

XRV SERIES

- ▶ Suitable for micro motion and smooth motion
- ▶ Fast response and short settling time
- ▶ Low friction
- ▶ No commutation needed
- ▶ High precision

EN-26.3.1

Introduction

XRV series voice coil motor module is composed of cylindrical voice coil motor, cross roller guide rail, encoder position feedback and structural base. It is a motion platform with compact internal structure and high-performance direct drive.

There are three standard products: XRV76, XRV97 and XRV115. These can be customized according to the actual technical requirements. The built-in voice coil motor and encoder of the standard modules are optional.

XRV modules have the following characteristics, no cogging force, low friction because of the use of cross roller bearings, precise and highly responsive.

Continuous Force $F_{cn} = 3.84\text{N} \sim 26.32\text{N}$







Peak Force $F_{pk} = 11.5\text{N} \sim 79.0\text{N}$

Features

- ▶ Direct drive with cylinder shape voice coil motor, flat structure
- ▶ Stroke from 20mm
- ▶ 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
			4	7	10	40	70	100					
 XRV76	 AVA1	AVA1-20						11.5			20	up to ± 0.5	114
 XRV97	 AVA2	AVA2-20						35.1					114
 XRV115	 AVA3	AVA3-20						79.0					115

Note:

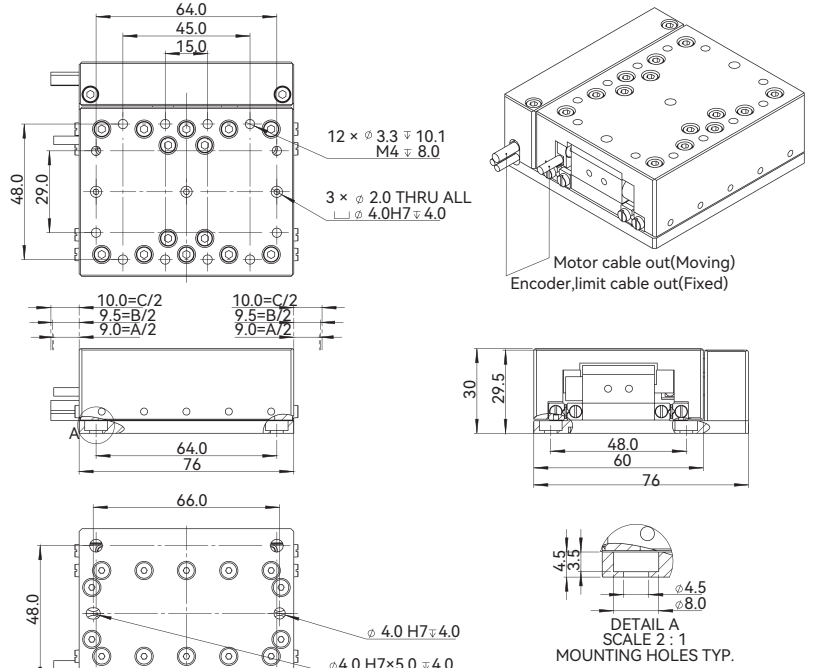
★ Products can be customized to meet specific working environments, please contact cust-service@akribis-sys.com.

XRV76

Motor Specifications	Unit	Value
Motor	-	AVA1-20
Continuous Force (NC) @100°C ^{1 2}	N	3.84
Peak Force ²	N	11.5
Force Constant ±10% ²	N/A	1.92
Back EMF Constant ±10% ²	V/(m/s)	1.92
Resistance (L-L) @25°C ±10% ³	Ω	1.40
Inductance (L-L) ±20% ⁴	mH	0.27
Continuous Current (NC) @100°C ¹	A	2.0
Peak Current	A	6.0
Max. Bus Voltage	Vdc	60
Mechanical Specifications	Unit	Value
Precision Grade	-	P N
Effective Stroke	mm	20
Resolution	μm	SINCOS/ 0.05
Repeatability	μm	±0.5 ±1.0
Horizontal Straightness	μm	±2.5
Vertical Straightness	μm	±2.5
Rated Payload	kg	1.0
No-load Moving Mass	kg	0.2
No-load Total Mass	kg	0.58
Max. Static Moment	Nm	0.6

¹ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC=Natural Cooling, AC=Air Cooling, WC=Water Cooling.
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.
 The contents of datasheet are subject to change without prior notice.

Dimensional Drawing



Note:

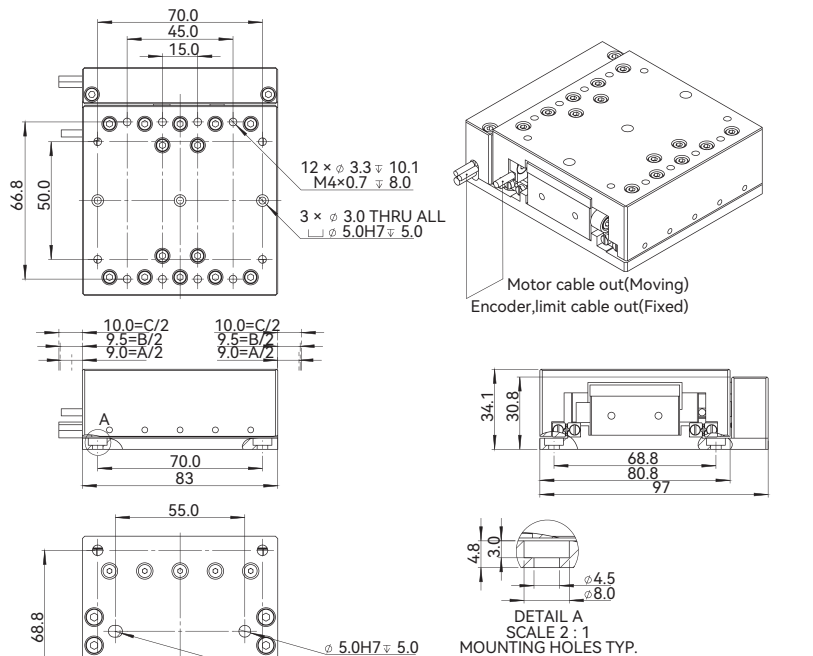
- A=Effective stroke
- B=Limit stroke
- C=Hardstop stroke
- Home index near the center of stroke;
- Clearance fit for pin holes;
- To maintain accuracy, mounting surface must be flat within 5μm over stage entire footprint.

XRV97

Motor Specifications	Unit	Value
Motor	-	AVA2-20
Continuous Force (NC) @100°C ^{1 2}	N	11.69
Peak Force ²	N	35.1
Force Constant ±10% ²	N/A	8.35
Back EMF Constant ±10% ²	V/(m/s)	8.35
Resistance (L-L) @25°C ±10% ³	Ω	3.7
Inductance (L-L) ±20% ⁴	mH	1.24
Continuous Current (NC) @100°C ¹	A	1.4
Peak Current	A	4.2
Max. Bus Voltage	Vdc	60
Mechanical Specifications	Unit	Value
Precision Grade	-	P N
Effective Stroke	mm	20
Resolution	μm	SINCOS/ 0.05
Repeatability	μm	±0.5 ±1.0
Horizontal Straightness	μm	±2.5
Vertical Straightness	μm	±2.5
Rated Payload	kg	2.0
No-load Moving Mass	kg	0.3
No-load Total Mass	kg	1.1
Max. Static Moment	Nm	0.8

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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.
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Dimensional Drawing



Note:

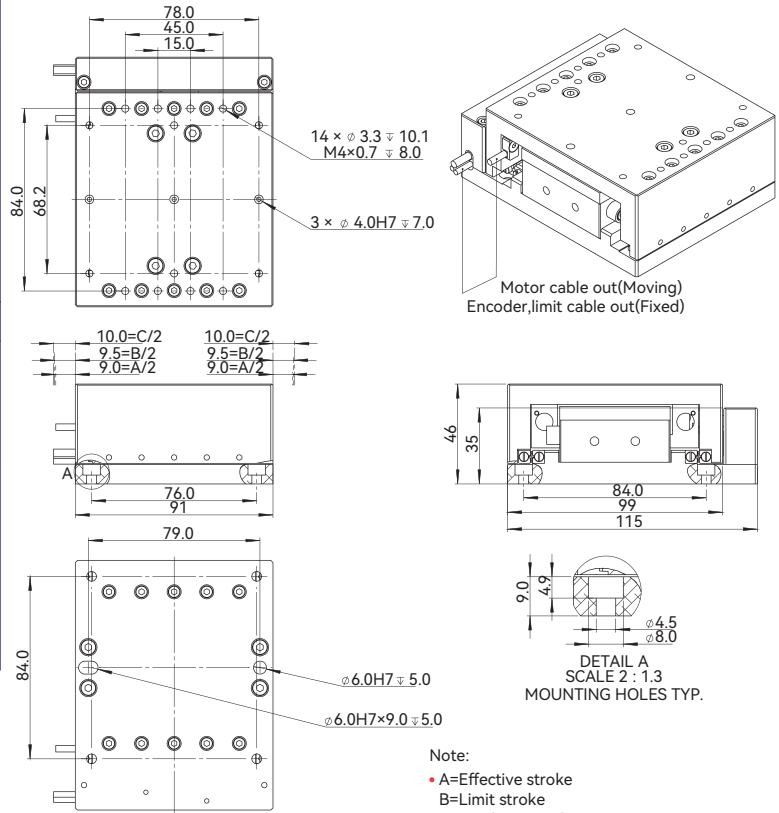
- A=Effective stroke
- B=Limit stroke
- C=Hardstop stroke
- Home index near the center of stroke;
- Clearance fit for pin holes;
- To maintain accuracy, mounting surface must be flat within 5μm over stage entire footprint.

XRV115

Motor Specifications	Unit	Value	
Motor	-	AVA3-20	
Continuous Force (NC) @100°C ^{1 2}	N	26.32	
Peak Force ²	N	79.0	
Force Constant ±10% ²	N/A	9.40	
Back EMF Constant ±10% ²	V/(m/s)	9.40	
Resistance (L-L) @25°C ±10% ³	Ω	1.6	
Inductance (L-L) ±20% ⁴	mH	0.7	
Continuous Current (NC) @100°C ¹	A	2.8	
Peak Current	A	8.4	
Max. Bus Voltage	Vdc	60	
Mechanical Specifications	Unit	Value	
Precision Grade	-	P	N
Effective Stroke	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	kg	3.0	
No-load Moving Mass	kg	0.46	
No-load Total Mass	kg	2.0	
Max. Static Moment	Nm	0.8	

- ¹ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC=Natural Cooling, AC=Air Cooling, WC=Water Cooling.
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.
 The contents of datasheet are subject to change without prior notice.

Dimensional Drawing



Note:

- A=Effective stroke
- B=Limit stroke
- C=Hardstop stroke
- Home index near the center of stroke;
- Clearance fit for pin holes;
- To maintain accuracy, mounting surface must be flat within 5μm over stage entire footprint.

Ordering Part Number (OPN)

XRV76-T20-A0G4-A1

Model:

XRV76
XRV97
XRV115

Precision Grade:

Unmarked: Normal

Cover Type:

T: Standard (Black Anodized)

Stroke:

20: 20mm

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)

XRV76P-T20-R0A2-A1

Model:

XRV76
XRV97
XRV115

Precision Grade:

P: Precision

Cover Type:

T: Standard (Black Anodized)

Stroke:

20: 20mm

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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