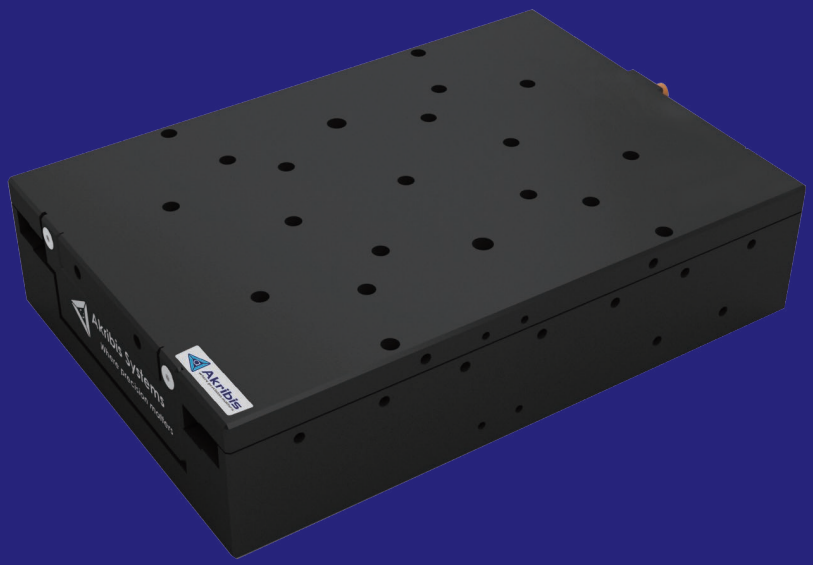


XRL SERIES

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

XRL Series

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 Fcn = 26.4N~70.4N
Peak Force Fpk = 132.0N~352.0N

Features

- Cross roller guide linear motor stage
- Built-in AUM ironless linear motor
- Repeatability up to ±0.1μm
- Stroke from 35mm to 210mm
- Optional resolution of 0.1μm, SINCOS
- Excellent straightness and flatness, high load capacity

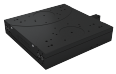
Applications

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 10 / 50 / 100 / 200 / 300 / 400	Stroke[1] (mm)	Repeatability (μm)	Page
 XRL130	 AUM2	AUM2-S3	26.4 / 132.0	35/60/ 110/160	up to ±0.1	081 ~ 082
 XRL250	 AUM2	AUM2-S4	70.4 / 352.0	35/60/ 110/160/ 210	up to ±0.15	084 ~ 086

Note:
[1] Longer stroke available upon request.
★ Products can be customized to meet specific working environments, please contact cust-service@akribis-sys.com.

XRL130-35

Motor Specifications	Unit	Value	
Motor	-	AUM2-S3	
Continuous Force (NC) @100℃ [1]	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℃ ±10% [2]	Ω	9.95	
Inductance (L-L) ±40% [3]	mH	2.94	
Continuous Current (NC) @100℃ [1]	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 [4]	kg	7.0	
No-load Moving Mass	kg	1.5	
No-load Total Mass	kg	2.8	
Max. Static Moment [4]	Nm	5.0	

[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.

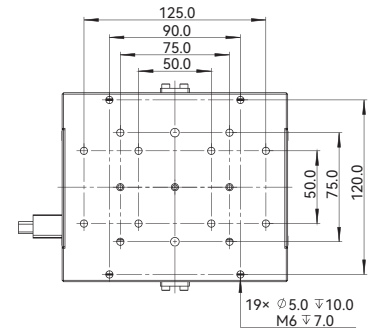
[2] Resistance is measured by DC current with standard 0.5m cable.

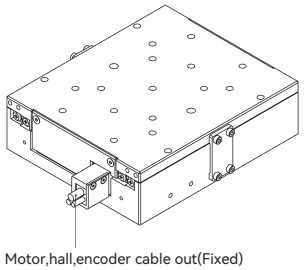
[3] Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different.
The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

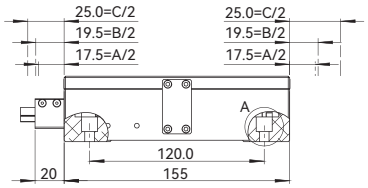
[4] This value is based on providing a higher control bandwidth, please contact cust-service@akribis-sys.com for higher load requirements.

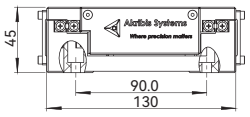
The contents of datasheet are subject to change without prior notice.

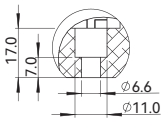
Dimensional Drawing




Motor,hall,encoder cable out(Fixed)







DETAIL A
SCALE 1 : 1
MOUNTING HOLES TYP.

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 5μm over stage entire footprint.

XRL130-60

Motor Specifications	Unit	Value	
Motor	-	AUM2-S3	
Continuous Force (NC) @100℃ [1]	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℃ ±10% [2]	Ω	9.95	
Inductance (L-L) ±40% [3]	mH	2.94	
Continuous Current (NC) @100℃ [1]	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	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 [4]	kg	9.0	
No-load Moving Mass	kg	1.7	
No-load Total Mass	kg	3.2	
Max. Static Moment [4]	Nm	6.0	

[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 AUM inductance is ±40% because three phase inductances are different.
The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

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

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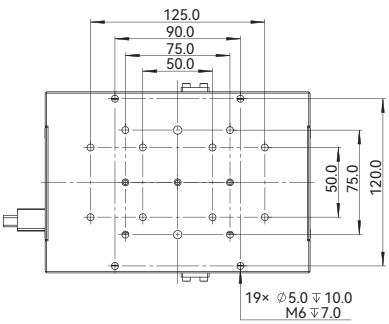
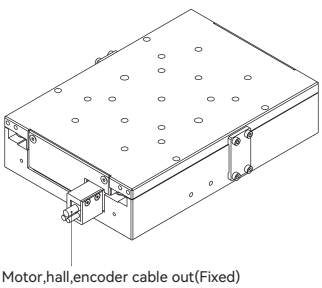
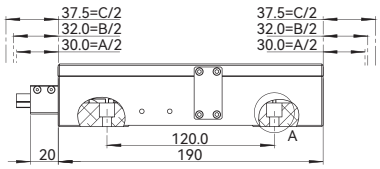
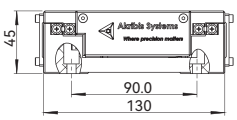
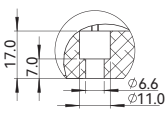
Dimensional Drawing




Motor,hall,encoder cable out(Fixed)







DETAIL A
SCALE 1 : 1
MOUNTING HOLES TYP.

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 5μm over stage entire footprint.

XRL130-110

Motor Specifications	Unit	Value	
Motor	-	AUM2-S3	
Continuous Force (NC) @100℃ [1]	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℃ ±10% [2]	Ω	9.95	
Inductance (L-L) ±40% [3]	mH	2.94	
Continuous Current (NC) @100℃ [1]	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	110	
Resolution	μm	SINCOS (4096X)	0.1
Repeatability	μm	±0.1	±0.3
Horizontal Straightness	μm	±1.0	±2.0
Vertical Straightness	μm	±1.0	±2.0
Rated Payload [4]	kg	11.0	
No-load Moving Mass	kg	2.1	
No-load Total Mass	kg	3.9	
Max. Static Moment [4]	Nm	7.0	

[1] Measurement is taken at ambient temperature 25ºC. 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 ±40% because three phase inductances are different.
The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.
[4] This value is based on providing a higher control bandwidth, please contact cust-service@akribis-sys.com for higher load requirements.

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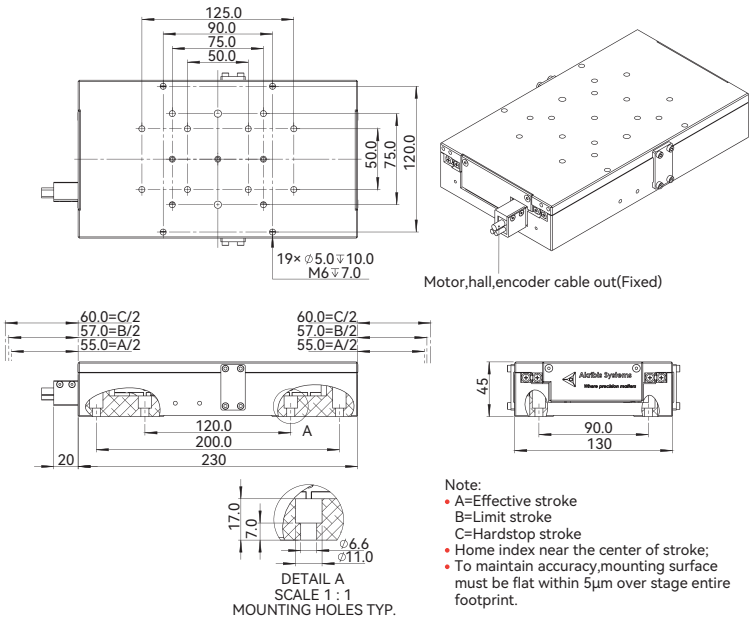
Dimensional Drawing



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 5μm over stage entire footprint.

XRL130-160

Motor Specifications	Unit	Value
Motor	-	AUM2-S3
Continuous Force (NC) @100℃ [1]	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℃ ±10% [2]	Ω	9.95
Inductance (L-L) ±40% [3]	mH	2.94
Continuous Current (NC) @100℃ [1]	Arms	1.6
Peak Current	Arms	8.0
Max. Bus Voltage	Vdc	330
Magnetic Period	mm	30
Mechanical Specifications	**Unit**	**Value**
Precision Grade	-	N
Effective Stroke	mm	160
Resolution	μm	0.1
Repeatability	μm	±0.3
Horizontal Straightness	μm	±2.0
Vertical Straightness	μm	±2.0
Rated Payload [4]	kg	13.0
No-load Moving Mass	kg	2.3
No-load Total Mass	kg	4.2
Max. Static Moment [4]	Nm	8.0

[1] Measurement is taken at ambient temperature 25ºC. 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 ±40% because three phase inductances are different.
The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.
[4] This value is based on providing a higher control bandwidth, please contact cust-service@akribis-sys.com for higher load requirements.

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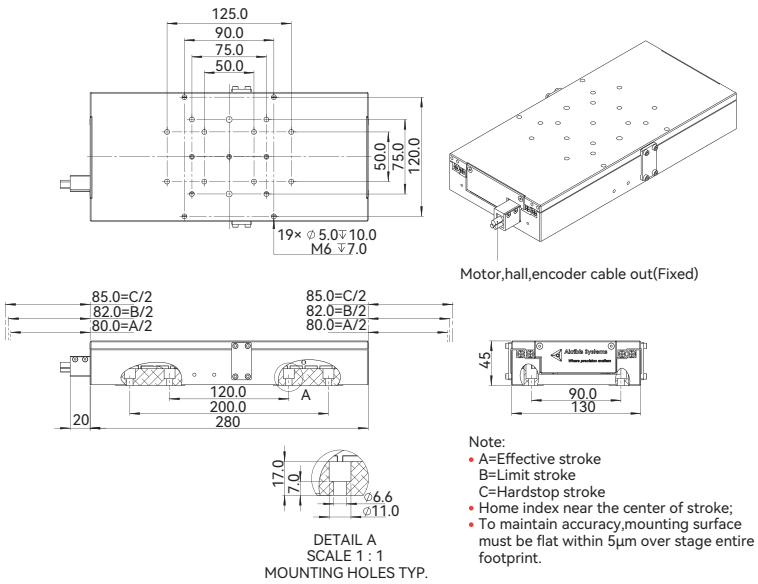
Dimensional Drawing



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 5μm 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
- Motor Type: U04: AUM2-S-S3-K (Peak Force: 132.0N)
- Encoder Type: R2H: Quantic, TTL (0.1μm)
- Scale Type: 1: Steel Tape, 11ppm/K
- Cable Length: D: 1.0m
- Termination: 1: Motor: Flying Leads/Encoder: DSUB 15/Hall: DSUB 9; 2: Motor: DSUB 9W4/Encoder: DSUB 15/Hall: DSUB 9

XRL130P-T03-U04R4A1-D1

- Model: XRL130
- Precision Grade: P: Precision
- Cover Type: T: Standard (Black Anodized)
- Effective Stroke: 03: 35mm; 06: 60mm; 11: 110mm
- Motor Type: U04: AUM2-S-S3-K (Peak Force: 132.0N)
- Encoder Type: R4A: TONiC, SINCOS (1Vpp)
- Scale Type: 1: Steel Tape, 11ppm/K
- Cable Length: D: 1.0m
- Termination: 1: Motor: Flying Leads/Encoder: DSUB 15/Hall: DSUB 9; 2: Motor: DSUB 9W4/Encoder: DSUB 15/Hall: DSUB 9

Note:

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

XRL Series

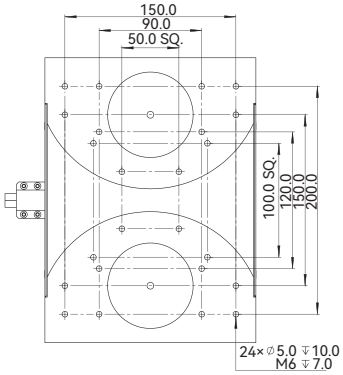
XRL250-35

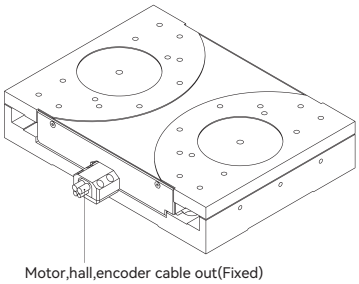
Motor Specifications	Unit	Value	
Motor	-	AUM2-S4×2	
Continuous Force (NC) @100℃ [1]	N	35.2×2	
Peak Force	N	176.0×2	
Force Constant ±10%	N/Arms	22.0	
Back EMF Constant ±10%	Vpeak/(m/s)	18.0	
Resistance (L-L) @25℃ ±10% [2]	Ω	6.59	
Inductance (L-L) ±40% [3]	mH	1.94	
Continuous Current (NC) @100℃ [1]	Arms	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	35	
Resolution	μm	SINCOS (4096X)	0.1
Repeatability	μm	±0.15	±0.3
Horizontal Straightness	μm	±1.0	±1.5
Vertical Straightness	μm	±1.0	±1.5
Rated Payload [4]	kg	20.0	
No-load Moving Mass	kg	3.9	
No-load Total Mass	kg	7.0	
Max. Static Moment [4]	Nm	7.0	

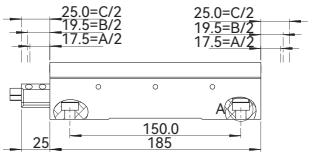
[1] Measurement is taken at ambient temperature 25ºC. Value depends on the thermal environment.
Abbreviations: NC-Natural Cooling, AC=Air Cooling, WC=Water Cooling.
[2] Resistance is measured by DC current with standard 0.5m cable.
[3] Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different.
The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.
[4] This value is based on providing a higher control bandwidth, please contact cust-service@akribis-sys.com for higher load requirements.

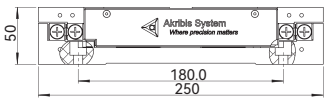
The contents of datasheet are subject to change without prior notice.

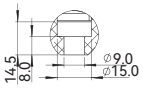
Dimensional Drawing











DETAIL A
SCALE 1 : 1
MOUNTING HOLES TYP.

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 5μm over stage entire footprint.

XRL250-60

Motor Specifications	Unit	Value	
Motor	-	AUM2-S4×2	
Continuous Force (NC) @100℃ [1]	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℃ ±10% [2]	Ω	6.59	
Inductance (L-L) ±40% [3]	mH	1.94	
Continuous Current (NC) @100℃ [1]	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	60	
Resolution	μm	SINCOS (4096X)	0.1
Repeatability	μm	±0.15	±0.3
Horizontal Straightness	μm	±1.0	±1.5
Vertical Straightness	μm	±1.0	±1.5
Rated Payload [4]	kg	25.0	
No-load Moving Mass	kg	4.6	
No-load Total Mass	kg	8.2	
Max. Static Moment [4]	Nm	10.0	

[1] Measurement is taken at ambient temperature 25ºC. 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 ±40% because three phase inductances are different.
The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.
[4] This value is based on providing a higher control bandwidth, please contact cust-service@akribis-sys.com for higher load requirements.

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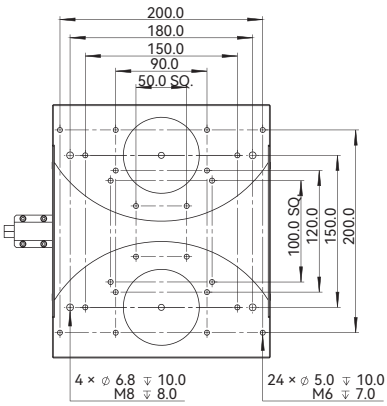
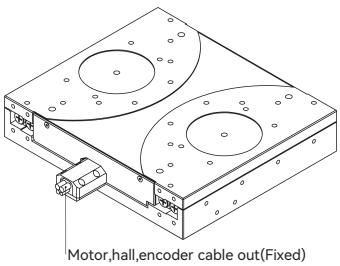
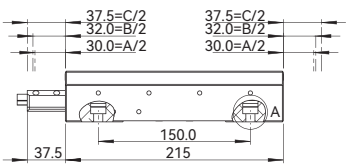
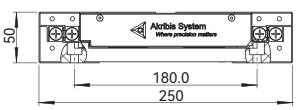
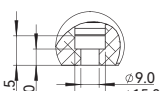
Dimensional Drawing











DETAIL A
SCALE 2 : 3
MOUNTING HOLES TYP.

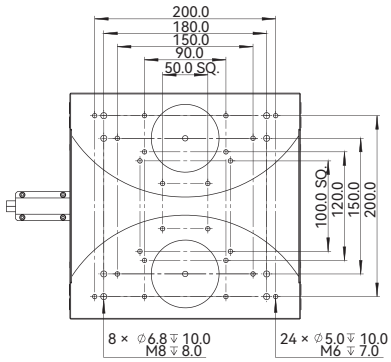
Note:
- A=Effective stroke
  B=Limit stroke
  C=Hardstop stroke
- Home index near the center of stroke;
- To maintain accuracy,mounting surface must be flat within 5μm over stage entire footprint.

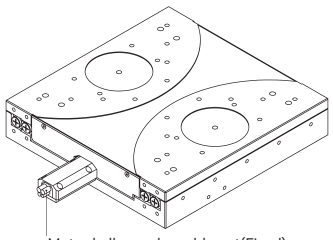
XRL250-110

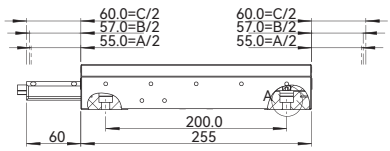
Motor Specifications	Unit	Value	
Motor	-	AUM2-S4×2	
Continuous Force (NC) @100℃ [1]	N	35.2×2	
Peak Force	N	176.0×2	
Force Constant ±10%	N/Arms	22.0	
Back EMF Constant ±10%	Vpeak/(m/s)	18.0	
Resistance (L-L) @25℃ ±10% [2]	Ω	6.59	
Inductance (L-L) ±40% [3]	mH	1.94	
Continuous Current (NC) @100℃ [1]	Arms	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	SINCOS (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 [4]	kg	30.0	
No-load Moving Mass	kg	5.4	
No-load Total Mass	kg	9.7	
Max. Static Moment [4]	Nm	15.0	

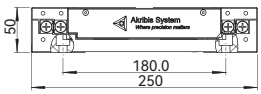
[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations: NC-Natural Cooling, AC=Air Cooling, WC=Water Cooling.
[2] Resistance is measured by DC current with standard 0.5m cable.
[3] Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different.
The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.
[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.

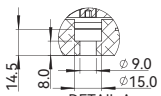
Dimensional Drawing




Motor,hall,encoder cable out(Fixed)







DETAIL A
SCALE 2 : 3
MOUNTING HOLES TYP.

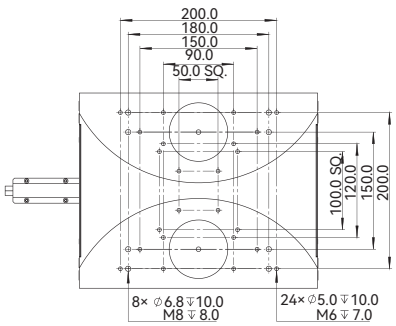
Note:
- A=Effective stroke
  B=Limit stroke
  C=Hardstop stroke
- Home index near the center of stroke;
- To maintain accuracy,mounting surface must be flat within 5μm over stage entire footprint.

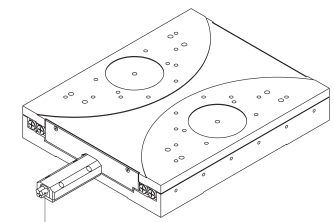
XRL250-160

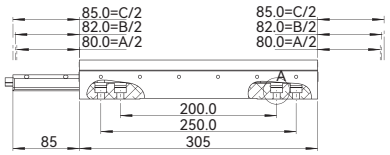
Motor Specifications	Unit	Value	
Motor	-	AUM2-S4×2	
Continuous Force (NC) @100℃ [1]	N	35.2×2	
Peak Force	N	176.0×2	
Force Constant ±10%	N/Arms	22.0	
Back EMF Constant ±10%	Vpeak/(m/s)	18.0	
Resistance (L-L) @25℃ ±10% [2]	Ω	6.59	
Inductance (L-L) ±40% [3]	mH	1.94	
Continuous Current (NC) @100℃ [1]	Arms	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	SINCOS (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 [4]	kg	40.0	
No-load Moving Mass	kg	6.6	
No-load Total Mass	kg	11.6	
Max. Static Moment [4]	Nm	20.0	

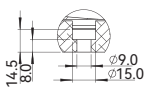
[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations: NC-Natural Cooling, AC=Air Cooling, WC=Water Cooling.
[2] Resistance is measured by DC current with standard 0.5m cable.
[3] Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different.
The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.
[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.

Dimensional Drawing




Motor,hall,encoder cable out(Fixed)





DETAIL A
SCALE 2 : 3
MOUNTING HOLES TYP.

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 5μm over stage entire footprint.

XRL250-210

Motor Specifications	Unit	Value	
Motor	-	AUM2-S4×2	
Continuous Force (NC) @100℃ [1]	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℃ ±10% [2]	Ω	6.59	
Inductance (L-L) ±40% [3]	mH	1.94	
Continuous Current (NC) @100℃ [1]	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	210	
Resolution	μm	SINCOS (4096X)	0.1
Repeatability	μm	±0.15	±0.3
Horizontal Straightness	μm	±1.5	±2.5
Vertical Straightness	μm	±1.5	±2.5
Rated Payload [4]	kg	45.0	
No-load Moving Mass	kg	7.3	
No-load Total Mass	kg	13.3	
Max. Static Moment [4]	Nm	24.0	

[1] Measurement is taken at ambient temperature 25ºC. Value depends on the thermal environment.
Abbreviations: NC=Natural Cooling, AC=Air Cooling, WC=Water Cooling.

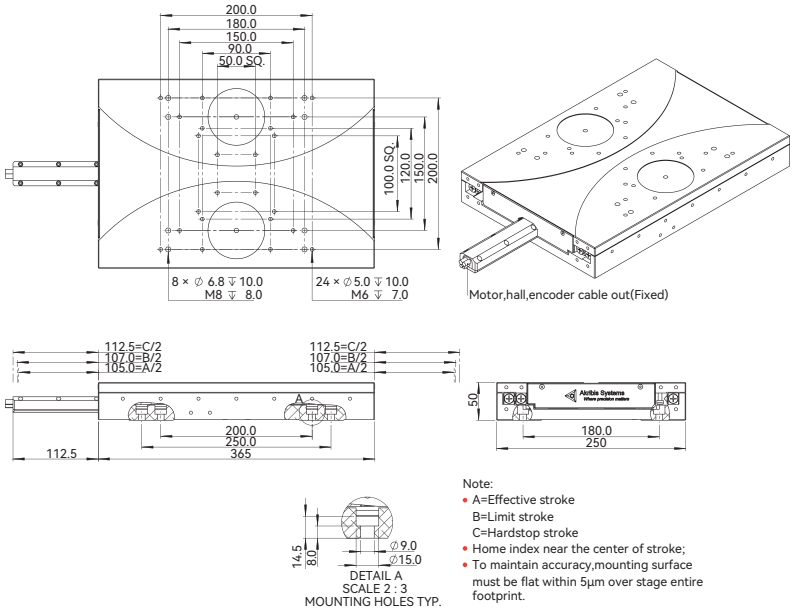
[2] Resistance is measured by DC current with standard 0.5m cable.

[3] Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different. The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

[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.

Dimensional Drawing



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 5μm over stage entire footprint.

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 9W4/Encoder: DSUB 15/Hall: DSUB 9
- Cable Length: D: 1.0m
- Scale Type: 1: Steel Tape, 11ppm/K
- Encoder Type: R2H: Quantic, TTL (0.1μm)
- Motor Type: U06: AUM2-S-S4-K (Peak Force: 176.0N)

XRL250P-T03-U06R4A1-D1

- Model: XRL250
- 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 9W4/Encoder: DSUB 15/Hall: DSUB 9
- Cable Length: D: 1.0m
- Scale Type: 1: Steel Tape, 11ppm/K
- Encoder Type: R4A: TONiC, SINCOS (1Vpp)
- Motor Type: U06: AUM2-S-S4-K (Peak Force: 176.0N)

Note:

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