.5	19.5	24.5	19.5	14.5	14.5	-	-	-	-
	F	1	2	2	2	3	3	4	4	4	5	5	-	-	-	-
	G	39.5						-	-	-	-	-	-	-	-	-
	m	2	3	3	3	4	4	5	5	5	6	6	-	-	-	-
	n	4.5						-	-	-	-	-	-	-	-	-
	P	8						-	-	-	-	-	-	-	-	-
	Q	4.4						-	-	-	-	-	-	-	-	-
KRF6 KRF6R	L <sub>0</sub>	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
	L <sub>1</sub>	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
	L <sub>2</sub>	100	200	130	150	170	140	150	160	170	160	170	180	150	170	180
	L <sub>3</sub>	100	200	260	300	340	420	450	480	510	560	640	680	720	750	850
	E	50	25	20	25	30	15	25	35	45	45	30	35	40	50	25
	F	1	1	2	2	2	3	3	3	4	4	4	4	5	5	5
	G	50	50	50	75	75	100	100	100	100	100	100	100	100	100	100
	m	2	2	3	3	3	4	4	4	4	5	5	5	5	6	6
	n	5.5						-	-	-	-	-	-	-	-	-
	P	9.5						-	-	-	-	-	-	-	-	-
	Q	5.4						-	-	-	-	-	-	-	-	-

## □1□2: Sensors

Optional proximity sensors and photo sensors are available for KRF. Models equipped with a sensor are also provided with a dedicated sensor rail. Please use the sensor with the following precautions (Notes 1 to 6) in mind.

- Note 1) The customer should provide a sensor target since it cannot be installed onto the actuator main unit. (Excluding KRF6)  
 Note 2) Sensor target for KRF6 to be shipped loose.  
 Note 3) Sensor rails are pre-mounted, and sensors are provided with the product.  
 Note 4) When optional sensor is used, note the home position may differ from the position indicated by the dimension in this catalog, in considering using them.  
 Note 5) Proximity sensors placed too close to each other may not work properly. In such a case, the customer should provide a different frequency type of sensor.  
 (For specifications, contact each manufacturer.)  
 Note 6) Mount the sensor/sensor rail on both sides if the stroke is not more than 100 mm.

Description	Model	Accessory	Symbol	
			□1	□2
With sensor rail	-	-	L/R	1
Photo sensor * [3 units]	EE-SX674 (OMRON Corporation)	Mounting screw, nuts, sensor rail (x 1 or 2), mounting plates (x 3), connectors (EE-1001, x 3)	L/R	6
Sensor N.O. contact [x 1] N.C. contact [x 2]	GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screw, nuts, sensor rail (x 1 or 2)	L/R	J
Sensor N.O. contact [x 1] (PNP output) N.C. contact [x 2] (PNP output)	GX-F12A-P (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B-P (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screw, nuts, sensor rail (x 1 or 2)	L/R	M

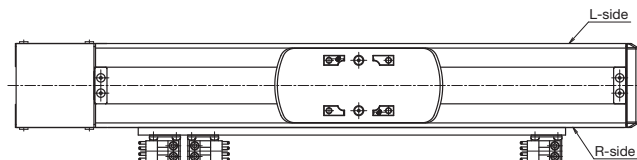
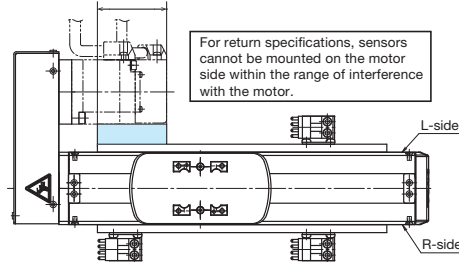
N.O. contact: Normally open contact point

N.C. contact: Normally closed contact point

Sensors marked with a symbol "M", if combined with our controller, cannot be used as a home position sensor.

\* The photo sensors can be switched between ON when lit and ON when unlit.

The range of interference with the motor



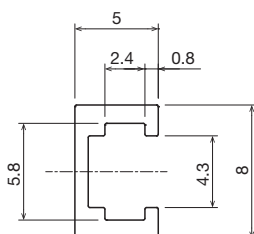
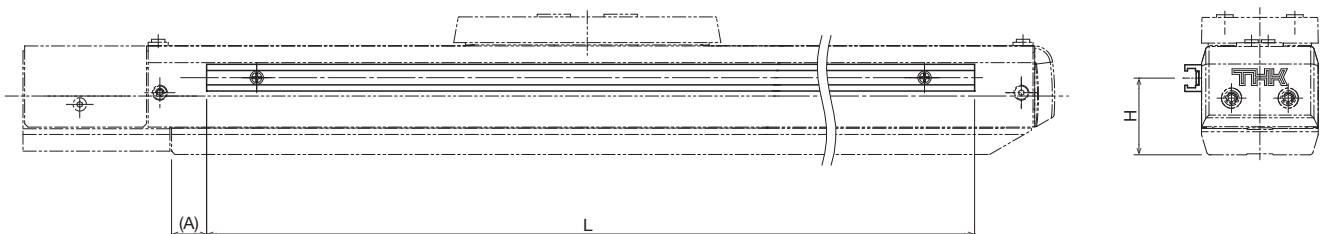
Optional: Sensor symbol

Symbol	
□1	□2
R	6

\* Symbol □1 represents the mounting position for sensor rail and sensor. No symbol is given for the case of stroke 100mm or shorter.

Symbol □2 represents the types of sensors.

## Symbol 1: Sensor rail



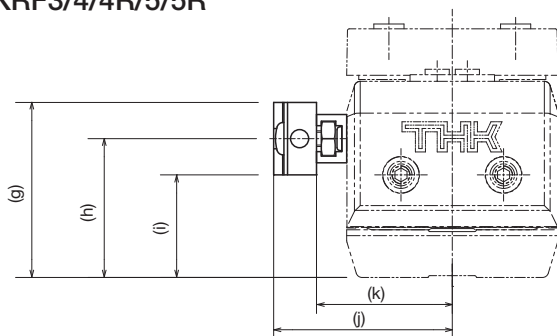
Model	H	(A)	L
KRF3	23	10.5	Stroke +80
KRF4/KRF4R	32.5	10.5	
KRF5/KRF5R	37.5	26	
KRF6/KRF6R	33.7	35	

Unit: mm

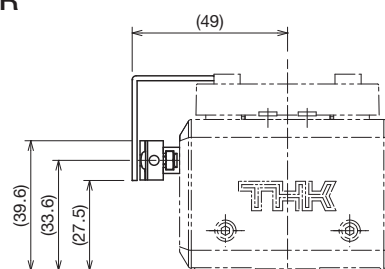


## Symbols J, M: Proximity sensor GX-F12\* (Panasonic Industrial Devices SUNX Co., Ltd.)

KRF3/4/4R/5/5R



KRF6/6R



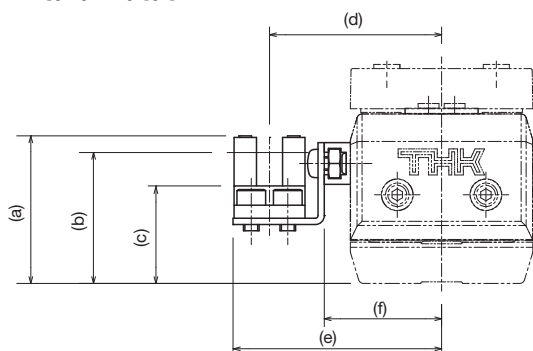
Sensor dog width: 26mm

Unit: mm

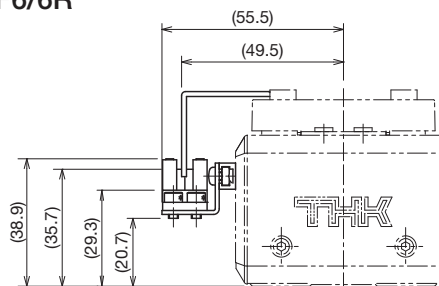
Model	g	h	i	j	k
KRF3	29	23	17	29.6	22.5
KRF4/KRF4R	38.5	32.5	26.5	34.6	27.5
KRF5/KRF5R	43.5	37.5	31.5	39.6	32.5

## Symbol 6: Photo sensor EE-SX674 (OMRON Corporation)

KRF3/4/4R/5/5R



KRF6/6R



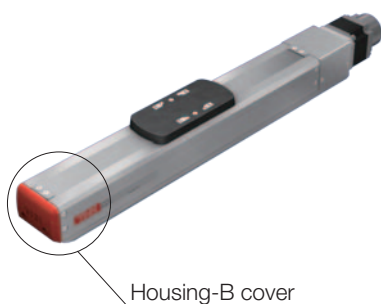
Sensor dog width: 26mm

Unit: mm

Model	a	b	c	d	e	f
KRF3	28.3	25.1	18.7	33	40	22.5
KRF4/KRF4R	37.8	34.6	28.2	38	45	27.5
KRF5/KRF5R	42.8	39.6	33.2	43	50	32.5

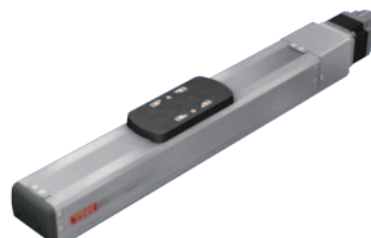
## GR: Change the cover color to gray

As an option for KRF, the cover color can be changed from red to gray.



Housing-B cover

No symbol: red



When GR is selected: gray

If the GR is not included in the model configuration, cover will be red.

## Stepper Driver Controller

# TSC

For single shaft/Position type



## Features

Ready to use by simplified setup.

## Simple Operation

Use PC setup tool D-STEP or digital operator TDO to access many useful functions.

## Functions

- Selectable function modes  
(64-position, external unit input instruction, 256-position, 512-position, Solenoid mode 1, and Solenoid mode 2)
- Step data count: Up to 512 (depending on function mode)
- Alarm history: Up to 50 (including power ON history)
- Switching between Auto/Manual, brake release switch
- Selectable control methods (positioning or pressing)

## Changes on the new version (design symbol B)

TSC is now updated to a new version that specified with “B” in design symbol.

Differences from conventional version, design symbol “A” are shown below.

### • Behavior at Servo-On

	Design symbol A	Design symbol B
Motion	Moves several millimeters	Standstill

### • Compatibility

Driver controller TSC, and actuator cable does not have compatibility between A and B.

\* To use a 10m actuator cable, insert a noise filter to the TSC power supply.

## Model Configuration

### ● Stepper driver controller \*Separate order required.

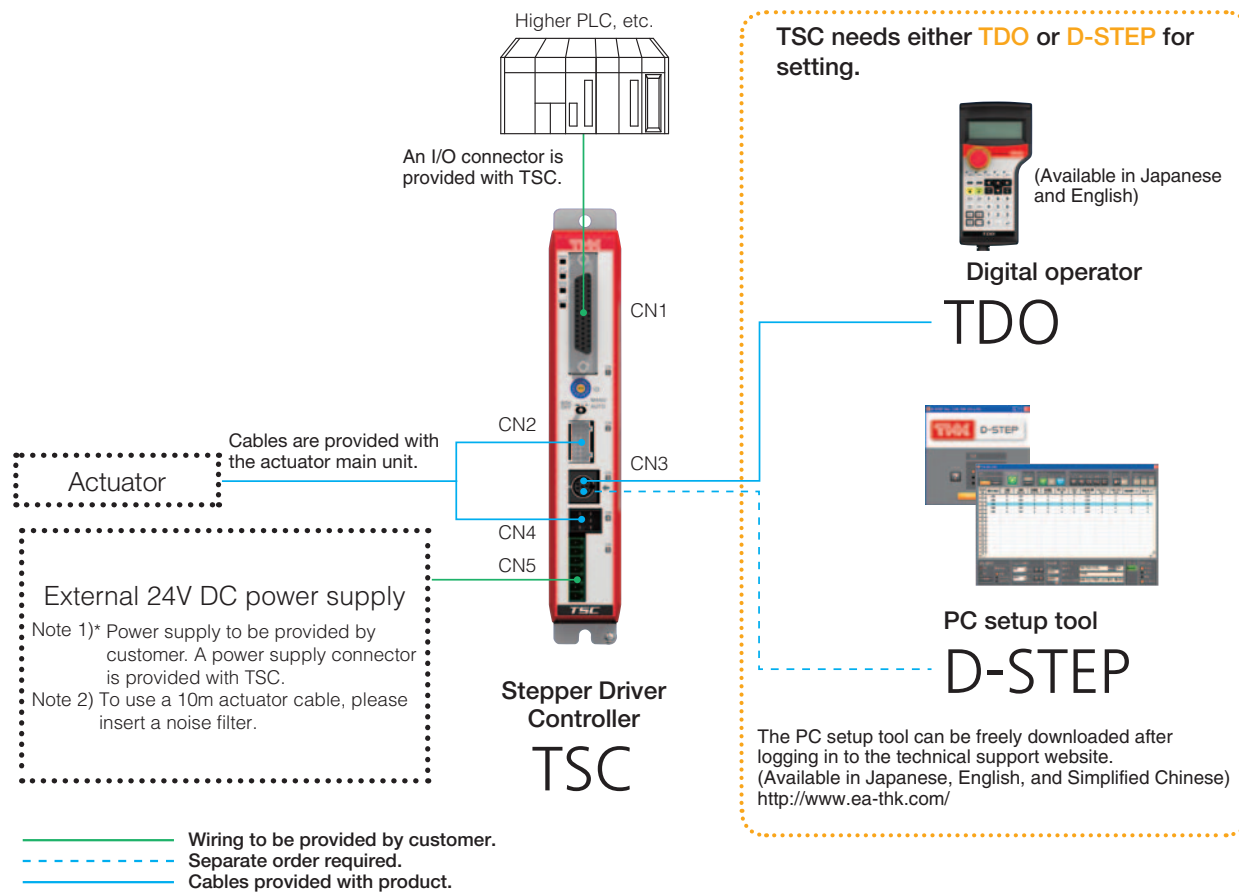
Model	Current	Design symbol	Type	Combined Actuator	Combined actuator ball screw lead	Home position	Brake
TSC	015	B	MOD	KRF3	06	D	B
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TSC	015: 1.5A	B	MOD: Mode switching type	KRF3 KRF4 KRF5	06: 6mm 10: 10mm	D: Motor side R: Reverse motor side	No symbol: Without brake B: With brake

## Basic Specifications

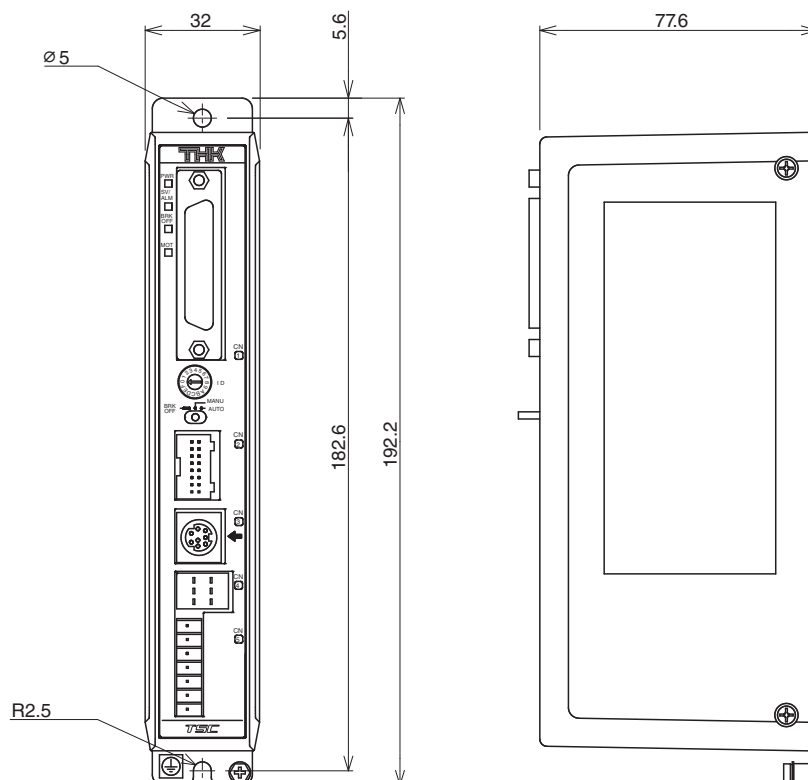
Basic Specifications	Input power supply	24V DC $\pm 10\%$ (Up to 2.5A)					
Control	Control axis	Single shaft					
	Motor type	Stepper motor ( $\square 28\text{mm}$ , $\square 35\text{mm}$ , $\square 42\text{mm}$ )					
	Control method	Feedback control (Semi-closed loop)					
	Position detection method	Incremental					
	Acceleration/deceleration method	Trapezoid acceleration					
Program	Function mode	64-position	External unit input	256-position	512-position	Solenoid mode 1	Solenoid mode 2
	Step data count	64 points	64 points	256 points	512 points	7 points	3 points
	Data input/output method	PC setup tool D-STEP or Digital operator TDO					
Input/output	Dedicated input/output	Input point	16 points (Start, Return to home position, Pause, Reset, Servo ON, Specify step number, etc.)*				
		Output point	16 points (Return to home position completed, In position, Servo ready, Alarm, Battery alarm, etc.)*				
	Input/output power supply		24V DC $\pm 10\%$ (This should be prepared by yourself.)				
Communication	Serial communication	Connected device	PC setup tool D-STEP or Digital operator TDO				
		Communication method	RS-485				
		Port count	Mini DIN $\times 1$				
Usage conditions	Usage conditions		0 to 40°C (No freezing)/-20 to 85°C (No freezing)				
	Operating humidity/Storage humidity		90% RH or below (No condensation)				
	Ambient condition		Indoor (Free from direct sunlight, corrosive gas, flammable gas, oil mist, dust, water, oil and chemicals)				
General specifications	Protective function		Overload, overvoltage, excessive position deviation, software limit over error, etc.				
	Accessories		Power supply connector $\times 1$ I/O connector $\times 1$				
	Options (sold separately)		Digital operator TDO (Cable length 5 m) I/O cable 3m, 5m, 7m, and 10m PC communication cable (Mini DIN $\leftrightarrow$ USB)				
	Outer dimensions		32mm (W) $\times$ 192.2mm (H) $\times$ 77.6mm (D)				
	Weight		300g or less				

\* Varies depending on function mode.

## System Configuration

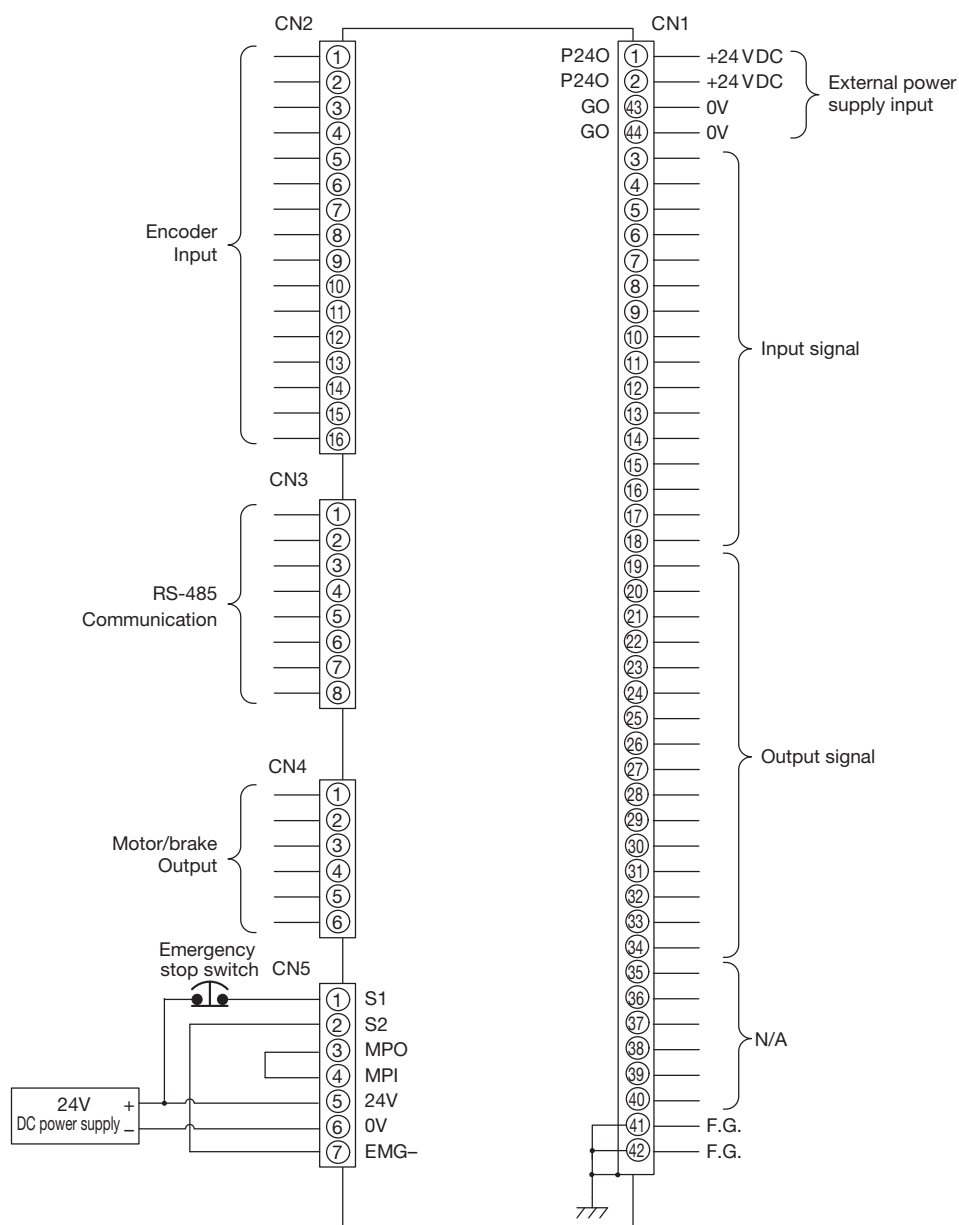


## Dimensional Drawing of Controller



\* For details of the dimensional drawing, please contact THK.

## TSC Pin Configuration

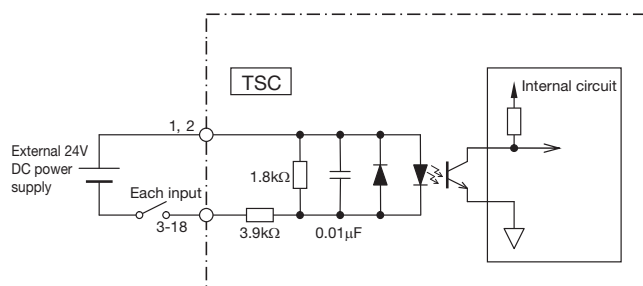


For attached I/O connector pin numbers, see P.46.

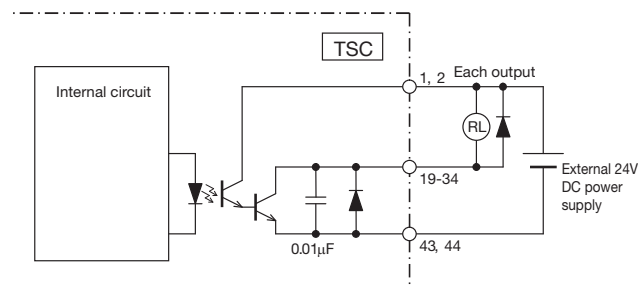
Customer provides 24V DC power supply for input/output circuitry.

## Input/Output Circuitry for TSC (CN1)

Input circuit



Output circuit



## TSC Function Modes

TSC provides six modes to support various requirements and purposes.

Function mode		Overview	Step data count	Pressing operation
Multi-point positioning	0: 64-position	Multi-point positioning operation with 64 points With area output, with P area output	64	○
	1: External unit input instruction	Multi-point positioning operation with 64 points I/O-based external unit instruction mode Without area output, with P area output	64	–
	2: 256-position	Multi-point positioning operation with 256 points Without area output, with P area output	256	○
	3: 512-position	Multi-point positioning operation with 512 points Without area output, without P area output	512	○
Electromagnetic valve	4: Solenoid mode 1	Multi-point positioning operation with 7 points Direct move command input With area output, with P area output	7	○
	5: Solenoid mode 2	Multi-point positioning operation with 3 points Direct move command input With position sensor auto-switch output, area output and P area output	3	–

## Pin Configuration by Function Mode

I/O	CN1 pin number	Signal name					
		Function mode 0	Function mode 1	Function mode 2	Function mode 3	Function mode 4	Function mode 5
		64-position	External unit input	256-position	512-position	Solenoid mode 1	Solenoid mode 2
Input	3	PI 0	PI 0	PI 0	PI 0	ST 0	ST 0
	4	PI 1	PI 1	PI 1	PI 1	ST 1	ST 1
	5	PI 2	PI 2	PI 2	PI 2	ST 2	ST 2
	6	PI 3	PI 3	PI 3	PI 3	ST 3	–
	7	PI 4	PI 4	PI 4	PI 4	ST 4	–
	8	PI 5	PI 5	PI 5	PI 5	ST 5	–
	9	–	MODE	PI 6	PI 6	ST 6	–
	10	–	JOG/INCHING	PI 7	PI 7	–	–
	11	–	JOG P	–	PI 8	–	–
	12	BKRL	JOG N	BKRL	BKRL	BKRL	BKRL
	13	STRT	STRT/PWRT	STRT	STRT	–	–
	14	MANU	MANU	MANU	MANU	MANU	MANU
	15	HOME	HOME	HOME	HOME	HOME	HOME
	16	PAUSE	PAUSE	PAUSE	PAUSE	PAUSE	PAUSE
	17	REST	REST	REST	REST	REST	REST
	18	SV-ON	SV-ON	SV-ON	SV-ON	SV-ON	SV-ON
Output	19	PO 0	PO 0	PO 0	PO 0	PE 0	LS 0
	20	PO 1	PO 1	PO 1	PO 1	PE 1	LS 1
	21	PO 2	PO 2	PO 2	PO 2	PE 2	LS 2
	22	PO 3	PO 3	PO 3	PO 3	PE 3	–
	23	PO 4	PO 4	PO 4	PO 4	PE 4	–
	24	PO 5	PO 5	PO 5	PO 5	PE 5	–
	25	MOVE	MOVE	PO 6	PO 6	PE 6	–
	26	AREA	MODES	PO 7	PO 7	AREA	AREA
	27	P AREA	P AREA	P AREA	PO 8	P AREA	P AREA
	28	MANU S	MANU S	MANU S	MANU S	MANU S	MANU S
	29	HEND	HEND	HEND	HEND	HEND	HEND
	30	INPS	INPS	INPS	INPS	INPS	–
	31	LOAD/TRQS	WEND	LOAD/TRQS	LOAD/TRQS	LOAD/TRQS	–
	32	SVRDY	SVRDY	SVRDY	SVRDY	SVRDY	SVRDY
	33	EMGS	EMGS	EMGS	EMGS	EMGS	EMGS
	34	ALM	ALM	ALM	ALM	ALM	ALM

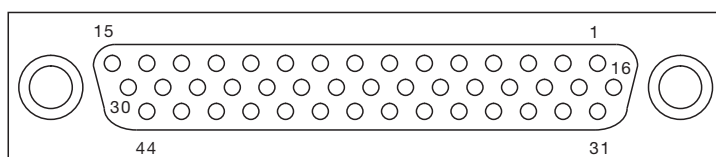
## Input Signal Functions

Input		
Signal name	Description	Remarks
MANU	Operation mode	Switches AUTO/MANUAL from I/O. MANUAL when signal is on, and AUTO when it is off.
STRT	Start	Start signal of program step. Program starts when signal is on.
PI0 - PI8	Instruction position number	Input for specifying position numbers. Specifies programs at each signal level. Selects a program step and starts a program with "STRT" signal.
PAUSE	Pause	Temporarily interrupts the operation. PAUSE input status when signal is off. (N.C. connection specification)
HOME	Return to home position	Starts the return to home position operation. Returning to home position is started when signal is on. It stops when it is off.
SV-ON	Servo on	Turns the servo ON and OFF. Servo ON when signal is on, and servo OFF when signal is off.
REST	Alarm reset	Resets alarm. Resets remaining travel distance during pause. Resets when it is on.
BKRL	Brake release	Forcibly releases brake. Releases brake when it is on.
MODE	External unit input instruction mode	Enters the instruction mode when signal is on. Instruction mode when signal is on.
PWRT	Current position write with external unit input instruction	During the instruction mode, the position is written when this signal is greater than 20ms with the position for writing specified.
JOG/INCHING	Manual operation switch with external unit input instruction	Switching of manual operation during the instruction mode. Selects inching operation when it is on, and jog operation when it is off.
JOG P	Moving direction + with external unit input instruction	Operating direction and operation start signal during the instruction mode. Moves in + direction to the soft limit when signal is on. Decelerates and stops when it is off while moving.
JOG N	Moving direction - with external unit input instruction	Operating direction and operation start signal during the instruction mode. Moves in - direction to the soft limit when signal is on. Decelerates and stops when it is off while moving.
ST0 - 6	Cylinder type START	Program start signal for position numbers from ST0 to ST6. Can select either Level or Edge for signal using parameter 13 "move" command. Note that when more than two positions are on at the same time, the lowest-number signal takes precedence.

## Output Signal Functions

Output		
Signal name	Description	Remarks
MANU S	Operation mode status	Operation mode status outputs (AUTO/MANUAL). MANUAL when signal is on, AUTO when off.
PO1 - PO8	End position number	Outputs the position number arrived after positioning is completed (binary outputs).
MOVE	Moving	Outputs signal during motor operation.
INPS	Positioning completed	Outputs when motor comes within the positioning completed width.
SVRDY	Operation preparations completed	Outputs signal when servo is on.
ALM	Alarm	Alarm output signal.
MODES	Operation mode status	Output signal for judging instruction mode or regular operation mode. Instruction mode when signal is on. Regular operation mode when it is off.
WEND	Writing completed	Signal is off after switching to the regular mode, and it is on for 30ms when writing of the PWRT signal is completed.
HEND	Return to home position completed	Outputs signal when returning to home position is completed.
AREA	Upper/lower area limit	On when the current position of actuator is within a range specified by the parameter.
P AREA	Position area	On when the current position of actuator is within a range specified by the program step.
EMGS	Emergency stop status	Outputs judgment for input of emergency stop. On during normal operation, and off when emergency stop circuit is shut off.
LOAD	Load output judgment status	On when a directive torque exceeds the threshold over a certain period within a judgment range.
TRQS	Torque level status	On when the load threshold is reached while moving. Off while the load remains under the threshold.
PE0 - PE6	Cylinder type arrival completed output	Signal generated after operation for position number is completed.
LS0 - LS2	Cylinder type position detection output	Outputs when the current position comes within the positioning width for each of the three points.

## I/O Connector Pin Numbers



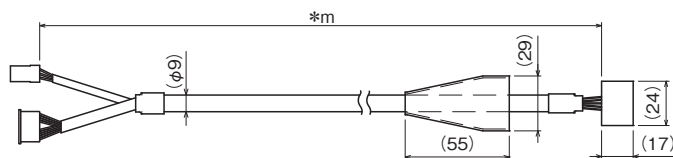
Controller connector port view



## Actuator Cable

TSC actuator cable: CBL-TSC-AC-\* \*-B (Standard)

\* \* indicates cable length: 03 (3m), 05 (5m), or 10 (10m).



\* To use a 10m actuator cable, insert a noise filter to the TSC power supply.  
Recommended noise filter is "RSAN-2003 (TDK-Lambda Corporation)".

## Low-capacity servo driver controller

# TLC

Servo driver controller for single axis



## Features

Ready to use, simplified setup.

## Simple Operation

Use PC setup tool D-Step or digital operator TDO to access many useful functions.

## Functions

- Selectable function modes  
(64-position, external unit input instruction, 256-position, 512-position, Solenoid mode 1, and Solenoid mode 2)
- Step data count: Up to 512 (depending on function mode)
- Alarm history: Up to 50 (including power ON history)
- Switching between Auto/Manual, brake release switch
- Selectable control methods (positioning or pressing)
- Absolute supported

## Combined Control Device Model Configuration (TLC)

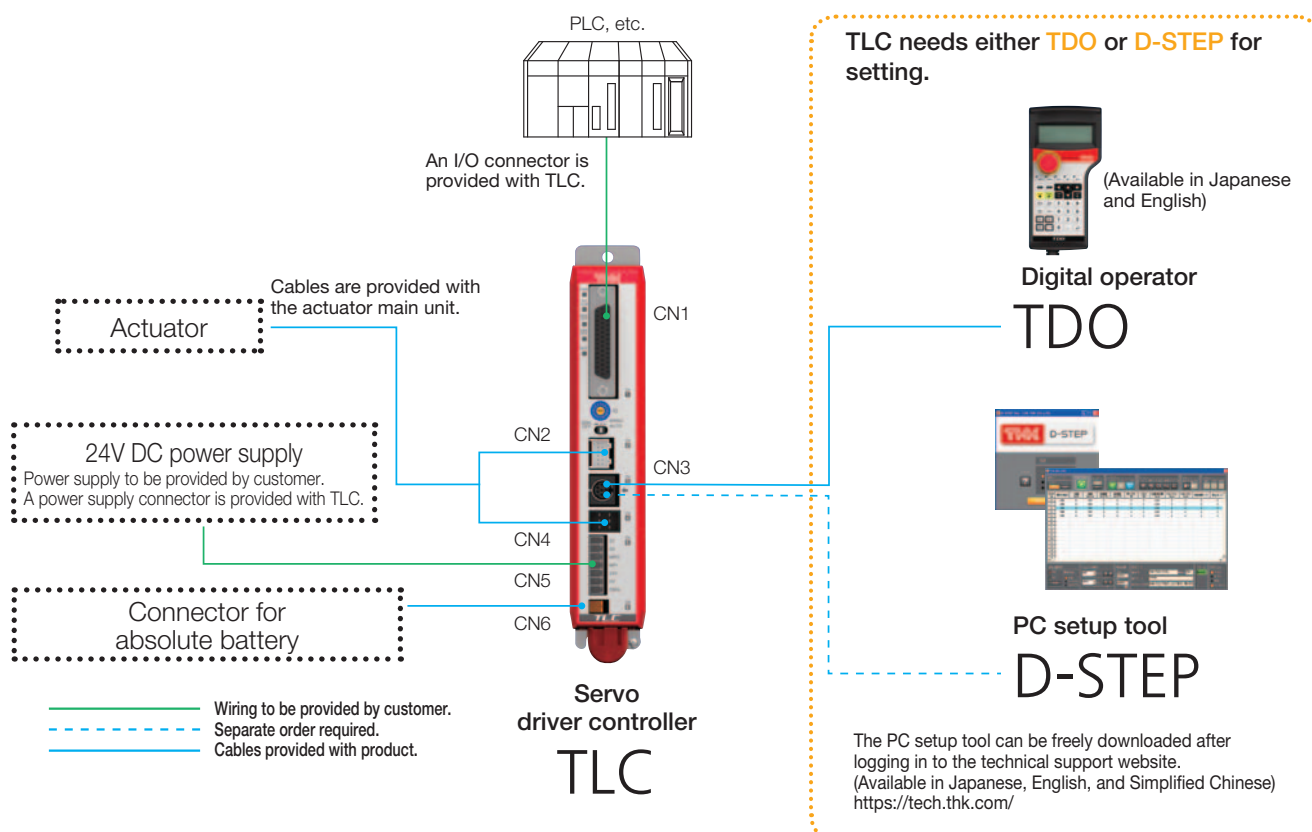
Control device model	Capacity	Power supply voltage	Type	Encoder type	Actuator model	Lead	Home position	Brake	Stroke
TLC	005	024DC	MOD	A	KRF4	06	D	B	0050
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
TLC	005: 50W	024DC: 24VDC	MOD: Mode switching type	A: Absolute	KRF4 KRF5	06: 6mm 10: 10mm	D: Motor side R: Reverse motor side	No symbol: Without brake B: With brake	Enter the stroke of the actuator model (6) Example) 0050: 50mm

## TLC Specifications

Type of machine	Model		TLC					
	Capacity		50W					
Input power supply	Main circuit		24VDC±10%					
	Control circuit							
	Power supply [A]		Rated 6A (Max 16A)					
Control	Control axis		Single axis					
	Motor		AC servo motor					
	Control		Feedback control (Semi-closed loop)					
	Position detection		Absolute					
	Acceleration/deceleration		Trapezoid acceleration, S-shape acceleration					
Program	Function mode		64-position	External unit input	256-position	512-position	Solenoid mode 1	Solenoid mode 2
	Step data count		64 points	64 points	256 points	512 points	7 points	3 points
	Data input/output		PC setup tool D-STEP or Digital operator TDO					
Input/output	Dedicated input/output	Input points	16 points (Start, Return to home position, Pause, Reset, Servo ON, Specify step number, etc.) *					
		Output points	16 points (Return to home position completed, In position, Servo ready, Alarm, Battery alarm, etc.) *					
	Input/output power supply		24VDC ±10% (This should be prepared by yourself.)					
Communication	Serial communication	Device	Digital operator or PC software					
		Method	RS-485					
		Ports	Mini DIN × 1					
Usage conditions	Operating/storage temperature		0 to 40°C (No freezing) / -20 to 85°C (No freezing)					
	Operating/storage humidity		90% RH or below (No condensation)					
	Ambient condition		Indoor (Free from direct sunlight, corrosive gas, flammable gas, oil mist, dust, water, oil and chemicals)					
General specifications	Protective function		Overload, overvoltage, excessive position deviation, software limit over error, etc.					
	Accessories		Power supply connector × 1 I/O connector × 1					
	Options (sold separately)		Digital operator TDO (Cable length 5m)					
			I/O cable 3m, 5m, 7m, and 10m					
			Communication cable (Mini DIN↔USB)					
	External dimensions [mm]		36.4mm (W)×199.2mm (H)×112.6mm (D)					
Weight (not including battery)		0.4kg or less						

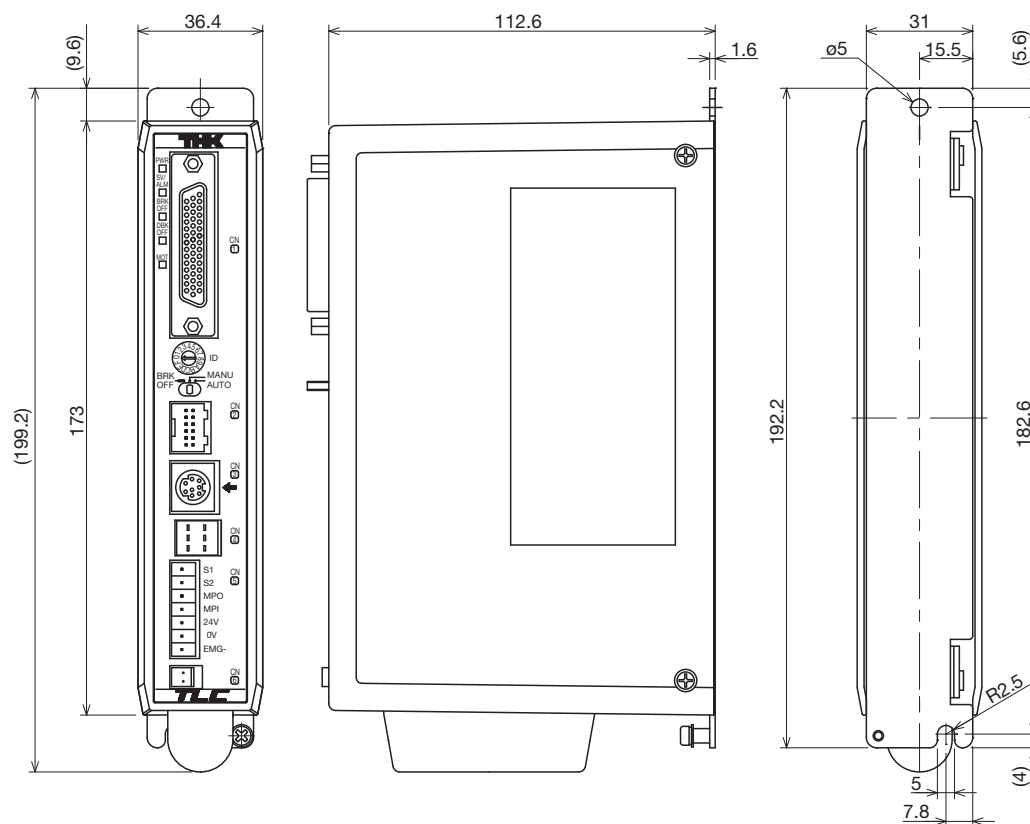
\* This count varies depending on function mode.

## System Configuration

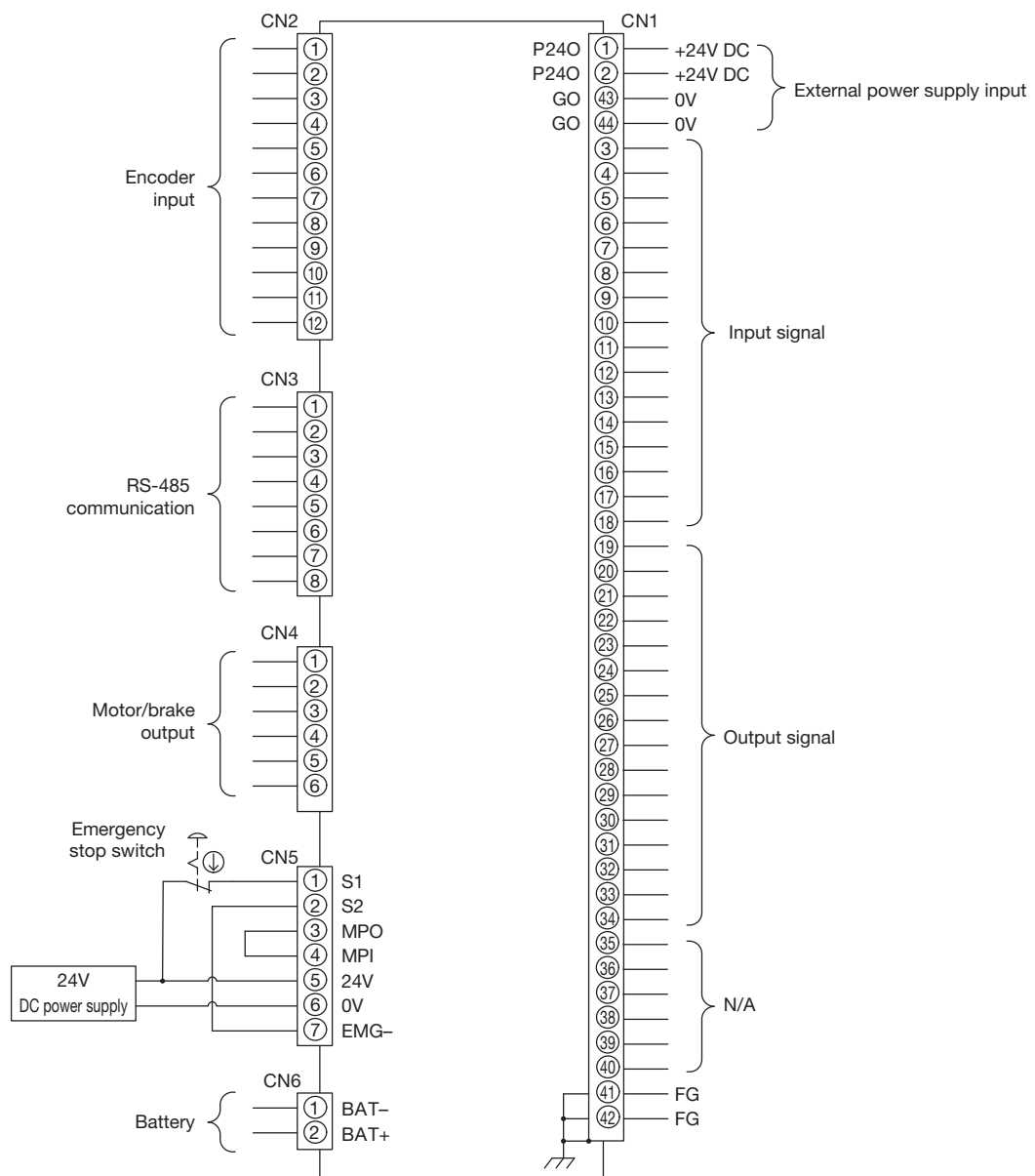


## Controller

## TLC



## TLC Pin Configuration

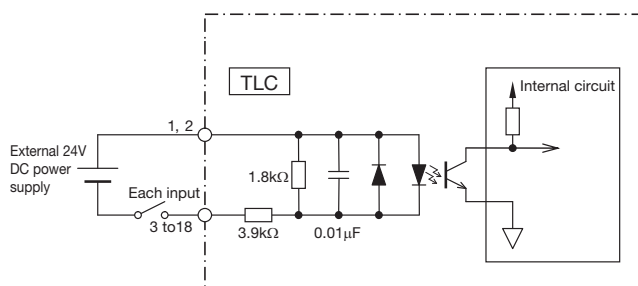


For attached I/O connector pin numbers, see P.21.

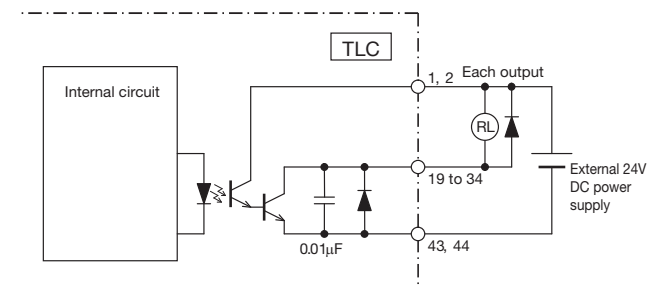
Customer provides 24V DC power supply for input/output circuitry.

## Input/Output Circuitry for TLC (CN1)

Input circuit



Output circuit



## TLC Function Modes

TLC provides six modes to support various requirements and purposes.

Function mode		Overview	Step data count	Pressing operation
Multi-point positioning	0: 64-position	Multi-point positioning operation with 64 points With area output, with P area output	64	○
	1: External unit input instruction	Multi-point positioning operation with 64 points I/O-based external unit instruction mode Without area output, with P area output	64	–
	2: 256-position	Multi-point positioning operation with 256 points Without area output, with P area output	256	○
	3: 512-position	Multi-point positioning operation with 512 points Without area output, without P area output	512	○
Electromagnetic valve	4: Solenoid mode 1	Multi-point positioning operation with 7 points Direct move command input With area output, with P area output	7	○
	5: Solenoid mode 2	Multi-point positioning operation with 3 points Direct move command input With position sensor auto-switch output, area output and P area output	3	–

## Pin Configuration by Function Mode

I/O	CN1 pin number	Signal name					
		Function mode 0 64-position	Function mode 1 External unit input	Function mode 2 256-position	Function mode 3 512-position	Function mode 4 Solenoid mode 1	Function mode 5 Solenoid mode 2
Input	3	PI 0	PI 0	PI 0	PI 0	ST 0	ST 0
	4	PI 1	PI 1	PI 1	PI 1	ST 1	ST 1
	5	PI 2	PI 2	PI 2	PI 2	ST 2	ST 2
	6	PI 3	PI 3	PI 3	PI 3	ST 3	–
	7	PI 4	PI 4	PI 4	PI 4	ST 4	–
	8	PI 5	PI 5	PI 5	PI 5	ST 5	–
	9	–	MODE	PI 6	PI 6	ST 6	–
	10	–	JOG/INCHING	PI 7	PI 7	–	–
	11	–	JOG P	–	PI 8	–	–
	12	BKRL	JOG N	BKRL	BKRL	BKRL	BKRL
	13	STRT	STRT/PWRT	STRT	STRT	–	–
	14	MANU	MANU	MANU	MANU	MANU	MANU
	15	HOME	HOME	HOME	HOME	HOME	HOME
	16	PAUSE	PAUSE	PAUSE	PAUSE	PAUSE	PAUSE
	17	REST	REST	REST	REST	REST	REST
	18	SV-ON	SV-ON	SV-ON	SV-ON	SV-ON	SV-ON
Output	19	PO 0	PO 0	PO 0	PO 0	PE 0	LS 0
	20	PO 1	PO 1	PO 1	PO 1	PE 1	LS 1
	21	PO 2	PO 2	PO 2	PO 2	PE 2	LS 2
	22	PO 3	PO 3	PO 3	PO 3	PE 3	–
	23	PO 4	PO 4	PO 4	PO 4	PE 4	–
	24	PO 5	PO 5	PO 5	PO 5	PE 5	–
	25	MOVE	MOVE	PO 6	PO 6	PE 6	–
	26	AREA	MODES	PO 7	PO 7	AREA	AREA
	27	P AREA	P AREA	P AREA	PO 8	P AREA	P AREA
	28	MANU S	MANU S	MANU S	MANU S	MANU S	MANU S
	29	HEND	HEND	HEND	HEND	HEND	HEND
	30	INPS	INPS	INPS	INPS	INPS	–
	31	LOAD/TRQS	WEND	LOAD/TRQS	LOAD/TRQS	LOAD/TRQS	–
	32	SVRDY	SVRDY	SVRDY	SVRDY	SVRDY	SVRDY
	33	BALM	BALM	BALM	BALM	BALM	BALM
	34	ALM	ALM	ALM	ALM	ALM	ALM

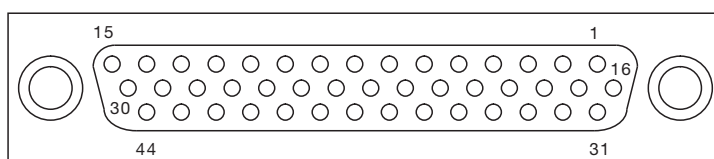
## Input Signal Functions

Input		
Signal name	Description	Remarks
MANU	Operation mode	Switches AUTO/MANUAL from I/O. MANUAL when signal is on, and AUTO when it is off.
STRT	Start	Start signal of program step. Program starts when signal is on.
PI0 - PI8	Instruction position number	Input for specifying position numbers. Specifies programs at each signal level. Selects a program step and starts a program with "STRT" signal.
PAUSE	Pause	Temporarily interrupts the operation. PAUSE input status when signal is off. (N.C. connection specification)
HOME	Return to home position	Starts the return to home position operation. Returning to home position is started when signal is on. It stops when it is off.
SV-ON	Servo on	Turns the servo ON and OFF. Servo ON when signal is on, and servo OFF when signal is off.
REST	Alarm reset	Resets alarm. Resets remaining travel distance during pause. Resets when it is on.
BKRL	Brake release	Forcibly releases brake. Releases brake when it is on.
MODE	External unit input instruction mode	Enters the instruction mode when signal is on. Instruction mode when signal is on.
PWRT	Current position write with external unit input instruction	During the instruction mode, the position is written when this signal is greater than 20ms with the position for writing specified.
JOG/INCHING	Manual operation switch with external unit input instruction	Switching of manual operation during the instruction mode. Selects inching operation when it is on, and jog operation when it is off.
JOG P	Moving direction + with external unit input instruction	Operating direction and operation start signal during the instruction mode. Moves in + direction to the soft limit when signal is on. Decelerates and stops when it is off while moving.
JOG N	Moving direction - with external unit input instruction	Operating direction and operation start signal during the instruction mode. Moves in - direction to the soft limit when signal is on. Decelerates and stops when it is off while moving.
ST0 - 6	Cylinder type START	Program start signal for position numbers from ST0 to ST6. Can select either Level or Edge for signal using parameter 13 "move" command. Note that when more than two positions are on at the same time, the lowest-number signal takes precedence.

## Output Signal Functions

Output		
Signal name	Description	Remarks
MANU S	Operation mode status	Operation mode status outputs (AUTO/MANUAL). MANUAL when signal is on, AUTO when off.
PO1 - PO8	End position number	Outputs the position number arrived after positioning is completed (binary outputs).
MOVE	Moving	Outputs signal during motor operation.
INPS	Positioning completed	Outputs when motor comes within the positioning completed width.
SVRDY	Operation preparations completed	Outputs signal when servo is on.
ALM	Alarm	Alarm output signal.
MODES	Operation mode status	Output signal for judging instruction mode or regular operation mode. Instruction mode when signal is on. Regular operation mode when it is off.
WEND	Writing completed	Signal is off after switching to the regular mode, and it is on for 30ms when writing of the PWRT signal is completed.
HEND	Return to home position completed	Outputs signal when returning to home position is completed.
AREA	Upper/lower area limit	On when the current position of actuator is within a range specified by the parameter.
P AREA	Position area	On when the current position of actuator is within a range specified by the program step.
BALM	Voltage reduction in battery	Off when the battery voltage decreases.
LOAD	Load output judgment status	On when a directive torque exceeds the threshold over a certain period within a judgment range.
TRQS	Torque level status	On when the load threshold is reached while moving. Off while the load remains under the threshold.
PE0 - PE6	Cylinder type arrival completed output	Signal generated after operation for positioning is completed.
LS0 - LS2	Cylinder type position detection output	Outputs when the current position comes within the positioning width for each of the three points.

## I/O Connector Pin Numbers



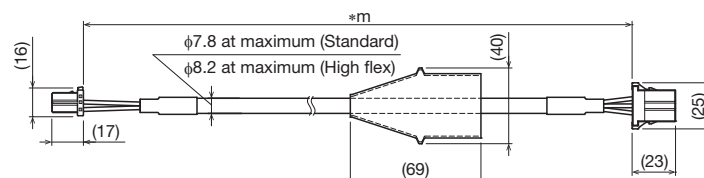
Controller connector port view

## Actuator Cable

Motor brake cable for TLC: CBL-TLC-ACP-\*\* F (Standard)

CBL-TLC-ACP-\*\* R (High flex)

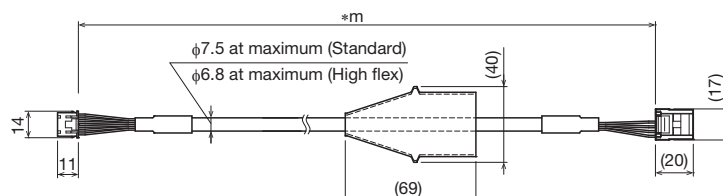
\*\* indicates cable length: 03 (3m), 05 (5m), or 10 (10m)



Encoder cable for TLC: CBL-TLC-ACS-\*\* F (Standard)

CBL-TLC-ACS-\*\* R (High flex)

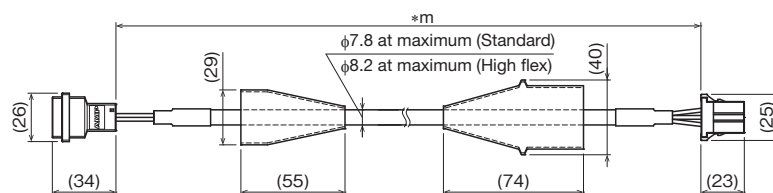
\*\* indicates cable length: 03 (3m), 05 (5m), or 10 (10m)



Motor brake extension cable for TLC/THC: CBL-ACP-EXT01-\*\* F (Standard)

CBL-ACP-EXT01-\*\* R (High flex)

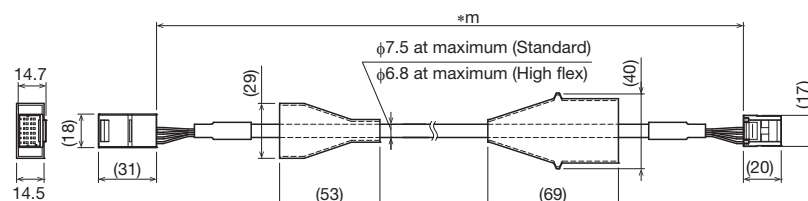
\*\* indicates cable length: 01 (1m), 03 (3m), or 05 (5m)



Extension encoder cable for TLC: CBL-ACS-EXT01-\*\* F (Standard)

CBL-ACS-EXT01-\*\* R (High flex)

\*\* indicates cable length: 01 (1m), 03 (3m), or 05 (5m)



Note 1) For use involving moving elements, select high flex type. The recommended bending radius at the core of cable is R95 or greater.  
(For use involving other than moving elements, R50 or greater is recommended.)

Note 2) When using the TLC servo driver controller, motor brake cable and encoder cable should be no longer than 11m.

Up to two extension cables can be connected.



## Option

### Lithium ion battery (for maintenance)

---

ER6V C4 (Toshiba Home Appliances Corporation)

- This is required for the absolute system.
- When replacing the battery, order the above.

## High-capacity servo driver controller

# THC

Servo driver controller for single axis



## Features

Ready to use, simplified setup.

## Simple Operation

Use PC setup tool D-Step or digital operator TDO to access many useful functions.

## Functions

- Selectable function modes  
(64-position, external unit input instruction, 256-position, 512-position, Solenoid mode 1, and Solenoid mode 2)
- Step data count: Up to 512 (depending on function mode)
- Alarm history: Up to 50 (including power ON history)
- Switching between Auto/Manual, brake release switch
- Selectable control methods (positioning or pressing)
- Absolute supported

## Combined Control Device Model Configuration (THC)

Control device model	Capacity	Power supply voltage	Type	Encoder type	Actuator model	Lead	Home position	Brake	Stroke	Sensor
THC	010	100AC	MOD	A	KRF6	06	D	B	0050	1
(1) THC	(2) 010: 100W	(3) 100AC: 100VAC 200AC: 200VAC	(4) MOD: Mode switching type	(5) A: Absolute	(6) KRF6	(7) 06: 6mm 10: 10mm	(8) D: Motor side R: Reverse motor side	(9) No symbol: Without brake B: With brake	(10) Enter the stroke of the actuator model (6) Example) 0050: 50m	(11) No symbol: None 1: With sensor

## THC Specifications

Type of machine	Model		THC					
			100V AC			200V AC		
	Capacity		100W	200W	400W	100W	200W	400W 750W
Input power supply	Main circuit		100V AC single-phase, 50/60Hz (Permissible voltage: 90 to 120V)			200V AC single-phase, 50/60Hz (Permissible voltage: 170 to 250V)		
	Control circuit		100V AC single-phase, 50/60Hz (Permissible voltage: 90 to 120V)			200V AC single-phase, 50/60Hz (Permissible voltage: 170 to 250V)		
	Power supply [kVA]		0.5	0.9	1.3	0.5	0.9	1.6 2.4
Control	Control axis		Single axis					
	Motor		AC servo motor					
	Control		Feedback control (Semi-closed loop)					
	Position detection		Absolute					
Program	Acceleration/deceleration		Trapezoid acceleration, S-shape acceleration					
	Function mode		64-position	External unit input	256-position	512-position	Solenoid mode 1	Solenoid mode 2
	Step data count		64 points	64 points	256 points	512 points	7 points	3 points
	Data input/output		PC setup tool D-STEP or Digital operator TDO					
Input/output	Dedicated input/output	Input points	16 points (Start, Return to home position, Pause, Reset, Servo ON, Specify step number, etc.) *					
		Output points	16 points (Return to home position completed, In position, Servo ready, Alarm, Battery alarm, etc.) *					
	Input/output power supply		24VDC ±10% (This should be prepared by yourself.)					
Communication	Serial communication	Device	Digital operator or PC software					
		Method	RS-485					
		Ports	Mini DIN × 1					
Usage conditions	Operating/storage temperature		0 to 40°C (No freezing)/-20 to 85°C (No freezing)					
	Operating/storage humidity		90% RH or below (No condensation)					
	Ambient condition		Indoor (Free from direct sunlight, corrosive gas, flammable gas, oil mist, dust, water, oil and chemicals)					
General specifications	Protective function		Overload, overvoltage, excessive position deviation, software limit over error, etc.					
	Accessories		Power supply connector × 1 I/O connector × 1					
	Options (sold separately)		Digital operator TDO (Cable length 5m) I/O cable 3m, 5m, 7m, and 10m Communication cable (Mini DIN↔USB)					
	External dimensions [mm]		200W or lower: 58mm (W) × 208.6mm (H) × 120mm (D) 400W or higher: 67.5mm (W) × 208.6mm (H) × 120mm (D)					
	Weight (not including battery)		1.3kg or less	1.3kg or less	1.3kg or less	1.3kg or less	1.3kg or less	1.3kg or less 1.5kg or less

\* This count varies depending on function mode.

## System Configuration

THC needs either **TDO** or **D-STEP** for setting.



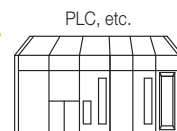
(Available in Japanese and English)

Digital operator  
**TDO**

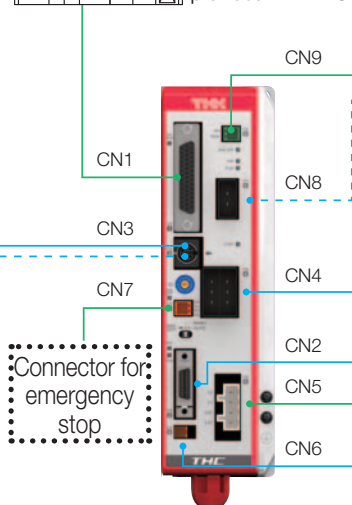


PC setup tool  
**D-STEP**

The PC setup tool can be freely downloaded after logging in to the technical support website.  
(Available in Japanese, English, and Simplified Chinese)  
<https://tech.thk.com/>



PLC, etc.  
An I/O connector is provided with THC.

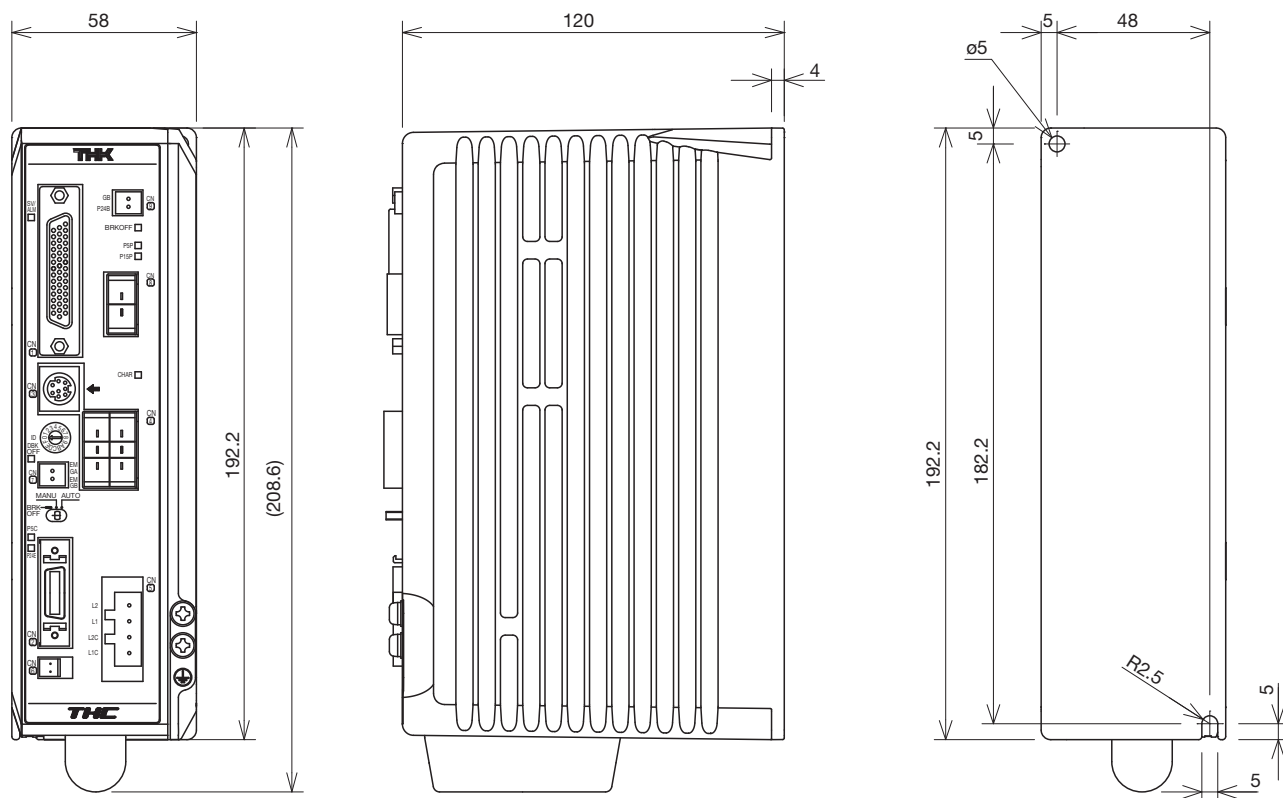


Servo driver controller  
**THC**

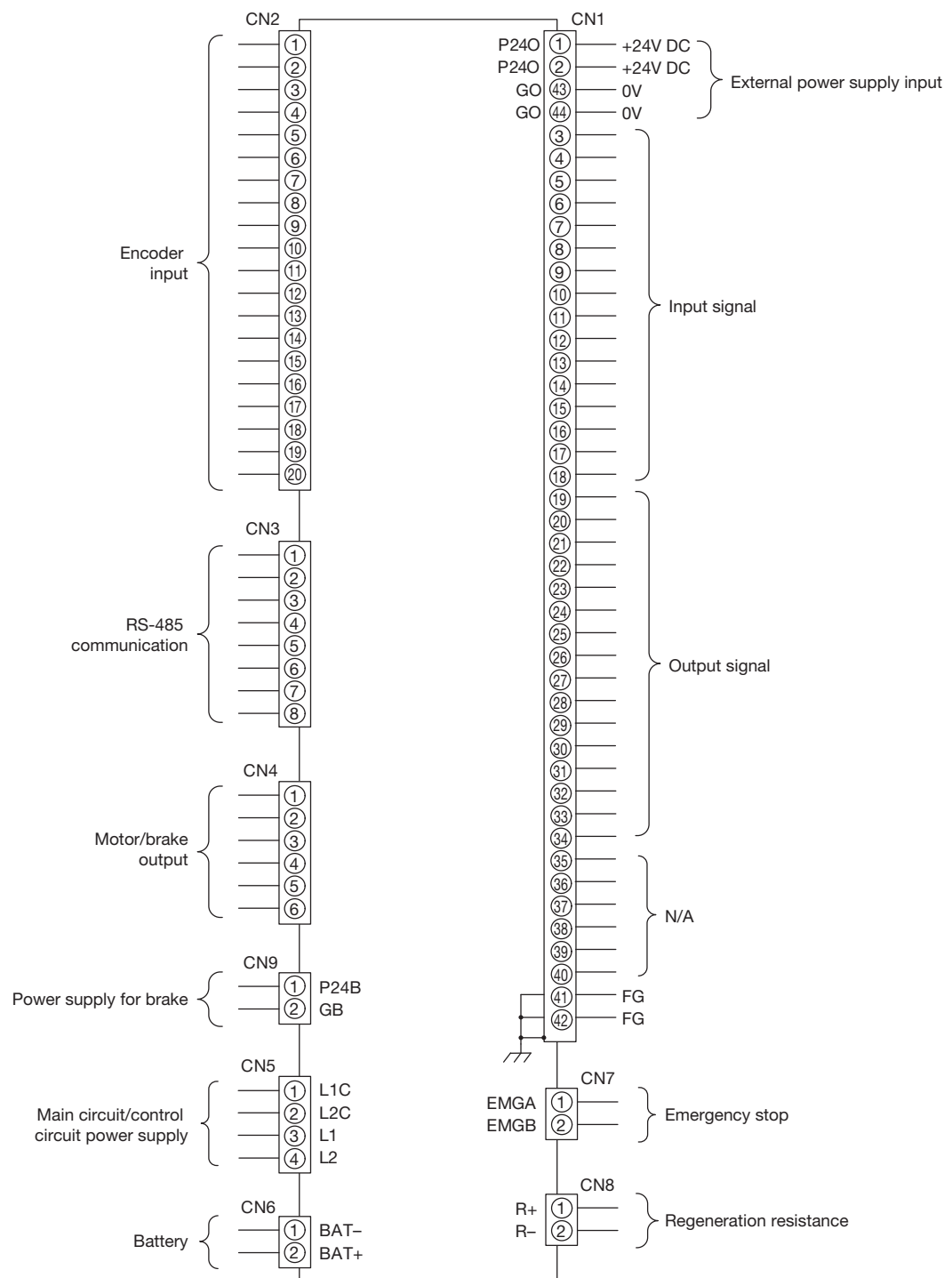
— Wiring to be provided by customer.  
- - - Separate order required.  
— Cables provided with product.

## Controller

## THC (100W)



## THC Pin Configuration

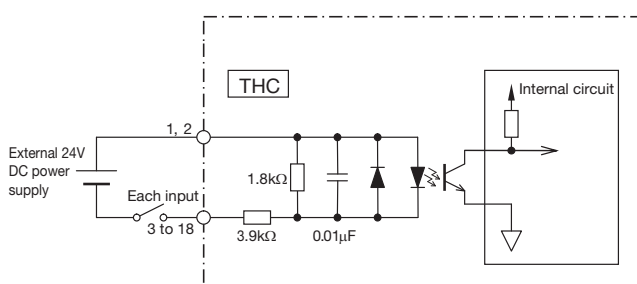


For attached I/O connector pin numbers, see P.29.

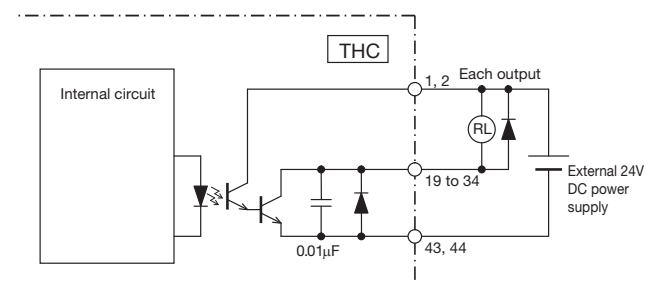
Customer provides 24V DC power supply for input/output circuitry.

## Input/Output Circuitry for THC (CN1)

Input circuit



Output circuit



## THC Function Modes

THC provides six modes to support various requirements and purposes.

Function mode		Overview	Step data count	Pressing operation
Multi-point positioning	0: 64-position	Multi-point positioning operation with 64 points With area output, with P area output	64	○
	1: External unit input instruction	Multi-point positioning operation with 64 points I/O-based external unit instruction mode Without area output, with P area output	64	–
	2: 256-position	Multi-point positioning operation with 256 points Without area output, with P area output	256	○
	3: 512-position	Multi-point positioning operation with 512 points Without area output, without P area output	512	○
Electromagnetic valve	4: Solenoid mode 1	Multi-point positioning operation with 7 points Direct move command input With area output, with P area output	7	○
	5: Solenoid mode 2	Multi-point positioning operation with 3 points Direct move command input With position sensor auto-switch output, area output and P area output	3	–

## Pin Configuration by Function Mode

I/O	CN1 pin number	Signal name					
		Function mode 0 64-position	Function mode 1 External unit input	Function mode 2 256-position	Function mode 3 512-position	Function mode 4 Solenoid mode 1	Function mode 5 Solenoid mode 2
Input	3	PI 0	PI 0	PI 0	PI 0	ST 0	ST 0
	4	PI 1	PI 1	PI 1	PI 1	ST 1	ST 1
	5	PI 2	PI 2	PI 2	PI 2	ST 2	ST 2
	6	PI 3	PI 3	PI 3	PI 3	ST 3	–
	7	PI 4	PI 4	PI 4	PI 4	ST 4	–
	8	PI 5	PI 5	PI 5	PI 5	ST 5	–
	9	–	MODE	PI 6	PI 6	ST 6	–
	10	–	JOG/INCHING	PI 7	PI 7	–	–
	11	–	JOG P	–	PI 8	–	–
	12	BKRL	JOG N	BKRL	BKRL	BKRL	BKRL
	13	STRT	STRT/PWRT	STRT	STRT	–	–
	14	MANU	MANU	MANU	MANU	MANU	MANU
	15	HOME	HOME	HOME	HOME	HOME	HOME
	16	PAUSE	PAUSE	PAUSE	PAUSE	PAUSE	PAUSE
	17	REST	REST	REST	REST	REST	REST
	18	SV-ON	SV-ON	SV-ON	SV-ON	SV-ON	SV-ON
Output	19	PO 0	PO 0	PO 0	PO 0	PE 0	LS 0
	20	PO 1	PO 1	PO 1	PO 1	PE 1	LS 1
	21	PO 2	PO 2	PO 2	PO 2	PE 2	LS 2
	22	PO 3	PO 3	PO 3	PO 3	PE 3	–
	23	PO 4	PO 4	PO 4	PO 4	PE 4	–
	24	PO 5	PO 5	PO 5	PO 5	PE 5	–
	25	MOVE	MOVE	PO 6	PO 6	PE 6	–
	26	AREA	MODES	PO 7	PO 7	AREA	AREA
	27	P AREA	P AREA	P AREA	PO 8	P AREA	P AREA
	28	MANU S	MANU S	MANU S	MANU S	MANU S	MANU S
	29	HEND	HEND	HEND	HEND	HEND	HEND
	30	INPS	INPS	INPS	INPS	INPS	–
	31	LOAD/TRQS	WEND	LOAD/TRQS	LOAD/TRQS	LOAD/TRQS	–
	32	SVRDY	SVRDY	SVRDY	SVRDY	SVRDY	SVRDY
	33	BALM	BALM	BALM	BALM	BALM	BALM
	34	ALM	ALM	ALM	ALM	ALM	ALM

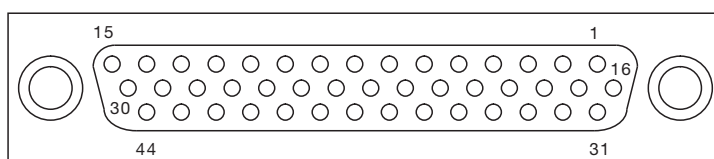
## Input Signal Functions

Input		
Signal name	Description	Remarks
MANU	Operation mode	Switches AUTO/MANUAL from I/O. MANUAL when signal is on, and AUTO when it is off.
STRT	Start	Start signal of program step. Program starts when signal is on.
PI0 - PI8	Instruction position number	Input for specifying position numbers. Specifies programs at each signal level. Selects a program step and starts a program with "STRT" signal.
PAUSE	Pause	Temporarily interrupts the operation. PAUSE input status when signal is off. (N.C. connection specification)
HOME	Return to home position	Starts the return to home position operation. Returning to home position is started when signal is on. It stops when it is off.
SV-ON	Servo on	Turns the servo ON and OFF. Servo ON when signal is on, and servo OFF when signal is off.
REST	Alarm reset	Resets alarm. Resets remaining travel distance during pause. Resets when it is on.
BKRL	Brake release	Forcibly releases brake. Releases brake when it is on.
MODE	External unit input instruction mode	Enters the instruction mode when signal is on. Instruction mode when signal is on.
PWRT	Current position write with external unit input instruction	During the instruction mode, the position is written when this signal is greater than 20ms with the position for writing specified.
JOG/INCHING	Manual operation switch with external unit input instruction	Switching of manual operation during the instruction mode. Selects inching operation when it is on, and jog operation when it is off.
JOG P	Moving direction + with external unit input instruction	Operating direction and operation start signal during the instruction mode. Moves in + direction to the soft limit when signal is on. Decelerates and stops when it is off while moving.
JOG N	Moving direction - with external unit input instruction	Operating direction and operation start signal during the instruction mode. Moves in - direction to the soft limit when signal is on. Decelerates and stops when it is off while moving.
ST0 - 6	Cylinder type START	Program start signal for position numbers from ST0 to ST6. Can select either Level or Edge for signal using parameter 13 "move" command. Note that when more than two positions are on at the same time, the lowest-number signal takes precedence.

## Output Signal Functions

Output		
Signal name	Description	Remarks
MANU S	Operation mode status	Operation mode status outputs (AUTO/MANUAL). MANUAL when signal is on, AUTO when off.
PO1 - PO8	End position number	Outputs the position number arrived after positioning is completed (binary outputs).
MOVE	Moving	Outputs signal during motor operation.
INPS	Positioning completed	Outputs when motor comes within the positioning completed width.
SVRDY	Operation preparations completed	Outputs signal when servo is on.
ALM	Alarm	Alarm output signal.
MODES	Operation mode status	Output signal for judging instruction mode or regular operation mode. Instruction mode when signal is on. Regular operation mode when it is off.
WEND	Writing completed	Signal is off after switching to the regular mode, and it is on for 30ms when writing of the PWRT signal is completed.
HEND	Return to home position completed	Outputs signal when returning to home position is completed.
AREA	Upper/lower area limit	On when the current position of actuator is within a range specified by the parameter.
P AREA	Position area	On when the current position of actuator is within a range specified by the program step.
BALM	Voltage reduction in battery	Off when the battery voltage decreases.
LOAD	Load output judgment status	On when a directive torque exceeds the threshold over a certain period within a judgment range.
TRQS	Torque level status	On when the load threshold is reached while moving. Off while the load remains under the threshold.
PE0 - PE6	Cylinder type arrival completed output	Signal generated after operation for positioning is completed.
LS0 - LS2	Cylinder type position detection output	Outputs when the current position comes within the positioning width for each of the three points.

## I/O Connector Pin Numbers



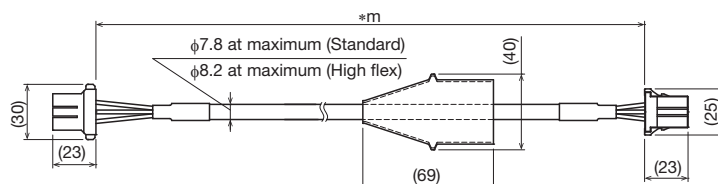
Controller connector port view

## Actuator Cable

Motor brake cable for THC: CBL-THC-ACP-\*\* F (Standard)

CBL-THC-ACP-\*\* R (High flex)

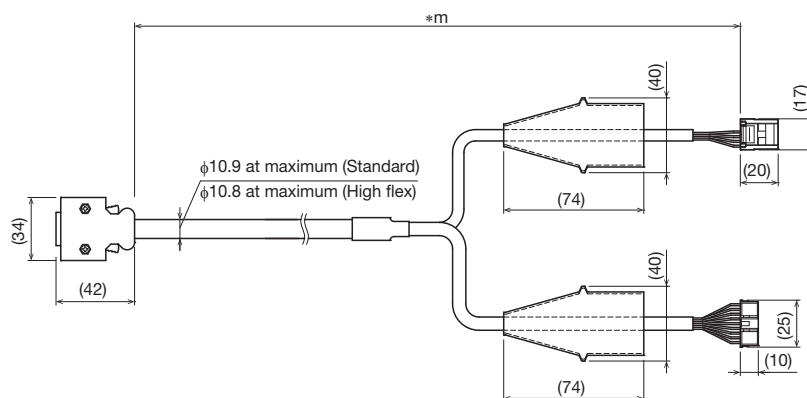
\*\* indicates cable length: 03 (3m), 05 (5m), or 10 (10m)



Encoder sensor cable for THC: CBL-THC-ACS-\*\* F (Standard)

CBL-THC-ACS-\*\* R (High flex)

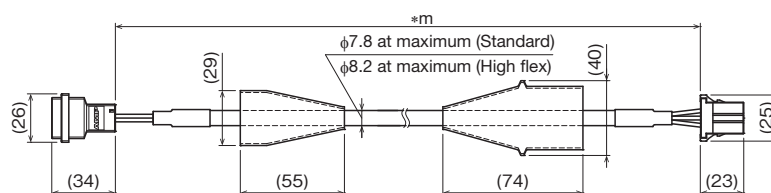
\*\* indicates cable length: 03 (3m), 05 (5m), or 10 (10m)



Motor brake extension cable for TLC/THC: CBL-ACP-EXT01-\*\* F (Standard)

CBL-ACP-EXT01-\*\* R (High flex)

\*\* indicates cable length: 01 (1m), 03 (3m), or 05 (5m)

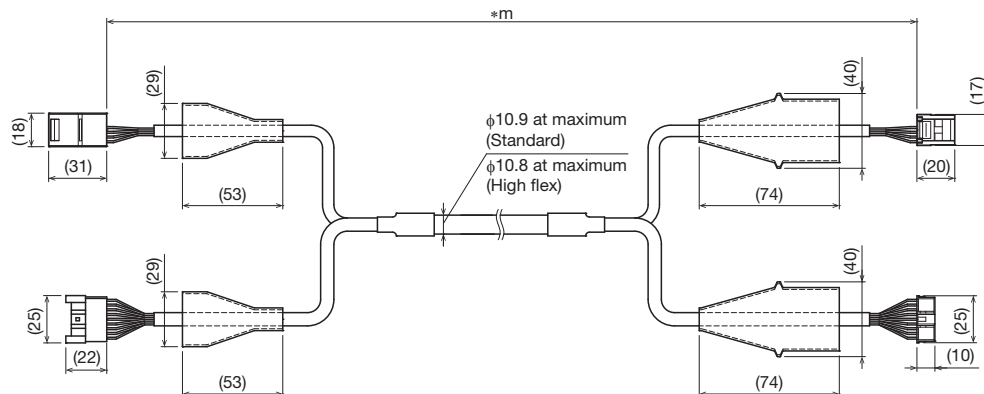




Encoder sensor extension cable for THC: CBL-ACS-EXT02-\*\* F (Standard)

CBL-ACS-EXT02-\*\* R (High flex)

\*\* indicates cable length: 01 (1m), 03 (3m), or 05 (5m)



Note 1) For use involving moving elements, select high flex type. The recommended bending radius at the core of cable is R95 or greater.  
(For use involving other than moving elements, R50 or greater is recommended.)

Note 2) When using the THC servo driver controller, motor brake cable and encoder sensor cable should be no longer than 16m.  
Up to two extension cables can be connected.

Note 3) When using the THC servo driver controller, the lengths of motor brake cable and encoder sensor cable should be no longer than 16m.  
Up to two extension cables can be connected.

## Option

### Lithium ion battery (for maintenance)

ER6V C4 (Toshiba Home Appliances Corporation)

- This is required for the absolute system.
- When replacing the battery, order the above.

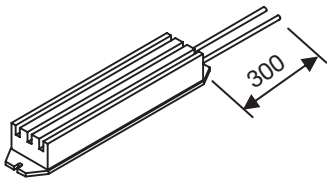
Optional (Regeneration Resistance)

Regeneration resistance

To make electrical actuator operate via the THC controller series, a regeneration resistance may be necessary depending on the operating conditions. The following table lists the required number of regeneration resistances just for reference. The customer should provide the required number of them.

It is recommended that you use regeneration resistances manufactured by Iwaki Musen Kenkyusho Co.,LTD. THK supplies regeneration resistance connection cables. The customer can order them separately as necessary.

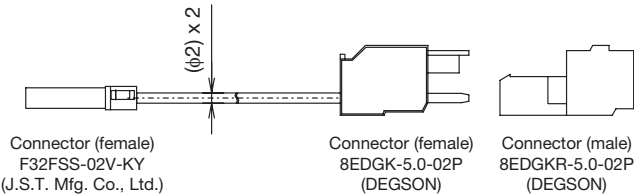
■ Regeneration resistance (Power-type cement resistor)



	Name of item	Manufacturer
A	RH150 100Ω J	Iwaki Musen
B	RH150 50Ω J	Kenkyusho Co.,LTD.

THC capacity	Orientation	
	Horizontal mount	Vertical mount
100W	A x 1	A x 1
200W	A x 1	A x 1
400W	B x 2	B x 2
750W	B x 2	B x 2

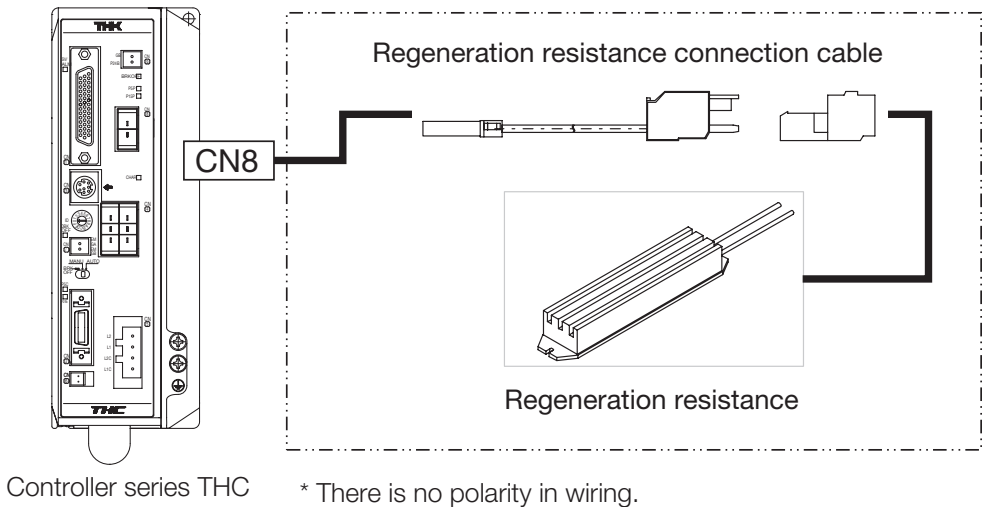
■ Regeneration resistance connection cable (CBL-REG00-01F)



\* Cable insertion jig (DG010-01P-19-00AH) is provided. (The customer does not have to provide special tools)

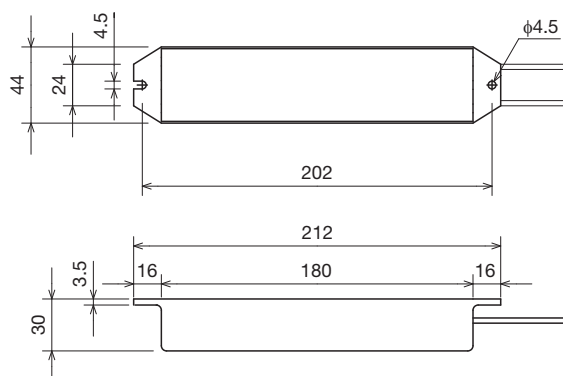
	Model	Length	Manufacturer
1	CBL-REG00-01F	1m	THK Co., Ltd.

Configuration Diagram



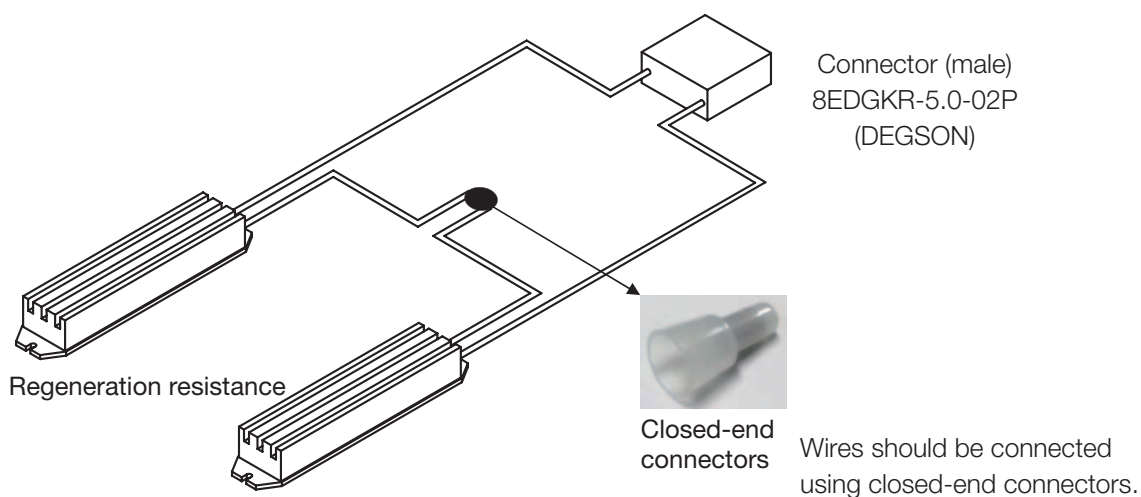
## Regeneration Resistance External Drawing

RH150 (90W, 100Ω) (90W, 50Ω) common to all



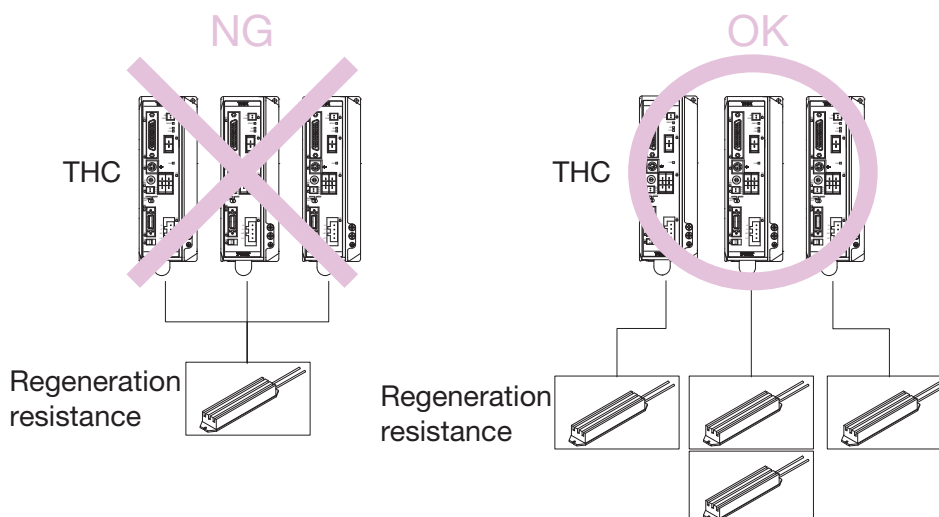
## Wiring Example (Using Two Regeneration Resistances)

When you use two regeneration resistances, connect them in series.



## Precautions on Selecting Resistance

The customer should provide the required number of regeneration resistances for each THC.



Controller Series  
Network Unit

# TNU/TJU



Multiple-axis connection fieldbus compatible

## Less Wiring Required

Connecting to a PLC through a fieldbus network requires less wiring than an I/O cable connection. In addition, the network unit and each driver controller can be connected with a single dedicated cable.



## Up to 16 Axes Can Be Connected

Up to 16 axes of mixed THK driver controllers (TSC, TLC, and THC) can be connected using one TNU and TJU (branch unit) in combination.

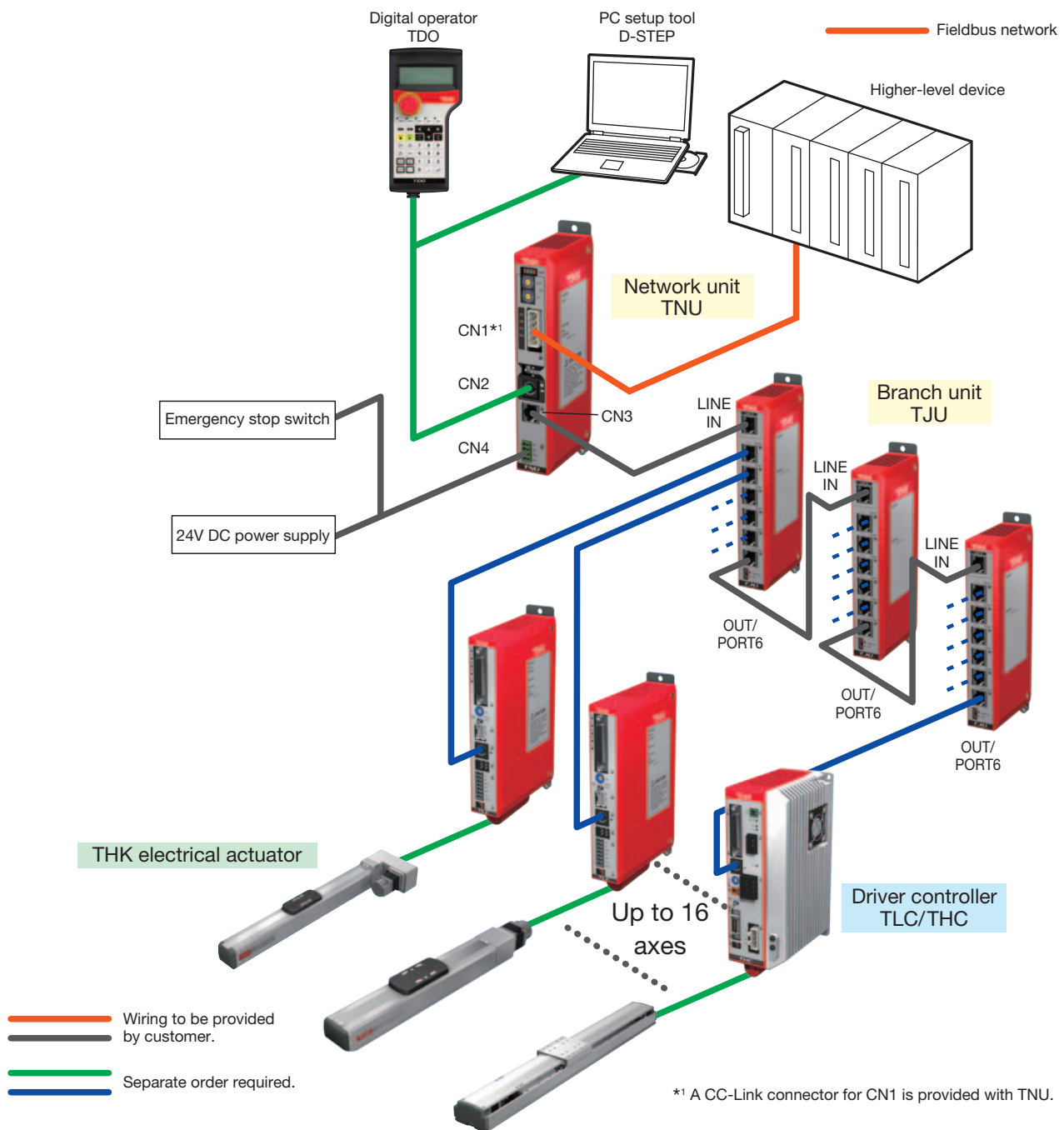
## Direct Numerical Control Supported (Version 1.2 or later)

Position, speed, and acceleration commands can be made directly from the PLC. As well, information such as the current position can be monitored.

\* TSC is supported with Version 1.22, TLC/THC with Version 1.07 or later.

\* For TNU-EC support, contact THK.

## System Configuration



## Model Configuration

### ● Network unit

Model	Network type
TNU	CC
(1)	(2)
TNU	CC:CC-Link
	EC:EtherCAT
	EP:EtherNet/IP

### ● Branch unit

Model
TJU
(1)
TJU

### ● TACnet cable (between TJU and driver controller)

Model	Type	Cable length
CBL	NW	01
(1)	(2)	(3)
CBL	NW	01:1m
		03:3m

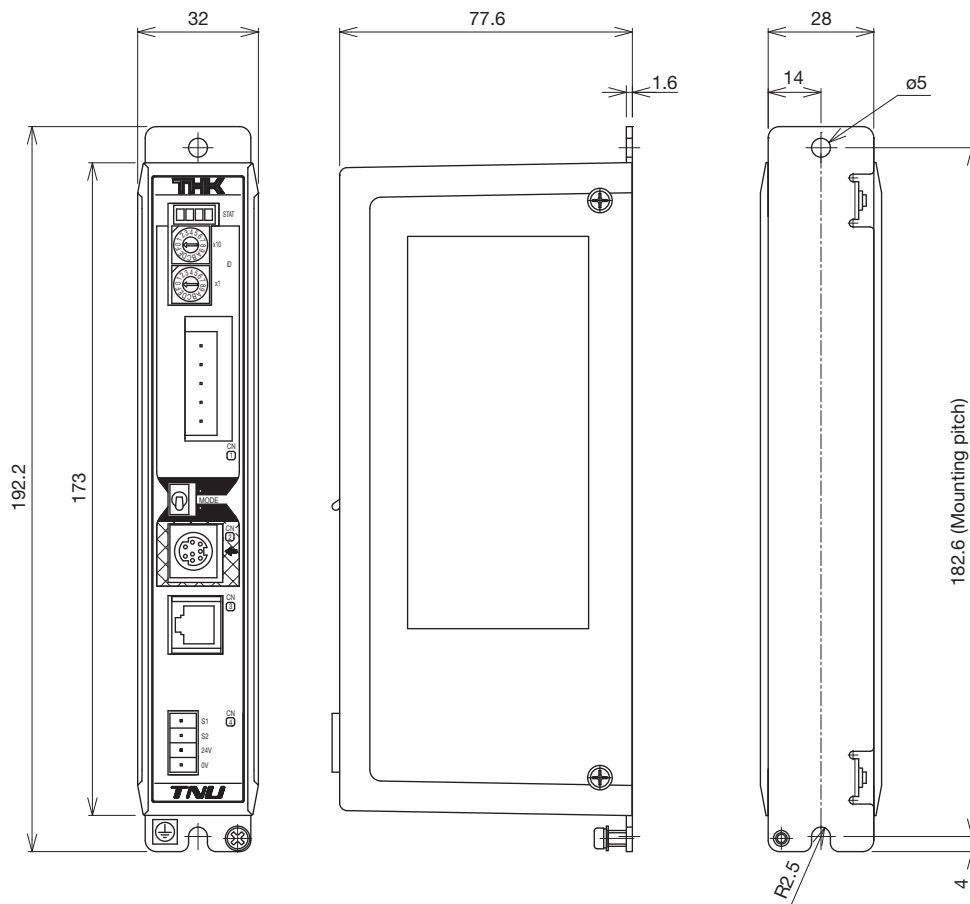
Use an industrial Ethernet cable between TNU and TJU, and between TJUs.

## Specifications

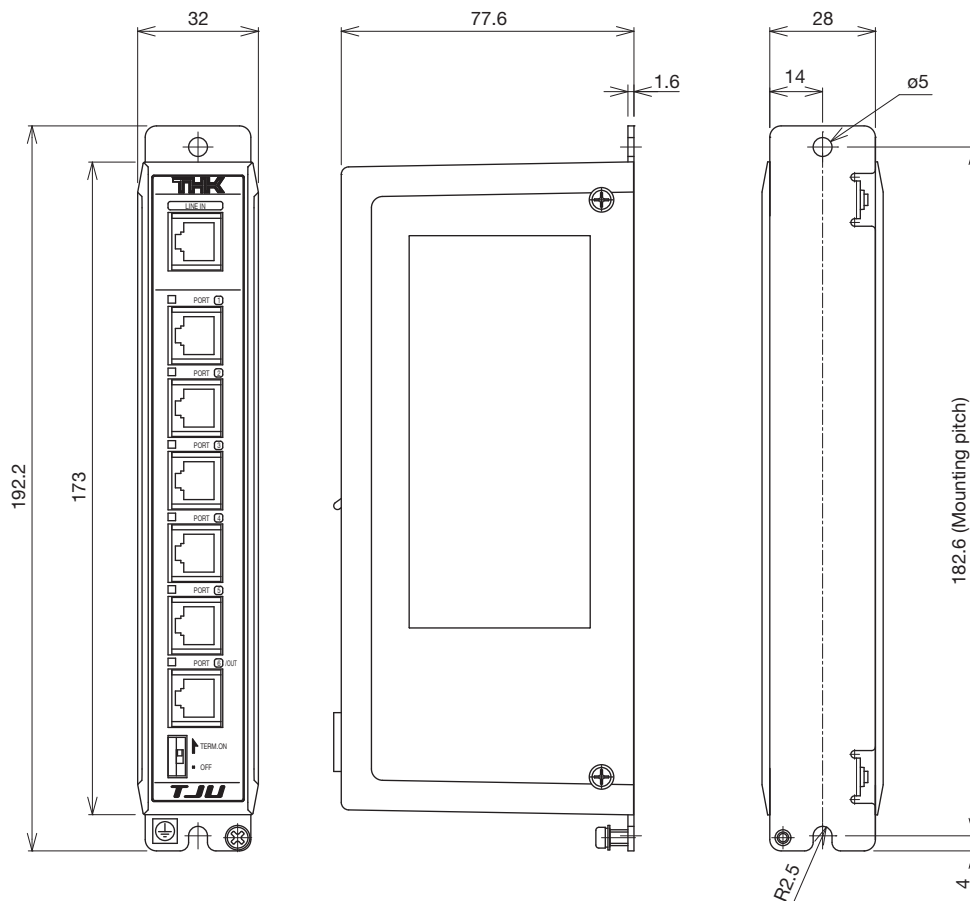
Model		TNU-CC		TNU-EC	TNU-EP
Fieldbus	Communication standard	CC-Link Ver1.10	CC-Link Ver2.00	EtherCAT	EtherNet/IP
	Communication speed	10Mbps/5Mbps/2.5Mbps/625kbps/156kbps 100M 10M/100M		100M	10M/100M
	Number of occupied stations	Remote device stations 4 stations	Remote device stations 1 station, 2 stations, 3 stations, 4 stations	—	—
Applicable controller		TSC/TLC/THC			
THK network	Transmission channel type	RS-485			
	Communication speed [bps]	38.4k/57.6k/115.2k			
	Communication method	Half duplex			
	Maximum trunk length [m]	20			
	Maximum number of connectable axes	16			
Input power supply		24V DC $\pm 10\%$ , up to 0.3A			
Operating/storage temperature		0 to 55°C (No freezing)/-20 to 85°C (No freezing)			
Ambient condition		Indoor (Free from direct sunlight, corrosive gas, flammable gas, oil mist)			
Protective function		Higher-level network communication error, communication error, system error			
Weight [g]		240(TJU:220)			

## Dimensions

### ● TNU



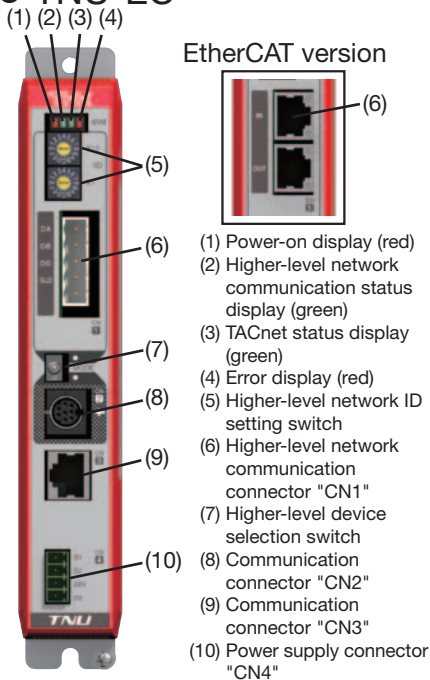
### ● TJU



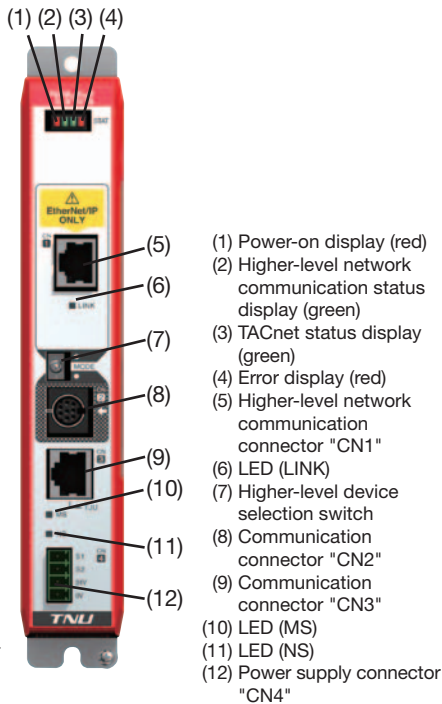
The external dimensions and mounting dimensions of TNU and TJU are the same.

## Components

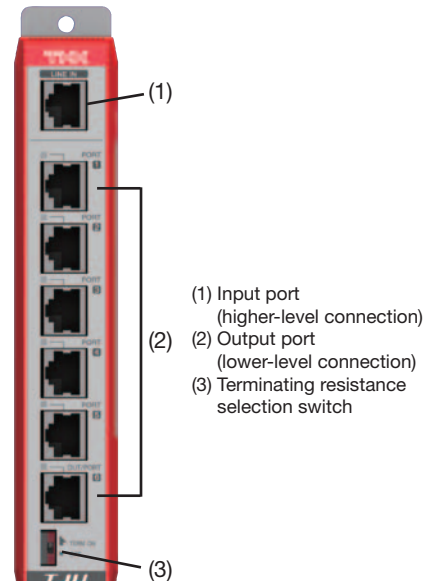
- TNU-CC
- TNU-EC



- TNU-EP

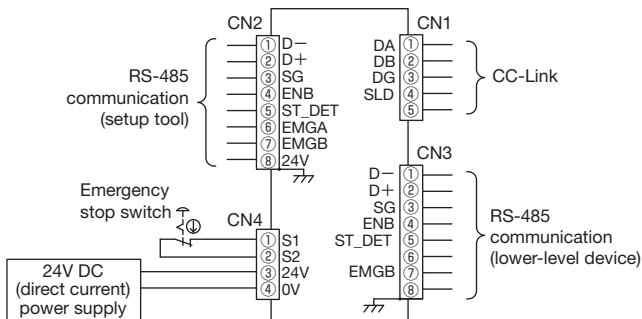


- TJU

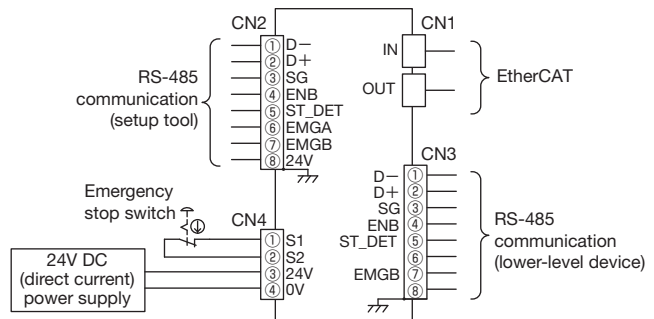


## External Device Connection (TNU)

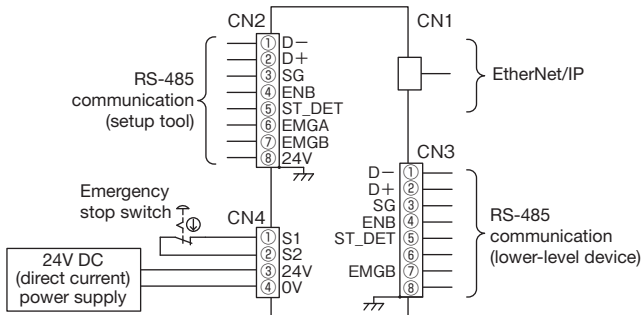
- CC-Link



- EtherCAT



- EtherNet/IP



Note: The emergency stop terminals (CN4-S1 and S2) are not used for power shutdown of TNU, but used for an emergency stop of the lower-level device (THK driver controller).



**TDO Digital operator** (separate order required)**Features**

Simple, quick operations and settings of TSC, TLC and THC are possible without using a PC.

**Simple Operation**

Key sheet with a straightforward design,  
LC with backlight (20 digits × 4 lines).

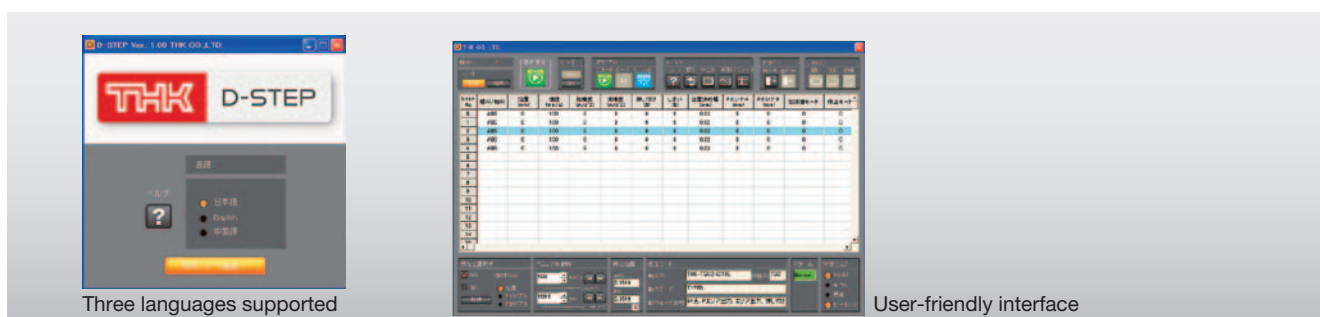
**Functions**

- Checking and editing step data and parameters
  - Operation of actuator  
(Return to home position, Jog operation, Inching operation, Program execution, Servo ON/OFF, Electromagnetic brake ON/OFF)
  - Monitor (I/O, Current position, Position command, Current command, Version display)
  - Alarm (History display, Clear history, Interrupt display on occurrence, Alarm reset)
  - Settings (Backlight luminance, LCD contrast, Beep tone, Automatic turn off of backlight)
  - Enable switch (3 positions) - Protection structure IP54 (excluding cable connectors) - Display language (Japanese/English)
- External dimensions: 110mm (W) × 218.3mm (H) × 66.6mm (D) (excluding crests)  
Main unit weight: 400g (excluding cables) Cable length: 5m  
TLC/THC is supported with Version 1.03 or later.  
TNU is supported with Version 1.10 or later.

**Model Configuration**

Model	Type
TDO	N
(1)	(2)
TDO	N: Category 2* compliant type

\* ISO 13849-1

**D-STEP PC setup tool****Features**

Supports multifunctional TSC/TLC/THC with user-friendly interface.

**Simple Operation**

Operations and settings of TSC, TLC and THC are possible using a PC.  
Equipped with functions useful for maintenance, such as backing up data or logging operating states.

**Functions**

- Checking, editing, backing up, or offline-editing of step data
  - Checking, editing, backing up, or offline-editing of parameters
  - Operations of actuator (Return to home position, Jog operation, Inching operation, Program execution, Servo ON/OFF)
  - Monitor (I/O, Current position, Position command, Current command) - Logging (Speed and current waveform display)
  - Alarm (History display, Clear history, Alarm reset) - Display language (Japanese/English/Simplified Chinese)
- Supported OS: Windows XP/Windows Vista/Windows 7  
D-STEP can be freely downloaded from the THK technical support website (<https://tech.thk.com/>).  
TLC/THC/TNU is supported with Version 1.10 or later.

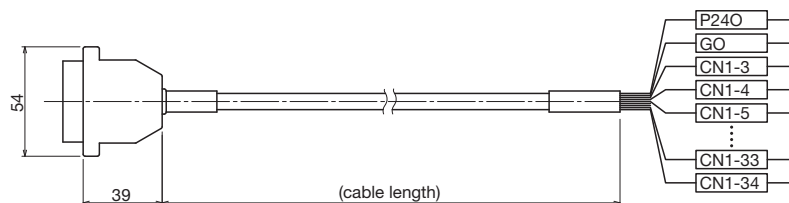
## Cable

I/O cable: CBL-TSC-IO-\*\* (optional)

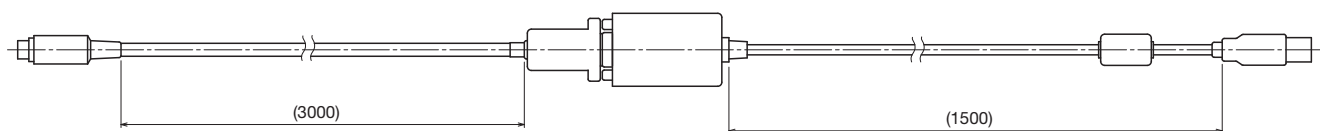
\*\* indicates cable length: 03 (3m), 05 (5m), 07 (7m), or 10 (10m).

Cables are shipped with the discrete wire side terminals unprocessed.

Cables are used for TSC/TLC/THC.



PC communications cable: CBL-COM-03 (optional)



# MEMO

# MEMO

# MEMO



# Precautions on Use

## ● Operation

- Do not unnecessarily disassemble the actuator or control device. Doing so may allow foreign objects to enter or reduce functionality.
- Do not drop or knock the actuator or control device. Doing so may cause injury or damage the unit. If the product is dropped or impacted, functionality may be reduced even if there is no surface damage.

## ● Environment

Wrong environment can cause failures of the actuator and control devices. The best place to use the product is as follows:

- Actuator: A place with an ambient temperature from 0 to 40°C and humidity of 80% RH or lower that will not expose the product to freezing or condensation.
- Controller: A place with an ambient temperature from 0 to 40°C and humidity of 90% RH or lower that will not expose the product to freezing or condensation.
- A place free from corrosive gas and flammable gas.
- A place free from electrically conductive powder (such as iron powder), dust, oil mist, cutting fluid, moisture, salt, and organic solvent.
- A place free from direct sunlight and radiant heat.
- A place free from strong electric and magnetic fields.
- A place where vibration or impact is not transmitted to the unit.
- A place that is easily accessible for service and cleaning purposes.

## ● Safety Precautions

- When the actuator is in motion or about to be in motion, do not touch any moving parts. Do not go near the actuator when it is in motion.
- Before performing installation, adjustment, checking, or services regarding and the connected peripherals, ensure that all power is disconnected. In addition, take countermeasures to prevent anyone other than the operator from turning on the power.
- If two or more people are involved in the operation, confirm the procedures such as sequences, signs, and abnormalities in advance, and appoint another person for monitoring the operation.
- Before operation, please read thoroughly and obey "Manipulating industrial robots - Safety" (JIS B8433) and "Ordinance on Industrial Safety and Health" (Ministry of Health, Labor and Welfare).
- Operation of the actuator over the torque limit value leads to damage of parts or injury. Please keep the torque limit settings of parameters within THK specifications.
- Although a stopper is installed inside the product, it is intended to limit the stroke and therefore may be damaged in case of a hard collision.

## ● Lubrication

- Thoroughly remove anti-rust oil and feed lubricant before using the product.
- In order to effectively use the actuator, lubrication is required. Insufficient lubrication may increase abrasion on the rolling part and shorten service life.
- Do not use a mix of lubricants with different physical properties.
- Please contact THK if using special lubricants.
- When adopting oil lubrication, contact THK for details.
- The greasing interval may vary depending on the usage conditions, so THK recommends determining a greasing interval during the initial inspection.

- Storage

- When storing the actuator, enclose it in a package designated by THK and store it in a horizontal orientation while avoiding high temperature, low temperature and high humidity.
- When storing control devices, avoid abnormally high or low temperatures and high humidity.

# **Compact Series KRF**

- The actual products may differ from the pictures and photographs in this catalog.
- Outward appearances and specifications are subject to change without notification for the purpose of improvement.
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