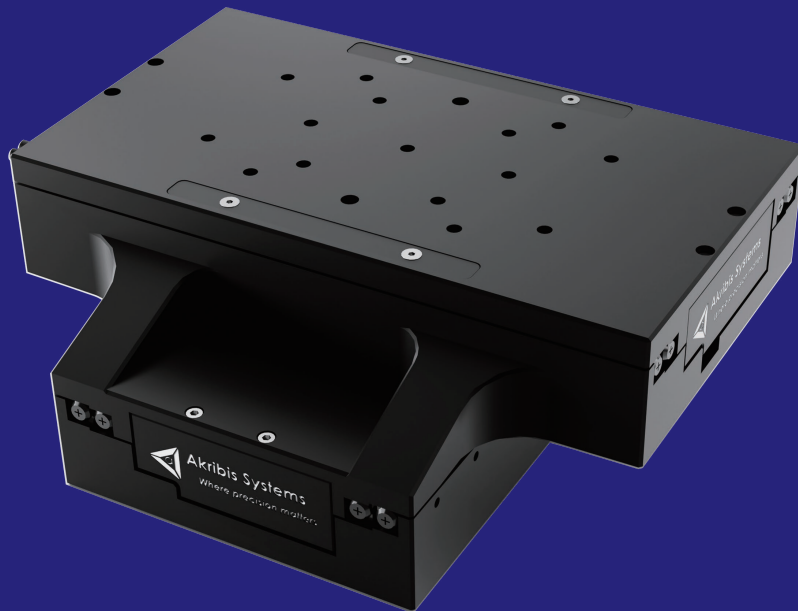




XRS SERIES

(Optical Fiber Alignment)

- ▶ High-precision XY axis positioning stage
- ▶ High force, low friction, High load capacity
- ▶ Compact structure
- ▶ Three-piece integrated design

EN-25.12.1

XRS Series (Optical Fiber Alignment)

Introduction

The XRS Series (Optical Fiber Alignment) is an XY dual-axis direct-drive module. There are two standard products: XRS130 and XRS140. The series features high precision, high force, low friction, fast response, excellent dynamic performance, and high load capacity. The Three-piece integrated design ensures superior straightness, flatness, and orthogonality. Can be used with XAZB series or XMZ series.

Continuous Force F_{cn} = 26.4N
Peak Force F_{pk} = 132.0N

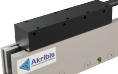
Features

- ▶ Anti-creep cross roller guide.
- ▶ Ironless linear motor has no cogging force.
- ▶ Stroke from 60mm × 60mm to 160mm × 160mm.
- ▶ Compact structure, High load capacity.
- ▶ Repeatability: $\pm 0.1\mu\text{m}$.

Applications

The XRS Series (Optical Fiber Alignment) is an XY dual-axis horizontal positioning module. They are suitable for point-to-point sub-micron and nano-level rapid positioning, as well as applications with stringent dynamic performance requirements.

Applications include sensor detection/calibration in precision manufacturing, laser micro-processing in the laser industry, optical fiber alignment in optical communications, and wafer inspection in semiconductor manufacturing etc.

Linear Module Series	Linear motor Series	Continuous Force (F _{cn})				Peak Force (F _{pk})		Unit: N	XY Stroke (mm)	Repeatability (μm)
		20.0	40.0	60.0	80.0	100.0	120.0	140.0		
 XRS130	 AUM2-S3	26.4				132.0			60/110/160	±0.1μm
 XRS140										

XRS Series (Optical Fiber Alignment)

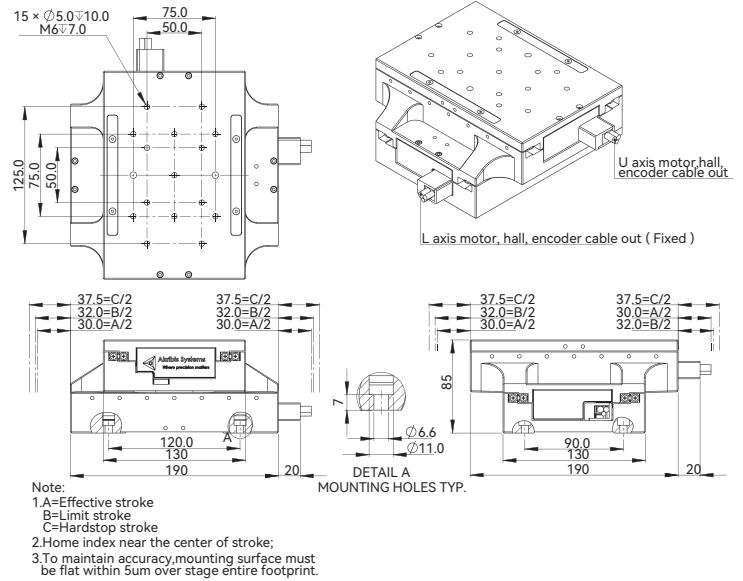
XRS130-60

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
Stroke	mm	60
Resolution	μm	SINCOS (4096X)
Repeatability	μm	±0.1
Horizontal Straightness	μm	±1.5
Vertical Straightness	μm	±1.5
Orthogonality	arcsec	20.0
Rated Payload ^①	kg	9.0
Lower Axis No-load Moving Mass	kg	4.8
Upper Axis No-load Moving Mass	kg	1.7
No-load Total Mass	kg	6.4
Max Allowable Roll Moment ^①	Nm	6.0
Max Allowable Pitch Moment ^①	Nm	7.0
Max Allowable Yaw Moment ^①	Nm	7.0

① 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.

Dimension



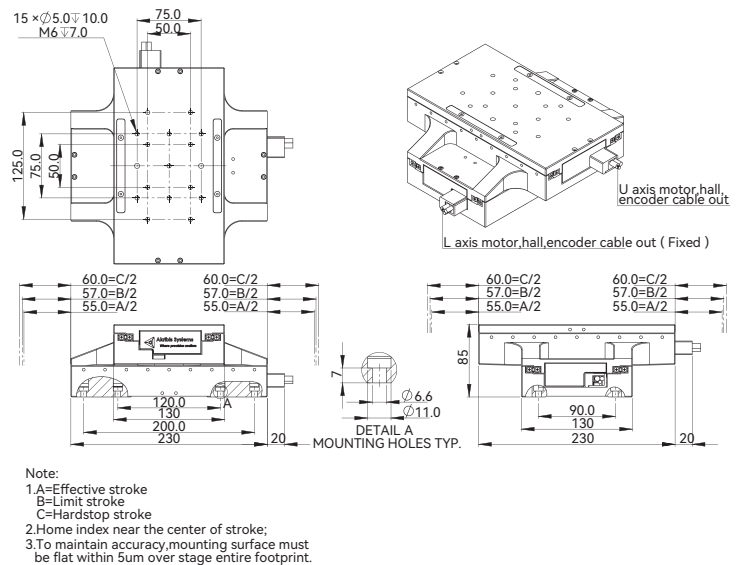
XRS130-110

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
Stroke	mm	110
Resolution	μm	SINCOS (4096X)
Repeatability	μm	±0.1
Horizontal Straightness	μm	±1.5
Vertical Straightness	μm	±1.5
Orthogonality	arcsec	15.0
Rated Payload ^①	kg	11.0
Lower Axis No-load Moving Mass	kg	6.0
Upper Axis No-load Moving Mass	kg	2.1
No-load Total Mass	kg	7.9
Max Allowable Roll Moment ^①	Nm	7.0
Max Allowable Pitch Moment ^①	Nm	8.0
Max Allowable Yaw Moment ^①	Nm	8.0

① 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.

Dimension



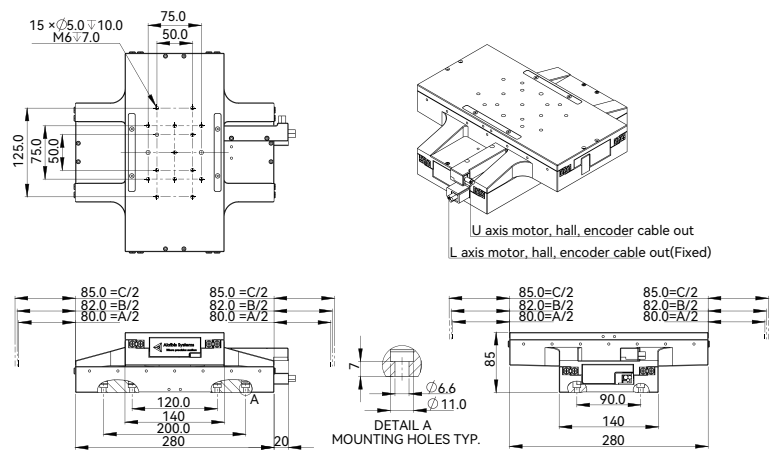
XRS Series (Optical Fiber Alignment)

XRS140-160

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
Stroke	mm	160
Resolution	μm	SINCOS (4096X)
Repeatability	μm	±0.1
Horizontal Straightness	μm	±2.0
Vertical Straightness	μm	±2.0
Orthogonality	arcsec	10.0
Rated Payload ^①	kg	20.0
Lower Axis No-load Moving Mass	kg	8.4
Upper Axis No-load Moving Mass	kg	3.0
No-load Total Mass	kg	11.0
Max Allowable Roll Moment ^①	Nm	15.0
Max Allowable Pitch Moment ^①	Nm	15.0
Max Allowable Yaw Moment ^①	Nm	15.0

① 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.

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)

XRS130P-T06-U04R4A1-D2

Model:

XRS130
XRS140

Precision Grade:

P: Precision

Cover Type:

T: Standard (Black Anodized)

Effective Stroke:^①

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

Motor Type:

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

① XRS130P: Effective Stroke only 60mm and 110mm.
XRS140P: Effective Stroke only 160mm.

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

Termination:

2: Motor: DSUB 9W4/
Encoder: DSUB15/Hall: DSUB 9

Cable Length:

D: 1.0m

Scale Type:

1: Steel tape,11ppm/K

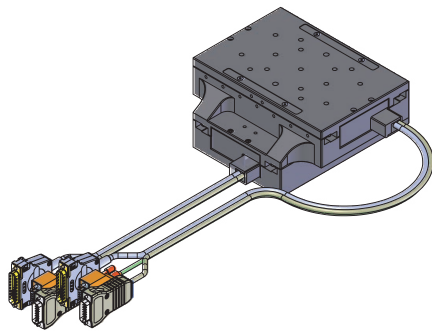
Motor Type:

R4A: Tonic,SINCOS (1Vpp)

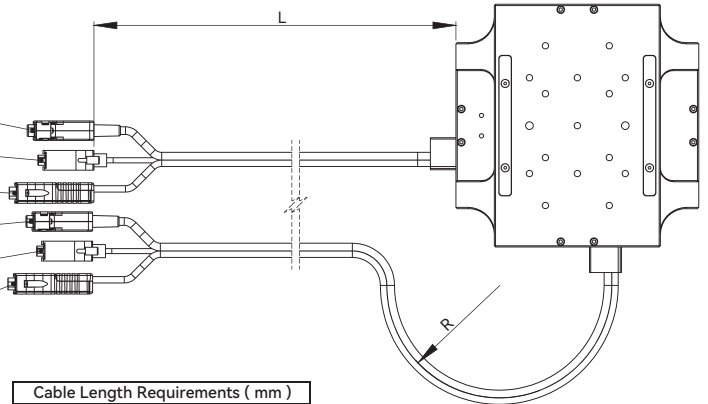
XRS Series (Optical Fiber Alignment)

XRS Series (Optical Fiber Alignment) EE Interface Diagram

XRS130P-T06-U04R4A1-D2 PIN OUT



L axis
Motor connector pinout
L axis
Hall connector pinout
L axis
Encoder connector pinout
U axis
Motor connector pinout
U axis
Hall connector pinout
U axis
Encoder connector pinout



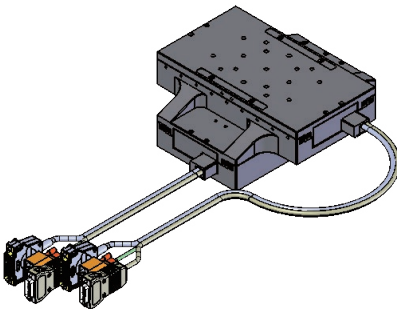
AUM MOTOR (DSUB)				
Connector Pin Configuration (view of mating connector)	Pinout	Color	Signal	Function
	A1	Yellow/Grey	M1	Motor Phase
	A2	Blue/Orange	M2	Motor Phase
	A3	Red/Green	M3	Motor Phase
	1	Brown	T1	Thermal Protection
	2	Brown/Black	T2	Thermal Protection
	A4	Green/Yellow	PE	Protected Earth Ground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

Cable Length Requirements (mm)	
L	R _{min}
920.0	100.0

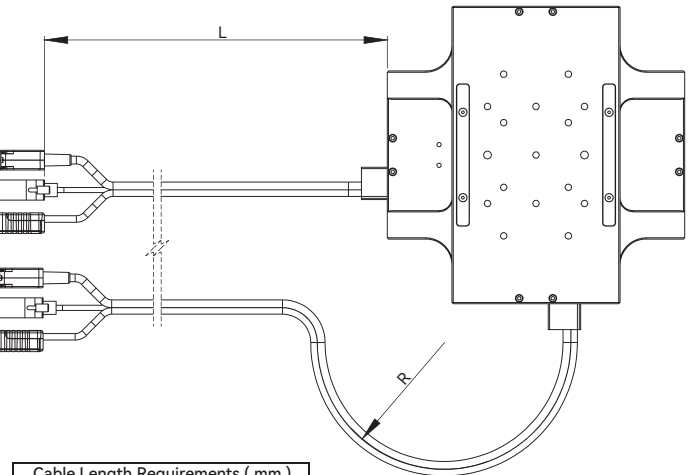
HALL				
Connector Pin Configuration (view of mating connector)	Pinout	Color	Signal	Function
	1	Grey	Ha	Hall A Signal
	2	Yellow	Hb	Hall B Signal
	3	Blue	Hc	Hall C Signal
	4	Red	+5V	Power Supply
	5	Black	GND	Power Supply Return
	Case	Screen	Shield	Shielding

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

XRS130P-T11-U04R4A1-D2 PIN OUT



L axis
Motor connector pinout
L axis
Hall connector pinout
L axis
Encoder connector pinout
U axis
Motor connector pinout
U axis
Hall connector pinout
U axis
Encoder connector pinout



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

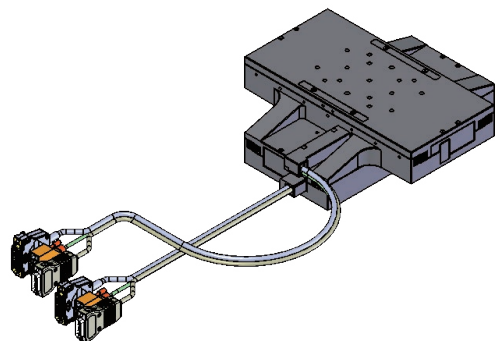
Cable Length Requirements (mm)	
L	R _{min}
900.0	120.0

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

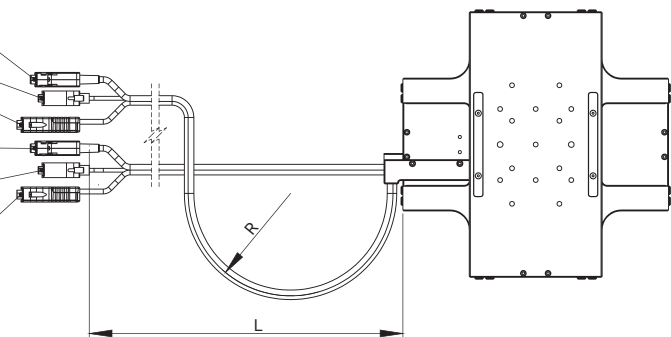
OPTICAL ENCODER (TONIC SINCOS)				
Connector Pin Configuration (view of mating connector)	Pin no.	Color	Signal	Function
	1	Blue	COS-	Incremental Cosine-
	2	Green	SIN-	Incremental Sine-
	3	Violet	Z+	Reference mark+
	4, 5	Brown	+5V	Power Supply
	6	Clear	Reserved	Do Not Connected
	7	Pink	P	P Limits
	8	Black	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

XRS Series (Optical Fiber Alignment)

XRS140P-T16-U04R4A1-D2 PIN OUT



U axis
Motor connector pinout
U axis
Hall connector pinout
U axis
Encoder connector pinout
L axis
Motor connector pinout
L axis
Hall connector pinout
L axis
Encoder connector pinout



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

Cable Length Requirements (mm)	
L	R _{min}
875.0	140.0

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