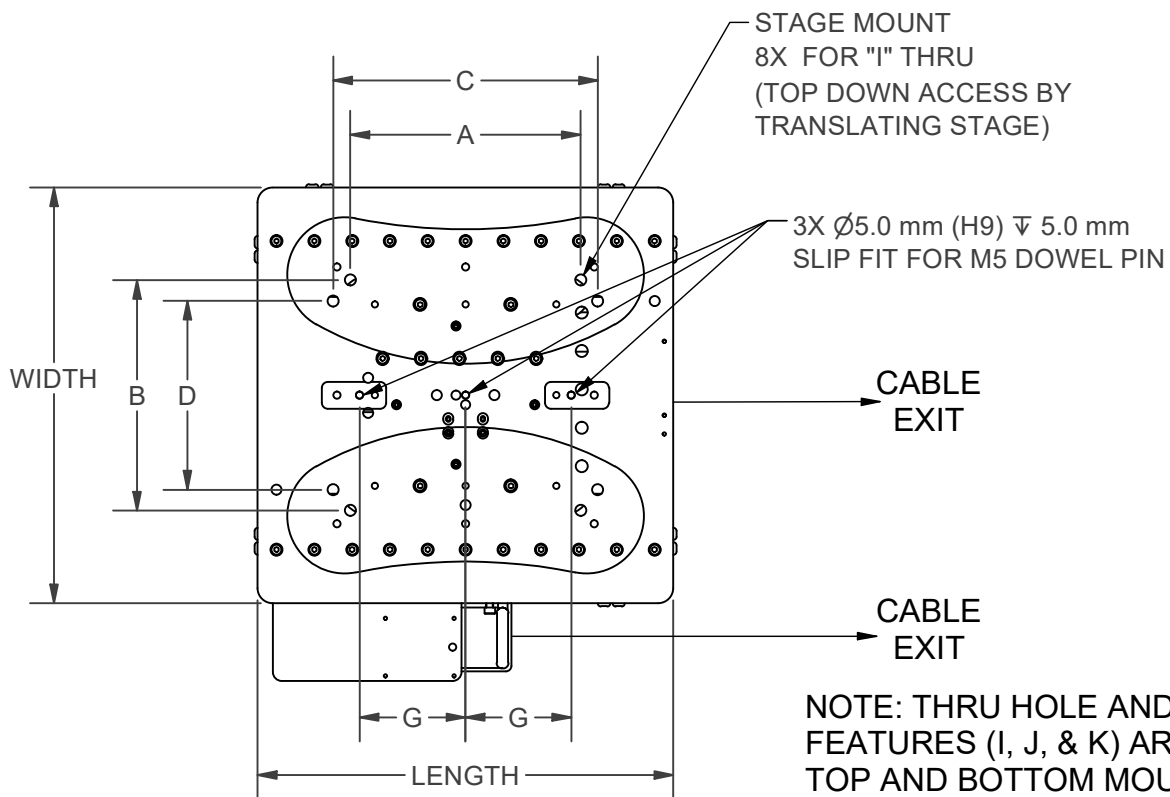
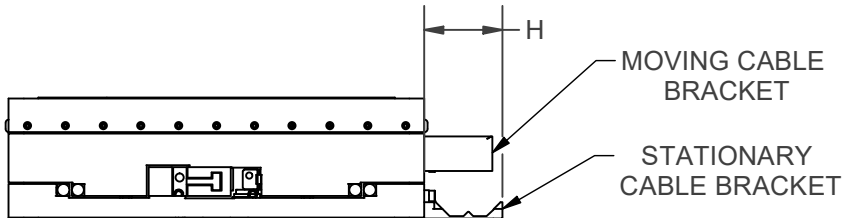
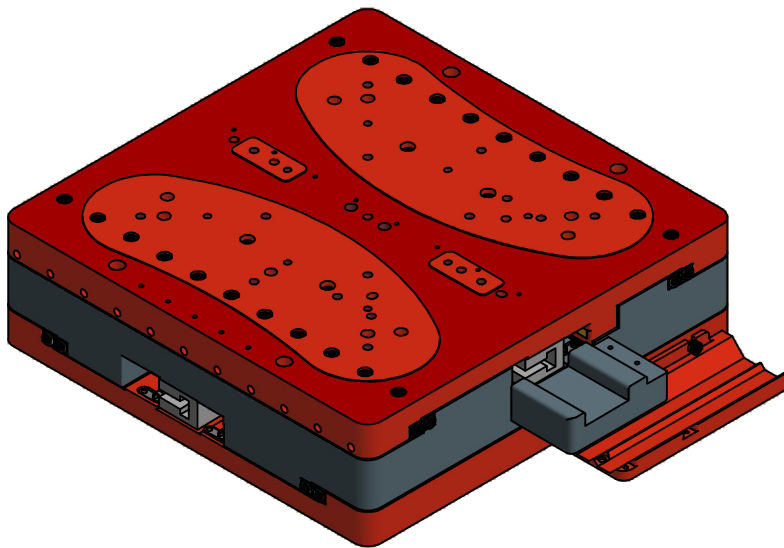
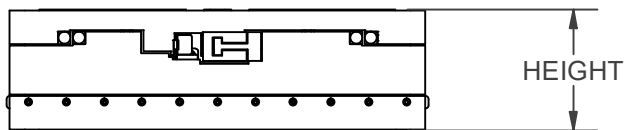
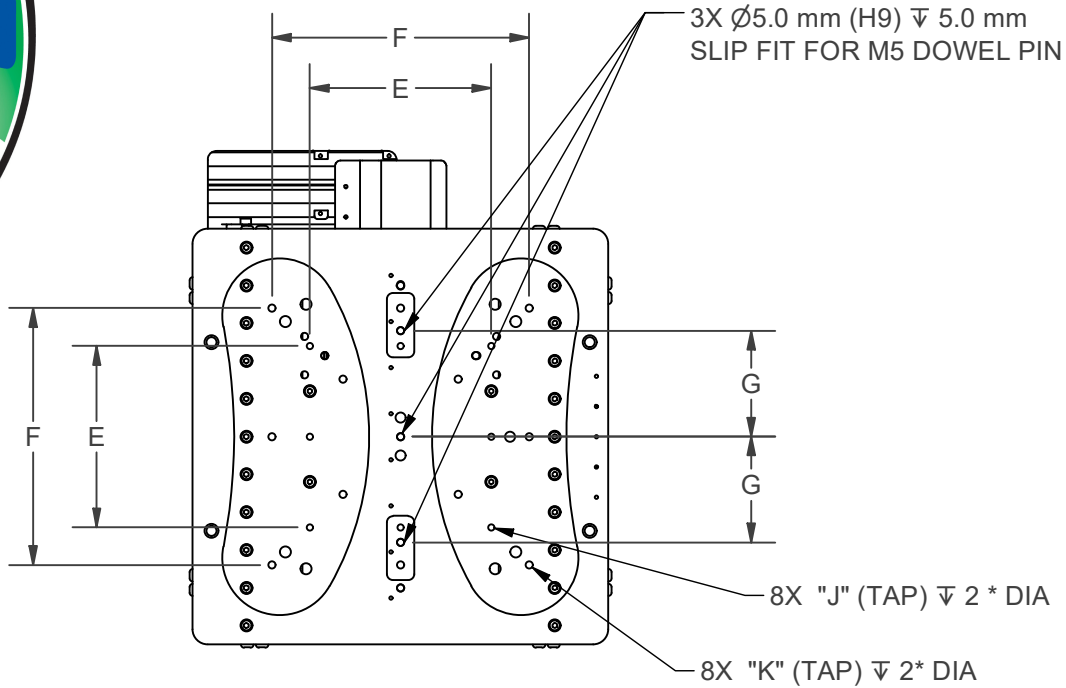




NOTE: THRU HOLE AND TAP MOUNTING FEATURES (I, J, & K) ARE PRESENT ON TOP AND BOTTOM MOUNTING SURFACES EVEN THOUGH DIMENSIONS ARE ONLY SHOWN ON ONE SURFACE.

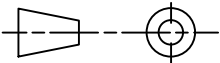
NOTE: MODEL AI-LM-16000-XY SHOWN.

STANDARD FEATURES	
Stage	Monolithic XY Stage
Travel	30mm to 450mm
Motor	Direct Drive Ironless Core Linear Motor
Feedback	Non-Contact Incremental Optical Linear Encoder Optional: Non-Contact Absolute Optical Linear Encoder (for Travel >= 60mm)
Scale	20um Pitch Gold Tape Scale Optional: 20um Pitch Near Zero CTE ZeroMet Scale Optional: Absolute Stainless Steel or Near Zero CTE ZeroMet Scale
Resolution	1Vp-p Sin-Cos Analog Output (~4.88nm with 4096 Interpolation) Digital AQB options available between 1nm and 5um (reduced speeds may apply) Absolute options available between 1nm and 100nm
Sensors	Integrated Optical Latching Home Index and End of Travel Magnetic NPN Limits
Bearings	High Precision Crossed Roller Bearings
Cables	High Flex, 10M Cycle, 3m Length from Component (Standard) (some length consumed inside stage), ~5mm OD, 20mm Dynamic Bend Radius (Motor and Encoder)
Cable Routing	Integrated Top Axis Cable Routing (for Travel >= 100mm) Customer Cable Routing Integrated Upon Request
Hard Stops	Integrated End-of-Travel Hard Stops; Shock Absorbers on Travel >= 400mm
Orientation	Horizontal Only; Inverted OK
Structure	Black Anodized Aluminum 6061-T6
Maintenance	Stages are Greased for Life in Normal Environment; No Maintenance
Environment	Standard Optional: Clean Room or Vacuum (10^-6 Torr)
Temperature	Operating: 0°C to 50°C (precision not guaranteed throughout entire range) Storage/Transport: -20°C to 70°C
Humidity	10% to 80% Non-Condensing
Precision	6-D Nano Precision™ Test Methods

TRAVEL	LENGTH	WIDTH	HEIGHT	A (inch)	B (inch)	C	D	E	F	G	H	I	J	K
30	108	108	65	n/a	n/a	100	76.2	60	76.2	35	n/a	M4	M5 (4X)	M5 (4X)
60	152.5	152.5	80	5	4	125	75	75	100	35	n/a	M6 or 1/4-20	M5 (4X)	M6
100	244	244	80	6	6	175	125	120	170	70	52	M6 or 1/4-20	M5	M6
160	275	275	80	6	6	175	125	120	170	70	52	M6 or 1/4-20	M5	M6
200	336	336	90	7	5	225	200	170	225	100	65	M8 or 5/16-18	M6	M6 (6X)
200 (-HF)	336	336	90	7	5	225	200	170	225	100	65	M8 or 5/16-18	M6	M6 (6X)
250	400	400	115	12	8	350	250	170 & 225	275	100	96	M8 or 5/16-18	M6	M8 (6X)
300	500	500	115	12	8	350	250	170 & 225	275	100	96	M8 or 5/16-18	M6	M8 (6X)
400	650	650	115	12	8	350	250	170 & 225	275 & 325	100	0	M8 or 5/16-18	M6 (6X)	M8 (6X)
450	650	650	115	12	8	350	250	170 & 225	275 & 325	100	0	M8 or 5/16-18	M6 (6X)	M8 (6X)

- * All units millimeters unless otherwise noted.
- * All hole patterns centered on M5 dowel pin hole at center of stage.
- * Custom and intermediate sizes available.
- * Compact sizes with minimal performance impact available.
- * All dimensions and visual representations reflect stage at mid-stroke or home position.

ALIO INDUSTRIES PROPRIETARY DOCUMENT
5335 XENON ST, ARVADA, CO 80002 USA
(Tel) 303.339.7500 - WWW.ALIOINDUSTRIES.COM

DRAWN					
QWOLF		2020-11-12			
CHECKED				TITLE	
					
Tolerances: Surface Roughness:					
x.x ± 0.5 mm x.xx ± 0.13 mm x.xxx ± 0.05 mm ANGLES ± 0.5°					
MATERIAL		SIZE		DWG NO	
		B		0010-08000	
FINISH		SCALE		REV	
SEE NOTES		0090-07999-016 ALIO STD TEMPLATE		008	
		SHEET		1	
		OF		2	



ALIO STAGE AND MOTOR SPECIFICATIONS

MODEL	UNITS	AI-LM-3000-XY			AI-LM-6000-XY			AI-LM-10000-XY			AI-LM-16000-XY			AI-LM-20000-XY			AI-LM-20000-XY-HF			AI-LM-25000-XY			AI-LM-30000-XY			AI-LM-35000-XY			AI-LM-40000-XY					
NOMINAL XY TRAVEL FROM HOME INDEX	mm	+/- 15			+/- 30			+/- 50			+/- 80			+/- 100			+/- 100			+/- 125			+/- 150			+/- 175			+/- 200					
MAGNETIC LIMIT LOCATIONS (+1/-3mm)	mm	+/- 14			+/- 30			+/- 51			+/- 81			+/- 101			+/- 101			+/- 126			+/- 151			+/- 176			+/- 201					
HARD STOP LOCATIONS (+/- 1mm)	mm	+/- 16			+/- 32			+/- 52.5			+/- 82.5			+/- 102.5			+/- 102.5			+/- 127.5			+/- 152.5			+/- 177.5			+/- 202 to +/- 207					
PERFORMANCE SPECIFICATIONS [1]		(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO			
LINEAR DISPLACEMENT ACCURACY	um	+/- 5.0	+/- 1.0	+/- 0.2	+/- 3.0	+/- 0.5	+/- 0.2	+/- 3.0	+/- 0.7	+/- 0.3	+/- 3.0	+/- 0.7	+/- 0.4	+/- 3.0	+/- 1.0	+/- 0.4	+/- 3.0	+/- 1.0	+/- 0.4	+/- 5	+/- 1.0	+/- 0.5	+/- 5.0	+/- 1.0	+/- 0.6	+/- 8.0	+/- 1.5	+/- 0.8	+/- 12.0	+/- 1.5	+/- 1.0			
BIDIRECTIONAL LINEAR REPEATABILITY	nanometers	+/- 30																																
HOME INDEX/BIDIRECTIONAL REPEATABILITY		< +/- 1 encoder count																																
RESOLUTION	--	Standard: ~ 4.88nm after 4096 Interpolation (Digital AQB options available between 1nm and 5000nm) (Absolute options:																																
STRAIGHTNESS	um	+/- 3.0	+/- 1.0	+/- 0.2	+/- 1.0	+/- 0.5	+/- 0.2	+/- 1.0	+/- 0.7	+/- 0.3	+/- 1.5	+/- 0.7	+/- 0.4	+/- 1.5	+/- 1.0	+/- 0.4	+/- 1.5	+/- 1.0	+/- 0.4	+/- 2	+/- 1.0	+/- 0.5	+/- 2.0	+/- 1.0	+/- 0.6	+/- 4.0	+/- 1.5	+/- 0.8	+/- 6.0	+/- 1.5	+/- 1.0			
FLATNESS [2]	um	+/- 3.0	+/- 1.0		+/- 2.0		+/- 1.0		+/- 2.0		+/- 1.0		+/- 3.0		+/- 1.5		+/- 3.0		+/- 1.5		+/- 5	+/- 2		+/- 5.0		+/- 2.0		+/- 8.0		+/- 4.0		+/- 16.0	+/- 8.0	
PITCH [2]	arc-sec	+/- 12.0			+/- 10.0			+/- 10.0			+/- 15.0			+/- 15.0			+/- 15.0			+/- 9			+/- 18.0			+/- 20.0			+/- 20.0					
YAW	arc-sec	+/- 12.0			+/- 10.0			+/- 10.0			+/- 15.0			+/- 15.0			+/- 15.0			+/- 9			+/- 18.0			+/- 20.0			+/- 20.0					
ROLL	arc-sec	+/- 6.0			+/- 6.0			+/- 6.0			+/- 8.0			+/- 8.0			+/- 8.0			+/- 5			+/- 10.0			+/- 14.0			+/- 14.0					
ORTHOGONALITY	arc-sec	+/- 20.0	+/- 5.0	+/- 1.0	+/- 20.0	+/- 5.0	+/- 1.0	+/- 20.0	+/- 5.0	+/- 1.0	+/- 20.0	+/- 5.0	+/- 1.0	+/- 20.0	+/- 5.0	+/- 1.0	+/- 20.0	+/- 5.0	+/- 1.0	+/- 10	+/- 2.5	+/- 0.5	+/- 20.0	+/- 5.0	+/- 1.0	+/- 20.0	+/- 5.0	+/- 1.0	+/- 20.0	+/- 5.0	+/- 1.0			
MOTION PROFILE SPECIFICATIONS																																		
TOP AXIS MAXVELOCITY [3]	m/s	1.2			1.2			1.4			1.5			1.7			2.0*			1.5			1.6			1.7			1.6					
BOT AXIS MAXVELOCITY [3]	m/s	0.7			0.7			0.8			1.0			1.0			1.2*			0.9			1.0			1.1			1.0					
TOP AXIS MAXPEAK ACCELERATION [3]	G	11.0			5.0			4.0			3.0			3.0			5.6			1.9			1.9			1.9			1.4					
BOT AXIS MAXPEAK ACCELERATION [3]	G	4.0			2.0			1.6			1.3			1.3			2.0			0.7			0.7			0.7			0.5					
MAXPAYLOAD CAPABILITY	kg	10			20			25			25			30			30			40			50			50			80					
ASSEMBLY MASS	kg	2.3			4.7			13			16			28			28			52			75			75			135					
XMOVING MASS	kg	1.8			3.7			10.2			12.1			20			20			37			54			54			94					
Y MOVING MASS	kg	0.7			1.4			3.6			4.4			7.6			7.6			15			22			22			40					
MOTOR INFORMATION																																		
MOTOR TYPE		LINEAR BRUSHLESS SERVO M																																
MOTOR MODEL	--	AI-LM-144ASN-D			AI-LM-144ASN-D			AI-LM-144BSN-D			AI-LM-144BSN-D			AI-LM-256BSN-D			AI-LM-256CSN-D			AI-LM-256BSN-D			AI-LM-256CSN-D			AI-LM-256CSN-D			AI-LM-256DSN-D					
MAGNETIC PITCH (N-N)	mm	30.48																																
MAXVOLTAGE (LINE TO LINE) [4]	V	500																																
ELECTRICAL TIME CONSTANT (@ 25°C)	msec	0.22			0.22			0.22			0.22			0.20			0.20			0.20			0.20			0.20			0.20					
MAXMOTOR TEMP	°C	125			125			125			125			130			130			130			130			130			130					
MOTOR THERMISTOR (options available)	--	NEGATIVE COEFFICIENT THERMISTOR: GE TYPE AL03006-5818-97-K, MATERIAL: GE9.7A																																
MOTOR CONNECTION		DELTA																																
MOTOR CONSTANT	N/sqrt(W)	2.96			2.96			4.18			4.18			7.04			8.62*			7.04			8.62			8.62			9.96					
FORCE CONSTANT	N/Apk	8.4			8.4			16.8			16.8			28.7			43.0*			28.7			43.0			43.0			57.4					
PHASE RESISTANCE (@ 25°C) [5]	Ohm	5.79			5.79			11.60			11.60			11.74			17.60			11.74			17.60			17.60			23.47					
PHASE RESISTANCE (@ MAX°C) [5]	Ohm	8.04			8.04			16.07			16.07			16.59			24.89			16.59			24.89			24.89			33.18					
INDUCTANCE @ 1kHz	mH	1.3			1.3			2.5			2.5			2.3			3.5			2.3			3.5			3.5			4.7					
CONTINUOUS FORCE [6]	N	26.7			26.7			53.3			53.3			93.1			139.7*			93.1			139.7			139.7			186.3					
CONTINUOUS CURRENT [6]	Apk	3.18			3.18			3.18			3.18			3.25			3.25			3.25			3.25			3.25			3.25					
PEAK FORCE [7]	N	84			84			169			169			295			442*			295			442			442			589					
PEAK CURRENT [7]	Apk	10.06			10.06			10.06			10.06			10.27			10.27			10.27			10.27			10.27			10.27					
BACK EMF CONSTANT	V/m/s	8.4			8.4			16.8			16.8			28.7			43.0*			28.7			43.0			43.0			57.4					