

C-MAX-3 CERAMIC SERVO DRIVE STAGE



Vacuum Rated C-MAX-3

PRODUCT SUMMARY

C-Max series of precision, ceramic servo positioning stages are ideal for today's high performance technology environment. Matched to high precision rotation tasks where intermittent part indexing, skew adjustment or precise angular alignment is required in a compact form.

- VERY Low Profile Ceramic Servo Driven Rotary Stage
- Smooth Positioning Motion
- Integrated High Resolution Rotary Encoder
- High Precision Guide Bearing System

C-MAX Background

C-MAX stages are built for the most demanding high precision applications in micro-electronic and photonic assembly, testing and inspection. C-Max series of ceramic servo drive rotary positioning stages are ideal for today's high performance technology environment. C-Max stages are driven by scalable ceramic servo motors, principle advantage is that it allows for the packaging of considerable driving force in small spaces. This characteristic makes it the ideal actuator for low profile rotary positioning stages. Ceramic servo motors have the unique operating characteristic of providing in-position braking. This results in the elimination of servo dither when in the desired position. The scalable drive architecture allows the most economical drive solutions to be developed and matched to payload and torque required. An integrated high-resolution rotary encoder system provides closed loop position and velocity feedback enabling outstanding trajectory control. The rotating hub is suspended by a large diameter 4-point contact bearing. This design provides for excellent running characteristics in a space efficient package.

Specifications	ALL C-MAX
Travel	360° Continuous
Drive Elements	Ceramic disk
Drive Type	Piezo-electric servo motor
Reduction Ratio	NA
Accuracy	25 arc seconds
Repeatability	± 1 encoder count
Flatness of Rotation	≤6 microns
Concentricity	≤4 microns
Wobble	≤8 arc seconds

Features & Benefits

C-Max series of rotary stages provide smooth, low friction rotary motions over a large speed range with zero-backlash and in-position breaking. These are key advantages in any application where excellent trajectory control is required. C-Max positioning stages operate with low-noise, low vibration and superior flatness. These are attractive features in any precision application. Closed-loop rotary position control coupled with ceramic servo motor drive technology creates a robust rotating hub with low-hysteresis and remarkable angular resolution.

Applications

C-MAX series rotary positioning stages are designed for precise motor driven rotary positioning, indexing and angular alignment. These tables are intended to function independently or in conjunction with other positioning components used in a variety of high precision and automation applications. The low-profile design minimizes stacking height in multi-axis configurations and enables C-Max to fit where other motorized devices cannot.

C-Max-3 models are available with 100 mm, hub diameter with a several resolution options to match

C-MAX Accessories

A range of specialized configuration rotary positioning stages are available based on the essential components of the C-Max stages. Variants of these rotation stages can be adapted for use in either clean rooms, vacuum chambers or sealed for operation in harsh environments while preserving all of their desirable high performance characteristics. These positioning stages can be factory equipped, tuned and tested with user supplied or custom fabricated payloads and tooling including a variety of work-holding collet systems.

speed and positioning requirements of your application.

Capacities	C-MAX-3100	C-TMAX-3200
Payload Axial (kg)	10	20
Payload Radial (kg)	5	10
Peak Torque (oz-in)	17	34
Velocity (RPM)	90	90

Rotary Stage Resolution

Resolution is defined as the smallest angular value, which can be detected by the evaluating electronics as the hub turns relative to the base. Resolution is developed by the combined effect of the scale grating pitch specified, in lines per revolution (lpr) and an electronic multiplying factor determined by the counting electronics.

Three configurations of electronic pulse counting systems are available in the C-Max product. All C-Max positioning stages share the same native analogue 1 Volt P-P encoder read head. This output is directly compatible with our Micromatic series controllers and most other high-performance servo controllers.

Lower cost and performance controllers may require direct TTL encoder input signals. C-Max system accomplishes this with either an in-line analogue to TTL signal conditioner or a high performance Interpolator-box for high resolution signal conditioning. The In-line TTL conversion is achieved with a defined interpolation factor, 1x, 25x, or 50x. The Interpolator-box is used where higher resolution is required and operates with interpolation factors of 100x, 200x and 400x.

C-MAX

Encoder Output	Grating Disk	Interpolator	Quadrature Edge Detection	Resolution
Analog 1 V(p-p) ⁽¹⁾	10,000 lpr	In-Controller	Not Applicable	0.036degrees/ cycle
TTL-1.30		25x	X4	1.3 arc-sec
TTL-0.65		50x	X4	0.65 arc-sec
TTL-0.32 ⁽²⁾		100x	X4	0.325 arc-sec
TTL-0.16 ⁽²⁾		200x	X4	0.1625 arc-sec
TTL-0.08 ⁽²⁾		400x	X4	0.08125 arc-sec