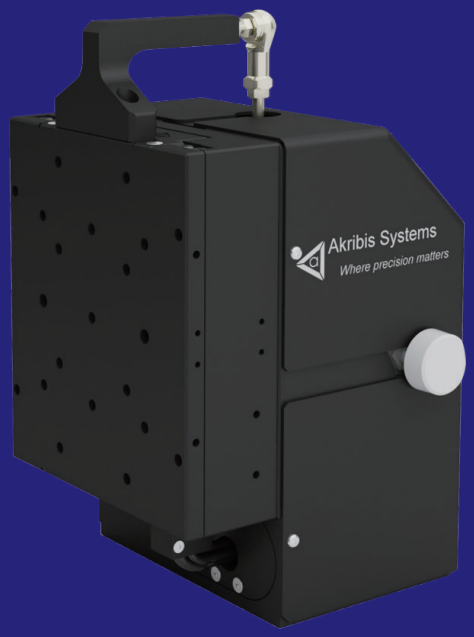


XAZB130 SERIES

- High-precision Z-axis positioning stage
- High force, low friction
- Pneumatic counterbalance (Rear-mounted cylinder)

EN-25.12.1

Akribis Systems

XAZB130 Series

Introduction

The XAZB130 series is a high-precision Z-axis linear motor module. The series combines XRL130 series direct-drive module and rear-mounted pneumatic counterbalance mechanism, working synergistically to achieve high-precision vertical motion. Available with 35mm and 60mm effective strokes. The series features high precision, high force, low friction, fast response, excellent dynamic performance. This product can be matched with XRL series or XRS series (Optical Fiber Alignment) modules to form multi-axis systems.

Continuous Force F_{cn} = 26.4N

Peak Force F_{pk} = 132.0N

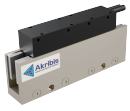
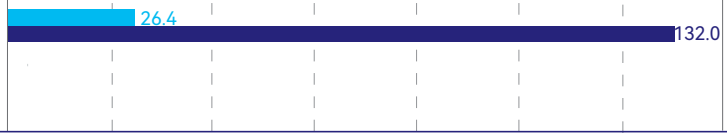
Features

- Anti-creep cross roller guide for Z-direction applications.
- Ironless linear motor has no cogging force.
- Low-friction cylinder.
- Integrated pneumatic pressure regulation system.

Applications

The XAZB130 series module is used as the platform Z-axis and can also be used in superposition with XRL series or XRS series (Optical Fiber Alignment) linear modules.

Typical scanning or point-to point applications, sensor testing and calibration,alignment, and pickup and placement assembly,Semiconductor, industrialand scientific research projects that require high precision such asprecision laser processing, laser cutting, optical focusing,optical chip coupling, wafer inspection, surface roughness inspection, etc

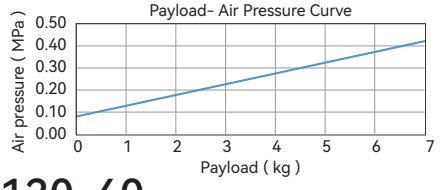
Linear Module Series	Linear motor Series	■ Continuous Force (F_{cn}) ■ Peak Force (F_{pk}) Unit: N 20.0 40.0 60.0 80.0 100.0 120.0 140.0	Stroke (mm)	Repeatability (μm)
 XAZB130	 AUM2-S3		35/60	up to ±0.15μm

XAZB130-35

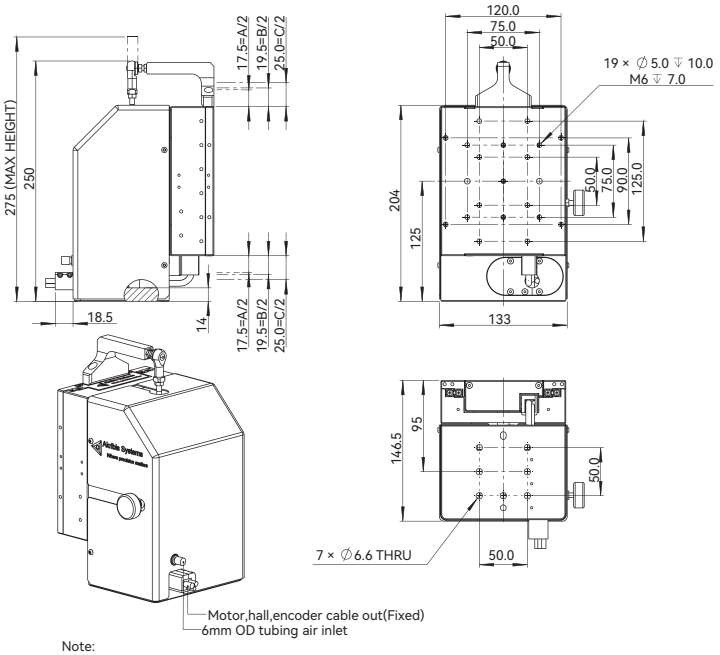
Motor Specifications	Unit	Value	
Motor	-	AUM2-S3	
Continuous Force	N	26.4	
Peak Force	N	132.0	
Force Constant±10%	N/Arms	16.5	
Back EMF Constant ±10%	Vpeak/ (m/s)	13.5	
Mechanical Specifications	**Unit**	**Value**	
Precision Grade	-	P	N
Stroke	mm	35	
Resolution	μm	SINCOS (4096X)	0.1
Repeatability	μm	±0.15	±0.3
Horizontal Straightness	μm	±1.5	±2.0
Vertical Straightness	μm	±1.5	±2.5
Rated Payload ❶	kg	7.0	
No-load Moving Mass	kg	1.7	
No-load Total Mass	kg	5.4	
Max Allowable Roll Moment ❶	Nm	3.0	
Max Allowable Pitch Moment ❶	Nm	4.0	
Max Allowable Yaw Moment ❶	Nm	4.0	

❶ This value is based on providing a higher control bandwidth, please contact cust-service@akribis-sys.com for higher load requirements.
★ All values are measured based on module fully mounted on a 5μm granite table. All values are measured according to Akribis measuring standard.

Payload- Air Pressure Curve



Dimension



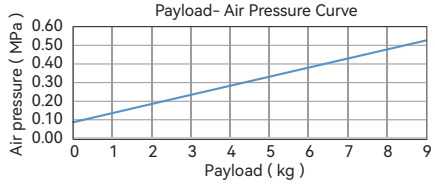
Note:
1.A=Effective stroke
B=Limit stroke
C=Hardstop stroke
2.Home index near the center of stroke;
3.To maintain accuracy,mounting surface must be flat within 5um over stage entire footprint.

XAZB130-60

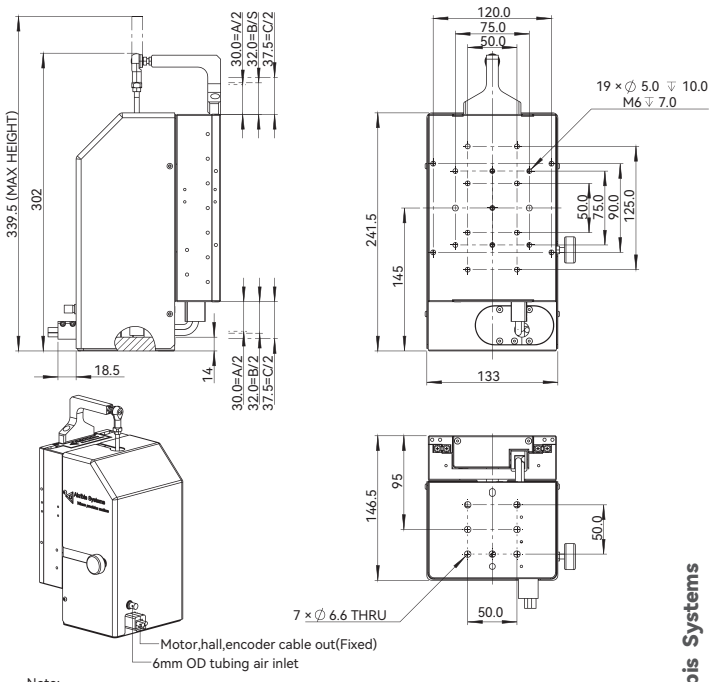
Motor Specifications	Unit	Value	
Motor	-	AUM2-S3	
Continuous Force	N	26.4	
Peak Force	N	132.0	
Force Constant±10%	N/Arms	16.5	
Back EMF Constant ±10%	Vpeak/ (m/s)	13.5	
Mechanical Specifications	**Unit**	**Value**	
Precision Grade	-	P	N
Stroke	mm	60	
Resolution	μm	SINCOS (4096X)	0.1
Repeatability	μm	±0.15	±0.3
Horizontal Straightness	μm	±1.5	±2.0
Vertical Straightness	μm	±1.5	±2.5
Rated Payload ❶	kg	9.0	
No-load Moving Mass	kg	1.9	
No-load Total Mass	kg	6.1	
Max Allowable Roll Moment ❶	Nm	4.0	
Max Allowable Pitch Moment ❶	Nm	5.0	
Max Allowable Yaw Moment ❶	Nm	5.0	

❶ This value is based on providing a higher control bandwidth, please contact cust-service@akribis-sys.com for higher load requirements.
★ All values are measured based on module fully mounted on a 5μm granite table. All values are measured according to Akribis measuring standard.

Payload- Air Pressure Curve



Dimension



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

Ordering Part Number （OPN）

XAZB130-T03-U04R2H1-D2

- Model: XAZB130
- Precision Grade: Unmarked: Normal
- Cover Type: T: Standard（Black Anodized）
- Effective Stroke: 03: 35mm; 06: 60mm
- Motor Type: U04: AUM2-S-S3-K（Peak Force: 132.0N）
- Termination: 2: Motor: DSUB 9W4/ Encoder: DSUB15/Hall: DSUB 9
- Cable Length: D: 1.0m
- Scale Type: 1: Steel tape, 11ppm/K
- Encoder Type: R2H: Quantic, TTL（0.1μm）

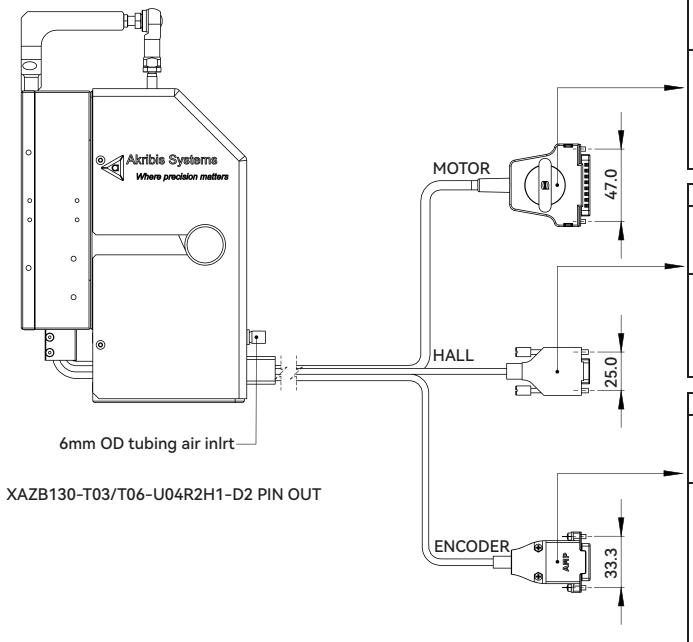
★Products can be customized to meet specific working environments, please contact cust-service@akribis-sys.com.

XAZB130P-T03-U04R4A1-D2-MS

- Model: XAZB130
- Precision Grade: P: Precision
- Cover Type: T: Standard（Black Anodized）
- Effective Stroke: 03: 35mm; 06: 60mm
- Motor Type: U04: AUM2-S-S3-K（Peak Force: 132.0N）
- Cylinder type: MS: SMC low friction cylinder
- Termination: 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）

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

XAZB130 Series EE Interface Diagram



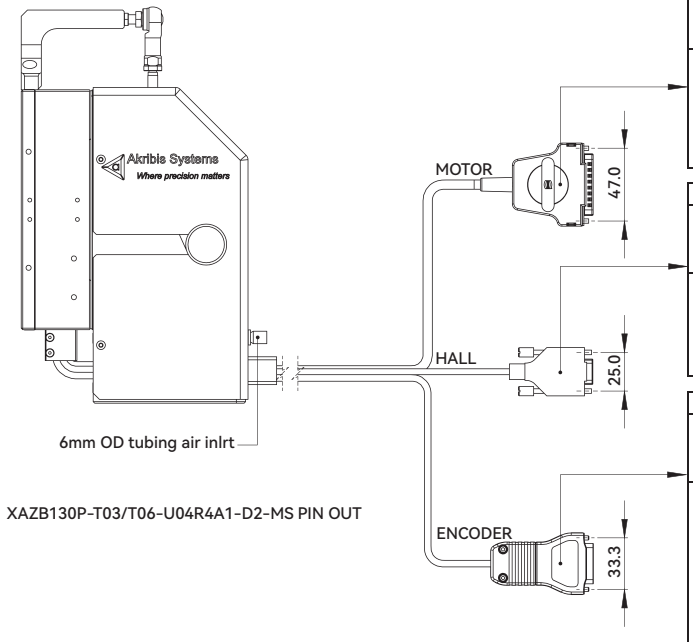
XAZB130-T03/T06-U04R2H1-D2 PIN OUT

AUM MOTOR (DSUB)				
Connector Pin Configuration (view of mating connector)	Pinout	Color	Signal	Function
	A1	Yellow/Grey	M1	Motor Phase
	A2	Blue/Orange	M2	Motor Phase
	A3	Red/Green	M3	Motor Phase
	1	Brown	T1	Thermal Protection
	2	Brown/Black	T2	Thermal Protection
	A4	Green/Yellow	PE	Protected Earth Ground
	CASING	Screen	Shield	Shielding

HALL				
Connector Pin Configuration (view of mating connector)	Pinout	Color	Signal	Function
	1	Grey	Ha	Hall A Signal
	2	Yellow	Hb	Hall B Signal
	3	Blue	Hc	Hall C Signal
	4	Red	+5V	Power Supply
	5	Black	GND	Power Supply Return
	Case	Screen	Shield	Shielding

OPTICAL ENCODER (QUANTIC 0.1μm)				
Connector Pin Configuration (view of mating connector)	Pin no.	Color	Signal	Function
	1	Clear	Reserved	Do Not Connected
	2、9	White	GND	Power Supply Return
	3	Orange	Reserved	Do Not Connected
	4	Grey	Z-	Reference mark-
	5	Green	B-	Incremental B-
	6	Blue	A-	Incremental A-
	7、8	Brown	+5V	Power Supply
	10	Black	Q	Q Limits
	11	Pink	P	P Limits
	12	Violet	Z+	Reference mark+
	13	Yellow	B+	Incremental B+
	14	Red	A+	Incremental A+
	Case	Screen	Shield	Shielding

XAZB130P Series EE Interface Diagram



XAZB130P-T03/T06-U04R4A1-D2-MS PIN OUT

AUM MOTOR (DSUB)				
Connector Pin Configuration (view of mating connector)	Pinout	Color	Signal	Function
	A1	Yellow/Grey	M1	Motor Phase
	A2	Blue/Orange	M2	Motor Phase
	A3	Red/Green	M3	Motor Phase
	1	Brown	T1	Thermal Protection
	2	Brown/Black	T2	Thermal Protection
	A4	Green/Yellow	PE	Protected Earth Ground
	CASING	Screen	Shield	Shielding

HALL				
Connector Pin Configuration (view of mating connector)	Pinout	Color	Signal	Function
	1	Grey	Ha	Hall A Signal
	2	Yellow	Hb	Hall B Signal
	3	Blue	Hc	Hall C Signal
	4	Red	+5V	Power Supply
	5	Black	GND	Power Supply Return
	Case	Screen	Shield	Shielding

OPTICAL ENCODER (TONIC SINCOS)				
Connector Pin Configuration (view of mating connector)	Pin no.	Color	Signal	Function
	1	Blue	COS-	Incremental Cosine-
	2	Green	SIN-	Incremental Sine-
	3	Violet	Z+	Reference mark+
	4、5	Brown	+5V	Power Supply
	6	Clear	Reserved	Do Not Connected
	7	Pink	P	P Limits
	8	Black	Q	Q Limits
	9	Red	COS+	Incremental Cosine+
	10	Yellow	SIN+	Incremental Sine+
	11	Grey	Z-	Reference mark-
	12、13	White	GND	Power Supply Return
	14	Orange	Reserved	Do Not Connected
	*	Green/Yellow	-	Inner Shielding
	Case	Outer screen	Shield	Outer Shielding