ALIO 6-D

Specifications	Model:	AI-TRI-LM-600	AI-TRI-LM-2400	AI-TRI-LM-2400-MS	AI-TRI-LM-4000	AI-TRI-LM-5500	AI-TRI-LM-9200	AI-TRI-LM-10600
Travel Range (Z)		6 mm	24 mm	24 mm	40 mm	55 mm	92 mm	106 mm
Travel Range (Pitch and Roll)		± 3°	± 15°	± 16°	± 16°	± 20°	± 20°	± 20°
Performance Spec's [1]: Precision Grade		(Std.) | NANO	(Std.) | NANO	(Std.) | NANO	(Std.) | NANO	(Std.) | NANO	(Std.) | NANO	(Std.) | NANO
Linear Displacement Accuracy		Contact ALIO Industries	Contact ALIO Industries	Contact ALIO Industries	Contact ALIO Industries	Contact ALIO Industries	Contact ALIO Industries	Contact ALIO Industries
Bi-Directional Linear Repeatability		± 100 nm	± 100 nm	± 100 nm	± 100 nm	± 100 nm	± 100 nm	± 100 nm
Angular Repeatability		~0.5 arc-sec	~0.5 arc-sec	~0.5 arc-sec	~0.5 arc-sec	~0.5 arc-sec	~0.5 arc-sec	~0.5 arc-sec
Linear Z-Axis Resolution		5 nm	5 nm	5 nm	5 nm	5 nm	5 nm	5 nm
Pitch and Roll Resolution		~0.04 arc-sec	~0.04 arc-sec	~0.03 arc-sec	~0.02 arc-sec	~0.02 arc-sec	~0.02 arc-sec	~0.02 arc-sec
Feedback		Non-Contact Linear Encoder	Non-Contact Linear Encoder	Non-Contact Linear Encoder	Non-Contact Linear Encoder	Non-Contact Linear Encoder	Non-Contact Linear Encoder	Non-Contact Linear Encoder
Counterbalance Pressure [15]		25 psi	40 psi	N/A (Magnetic Spring)	42 psi	54 psi	40 psi	66 psi
Motion Profile Specifications		**Motion Profile Specifications**						
Max Velocity [3]		0.08 m/sec	0.1 m/sec	0.1 m/sec	0.1 m/sec	0.2 m/sec	0.1 m/sec	0.2 m/sec
Max Angular Velocity [12]		90 deg/sec	90 deg/sec	90 deg/sec	90 deg/sec	90 deg/sec	90 deg/sec	90 deg/sec
Max Payload Capability [13]		2.0 kg	3.5 kg	3.5 kg	7.5 kg	10 kg	35 kg	10 kg
Max Center of Gravity Height [14]		40 mm	50 mm	50 mm	75 mm	75 mm	75 mm	100 mm
Assembly Mass		3.4 kg	4.5 kg	6.3 kg	13.6 kg	15.6 kg	52 kg	23.2 kg
Moving Mass		0.08 kg	1.6 kg	2.1 kg	3.0 kg	3.6 kg	21 kg	6.6 kg
Motor Information		**Motor Information**						
Drive Type		Ironless, Brushless Servomotor	Ironless, Brushless Servomotor	Ironless, Brushless Servomotor	Ironless, Brushless Servomotor	Ironless, Brushless Servomotor	Ironless, Brushless Servomotor	Ironless, Brushless Servomotor
Motor Model		C12-1	P16-0.5	P16-0.5	P16-1	P16-1	P20-2	P16-2
Magnetic Pitch (N-N)		30.48 mm	30.48 mm	30.48 mm	30.48 mm	30.48 mm	60.96 mm	30.48 mm
Maximum line to line Voltage [4]		500 VDC	500 VDC	500 VDC	500 VDC	500 VDC	500 VDC	500 VDC
Electrical Time Constant		0.20 msec	0.20 msec	0.20 msec	0.20 msec	0.20 msec	0.31 msec	0.20 msec
Maximum Motor Temp		130 °C	130 °C	130 °C	130 °C	130 °C	130 °C	130 °C
Force Constant		3.5 N/Apk	7.2 N/Apk	7.2 N/Apk	14.3 N/Apk	14.3 N/Apk	36.6 N/Apk	28.7 N/Apk
Phase Resistance (@ 25 °C) [5]		2.9 Ω	2.9 Ω	2.9 Ω	5.9 Ω	5.9 Ω	7.8 Ω	11.7 Ω
Phase Resistance (@ 130 °C) [5]		4.2 Ω	4.2 Ω	4.2 Ω	8.3 Ω	8.3 Ω	11.0 Ω	16.6 Ω
Inductance		0.6 mH	0.6 mH	0.6 mH	1.2 mH	1.2 mH	2.4 mH	2.3 mH
Continuous Force [6]	Motor Connection: **Delta**	10 N	15 N	15 N	47 N	47 N	141 N	93 N
Continuous Current [6]	Motor Connection: **Delta**	Up to 2.80 A	Up to 2.10 A	Up to 2.10 A	Up to 3.20 A	Up to 3.20 A	Up to 3.90 A	Up to 3.20 A
Peak Force [7]	Motor Connection: **Delta**	21 N	74 N	74 N	148 N	148 N	447 N	295 N
Peak Current [7]	Motor Connection: **Delta**	6.0 A	10.3 A	10.3 A	10.3 A	10.3 A	12.2 A	10.3 A
Back EMF Constant		3.5 V/m/sec	7.2 V/m/sec	7.2 V/m/sec	14.3 V/m/sec	14.3 V/m/sec	63.3 V/m/sec	28.7 V/m/sec
Corresponding ALIO Drawing #		001-08008-001	001-08008-001	001-08008-001	001-08008-001	001-08008-001	001-08008-001	001-08008-001
Mean Time Between Failure		100,000 Hrs	100,000 Hrs	100,000 Hrs	100,000 Hrs	100,000 Hrs	100,000 Hrs	100,000 Hrs

Notes:

(1) Specifications measured on stage centerline, 50mm above mounting surface. ALIO provides NIST traceable proof for all options/spec per quote.
(2) Flatness specifications dependent on system base. Contact ALIO for more information.
(3) Stage limitation at no load. Does not account for drive or resolution limitations.
(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 for Delta connection and 0.44 ohm/m for Wye Connection.
(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.
(10) Lack of mounting surface quality and environmental control may force stages out of these specifications.
(11) Angular travel is measured when the Z axis is at mid-stroke and the other angle is zero degrees. Deviation from this specified off axis position reduces angular travel.
(12) Maximum velocity specified is for motor in unloaded state. Stage velocity limitations vary greatly depending on stage load and motion profile.
(13) Higher payload options available upon special request.
(14) Contact ALIO technical sales for questions concerning high or offset centers of gravity.
(15) Pneumatic counterbalance supply pressure listed is the estimated pressure required at the max payload.