

Specifications	Model:	AI-CM-3000E-030-XY	AI-CM-6000E-060-XY	AI-CM-10000E-100-XY	AI-CM-15000E-150-XY	AI-CM-20000E-200-XY
Travel		30 x 30 mm	60 x 60 mm	100 x 100 mm	150 x 150 mm	200 x 200 mm
Performance Spec's ⁽¹⁾: Precision Grade		(Std.) ULTRA NANO	(Std.) ULTRA NANO	(Std.) ULTRA NANO	(Std.) ULTRA NANO	(Std.) ULTRA NANO
Linear Displacement Accuracy		± 3.0 µm ± 0.5 µm ± 0.3 µm	± 3.0 µm ± 0.7 µm ± 0.4 µm	± 4.0 µm ± 1.0 µm ± 0.5 µm	± 4.0 µm ± 1.0 µm ± 0.5 µm	± 5.0 µm ± 1.0 µm ± 0.5 µm
Straightness		± 2.0 µm ± 0.5 µm ± 0.3 µm	± 3.0 µm ± 0.7 µm ± 0.4 µm	± 3.0 µm ± 1.0 µm ± 0.5 µm	± 4.0 µm ± 1.0 µm ± 0.5 µm	± 4.0 µm ± 1.0 µm ± 0.5 µm
Flatness ⁽²⁾		± 2.0 µm	± 2.0 µm	± 2.0 µm	± 3.0 µm	± 3.5 µm
Bi-Directional Linear Repeatability		± 30 nm	± 30 nm	± 30 nm	± 30 nm	± 30 nm
Resolution		5 nm (Standard; Options avail.)	5 nm (Standard; Options avail.)	5 nm (Standard; Options avail.)	5 nm (Standard; Options avail.)	5 nm (Standard; Options avail.)
Feedback		Non-Contact Linear Encoder	Non-Contact Linear Encoder	Non-Contact Linear Encoder	Non-Contact Linear Encoder	Non-Contact Linear Encoder
Pitch (all +/-)		10 arc-sec	10 arc-sec	10 arc-sec	15 arc-sec	15 arc-sec
Yaw (all +/-)		10 arc-sec	10 arc-sec	10 arc-sec	15 arc-sec	15 arc-sec
Roll (all +/-)		10 arc-sec	10 arc-sec	10 arc-sec	15 arc-sec	15 arc-sec
Orthogonality		20 arc-sec 5 arc-sec 1 arc-sec	20 arc-sec 5 arc-sec 1 arc-sec	20 arc-sec 5 arc-sec 1 arc-sec	20 arc-sec 5 arc-sec 1 arc-sec	20 arc-sec 5 arc-sec 1 arc-sec
Motion Profile Specifications		Motion Profile Specifications				
Max Velocity ⁽³⁾		0.2 m/sec	0.3 m/sec	0.4 m/sec	0.4 m/sec	0.5 m/sec
Max Acceleration ⁽³⁾		0.3 G	0.3 G	0.3 G	0.2 G	0.2 G
Max Payload Capability		8 kg	10 kg	12 kg	12 kg	15 kg
Assembly Mass		1.9 kg	3.2 kg	5.6 kg	7.4 kg	11.4 kg
Moving Mass (X-Axis)		1.5 kg	2.5 kg	4.4 kg	5.7 kg	8.7 kg
Moving Mass (Y-Axis)		0.5 kg	0.9 kg	1.8 kg	2.2 kg	3.4 kg
Motor Information		Motor Information				
Drive Type		Ironless, Brushless Servomotor	Ironless, Brushless Servomotor	Ironless, Brushless Servomotor	Ironless, Brushless Servomotor	Ironless, Brushless Servomotor
Motor Model		C12-1	C12-1	C12-1	C12-1	C12-2
Magnetic Pitch (N-N)		30.48 mm	30.48 mm	30.48 mm	30.48 mm	30.48 mm
Maximum line to line Voltage ⁽⁴⁾		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
Maximum Motor Temp		130 °C	130 °C	130 °C	130 °C	130 °C
Force Constant		3.5 N/Apk	3.5 N/Apk	3.5 N/Apk	3.5 N/Apk	7.1 N/Apk
Phase Resistance (@ 25 °C) ⁽⁵⁾		2.9 Ω	2.9 Ω	2.9 Ω	2.9 Ω	5.8 Ω
Phase Resistance (@ 130 °C) ⁽⁵⁾		4.2 Ω	4.2 Ω	4.2 Ω	4.2 Ω	8.3 Ω
Inductance		0.6 mH	0.6 mH	0.6 mH	0.6 mH	1.2 mH
Continuous Force ⁽⁶⁾	Motor Connection: Delta	10 N	10 N	10 N	10 N	19.8 N
Continuous Current ⁽⁶⁾	Motor Connection: Delta	Up to 2.80 A	Up to 2.80 A	Up to 2.80 A	Up to 2.80 A	Up to 2.80 A
Peak Force ⁽⁷⁾	Motor Connection: Delta	21 N	21 N	21 N	21 N	42 N
Peak Current ⁽⁷⁾	Motor Connection: Delta	6.0 A	6.0 A	6.0 A	6.0 A	6.0 A
Back EMF Constant		3.5 V/m/sec	3.5 V/m/sec	3.5 V/m/sec	3.5 V/m/sec	7.1 V/m/sec
Corresponding ALIO Drawing #		001-08014-001	001-08014-001	001-08014-001	001-08014-001	001-08014-001
Mean Time Between Failure		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.

