

HIWIN®

Linear Actuator

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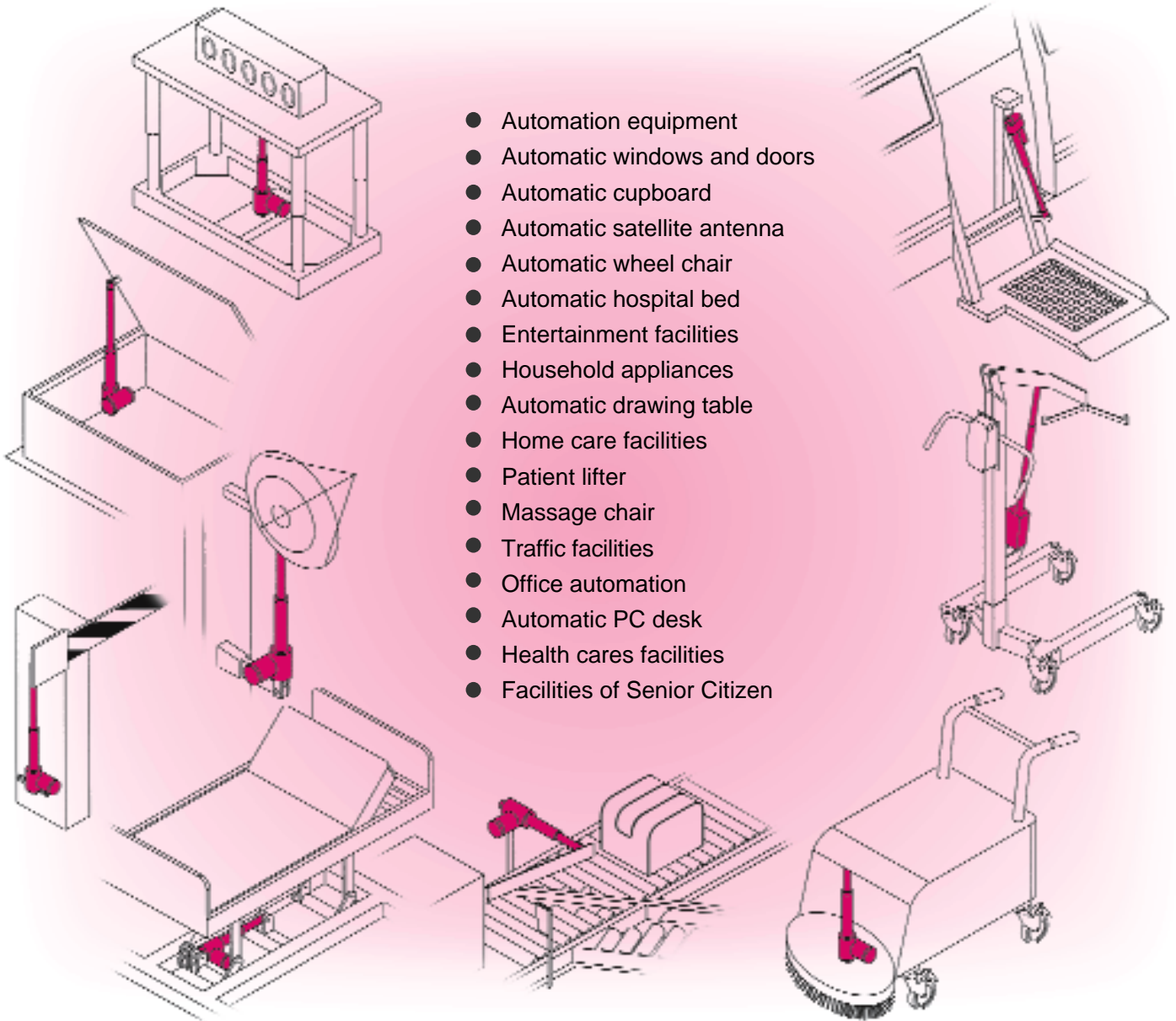
**The specifications in this catalogue are subject to change without notification.*

1. Features & Applications

1-1 Features of *HIWIN* Linear Actuator

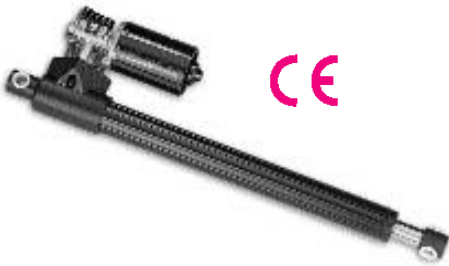
1. Light weight and compact structure.
2. User friendly.
3. Simple installation.
4. Low noise.
5. High rigidity.
6. Competitive price.

1-2 Applications



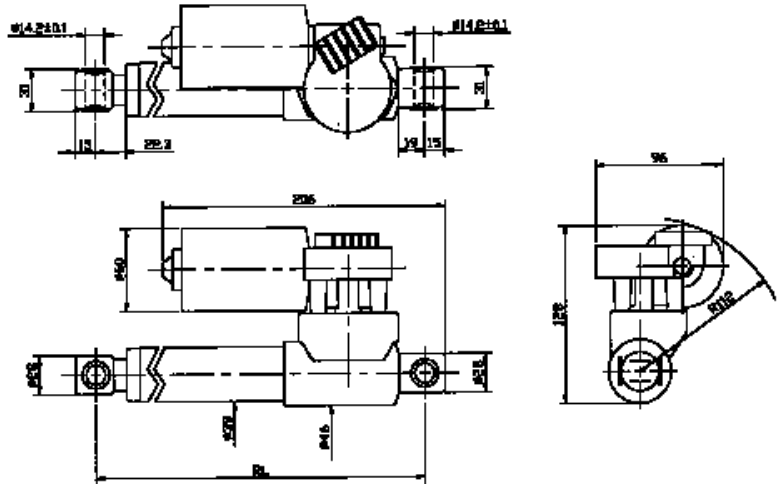
2. HIWIN LAI Series

LAI-1



Screw type	Ball screw
Weight*	2.4 kg
Protection	IP 20
Compatible controller**	LAK2 / LAK2L

* : Stroke length 100mm
** : For LAI-1 completed with external limit switches



● $RL = S + 170$

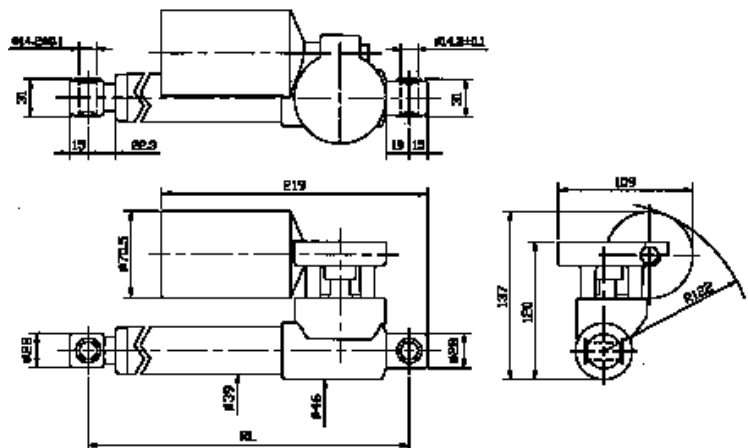
RL: Retracted length
S : Stroke length

LAI-2



Screw type	Ball screw
Weight*	3.4 kg
Protection	IP 54
Compatible controller**	LAK2 / LAK2L

* : Stroke length 100mm
** : For LAI-2 completed with external limit switches

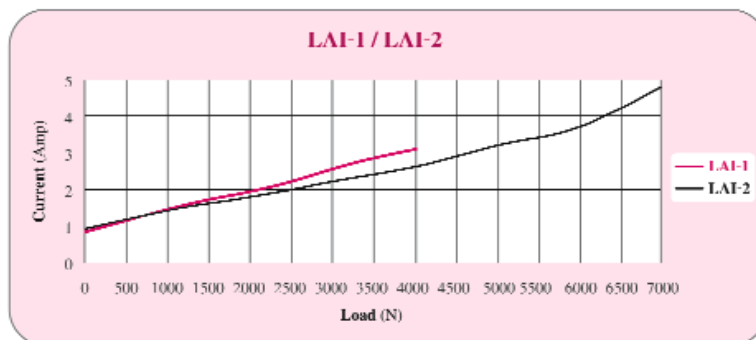
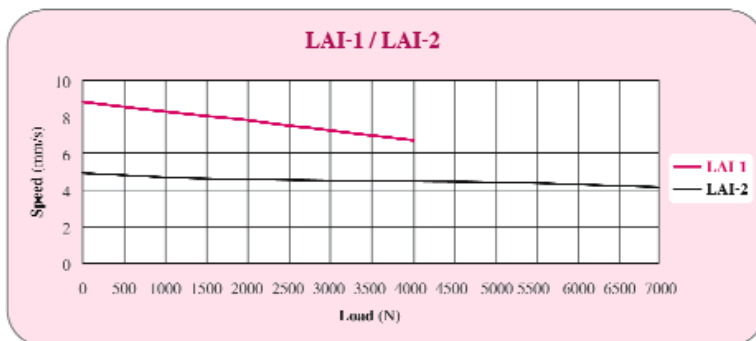


● $RL = S + 210$

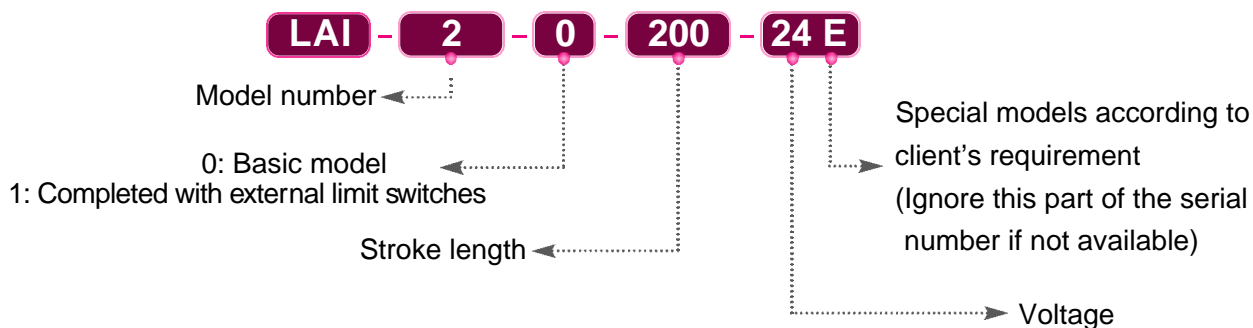
RL: Retracted length
S : Stroke length

LAI Specifications

Model	Thrust max. (N)	Pulling max. (N)	Holding force max. (N)	Speed (mm/s) Load=Max./Load=0	Standard stroke (mm) : S						Duty cycle %	Max.current (A) 24VDC
					100	150	200	250	300	350		
LAI-1	4000	4000	1600	6 / 8	100	150	200	250	300	350	10	4
LAI-2	7000	7000	7000	3.5 / 4.5	100	150	200	250	300	350	10	5



Ordering Information



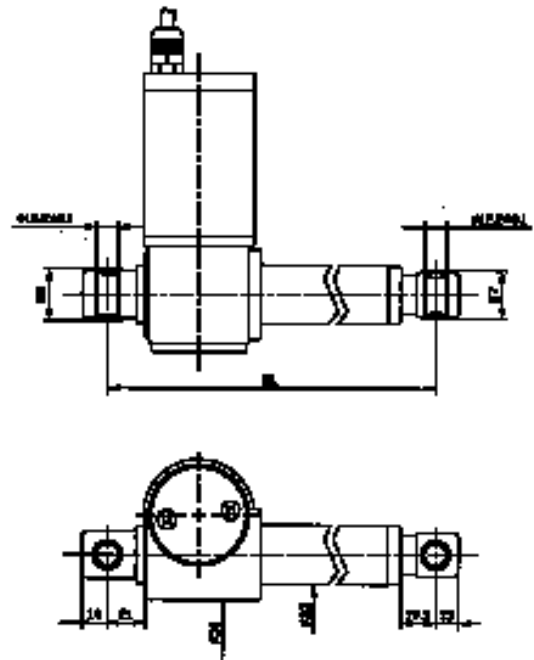
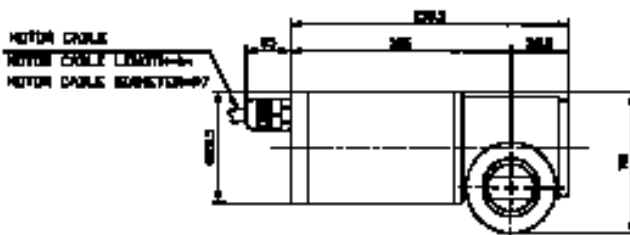
3. HIWIN LAM Series

LAM-1 / -2



Screw type	Ball screw
Weight*	2.2 kg
Protection	IP 54
Compatible controller**	LAK2 / LAK2L

* : Stroke length 100mm
** : For LAM completed with external limit switches

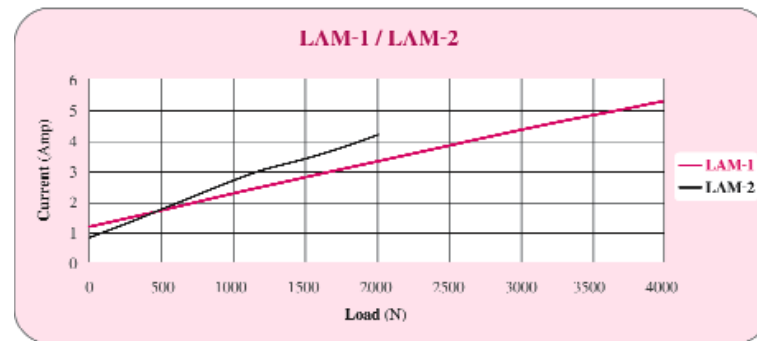
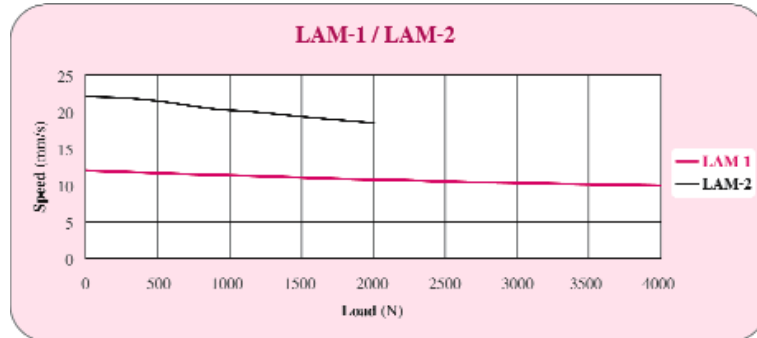


● **RL=S+153**

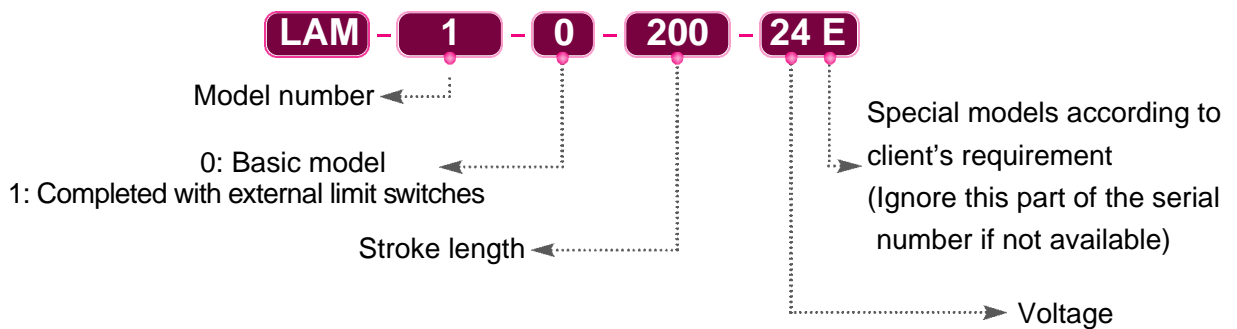
RL: Retracted length
S : Stroke length

LAM Specifications

Model	Thrust max. (N)	Pulling max. (N)	Holding force max. (N)	Speed (mm/s) Load=Max./Load=0	Standard stroke (mm) : S							Duty cycle %	Max.current (A)	
					100	150	200	250	300	350	400		12VDC	24VDC
LAM-1	4000	4000	4000	8 / 11	100	150	200	250	300	350	400	10	11	6
LAM-2	2000	2000	1400	16 / 21	100	150	200	250	300	350	400	10	11	6

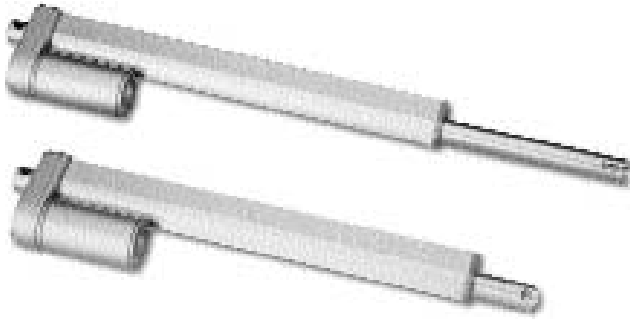


Ordering Information



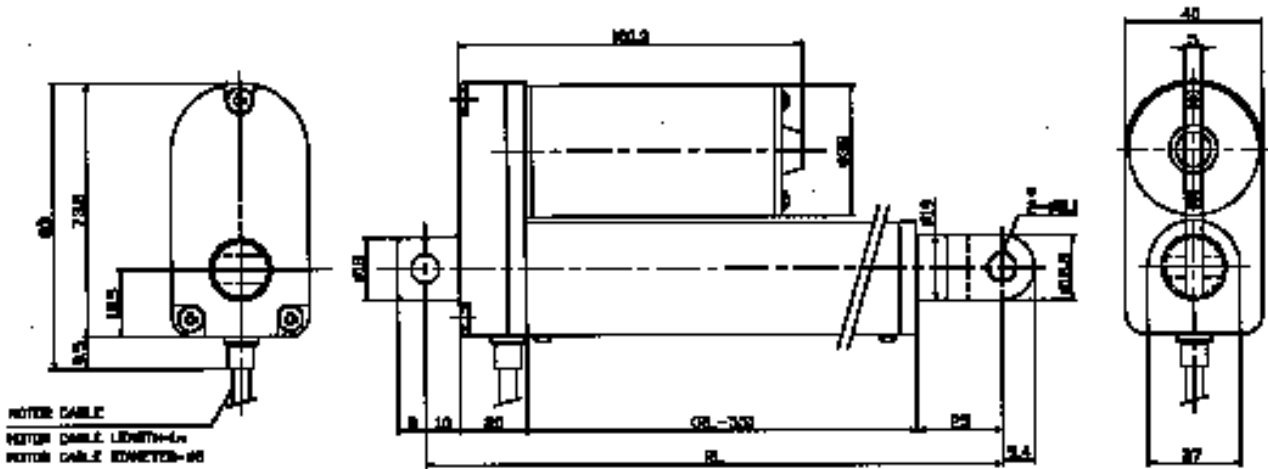
4. HIWIN LAS Series (1)

LAS-1 / -2



Screw type	ACME
Weight*	0.86 kg
Protection	IP 54
Compatible controller	LAK2

*: Stroke length 200mm



● $RL=S+119$

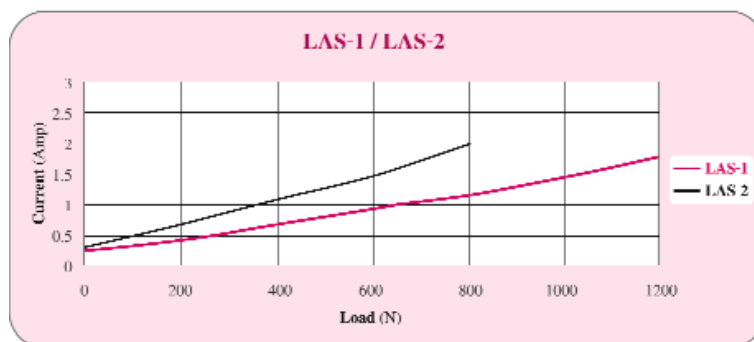
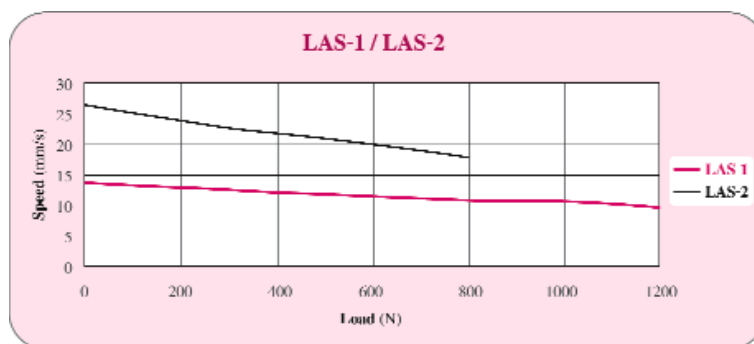
RL: Retracted length

S : Stroke length

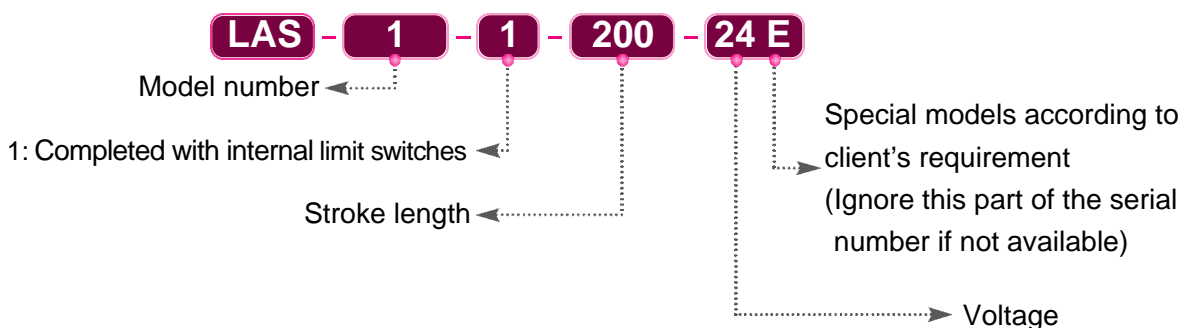
Note: Piston rod eye, marked with *, can be rotated 180° counterclockwise to adjust the orientation of the hole of the front end.

LAS Specifications (1)

Model	Thrust max. (N)	Pulling max. (N)	Holding force max. (N)	Speed (mm/s) Load=Max./Load=0	Standard stroke (mm) : S					Duty cycle %	Max.current (A)	
											12VDC	24VDC
LAS-1	1200	1200	800	8 / 12	50	100	150	200	250	10	5.5	2.3
LAS-2	800	800	400	16 / 25	50	100	150	200	250	10	6	3

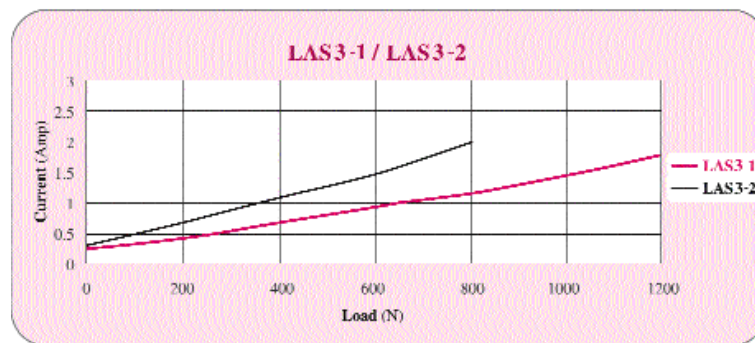
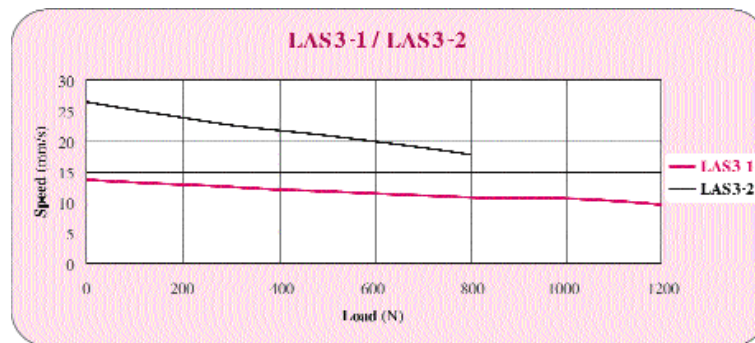


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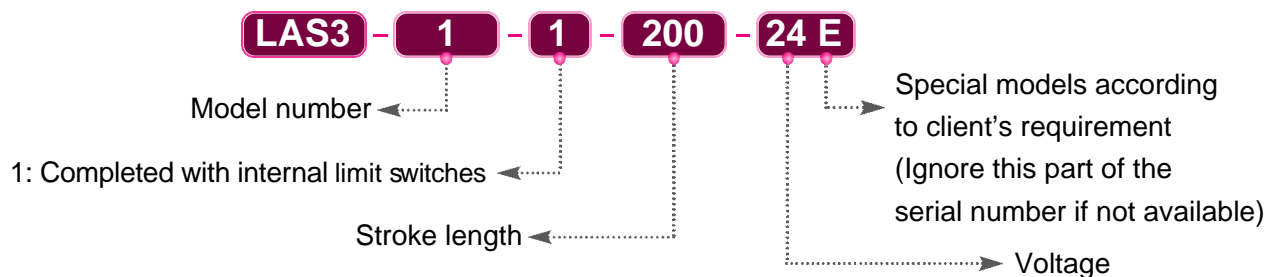


LAS Specifications (2)

Model	Thrust max. (N)	Pulling max. (N)	Holding force max. (N)	Speed (mm/s) Load=Max./Load=0	Standard stroke (mm) : S					Duty cycle %	Max.current (A)	
					50	100	150	200	250		12VDC	24VDC
LAS3-1	1200	1200	800	8 / 12	50	100	150	200	250	10	5.5	2.3
LAS3-2	800	800	400	16 / 25	50	100	150	200	250	10	6	3



Ordering Information



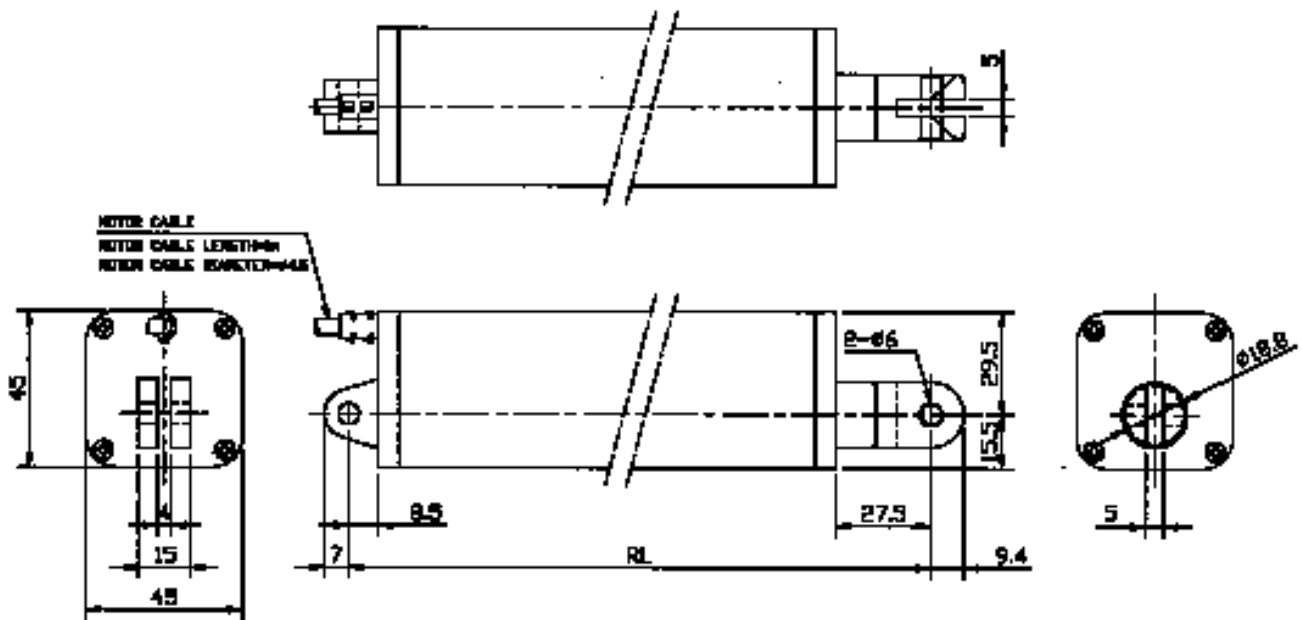
5. HIWIN LAF Series

LAF-1 / -2 / -3 / -4 / -5 / -6



Screw type	ACME
Weight*	0.8 kg
Protection	IP 54
Compatible controller	LAK2

*: Stroke length 200mm



● $RL = S + 203$ (LAF -1 / -2 / -3 / -5)

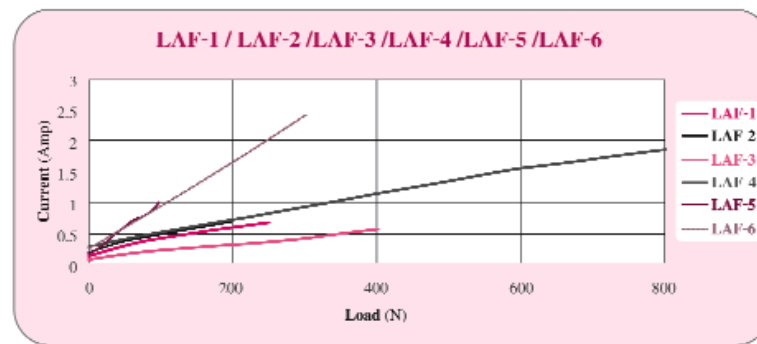
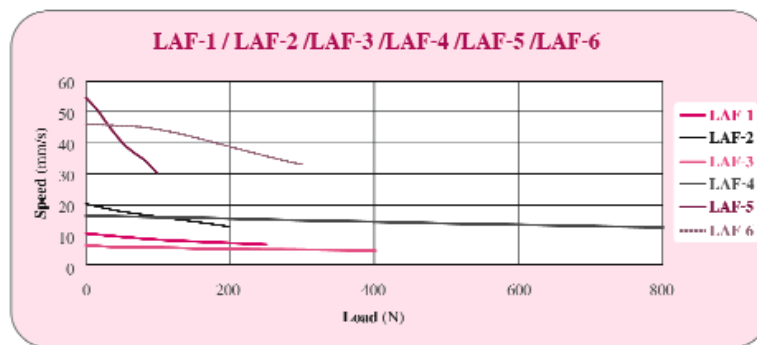
● $RL = S + 222.5$ (LAF -4 / -6)

RL: Retracted length

S : Stroke length

LAF Specifications

Model	Thrust max. (N)	Pulling max. (N)	Holding force max. (N)	Speed (mm/s) Load=Max./Load=0	Standard stroke (mm) : S					Duty cycle %	Max.current (A)	
					100	150	200	250	300		12VDC	24VDC
LAF-1	250	250	250	6 / 10	100	150	200	250	300	10	1.5	0.8
LAF-2	200	200	200	12 / 20	100	150	200	250	300	10	1.5	0.8
LAF-3	400	400	400	4 / 6	100	150	200	250	300	10	1.5	0.8
LAF-4	800	800	800	11 / 15	100	150	200	250	300	10	5	1.8
LAF-5	100	100	100	30 / 55	100	150	200	250	300	10	2	1
LAF-6	300	300	300	30 / 46	100	150	200	250	300	10	5	2.5



Ordering Information

LAF - 1 - 1 - 200 - 12 E

Model number

1: Completed with internal limit switches

Stroke length

Special models according to client's requirement
(Ignore this part of the serial number if not available)

Voltage

6. HIWIN LAH1 Series

LAH1-1 / -2 / -3

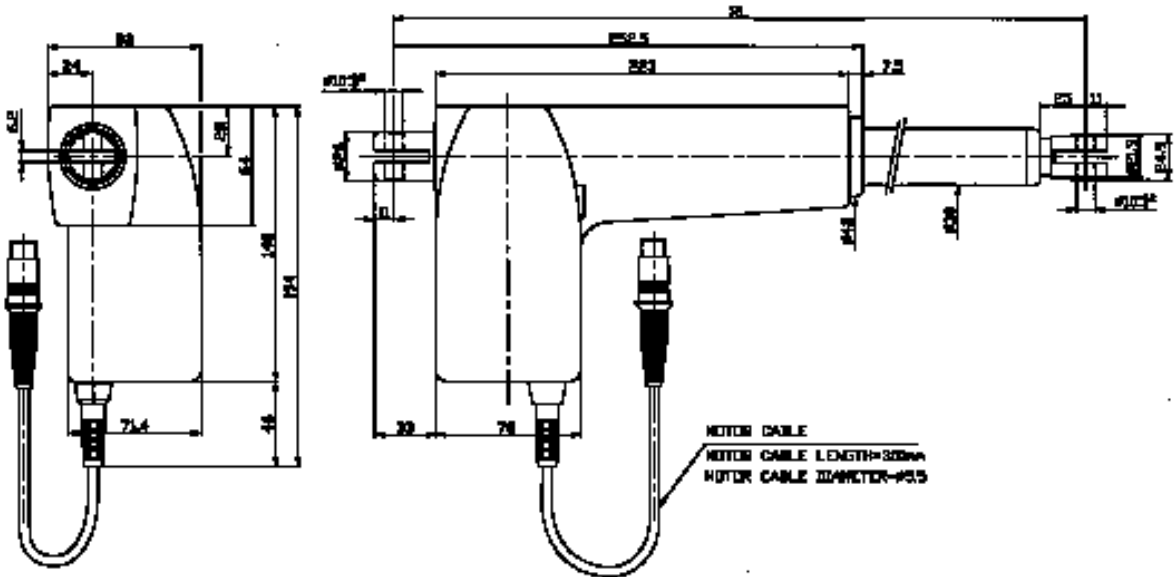


Screw type	ACME
Weight*	2.5 kg
Protection	IP 54
Compatible controller	LAK4

*: Stroke length 200 mm
*: Option : IP66, position feedback

Position feedback specifications (Hall Sensor)

Supply voltage	24VDC
Output	High level 22VDC Low level 0.2v/5mA sink
Resolution	0.3mm/pulse

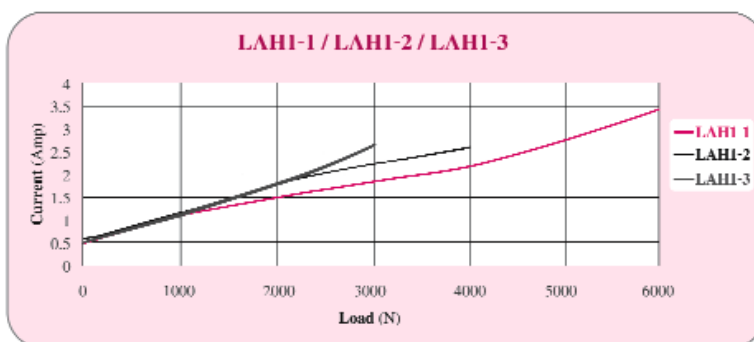
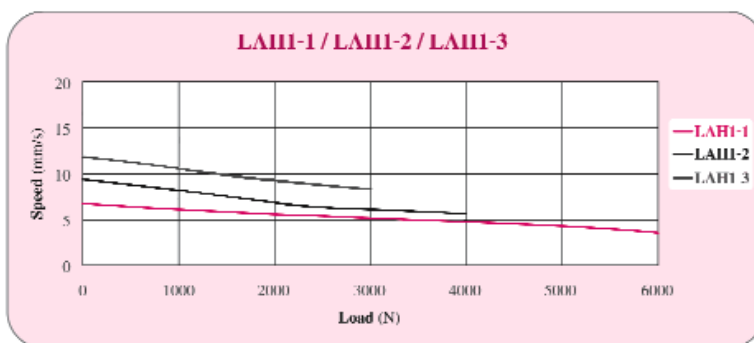


- **RL=S+173** (for stroke 150, 200, 250mm)
- **RL=S+188** (for stroke 100mm)

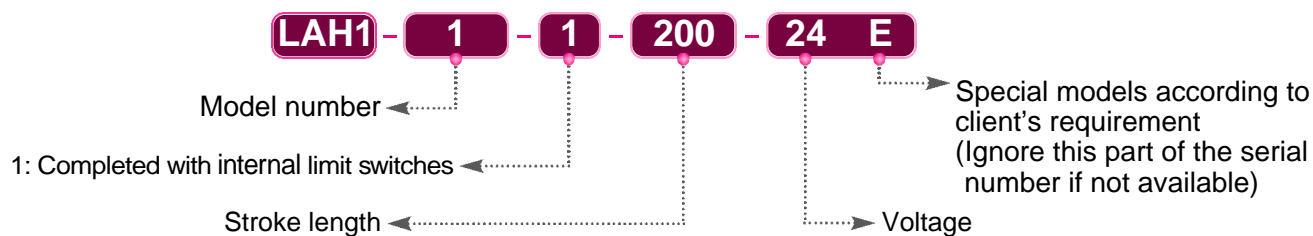
RL: Retracted length
S : Stroke length

LAH1 Specifications

Model	Thrust max. (N)	Pulling max. (N)	Holding force max. (N)	Speed (mm/s) Load=Max./Load=0	Standard stroke (mm) : S					Duty cycle %	Max.current (A) 24VDC
					100	150	200	250	300		
LAH1-1	6000	4000	4000	3 / 5	100	150	200	250	300	10	4
LAH1-2	4000	4000	3000	5 / 9	100	150	200	250	300	10	4
LAH1-3	3000	3000	1200	7 / 12	100	150	200	250	300	10	4

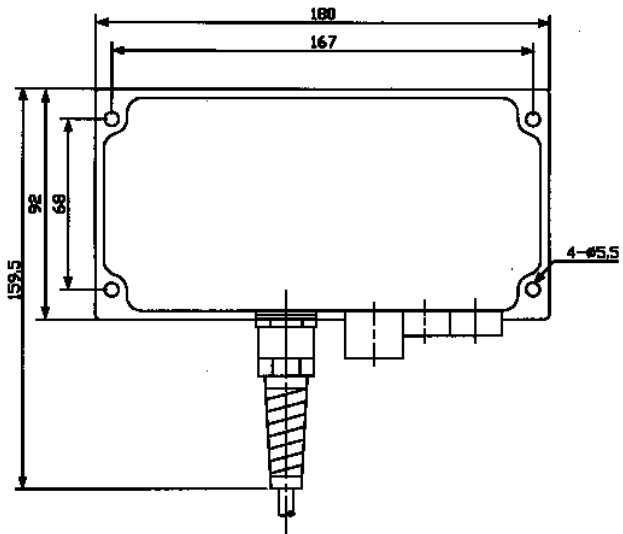


Ordering Information

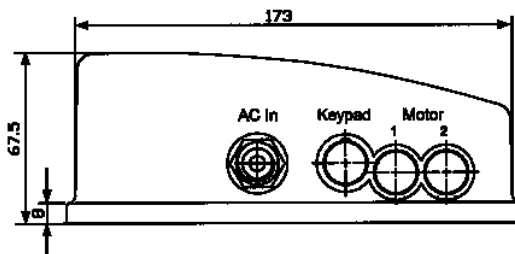


7. HIWIN 2-Axis Controller

LAK2 Type



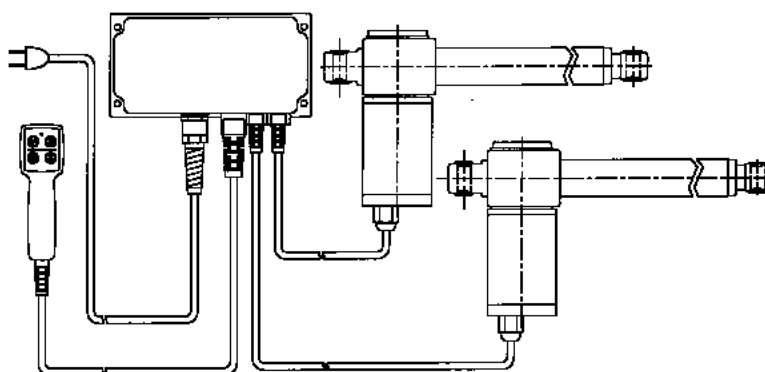
Input Voltage	AC 100/110/220/230V
Output power	76W (24VDC)
Duty cycle	10%
Working temp	-5°C ~ 50°C



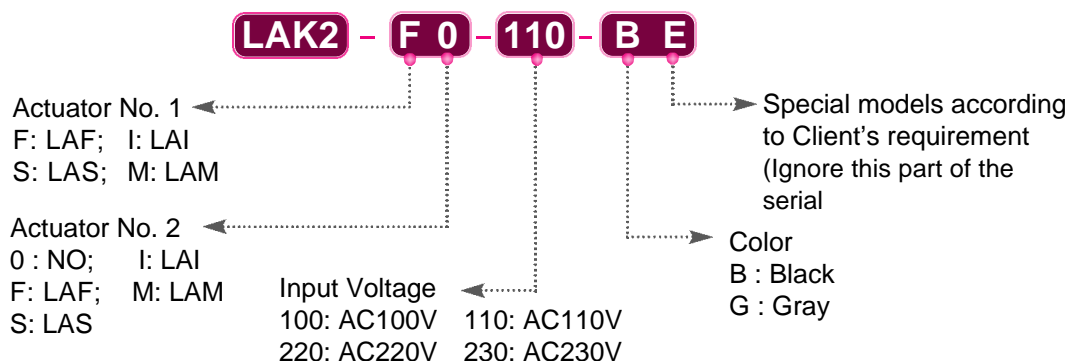
Features of LAK2

- Control 1 or 2 Linear Actuators
- Compact size
- Overcurrent protection
- Standard cable length: 3.3m

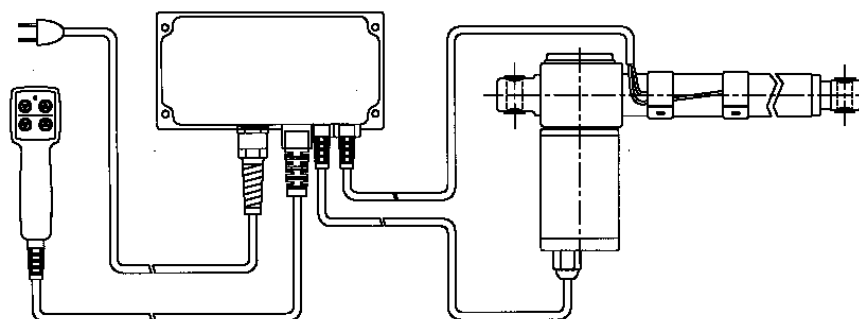
● For Series LAS, LAF, LAI and LAM ●



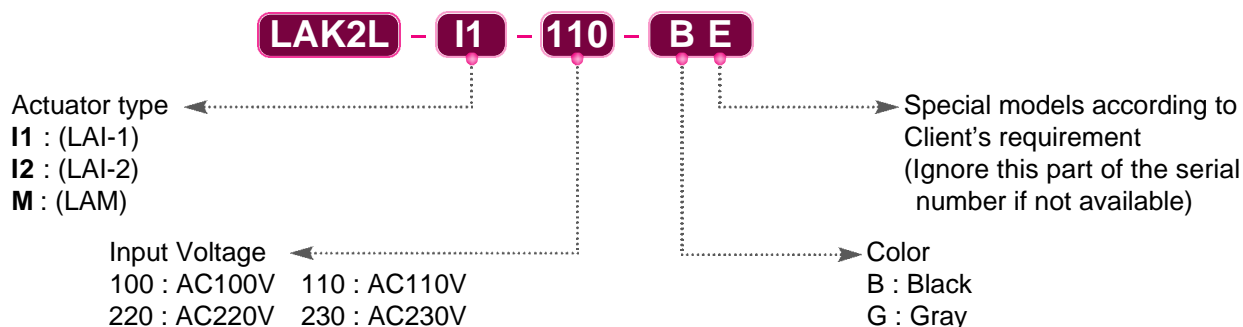
● Ordering Information



● For Series LAI, LAM completed with external limit switches ●



● Ordering Information



8. **HIWIN** 4-Axis Controller

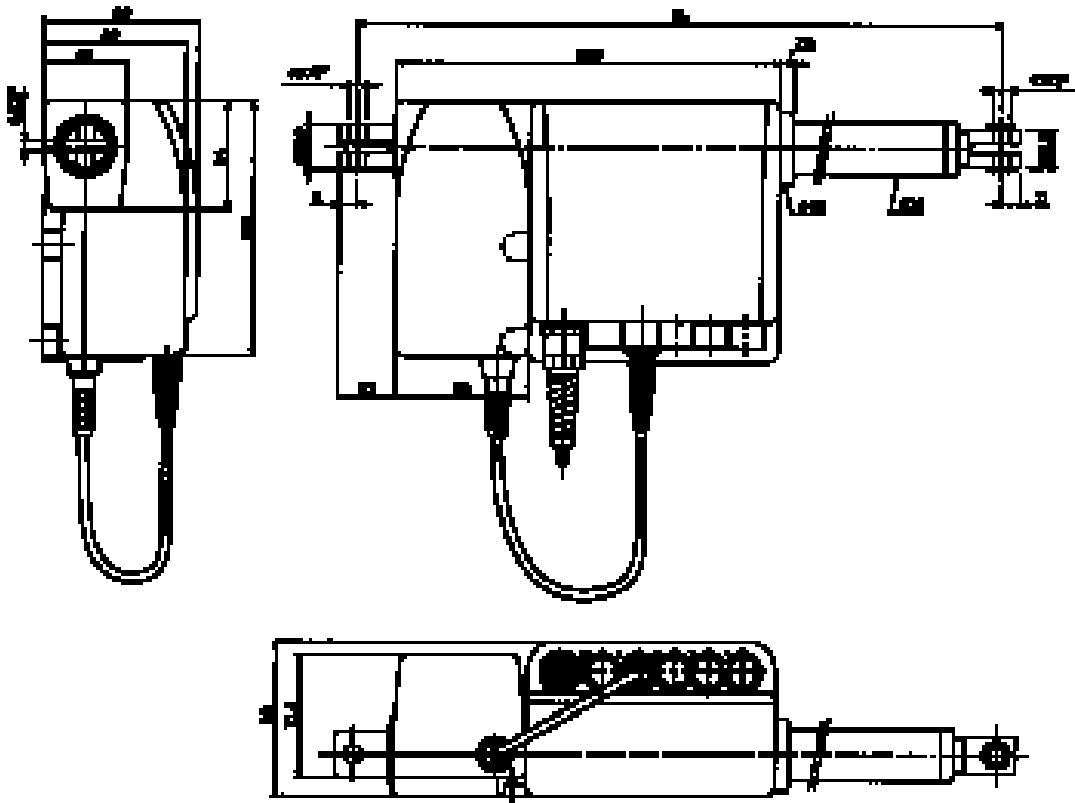
LAK4 Type



CE

Input Voltage	AC 100/110/220/230V
Output power	72.5W (24VDC)
Duty cycle	10%
Working temp	-5°C ~ 50°C

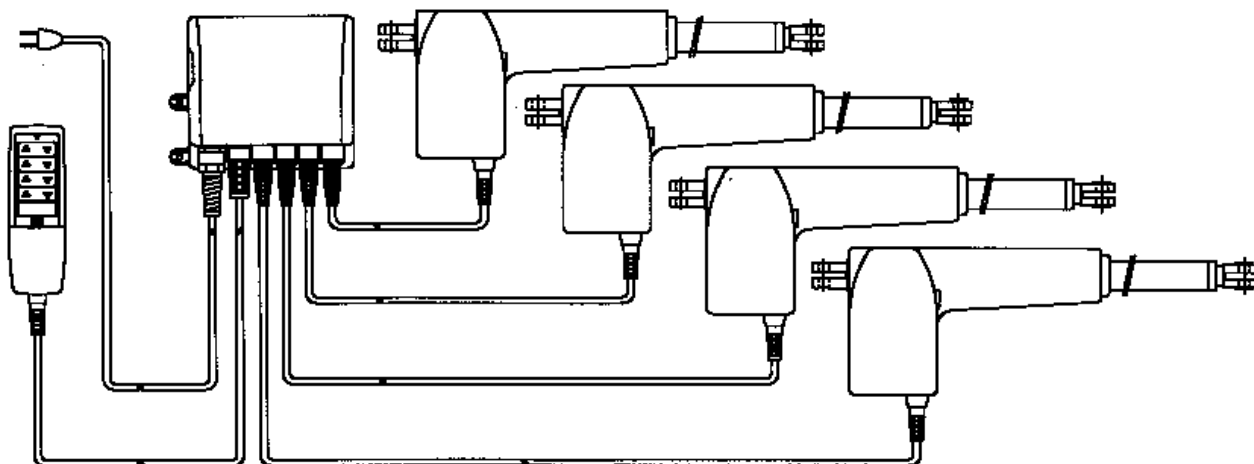
*: Option : IP66



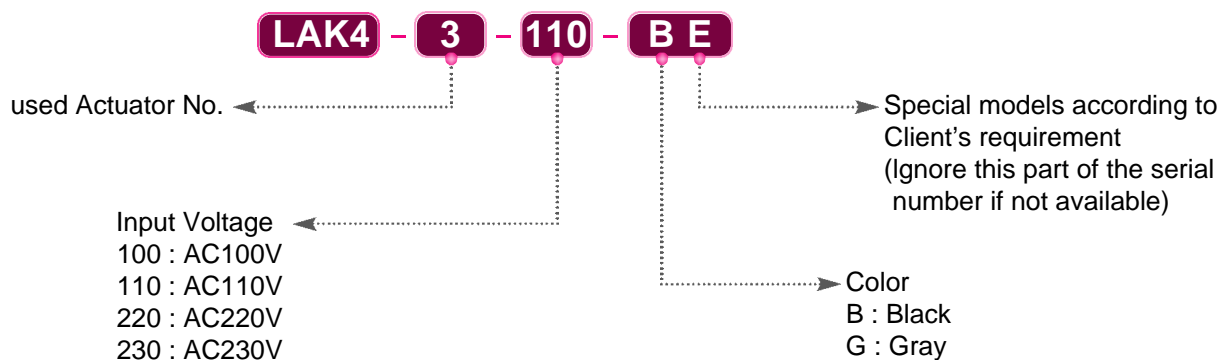
Features of LAK4

- Control 1 to 4 Linear Actuators
- Compatible with **HIWIN's** LAH1 Series
- Can be mounted directly on LAH1
- Standard cable length: 3.3m
- Color: Gray

For Series LAH1

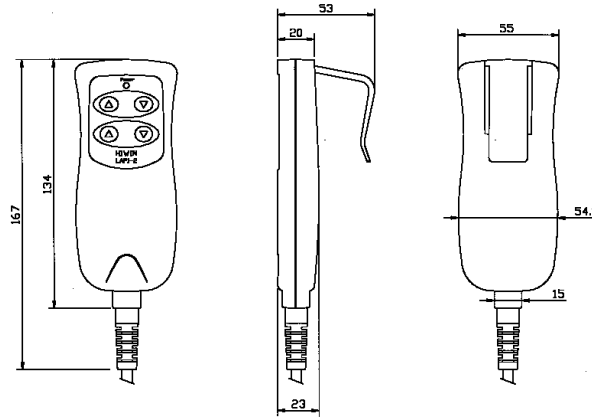


Ordering Information



9. HIWIN Keypad Series

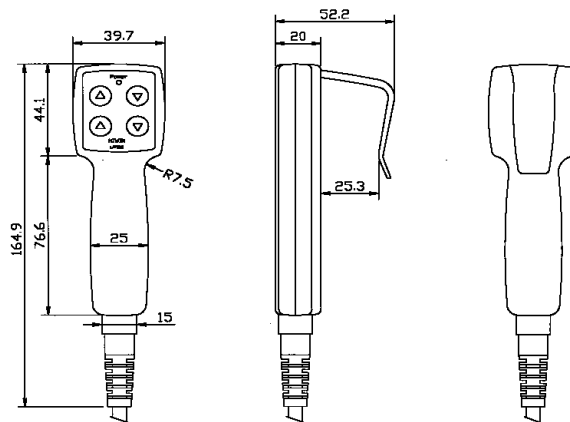
LAP1 Type



● Features

- Control of max. 2 Actuators
- Compatible with LAK2 and LAK4
- Ergonomic design
- Standard cable length: coil 600mm; total 1100mm
- Standard Color: Gray
- Protection: IP 66
- A mankind figure is optional

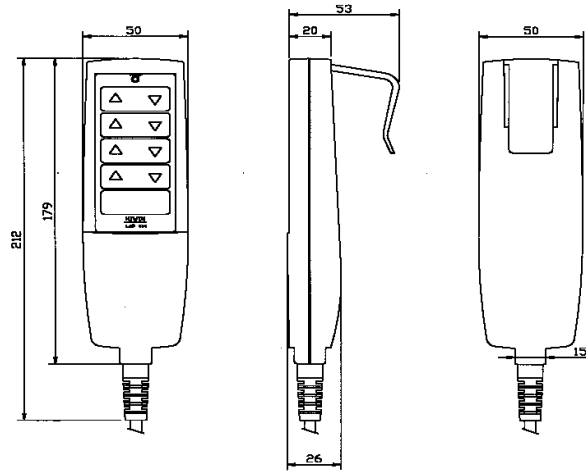
LAP2 Type



● Features

- Control of max. 2 Actuators
- Compatible with LAK2 and LAK4
- Ergonomic design and small size
- Standard cable length: coil 400mm; total 450mm
- Standard color: Black
- Protection: IP 66

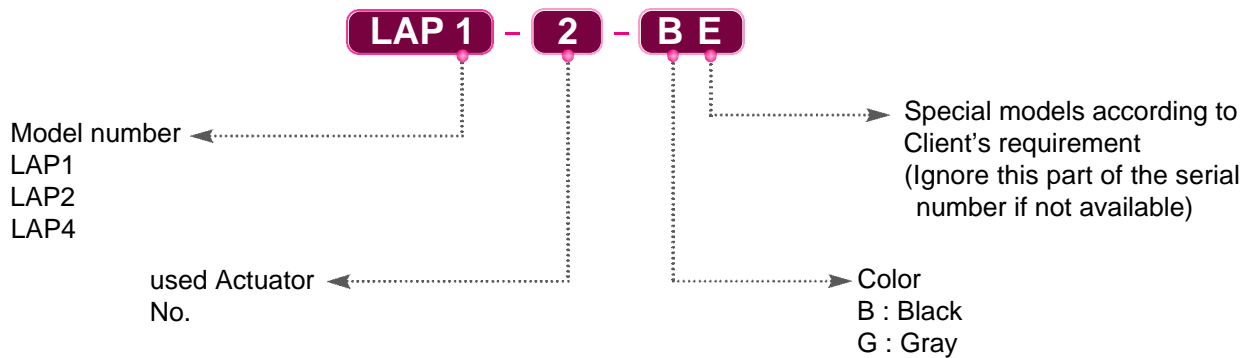
LAP4 Type



● Features

- Control of max. 4 Actuators
- Compatible with LAK4
- Ergonomic design
- Standard cable length: coil 600mm; total 2250mm
- Standard color: Gray
- Protection: IP 66
- A mankind figure is optional

● Ordering Information



10. Sizing of *HIWIN* Linear Actuator

Step 1: Determine the load and speed :

Consider the operating environment, compare the specifications of various types of Hiwin Linear Actuator and select the most appropriate model.

Step 2: Stroke and retracted length sizing :

Consider the dimension of operating area and select the most fit actuator.

Step 3: Duty cycle consideration :

Duty cycle should not exceed 10%. If the duty cycle is exceeded 10%, the life of actuator might be shortened. Users should ensure that no torsion or impact force is acting towards the linear actuator.

Step 4: Controller Sizing :

The selection of controller should be made according to the power requirement of actuator. Other considerations are such as number of axis, type of limit switches and the version of keypad.

11. Installation of *HIWIN* Linear Actuator

1. Please ensure that the extension tube is in the “lowest position”. The term “lowest position” refers to the position such that there is no further movement towards the DC motor while the actuator is powered on.
2. The front and end joints of the linear actuator should be mounted onto two fixed positions on the main chasis. Locations of these fixed positions should be chosen according to the stroke length of the linear actuator.
3. After the fixed positions had been selected, install the fixtures onto these selected positions of the main chasis. These fixtures are used to fix the front and end joints of linear actuator.
4. Assemble the front and end joints of the linear actuator onto the two fixtures using fixture bolts. Please ensure that the fixture bolts must be able to rotate freely after this step is completed. On the other hand, users should be caution that the fixture bolts would not drop off either during operating or resting period.
5. The chasis of linear actuator should be fixed in the horizontal direction if it is going to be operated in this direction and likewise for vertical operation. Damages would happen to the actuator if this clause is not complied.
6. The operation of linear actuator should be tested manually after the installation is completed. Users should be caution that:
 - The travel distance of actuator is matching the requirement of the structural designed.
 - The up and low limit switches are operated normally.
 - The motor should stop when the extension tube reaches up and low limit switches.

If the linear actuator is failed to comply the above, please repeat (2) to (4) until the above mentioned clauses are complied.

12. Safe Operating Regulation of **HIWIN** Linear Actuator

1. As stated in the previous section, the front joint of the actuator should be connected to linear-guided structure, the actuator will operate under no-load condition if nothing is attached to it.
2. Users should be aware of the mechanical interference within the working area to ensure that no damage will be caused to the motor and mechanical parts of actuator due to the poor working environment.
3. DC voltage supplied to the actuator should be corresponded to the specification of the employed DC motor. Under maximum load circumstance, the power supply should be able to support the actuator.
4. For users applying commonly used commercial power supplies to drive **HIWIN** actuator, they should be aware of the maximum current generated from these power supplies. This is to protect the wiring of actuator against large current driven by DC motor under some extraordinary situations. Output from the power supply should be connected to a fuse or current detection device before terminated onto the actuator. Feedback from this particular detector should be used to control and protect the actuator so that the actuator will be automatically shut off if malfunction occurred.
5. Users should also prepare overload detection devices for the utilized of these commercial power supplies. This is to ensure that all activities will be terminated if the extension tube of actuator approaching limit positions or overload is detected by the overload sensor. Feedback signals from detector should be applied to control and protect the actuator.
6. Duty cycle of **HIWIN** actuator is set at 10%, which means that the actuator works for 6 minutes and idles for 54 minutes per hour. For users applying **HIWIN** actuators under duty cycle exceeding 10%, please install overheat detection or protection devices (e.g. fans etc.). Feedback signals from these thermal protection components should be utilized to control and protect the actuator so that in case of over-heating, the actuator will be shut down automatically.
7. For users who purchased **HIWIN** actuator, which is not completed with limit switches, please install appropriate limit switches onto it to ensure that the extension tube will work within the stroke length. These limit switches should compatible with those installed detector and power supply for safety purposes.
8. The actuator utilized DC motor to drive load, movement of the extension tube will be reversed by altering the DC input. After the actuator terminated, please use an appropriate controller and power supply to short both DC input outlet in order to produce an auxiliary braking to the actuator. Please make sure that power supply of the actuator is switched off before generating the braking function.
9. The actuator should operate within its stroke length if it is not completed with limit switches or overload protection.
10. The actuator should operate within the specified load.
11. For users purchasing non-waterproof actuator, please ensure that the operating environment is complied with the IP Code.
12. Extension tube of the actuator should be connected to a linear-guided structure as mentioned in "Installation of **HIWIN** Linear Actuator". The actuator will operate under no-load condition if nothing is attached onto it.
13. This linear actuator is inappropriate for operation required high precision, speed controlled.

HIWIN Customer's Requirements (LA)

Date:

Customer:		Contact person :
		Tel :
		Fax :
Voltage VDC		Notes:
No-Load current		
Max. current		
Max. thrust force		
Max. pulling force		
Max. holding force		
Stroke		
Install length		
Speed (mm/s)		
Load (N)		
Duty cycle 10%		
Operation temp		
IP Codes		
Outdoor use	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Direction	<input type="checkbox"/> H <input type="checkbox"/> V	
Axial load	<input type="checkbox"/> Yes <input type="checkbox"/> No	
With L/S	<input type="checkbox"/> Yes <input type="checkbox"/> No	
With control	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Over current	<input type="checkbox"/> Yes <input type="checkbox"/> No	
With customer's L/S		
Position capability		
Special design		
Expected price		
PCS.		
Recommended specification:		
HIWIN engineer:		