DH-ROBOTICS

LINEAR COIL ACTUATOR

DH-Robotics Technology Co.,Ltd.

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PRODUCT FEATURES

3 working modes
- Velocity mode
- Torque mode
- Position mode

Compact design, thin and light. The thinnest product thickness is only **10 mm**

Application scenarios

Hi-speed pick and place

Precision machining

Automated production line

Soft landing

Contact the surface of an object with high speed and low force

- Force repeatability: ±3 g
- Stroke resolution: up to 0.5 μm
- Positioning repeatability: ±2 μm
- Rotary position resolution:0.005°

PRODUCT ADVANTAGES

±3 g
Force control accuracy

The force generated by the voice coil actuator is proportional to the current. The voice coil actuator is combined with a high-performance guide rail. The coil and stator parts of the motor are non-contact and wear-free, and the force control accuracy of up to ±3 g can be achieved.

0.5 µm
Stroke resolution

High-precision magnetic encoder with micron-level resolution. Optical encoder with 0.5µm resolution, Magnetic grid encoder with 1µm resolution.

±2 µm
Positioning repeatability

The DH-Robotics voice coil actuator is a direct drive motor combined with a micron-level magnetic encoder. When it positions to the same point repeatedly, the accuracy deviation of the stop position is ±2 µm.

10 mm
Optimal thickness

The DH-Robotics voice coil actuator is designed to be highly integrated, with a minimum thickness of 10 mm for the series of products, greatly saving the internal space of the module device and facilitating the arrangement of the multi-motor matrix combination.

Soft landing

The intelligent soft landing function enables the target object to be softly touched with precise force control. This technology reduces the scratch rate and fragmentation rate of precision fragile or high unit price parts. In this way, the yield rate and productivity are improved.

Advantages Over Conventional Solution

Take chip packaging as an example:

Pain points
The conventional chip pickup mechanism contacts the chip too fast, and the contact force is too large, which will cause the chip to be damaged due to excessive pressing. And it cannot achieve high force control, limiting the efficiency of the chip mounting process.

	Conventional solution	DH-Robotics solution
Device used	Combined mounting head	VLAR-20-15 voice coil linear rotary actuator
Motion module	**The module is integrated with:** Linear motor Servo motor/stepper motor Voice coil motor (VCM)	**All-in-one integrated module design**
Repeatability	Positioning repeatability: ±10 µm Rotation repeatability: ±0.5 ° Force control accuracy: ±10 g	**Positioning repeatability: ±2 µm** ↑ **Improved by more than 5 times** **Rotation repeatability: ±0.05 °** ↑ **Improved by more than 10 times** **Force control accuracy: ±3 g** ↑ **Improved by more than 3 times**

The advantages of DH-Robotics voice coil actuator compared with the common combined mounting head are:

Integrated design
Small volume
Saving device space

Higher accuracy
Faster
More stable motion

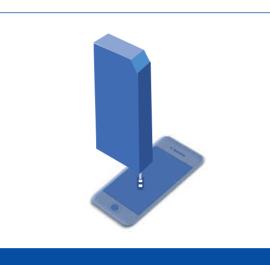**Precision component**
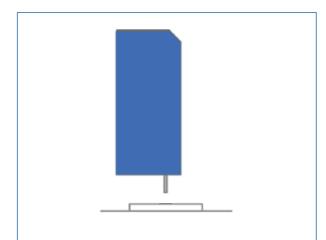**Less wear**
Longer service life

APPLICATIONS

Flexible pick and place of vulnerable components

The voice coil actuator can provide accurate linear and rotary motions of the Z-axis while performing high-speed pick-and-place motions. With the soft landing function, it can touch precision components with a force of ±3 g to protect the components from damage, for example, in chip packaging and camera module assembly.
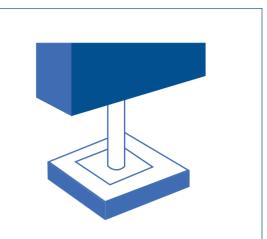
Electronics testing

Highly integrated design, the minimum thickness can reach 10mm, suitable for multi-motor matrix combination arrangement, and can complete a variety of touch operation modes. The force control accuracy is ±3g, the repeat accuracy (position) is ±2μm, the product runs stably, so that the detection efficiency is improved. It can be applied to touch panel testing, keyboard testing, switch testing.

New energy battery thickness measurement

The thrust and speed of the actuator are set through the program, and the battery pack is pushed flexibly. When the set force is reached, the position is measured and the thickness information of the battery pack is output. The characteristics of high stability, high frequency and long life of the voice coil actuator can ensure long-term, efficient, accurate and stable execution of detection.

High-precision parts assembly

Miniature electronic components have high requirements for production and assembly, such as camera module assembly. The precise force control and soft landing capability of the voice coil linear rotary actuator can prevent parts from being damaged; high position repeatability ensures the accuracy of positioning and assembly and improves the overall assembly production yield.

Linear Coil Actuator

VLA SERIES

Linear Coil Actuator

VLA-10-20(Magnetic encoder)

VLA-16-15(Magnetic encoder)

VLA-16-15(With vacuum)

VLA-25-10(Optical/Magnetic encoder)

VLA-25-25(Magnetic encoder)
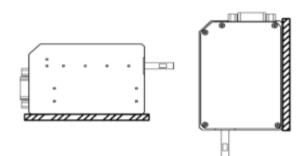
VLA-30-25(Optical/Magnetic encoder)

PRODUCT FEATURES

High force repeatability Soft landing	Light, thin, and easy to use Adjustable parameters	High-speed and high-frequency Long life over 100 million cycles
The thrust repeatability of VLA series of products is within ±3 g, meeting the production and assembly requirements of semiconductors, optoelectronics, and other industries for high force control accuracy.	The product design is compact, light and thin, and has strong maneuverability. You can adjust the speed, thrust, and position parameters and set different modes through the control software.	With high response-ability, high speed, and high frequency, the frequency can reach more than 30 Hz without load. The service life is up to 100 million cycles, and it is stable and durable.

INSTALLATION METHOD

Install it using the screw holes on the back of the product.

Installation directions:

● Horizontal direction

● Vertical installation with the vertical rod pointing down

● Vertical installation with the vertical rod pointing up
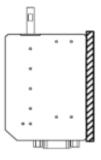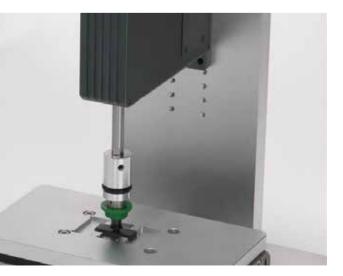
APPLICATION SCENARIOS

The force repeatability of ±3 g, micron-level resolution, and ultra-high motion frequency of the VLA series help to improve the efficiency and yield rate of quick pick-and-place, assembly, testing, and other scenarios in semiconductor, 3C electronics, optoelectronics, and other industries.

VLA-10-20 (Magnetic encoder)

LINEAR COIL ACTUATOR

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLA	10	20	M2	24	BV	0

M2	Magnetic encoder, 1 µm

BV	Bottom interface + With vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Intelligent feedback **Adjustable parameters** **Long life**

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
When higher requirements for actuators are required, please contact engineering staff.

Performance specifications

Peak thrust	4 N
Continuous thrust	1.8 N
Total stroke	20 mm
Force repeatability	±5 g
Force constant	1.8 N/A
Linear stroke resolution	1 µm
Positioning repeatability	±5 µm
No-load frequency	20 Hz

Mechanical specifications

Overall mass	120 g
Movable part mass	30 g
Size	85 mm x 58 mm x 10 mm
Vacuum	Without vacuum

Operating environment

Operating voltage	24 V DC ± 10%
Continuous current	1.0 A
Peak current	2.2 A
Recommended load	<50 g
IP rating	IP 40
Recommended operating environment	0°C-40°C, 85% RH or less
International standard compliance	CE, FCC, RoHS

Dimensions

VLA-16-15 (Magnetic encoder)

LINEAR COIL ACTUATOR

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLA	16	15	M2	24	B	0

M2	Magnetic encoder, 1 μm

B	Bottom interface + Without vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Intelligent feedback

Adjustable parameters

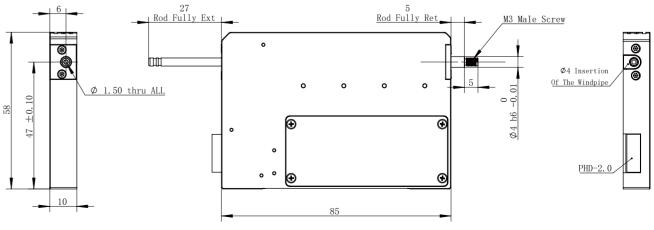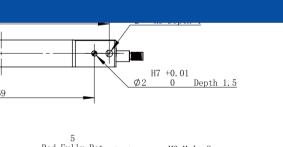**Long life**

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
When higher requirements for actuators are required, please contact engineering staff.

Performance specifications

Peak thrust	6 N
Continuous thrust	3 N
Total stroke	15 mm
Force repeatability	±3 g
Force constant	3 N/A
Linear stroke resolution	1 μm
Positioning repeatability	±5 μm
No-load frequency	More than 30 Hz

Mechanical specifications

Overall mass	190 g
Movable part mass	30 g
Size	80 mm x 55 mm x 16 mm
Vacuum	Without vacuum

Operating environment

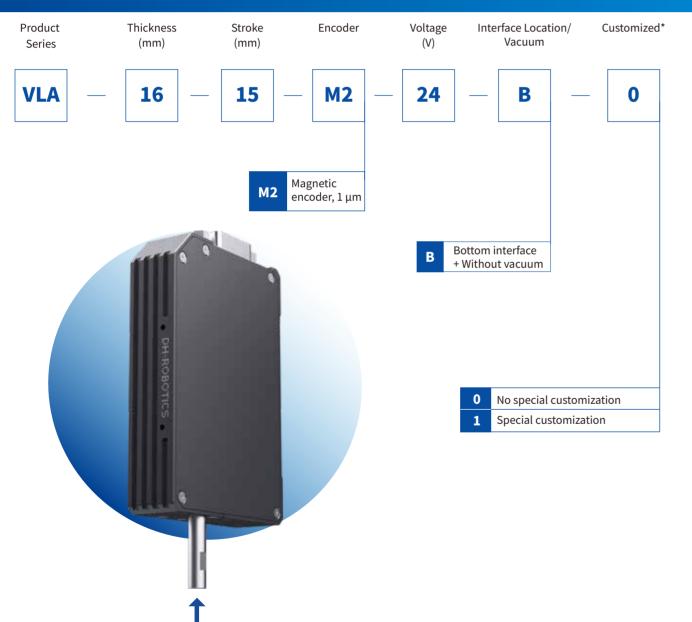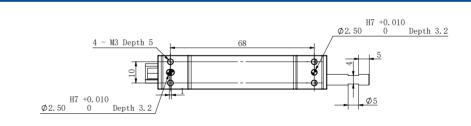|	
Operating voltage	24 V DC ± 10%
Continuous current	1.0 A
Peak current	2.4 A
Recommended load	≤80 g
IP rating	IP 40
Recommended operating environment	0°C-40°C, 85% RH or less
International standard compliance	CE, FCC, RoHS

Dimensions

VLA-16-15 (With vacuum)

LINEAR COIL ACTUATOR

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLA	16	15	M2	24	BV	0

M2	Magnetic encoder, 1 μm

BV	Bottom interface + With vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Intelligent feedback

Adjustable parameters

Long life
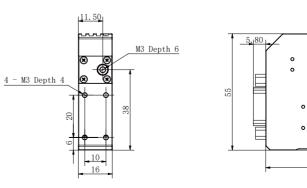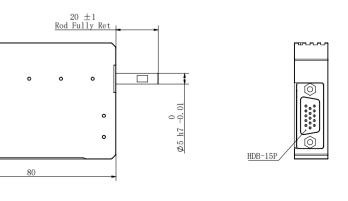
For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
When higher requirements for actuators are required, please contact engineering staff.

Performance specifications

Peak thrust	6 N
Continuous thrust	3 N
Total stroke	15 mm
Force repeatability	±3 g
Force constant	3 N/A
Linear stroke resolution	1 μm
Positioning repeatability	±5 μm
No-load frequency	More than 30 Hz

Mechanical specifications

Overall mass	220 g
Movable part mass	30 g
Size	100 mm x 62 mm x 16 mm
Vacuum	With vacuum

Operating environment

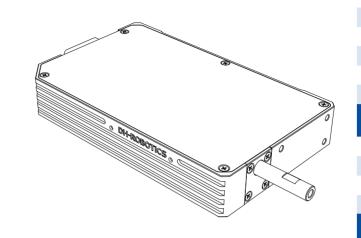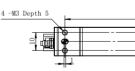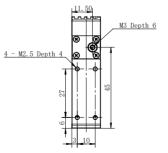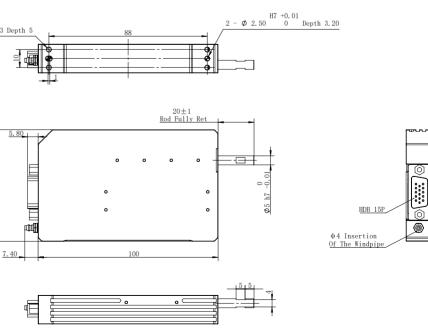|	
Operating voltage	24 V DC ± 10%
Continuous current	1.0 A
Peak current	2.4 A
Recommended load	≤80 g
IP rating	IP 40
Recommended operating environment	0°C-40°C, 85% RH or less
International standard compliance	CE, FCC, RoHS

Dimensions

4 -M3 Depth 5
88
2 - Ø 2.50 H7 +0.01 0 Depth 3.20

11.50
M3 Depth 6
4 - M2.5 Depth 4
27
45
6
3 10

20±1 Rod Fully Ret
5.80
62
Ø5 H7 -0.01 0
7.40
100

HDB 15P
Φ4 Insertion Of The Windpipe

5 5

VLA-25-10 (Optical/Magnetic encoder)

LINEAR COIL ACTUATOR

TECHNICAL SPECIFICATIONS

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLA	25	10	M2	24	BV	0

M2	Magnetic encoder, 1 μm
H1	Optical encoder, 0.5 μm

BV	Bottom interface + With vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

Performance specifications

Peak thrust	12 N
Continuous thrust	4.8 N
Total stroke	10 mm
Force repeatability	±3 g
Force constant	6.8 N/A
Linear stroke resolution	1 μm (Magnetic grid encoder) 0.5 μm (Optical encoder)
Positioning repeatability	±5 μm (Magnetic grid encoder) ±2 μm (Optical encoder)
No-load frequency	18 Hz

Mechanical specifications

Overall mass	304 g
Movable part mass	57 g
Size	80 mm x 60 mm x 25 mm
Vacuum	Without vacuum

Operating environment

Operating voltage	24 V DC ± 10%
Continuous current	0.7 A
Peak current	1.8 A
Recommended load	≤100 g
IP rating	IP 40
Recommended operating environment	0°C-40°C, 85% RH or less
International standard compliance	CE，FCC，RoHS

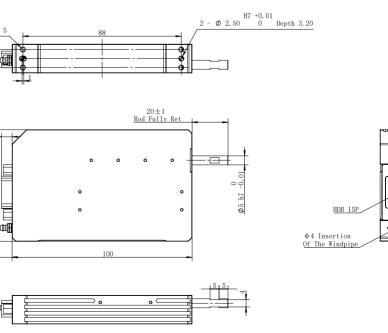**Intelligent feedback** **Adjustable parameters** **Long life**

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
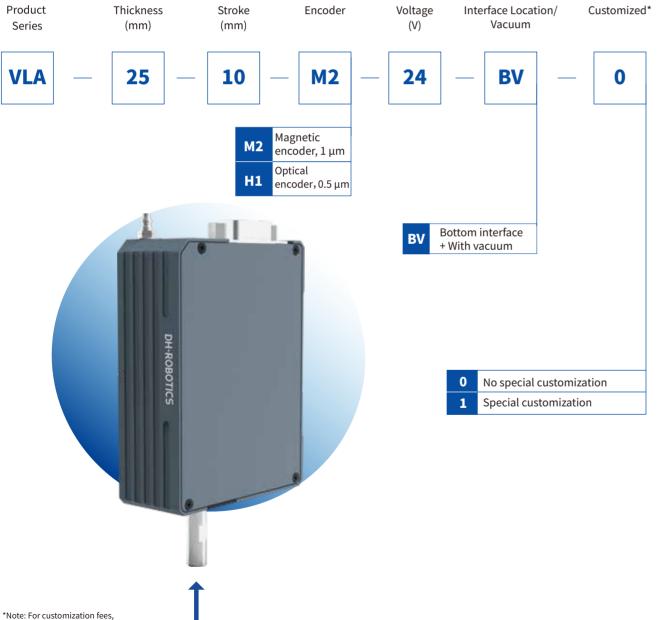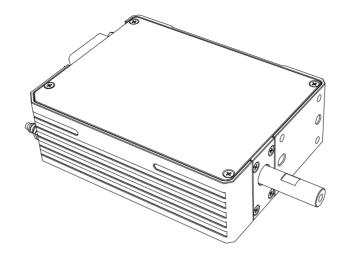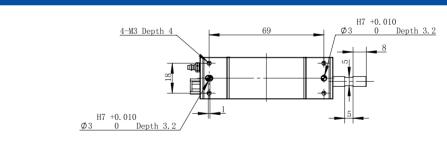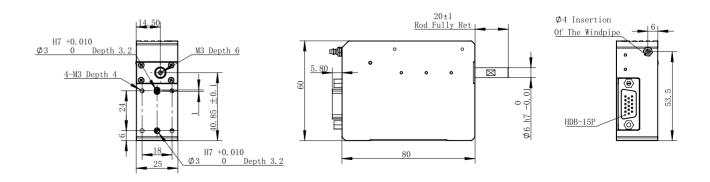When higher requirements for actuators are required, please contact engineering staff.
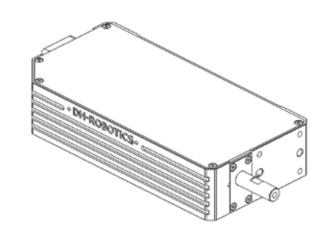
Dimensions

VLA-25-25 (Magnetic encoder)

LINEAR COIL ACTUATOR

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLA	25	25	M2	24	B	0

M2	Magnetic encoder, 1 µm

B	Bottom interface + Without vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Performance specifications

Peak thrust	11 N
Continuous thrust	6 N
Total stroke	25 mm
Force repeatability	±3 g
Force constant	5 N/A
Linear stroke resolution	1 µm
Positioning repeatability	±5 µm
No-load frequency	More than 30 Hz

Mechanical specifications

Overall mass	510 g
Movable part mass	54 g
Size	120 mm x 60 mm x 25 mm
Vacuum	Without vacuum

Operating environment

Operating voltage	24 V DC ± 10%
Continuous current	1.2 A
Peak current	2.2 A
Recommended load	≤150 g
IP rating	IP 40
Recommended operating environment	0℃-40℃, 85% RH or less
International standard compliance	CE, FCC, RoHS

Intelligent feedback

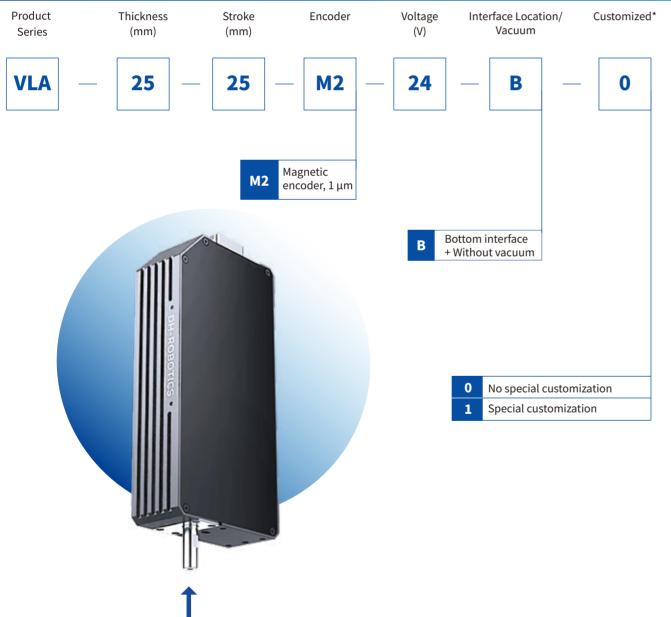**Adjustable parameters**

Long life

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
When higher requirements for actuators are required, please contact engineering staff.

Dimensions

VLA-30-25 (Optical/Magnetic encoder)

LINEAR COIL ACTUATOR

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLA	30	25	M2	24	B	0

M2	Magnetic encoder, 1 μm
H1	Optical encoder, 0.5 μm

24
48

B	Bottom interface + Without vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Intelligent feedback

Adjustable parameters

Long life

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
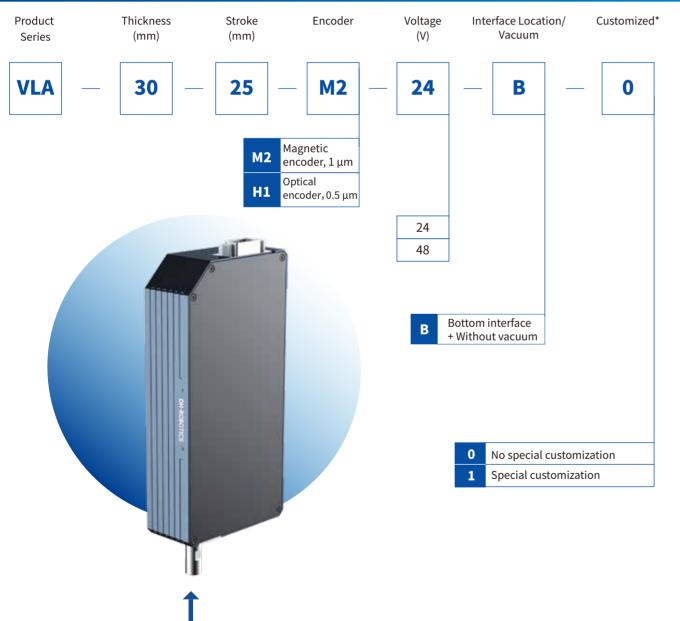When higher requirements for actuators are required, please contact engineering staff.

Performance specifications

Peak thrust	24 N	30 N
Continuous thrust	12 N	16 N
Total stroke	25 mm	
Force repeatability	±3 g	
Force constant	8.0 N/A	
Linear stroke resolution	1 μm (Magnetic grid encoder) 0.5 μm (Optical encoder)	
Positioning repeatability	±5 μm	
No-load frequency	More than 30 Hz	

Mechanical specifications

Overall mass	860 g
Movable part mass	130 g
Size	140 mm x 75 mm x 30 mm
Vacuum	Without vacuum

Operating environment

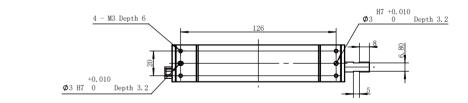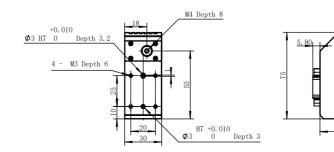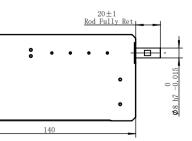| Operating voltage	24 V DC ± 10%	48 V DC ± 10%
Continuous current	1.5 A	2 A
Peak current	3 A	4 A
Recommended load	≤300 g	
IP rating	IP 40	
Recommended operating environment	0°C-40°C, 85% RH or less	
International standard compliance	CE, FCC, RoHS	

Dimensions

4 − M3 Depth 6
126
ϕ3 H7 +0.010 0 Depth 3.2
8
6.80
20
ϕ3 H7 +0.010 0 Depth 3.2
5

18
M4 Depth 8
ϕ3 H7 +0.010 0 Depth 3.2
4 − M3 Depth 6
25
10
55
20
30
ϕ3 H7 +0.010 0 Depth 3

20±1 Rod Fully Ret.
5.80
75
140
ϕ8 h7 0 −0.015
HDB−15P

VLAR SERIES

Linear Rotary Coil Actuator

VLAR-20-15(Magnetic encoder)

VLAR-20-15(Optical encoder)

VLAR-20-25(Optical/Magnetic encoder)

VLAR-25-25(Optical/Magnetic encoder)

VLAR-25-40(Optical/Magnetic encoder)

PRODUCT FEATURES

High performance Linear/Rotary motion Adjustable parameters	Hollow rod Soft landing Power-off protection	Precision resolution Long life over 100 million cycles
Provide accurate linear and rotary actions of the Z-axis during high-speed motion, with adjustable velocity, thrust, and position parameters, enabling complex actions requiring high frequency and high precision.	The product is compact, light, and thin. It employs a hollow rod design to support pick-and-place tasks. The intelligent soft landing function protects the picked and placed workpiece with precise force control. The Z-axis has a built-in spring to prevent the axis from falling off due to power-off during vertical operations.	Regarding this product, the stroke resolution is up to 0.5 μm, the rotary position resolution is 0.005°, and the thrust repeatability is within ±3 g. With high-quality guide rail-level related components, it has a service life of up to 100 million cycles, and it is stable and durable.

INSTALLATION METHOD

Install it using the screw holes on the back of the product.

Installation directions:

- Horizontal direction
- Vertical installation with the vertical rod pointing down
- Vertical installation with the vertical rod pointing up

APPLICATION SCENARIOS

The force repeatability of ±3 g and the micron-level resolution can be applied to the fast pick-and-place, assembly, testing, and other scenarios in semiconductors, 3C electronics, and other industries.

The unique linear and rotary motions of the Z-axis of the VLAR series can adapt to more abundant industrial scenarios, such as positioning, correction, and assembly in medical automation, 3C, and packaging automation.
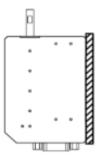
VLAR-20-15 (Magnetic encoder)

LINEAR ROTARY COIL ACTUATOR

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLAR	20	15	M2	24	BV	0

M2	Magnetic encoder, 1 μm

BV	Bottom interface + With vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Performance specifications

Peak thrust	16.5 N
Continuous thrust	8 N
Total stroke	15 mm
Force repeatability	±3 g
Force constant	6.7 N/A
Maximum torque	0.04 N·m
Maximum speed	2000 rpm
Linear stroke resolution	1 μm
Positioning repeatability	±5 μm
Rotary encoder resolution	0.02°

Mechanical specifications

Overall mass	555 g
Movable part mass	144 g
Size	140 mm x 80 mm x 20 mm
Vacuum	With vacuum

Operating environment

Operating voltage	24 V DC ± 10%
Continuous current	(Linear) 1.2 A (Rotary) 0.6 A
Peak current	(Linear) 2.5 A (Rotary) 2.5 A
Recommended load	≤150 g
Recommended load inertia	20 g·cm²
IP rating	IP 40
Recommended operating environmen	0℃-40℃, 85% RH or less
International standard compliance	CE, FCC, RoHS

Intelligent feedback

Adjustable parameters

Long life

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
When higher requirements for actuators are required, please contact engineering staff.

Dimensions

4 x Ø 3.40thru ALL
3 H7 +0.010 / 0 thru ALL
150
12
2 x Ø 3 H7 +0.010 / 0 thru ALL
2

20 ±0.50 Rod Fully Ret
M3 Depth 6
64.50
80
Ø3.40
7.40
20
10
140
160
Ø6 h7 0/−0.01
HDB-26P
Ø4 Insertion Of The Windpipe
10
10

8
5
5
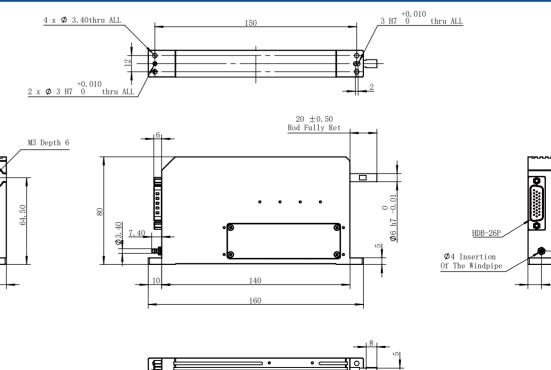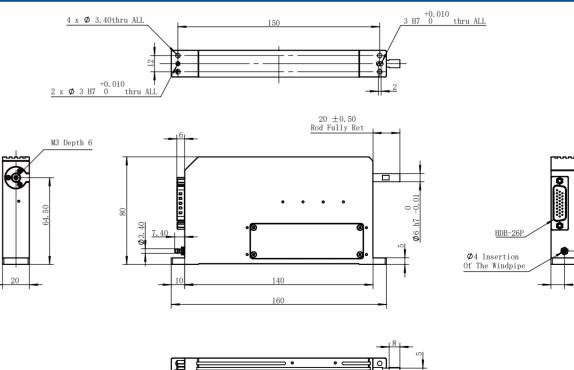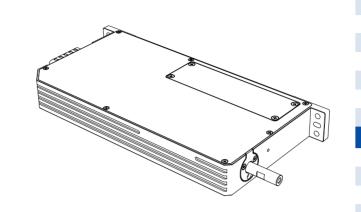
VLAR-20-15 (Optical encoder)

LINEAR ROTARY COIL ACTUATOR

TECHNICAL SPECIFICATIONS

Performance specifications	
Peak thrust	16.5 N
Continuous thrust	8 N
Total stroke	15 mm
Force repeatability	±3 g
Force constant	6.7 N/A
Maximum torque	0.04 N·m
Maximum speed	2000 rpm
Linear stroke resolution	0.5 μm
Positioning repeatability	±2 μm
Rotary encoder resolution	0.005°

Mechanical specifications	
Overall mass	600 g
Movable part mass	156 g
Size	160 mm x 83 mm x 20 mm
Vacuum	With vacuum

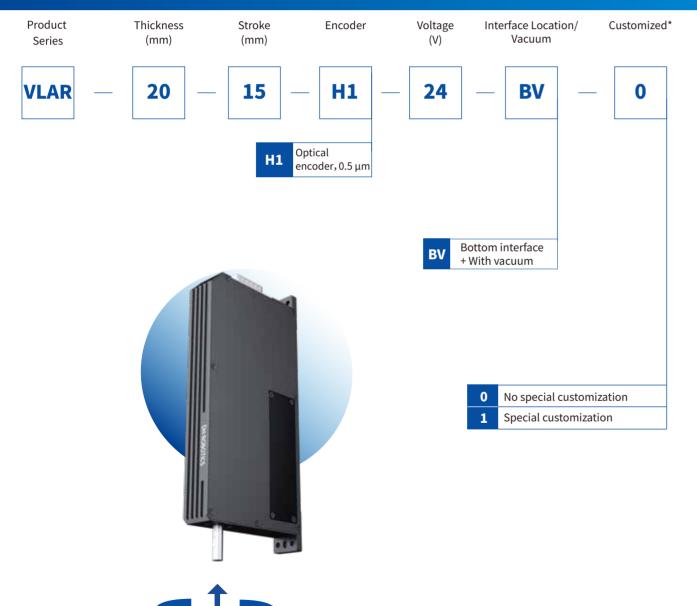| Operating environment	
Operating voltage	24 V DC ± 10%
Continuous current	(Linear) 1.2 A (Rotary)0.6 A
Peak current	(Linear) 2.5 A (Rotary)2.5 A
Recommended load	≤150 g
Recommended load inertia	20 g·cm²
IP rating	IP 40
Recommended operating environmen	0°C-40°C, 85% RH or less
International standard compliance	CE, FCC, RoHS

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLAR	20	15	H1	24	BV	0

H1	Optical encoder, 0.5 μm

BV	Bottom interface + With vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
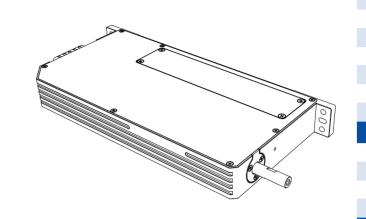When higher requirements for actuators are required, please contact engineering staff.

Intelligent feedback

Adjustable parameters

Long life

Dimensions

VLAR-20-25 (Optical/Magnetic encoder)

LINEAR ROTARY COIL ACTUATOR

1 μm (Magnetic grid encoder)	0.5 μm (Optical encoder)
±5 μm (Magnetic grid encoder)	±2 μm (Optical encoder)
0.02° (Magnetic grid encoder)	0.005° (Optical encoder)

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLAR	20	25	H1	24	BV	0

M2	Magnetic encoder, 1 μm
H1	Optical encoder, 0.5 μm

BV	Bottom interface + With vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Performance specifications

Peak thrust	16 N
Continuous thrust	8 N
Total stroke	25 mm
Force repeatability	±3 g
Force constant	6.5 N/A
Maximum torque	0.056 N·m
Maximum speed	2000 rpm
Linear stroke resolution	1 μm (Magnetic grid encoder) / 0.5 μm (Optical encoder)
Positioning repeatability	±5 μm (Magnetic grid encoder) / ±2 μm (Optical encoder)
Rotary encoder resolution	0.02° (Magnetic grid encoder) / 0.005° (Optical encoder)

Mechanical specifications

Overall mass	687 g
Movable part mass	166 g
Size	165 mm x 83 mm x 20 mm
Vacuum	With vacuum

Operating environment

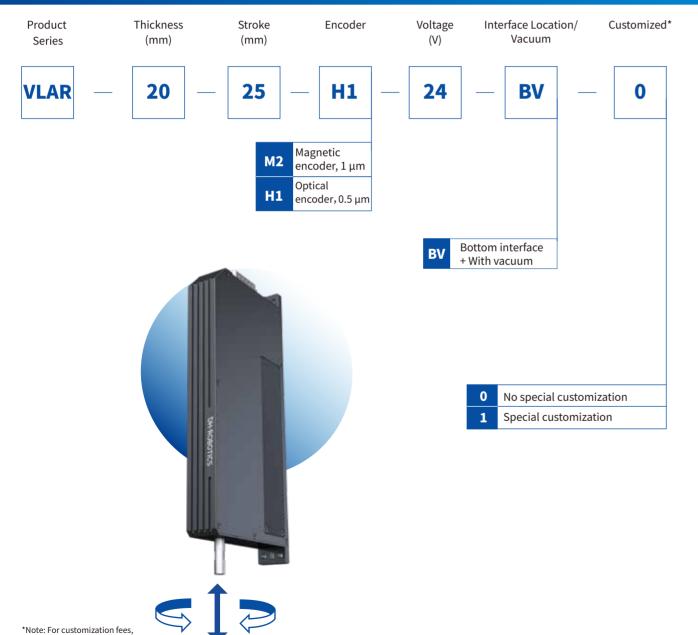|	
Operating voltage	24 V DC ± 10%
Continuous current	(Linear) 1.2 A (Rotary)0.6 A
Peak current	(Linear) 2.5 A (Rotary)2.5 A
Recommended load	≤150 g
Recommended load inertia	20 g·cm²
IP rating	IP 40
Recommended operating environmen	0°C-40°C, 85% RH or less
International standard compliance	CE, FCC, RoHS

Intelligent feedback **Adjustable parameters** **Long life**

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
When higher requirements for actuators are required, please contact engineering staff.
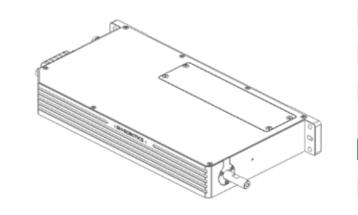
Dimensions

4 x Ø 3.40thru ALL

H7+0.010 0 thru ALL

175

H7 +0.010 2 x Ø 3 0 thru ALL

3

2

12

20 ±0.50 Rod Fully Ret

M3 Depth 6

6

83

Ø6 h7 -0.01 0

HDB-26P

Ø4 Insertion Of The Windpipe

64.50

Ø3.40

7.40

20

10

165

185

10

8

5

5

10

VLAR-25-25 (Optical/Magnetic encoder)

LINEAR ROTARY COIL ACTUATOR

1 μm (Magnetic grid encoder)	0.5 μm (Optical encoder)
±5 μm (Magnetic grid encoder)	±2 μm (Optical encoder)
0.02° (Magnetic grid encoder)	0.005° (Optical encoder)

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLAR	25	25	H1	24U	BV	0

M2	Magnetic encoder, 1 μm
H1	Optical encoder, 0.5 μm

24U	24V main with 48V compatibility

BV	Bottom interface + With vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Performance specifications

Peak thrust	15 N
Continuous thrust	8 N
Total stroke	25 mm
Force repeatability	±5 g
Force constant	6.7 N/A
Maximum torque	0.072 N·m
Maximum speed	2000 rpm
Linear stroke resolution	1 μm (Magnetic grid encoder) / 0.5 μm (Optical encoder)
Positioning repeatability	±5 μm (Magnetic grid encoder) / ±2 μm (Optical encoder)
Rotary encoder resolution	0.02° (Magnetic grid encoder) / 0.005° (Optical encoder)

Mechanical specifications

Overall mass	1080 g
Movable part mass	280 g
Size	180 mm x 105 mm x 25 mm
Vacuum	With vacuum

Operating environment

Operating voltage	24 V DC ± 10%
Continuous current	(Linear)1.2 A (Rotary)1.0 A
Peak current	(Linear)2.2 A (Rotary)2.5 A
Recommended load	≤200 g
Recommended load inertia	140 g·cm²
IP rating	IP 40
Recommended operating environmen	0°C-40°C, 85% RH or less
International standard compliance	CE, FCC, RoHS

Intelligent feedback

Adjustable parameters

Long life

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
When higher requirements for actuators are required, please contact engineering staff.

Dimensions

VLAR-25-40 (Optical/Magnetic encoder)
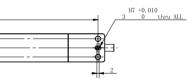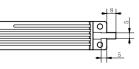
LINEAR ROTARY COIL ACTUATOR

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
VLAR	25	40	H1	24U	BV	0

M2	Magnetic encoder, 1 μm
H1	Optical encoder, 0.5 μm

24U	24V main with 48V compatibility

BV	Bottom interface + With vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Performance specifications		
Peak thrust	10 N	
Continuous thrust	5.5 N	
Total stroke	40 mm	
Force repeatability	±3 g	
Force constant	4.6 N/A	
Maximum torque	0.035 N·m	
Maximum speed	2000 rpm	
Linear stroke resolution	1 μm (Magnetic grid encoder)	0.5 μm (Optical encoder)
Positioning repeatability	±5 μm (Magnetic grid encoder)	±2 μm (Optical encoder)
Rotary encoder resolution	0.02° (Magnetic grid encoder)	0.005° (Optical encoder)

Mechanical specifications	
Overall mass	1150 g
Movable part mass	265 g
Size	180 mm x 115 mm x 25 mm
Vacuum	With vacuum

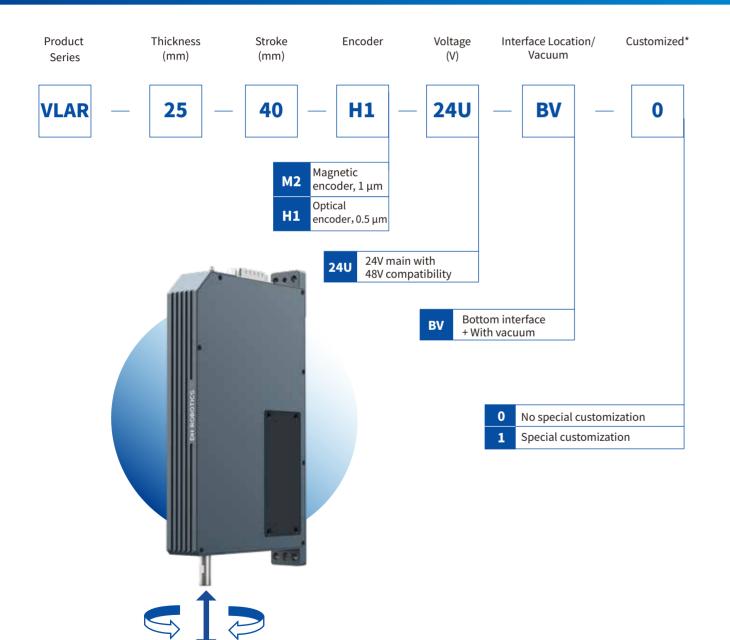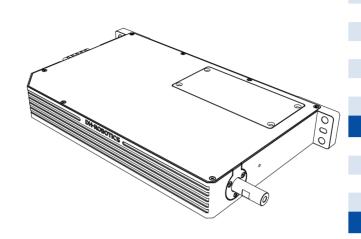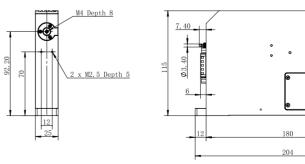| Operating environment	
Operating voltage	24 V DC ± 10%
Continuous current	(Linear) 1.2 A (Rotary)0.9 A
Peak current	(Linear) 2.2 A (Rotary)2.5 A
Recommended load	≤150 g
Recommended load inertia	20 g·cm²
IP rating	IP 40
Recommended operating environmen	0℃-40℃, 85% RH or less
International standard compliance	CE, FCC, RoHS

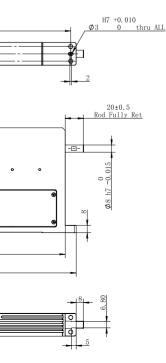**Intelligent feedback** **Adjustable parameters** **Long life**

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
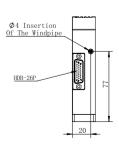When higher requirements for actuators are required, please contact engineering staff.

Dimensions

4 x Φ4.30 thru ALL   192   H7 +0.010 Φ3 0 thru ALL
H7 +0.010 Φ3 0 thru ALL   2
20±0.5 Rod Fully Ret
M4 Depth 8   7.40   Φ4 Insertion Of The Windpipe
92.20   70   115   Φ3.40   Φ8 h7 −0.015   HDB-26P   77
2 x M2.5 Depth 5   6   8
12   25   12   180   20
204
8   6.80
5

DLAR SERIES

Direct Drive Linear Rotary Actuator

DLAR-20-40(Optical/Magnetic encoder)

PRODUCT FEATURES

High performance Linear/Rotary motion Adjustable parameters	Hollow rod Soft landing Power-off protection	Precision resolution Long life over 100 million cycles
Provide accurate linear and rotary actions of the Z-axis during high-speed motion, with adjustable velocity, thrust, and position parameters, enabling complex actions requiring high frequency and high precision.	The product is compact, light, and thin. It employs a hollow rod design to support pick-and-place tasks. The intelligent soft landing function protects the picked and placed workpiece with precise force control. The Z-axis has a built-in spring to prevent the axis from falling off due to power-off during vertical operations.	Regarding this product, the stroke resolution is up to 0.5 μm, the rotary position resolution is 0.005°. With high-quality guide rail-level related components, it has a service life of up to 100 million cycles, and it is stable and durable.

INSTALLATION METHOD

Install it using the screw holes on the back of the product.

Installation directions:

- Horizontal direction
- Vertical installation with the vertical rod pointing down
- Vertical installation with the vertical rod pointing up

APPLICATION SCENARIOS

The force repeatability of ±5 g and the micron-level resolution can be applied to the fast pick-and-place, assembly, testing, and other scenarios in semiconductors, 3C electronics, and other industries.
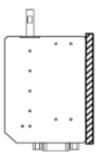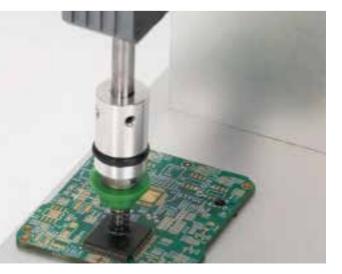
The unique linear and rotary motions of the Z-axis of the VLAR series can adapt to more abundant industrial scenarios, such as positioning, correction, and assembly in medical automation, 3C, and packaging automation.

DLAR-20-40 (Optical/Magnetic encoder)

DIRECT DRIVE LINEAR ROTARY ACTUATOR

	1 μm (Magnetic grid encoder)	0.5 μm (Optical encoder)
±5 μm (Magnetic grid encoder)	±2 μm (Optical encoder)
0.02° (Magnetic grid encoder)	0.005° (Optical encoder)

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
DLAR	20	40	H1	24U	BV	0

| M2 | Magnetic encoder, 1 μm |
| H1 | Optical encoder, 0.5 μm |

| 24U | 24V main with 48V compatibility |

| BV | Bottom interface + With vacuum |

| 0 | No special customization |
| 1 | Special customization |

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Performance specifications

Peak thrust	33 N
Continuous thrust	11 N
Total stroke	40 mm
Force repeatability	±5 g
Force constant	9.2 N/A
Maximum torque	0.056 N·m
Maximum speed	2000 rpm
Linear stroke resolution	1 μm (Magnetic grid encoder) / 0.5 μm (Optical encoder)
Positioning repeatability	±5 μm (Magnetic grid encoder) / ±2 μm (Optical encoder)
Rotary encoder resolution	0.02° (Magnetic grid encoder) / 0.005° (Optical encoder)

Mechanical specifications

Overall mass	1100 g
Movable part mass	180 g
Size	195 mm x 106 mm x 20 mm
Vacuum	With vacuum

Operating environment

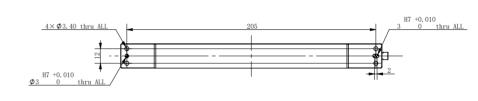| Operating voltage	24 V DC ± 10%
Continuous current	(Linear)1.2 A (Rotary)0.6 A
Peak current	(Linear)3.5 A (Rotary)2.5 A
Recommended load	≤150 g
Recommended load inertia	20 g·cm²
IP rating	IP 40
Recommended operating environmen	0°C-40°C, 85% RH or less
International standard compliance	CE, FCC, RoHS

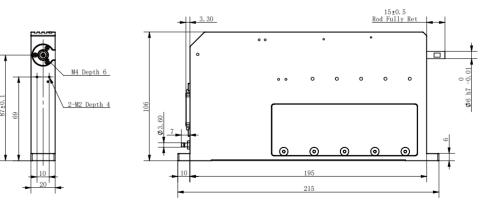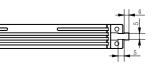**Intelligent feedback**   **Adjustable parameters**   **Long life**

For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
When higher requirements for actuators are required, please contact engineering staff.
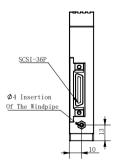
Dimensions

DLSR SERIES

Direct Drive Linear Rotary Actuator

DLSR-25-50 (Optical/Magnetic encoder)

PRODUCT FEATURES

High Cost-Performance Ratio	Soft Landing Feature	Versatile Motion Control
Offering a cost-effective solution, this product provides a reliable and economical solution for both high-performance Z-axis linear and rotational movements.	Integrated with intelligent soft landing functionality, this product achieves smooth and controlled deceleration upon contact with objects, minimizing impact forces to protect workpieces and enhance operational efficiency.	Enabling highly precise Z-axis linear and rotational movements, this product boasts adjustable parameters for speed, thrust, and position, catering to the demands of complex motion control requirements.

INSTALLATION METHOD

Install it using the screw holes on the back of the product.

Installation directions:

- Horizontal direction
- Vertical installation with the vertical rod pointing down
- Vertical installation with the vertical rod pointing up

APPLICATION SCENARIOS

The DLSR features both linear and rotational motion, with a repeatable force accuracy of ±10g. It is suitable for applications in the assembly and fitting processes of 3C products, as well as for tasks such as automated transplanting and handling.

DLSR-25-50 (Optical/Magnetic encoder)

DIRECT DRIVE LINEAR ROTARY ACTUATOR

SELECTION METHOD

Product Series	Thickness (mm)	Stroke (mm)	Encoder	Voltage (V)	Interface Location/ Vacuum	Customized*
DLAR	25	50	H1	24U	BV	0

M2	Magnetic encoder, 1 μm
H1	Optical encoder, 0.5 μm

24U	24V main with 48V compatibility

BV	Bottom interface + With vacuum

0	No special customization
1	Special customization

*Note: For customization fees, consult the company's sales staff.

TECHNICAL SPECIFICATIONS

Performance specifications

Peak thrust	26 N
Continuous thrust	8 N
Total stroke	50 mm
Force repeatability	±10 g
Force constant	6.6 N/A
Maximum torque	0.03 N·m
Maximum speed	800 rpm
Linear stroke resolution	1 μm (Magnetic grid encoder) 0.5 μm (Optical encoder)
Positioning repeatability	±5 μm (Magnetic grid encoder) ±2 μm (Optical encoder)
Closed-loop stepper motor with encoder resolution	2000 lines

Mechanical specifications

Overall mass	1170 g
Movable part mass	245 g
Size	200 mm x 115 mm x 25 mm
Vacuum	With vacuum

Operating environment

Operating voltage	24 V DC ± 10%
Continuous current	(Linear)1.2 A (Rotary)0.8 A
Peak current	(Linear)4.0 A (Rotary)1.2 A
Recommended load	150 g
Recommended load inertia	20 g·cm²
IP rating	IP 40
Recommended operating environmen	0°C-40°C, 85% RH or less
International standard compliance	CE, FCC, RoHS

Intelligent feedback

Adjustable parameters

Long life
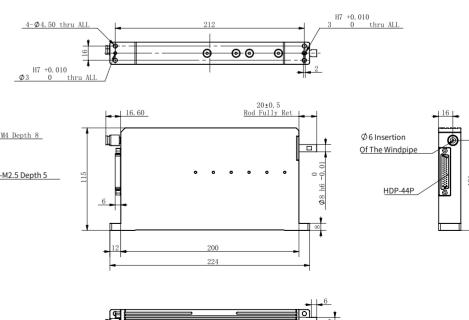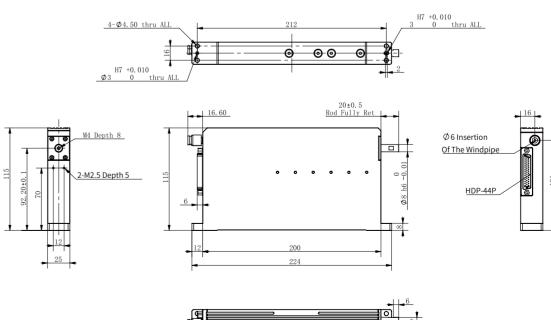
For specific selection of voice coil products, please contact DH-Robotics or authorized agent for application and process confirmation.
When higher requirements for actuators are required, please contact engineering staff.

Dimensions

VOICE COIL ACTUATOR DRIVE

The drives are available in the following models:

Drive	Communication method	Operating mode	I/O	Note	Model
ISD (DH-Robotics)	USB	Velocity mode Torque mode Position mode	6 digital inputs 4 digital outputs 2 12-bit analog inputs	Small size with excellent force control accuracy. The built-in soft landing function can be configured with rich parameters and is flexible for use.	EtherCAT: ISD-N-EC-U-10 A1
	EtherCAT (CoE) (changeable to CANopen)	Position track mode Velocity track mode Torque track mode Interpolated position mode Cyclic Synchronous Position mode Cyclic Synchronous Velocity mode Cyclic Synchronous Torque mode			
SERVO TRONIX (Servotronix)	USB	Velocity mode Torque mode Position mode	8 digital inputs 3 fast digital inputs 6 digital outputs 2 fast digital outputs 1 16-bit analog input 2 14-bit analog inputs 1 analog output	Medium size, good force control accuracy, no soft landing function, and configurable I/O trigger script	EtherCAT: CDHD2-0031-DEC2
	RS232				
	Analog voltage	Analog velocity mode Analog torque mode			
	EtherCAT (CoE) (changeable to CANopen)	Position track mode Velocity track mode Torque track mode Interpolated position mode Cyclic Synchronous Position mode Cyclic Synchronous Velocity mode Cyclic Synchronous Torque mode			
ELMO (Elmo)	USB	Velocity mode Torque mode Position mode	6 digital inputs 2 digital outputs 1 analog input	Small size, excellent force control accuracy, built-in soft landing function, and programmable inside the drive	EtherCAT: G-MOL WHI5/100EE
	RS232				
	EtherNET UDP				
	EtherCAT (CoE) (changeable to CANopen)	Position track mode Velocity track mode Torque track mode Interpolated position mode Cyclic Synchronous Position mode Cyclic Synchronous Velocity mode Cyclic Synchronous Torque mode			

Customer trust

More than 500 customers around the world are using DH-Robotics products
The number of customers continues to grow rapidly. . .

Product Distribution

Chinese Agent Distribution Cties

Beijing/Changchun/Changsha/Chengdu/Chongqing/Dalian/Dongguan/
Guangzhou/Hangzhou/Hefei/Jinan/Nanchang/Nanjing/Ningbo/Qingdao/
Shanghai/Shenyang/Shenzhen/Suzhou/Wuhan/Wuxi/Xi'an/Xiamen/Yantai/
Yangzhou/Zhengzhou/Zhuhai

Overseas Agents Distribution Area

Europe: Spain / France / Italy / Germany / UK / Czech Republic / Romania / Russia / Netherlands / Lithuania / Sweden / Denmark / Norway
Asia: Israel / Bangladesh / India / Japan / Thailand / South Korea / Malaysia
Australia: Australia / New Zealand
America: United States / Mexico
Middle East: Saudi Arabia / Tunisia / Türkiye

DH-ROBOTICS

**A professional provider of precision
motion control products and solutions**