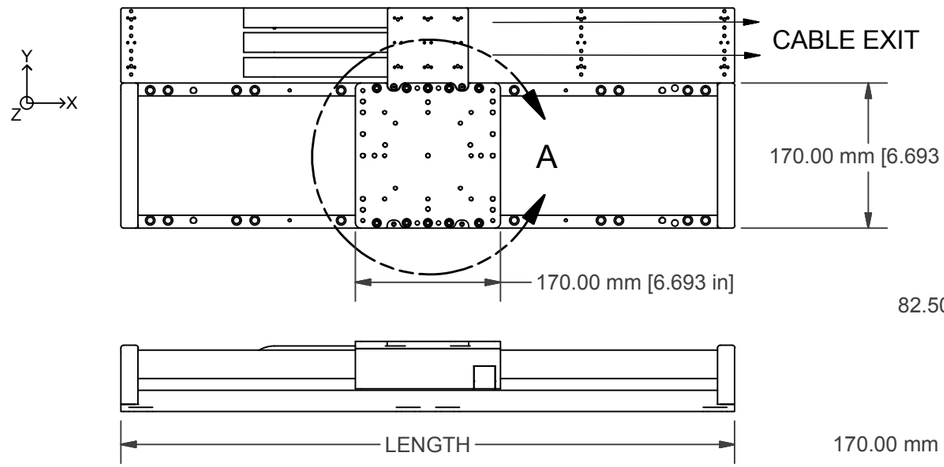
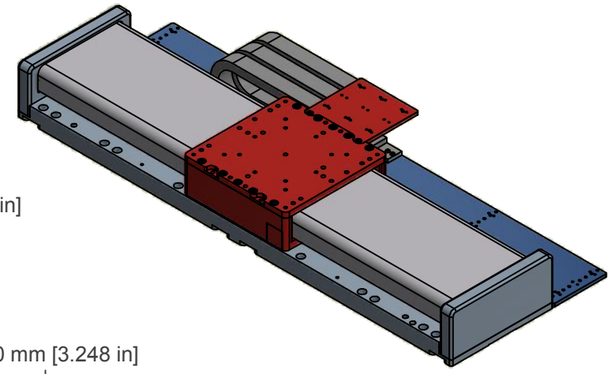
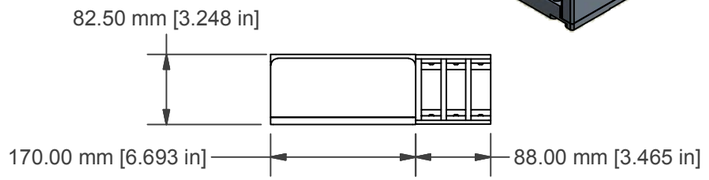
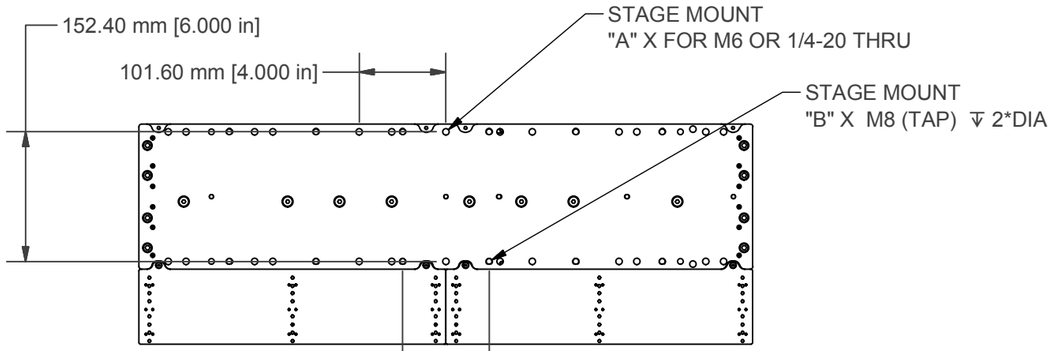
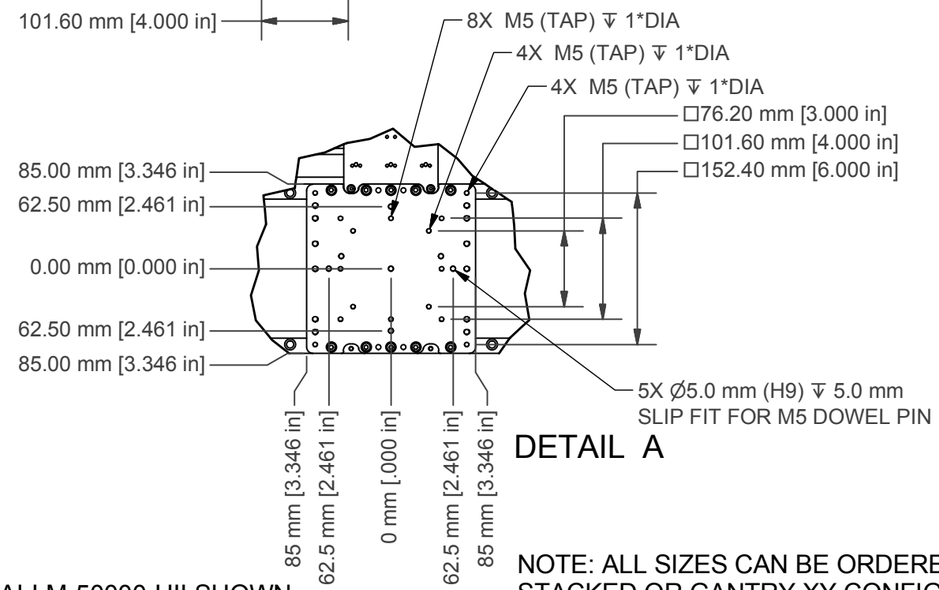










DETAIL A

NOTE: MODEL AI-LM-50000-UII SHOWN.

NOTE: ALL SIZES CAN BE ORDERED AS STACKED OR GANTRY XY CONFIGURATIONS.

STANDARD CABLE TRACKS:
2X TRACKS INNER DIMENSIONS:
16MM X 9.4MM
18MM BEND RADIUS
(OTHER OPTIONS AVAILABLE)

TRAVEL	LENGTH	A (QTY)	B (QTY)
100	320	6	4
150	370	8	6
200	420	8	6
250	470	10	8
300	520	10	8
400	620	12	10
500	720	14	12
600	820	16	14
700	920	18	16

* All units millimeters unless otherwise noted.
* All hole patterns centered on M5 dowel pin hole at center of stage.
* All dimensions and visual representations reflect the stage at mid-stroke or home position.

STANDARD FEATURES	
Stage	Linear Stage
Travel	100mm to 700mm
Motor	Direct Drive Ironless Core Linear Motor
Feedback	Non-Contact Incremental Optical Linear Encoder Optional: Non-Contact Absolute Optical Linear Encoder
Scale	20um Pitch Gold Tape Scale Optional: 20um Pitch Near Zero CTE ZeroMet Scale Optional: Absolute Stainless Steel or NearZero CTE ZeroMet Scale
Resolution	1Vp-p Sin-Cos Analog Output (~4.88nm with 4096 Interpolation) Digital AQB options available between 1nm and 5000nm (reduced speeds may apply) Absolute option available between 1nm and 100nm
Sensors	Integrated Optical Latching Home Index and End of Travel Magnetic NPN Limits
Bearings	Dual Recirculating Ball Rail 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 Alio Cable Routing; Customer Cable Routing Upon Request
Hard Stops	Integrated End-of-Travel Rubber Bumpers
Orientation	Horizontal Only; Can be Mounted on Horizontal or Vertical Surface; Inverted Ok
Structure	Black Anodized Aluminum 6061-T6
Maintenance	Stages are Greased for Life in Normal Environment, No Maintenance
Environment	Standard Optional: Clean Room and Vacuum (10^-6 Torr)
Temperature	Operating: 0°C to 50°C (performance not guaranteed though entire range) Storage/Transport: -20°C to 70°C
Humidity	10% to 80% Non-Condensing
Precision	6-D Nano Precision ™ Test Methods

DRAWN	QWOLF	2020-11-13
CHECKED		
Tolerances: x.x ± 0.5 mm x.xx ± 0.13 mm x.xxx ± 0.05 mm ANGLES ± 0.5°	Surface Roughness: RMS MAX.	
MATERIAL		
FINISH	SEE NOTES	

ALIO 6-D

TITLE

AI-LM-(TRAVEL)00-μII

SIZE	DWG NO	REV
B	0010-08050	003

SCALE | 0090-07999-016 ALIO STD TEMPLATE | SHEET 1 OF 2

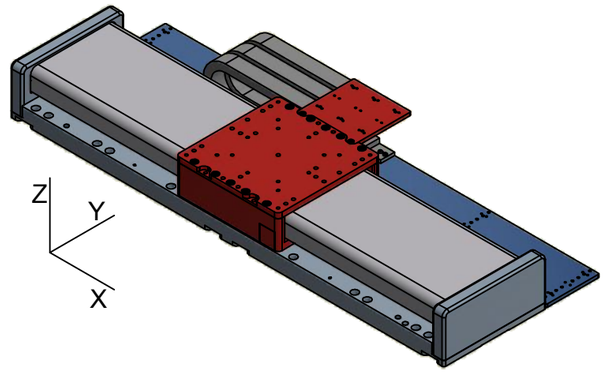
ALIO STAGE AND MOTOR SPECIFICATIONS

MODEL	UNITS	AI-LM-10000-UII			AI-LM-15000-UII			AI-LM-20000-UII			AI-LM-25000-UII			AI-LM-30000-UII			AI-LM-40000-UII			-50000-UII			AI-LM-60000-UII			AI-LM-70000-UII		
NOMINAL TRAVEL FROM HOME INDEX	mm	+/- 50			+/- 75			+/- 100			+/- 125			+/- 150			+/- 200			+/- 250			+/- 300			+/- 350		
MAGNETIC LIMIT LOCATIONS (+1/-3mm)	mm	+/- 51			+/- 76			+/- 101			+/- 126			+/- 151			+/- 201			+/- 251			+/- 301			+/- 351		
HARD STOP LOCATIONS (+/-1mm)	mm	+/- 54			+/- 79			+/- 104			+/- 129			+/- 154			+/- 204			+/- 254			+/- 304			+/- 354		
PERFORMANCE SPECIFICATIONS [1]		(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO		ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO
LINEAR DISPLACEMENT ACCURACY	um	+/- 5	+/- 2	+/- 1	+/- 6	+/- 2	+/- 1	+/- 8	+/- 2	+/- 1	+/- 10	+/- 2	+/- 1	+/- 12	+/- 2	+/- 1	+/- 16	+/- 2	+/- 1	+/- 20	+/- 2	+/- 1	+/- 24	+/- 2	+/- 1	+/- 28	+/- 2	+/- 1
BIDIRECTIONAL LINEAR REPEATABILITY	um	+/- 0.5																										
HOME INDEX BIDIRECTIONAL REPATABILITY		< +/- 1 encoder count																										
RESOLUTION	--	Standard:~4.88nm with 4096 Interpolation (Digital AQB options available between 1nm and 5000nm) (Absolute options available between 1nm and 100nm)																										
STRAIGHTNESS IN Y	um	+/- 3	+/- 2		+/- 3	+/- 2		+/- 4	+/- 3		+/- 5	+/- 3		+/- 5	+/- 3		+/- 5	+/- 3		+/- 6	+/- 4		+/- 8	+/- 4		+/- 8	+/- 4	
STRAIGHTNESS IN Z [2]	um	+/- 3	+/- 2		+/- 3	+/- 2		+/- 4	+/- 3		+/- 5	+/- 3		+/- 5	+/- 3		+/- 5	+/- 3		+/- 6	+/- 4		+/- 8	+/- 4		+/- 8	+/- 4	
PITCH ABOUT Y [2]	arc-sec	+/- 5			+/- 5			+/- 7.5			+/- 7.5			+/- 9			+/- 9			+/- 9			+/- 9			+/- 10		
PITCH ABOUT Z	arc-sec	+/- 5			+/- 5			+/- 7.5			+/- 7.5			+/- 9			+/- 9			+/- 9			+/- 9			+/- 10		
PITCH ABOUT X	arc-sec	+/- 3			+/- 3			+/- 4			+/- 4			+/- 5			+/- 5			+/- 5			+/- 5			+/- 6		
MOTION PROFILE SPECIFICATIONS																												
MAX VELOCITY [3]	m/s	2.0			2.5			3.0			3.5			3.5			4.0			4.5			5.0			5.5		
MAX PEAK ACCELERATION [3]	G	10.0			10.0			10.0			10.0			10.0			10.0			10.0			10.0			10.0		
MAX PAYLOAD CAPABILITY	kg	70			70			70			70			70			70			70			70			70		
ASSEMBLY MASS	kg	11			12.0			13			14			15			17			19			21			23		
MOVING MASS	kg	2.7			2.7			2.7			2.7			2.7			2.7			2.7			2.7			2.7		

MOTOR INFORMATION		DEFAULT MOTOR
MOTOR TYPE	--	LINEAR BRUSHLESS SERVO MOTOR
MOTOR MODEL	--	AI-LM-256BSN-D
MAGNETIC PITCH (N-N)	mm	30.48
MAX VOLTAGE (LINE TO LINE) [4]	V	500
ELECTRICAL TIME CONSTANT (@ 25°C)	msec	0.20
MAX MOTOR TEMP	°C	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)	7.04
FORCE CONSTANT	N/Apk	28.7
PHASE RESISTANCE (@ 25°C) [5]	Ohm	11.74
PHASE RESISTANCE (@ 130°C) [5]	Ohm	16.59
INDUCTANCE @ 1kHz	mH	2.3
CONTINUOUS FORCE [6]	N	93.1
CONTINUOUS CURRENT [6]	Apk	3.25
PEAK FORCE [7]	N	295
PEAK CURRENT [7]	Apk	10.27
BACK EMF CONSTANT	V/m/s	28.7

Notes:

1. Specifications measured on stage centerline at nominal 20°C, ~50mm above mounting surface with no payload. Standard describes typical values, Ultra and Nano are guaranteed. ALIO provides NIST traceable proof for all options/specs per quote.
2. Flatness and Pitch specifications dependent on system base. Contact ALIO for more information.
3. Stage limitation at no load. Based on 100% S-curve profile. Does not account for limitations due to amplifier, resolution, position error, or duty cycle.
4. Back EMF plus IR drop must not exceed maximum line to line bus voltage.
5. Resistance values do not include cable resistance. Cable resistance adds 0.146 ohm/m.
6. Continuous operating limits are based on continuous operation at maximum temperature with aluminum heat sink (300mm x 12.5mm x motor length).
7. Maximum on time at peak operating limits is 10 seconds.
8. All electrical specifications may vary by 12% from listed values.
9. Additional motor and travel options are available for each stage for optimized performance as necessary per customer requirements.



DRAWN QWOLF	2020-11-13	ALIO 6-D
CHECKED		TITLE: AI-LM-(TRAVEL)00-μII
Tolerances: x.x ± 0.5 mm, x.xx ± 0.13 mm, x.xxx ± 0.05 mm, ANGLES ± 0.5'	Surface Roughness: RMS MAX.	SIZE B / DWG NO 0010-08050 / REV 003
MATERIAL		
FINISH SEE NOTES		SCALE / 0090-07999-016 ALIO STD TEMPLATE / SHEET 2 OF 2