

XRL SERIES

- ▶ Suitable for smooth movement
- ▶ Fast response and short settling time
- ▶ Low friction
- ▶ High precision

EN-26.3.1

Introduction

XRL series utilize linear motor positioning system, it consists of cross roller linear guide, linear motor, encoder feedback and aluminum cover to form a compact footprint and high performance module.

There are two standard products: XRL130 and XRL250. The built-in linear motor and encoders for the two standard products are selectable according to the actual technical requirements and customization is accepted.

Built in AUM iron less linear motor is cogging free with cross roller linear guide. Suitable for light load, low velocity, high precision positioning application.

Continuous Force $F_{cn} = 26.4\text{N} \sim 70.4\text{N}$

Peak Force $F_{pk} = 132.0\text{N} \sim 352.0\text{N}$

Features

- ▶ Cross roller guide linear motor stage
- ▶ Built-in AUM ironless linear motor
- ▶ Repeatability up to $\pm 0.1\mu\text{m}$
- ▶ Stroke from 35mm to 210mm
- ▶ Optional resolution of $0.1\mu\text{m}$, SINCOS
- ▶ Excellent straightness and flatness, high load capacity

Applications

Point to point sub-micron and nanometer level fast positioning, optical focus for Z axis.

Good velocity ripple of high or low velocity and harsh trajectory following.

Light load and requirement of compact size.

High precision positioning in semiconductor, solar PV, lithium battery, LCD display equipment. And industrial printer and laser manufacturing scenarios which require high velocity, high precision, harsh trajectory following and velocity ripples.

Cross Roller Modules Series	Linear Motor Series		■ Continuous Force (F _{cn}) ■ Peak Force (F _{pk})						Unit: N	Stroke (mm)	Repeatability (μm)	Page
			10	50	100	200	300	400				
 XRL130	 AUM2	AUM2-S3								35/60/ 110/160	up to ±0.1	081 082
 XRL250	 AUM2	AUM2-S4								35/60/ 110/160/ 210	up to ±0.15	084 086

Note:

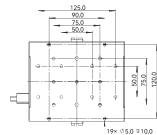
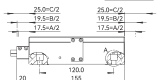
● Longer stroke available upon request.

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

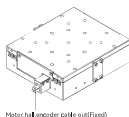
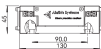
XRL130-35

Motor Specifications	Unit	Value	
Motor	-	AUM2-S3	
Continuous Force (NC) @100°C	N	26.4	
Peak Force	N	132.0	
Force Constant ±10%	N/Arms	16.5	
Back EMF Constant ±10%	Vpeak/(m/s)	13.5	
Resistance (L-L) @25°C ±10%	Ω	9.95	
Inductance (L-L) ±40%	mH	2.94	
Continuous Current (NC) @100°C	Arms	1.6	
Peak Current	Arms	8.0	
Max. Bus Voltage	Vdc	330	
Magnetic Period	mm	30	
Mechanical Specifications	Unit	Value	
Precision Grade	-	P	N
Effective Stroke	mm	35	
Resolution	μm	SINCOS (4096X)	0.1
Repeatability	μm	±0.1	±0.3
Horizontal Straightness	μm	±1.0	±1.5
Vertical Straightness	μm	±1.0	±1.5
Rated Payload	kg	7.0	
No-load Moving Mass	kg	1.5	
No-load Total Mass	kg	2.8	
Max. Static Moment	Nm	5.0	

■ Dimensional Drawing



SCALE 1 : 1
MOUNTING HOLES TYPE



Next

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

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.

Resistance is measured by DC current with standard 0.5m cable

① Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is $\pm 40\%$ because three phase inductances are different.

The value in the catalog is the average between the maximum and

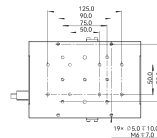
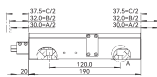
④ This value is based on providing a higher control bandwidth, please contact cust-service@akribis-sys.com for higher load requirements.

The contents of datasheet are subject to change without prior notice.

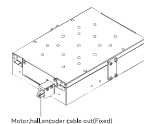
XRL130-60

Motor Specifications	Unit	Value	
Motor	-	AUM2-53	
Continuous Force (NC) @100°C	N	26.4	
Peak Force	N	132.0	
Force Constant ±10%	N/Arms	16.5	
Back EMF Constant ±10%	Vpeak/(m/s)	13.5	
Resistance (L-L) @25°C ±10%	Ω	9.95	
Inductance (L-L) ±40%	mH	2.94	
Continuous Current (NC) @100°C	Arms	1.6	
Peak Current	Arms	8.0	
Max. Bus Voltage	Vdc	30	
Magnetic Period	mm	330	
Mechanical Specifications	Unit	Value	
Precision Grade	-	P	N
Effective Stroke	mm	60	
Resolution	μm	SINCOS (4096X)	0.1
Repeatability	μm	±0.1 ±0.3	
Horizontal Straightness	μm	±1.0 ±1.5	
Vertical Straightness	μm	±1.0 ±1.5	
Rated Payload	kg	9.0	
No-load Moving Mass	kg	1.7	
No-load Total Mass	kg	3.2	
Max. Static Moment	Nm	6.0	

■ Dimensional Drawing



SCALE 1:1
MOUNTING HOLES TYPE



Notes

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

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.

Resistance is measured by DC current with standard 0.5m cable.

① Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is $\pm 40\%$ because three phase inductances are different.

The value in the catalog is the average between the maximum and

⑤ This value is based on providing a higher control bandwidth, please contact cust-service@kribis-sys.com for higher load requirements.

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Introduction
Sizing Guide
Q&A
Motion control of Gantry
Staged Dual Guide Modules
Cross Roller Modules
Voice Coil Modules
Miniature Modules
Pickup Modules
Air Bearing Modules
Stacked Stages
Family Stages
Water Stages

AKRIDIS systems

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 Resistance is measured by DC current with standard 0.5m cable.
③ Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is the value in the catalog is the average between the maximum and minimum values. For each pin.
④ This value is based on providing a higher control bandwidth, please contact cust-service@alibabacloud.com.
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Technical drawings of the Motor/hall encoder cable out (Fixed) model. The drawings include a top view, a side view, a front view, and a detail view of the mounting surface. Dimensions are provided in millimeters.

Top View: Shows a rectangular plate with a cable connector on the left and a mounting flange on the right. Dimensions include 125.0, 90.0, 75.0, 50.0, 50.0, 120.0, 19 × $\phi 5.0$ 11.0, and $M6 \times 7.0$.

Side View: Shows the profile of the plate with dimensions 50.0 and 120.0.

Front View: Shows the mounting flange with four mounting holes. Dimensions include 60.0-C/2, 57.0-B/2, 55.0-A/2, 40.0-C/2, 37.0-B/2, 35.0-A/2, 120.0, 200.0, 230, and 20.

Detail A: Shows the mounting surface with dimensions 17.0, 11.0, and $\phi 5.6$.

Motor/hall encoder cable out (Fixed)

Note:

- A=Effective stroke
- B=Limit stroke
- C=Landstop stroke
- Home index near the center of stroke;
- To maintain accuracy mounting surface must be flat within S_{2m} over edge entire footprint.

Note:

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

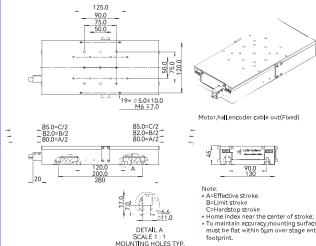
■ Dimensional Drawing

① Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations: AC=Air-Cooling, AC+Air-Cooling, WC=Water-Cooling.

② Resistance is measured by DC current with standard 0.5m cable.

③ Inductance is measured by current frequency of 1 kHz. The variation range of ALUM inductance is the value in the catalog is the average between the maximum and minimum values. For each pin.

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Note:

- A=Effective stroke
- B=Limit stroke
- C=Hardstop stroke
- Home index near the center of stroke;
- To maintain accuracy, mounting surface must be flat within ± 0.01 mm over stage entire footprint.

Ordering Part Number (OPN)

XRL130-T03-U04R2H1-D1

Model:

XRL130

Precision Grade:

Unmarked, Normal

Cover Type:

T: Standard (Black Anodized)

Effective Stroke:

03: 35mm
06: 60mm
11: 110mm
16: 160mm

Termination:

1: Motor: Flying Leads/Encoder: DSUB 15/Hall: DSUB 9
2: Motor: DSUB 9Ww/Encoder: DSUB 15/Hall: DSUB 9

Cable Length:

D: 1.0m

Scale Type:

1: Steel Tape, 31ppm/K

Encoder Type:

R2H: Quadratic, TTL (0.1µm)

Motor Type:

U04: AUM2-S-S3-K (Peak Force: 132.0N)

XRL130P-T03-U04R4A1-D1

Model:

XRL130

Precision Grade:

P: Precision

Cover Type:

T: Standard (Black Anodized)

Effective Stroke:

03: 35mm
06: 60mm
11: 110mm

Termination:

1: Motor: Flying Leads/Encoder: DSUB 15/Hall: DSUB 9
2: Motor: DSUB 9Ww/Encoder: DSUB 15/Hall: DSUB 9

Cable Length:

D: 1.0m

Scale Type:

1: Steel Tape, 31ppm/K

Encoder Type:

R4A: TONIC, SIN/COS (1Vpp)

Motor Type:

U04: AUM2-S-S3-K (Peak Force: 132.0N)

Note:

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

XRL250-110

Motor Specifications	Unit	Value
Motor	-	AUM2-S4+2
Continuous Force (NC) @100°C	N	35.2±2
Peak Force	N	176.0±2
Force Constant ±10%	N/Arms	22.0
Back EMF Constant ±10%	Vpeak/(m/s)	18.0
Resistance (L-L) @25°C ±10%	Ω	6.59
Inductance (L-L) ±40%	mH	1.94
Continuous Current (NC) @100°C	Arms	1.6±2
Peak Current	Arms	8.0±2
Max. Bus Voltage	Vdc	330
Magnetic Period	mm	30
Mechanical Specifications	Unit	Value
Precision Grade	-	P N
Effective Stroke	mm	110
Resolution	μm	SINCOX (4096X) 0.1
Repeatability	μm	±0.15 ±0.3
Horizontal Straightness	μm	±1.0 ±2.0
Vertical Straightness	μm	±1.0 ±2.0
Rated Payload	kg	30.0
No-load Moving Mass	kg	5.4
No-load Total Mass	kg	9.7
Max. Static Moment	Nm	15.0

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 Resistance is measured by DC current with standard 0.5m cable.

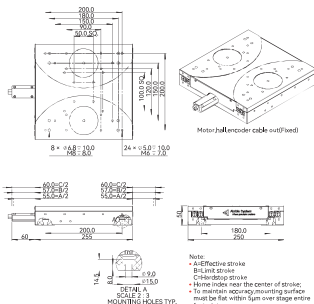
③ Inductance is measured by current frequency of 1 kHz. The variation range of ALH inductance is ±40% because three phase inductances are different.

④ The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

⑤ This value is based on providing a higher control bandwidth, please contact our service@alibis-system.com for higher load requirements.

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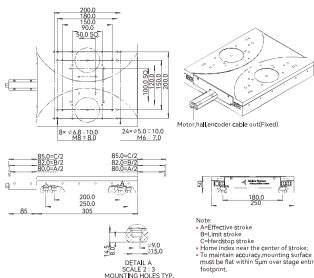
■ Dimensional Drawing



XRL250-160

Motor Specifications	Unit	Value
Motor	-	AUM2-S4+2
Continuous Force (NC) @100°C	N	35.2±2
Peak Force	N	176.0±2
Force Constant ±10%	N/Arms	22.0
Back EMF Constant ±10%	Vpeak/(m/s)	18.0
Resistance (L-L) @25°C ±10%	Ω	6.59
Inductance (L-L) ±40%	mH	1.94
Continuous Current (NC) @100°C	Arms	1.6±2
Peak Current	Arms	8.0±2
Max. Bus Voltage	Vdc	330
Magnetic Period	mm	30
Mechanical Specifications	Unit	Value
Precision Grade	-	P N
Effective Stroke	mm	160
Resolution	μm	SINCOX (4096X) 0.1
Repeatability	μm	±0.15 ±0.3
Horizontal Straightness	μm	±1.5 ±2.0
Vertical Straightness	μm	±1.5 ±2.0
Rated Payload	kg	40.0
No-load Moving Mass	kg	6.6
No-load Total Mass	kg	11.6
Max. Static Moment	Nm	20.0

■ Dimensional Drawing



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 Resistance is measured by DC current with standard 0.5m cable.

③ Inductance is measured by current frequency of 1 kHz. The variation range of ALH inductance is ±40% because three phase inductances are different.

④ The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

⑤ This value is based on providing a higher control bandwidth, please contact our service@alibis-system.com for higher load requirements.

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Ordering Part Number (OPN)

XRL250-T03-U06R2H1-D1

Model:

XRL250

Precision Grade:

Unmarked: Normal

Cover Type:

T: Standard (Black Anodized)

Effective Stroke:

03: 35mm
06: 60mm
11: 110mm
16: 160mm
21: 210mm

Termination:

1: Motor: Flying Leads/Encoder: DSUB 15/Hall: DSUB 9
2: Motor: DSUB 9/Hall/Encoder: DSUB 15/Hall: DSUB 9

Cable Length:

D: 1.0m

Scale Type:

1: Steel Tape, 11ppm/K

Encoder Type:

R2H: Quadratic, TTL (0.1µm)

Motor Type:

U06: ALUM2-S-SA-K (Peak Force: 176.0N)

XRL250P-T03-U06R4A1-D1

Model:

XRL250P

Precision Grade:

P: Precision

Cover Type:

T: Standard (Black Anodized)

Effective Stroke:

03: 35mm
06: 60mm
11: 110mm
16: 160mm
21: 210mm

Termination:

1: Motor: Flying Leads/Encoder: DSUB 15/Hall: DSUB 9
2: Motor: DSUB 9/Hall/Encoder: DSUB 15/Hall: DSUB 9

Cable Length:

D: 1.0m

Scale Type:

1: Steel Tape, 11ppm/K

Encoder Type:

RAA: TONIC, SINCOS (TVop)

Motor Type:

U06: ALUM2-S-SA-K (Peak Force: 176.0N)

Note:

* Products can be customized to meet specific working environments. Please contact cust-service@altrixb-sys.com.