

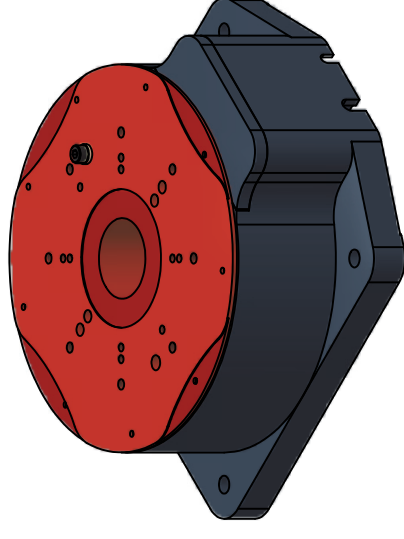


# ALIO STAGE AND MOTOR SPECIFICATIONS

MODEL	UNITS	AI-TM-80RA-50	AI-TM-104RA-80	AI-TM-154RA-65	AI-TM-208RA-110	AI-TM-240RA-44	AI-TM-312RA-80
TRAVEL	deg	360 degrees continuous	360 degrees continuous	360 degrees continuous	360 degrees continuous	360 degrees continuous	360 degrees continuous
DIAMETER	mm	80	104	154	208	240	312
STAGE HEIGHT	mm	50	80	65	110	44	80
AVAILABILITY [1]	--	Standard	Standard	Standard	Standard	Standard	Standard
PERFORMANCE SPECIFICATIONS [2]		Performance Options (STD) [ULTRA] [NANO]	Performance Options (STD) [ULTRA] [NANO]	Performance Options (STD) [ULTRA] [NANO]	Performance Options (STD) [ULTRA] [NANO]	Performance Options (STD) [ULTRA] [NANO]	Performance Options (STD) [ULTRA] [NANO]
ANGULAR ACCURACY	arc-sec	Contact ALIO	Contact ALIO	Contact ALIO	Contact ALIO	Contact ALIO	Contact ALIO
BIDIRECTIONAL ANGULAR REPEATABILITY	arc-sec	+/- 0.5   +/- 0.5   +/- 0.3	+/- 0.5   +/- 0.5   +/- 0.3	+/- 0.5   +/- 0.4   +/- 0.25	+/- 0.5   +/- 0.4   +/- 0.25	+/- 0.5   +/- 0.4   +/- 0.25	+/- 0.5   +/- 0.4   +/- 0.25
RESOLUTION (ANALOG - STANDARD)	arc-sec	0.027 arc-sec	0.02 arc-sec	0.013 arc-sec	0.01 arc-sec	0.009 arc-sec	0.007 arc-sec
RESOLUTION (DIGITAL - OPTIONAL)	arc-sec	0.007 - 27.0 arc-sec	0.005 - 21.0 arc-sec	0.004 - 14.0 arc-sec	0.003 - 10.0 arc-sec	0.003 - 9.0 arc-sec	0.002 - 7.0 arc-sec
RESOLUTION (ENCODER LINE COUNT)	lines/rev	11840	15744	23600	31488	36000	47200
AXIAL RUNOUT (STANDARD)	um	10   7.5   5   10   7	10   7   4   10   7	10   7   4   10   7	10   5   3   10   5	10   5   3   10   5	10   5   3   10   5
RADIAL RUNOUT (STANDARD)	um	10   7.5   6   10   7	10   7   4   10   7	10   7   4   10   7	10   5   3   10   5	10   5   3   10   5	10   5   3   10   5
WOBBLE	arc-sec	20   10   7   20   10	20   10   6   20   10	20   10   6   20   10	16   10   5   15   10	15   10   5   15   10	15   10   5   15   10
MOTION PROFILE SPECIFICATIONS							
MAX VELOCITY [3]	deg/sec	1800	1800	1800	1800	1800	1800
MAX ACCELERATION [3]	deg/sec <sup>2</sup>	> 3600	> 3600	> 3600	> 3600	> 3600	> 3600
ASSEMBLY MASS	kg	0.9	2.7	4.2	11	10	24
MAX LOAD (AXIAL)	kg	2.5	10.0	10.0	40	8.0	50
MAX LOAD (RADIAL)	kg	2.5	10.0	10.0	27	8.0	33
MOVING MASS	kg	0.35	0.9	1.5	3.6	2.9	6
ROTATING MASS MOMENT OF INERTIA	kg*mm <sup>2</sup>	250	900	4500	16000	14000	40000
MOTOR INFORMATION							
MOTOR TYPE	--	FRAMELESS TORQUE MOTOR	FRAMELESS TORQUE MOTOR	FRAMELESS TORQUE MOTOR	FRAMELESS TORQUE MOTOR	FRAMELESS TORQUE MOTOR	FRAMELESS TORQUE MOTOR
MOTOR MODEL	--	044050-EY	089100-9Y	089100-9Y	178100-EY	165A18B	178100-EY
MAGNETIC PITCH (N-N)	deg	120	60	60	40	20	40
MAX VOLTAGE (LINE TO LINE) [4]	VDC	340	340	340	340	285	340
MAX MOTOR TEMP	°C	155	155	155	155	100	155
MOTOR CONNECTION	--	WYE	WYE	WYE	WYE	WYE	WYE
TORQUE CONSTANT	Nm/Arms	0.091	0.68	0.68	2.50	0.54	2.50
PHASE RESISTANCE (@25°C) [5]	Ohm	4.5	3.9	3.9	3.1	2.4	3.1
INDUCTANCE	mH	3.2	8.9	8.9	19.1	6.0	19.1
CONTINUOUS TORQUE [6]	Nm	0.21	2.6	2.6	15.0	3.1	15.0
CONTINUOUS CURRENT [6]	Arms	2.3	3.8	3.8	6.0	5.7	6.0
PEAK TORQUE [7]	Nm	0.66	8.2	8.2	48.0	9.5	48.0
PEAK CURRENT [7]	Arms	7.3	12.0	12.0	19.1	17.6	19.1
BACKEMF CONSTANT	Vrms/krpm	5.5	41	41	152	57	152

### Notes:

- "Standard" models (green cells) are readily available while "Optional" models may have longer lead times. This height and motor stage options are independent of performance specification options.
- Specifications measured on stage centerline, 25mm above mounting surface. ALIO provides NIST traceable proof for all options/spec per quote.
- 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 0.3 ohm/m.
- Continuous operating limits are based on continuous operation at maximum temperature with aluminum heat sink (300mm x 300mm x 25mm).
- 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 optimized performance as necessary per customer requirements.



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DRAWN	5/12/2012	
NBROWN		
CHECKED		
TITLE		
<p>Tolerances: Surface Roughness:  x.x ± .05 in [1.3 mm]  x.xx ± .01 in [0.25 mm]  x.xxx ± .005 in [0.13 mm]</p>		
<p>Angles ± 0.5°  RMS MAX. ✓</p>		
SIZE	DWG NO	REV
B	0010-08015	005
SCALE	ALIO STD TEMPLATE - REV 006	1 OF 1

## AI-TM-(DIAMETER)RA



SEE NOTES

1 OF 1

SHEET 1

ALIO STD TEMPLATE - REV 006

SCALE

FINISH

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