

HIWIN[®]

Motion Control & Systems



Linear Actuators

Linear Actuators

Linear Actuators

HIWIN linear actuators are not only employed in the fields of rehabilitation and home care but also in industrial technology. They are characterized by a light and compact design, high rigidity, user-friendly handling, easy installation and low operating noise.

An inserted gear convey the rotary motion of the engine to a buttress or a ballscrew. This one converts the rotary motion into linear motion. In addition to our standard versions HIWIN linear actuators can also be designed according to the individual wishes of our customers.

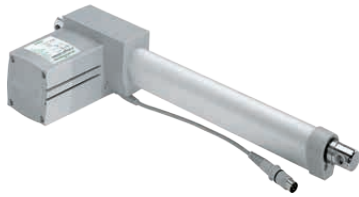
Contents

1	Product overview	7
2	General information	8
2.1	Selection of HIWIN linear actuators	8
2.2	Installation of the HIWIN linear actuators	8
2.3	Safe operation of HIWIN linear actuators	8
2.4	Features and applications	9
3	HIWIN linear actuators LAM	10
3.1	LAM1	10
3.2	LAM2	12
3.3	LAM3	14
4	HIWIN linear actuators LAS	16
4.1	LAS1	16
4.2	LAS2	18
4.3	LAS3	20
4.4	LAS4	22
5	HIWIN linear actuators LAN	24
5.1	LAN1	24
5.2	LAN3	28
5.3	LAN4	31
5.4	LAN5	33
6	HIWIN linear actuators LAC	37
6.1	LAC1	37
7	Standard options for each linear actuator type	40

Linear Actuators

Product overview

1. Product overview



HIWIN linear actuators LAM

[Page 10](#)

- Thrust up to 6,000 N
- Worm gears for very quiet running
- Optional with protection class IP 65/66



HIWIN linear actuators LAS

[Page 16](#)

- Thrust up to 1,800 N
- Compact design thanks to spur or planetary gears
- Optional with positioning measurement system



HIWIN linear actuators LAN

[Page 24](#)

- Thrust up to 10,000 N
- Worm gears for very quiet running
- Optional with positioning measurement system



HIWIN linear actuators LAC

[Page 37](#)

- Thrust up to 2,000 N
- Lifting column with integrated guiding
- Max torque loading capacity 500 Nm

Linear Actuators

General information

2. General information

2.1 Selection of HIWIN linear actuators

Step 1: Calculating load and speed

The model selected from the various HIWIN linear actuators depends on the operating environment, the load levels, and the required speed.

Step 2: Required stroke and zero stroke length

The required stroke depends on the application. The zero stroke length (R_L) is the minimum length of a linear actuator with fully retracted piston rod. Accordingly, the maximum length with fully extended piston rod is the zero stroke length plus the selected stroke.

Step 3: Effects on the duty cycle

Linear actuators are designed for a maximum duty cycle of 10 %. A longer duty cycle leads to excessive wear. Bending and impact loads must be avoided.

2.2 Installation of the HIWIN linear actuators

- Linear actuators are delivered with their piston rod fully retracted (0 stroke). If this should prevent installation, the linear actuator may be powered to the required stroke position. If an auxiliary voltage is applied for this purpose, make sure that linear actuators without internal limit switches are protected against surge currents on reaching their end position.
- The linear actuators must be secured with bolts whose axes are parallel to each other. The linear actuator must be able to swivel about its mounting bolts. The mounting bolts must prevent twisting about the linear actuators' longitudinal axis, i.e. they must function as an antitwist lock.
- LAM, LAS, and LAN series linear actuators are not suitable for absorbing bending moments or lateral forces.
- The linear actuators' swivelling motions must be taken into account when the power lines are routed.
- Linear actuators without integrated limit switches must be connected to external limit switches or excess current monitors that switch OFF the power.
- Check that the linear actuator functions properly after installation.

Users should consider the following:

- The stroke selected for the linear actuator must be adequate for the application.
- The limit switches must be actuated reliably at the end of the stroke.
- At their end positions, linear actuators without integrated limit switches draw excess current that can soon damage the motors.

2.3 Safe operation of HIWIN linear actuators

- The structure the linear actuators are intended to move must also serve as their guide. Unguided loads may generate bending moments that exceed the design specifications of LAM, LAS, and LAN series linear actuators.
- The linear actuator's enclosing structure may not project into its area of movement.
- The voltage supplied across the linear actuator must agree with its specifications. The electric power must be adequate for the linear actuator at its peak load.
- The current draw rises rapidly when the linear actuator is overloaded or blocked. This will damage the motor. A fuse or current limiter must be provided if excess current is not to damage the linear actuator. The current monitor must safeguard the linear actuator's automatic deactivation in the event of a malfunction.
- The maximum duty cycle of HIWIN linear actuators is 10 %. There may be two minutes of full load operation within a twenty minute period. If longer duty cycles are required, a temperature monitor must be provided. If necessary, there must be forced cooling.
- If not fitted with their own, linear actuators must be protected with suitable limit switches. Limit switches restricting the stroke can be fitted separately to the moving structure or the linear actuator.
- Linear actuators without integrated limit switches or overload protection may be operated only within the specified nominal stroke.
- Linear actuators are powered from a DC supply. The DC motor's polarity must be reversed for reversed movements. Additional braking effects can be obtained when a suitable switch is fitted to short circuit the motor. This braking effect is not generated when the equipment is stationary.
- The linear actuators must be operated within the specified load limits. Linear actuators have been approved for a range of IP codes. Make sure that the IP code corresponds to the ambient conditions.
- Depending on the linear actuator type, the piston rod may require an antitwist lock. If not locked against twisting, the piston rod may rotate in sympathy without executing a stroke.
- Linear actuators are not suitable for applications requiring high accuracies and defined speeds.
- A number of linear actuators may be fitted with a loose coupling. The units then generate thrust forces only. Under tractive forces, the piston rod slides out of the linear actuator to its stop. This option helps to prevent damage or injury from suddenly dropping structures.

2.4 Features and applications

2.4.1 Features of the linear actuators

- Compact and light design
- User-friendly
- Easy to assemble
- Low noise motors
- Stable structure
- Optimal value for money

2.4.2 Applications

- Automation equipment
- Door and window drives
- Movable furniture
- Aerial tracking
- Wheel chairs
- Hospital beds
- Entertainment equipment
- Household equipment
- Adjustable office furniture
- Home care furniture and appliances
- Patient lift
- Treatment tables
- Visitor flow control
- Ventilation flaps
- Sun protection
- Rehabilitation equipment
- Motor home equipment

Linear Actuators

HIWIN linear actuators LAM

3. HIWIN linear actuators LAM

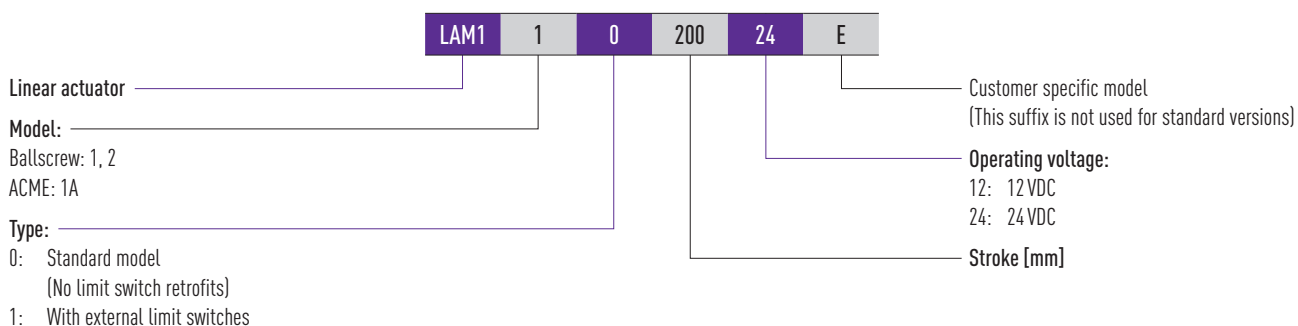
3.1 LAM1

Product specifications:

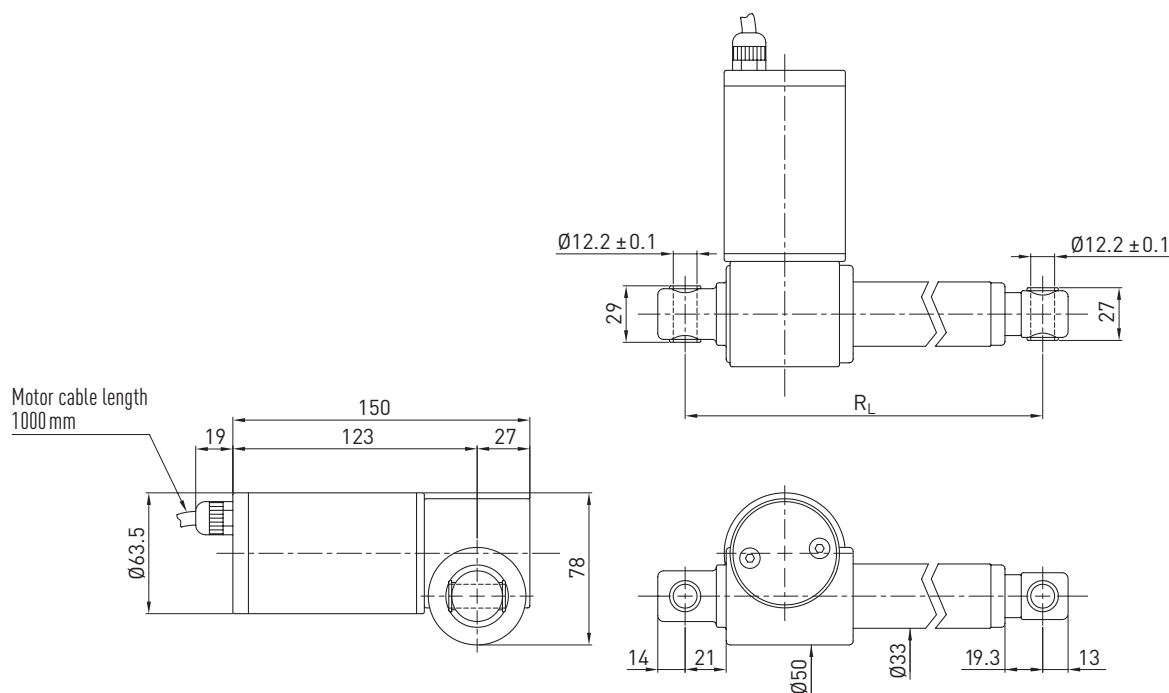
- Screw type: Ballscrew/ACME
- Weight (at a stroke of 100 mm): 2.31 kg
- Protection class: IP 54
- Operating temperature: +5 °C to +40 °C



3.1.1 Order code



3.1.2 Dimensions



LAM1-1/-2:

$$R_L = S + 153$$

LAM1-1A:

$$R_L = S + 162$$

R_L : Zero stroke length [mm]

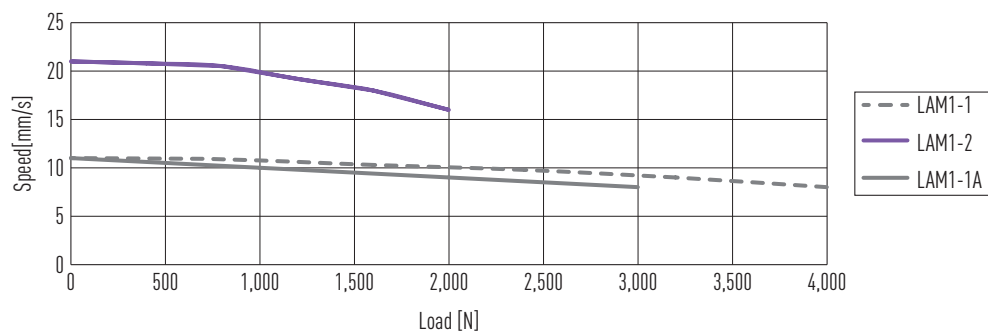
S: Stroke [mm]

3.1.3 Options for LAM1

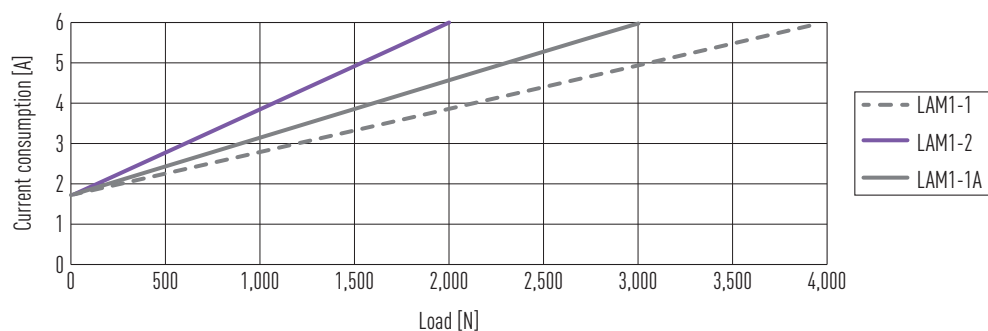
- Protection class IP 65
- Gear housing of S45C instead of aluminium (standard)
- Mounting points turned through 90°
- 36 VDC motor
- UL version (24 VDC)

3.1.4 Product characteristic curves and technical data

24/12 VDC motor



24 VDC motor



12 VDC motor

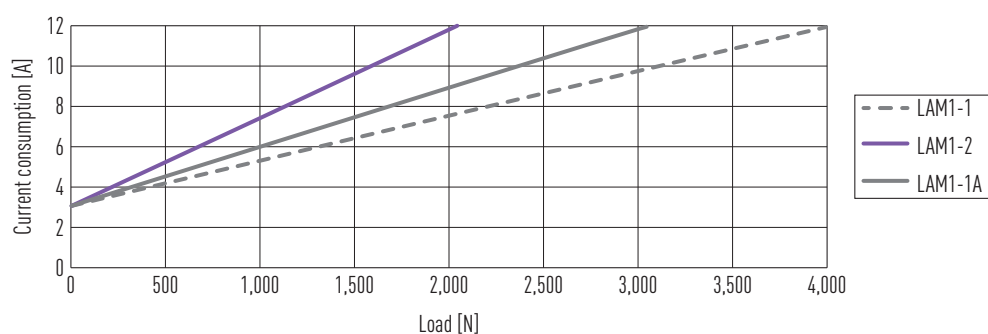


Table 3.1 Technical data LAM1

Model	Screw type	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]							Duty cycle [%]	Max. current [A]	
						100	150	200	250	300	350	400		12 VDC	24 VDC
LAM1-1	Ball screw	4,000	3,000	4,000	8/11	100	150	200	250	300	350	400	10	12	6
LAM1-2	Ball screw	2,000	2,000	1,200	16/21	100	150	200	250	300	350	400	10	12	6
LAM1-1A	ACME	3,000	3,000	3,000	8/11	100	150	200	250	300	350	400	10	12	6

Linear Actuators

HIWIN linear actuators LAM

3.2 LAM2

Product specifications:

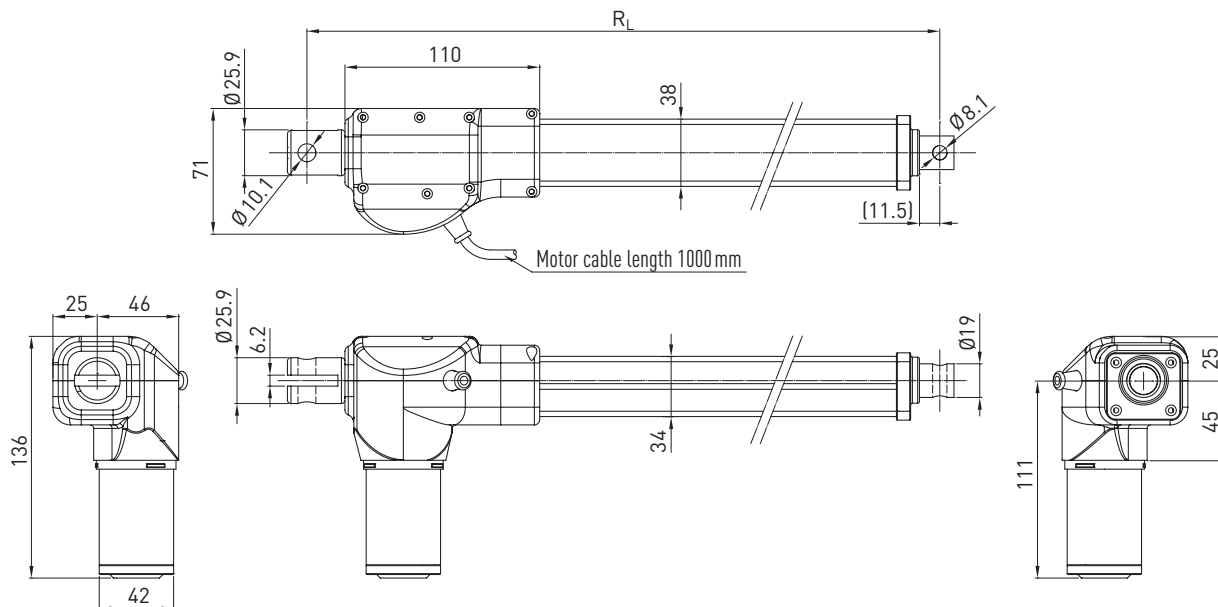
- Screw type: ACME
- Weight (at a stroke of 200 mm): 1.9 kg
- Protection class: IP 54
- Operating temperature: + 5 °C to + 40 °C



3.2.1 Order code

	LAM2	1	1	200	24	G	E	
Linear actuator								Customer specific model (This suffix is not used for standard versions)
Model								
Type:								Colour: B: Black G: Grey
1: Standard model with internal limit switches								Operating voltage: 12: 12 VDC 24: 24 VDC
Stroke [mm]								

3.2.2 Dimensions



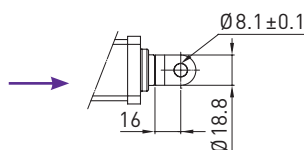
$$R_L = S + 157$$

R_L : Zero stroke length [mm]

S : Stroke [mm]

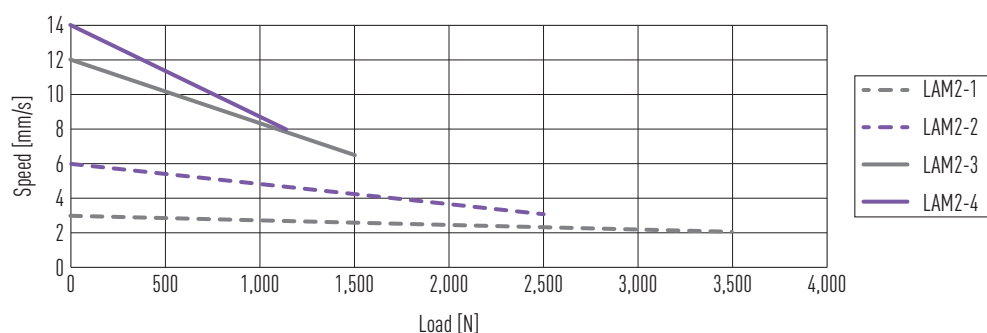
3.2.3 Options for LAM2

- Protection class IP 66
- External limit switches
- Mechanical spline
- Back fixture turned 90°
- Piston rod with flat connector: $R_L = S + 166$
- UL version

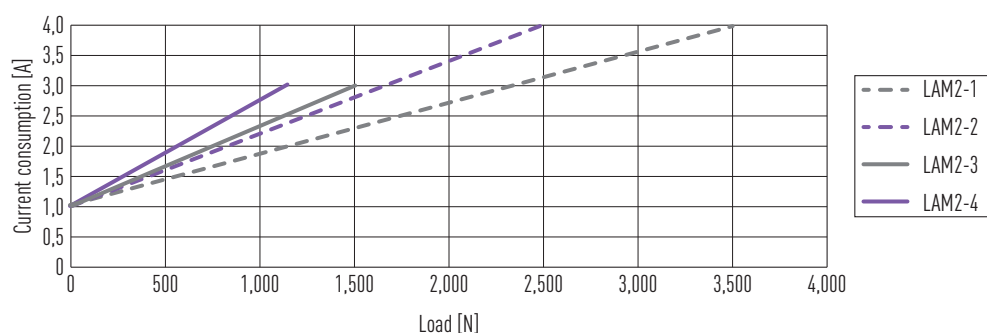


3.2.4 Product characteristic curves and technical data

24/12 VDC motor



24 VDC motor



12 VDC motor

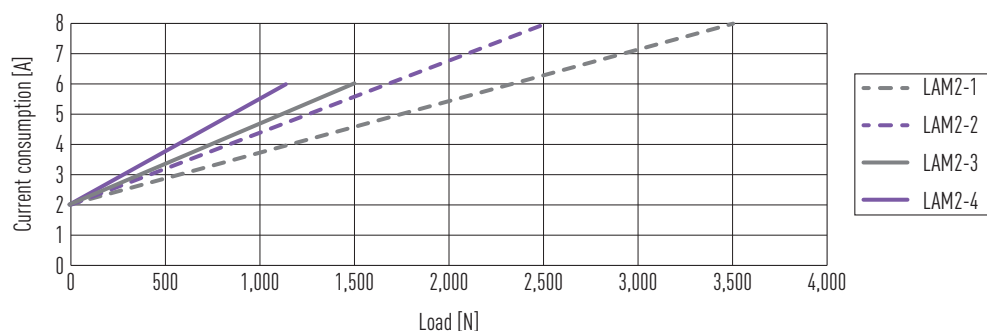


Table 3.2 Technical data LAM2

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]					Duty cycle [%]	Max. current [A]	
											12 VDC	24 VDC
LAM2-1	3,500	3,500	3,000	2/3.5	100	150	200	250	300	10	8	4
LAM2-2	2,500	2,500	2,000	3/6	100	150	200	250	300	10	8	4
LAM2-3	1,500	1,500	1,500	6.5/12	100	150	200	250	300	10	6	3
LAM2-4	1,200	1,200	800	8/14	100	150	200	250	300	10	6	3

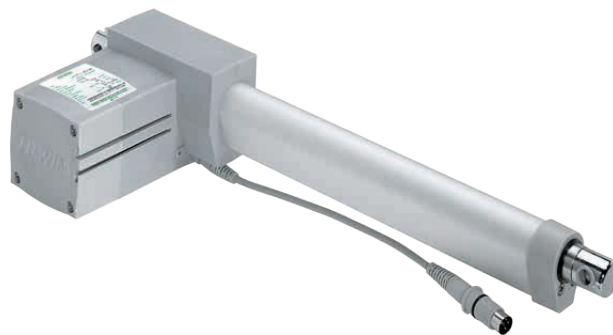
Linear Actuators

HIWIN linear actuators LAM

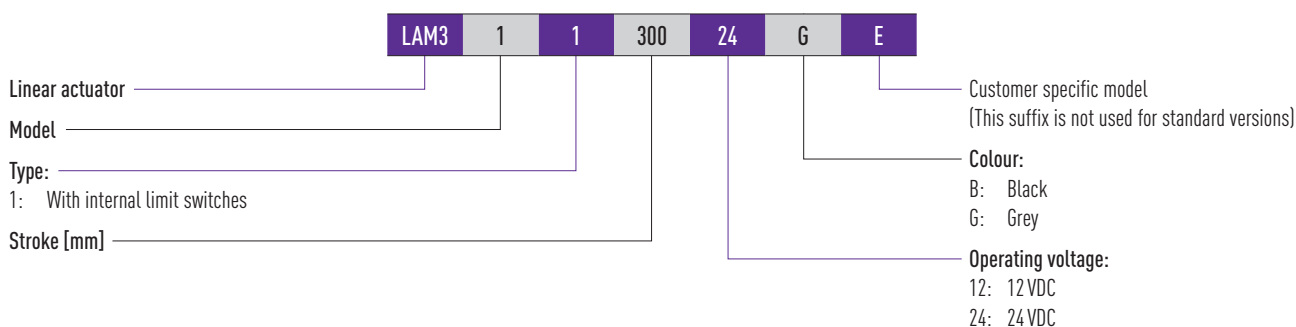
3.3 LAM3

Product specifications:

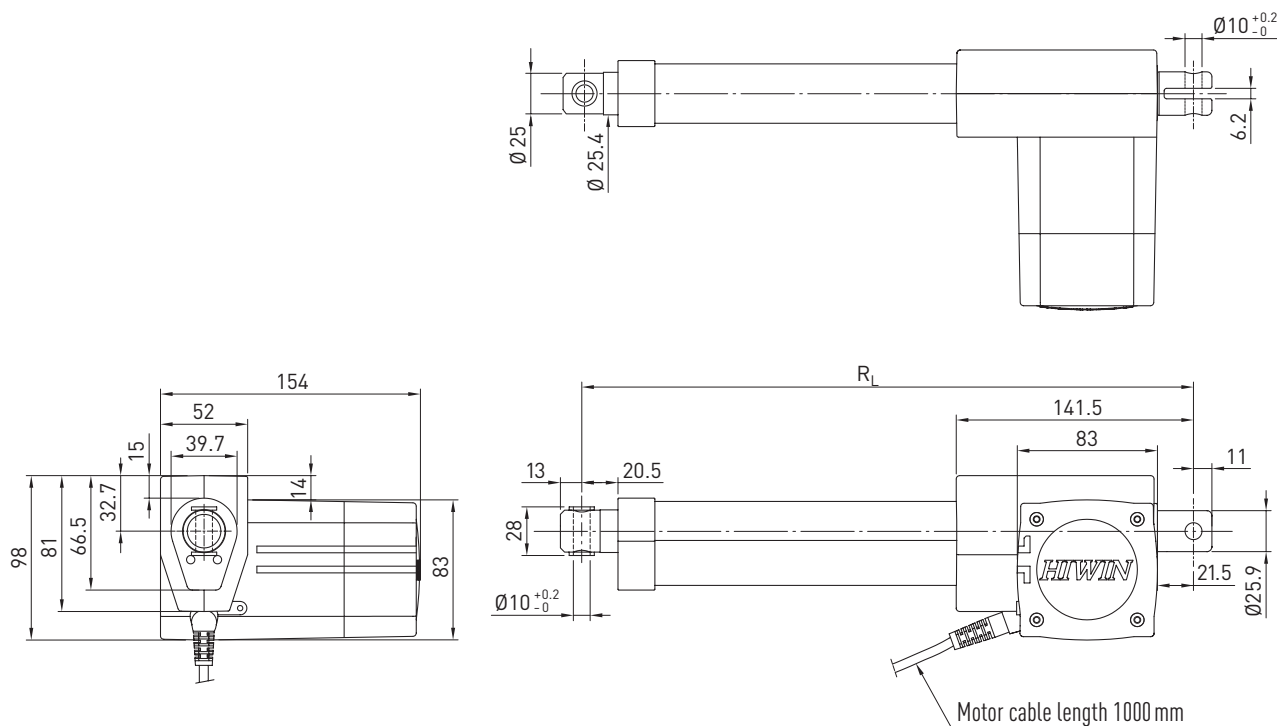
- Screw type: ACME
- Weight (at a stroke of 200 mm): 2.95 kg
- Protection class: IP 54
- Operating temperature: + 5 °C to + 40 °C



3.3.1 Order code



3.3.2 Dimensions



$R_L = S + 171$ for stroke ≤ 300 mm; $R_L = S + 221$ for stroke > 300 mm

R_L : Zero stroke length

S: Stroke

Note:

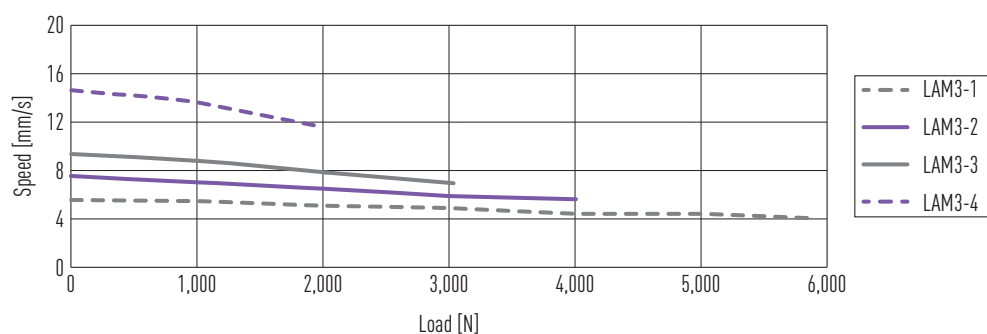
If the mounting lugs do not lie precisely flush, the piston rod may twist as far as 180° anticlockwise.

3.3.3 Options for LAM3

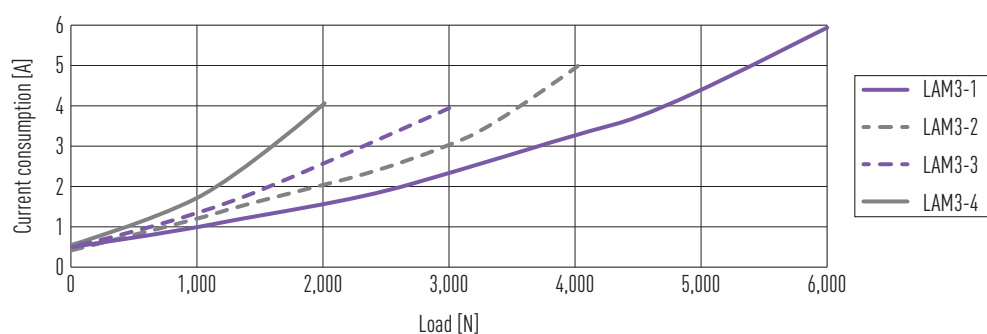
- IP 66
- Safety nut:
 $R_L = S + 183$ for stroke ≤ 300 mm; $R_L = S + 233$ for stroke > 300 mm
- Back fixture turned 90°

3.3.4 Product characteristic curves and technical data

24/12 VDC motor



24 VDC motor



12 VDC motor

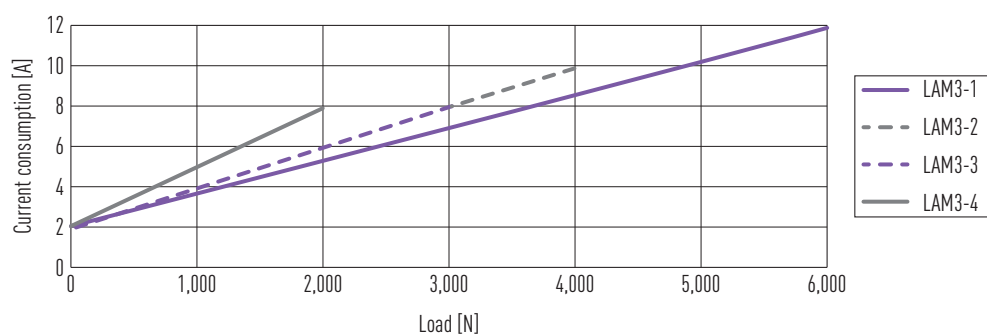


Table 3.3 Technical data LAM3

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]							Duty cycle [%]	Max. current [A]	
					100	150	200	250	300	350	400		12 VDC	24 VDC
LAM3-1	6,000	5,000	5,000	4/5.5	100	150	200	250	300	350	400	10	12	6
LAM3-2	4,000	4,000	4,000	5.5/7.5	100	150	200	250	300	350	400	10	10	5
LAM3-3	3,000	3,000	3,000	7/9	100	150	200	250	300	350	400	10	8	4
LAM3-4	2,000	2,000	1,500	11.5/14.5	100	150	200	250	300	350	400	10	8	4

Linear Actuators

HIWIN linear actuators LAS

4. HIWIN linear actuators LAS

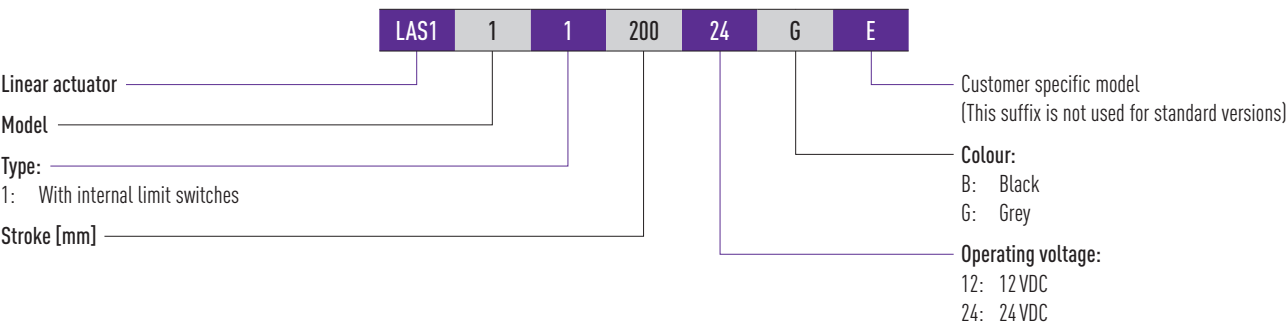
4.1 LAS1

Product specifications:

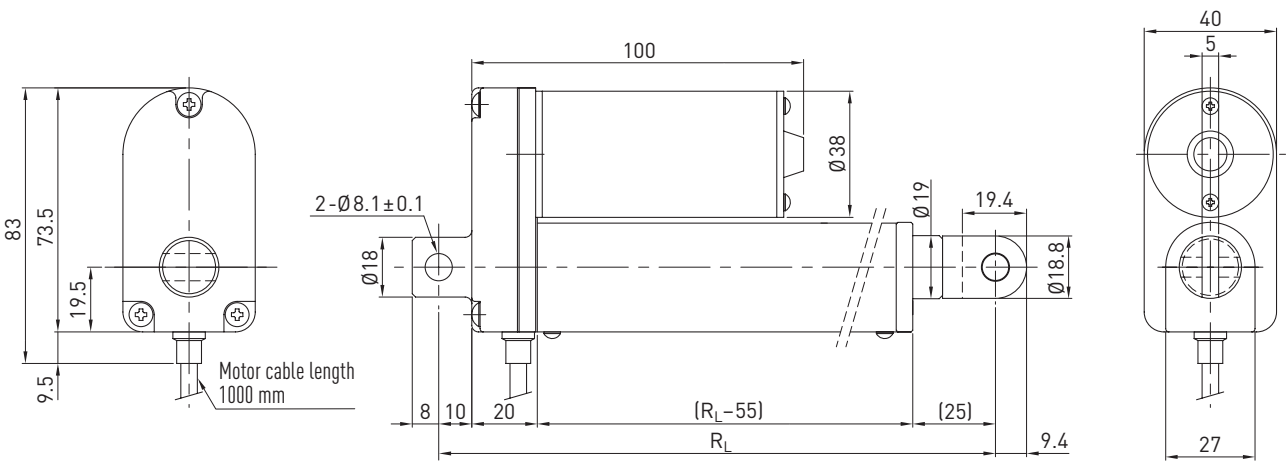
- Screw type: ACME
- Weight (at a stroke of 200 mm): 1.04 kg
- Protection class: IP 54
- Operating temperature: +5 °C to +40 °C



4.1.2 Order code



4.1.1 Dimensions

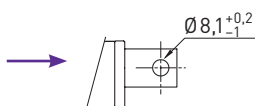


$R_L = S + 119$
 R_L : Zero stroke length [mm]
 S : Stroke [mm]

Note:
If the mounting lugs do not lie precisely flush, the piston rod may twist as far as 180° anticlockwise.

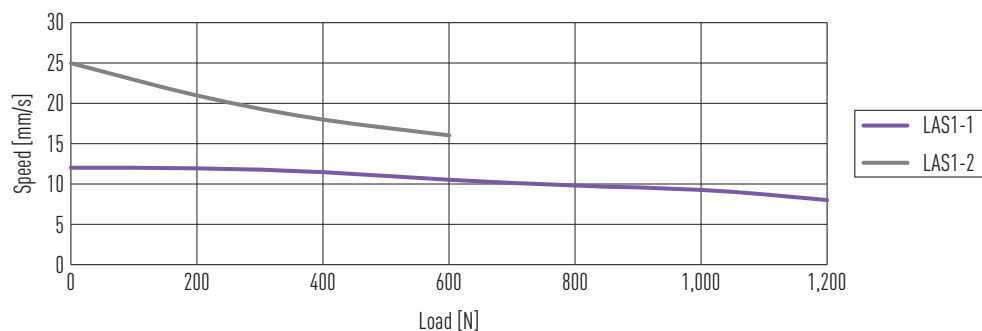
4.1.3 Options for LAS1

- IP 65
- Mounting points turned through 90°
- Piston rod with flat connector: $R_L = S + 110$
- 36 VDC motor
- External limit switches

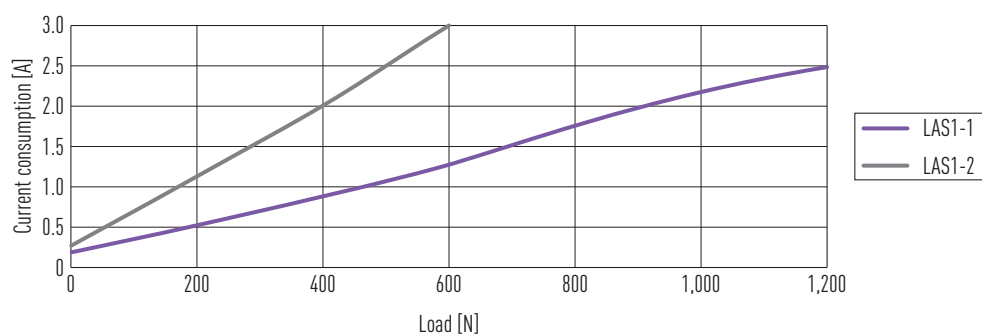


4.1.4 Product characteristic curves and technical data

24/12 VDC motor



24 VDC motor



12 VDC motor

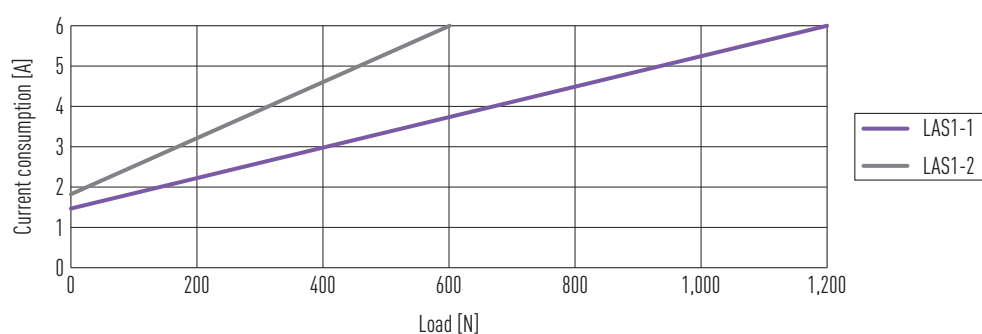


Table 4.1 Technical data LAS1

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]					Duty cycle [%]	Max. current [A]	
											12 VDC	24 VDC
LAS1-1	1,200	1,200	800	8/12	50	100	150	200	250	10	6	2.5
LAS1-2	600	600	300	16/25	50	100	150	200	250	10	6	3

Linear Actuators

HIWIN linear actuators LAS

4.2 LAS2

Product specifications:

- Screw type: ACME
- Weight (at a stroke of 200 mm): 1.3 kg
- Protection class: IP 54
- Operating temperature: + 5 °C to + 40 °C



4.2.1 Order code

LAS21120024GE

Linear actuator

Model

Type:

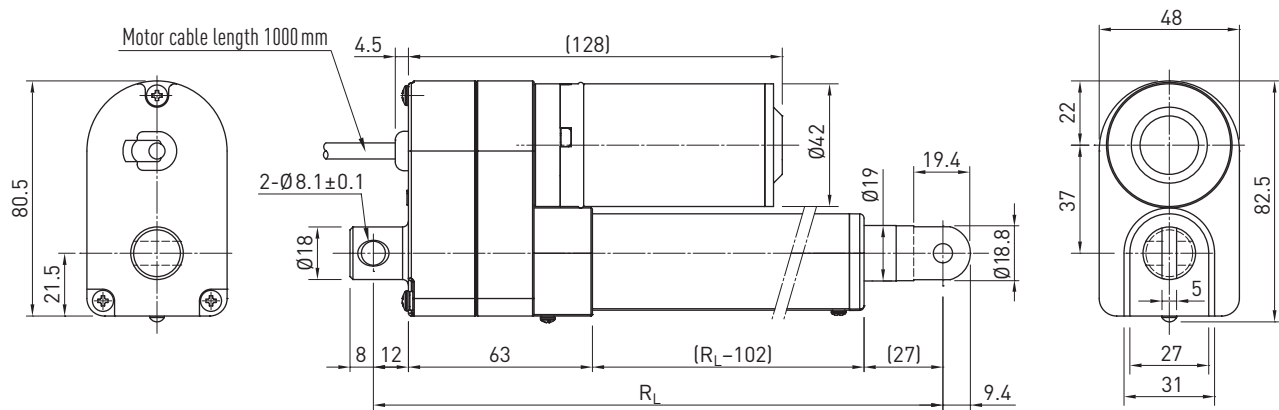
Stroke [mm]

Customer specific model
(This suffix is not used for standard versions)

Colour:
B: Black
G: Grey

Operating voltage:
12: 12 VDC
24: 24 VDC

4.2.2 Dimensions

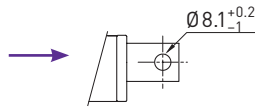


$R_L = S + 146$
 R_L : Zero stroke length [mm]
 S : Stroke [mm]

Table 4.2 Encoder specifications (optical sensor)			
Output	Supply voltage		
	24 VDC	12 VDC	5 VDC
	High level 24 VDC	High level 12 VDC	TTL
	Low level 0.2 V/40 mA	Low level 0.2 V/40 mA	—
	PNP	PNP	—
	Open collector	Open collector	—

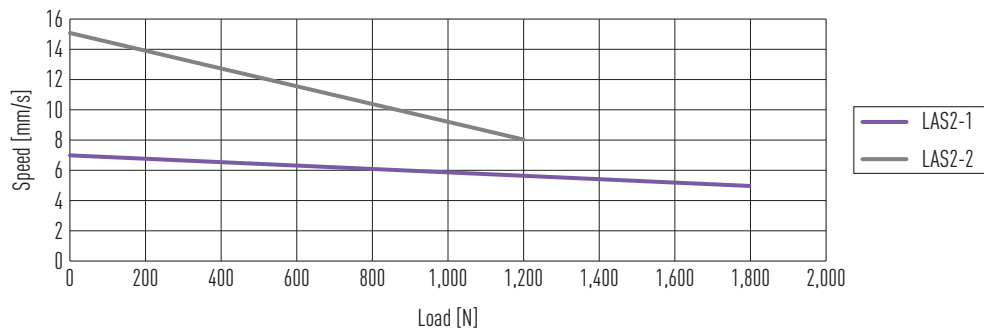
4.2.3 Options for LAS2

- Optical sensor, PNP output signal
- Optical sensor, NPN output signal
- Optical sensor, TTL output signal
- Potentiometric sensor (10 kΩ): $R_L = S + 154$
- IP 65
- Mounting points turned through 90°
- Piston rod with flat connector: $R_L = S + 133$
- 36 VDC motor
- UL version

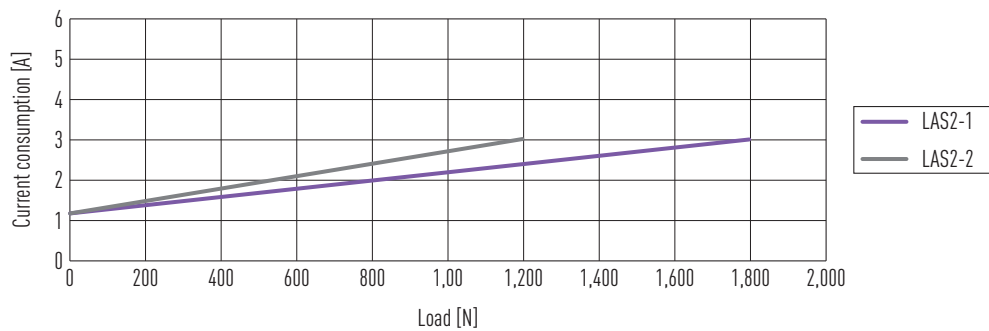


4.2.4 Product characteristic curves and technical data

24/12 VDC motor



24 VDC motor



12 VDC motor

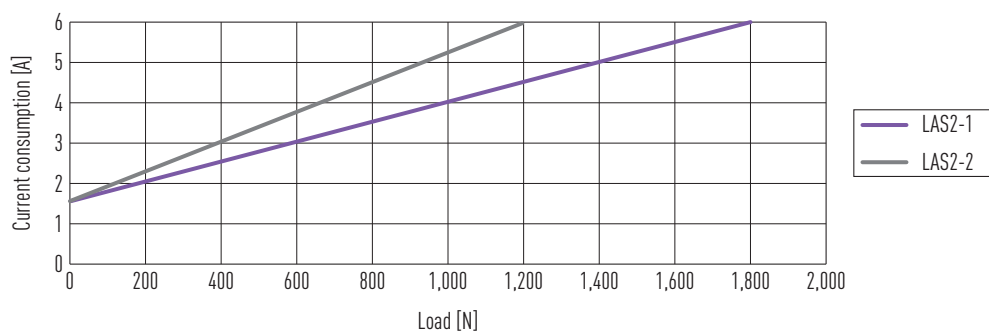


Table 4.3 Technical data LAS2

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]					Duty cycle [%]	Max. current [A]		Optical sensor resolution [mm/pulse]	Potentiometer resolution [Ω/mm]
											12 VDC	24 VDC		
LAS2-1	1,800	1,200	1,800	4.5/7	50	100	150	200	250	10	6	3	0.3175	21.0
LAS2-2	1,200	1,200	1,000	8/15	50	100	150	200	250	10	6	4	0.635	10.5

Linear Actuators

HIWIN linear actuators LAS

4.3 LAS3

Product specifications:

- Screw type: ACME
- Weight (at a stroke of 200 mm): 1.27 kg
- Protection class: IP 54
- Operating temperature: + 5 °C to + 40 °C



4.3.1 Order code

LAS3

1

1

200

24

G

E

Linear actuator

Model

Type:

1: With internal limit switches

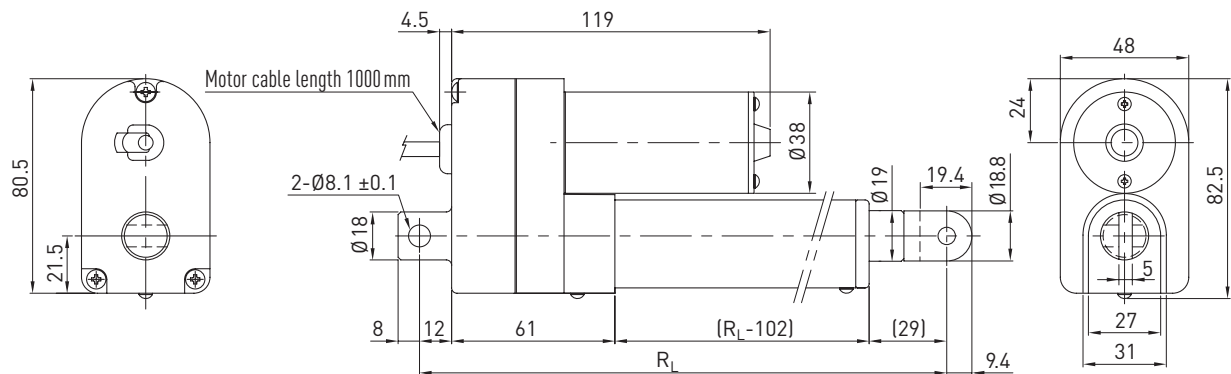
Stroke [mm]

Customer specific model
(This suffix is not used for standard versions)

Colour:
B: Black
G: Grey

Operating voltage:
12: 12 VDC
24: 24 VDC

4.3.2 Dimensions



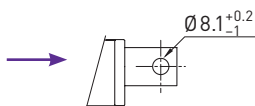
$R_L = S + 146$
 R_L : Zero stroke length
 S : Stroke

Note:
If the mounting lugs do not lie precisely flush, the piston rod may twist as far as 180° anticlockwise.

Table 4.4 Encoder specifications (optical sensor)			
Output	Supply voltage		
	24 VDC	12 VDC	5 VDC
	High level 24 VDC	High level 12 VDC	TTL
	Low level 0.2 V/40 mA	Low level 0.2 V/40 mA	—
	PNP	PNP	—
	Open collector	Open collector	—

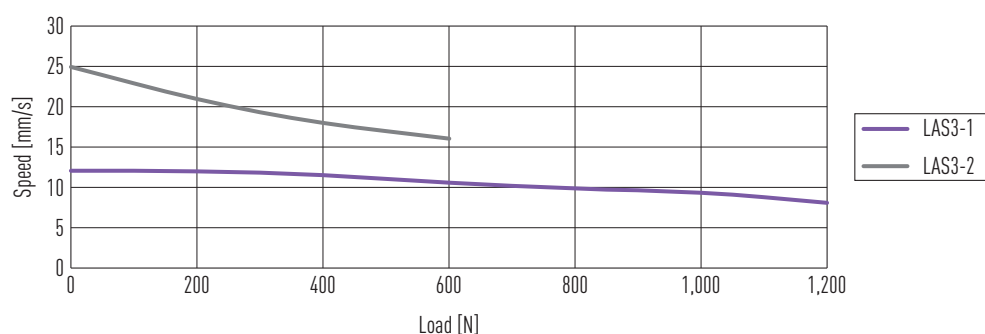
4.3.3 Options for LAS3

- Optical sensor, PNP output signal
- Optical sensor, NPN output signal
- Optical sensor, TTL output signal
- Potentiometric sensor (10 kΩ): $R_L = S + 154$
- IP 65
- Mounting points turned through 90°
- Piston rod with flat connector: $R_L = S + 133$
- 36 VDC motor

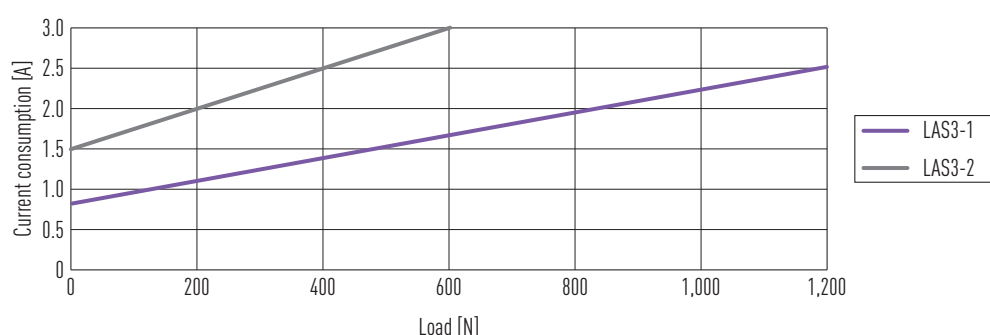


4.3.4 Product characteristic curves and technical data

24/12 VDC motor



24 VDC motor



12 VDC motor

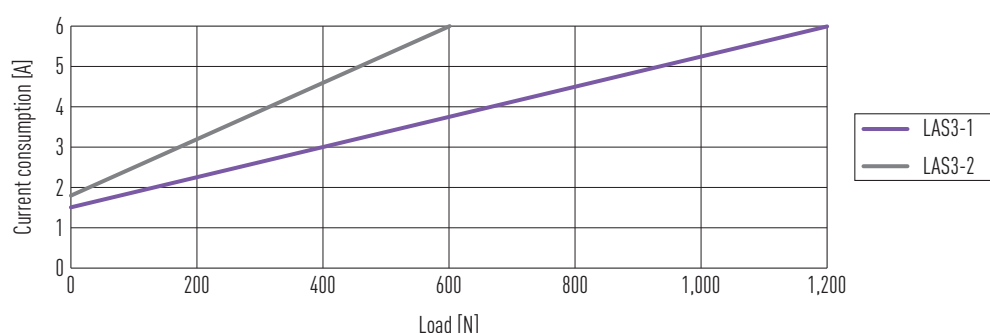


Table 4.5 Technical data LAS3

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]					Duty cycle [%]	Max. current [A]		Optical sensor resolution [mm/pulse]	Potentiometer-resolution [Ω/mm]
											12 VDC	24 VDC		
LAS3-1	1,200	1,200	800	8/12	50	100	150	200	250	10	6	2.5	0.3175	21.0
LAS3-2	600	600	300	16/25	50	100	150	200	250	10	6	3.0	0.635	10.5

Linear Actuators

HIWIN linear actuators LAS

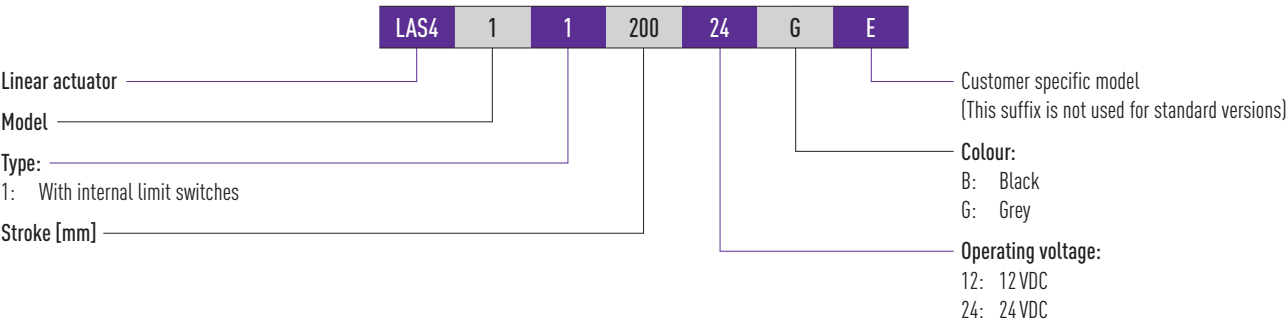
4.4 LAS4

Product specifications:

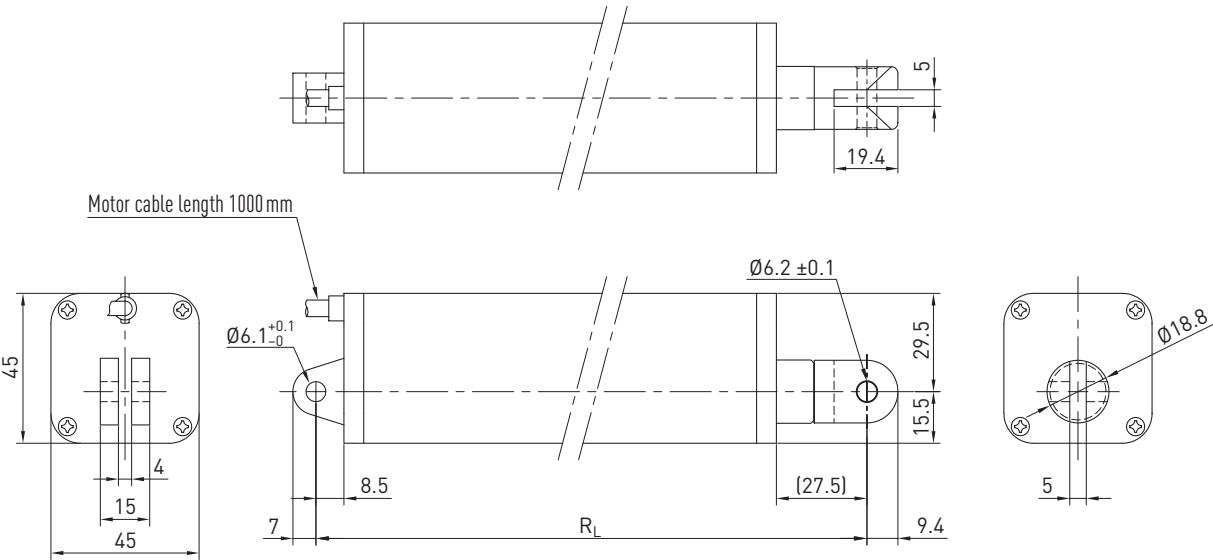
- Screw type: ACME
- Weight (at a stroke of 200 mm): 1.36 kg
- Protection class: IP 54
- Operating temperature: + 5 °C to + 40 °C



4.4.1 Order code



4.4.2 Dimensions



$R_L = S + 222.5$
 R_L : Zero stroke length
S: Stroke

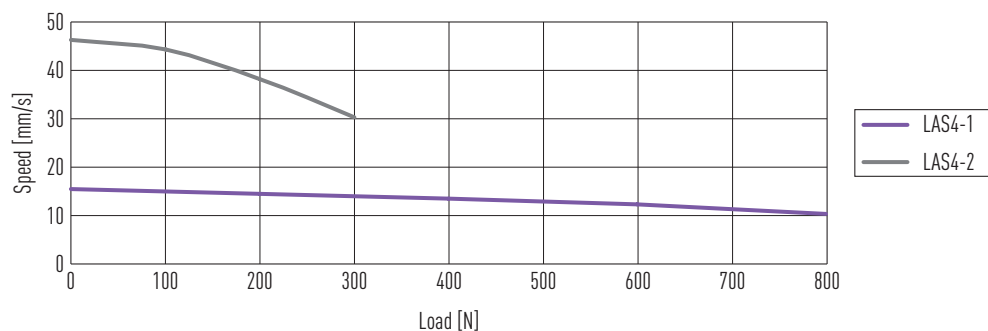
Table 4.6 Encoder specifications (Hall sensor)			
Output	Supply voltage		
	24 VDC	12 VDC	5 VDC
	High level 24 VDC	High level 12 VDC	TTL
	Low level 0.2 V/10 mA	Low level 0.2 V/10 mA	—
	NPN	NPN	—

4.4.3 Options for LAS4

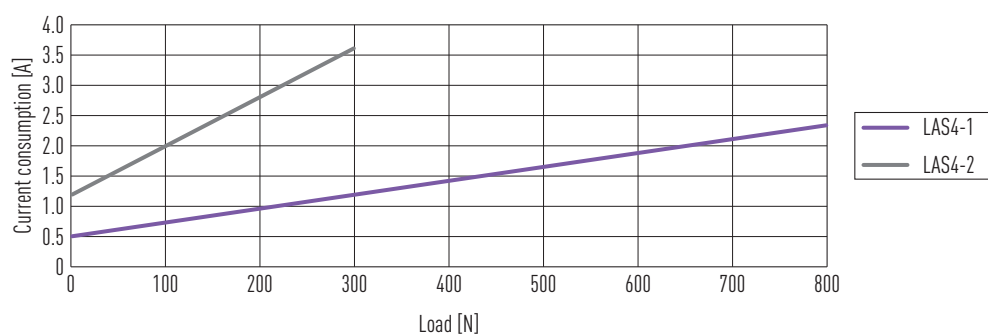
- IP 65
 - Hall sensor
- $R_L = S + 226$

4.4.4 Product characteristic curves and technical data

24/12 VDC motor



24 VDC motor



12 VDC motor

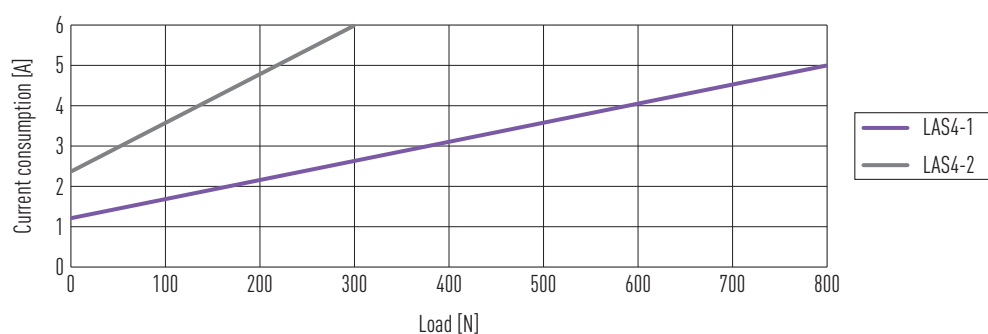


Table 4.7 Technical data LAS4

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]					Duty cycle [%]	Max. current [A]		Hall sensor resolution [mm/pulse]
											12 VDC	24 VDC	
LAS4-1	800	800	600	10/15	100	150	200	250	300	10	5	2.3	0.0085
LAS4-2	300	300	200	30/46	100	150	200	250	300	10	6	3.6	0.02

Linear Actuators

HIWIN linear actuators LAN

5. HIWIN linear actuators LAN

5.1 LAN1

Product specifications:

- Screw type: ACME
- Weight (at a stroke of 200 mm): 2.6 kg
- Protection class: IP 54
- Operating temperature: +5 °C to +40 °C



5.1.1 Order code

LAN1	1	1	1	200	24	G	E
------	---	---	---	-----	----	---	---

Linear actuator ————

Model ————

Load direction: ————

1: Mostly thrust forces (standard)¹⁾

2: Mostly tractive forces²⁾

Type: ————

1: With internal limit switches

Stroke [mm] ————

Customer specific model
(This suffix is not used for standard versions)

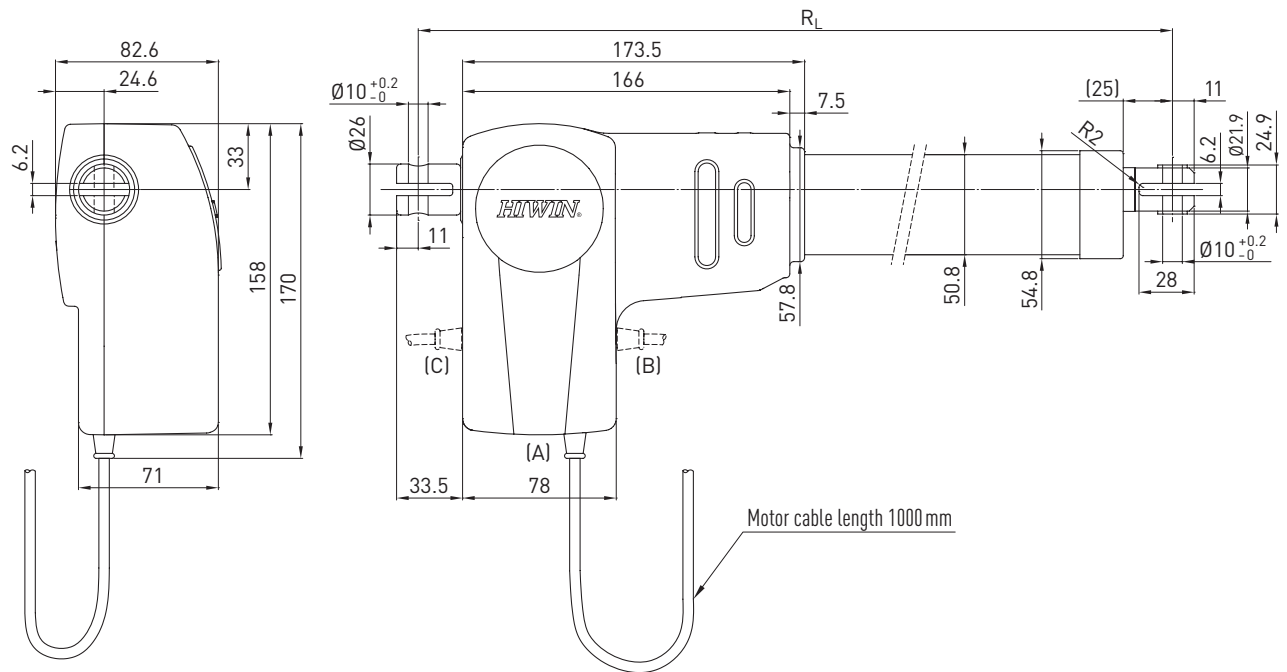
Colour:
B: Black
G: Grey

Operating voltage:
12: 12 VDC
24: 24 VDC
24Q: 24 VDC (type with higher speed)

¹⁾ Thrust forces greater than tractive forces, and tractive force ≤ 50 % of the max tractive force

²⁾ Tractive forces greater than thrust forces

5.1.2 Dimensions



$R_L = S + 173$

R_L : Zero stroke length

S: Stroke

Table 5.1 Encoder specifications (Hall sensor)

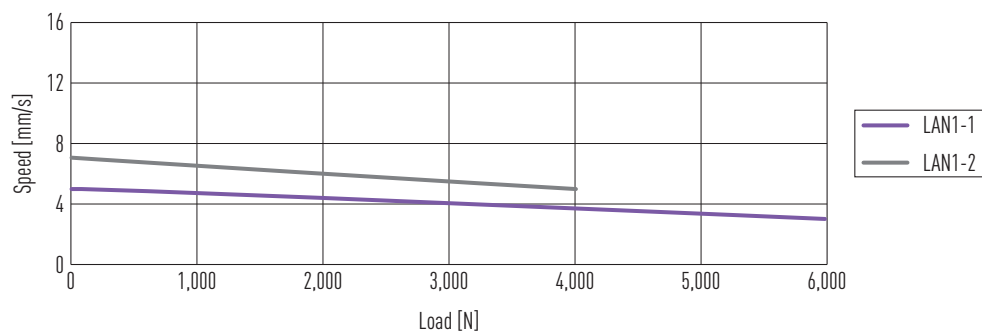
	Supply voltage		
	24 VDC	12 VDC	5 VDC
	High level 24 VDC	High level 12 VDC	TTL
	Low level 0.2 V/10 mA	Low level 0.2 V/10 mA	—
Output	NPN	NPN	—

5.1.3 Options for LAN1

- Protection class IP 66
- Hall sensor
- Safety nut: $R_L = S + 185$
- Mechanical spline: $R_L = S + 223$
- Mechanical quick release ($R_L = S + 230$), LAN1-4 only
- Mounting points turned through 90°
- Motor cable outlet: (A) standard, (B) front, (C) back
- 36 VDC motor
- UL version

5.1.4 Product characteristic curves and technical data LAN1, 24 VDC motor

24 VDC motor



24 VDC motor

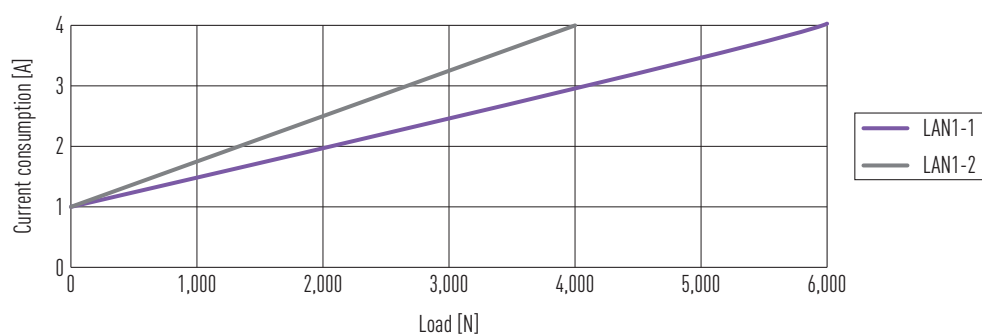


Table 5.2 Technical data LAN1, 24 VDC motor

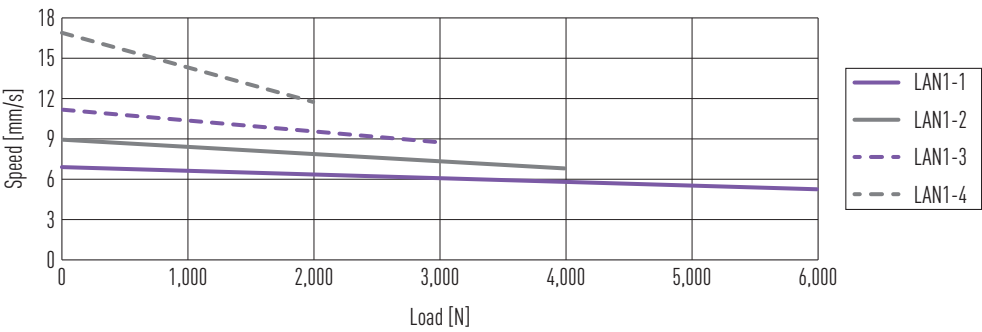
Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]					Duty cycle [%]	Max. current [A] 24 VDC	Hall sensor-resolution [mm/pulse]
					100	150	200	250	300			
LAN1-1	6,000	5,000	5,000	2.7/5	100	150	200	250	300	10	4	0.3
LASN-2	4,000	4,000	4,000	5/7	100	150	200	250	300	10	4	0.5

Linear Actuators

HIWIN linear actuators LAN

5.1.5 Product characteristic curves and technical data LAN1, 24 VDC higher speed motor version (24Q)

24 VDC motor (24Q)



24 VDC motor (24Q)

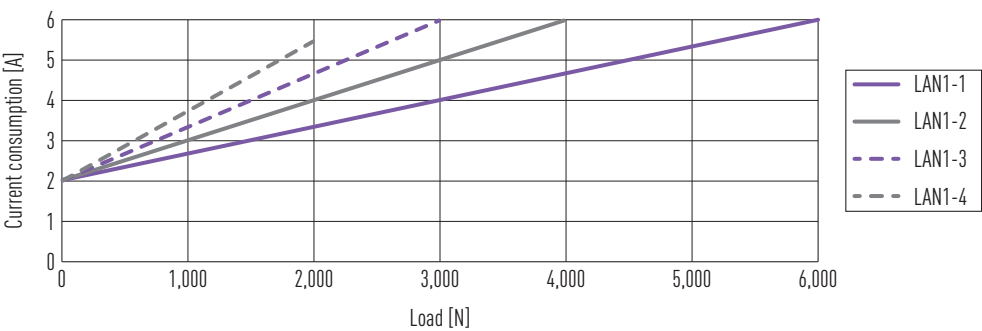
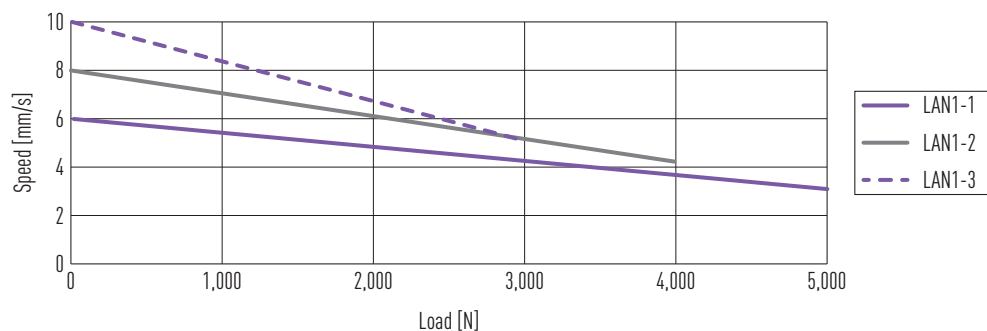


Table 5.3 Technical data LAN1, 24 VDC higher speed motor version (24Q)

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]					Duty cycle [%]	Max. current [A] 24 VDC	Hall sensor-resolution [mm/pulse]
					100	150	200	250	300			
LAN1-1	6,000	5,000	5,000	5/7	100	150	200	250	300	10	6.0	0.3
LAN1-2	4,000	4,000	4,000	7/9	100	150	200	250	300	10	6.0	0.4
LAN1-3	3,000	3,000	3,000	9/11.5	100	150	200	250	300	10	6.0	0.5
LASN-4	2,000	2,000	2,000	12/17	100	150	200	250	300	10	5.5	0.8

5.1.6 Product characteristic curves and technical data LAN1, 12 VDC motor

12 VDC motor



12 VDC motor

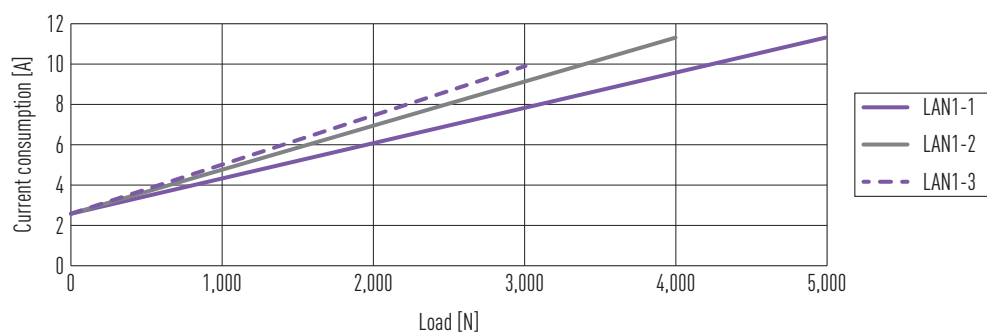


Table 5.4 Technical data LAN1, 12 VDC motor

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]					Duty cycle [%]	Max. current [A] 24 VDC	Hall sensor-resolution [mm/pulse]
					100	150	200	250	300			
LAN1-1	5,000	5,000	5,000	3/6	100	150	200	250	300	10	11	0.3
LAN1-2	4,000	4,000	4,000	4/8	100	150	200	250	300	10	11	0.4
LAN1-3	3,000	3,000	3,000	5/10	100	150	200	250	300	10	10	0.5

Linear Actuators

HIWIN linear actuators LAN

5.2 LAN3

Product specifications:

- Screw type: ACME
- Weight (at a stroke of 200 mm): 5.31 kg
- Protection class: IP 54
- Operating temperature: + 5 °C to + 40 °C



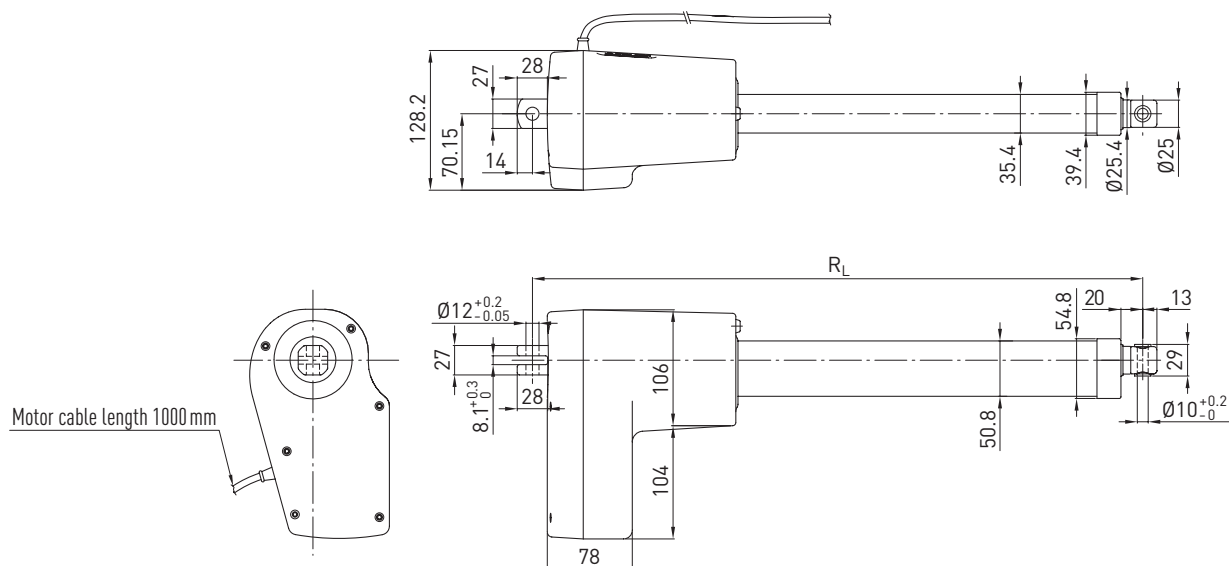
5.2.1 Order code

	LAN3	1	1	1	200	24	G	E	
Linear actuator									Customer specific model (This suffix is not used for standard versions)
Model									
Load direction:									Colour: B: Black G: Grey
1: Mostly thrust forces (standard) ¹⁾									
2: Mostly tractive forces ²⁾									
Type:									Operating voltage: 24: 24 VDC 24Q: 24 VDC (type with higher speed)
1: With internal limit switches									
Stroke [mm]									

¹⁾ Thrust forces greater than tractive forces, and tractive force ≤ 50 % of the max tractive force

²⁾ Tractive forces greater than thrust forces

5.2.2 Dimensions



$R_L = S + 210$ for stroke < 200 mm; $S + 260$ for stroke = 200 – 500 mm

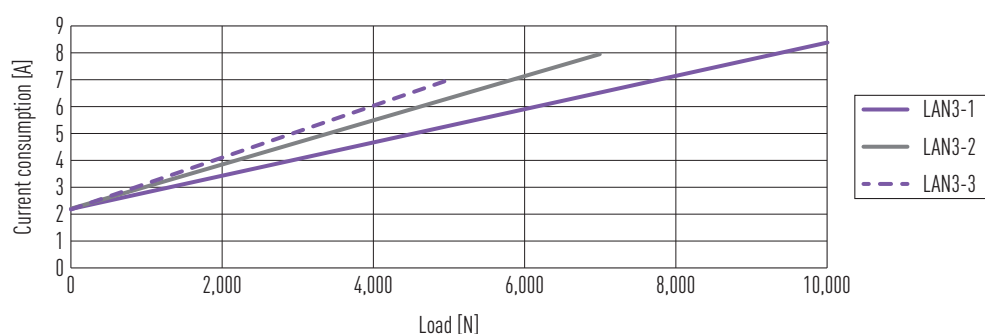
R_L : Zero stroke length

S: Stroke

- Protection class IP 66

- Protection class IP 66
 - Potentiometric sensor, 10 kΩ:
 $R_L = S + 221$ for stroke < 200 mm; $R_L = S + 271$ for stroke = 200 – 500 mm
Max. stroke lengths with potentiometric sensor: LAN3-1: 250 mm
LAN3-2: 330 mm
LAN3-3: 420 mm
 - Mechanical spline:
 $R_L = S + 252$ for stroke < 200 mm; $R_L = S + 302$ for stroke = 200 – 500 mm
 - Safety nut:
 $R_L = S + 222$ for stroke < 200 mm; $R_L = S + 272$ for stroke = 200 – 500 mm
Safety nut + mechanical spline:
 $R_L = S + 259$ for stroke < 200 mm; $R_L = S + 309$ for stroke = 200 – 500 mm
- Mechanical quick release:
Max permitted load on the piston rod during the initiation of rapid lowering:
180 N. Mechanical lowering requires a minimum force of 700 N.
 - Mounting points turned through 90°
 - Fast motor 24Q
 - 36 VDC motor
 - UL version
 - External limit switches:
 $R_L = S + 290$ for stroke < 200 mm; $R_L = S + 340$ for stroke = 200 – 500 mm

24 VDC motor

Table 5.5 **Technical data LAN3, 24 VDC motor**

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]										Duty cycle [%]	Max. current [A] 24 VDC	Potentiometer resolution [Ω/mm]
LAN3-1	10,000	6,000	10,000	4.5/8	100	150	200	250	300 ¹⁾	350 ¹⁾	400 ¹⁾	—	—	10	8.3	37.5	
LAN3-2	7,000	6,000	7,000	6.5/9	100	150	200	250	300	350 ¹⁾	400 ¹⁾	450 ¹⁾	500 ¹⁾	10	8.0	28.0	
LAN3-3	5,000	5,000	5,000	9/12.5	100	150	200	250	300	350	400	450 ¹⁾	500 ¹⁾	10	7.0	22.5	

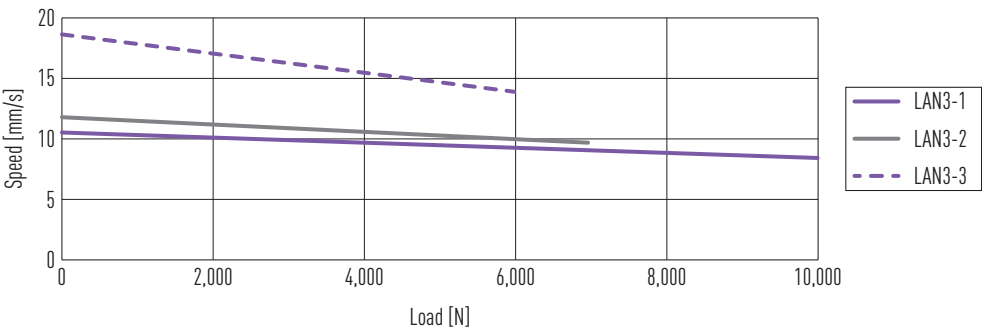
¹⁾ Not available with option "potentiometric sensor"

Linear Actuators

HIWIN linear actuators LAN

5.2.5 Product characteristic curves and technical data LAN3, 24 VDC higher speed motor version (24Q)

24 VDC motor (24Q)



24 VDC motor (24Q)

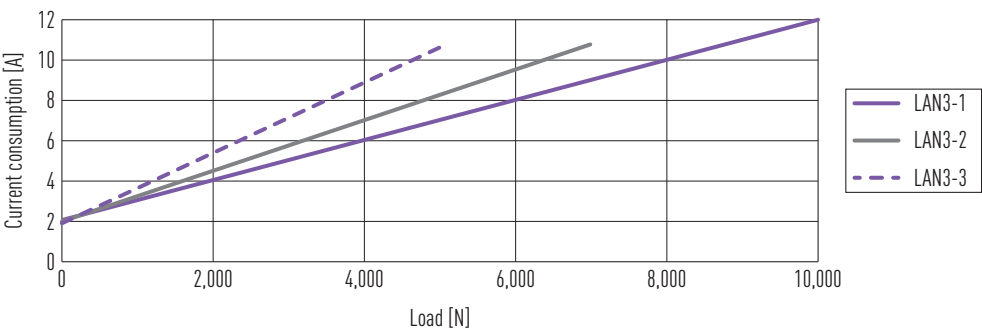


Table 5.6 Technical data LAN3, 24 VDC higher speed motor version (24Q)

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]										Duty cycle [%]	Max. current [A] 24 VDC	Potentiometer resolution [°/mm]
					100	150	200	250	300 ¹⁾	350 ¹⁾	400 ¹⁾	—	—	—			
LAN3-1	10,000	6,000	10,000	7/11	100	150	200	250	300 ¹⁾	350 ¹⁾	400 ¹⁾	—	—	—	10	12	37.5
LAN3-2	7,000	6,000	7,000	9/13	100	150	200	250	300	350 ¹⁾	400 ¹⁾	450 ¹⁾	500 ¹⁾	—	10	11	28.0
LAN3-3	5,000	5,000	5,000	13/18	100	150	200	250	300	350	400	450 ¹⁾	500 ¹⁾	—	10	11	22.5

¹⁾ Not available with option "potentiometric sensor"

5.3 LAN4

Product specifications:

- Screw type: ACME
- Weight (at a stroke of 200 mm): 2.33 kg
- Protection class: IP 54
- Operating temperature: + 5 °C to + 40 °C

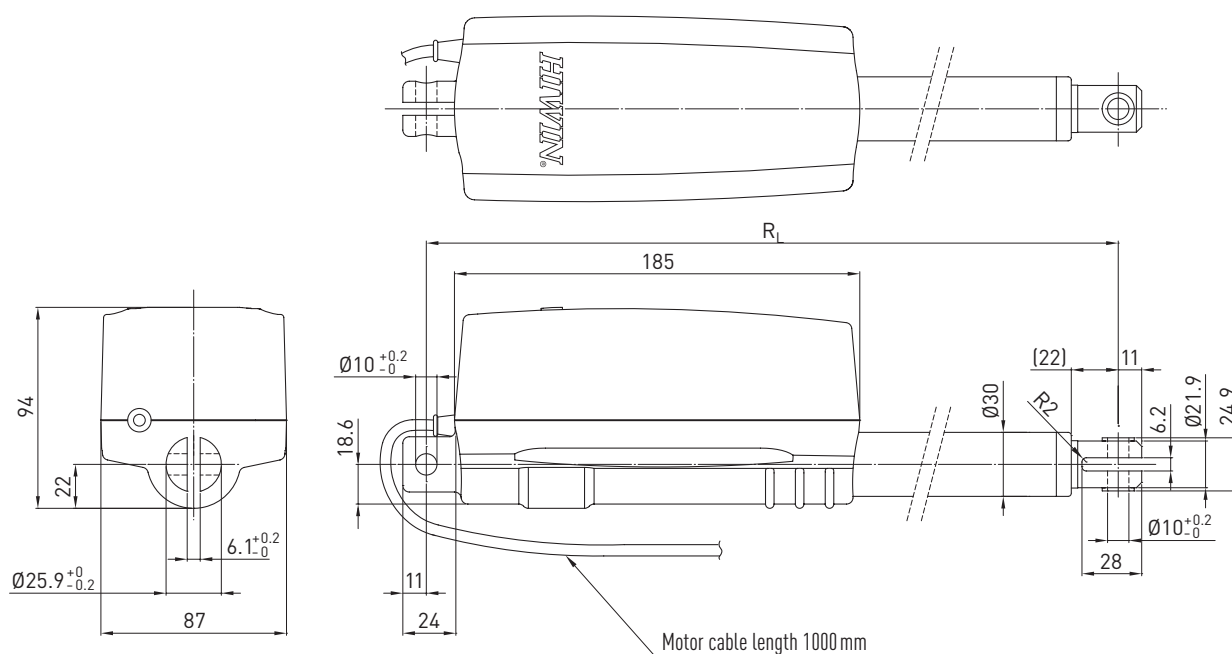


5.3.1 Order code

	LAN4	1	0	300	24	G	E	
Linear actuator								
Model								Customer specific model (This suffix is not used for standard versions)
Overcurrent protection ¹⁾ :								Colour: B: Black G: Grey
0: Without								Operating voltage: 12: 12 VDC 24: 24 VDC
1: With								
Stroke [mm]								

¹⁾ The integrated overcurrent protection automatically switches off the linear actuator when an obstacle occurs.

5.3.2 Dimensions



$$R_L = S + 160$$

R_L : Zero stroke length

S: Stroke

Linear Actuators

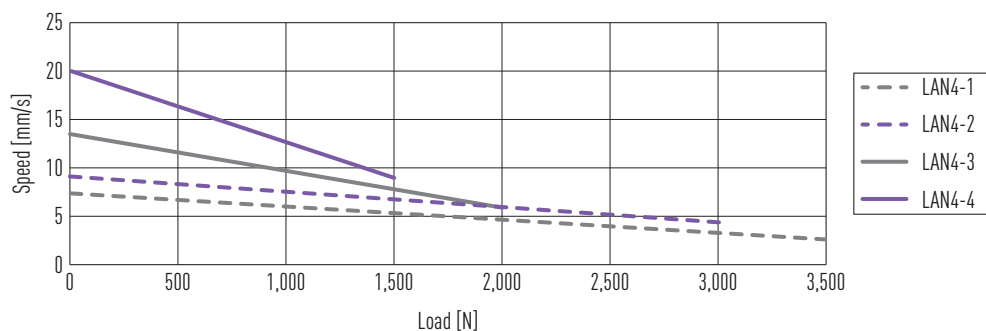
HIWIN linear actuators LAN

5.3.3 Options for LAN4

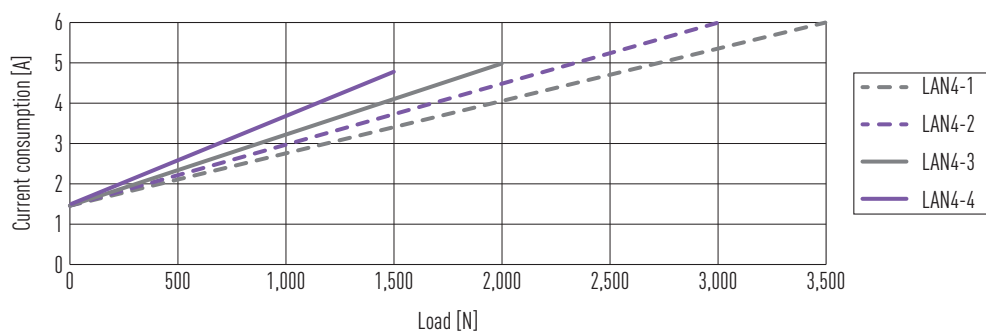
- Protection class IP 66
- Safety nut: $R_L = S + 174$
- Jack plug; $\varnothing 6.35$ mm; mono
- Mechanical spline: $R_L = S + 200$
- UL version

5.3.4 Product characteristic curves and technical data

24/12 VDC motor



24 VDC motor



12 VDC motor

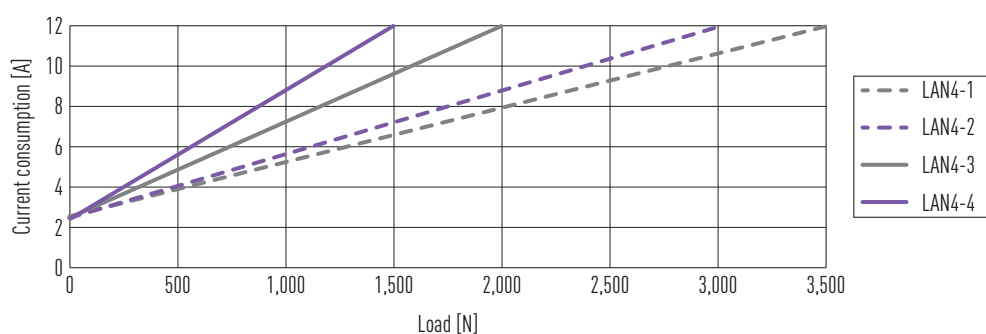
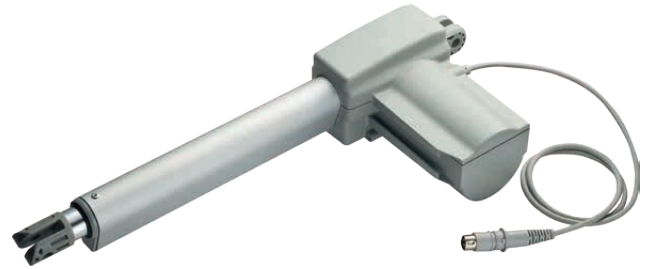


Table 5.7 Technical data LAN4

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]							Duty cycle [%]	Max. current [A]	
													12 VDC	24 VDC
LAN4-1	3,500	3,500	3,500	3.5/7	100	150	200	250	300	350	400	10	12	6
LAN4-2	3,000	3,000	3,000	4.2/9	100	150	200	250	300	350	400	10	12	6
LAN4-3	2,000	2,000	2,000	6/13	100	150	200	250	300	350	400	10	12	5
LAN4-4	1,500	1,500	1,500	8.5/20	100	150	200	250	300	350	400	10	12	5

Product specifications:

- Screw type: ACME
- Weight (at a stroke of 200 mm): 1.96 kg
- Protection class: IP 54
- Operating temperature: +5 °C to +40 °C



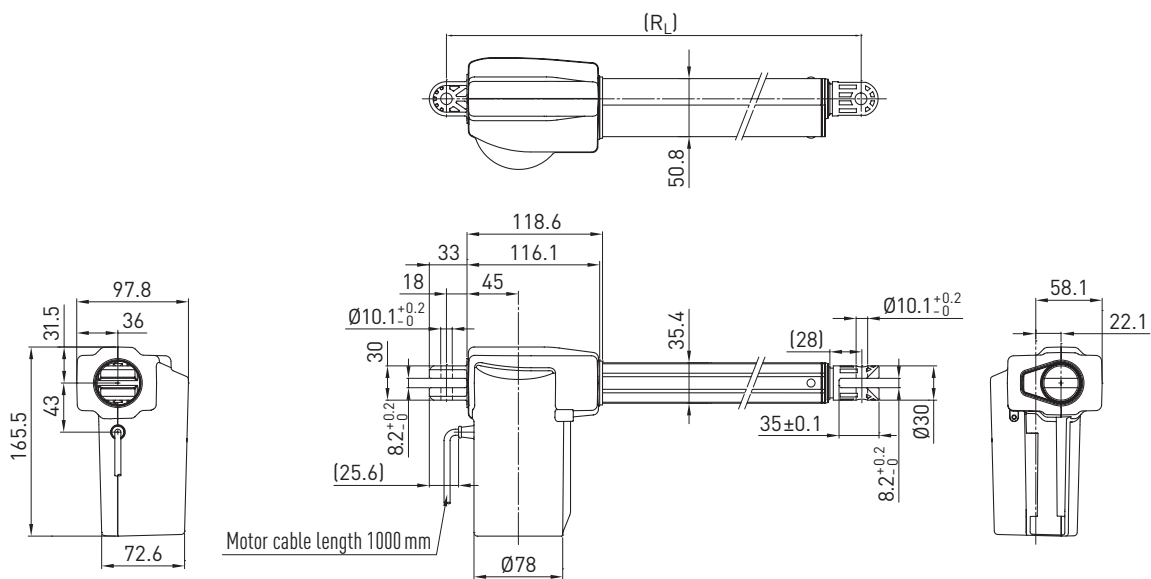
5.4.1 Order code

LAN5	1	1	1	200	24	G	E
------	---	---	---	-----	----	---	---

Linear actuator _____
Model _____
Load direction: _____
 1: Standard
Type: _____
 1: With internal limit switches
Stroke [mm] _____

_____ Customer specific model
 (This suffix is not used for standard versions)
 _____ **Colour:**
 B: Black
 G: Grey
 _____ **Operating voltage:**
 24: 24 VDC
 24Q: 24 VDC (type with higher speed)

5.4.2 Dimensions

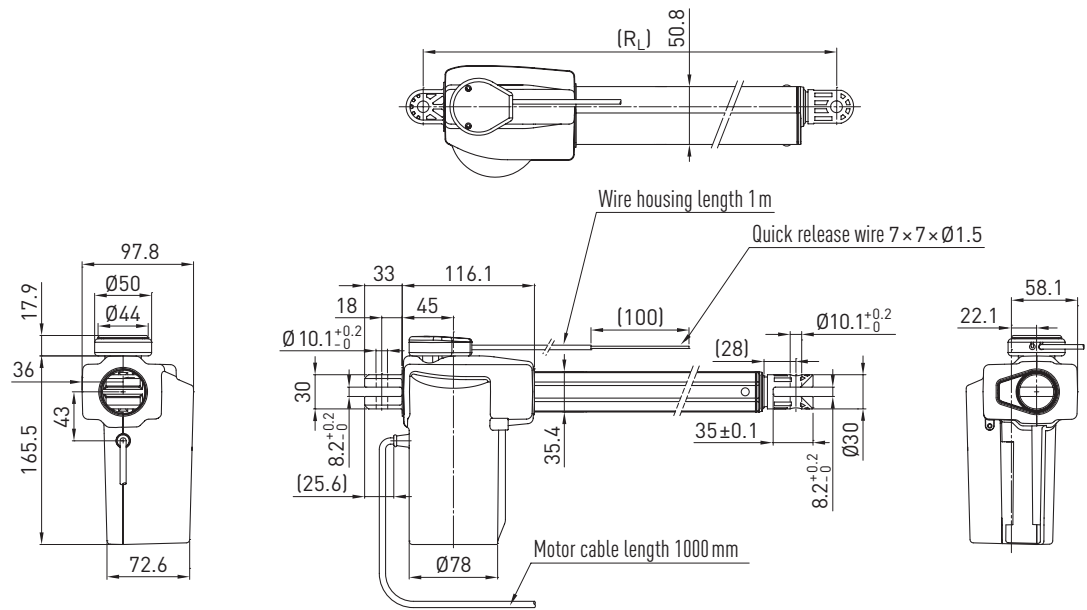


$R_L = S + 163$
 R_L : Zero stroke length
 S : Stroke

Linear Actuators

HIWIN linear actuators LAN

Dimensions LAN5 with mechanical quick release



$R_L = S + 163$
 R_L : Zero stroke length
 S : Stroke

The quick release function:

- Quick release can be initiated when the load is less than 100 N.
- Once quick release has been initiated, the load must be at least 700 N. The cylinder can then retract automatically.
- After initiation, the cylinder may have to be retracted.

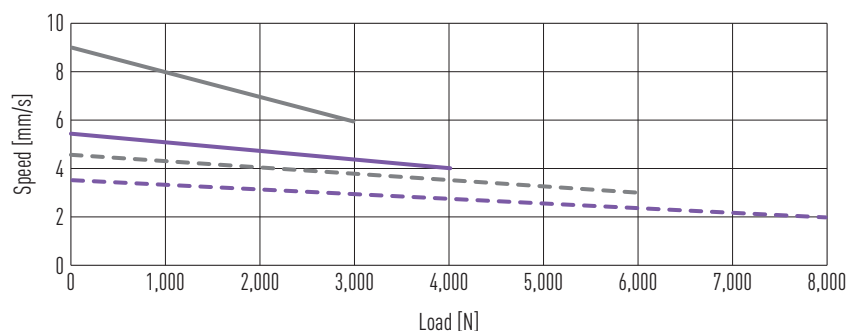
Table 5.8 Encoder specifications (Hall sensor)			
Output	Supply voltage		
	24 VDC	12 VDC	5 VDC
	High level 24 VDC	High level 12 VDC	TTL
	Low level 0.2 V/10 mA	Low level 0.2 V/10 mA	—
	NPN	NPN	—

5.4.3 Options for LAN5

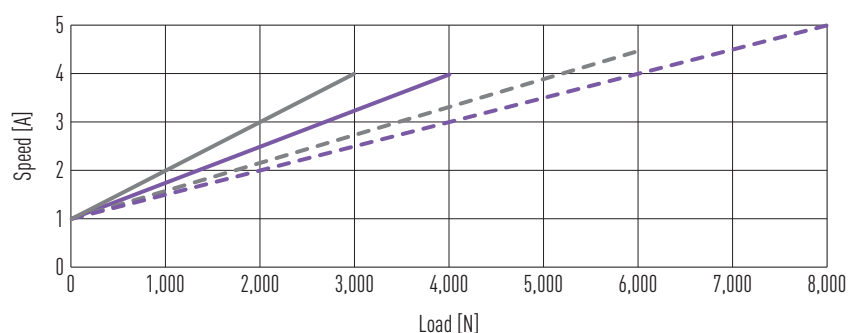
- Hall sensor
- Safety nut
- Mechanical spline
- Mounting points turned through 45°, 90°, 135°
- Protection class IP 65, IP 66
- Large mounting point diameter 12.1 mm
- Mechanical quick release, for LAN5-3 and LAN5-4 only
- UL version

5.4.4 Product characteristic curves and technical data LAN5, 24 VDC motor

24 VDC motor



24 VDC motor



24 VDC motor

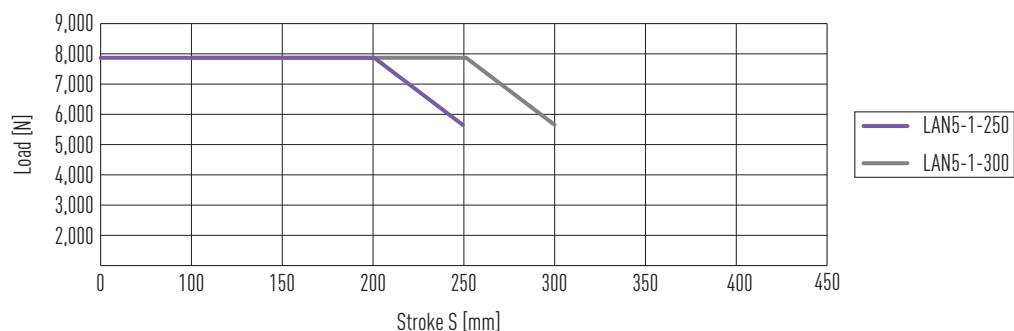


Table 5.9 Technical data LAN5, 24 VDC motor

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]					Duty cycle [%]	Max. current [A] 24 VDC	Hall sensor resolution [mm/pulse]
LAN5-1 ¹⁾	8,000	4,000	6,000	2/3.5	100	150	200	250	300	10	5.0	0.08
LAN5-2	6,000	4,000	5,000	3/4.5	100	150	200	250	300	10	4.5	0.10
LAN5-3 ²⁾	4,000	3,000	4,000	4/5.5	100	150	200	250	300	10	4.0	0.14
LAN5-4 ³⁾	3,000	2,000	1,500	6/9	100	150	200	250	300	10	4.0	0.22

¹⁾ When the stroke is greater than 200 mm, the maximum permitted load must be taken from the above table

²⁾ Max holding force during quick release: 3,000 N

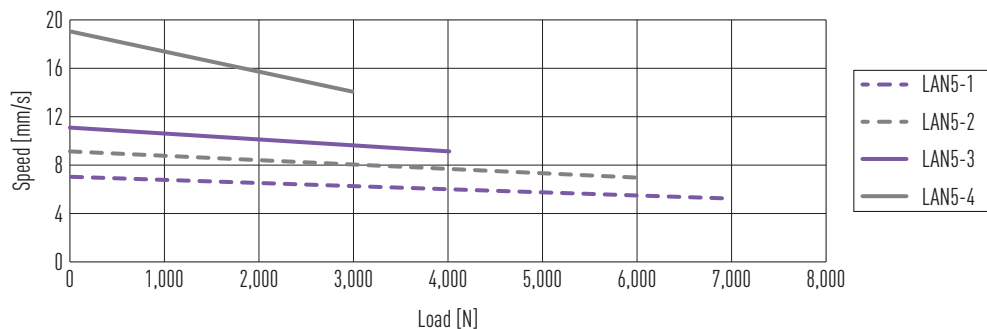
³⁾ Max holding force during quick release: 1,000 N

Linear Actuators

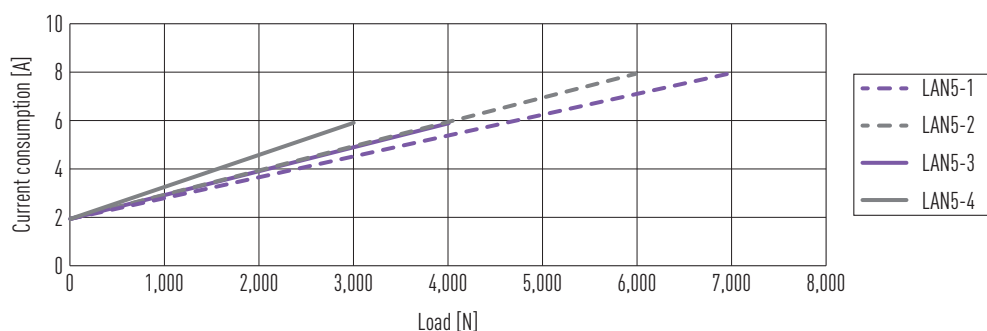
HIWIN linear actuators LAN, HIWIN linear actuators LAC

5.4.5 Product characteristic curves and technical data LAN5, 24 VDC higher speed motor version (24Q)

24 VDC motor (24Q)



24 VDC motor (24Q)



24 VDC motor (24Q)

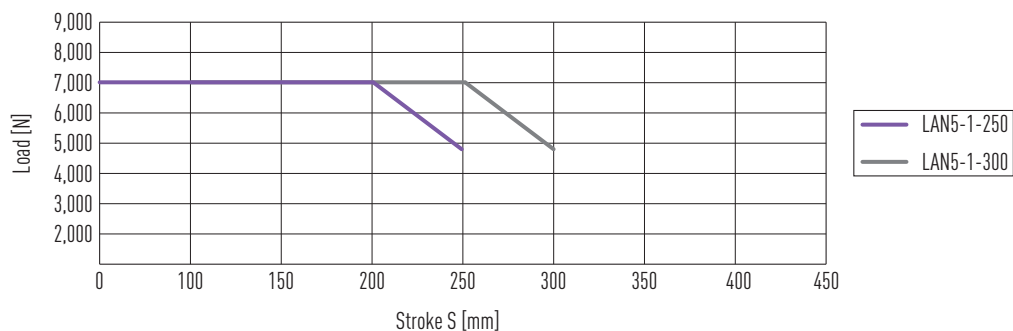


Table 5.10 Technical data LAN5, 24 VDC higher speed motor version (24Q)

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]					Duty cycle [%]	Max. current [A] 24 VDC	Hall sensor resolution [mm/pulse]
LAN5-1 ¹⁾	8,000	4,000	6,000	5/7	100	150	200	250	300	10	8	0.08
LAN5-2	6,000	4,000	5,000	7/9	100	150	200	250	300	10	8	0.10
LAN5-3 ²⁾	4,000	3,000	4,000	9/11	100	150	200	250	300	10	6	0.14
LAN5-4 ³⁾	3,000	2,000	1,500	14/19	100	150	200	250	300	10	6	0.22

¹⁾ When the stroke is greater than 200 mm, the maximum permitted load must be taken from the above table

²⁾ Max holding force during quick release: 3,000 N

³⁾ Max holding force during quick release: 1,000 N

6. HIWIN linear actuators LAC

6.1 LAC1

Product specifications:

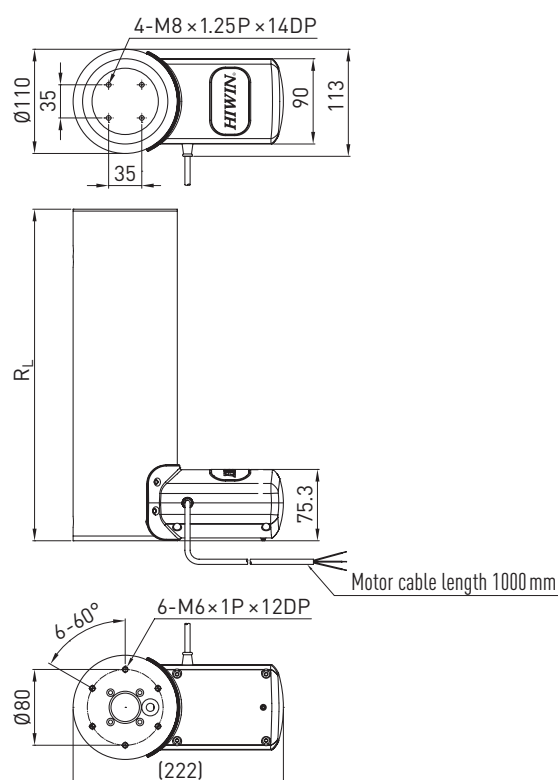
- Screw type: ACME
- Weight (at a stroke of 400 mm): 5.6 kg
- Protection class: IP 54
- Operating temperature: +5 °C to +40 °C



6.1.1 Order code

	LAC1	1	1	400	24	G	E	
Linear actuator								Customer specific model (This suffix is not used for standard versions)
Model								
Type:								Colour: G: Grey
1: With internal limit switches								
Stroke [mm]								Operating voltage: 24: 24 VDC 24Q: 24 VDC (type with higher speed)

6.1.2 Dimensions



$$R_L = 150 + S/2$$

R_L : Zero stroke length

S: Stroke

Linear Actuators

HIWIN linear actuators LAC

6.1.3 Permissible bending moments – LAC1

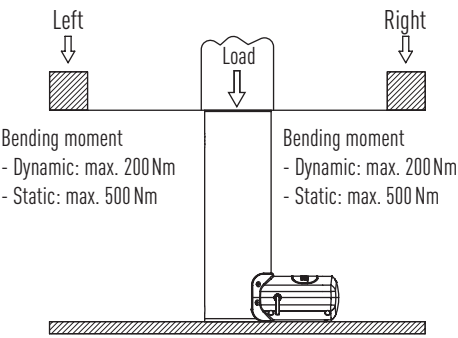


Table 6.1 Encoder specifications (Hall sensor)

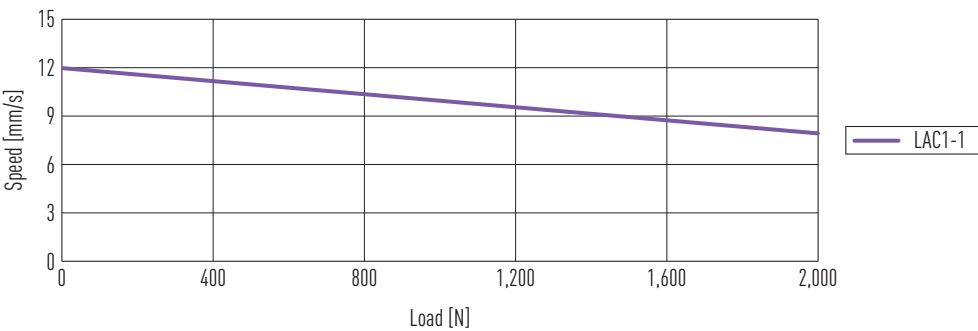
Output	Supply voltage	
	24 VDC	5 VDC
	High level 24 VDC	TTL
	Low level 0.2 V/10 mA	—
	NPN	—

6.1.4 Options for LAC1

- Hall sensor
- Potentiometric sensor (10 kΩ)

6.1.5 Product characteristic curves and technical data LAC1, 24 VDC motor

24 VDC motor



24 VDC motor

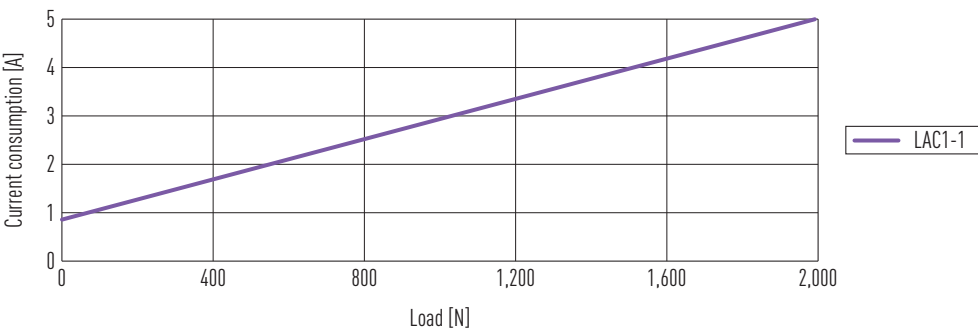
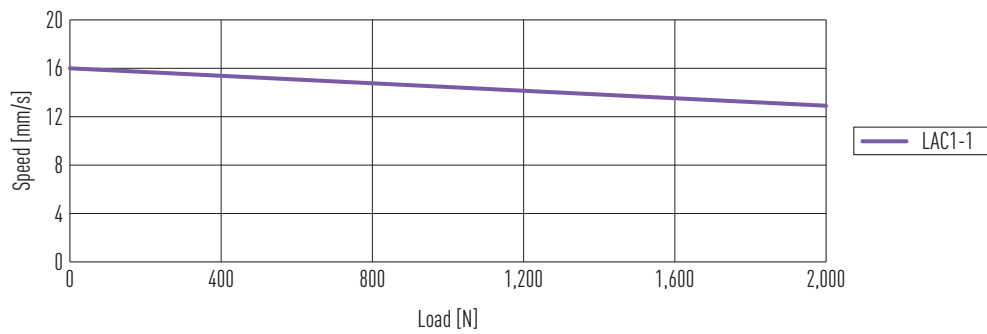


Table 6.2 Technical data LAC1, 24 VDC motor

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]			Duty cycle [%]	Max. current [A] 24 VDC	Potentiometer resolution [Ω/mm]	Hall sensor resolution [mm/pulse]
LAC1-1	2,000	500	2,000	8/12	300	400	500	10	5	6.67	0.064

6.1.6 Product characteristic curves and technical data LAC1, 24 VDC higher speed motor version (24Q)

24 VDC motor (24Q)



24 VDC motor (24Q)

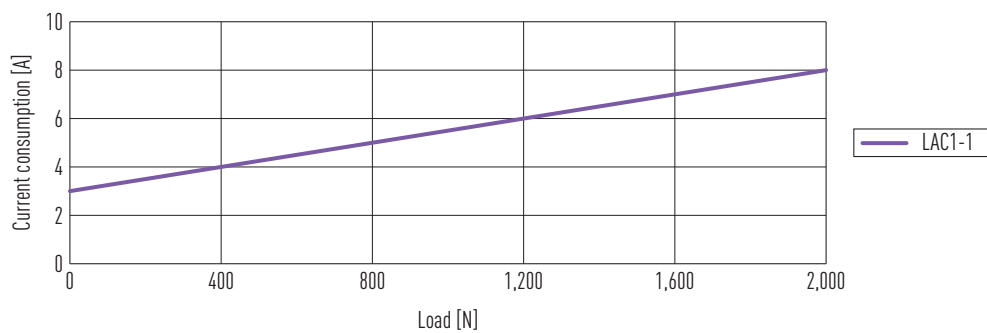


Table 6.3 Technical data LAC1, 24 VDC higher speed motor version (24Q)

Model	Max. thrust [N]	Max. pull [N]	Max. holding force [N]	Speed load=max/load=0 [mm/s]	Standard stroke S [mm]			Duty cycle [%]	Max. current [A] 24 VDC	Potentiometer resolution [Q/mm]	Hall sensor resolution [mm/pulse]
LAC1-1	2,000	500	2,000	13/16	300	400	500	10	8	6.67	0.064

Linear Actuators

Options

7. Standard options for each linear actuator type

Series/Function		IP54	IP65	IP66	Back fixture turned 90°	Gear housing of S45C	Piston rod with flat connector	Safety nut	Mechanical spline	Mechanical quick release	Internal limit switches	External limit switches	Hall sensor (NPN)	Hall sensor (TTL)	Potentiometer	Optical sensor NPN	Optical sensor PNP	Optical sensor TTL
LAM1	LAM1-1	●	▲		▲	▲						▲						
	LAM1-2	●	▲		▲	▲						▲						
	LAM1-1A	●	▲		▲	▲						▲						
LAM2	LAM2-1	●		▲	▲		●		▲		●	▲						
	LAM2-2	●		▲	▲		●		▲		●	▲						
	LAM2-3	●		▲	▲		●		▲		●	▲						
	LAM2-4	●		▲	▲		●		▲		●	▲						
LAM3	LAM3-1	●		▲	▲			▲	▲		●							
	LAM3-2	●		▲	▲			▲	▲		●							
	LAM3-3	●		▲	▲			▲	▲		●							
	LAM3-4	●		▲	▲			▲	▲		●							
LAS1	LAS1-1	●	▲		▲		▲				●							
	LAS1-2	●	▲		▲		▲				●							
LAS2	LAS2-1	●	▲		▲						●				◆	◆	◆	◆
	LAS2-2	●	▲		▲						●				◆	◆	◆	◆
LAS3	LAS3-1	●	▲		▲						●				◆	◆	◆	◆
	LAS3-2	●	▲		▲						●				◆	◆	◆	◆
LAS4	LAS4-1	●	▲								●							
	LAS4-1	●	▲								●							
LAN1	LAN1-1	●		▲	▲			▲	▲		●		▲	▲				
	LAN1-2	●		▲	▲			▲	▲		●		▲	▲				
	LAN1-3	●		▲	▲			▲	▲		●		▲	▲				
	LAN1-4	●		▲	▲			▲	▲	▲	●		▲	▲				
LAN3	LAN3-1	●		▲	▲			▲	▲	▲	●				▲			
	LAN3-2	●		▲	▲			▲	▲	▲	●				▲			
	LAN3-3	●		▲	▲			▲	▲	▲	●				▲			
LAN4	LAN4-1	●		▲														
	LAN4-2	●		▲														
	LAN4-3	●		▲														
	LAN4-4	●		▲														
LAN5	LAN5-1	●	◆	◆	▲			▲	▲		●		▲	▲				
	LAN5-2	●	◆	◆	▲			▲	▲		●		▲	▲				
	LAN5-3	●	◆	◆	▲			▲	▲		●		▲	▲				
	LAN5-4	●	◆	◆	▲			▲	▲		●		▲	▲				
LAC1	LAC1-1	●									●		◆	◆	◆			

- Standard
- ▲ More than one option possible
- ◆ Only one option possible

[illegible]

Linear Actuators

Notes

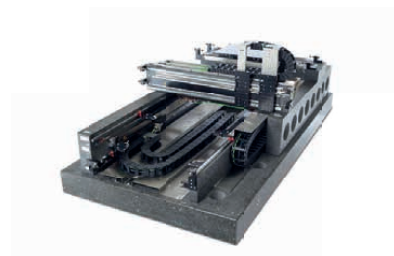
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Linear Guideways



Ballscrews



Linear Motor Systems



Linear Axes



Linear Actuators



Robots



Linear Motor Components



Rotary Tables



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