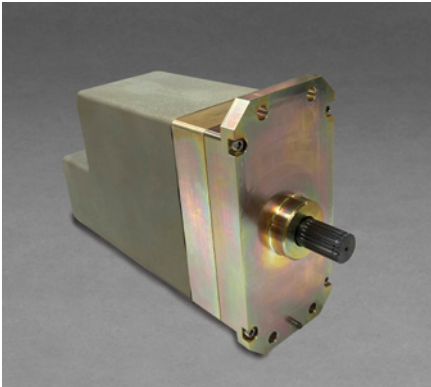


MODEL 965 ROTARY SERVO ACTUATOR



The Model 965 is one of the highest torque rotary servo electromechanical actuators available that integrates position loop servo control electronics with a digital communications interface. This actuator provides an angular excursion up to ± 90 degrees in its current configuration. The customer can program the positional state of the actuator if loss of communications occurs. This is one of many options that allow the customer to

easily implement this actuator into their system.

TYPICAL APPLICATIONS

- Unmanned air vehicles — tactical, medium long endurance and MALE / HALE vehicles
 - Control surfaces requiring servo actuation
- Target drones — control surfaces, speed brakes
- Utility actuation — throttle control, doors, spoilers
- Electric aircraft, eVTOL, eSTOL, air taxis and urban air mobility vehicles — tilting mechanism, flight control, landing gear



MODEL 965 ROTARY SERVO ACTUATOR

FEATURES

- Integrated position servo loop control with digital communications
- Non-jamming mechanical stops
- Brushless permanent magnet motor design with integrated holding brake
- High temperature capability
- Electronic stops limit input command
- Four wire RS-485 full duplex signal interface

BENEFITS

- Robust structural design
- Mechanical stops
- Low weight to power performance
- Customizable

ELECTRONICS DESIGN AND CONSTRUCTION

- IPC-6012, Class 3
- J-STD-001B, Class 3
- IPC-A-610, Class 3

INPUT VOLTAGE / POWER DATA SPECIFICATIONS

Specification	Model 96500000-03
Operating Voltage	21 to 32 VDC
Operating Temperature Range	-40° to +71° C
Operating Altitude Range	11,500 to 38,000 ft
Weight	11.5 lb
Mechanical Stroke	±105 ±2° non jamming stops
Electrical Stroke	±90 ±1° - electronically limited
No Load Speed @ 28 VDC	70° / sec
Static Current @ 28 VDC	< 400 mA
Peak Stall Torque	2,500 lb-in nom - electronically limited
Line Current AT Peak Stall Torque	23 amps
Unpowered Backdrive Torque	15 lb-in max
Power Point	2,200 lb-in @ 45° / sec
Backlash	< 1.0 degrees with ±125 lb-in reversing torque
Small Signal Frequency Response	5.0 Hz no load with 4° DEGP-P command
Electrical Command interface	4 wire RS-485 full duplex
Communications Protocol	Refer to M1 / M2 protocol ¹
Command and Position Resolution	12 bit
Addressing	Connector pin strapping-up to 16 addresses
Loss of Communication	User definable

Notes:

¹Contact Moog sales to receive detailed protocol information.

MODEL 965 ROTARY SERVO ACTUATOR

CONNECTOR PIN ASSIGNMENT

Pin Number	RS-485 Half Duplex Model
A	Power Return
B	Power Return
C	+28 VDC Power
D	Chassis Ground
E	Return Unit ID
F	Unit ID 'B'
G	Unit ID 'A'
H	RS-485 Transmit High
J	RS-485 Transmit Low
K	RS-485 Receive High
L	RS-485 Receive Low
M	Spare
N	Spare
P	+28 VDC Power
R	+28 VDC Power
S	Unit ID 'D'
T	Unit ID 'C'
U	RS-485 Return
V	Power Return

SPLINE DATA

External Involute - Class 5 Fit
Fillet Root Side Fit Per ANSI B92.1a-1976

Features	Model 96500000-03
Number of Teeth	22
Pitch	32 / 64
Pitch Diameter Reference	0.68750
Pressure Angle	30°
Base Diameter	0.5954
Major Diameter	0.7188
Minor Diameter	0.613
True Involute Form Diameter	0.652
Effective Circular Tooth Thickness Maximum	0.0491
Actual Circular Tooth Thickness Minimum	0.0465
Fillet Radius	0.011
Measurement Over 0.0600 Diameter Pins	0.7763 $\begin{matrix} +.0018 \\ -.0000 \end{matrix}$

