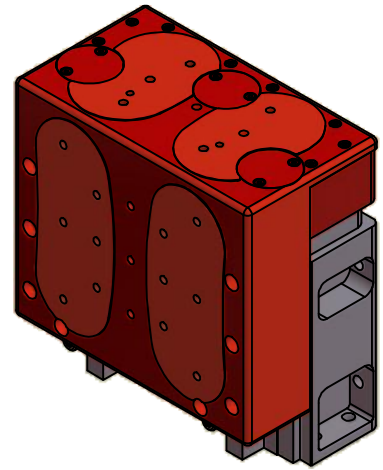
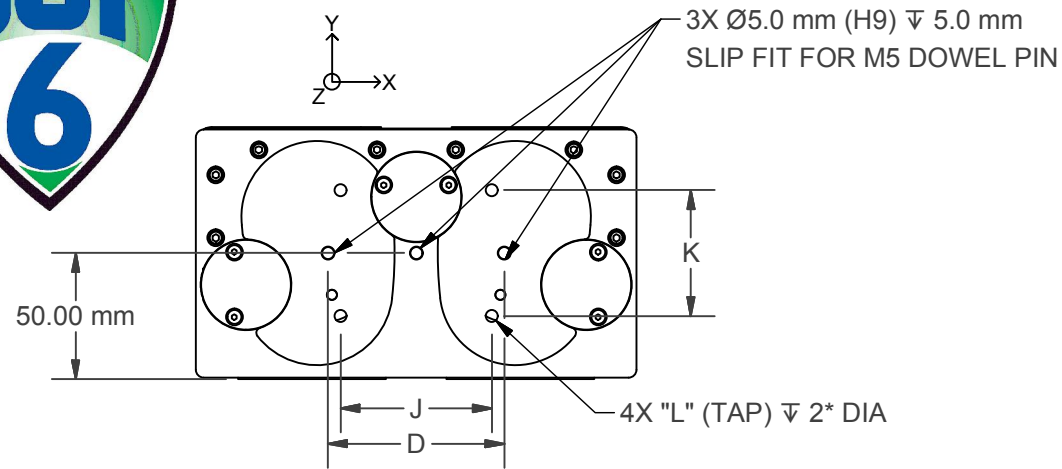




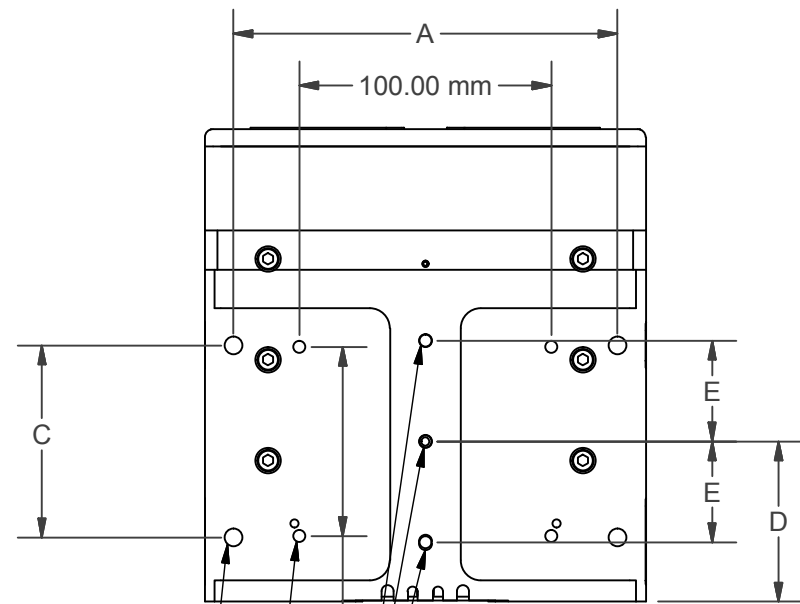
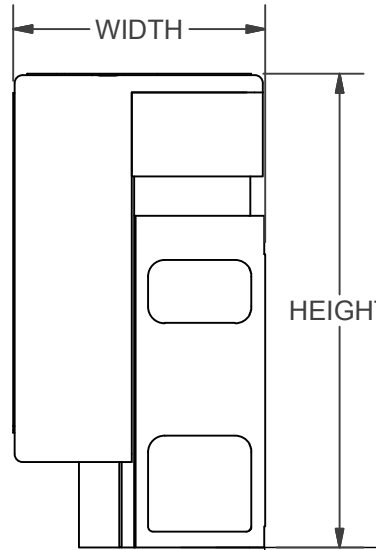
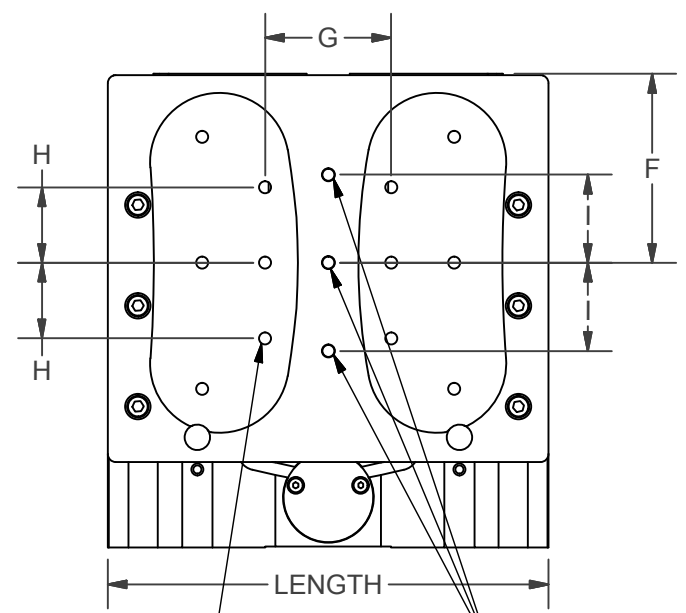
4 3 2 1

B

B



STANDARD FEATURES	
Stage	Z Stage
Travel	24mm to 50mm
Motor	Frameless Torque Motor with Precision Ball Screw
Feedback	Non-Contact Optical Linear Encoder
Scale	Gold Plated Steel Tape Scale Optional: Near Zero CTE ZeroMet Optional: Steel Absolute Scale (BISS-C)
Resolution	1Vp-p Analog Output (5nm with 4096 Interpolation) Digital Output Options: 5µm, 1µm, 0.5µm, 0.2µm, 100nm, 50nm, 20nm**, 10nm**, and 5nm** (** Reduced Speeds Apply)
Sensors	Integrated Home and End of Travel Limits
Bearings	High Precision Crossed Roller Bearings
Brake	Standard: Pneumatic Release, Spring Engage Brake (-PBRK) Optional: No Brake
Counterbalance	Standard: None Needed Optional: PneuBoost to Increase Payload Capability
Cables	High Flex, 10M Cycle, 3m Length, 4.8mm OD (encoder), 5.2mm OD (motor), 20mm Dyn. Bend Radius
Structure	Anodized Aluminum 6061-T6
Environment	Standard Optional: Clean Room
Temperature	0°C to 50°C
Humidity	10% to 80% Non-Condensing
Precision	6-D Nano Precision™ Test Methods



6X "L" (TAP) ± 2* DIA
3X Ø5.0 mm (H9) ± 5.0 mm SLIP FIT FOR M5 DOWEL PIN

CABLE EXIT OPTIONS
(CONFIGURABLE BY CUSTOMER)
STAGE (WALL) MOUNT
4X FOR M6 OR 1/4-20 THRU (SIDE ACCESS)

4X "L" (TAP) ± 2* DIA
3X Ø5.0 mm (H9) ± 5.0 mm SLIP FIT FOR M5 DOWEL PIN

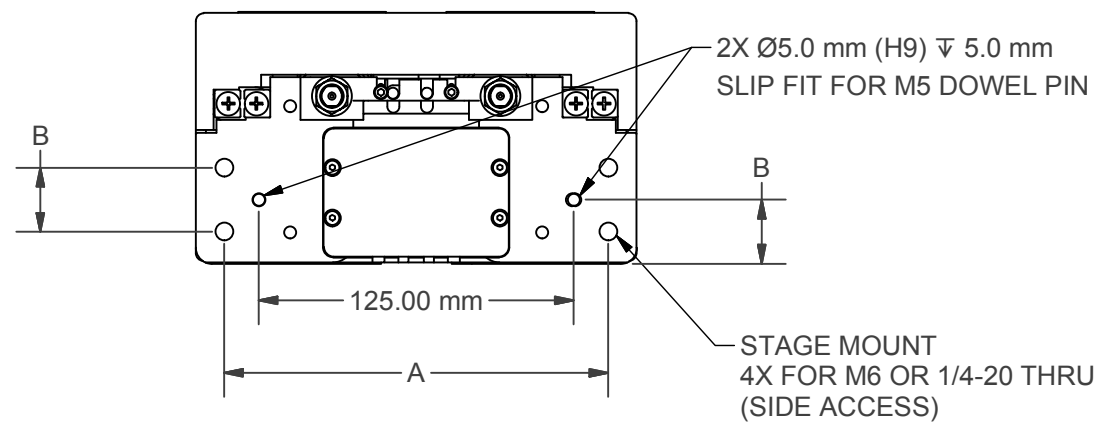
TRAVEL	LENGTH	WIDTH	HEIGHT	A (inch)	B (inch)	C (inch)	D	E	F	G	H	I	J	K	L
24	175	100	188	6	1	3	70	40	75	50	30	35	60	50	M6
32	175	100	202	6	1	3	70	40	79	50	30	35	60	50	M6
50	175	100	229	6	1	3	70	40	79	50	30	35	60	50	M6

* All units millimeters unless otherwise noted.
* All hole patterns centered on M5 dowel pin hole at center of stage (if not otherwise indicated)
* All dimensions and visual representations reflect stage at mid-stroke or home position.

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(Tel) 303.339.7500 - WWW.ALIOINDUSTRIES.COM

A

A



DRAWN	QWOLF	2018-03-22
CHECKED		
Tolerances:	Surface Roughness:	
x.x ± 0.5 mm		
x.xx ± 0.13 mm		
x.xxx ± 0.05 mm	✓ RMS MAX.	
ANGLES ± 0.5°		
MATERIAL		
FINISH	SEE NOTES	

TITLE		
AI-BSD-(TRAVEL)00-Z-PBRK		
SIZE	DWG NO	REV
B	0010-08059	002
SCALE	0090-07999-014 ALIO STD TEMPLATE	SHEET 1 OF 2

NOTE: MODEL AI-BSD-2400-Z-PBRK SHOWN.

4 3 2 1



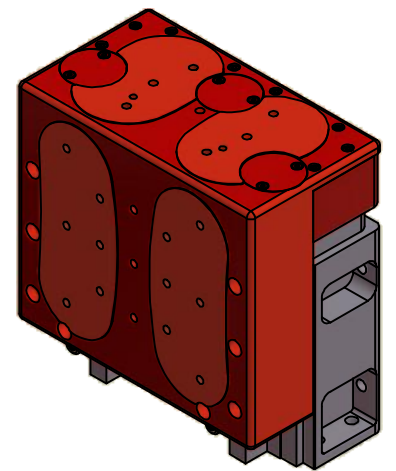
ALIO STAGE AND MOTOR SPECIFICATIONS

MODEL	UNITS	AI-BSD-2400-Z			AI-BSD-3200-Z			AI-BSD-5000-Z		
NOMINAL TRAVEL	mm	24			32			50		
LIMIT LOCATIONS (+1/-3mm)	mm	+/- 11.5			+/- 15.5			+/- 24.5		
HARD STOPS LOCATIONS (+/- 0.5mm)	mm	+13.5 / -12.25			+17.5 / -16.25			+26.5 / -25.25		
PERFORMANCE SPECIFICATIONS [1]		(STD)	ULTRA	NANO	(STD)	ULTRA	NANO	(STD)	ULTRA	NANO
LINEAR DISPLACEMENT ACCURACY	um	+/- 3	+/- 0.8	+/- 0.4	+/- 5	+/- 1.0	+/- 0.5	+/- 5	+/- 1.0	+/- 0.5
BIDIRECTIONAL LINEAR REPEATABILITY	nanometers	+/- 125			+/- 100			+/- 125		
RESOLUTION	nanometers	5 nm (standard) (options available)								
STRAIGHTNESS	um	+/- 2	+/- 0.8	+/- 0.4	+/- 4	+/- 1.0	+/- 0.5	+/- 4	+/- 1.0	+/- 0.5
FLATNESS [2]	um	+/- 3.0		+/- 1.5	+/- 3.0		+/- 1.5	+/- 4.0		+/- 2.0
PITCH	arc-sec	+/- 15			+/- 15			+/- 15		
YAW	arc-sec	+/- 15			+/- 15			+/- 15		
ROLL	arc-sec	+/- 15			+/- 15			+/- 15		
MOTION PROFILE SPECIFICATIONS										
MAX VELOCITY [3]	m/s	0.10			0.10			0.10		
MAX VELOCITY w/ 48VDC BUS [3]	m/s	0.10			0.10			0.10		
MAX ACCELERATION [3]	G	1.0			1.0			1.0		
MAX ACCELERATION w/ 48VDC BUS [3]	G	1.0			1.0			1.0		
MAX PAYLOAD CAPABILITY	kg	20			20			20		
MAX PAYLOAD CAPABILITY (WITH PNEUBOOST)	kg	50			50			50		
ASSEMBLY MASS	kg	6.6			6.9			7.6		
Z MOVING MASS	kg	2.8			2.9			3.3		
MOTOR INFORMATION										
MOTOR TYPE	--	FRAMELESS TORQUE MOTOR								
MOTOR MODEL	--	AI-TM-044B8-Y								
MAGNETIC PITCH (N-N)	deg	120								
BALL SCREW PITCH	mm	2								
MAX VOLTAGE (LINE TO LINE) [4]	V	340								
MAX MOTOR TEMP	°C	155								
THERMAL SENSOR	--	NONE								
MOTOR CONNECTION	--	WYE								
TORQUE CONSTANT	N/Arms	0.11								
PHASE RESISTANCE (@25° C) [5]	Ohm	2.4								
INDUCTANCE	mH	2.5								
CONTINUOUS FORCE [6]	N	250								
CONTINUOUS TORQUE [6]	Nm	0.36								
CONTINUOUS CURRENT [6]	Arms	3.2								
PEAK FORCE [7]	N	500								
PEAK TORQUE [7]	Nm	1.16								
PEAK CURRENT [7]	Arms	10.1								
BACK EMF CONSTANT	Vrms/krpm	6.9								

- Notes:
- Specifications measured on stage centerline, 50mm above mounting surface. ALIO provides NIST traceable proof for all options/specs per quote.
 - Flatness specifications dependent on system base. Contact ALIO for more information.
 - Stage limitation at no load. Does not account for drive or resolution limitations.
 - Back EMF plus IR drop must not exceed maximum line to line bus voltage.
 - Resistance values do not include cable resistance. Cable resistance adds 0.66 ohm/m for Wye Connection.
 - Continuous operating limits are based on continuous operation at maximum temperature with aluminum heat sink (300mm x 12.5mm x motor length).
 - Maximum on time at peak operating limits is 10 seconds.
 - All electrical specifications may vary by 12% from listed values.
 - Additional motor and travel options are available for each stage for optimized performance as necessary per customer requirements.

PNEUMATIC BRAKE SPECIFICATIONS	
PNEUMATIC BRAKE DESCRIPTION	
BRAKE LOCK (& FAILSAFE)	SPRING ACTIVATED
BRAKE RELEASE	PNEUMATIC ACTIVATED
BRAKE SUPPLY TUBE	4mm Outer Diameter High Flex
MINIMUM SUPPLY PRESSURE	~0.3 Mpa
MAXIMUM SUPPLY PRESSURE	1.0 MPa
MAXIMUM THEORETICAL DISPLACEMENT UPON BRAKE ACTIVATION	~0.1 MM
RECOMMENDED AIR QUALITY	5 micron PARTICLE FILTER AND 0.01 micron OIL/WATER MIST FILTER
CUSTOMER TO SUPPLY AIR SUPPLY, PRESSURE REGULATOR, AND PRESSURE VALVE FOR BRAKE ACTIVATION	
ALIO PROVIDE ALL BRAKE EQUIPMENT WHEN PROVIDING CONTROL SYSTEM	

PNEUMATIC BOOST SPECIFICATIONS	
PNEUMATIC BOOST ADDS FRICTIONLESS PNEUMATIC COUNTERBALANCES TO BOOST THE PAYLOAD CAPABILITY	
PAYLOAD CAPABILITY	INCREASED TO 50kg
REQUIRED SUPPLY PRESSURE	0.35 MPa
AIR CONSUMPTION	<2.5 NLPM
BRAKE SUPPLY TUBE	4mm Outer Diameter High Flex
RECOMMENDED AIR QUALITY	5 micron PARTICLE FILTER AND 0.01 micron OIL/WATER MIST FILTER
CUSTOMER TO SUPPLY AIR SUPPLY AND PRESSURE REGULATOR	



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DRAWN	QWOLF	2018-03-23		
CHECKED				
TOLERANCES:			TITLE	
x.x ± 0.5 mm x.xx ± 0.13 mm x.xxx ± 0.05 mm ANGLES ± 0.5°			AI-BSD-(TRAVEL)00-Z-PBRK	
SURFACE ROUGHNESS: ✓ RMS MAX.			SIZE	REV
MATERIAL			B	002
FINISH			DWG NO	
SEE NOTES			0010-08059	
SCALE			0090-07999-014 ALIO STD TEMPLATE	SHEET 2 OF 2