

XMGV SERIES

- ▶ Zero cogging, zero backlash, ironless linear positioning module
- ▶ Stroke from 15mm to 30mm
- ▶ Suitable for high speed and high acceleration application
- ▶ Smooth motion even at low speed (minimum velocity ripple)
- ▶ Uses cross roller guide for high stiffness

EN-26.3.1

XMGV Series

Introduction

The XMGV series linear modules combines cylindrical voice coil motors, precision crossed roller ways, and linear encoder feedback to realized high performance direct-drive motion in a compact package.

The product comes in four standard sizes: XMGV30, XMGV40, XMGV60, and XMGV90 to cater to a wide range of payloads. Two different precision grades (corresponding to different bearing and feedback options) provide additional flexibility to tailor the product to your application.

The built-in voice coil motor provides smooth, cogging-free actuation, while the crossed roller ways eliminate bearing reentry noise to enable accurate tracking of low velocities.

Continuous Force $F_{cn} = 4.43\text{N}\sim 95.6\text{N}$









Peak Force $F_{pk} = 28.20\text{N}\sim 340.3\text{N}$

Features

- ▶ Direct drive, built-in cylindrical voice coil motor
- ▶ Stroke from 15mm to 30mm
- ▶ Repeatability up to $\pm 0.5\mu\text{m}$
- ▶ Optional resolution of $0.2\mu\text{m}$, $0.05\mu\text{m}$, SINCOS
- ▶ Excellent straightness and flatness, high rigidity, high dynamic performance

Applications

Applications in various industries such as automation equipment which requires point-to-point high speed positioning, z-axis optical focusing, leveling mechanism, high speed pick and place, flying probe test, material fatigue tester and others.

Voice Coil Module Series	Voice Coil Motor Series	Continuous Force (F_{cn})					Peak Force (F_{pk})		Unit: N	Stroke (mm)	Repeatability (μm)	Page
		5	10	50	100	300	500					
 XMGV30	 AVM30-15						28.20	121.6		15	up to ± 0.5	097
 XMGV40	 AVM40-20						61.7	121.6		20		097
 XMGV60	 AVM60-25						121.6	121.6		25		098
 XMGV90	 AVM90-30						340.3	121.6		30		098

Note:

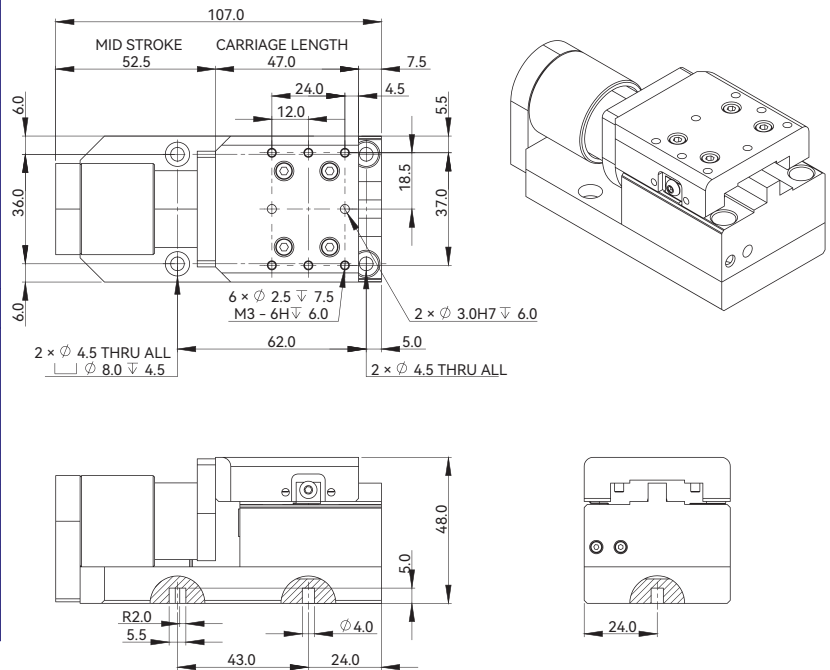
★ Products can be customized to meet specific working environments or for high frequency reciprocating motion, please contact cust-service@akribis-sys.com.

XMGV30

Motor Specifications	Unit	Value	
Motor	-	AVM30-15	
Continuous Force (NC) @100°C ^{1 2}	N	4.43	
Peak Force ²	N	28.2	
Force Constant ±10% ²	N/A	7.03	
Back EMF Constant ±10% ²	V/(m/s)	7.03	
Resistance @25°C ±10% ³	Ω	10.24	
Inductance ±20% ⁴	mH	2.82	
Continuous Current (NC) @100°C ¹	A	0.6	
Peak Current	A	4.0	
Max. Voltage	Vdc	60	
Mechanical Specifications	Unit	Value	
Precision Grade	-	P	N
Stroke ⁵	mm	15	
Resolution	μm	SINCOS/0.05	0.2
Repeatability	μm	±0.5	±1.0
Horizontal Straightness	μm	±2.5	
Vertical Straightness	μm	±2.5	
Rated Payload ⁶	kg	0.6	
No-load Moving Mass	kg	0.14	
No-load Total Mass	kg	0.51	
Max. Static Moment	Nm	0.8	

- ¹ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
- ² The values are at mid stroke.
- ³ Resistance is measured by DC current with standard 0.5m lead wire.
- ⁴ Inductance is measured by current frequency of 1 kHz.
- ⁵ Stroke refers to hardstop-to-hardstop mechanical stroke. The limit sensors are positioned 0.5mm from the hardstops.
- ⁶ The rated load is based on the load in which the acceleration of the mass is at least 1G. The contents of datasheet are subject to change without prior notice.

Dimensional Drawing

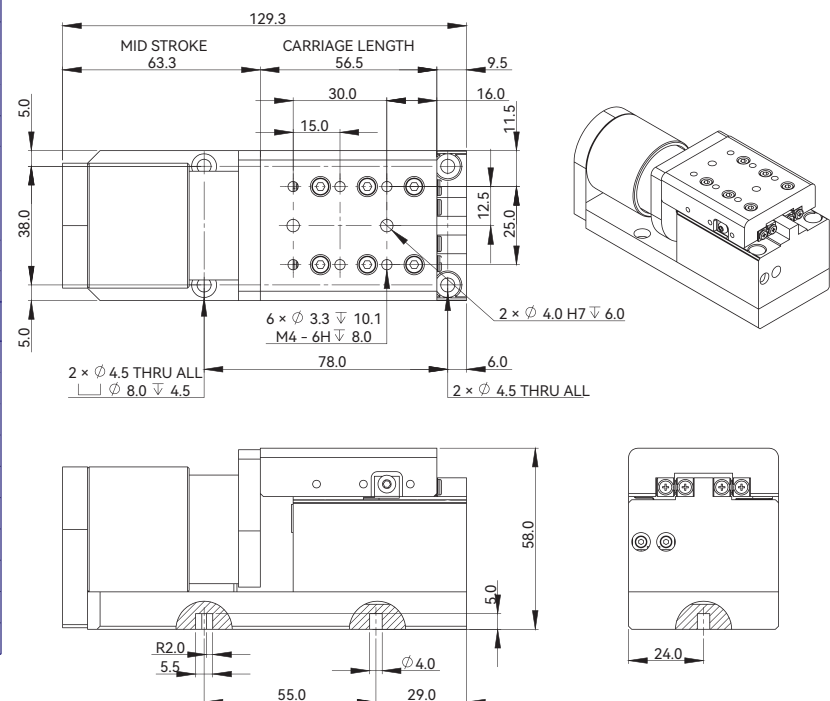


XMGV40

Motor Specifications	Unit	Value	
Motor	-	AVM40-20	
Continuous Force (NC) @100°C ^{1 2}	N	10.5	
Peak Force ²	N	61.7	
Force Constant ±10% ²	N/A	13.6	
Back EMF Constant ±10% ²	V/(m/s)	13.6	
Resistance @25°C ±10% ³	Ω	11.5	
Inductance ±20% ⁴	mH	5.2	
Continuous Current (NC) @100°C ¹	A	0.8	
Peak Current	A	4.5	
Max. Voltage	Vdc	60	
Mechanical Specifications	Unit	Value	
Precision Grade	-	P	N
Stroke ⁵	mm	20	
Resolution	μm	SINCOS/0.05	0.2
Repeatability	μm	±0.5	±1.0
Horizontal Straightness	μm	±2.5	
Vertical Straightness	μm	±2.5	
Rated Payload ⁶	kg	1.5	
No-load Moving Mass	kg	0.20	
No-load Total Mass	kg	0.80	
Max. Static Moment	Nm	1.4	

- ¹ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
- ² The values are at mid stroke.
- ³ Resistance is measured by DC current with standard 0.5m lead wire.
- ⁴ Inductance is measured by current frequency of 1 kHz.
- ⁵ Stroke refers to hardstop-to-hardstop mechanical stroke. The limit sensors are positioned 0.5mm from the hardstops.
- ⁶ The rated load is based on the load in which the acceleration of the mass is at least 1G. The contents of datasheet are subject to change without prior notice.

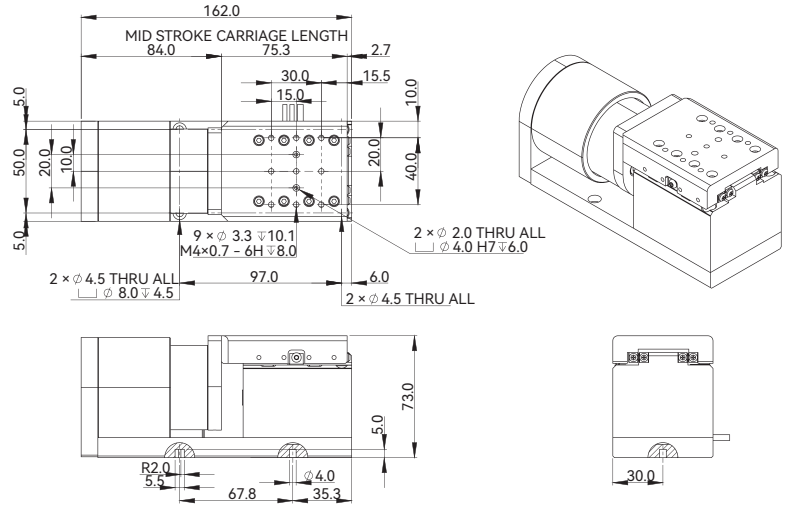
Dimensional Drawing



XMGV60

Motor Specifications	Unit	Value	
Motor	-	AVM60-25	
Continuous Force (NC) @100°C ^{1 2}	N	26.8	
Peak Force ²	N	121.6	
Force Constant ±10% ²	N/A	17.3	
Back EMF Constant ±10% ²	V/(m/s)	17.3	
Resistance @25°C ±10% ³	Ω	5.35	
Inductance ±20% ⁴	mH	3.82	
Continuous Current (NC) @100°C ¹	A	1.6	
Peak Current	A	7.0	
Max. Voltage	Vdc	60	
Mechanical Specifications	Unit	Value	
Precision Grade	-	P	N
Stroke ⁵	mm	25	
Resolution	μm	SINCOS/0.05	0.2
Repeatability	μm	±0.5	±1.0
Horizontal Straightness	μm	±2.5	
Vertical Straightness	μm	±2.5	
Rated Payload ⁶	kg	4.0	
No-load Moving Mass	kg	0.45	
No-load Total Mass	kg	1.90	
Max. Static Moment	Nm	3.4	

Dimensional Drawing

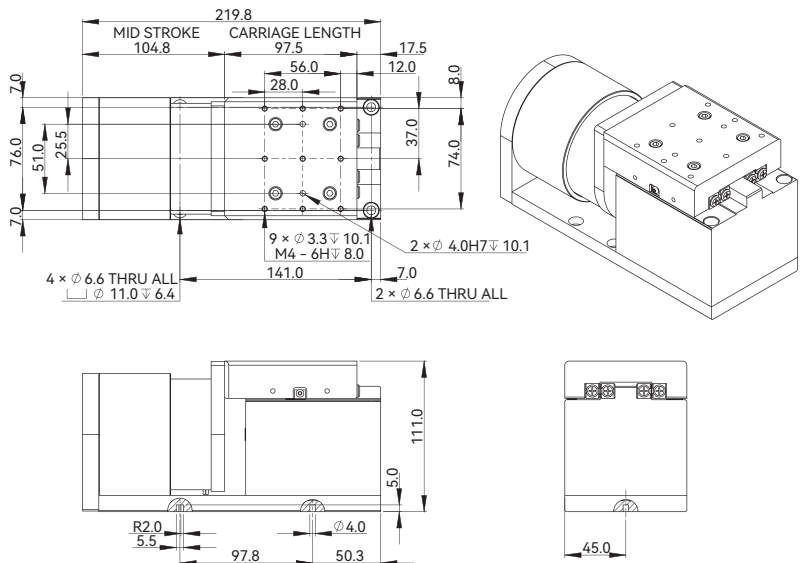


- ¹ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
- ² The values are at mid stroke.
- ³ Resistance is measured by DC current with standard 0.5m lead wire.
- ⁴ Inductance is measured by current frequency of 1 kHz.
- ⁵ Stroke refers to hardstop-to-hardstop mechanical stroke. The limit sensors are positioned 0.5mm from the hardstops.
- ⁶ The rated load is based on the load in which the acceleration of the mass is at least 1G. The contents of datasheet are subject to change without prior notice.

XMGV90

Motor Specifications	Unit	Value	
Motor	-	AVM90-30	
Continuous Force (NC) @100°C ^{1 2}	N	95.6	
Peak Force ²	N	340.3	
Force Constant ±10% ²	N/A	23.9	
Back EMF Constant ±10% ²	V/(m/s)	23.9	
Resistance @25°C ±10% ³	Ω	2.73	
Inductance ±20% ⁴	mH	3.80	
Continuous Current (NC) @100°C ¹	A	4.0	
Peak Current	A	14.0	
Max. Voltage	Vdc	120	
Mechanical Specifications	Unit	Value	
Precision Grade	-	P	N
Stroke ⁵	mm	30	
Resolution	μm	SINCOS/0.05	0.2
Repeatability	μm	±0.5	±1.0
Horizontal Straightness	μm	±2.5	
Vertical Straightness	μm	±2.5	
Rated Payload ⁶	kg	14.0	
No-load Moving Mass	kg	1.63	
No-load Total Mass	kg	5.31	
Max. Static Moment	Nm	16.0	

Dimensional Drawing



- ¹ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
- ² The values are at mid stroke.
- ³ Resistance is measured by DC current with standard 0.5m lead wire.
- ⁴ Inductance is measured by current frequency of 1 kHz.
- ⁵ Stroke refers to hardstop-to-hardstop mechanical stroke. The limit sensors are positioned 0.5mm from the hardstops.
- ⁶ The rated load is based on the load in which the acceleration of the mass is at least 1G. The contents of datasheet are subject to change without prior notice.

Ordering Part Number (OPN)

XMGV30-T15-A0G4-A1

Model:

XMGV30
XMGV40
XMGV60
XMGV90

Precision Grade:

Unmarked: Normal

Cover Type:

T: Standard (Black Anodized)

Stroke (Corresponding Models):

15: 15mm (XMGV30)
20: 20mm (XMGV40)
25: 25mm (XMGV60)
30: 30mm (XMGV90)

Termination:

1: Motor: Flying Leads/Encoder: DSUB 15

Cable Length:

A: 0.5m

Scale Type:

4: Nickel, 14ppm/K

Encoder Type:

A0G: ABI-21 (0.2µm)

XMGV30P-T15-R0A2-A1

Model:

XMGV30
XMGV40
XMGV60
XMGV90

Precision Grade:

P: Precision

Cover Type:

T: Standard (Black Anodized)

Stroke (Corresponding Models):

15: 15mm (XMGV30)
20: 20mm (XMGV40)
25: 25mm (XMGV60)
30: 30mm (XMGV90)

Termination:

1: Motor: Flying Leads/Encoder: DSUB 15

Cable Length:

A: 0.5m

Scale Type:

2: Glass G8 Soda Lime, 8ppm/K

Encoder Type:

R0A: ATOM2, SINCOS (1Vpp)
R0J: ATOM2, TTL (0.05µm)

Note:

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