TAAC
AEROSPACE TECHNOLOGIES

UTILITY ACTUATORS

ACTUATION SYSTEMS

UTILITY ACTUATION SYSTEMS

TAAC Aerospace Technologies designs and develops electromechanical utility actuation systems, including integrated controllers if required, for advanced aircraft platforms. Engineered in full compliance with international aviation standards, our systems offer high precision, enhanced reliability, lightweight design, and high-efficiency, while eliminating the complexity of hydraulic or pneumatic infrastructure.

APPLICATION AREAS / USAGE SCENARIOS

TAAC's Electromechanical Utility Actuation Systems are designed to meet the demanding needs of military and trainer aircraft, offering lightweight, low-maintenance, and highly reliable alternatives to hydraulic and pneumatic systems.

Airframe Utility Systems

- Canopy actuation for fighter, light combat, and trainer aircraft
- Landing gear door systems
- Access panel and avionics bay latches
- Brake cooling ducts and exhaust flap control
- Ram Air Turbine (RAT) deployment
- Engine nacelle and IGV actuation
- Control surface locks for storage/maintenance
- Emergency exit and rescue hatch actuation
- Thrust reverser actuation
- Environmental Control System valve actuation
- Trim tab adjustment for aerodynamic stability

Mission-Critical Systems

- Weapon bay door actuation
- Refueling probe/door actuation
- Radar/sensor bay cover control
- Variable geometry wing/surface positioning

TECHNICAL PROPERTIES

Parameters	Typical / Max Value	Unit
Operational Load	< 12,500	N
Limit Load	< 20,000	N
Ultimate Load	< 45,000	N
Velocity	< 30	mm/s
Stroke Range	60 – 250	mm
Pin To Pin Length [A]	< 500	mm
Power Consumption (Nominal)	560 (Peak: 6 sec)	W
Input Voltage	28	VDC
Overall Dimensions	< 150 × 200 × 600	mm
Weight	< 7.5	kg
Manual Drive Torque	< 8	Nm
Operational Temperature	-46 to +70	°C
Interface	CAN Bus 2.0 B	-
Communication Protocols	ARINC 825, ARINC 826	-

QUALITY & STANDARDS COMPLIANCE

TAAC's electromechanical utility actuation systems are designed, developed, and tested in accordance with internationally recognized aerospace standards and rigorous quality frameworks. Our commitment to airworthiness and system integrity is demonstrated through compliance with the following:

- **Development and Certification Standards:**
  - ARP 4754 (System Development Assurance)
  - ARP 4761 (Safety Assessment Process)
  - ARP 5311 (Actuation System Requirements)
  - DO-160 (Environmental Testing)
  - MIL-STD-810 (Military Environmental Conditions)
  - DO-178 (Software Considerations)
  - DO-254 (Hardware Design Assurance)
  - MIL-STD-461 (Military EMI Requirements)
- **Design Assurance Level:**
  - **DAL-B**, ensuring high-integrity system performance for critical flight functions
- **Material and Standard Part Conformity:**
  - Standard parts conform to **MS (Military Standards)** and **NAS (National Aerospace Standards)**
  - Raw materials are sourced and certified according to AMS **(Aerospace Material Specifications)**

Customizable Mechanical Interface

Designed for seamless integration with various aircraft structures, the mechanical interface can be tailored to match specific platform requirements, including:

- Rod-end or clevis configurations
- Bearing and bushing types
- Mounting geometry (angle, length, diameter)
- Material or surface treatment compatibility (e.g., anodized, passivated, cadmium plated)

Optional Features

- Anti-rotation locking
- Torque-limiting joints
- Quick-disconnect fittings

Manual Drive Interface
(Manual operation without electrical power)

Actuator Control Unit

Connected by wire to the actuator, the control unit enables modular architecture for platform-specific flexibility.

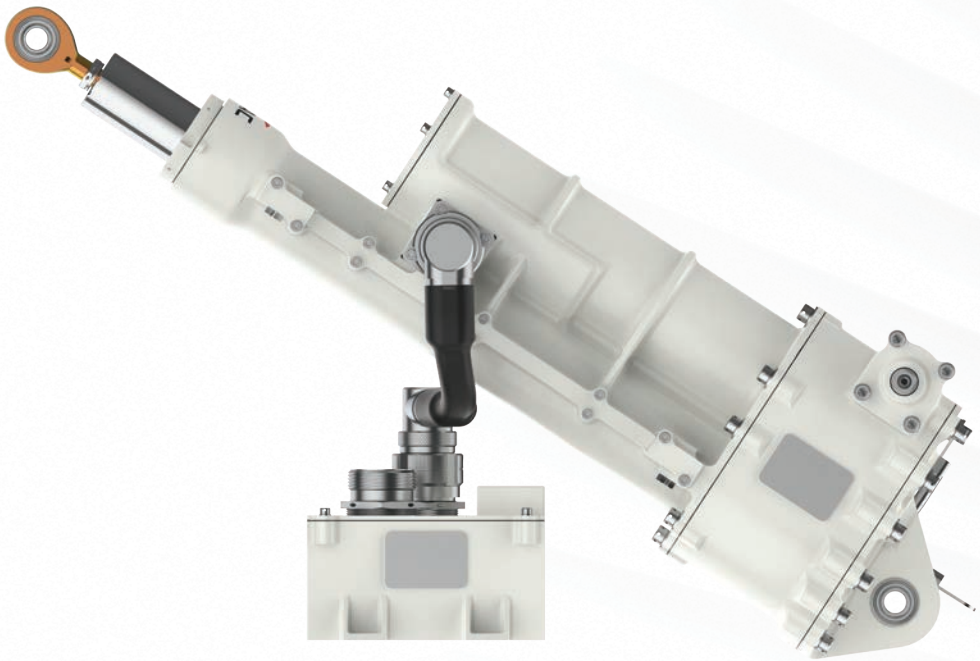
- Default configuration: externally mounted with harness connection
- Optional configuration: fully integrated into actuator body
- Provides control logic, position feedback, and health monitoring functions
- Designed to meet environmental and EMI requirements (MIL-STD-810, DO-160, MIL-STD-461 etc.)

* Visuals and configurations shown are representative and may be adapted based on customer requirements, interfaces and the installation envelope constraints of the platform.

MAINTENANCE & LIFECYCLE SUPPORT

TAAC's electromechanical actuation systems are engineered for reliability, reduced maintenance burden, and long service life. Comprehensive lifecycle support ensures system readiness and airworthiness throughout the product's operational duration.

- **O-Level Maintenance:**
  - Visual inspection every 600 flight hours or 2 years, whichever comes first
- **D-Level Maintenance:**
  - Grease replenishment and seal replacement every 5 years
- **Lifecycle Support Commitment:**
  - Technical support available for up to 30 years or 8,000 flight hours
  - Spare parts availability and obsolescence management included within support scope



OPTIONAL CUSTOMIZATION

- Power On-Off Brake (with or without motor)
- Motor (Brushed or Brushless)
- Controller (Separate endbox or integrated in actuator body)
- Mechanical Interface (Rod, Rod End, Clevis, Fork, Eye, etc.)
- Position Feedback (Linear potentiometer, rotary encoder, resolver)
- Autoblockage (Manual Drive, leadscrew, worm gear)
- Switch (Single or multi-position, limit switch)
- Manual Drive (with flexible shaft)

REDUNDANCY CASE

- **Manual Drive**: enables manual open-close operation of the utility system without electrical power
- **Power Off Brake**: prevents unintended movement by locking the system during power loss

TAAC AEROSPACE TECHNOLOGIES

TAAC Aerospace Technologies
Sanayi Mah. Teknopark Bul. No:1/7C
Pendik / İstanbul / Türkiye
www.taac.com.tr
taac@taac.com.tr

TURKISH AEROSPACE

altınay Defense

TAAC IS A SUBSIDIARY OF TURKISH AEROSPACE & ALTINAY DEFENSE.