

Specifications	Model:	AI-CM-2500	AI-CM-6000	AI-CM-10000	AI-CM-15000
Travel		25 mm	60 mm	100 mm	150 mm
Performance Spec's ⁽¹⁾: Precision Grade		(Std.) ULTRA NANO	(Std.) ULTRA NANO	(Std.) ULTRA NANO	(Std.) ULTRA NANO
Linear Displacement Accuracy		± 3.0 µm ± 0.5 µm ± 0.2 µm	± 3.0 µm ± 0.7 µm ± 0.2 µm	± 3.0 µm ± 1.0 µm ± 0.2 µm	± 3.0 µm ± 1.0 µm ± 0.3 µm
Straightness		± 2.0 µm ± 0.5 µm ± 0.2 µm	± 2.0 µm ± 0.7 µm ± 0.2 µm	± 2.0 µm ± 1.0 µm ± 0.2 µm	± 3.0 µm ± 1.0 µm ± 0.3 µm
Flatness ⁽²⁾		± 2.0 µm	± 2.0 µm	± 2.0 µm	± 3.0 µm
Bi-Directional Linear Repeatability		± 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.)
Feedback		Non-Contact Linear Encoder	Non-Contact Linear Encoder	Non-Contact Linear Encoder	Non-Contact Linear Encoder
Pitch (all +/-)		12 arc-sec	12 arc-sec	12 arc-sec	15 arc-sec
Yaw (all +/-)		12 arc-sec	12 arc-sec	12 arc-sec	15 arc-sec
Roll (all +/-)		12 arc-sec	12 arc-sec	12 arc-sec	15 arc-sec
Motion Profile Specifications		Motion Profile Specifications			
Max Velocity ⁽³⁾		0.2 m/sec	0.3 m/sec	0.5 m/sec	0.5 m/sec
Max Acceleration ⁽³⁾		0.5 G	0.5 G	0.5 G	0.5 G
Max Payload Capability		8 kg	10 kg	12 kg	12 kg
Assembly Mass		1.1 kg	1.4 kg	2.2 kg	2.5 kg
Moving Mass		0.7 kg	0.8 kg	1.3 kg	1.5 kg
Motor Information		Motion Profile Specifications			
Drive Type		Ironless, Brushless Servomotor	Ironless, Brushless Servomotor	Ironless, Brushless Servomotor	Ironless, Brushless Servomotor
Motor Model		C12-1	C12-1	C12-1	C12-1
Magnetic Pitch (N-N)		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
Electrical Time Constant		0.20 msec	0.20 msec	0.20 msec	0.20 msec
Maximum Motor Temp		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
Phase Resistance (@ 25 °C) ⁽⁵⁾		2.9 Ω	2.9 Ω	2.9 Ω	2.9 Ω
Phase Resistance (@ 130 °C) ⁽⁵⁾		4.2 Ω	4.2 Ω	4.2 Ω	4.2 Ω
Inductance		0.6 mH	0.6 mH	0.6 mH	0.6 mH
Continuous Force ⁽⁶⁾	Motor Connection: Delta	10 N	10 N	10 N	10 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
Peak Force ⁽⁷⁾	Motor Connection: Delta	21 N	21 N	21 N	21 N
Peak Current ⁽⁷⁾	Motor Connection: Delta	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
Corresponding ALIO Drawing #		001-08003-001	001-08003-001	001-08003-001	001-08003-001
Mean Time Between Failure		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.

