

Re-Configurable Active 2-Axis Centerstick



Unique Features

- *Both compact and light*
- *Smooth, precise and repeatable feel*
- *Proven WITTENSTEIN motors, gearboxes and digital motor controllers*
- *Mechanically simple and easy to mount*
- *Robust and reliable*
- *Latest integrated digital motor control technology*
- *CAN bus to link sticks to a compact system control module*
- *Integrated force sensors*
- *Simple standard interface for sticks and grips*
- *CAN bus digital interface for grip inputs*

Wittenstein Aerospace & Simulation

The Aerospace and Simulation Division has developed a range of Re-Configurable Active 2-Axis Centersticks that provide programmable feel characteristics using force feedback. Their high performance and programmability make them suitable for both re-configurable and high fidelity control loader applications.

Wide range of applications:

- Active cyclic sticks for helicopters
- Active control loaders for airplane and helicopter simulators and mission trainers
- Road vehicle simulator gear shift
- Coupled twin sticks
- Active centersticks for aircraft

These systems are extremely compact and easy to install. Integration is simplified by the use of CAN bus serial bus technology to couple twin sticks and link multiple sticks to a system control module. This product has been developed primarily for airplane and helicopter simulators or mission trainers.

Operation of the System

High dynamic performance brushless ac motors are used to drive the pitch and roll axes of the stick through two-stage planetary precision gearboxes. Each motor has a digital motor controller integrated in the motor housing that determines the torque, speed and position of the associated axis. Force transducers, mounted on the stick, feed the force signals back to the system control module. The system control module controls the force-feel characteristics at the grip, so they can be re-configured or dynamically changed to inject advanced cues and simulate different systems or changing operating conditions. For simpler systems, alternate control algorithms can be used to allow the force transducer to be eliminated.

The unique mechanical design of the unit, both compact and very light, has been achieved using the low backlash, low friction, integrated motor-gearboxes we have developed for applications such as robotics and manipulators. A separate system control module controls the Re-Configurable Active 2-Axis Centerstick. For multiple stick and throttle applications, units can be linked to one system control module using a CAN bus for both implementing and coordinating control.

WITTENSTEIN



aerospace & simulation

www.wittenstein.aero

Technical Information

CONTROL LOADING UNIT

Travel

- Programmable to $\pm 20^\circ$

Force Capability

| Motor Option ¹ | Level | Torque | Force ² |
|---------------------------|-------|------------------------|--------------------|
| MYTA010 | Cont. | 50 Nm (440 lb.in) | 67 N (15 lbf) |
| | Peak | 100 Nm (890 lb.in) | 135 N (30 lbf) |
| MYTA025 | Cont. | 150 Nm (1330 lb.in) | 202 N (45 lbf) |
| | Peak | 170 Nm (1500 lb.in) | 229 N (51 lbf) |

¹ Note: 91:1 gear ratio used for ratings, other force ratings are possible with alternate gear ratios.

² Pivot radius at 740 mm (29in)

Size (MYTA 010 based system)

429 mm (16.9 in), 217 mm (8.5 in), 340 mm (13.4 in) H, W, D

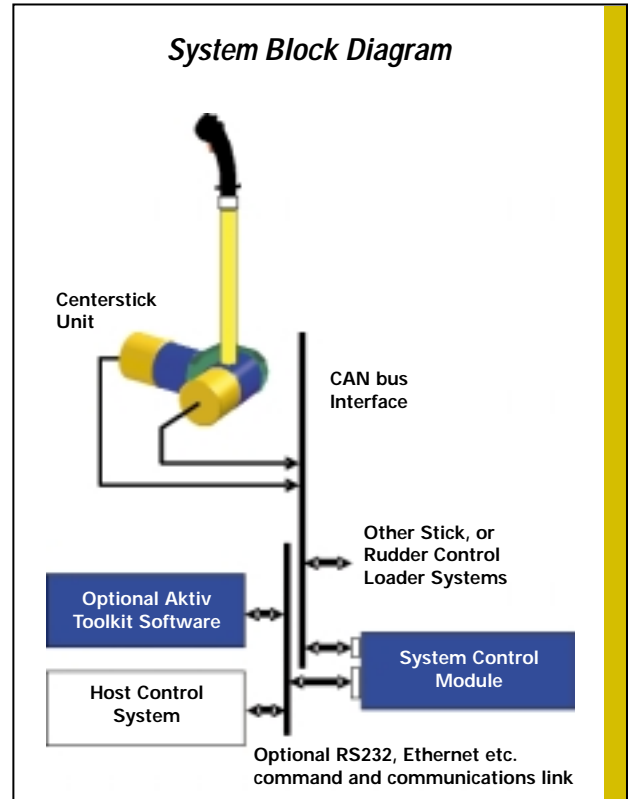
Dynamically Variable Characteristics

- Force-feel curve
- Hard and soft stops
- Trimming and trim release
- Centering features and special cues
- Stick shaker
- Model parameters bandwidth, damping, friction

SYSTEM CONTROL MODULE

Features

- Multiple stick control capability
- CAN bus interface to stick servo units
- Ethernet, RS232 or customized interfaces to host
- Multiple aircraft characteristics defined in configuration files



Size

- Six-slot microbox
177 mm (7 in), 274 mm (10.8 in), 287 mm (11.3 in) H, W, D
- 19 inch rack mountable
177 mm (7 in), 432 mm (17 in), 457 mm (18 in) H, W, D

Customer Options

- Analog output of stick parameters
- Software toolkit for setting defaults and system evaluation
- Setup of characteristics to meet customer requirements

WITTENSTEIN



aerospace & simulation

Sales Office Europe & ROTW

WITTENSTEIN aerospace & simulation GmbH
Walter-Wittenstein-Strasse - 97999 Igersheim, Germany
Phone: +49 (0)7931 493-0 • Fax: +49 (0)7931 493-9 09

Sales Office North America

WITTENSTEIN aerospace & simulation Inc.
931 S. Semoran Blvd., Suite 202 • Winter Park, FL 32792 USA
Phone: (407) 672.0010 • Fax: (407) 672.0301

www.wittenstein.aero • email: info@wittenstein.aero