DINGS' Voice Coil Series

Product Introduction

DINGS
Precision Motion Specialist

Solution Lineup

From standalone units to modules and stages for diverse applications

Voice Coil Motor · Actuator · Flat Type

Basic Linear Drive

- Direct drive structure
- Fast response
- Flexible design

Analog Linear Hall Sensor Type

Sensor Feedback Drive

- Position feedback
- Stable operation
- Easy control

Voice Coil Module

Integrated Module

- Guide & sensor integrated
- Precise positioning
- Modular design

Voice Coil Stage

Precision Positioning Stage

- High-speed response
- μm-level positioning
- For precision equipment

Voice Coil Motion Demo

Live Motion Demonstration of VCM / VCA / Stage

Voice Coil Motor & Module

[With High-Precision Linear Encoder]

Voice Coil Actuator

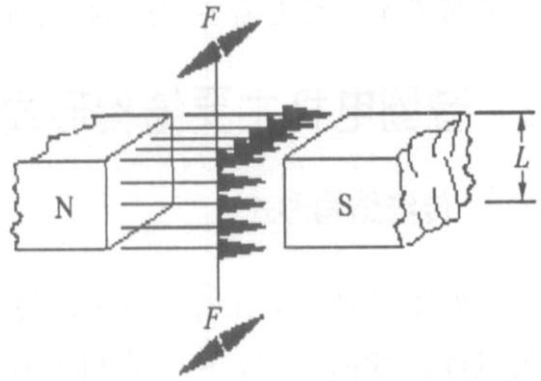
Voice Coil Stage

[With High-Precision Linear Encoder]

Voice Coil Motor (VCM)

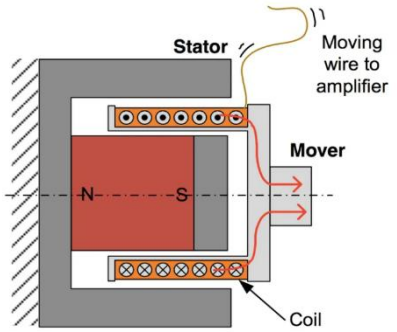
Direct drive linear motion with high precision and fast response

A Voice Coil Motor (VCM) generates linear motion through the interaction between current and magnetic field.
As a direct drive system, it converts electrical energy directly into motion without mechanical transmission, making it ideal for high-speed and high-precision positioning.
The operating principle is based on Ampere's force law, where thrust is generated by the current flowing through the coil within a magnetic field.

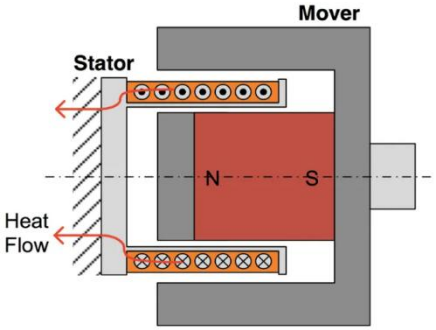


F=NIBL

F: Force (N)
N: Number of coil turns
I: Current (A)
B: Magnetic flux density (T)
L: Length of conductor (m)



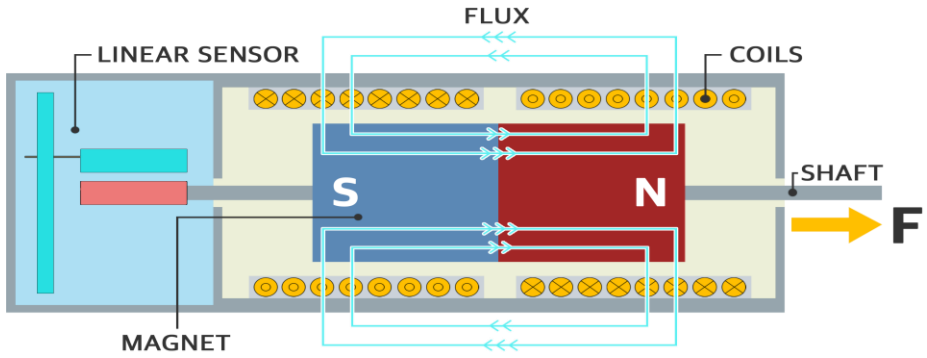
Coil Drive

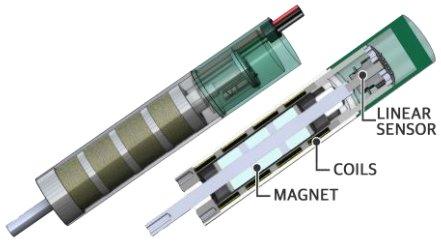


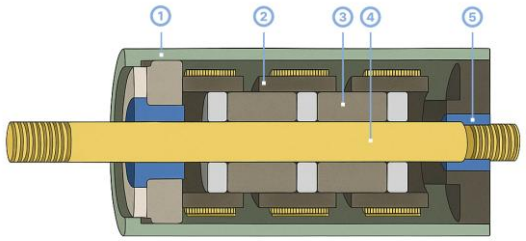
Magnet Drive

Dual-Shaft Linear Voice Coil Actuator

Voice Coil Actuator (VCA) for high-response, high-precision linear motion







Operating Principle

A Voice Coil Actuator generates electromagnetic force from the current flowing through the coil, enabling precise linear shaft motion.

Its direct drive structure ensures fast and accurate positioning.

Key Structural Features

With a special magnet array and moving magnet design, it achieves higher thrust within the same compact volume. Its dual output shaft structure also supports simultaneous bidirectional motion.

Structure

① Surface-treated conductive housing
② Internal coil assembly
③ Magnet mover assembly
④ Output shaft
⑤ Sliding bearing

Product Overview

Voice Coil Motor Series [Standard Type]

Key Features

Low friction · low resistance

Fast response · high resolution

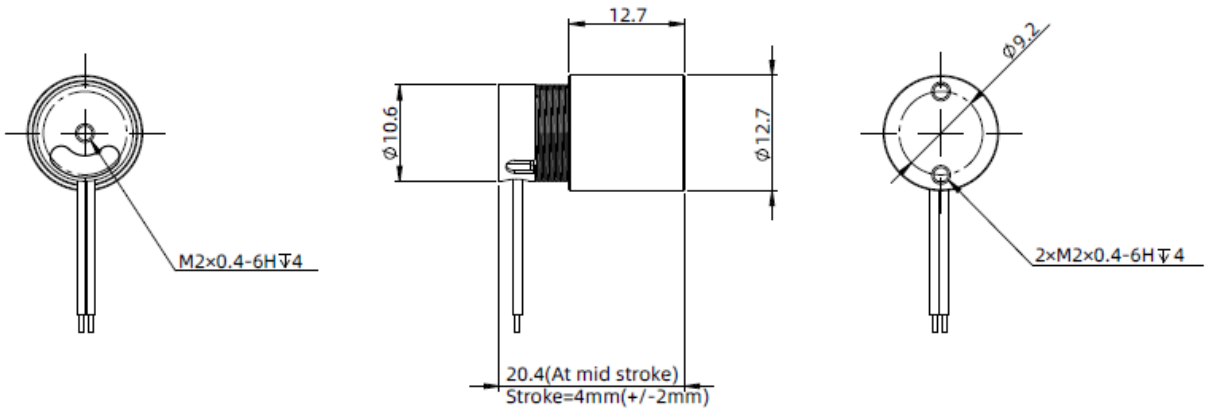
Long service life · over 70 million cycles

Applications

Semiconductor pick-and-place / Precision optical stages /

Laser measurement equipment / Medical devices

Model Specifications – Ø12.7 mm Cylindrical VCM



Model	Unit	VC-04-12.7-4
Stroke	mm	4
Continuous Force	N	0.4
Peak Force	N	3.2
Rated Current	A	6.5
Coil Gap	mm	0.38
Temperature Rise	°C	100

Product Overview

Voice Coil Motor Series [High Force Type]

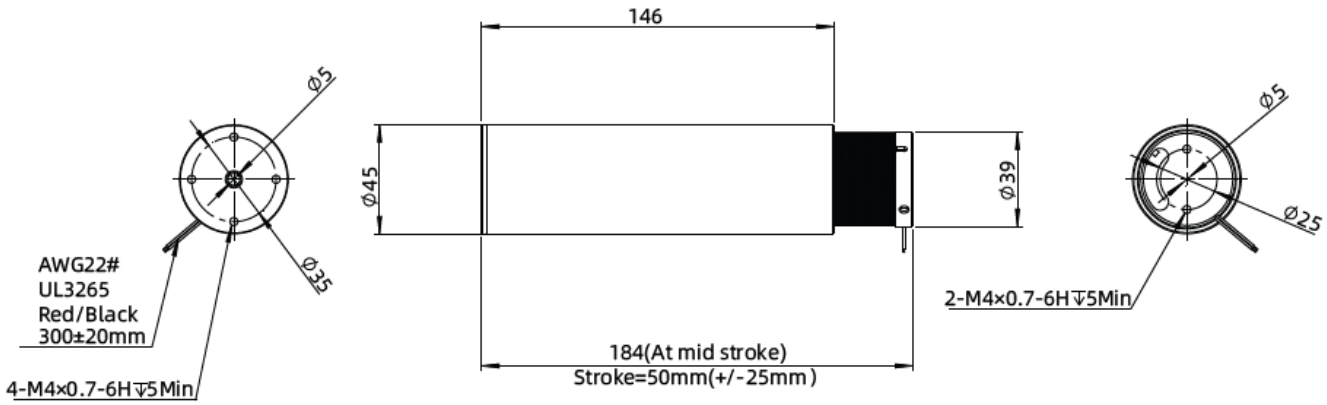
Key Features

High force · High power density
Wide operating range · Stable force characteristics
High load · Suitable for high-performance drive applications

Applications

Industrial automation / Precision drive equipment /
High-force transfer / Special-purpose machinery

Model Specifications – Ø45 mm High-Force Cylindrical VCM



Model	Unit	VCHF-45-50-20-01
Stroke	mm	50
Continuous Force	N	20
Peak Force	N	120
Rated Current	A	1
Coil Gap	mm	0.5
Temperature Rise	°C	100

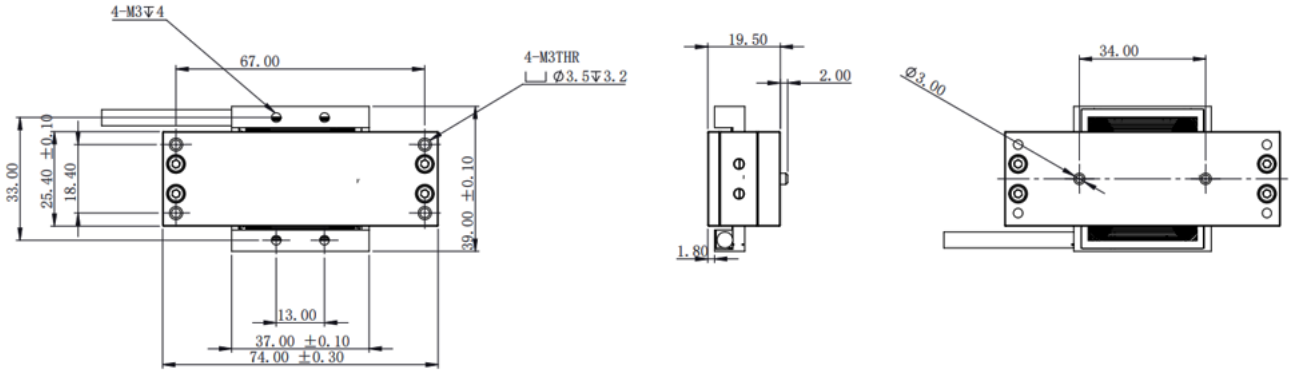
Product Overview

76 mm

97 mm

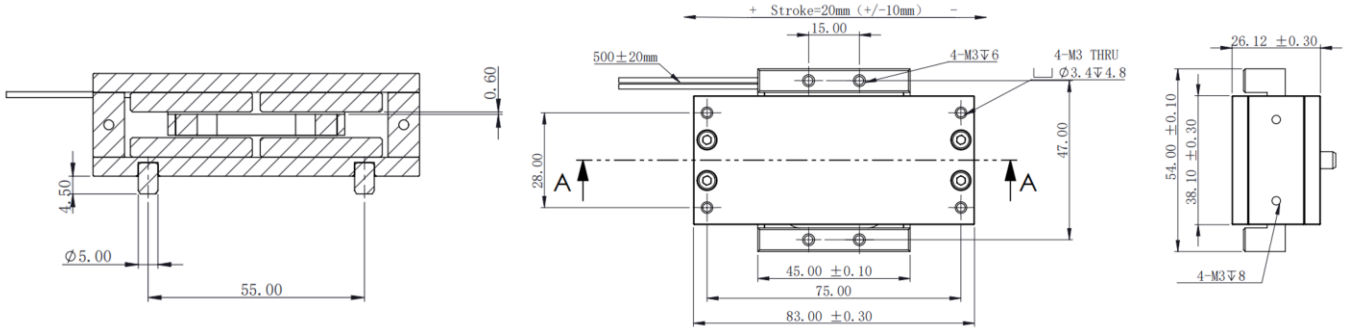
Voice Coil Motor Series [Flat Type]

Model Specifications – 76 mm Flat VCM



Model	Unit	VCXR-76-20-3.8-001
Stroke	mm	20
Continuous Force	N	3.84
Peak Force	N	11.5
Rated Current	A	0.85
Coil Gap	mm	0.6
Temperature Rise	°C	155

Model Specifications – 97 mm Flat VCM



Model	Unit	VCXR-97-20-11.69-001
Stroke	mm	20
Continuous Force	N	11.69
Peak Force	N	35.1
Rated Current	A	1.4
Coil Gap	mm	0.6
Temperature Rise	°C	155

Product Overview

Voice Coil Actuator Series [Standard Output Shaft]

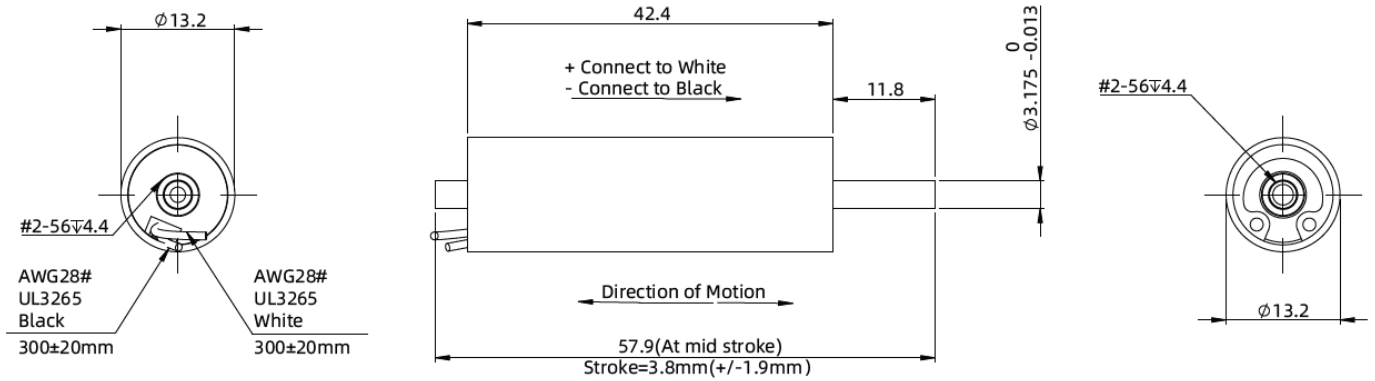
Key Features

Integrated spring structure · Optimized bearing design
High response · High-precision motion
Stable repeatability · Suitable for system integration

Applications

Medical devices / Semiconductor equipment /
Industrial automation / Beauty devices

Model Specifications – Ø13.2 mm Cylindrical VCA



Model	Unit	VC (A) - 13.2-3.8-2.2-01
Stroke	mm	3.8
Continuous Force	N	2.2
Peak Force	N	6.7
Rated Current	A	0.7
Coil Gap	mm	0.4
Temperature Rise	°C	100

Product Overview

Voice Coil Actuator Series [Integrated Position Sensor]

Key Features

Low friction · Zero hysteresis

High response · High performance

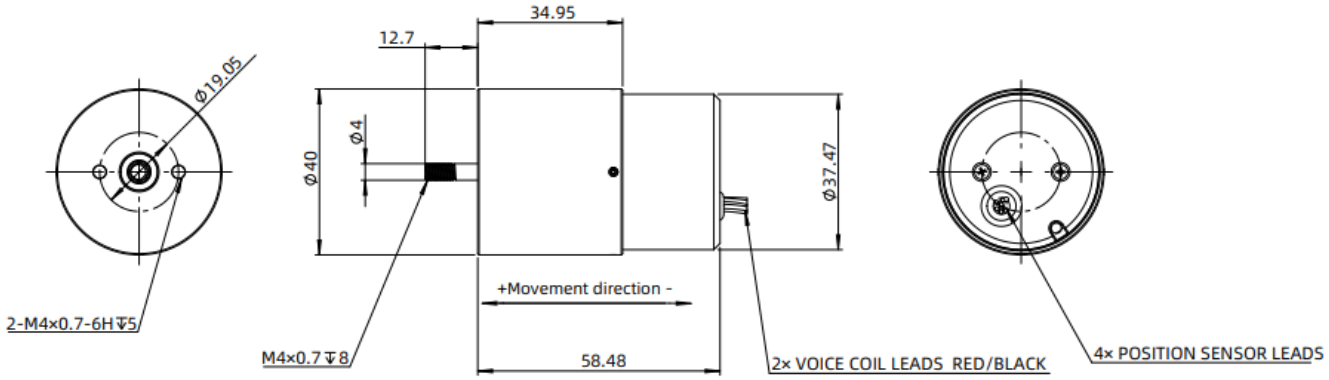
Long service life (>70 million cycles) · Stable repeatability

Applications

Ventilators / Inhalation & exhalation valve actuation /

Precision flow control / Stable repeatability

Model Specifications – Ø40 mm Ventilator VCA



Model	Unit	VC - 40-6.09-17 - PS - 01
Stroke	mm	6.09
Continuous Force	N	17
Peak Force	N	85
Rated Current	A	1.4
Coil Gap	mm	0.5
Temperature Rise	°C	100
Position Sensor Accuracy	mm	0.01

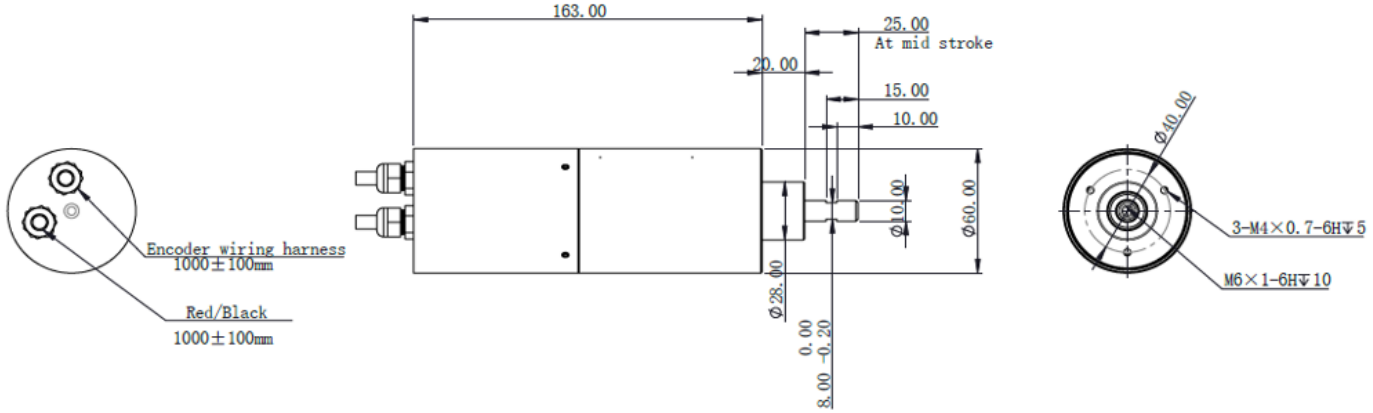
Product Overview

Ø60 mm

Ø90 mm

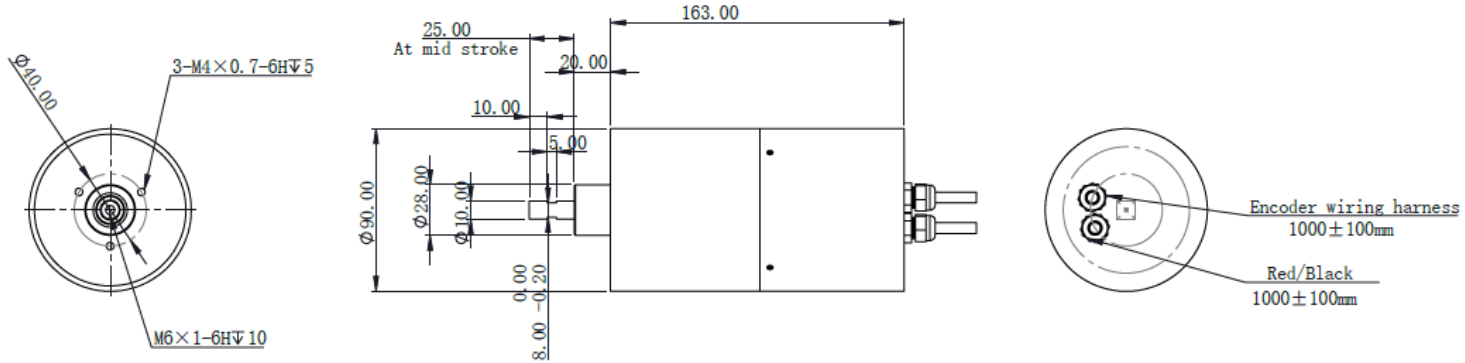
Voice Coil Actuator Series [Encoder-Integrated Type]

Model Specifications – Ø60 mm Encoder-Integrated VCA (1 μm resolution / Cable-protected type)



Model	Unit	VC-60-15-40-PS-001
Stroke	mm	15
Continuous Force	N	40
Peak Force	N	142
Rated Current	A	2
Coil Gap	mm	0.7
Temperature Rise	°C	155
Encoder Resolution	μm	1

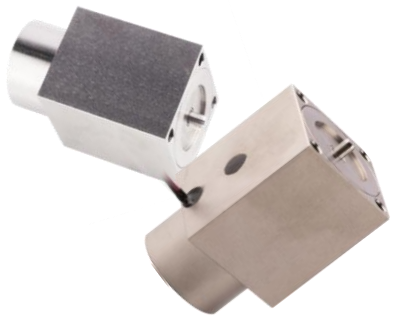
Model Specifications – Ø90 mm Encoder-Integrated VCA (1 μm resolution / Cable-protected type)



Model	Unit	VC-90-15-90-PS-001
Stroke	mm	15
Continuous Force	N	90
Peak Force	N	340
Rated Current	A	4
Coil Gap	mm	0.7
Temperature Rise	°C	155
Encoder Resolution	μm	1

Product Overview

VCHF Solenoid Series [Proportional Valve Solenoid]



Key Features

Low friction · Compact · High-force design
High response · Precision control
High pressure resistance · High durability

Applications

Proportional control valves / Flow control /
Industrial automation / Semiconductor equipment

VCHF-200 AC Series [AC Voice Coil Motor for Gas Compression]

Key Features

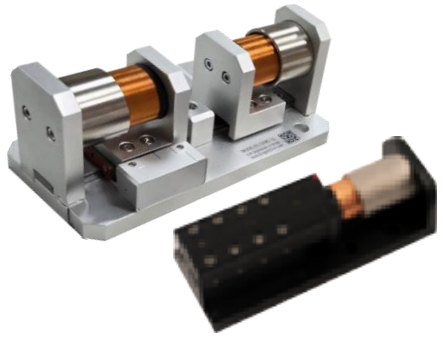
High response · High-force drive
Air bearing design
High-frequency operation (>100 Hz)

Applications

Gas compression systems / Industrial automation / High-speed precision systems

Product Overview

Voice Coil Motor Module Series [Custom Type]



Key Features

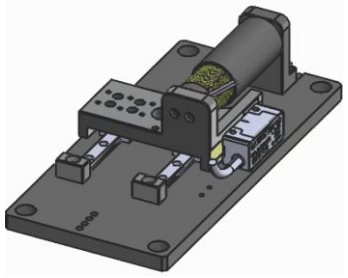
Position feedback control · Positioning accuracy up to ±0.1 μm
Smooth motion control based on direct drive
Compatible with linear encoders and limit sensors
High-rigidity module configuration with CRB integration

Applications

Semiconductor pick-and-place / Precision optical stages /
Laser measurement equipment / Medical devices

Suitable for high-speed, high-precision positioning systems /
Available in single-shaft and dual-shaft configurations

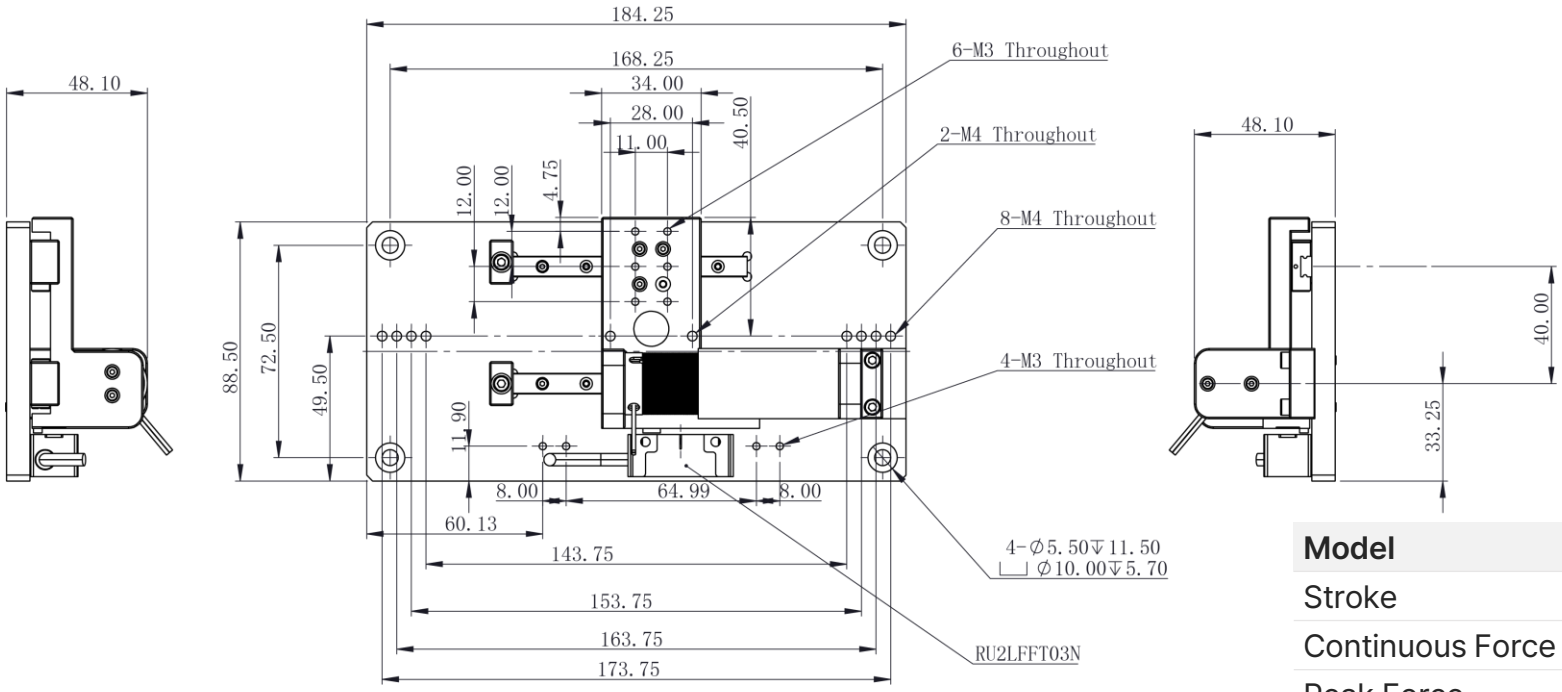
Product Overview



Ø24 mm

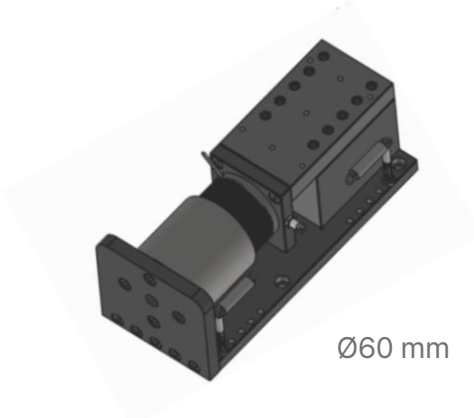
Voice Coil Motor Module Series [Custom Type]

Model Specifications – Ø24 mm VCM Module with Home/Limit Sensors and High-Precision Linear Encoder



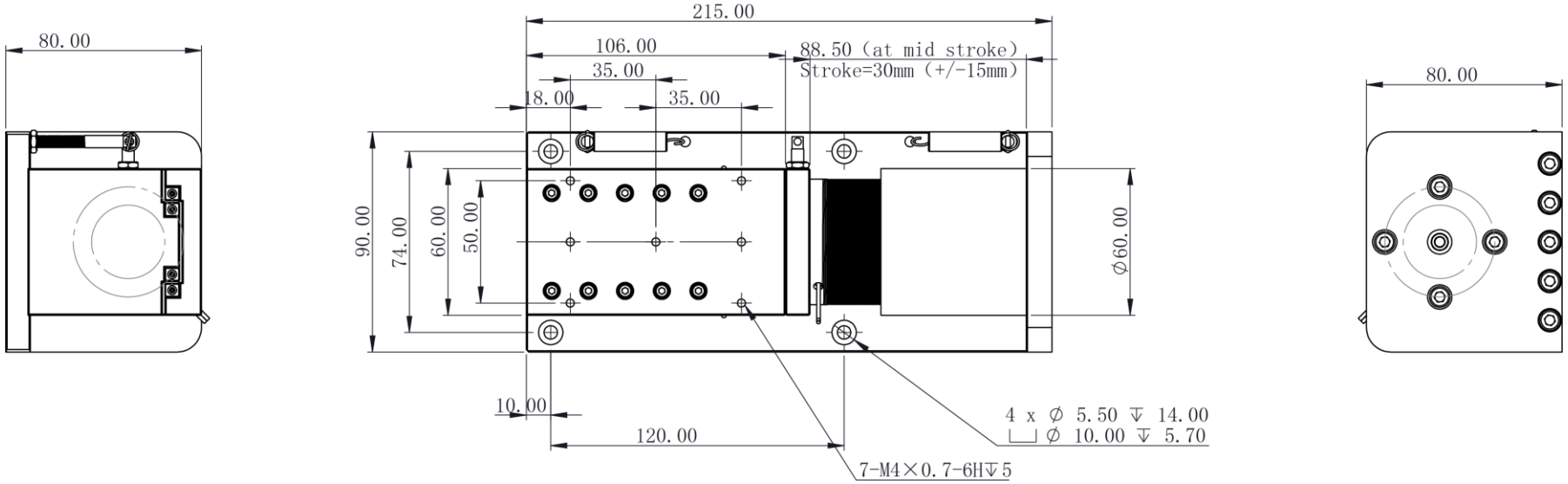
Model	Unit	VC-24-30-2-002-DM
Stroke	mm	30
Continuous Force	N	2
Peak Force	N	19
Rated Current	A	0.85
Coil Gap	mm	0.4
Temperature Rise	°C	155
Encoder Resolution	μm	0.1

Product Overview



Voice Coil Motor Module Series [Custom Type]

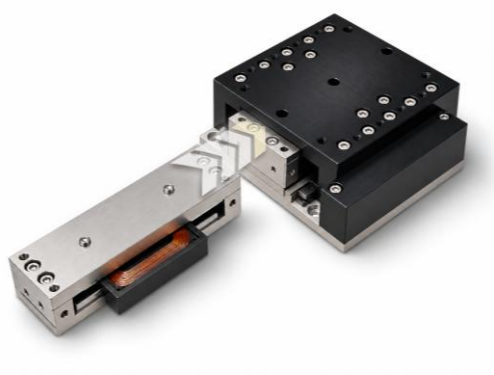
Model Specifications – Ø60 mm Speed-Drive VCM Module with Return Force Compensation Spring



Model	Unit	VC-60-30-20-001-DM
Stroke	mm	30
Continuous Force	N	20
Peak Force	N	82.3
Rated Current	A	1.7
Coil Gap	mm	0.6
Temperature Rise	°C	155

Product Overview

INV Series [High-Precision Voice Coil Stage]



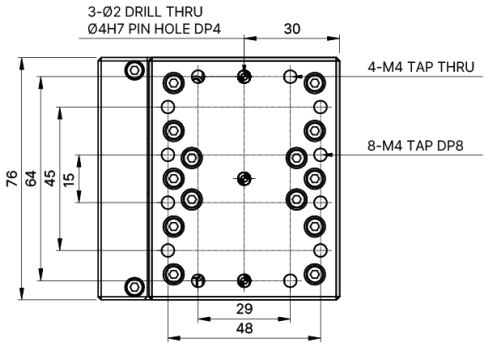
Key Features

High-speed response · Short settling time
Low friction · Precision linear motion
μm-level positioning · Encoder feedback

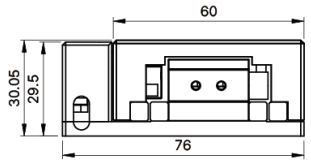
Applications

Semiconductor / Electronics / Optical alignment /
Bio / Medical / Precision manufacturing equipment

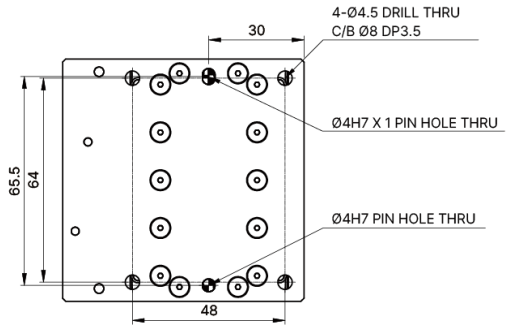
Model Specifications – Ø76 mm INV Stage



[Top View]



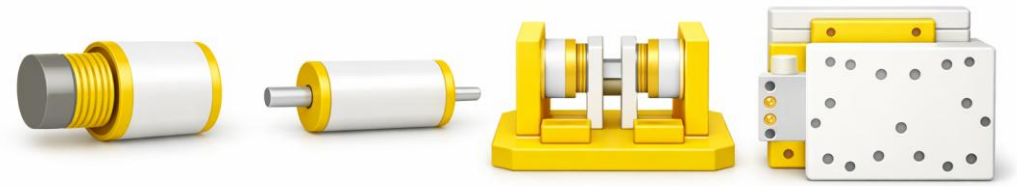
[Front View]



[Bottom View]

Model	Unit	INV76-B20-10S4-C050-A1
Stroke	mm	20
Continuous Force	N	3.84
Peak Force	N	11.5
Encoder Resolution	μm	0.1
Repeatability	μm	±0.5
Straightness	μm	±2.5
Flatness	μm	±2.5

Voice Coil Series – Integrated Drive Solution with Welcon



Optimized for the DINGS' Voice Coil Series, Welcon drives support PWM (Open Loop), Linear Hall Sensor, and Encoder-based Closed Loop control within a unified platform.

PIXIE
Compact & Low-current precision control

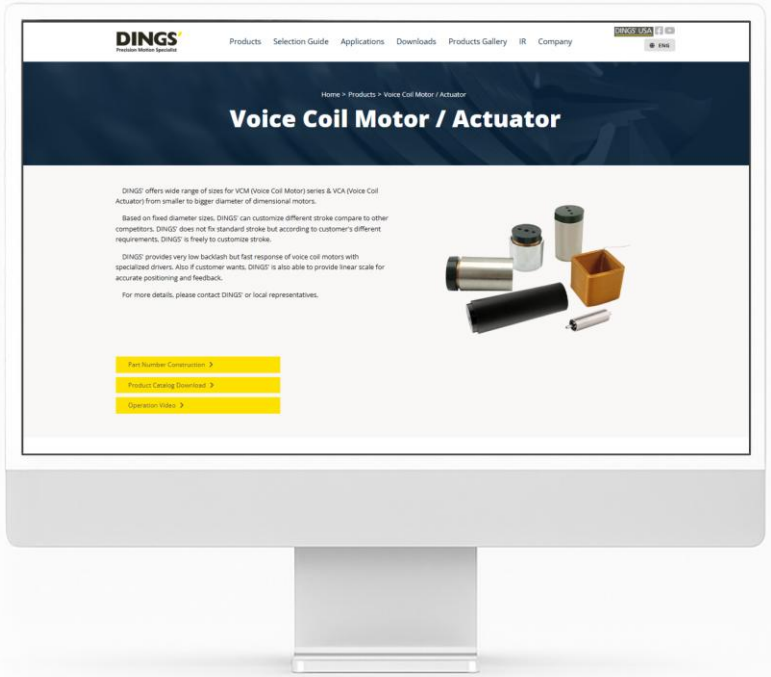
FALCON
Flexible control & integration

MERLIN
High-power control for advanced systems

PIXIE	FALCON	MERLIN
12 – 48 VDC (H/W Limit : 10 ~ 60VDC)	12 – 48 VDC	12 – 48 VDC
DC / BLDC / VCM / PMSM (Rotary or Linear Type)	DC / BLDC / VCM / PMSM (Rotary or Linear Type)	DC / BLDC / VCM / PMSM (Rotary or Linear Type)
1A / 3A (Peak to Peak) * 3A / 6A (Peak to Peak) *	1A / 2A / 5A * 2A / 4A / 10A *	5A 10A
EtherCAT, CAN, USB	EtherCAT, CAN, USB	EtherCAT, CAN, USB
72mmX 44.3mmX 30mm / 90g	106.5mm X 78mm X 25mm / 200g	103mm X 62mm X 30.8mm / 190g

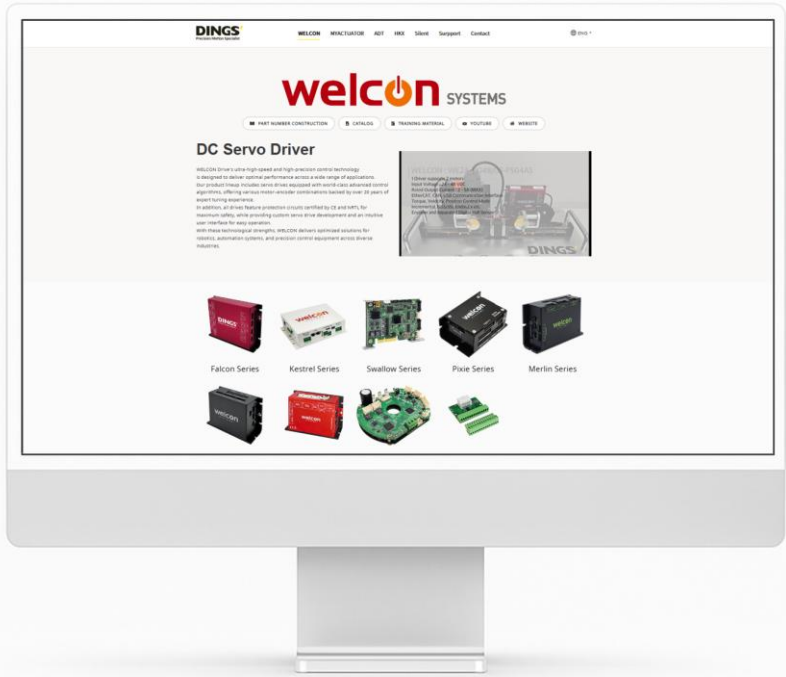
*Optional

Voice Coil & Drive Solution Platform



DINGS' Voice Coil Motors & Actuators

High-response, high-precision linear motion solutions



DINGS Korea Partner Solution – Welcon Drive

Integrated drive and control platform for VCM applications

THANK YOU

DINGS'
Precision Motion Specialist

www.dingsmotion.com

Jiangsu DINGS' Intelligent Control Technology