

AML110 SERIES LINEAR MODULE

- ▶ Compact design
- ▶ Anti-creep cross roller guide rail
- ▶ Direct drive technology
- ▶ High precision optical encoder
- ▶ Stackable configuration

EN-24.3.1

Introduction

The AML110 series micro positioning stage consists of micro linear motor, micro anti-creep cross roller guide rail, encoder position feedback and structural base. The internal structure is extremely compact. It is a high-precision positioning motion stage.

Continuous Force $F_{cn} = 17.1N$

Peak Force $F_{pk} = 51.3N$


Features

- ▶ Direct-drive, compact design
- ▶ Anti-creep cross roller guide rail
- ▶ Stroke from 25/50/75/100/150mm
- ▶ Repeatability up to $\pm 0.5\mu m$
- ▶ Optional resolution of $0.05\mu m$, $0.2\mu m$
- ▶ It can be combined flexibly to form an XY stage

Applications

Submicron positioning, optical alignment stage.

They are applied to point-to-point high-speed positioning, optical alignment, high speed pick and place, flying probe test and fiber optical alignment for automation equipment of all industries.

Miniature Modules	Continuous Force (F_{cn}) Peak Force (F_{pk})						Unit: N	Repeatability (μm)	Page
	10.0	20.0	30.0	40.0	50.0	60.0			
 AML110								± 0.5	03

Note:

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

AML110-25

Motor Specifications	Unit	Value
Motor	-	CLA0010-025
Continuous Force(NC)@100°C ¹	N	17.1
Peak Force	N	51.3
Force Constant±10%	N/Arms	8.6
Back EMF Constant ±10%	Vpeak/(m/s)	7.0
Resistance (L-L) @25°C ±10% ²	Ω	5.2
Inductance (L-L) ±30% ³	mH	1.8
Continuous Current (NC) @100°C ¹	Arms	2.0
Peak Current	Arms	6.0
Max. Bus Voltage	Vdc	48.0
Mechanical Specifications	Unit	Value
Stroke	mm	25
Resolution	μm	0.05 0.2
Repeatability	μm	±0.5
Horizontal Straightness	μm	±2.0
Vertical Straightness	μm	±2.0
Rated Payload ⁴	kg	6.0
No-load Moving Mass	kg	0.6
No-load Total Mass	kg	1.1
Max. Allowable Roll Moment	Nm	3.6
Max. Allowable Pitch Moment	Nm	3.1
Max. Allowable Yaw Moment	Nm	3.1

¹ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations: NC-Natural Cooling.

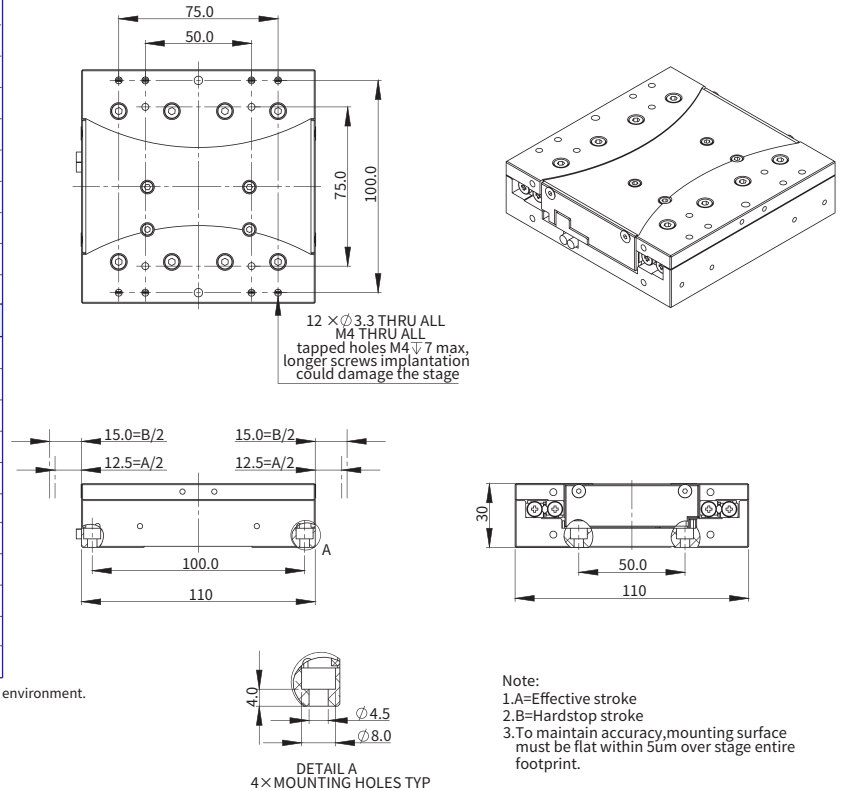
² Resistance is measured by DC current with 0.5m cable.

³ Inductance is measured by current frequency of 1kHz.

⁴ Load capacity of module without cantilever.

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

■ Dimensional Drawing



AML110-50

Motor Specifications	Unit	Value
Motor	-	CLA0010-025
Continuous Force(NC)@100°C ¹	N	17.1
Peak Force	N	51.3
Force Constant±10%	N/Arms	8.6
Back EMF Constant ±10%	Vpeak/(m/s)	7.0
Resistance (L-L) @25°C ±10% ²	Ω	5.2
Inductance (L-L) ±30% ³	mH	1.8
Continuous Current (NC) @100°C ¹	Arms	2.0
Peak Current	Arms	6.0
Max. Bus Voltage	Vdc	48.0
Mechanical Specifications	Unit	Value
Stroke	mm	50
Resolution	μm	0.05 0.2
Repeatability	μm	±0.5
Horizontal Straightness	μm	±2.0
Vertical Straightness	μm	±2.0
Rated Payload ⁴	kg	7.0
No-load Moving Mass	kg	0.7
No-load Total Mass	kg	1.4
Max. Allowable Roll Moment	Nm	4.1
Max. Allowable Pitch Moment	Nm	4.2
Max. Allowable Yaw Moment	Nm	4.2

¹ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations: NC-Natural Cooling.

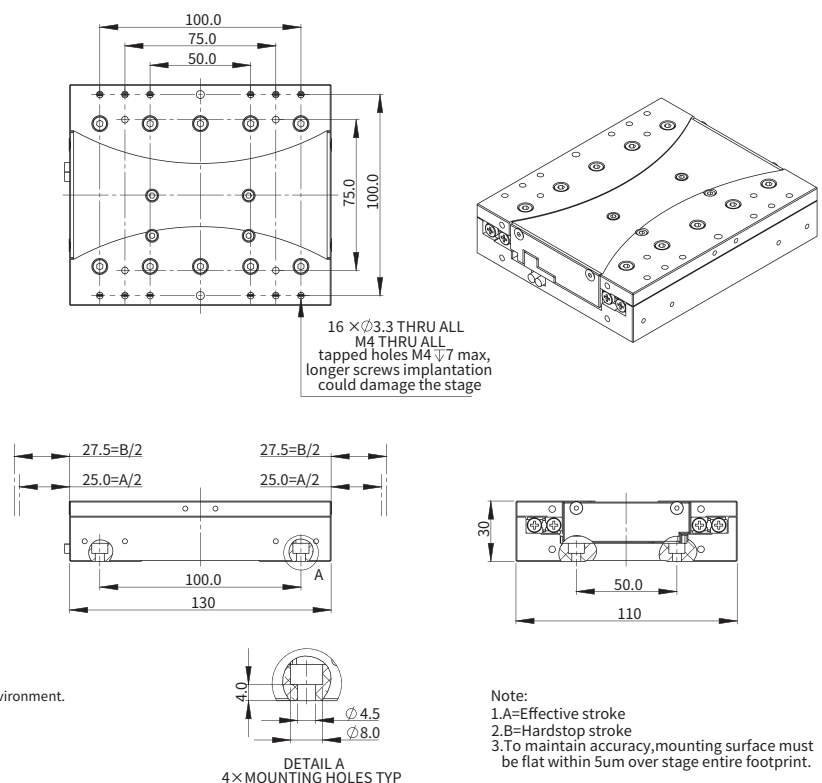
² Resistance is measured by DC current with 0.5m cable.

³ Inductance is measured by current frequency of 1kHz.

⁴ Load capacity of module without cantilever.

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■ Dimensional Drawing



AML110-75

Motor Specifications	Unit	Value
Motor	-	CLA0010-025
Continuous Force(NC)@100°C ^①	N	17.1
Peak Force	N	51.3
Force Constant±10%	N/Arms	8.6
Back EMF Constant ±10%	Vpeak/(m/s)	7.0
Resistance (L-L) @25°C ±10% ^②	Ω	5.2
Inductance (L-L) ±30% ^③	mH	1.8
Continuous Current (NC) @100°C ^①	Arms	2.0
Peak Current	Arms	6.0
Max. Bus Voltage	Vdc	48.0
Mechanical Specifications	Unit	Value
Stroke	mm	75
Resolution	μm	0.05 0.2
Repeatability	μm	±0.5
Horizontal Straightness	μm	±3.0
Vertical Straightness	μm	±3.0
Rated Payload ^④	kg	8.0
No-load Moving Mass	kg	0.9
No-load Total Mass	kg	1.6
Max. Allowable Roll Moment	Nm	4.7
Max. Allowable Pitch Moment	Nm	6.0
Max. Allowable Yaw Moment	Nm	6.0

① Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations: NC-Natural Cooling.

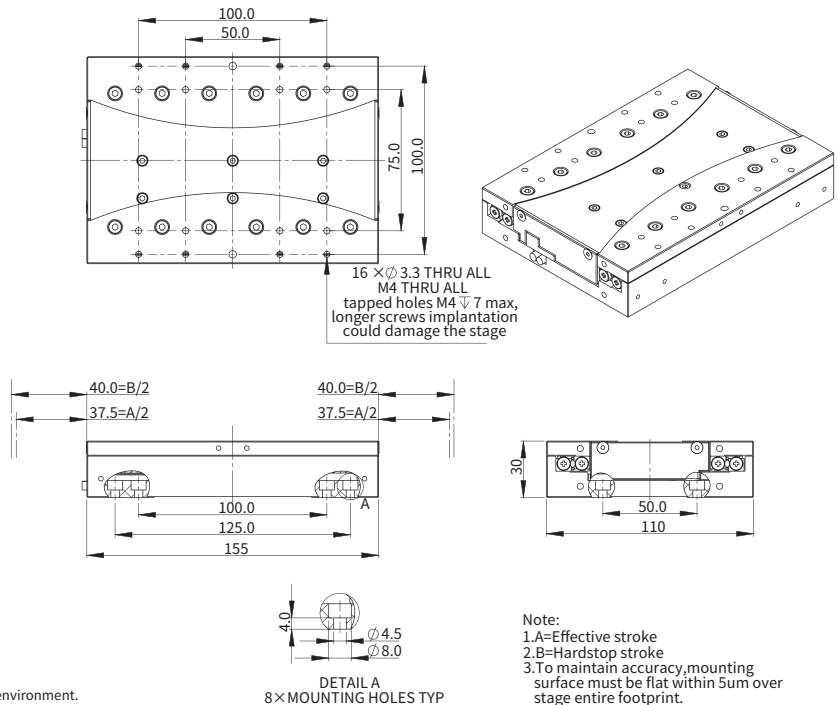
② Resistance is measured by DC current with 0.5m cable.

③ Inductance is measured by current frequency of 1kHz.

④ Load capacity of module without cantilever.

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■ Dimensional Drawing



AML110-100

Motor Specifications	Unit	Value
Motor	-	CLA0010-025
Continuous Force(NC)@100°C ^①	N	17.1
Peak Force	N	51.3
Force Constant±10%	N/Arms	8.6
Back EMF Constant ±10%	Vpeak/(m/s)	7.0
Resistance (L-L) @25°C ±10% ^②	Ω	5.2
Inductance (L-L) ±30% ^③	mH	1.8
Continuous Current (NC) @100°C ^①	Arms	2.0
Peak Current	Arms	6.0
Max. Bus Voltage	Vdc	48.0
Mechanical Specifications	Unit	Value
Stroke	mm	100
Resolution	μm	0.05 0.2
Repeatability	μm	±0.5
Horizontal Straightness	μm	±3.0
Vertical Straightness	μm	±3.0
Rated Payload ^④	kg	10.0
No-load Moving Mass	kg	1.0
No-load Total Mass	kg	1.9
Max. Allowable Roll Moment	Nm	5.7
Max. Allowable Pitch Moment	Nm	8.6
Max. Allowable Yaw Moment	Nm	8.6

① Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations: NC-Natural Cooling.

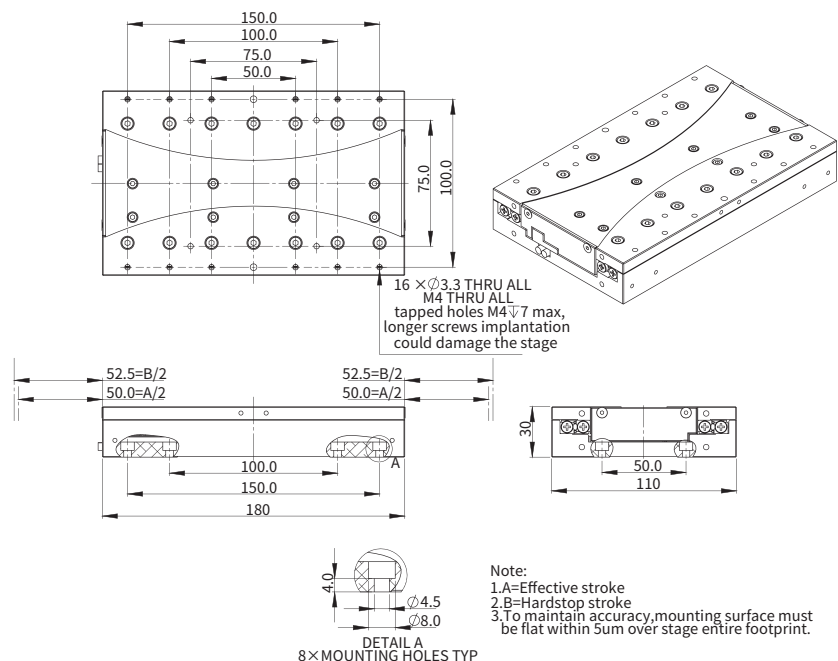
② Resistance is measured by DC current with 0.5m cable.

③ Inductance is measured by current frequency of 1kHz.

④ Load capacity of module without cantilever.

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■ Dimensional Drawing



AML110 Series

AML110-150

Motor Specifications	Unit	Value
Motor	-	CLA0010-025
Continuous Force(NC)@100°C ¹	N	17.1
Peak Force	N	51.3
Force Constant ±10%	N/Arms	8.6
Back EMF Constant ±10%	Vpeak/(m/s)	7.0
Resistance (L-L) @25°C ±10% ²	Ω	5.2
Inductance (L-L) ±30% ³	mH	1.8
Continuous Current (NC) @100°C ¹	Arms	2.0
Peak Current	Arms	6.0
Max. Bus Voltage	Vdc	48.0
Mechanical Specifications	Unit	Value
Stroke	mm	150
Resolution	μm	0.05 0.2
Repeatability	μm	±0.5
Horizontal Straightness	μm	±3.0
Vertical Straightness	μm	±3.0
Rated Payload ⁴	kg	14.0
No-load Moving Mass	kg	1.2
No-load Total Mass	kg	2.3
Max. Allowable Roll Moment	Nm	6.7
Max. Allowable Pitch Moment	Nm	12.0
Max. Allowable Yaw Moment	Nm	12.0

¹ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations: NC-Natural Cooling.

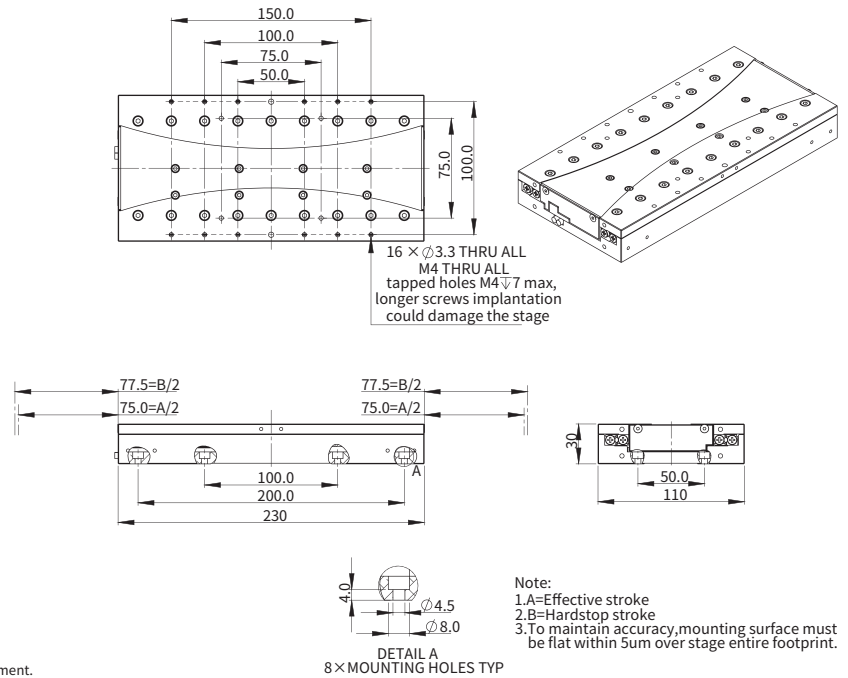
² Resistance is measured by DC current with 0.5m cable.

³ Inductance is measured by current frequency of 1kHz.

⁴ Load capacity of module without cantilever.

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■ Dimensional Drawing



Ordering Part Number (OPN)

AML110-T02-AD01-D1

Model:

AML110

Cover Type:

T: Standard (Black Anodized)

Effective Stroke:

02: 25mm
05: 50mm
07: 75mm
10: 100mm
15: 150mm

Termination:

1: Motor: Flying Leads/Encoder: DSUB 15
2: Motor: TYCO4/Encoder: DSUB 15

Cable Length:

B: 3.0m
D: 1.0m

Scale Type:

1: Steel Tape, 11ppm/K¹
4: Nickel, 14ppm/K¹

Encoder Type:

A0G: ABI-21, TTL (0.2μm)
AD0: ABA-20 (0.05μm)

Note:

¹ ABI-21 uses Nickel, ABA-20 uses Steel tape.

★ Default mounting orientation for this module is horizontal. For other mounting orientations, please contact cust-service@akribis-sys.com.

Motor Cable Connection Diagram

PIN	DESCRIPTION	COLOR
1	M1	Black
2	M2	Grey
3	M3	Blue
4	PE	Yellow

