

**CURTISS -
WRIGHT**

Turret Aiming & Stabilization System

New Levels of Stability and Control for Military and Industrial Applications



Trusted. Proven. Leader.

curtisswrightds.com

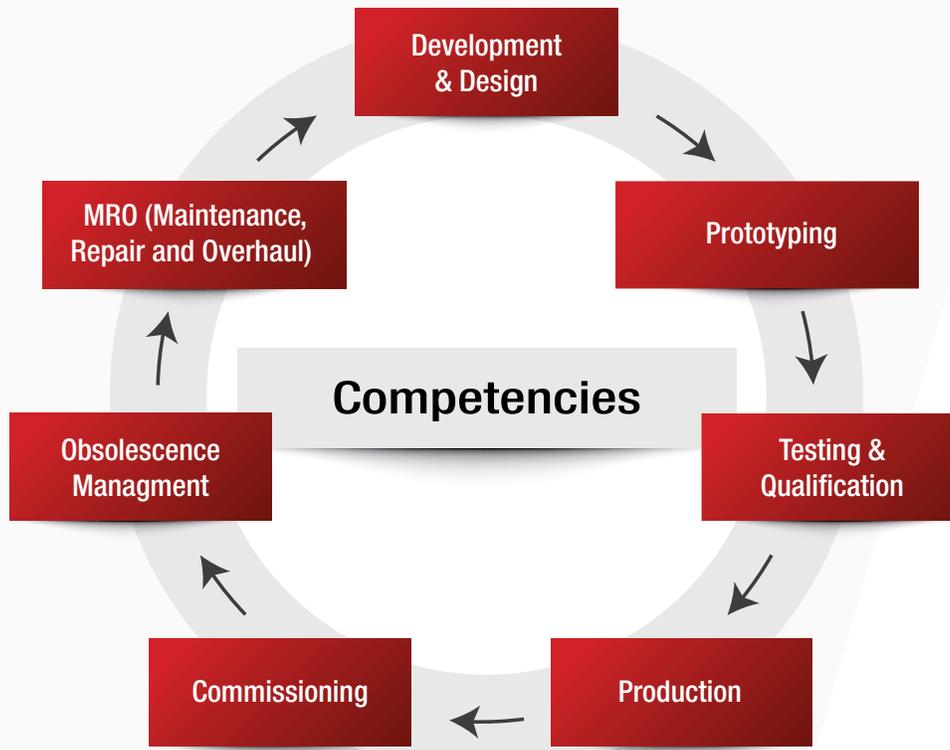
About Curtiss-Wright Drive Technology

Curtiss-Wright Drive Technology is part of the Curtiss-Wright Defense Solutions division and has been a global leader in developing and manufacturing electromechanical systems for over 70 years. We work closely with our customers to provide expert design and development services to deliver custom solutions for any military or industrial program size, with cost-effective options using standard products. We offer world-class customer support from design, assembly, and testing to rapid on-site assistance post-installation.

We ensure the highest quality and reliability standards using sophisticated test equipment, centralized quality, lean management, and compliance with all relevant regulations, including EN9100:2018. With a large team of highly qualified engineers and skilled employees, we support many applications, including ammunition feeding, missile launchers, rapid, active drive systems, train tilting technology, camera crane stabilization, and high-viscosity screw pumps.

Our rugged, high-speed, and high-precision motion control systems are part of the design phase for more than 25 tank turret programs worldwide. We have a reliability and logistic-focused development strategy to ensure high-quality solutions are delivered on time. To ensure safety, we implement model-based software development in accordance with EN 61508 and are RoHS and REACH compliant. We adopt a partnership approach to deliver the best outcomes for our customers with on-site support and fast response times.

To develop customized drive solutions, we follow best practices, such as the V-Model, and international standards (e.g., ISO 12207, IEC 61508, RTCA DO-178). Our approach of adapting well-proven industrial components to meet the challenges found in the defense segment leads to high system availability and reliability with the precision and ruggedization required.



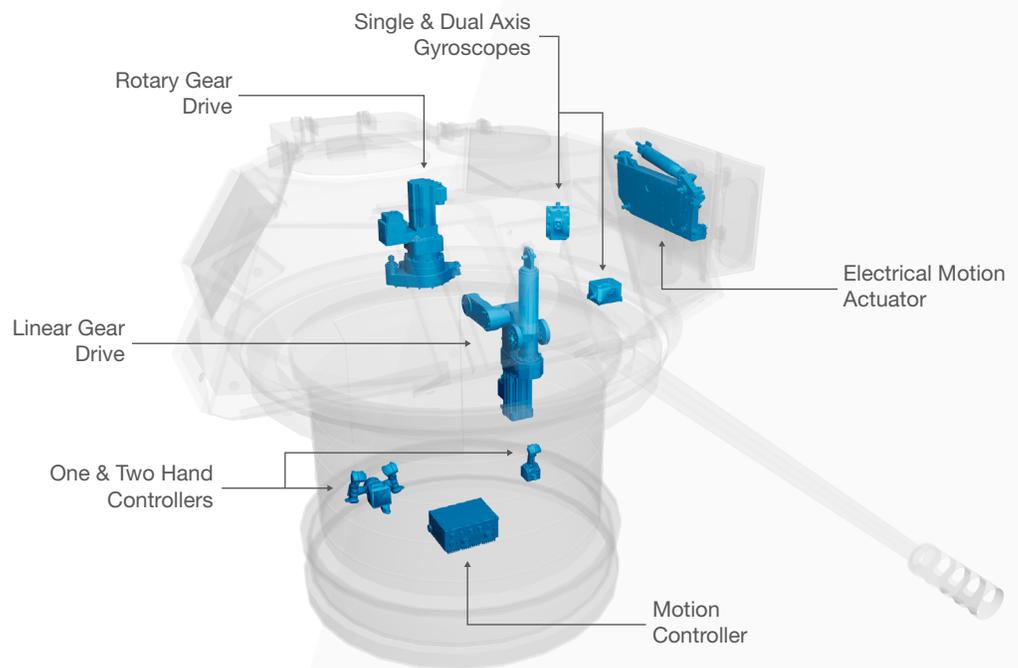
Aiming and Stabilization Systems

Curtiss-Wright's Turret Drive Stabilization System (TDSS) offers a flexible choice of standard configurations that range from manual systems to fully stabilized electromechanical solutions.

The TDSS uses modular building blocks that make creating custom systems faster and more cost-effective than fully custom solutions, allowing our customers to jump-start their program by getting to demo and production quickly. They also allow easy adaptation to different turrets to meet the required dynamic performance and precision expectations. There is also a simplified upgrade path for retrofit applications.

Whether a small gun or a main battle tank turret that needs basic movement or sophisticated stabilization, the TDSS can be configured to meet customer needs. A common TDSS consists of the following components:

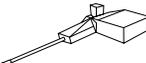
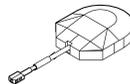
- Rotary Gear Drives
- Linear Gear Drives
- Motion Controller
- Hand Controllers
- Gyroscopes
- Software



Flexible System Configurations

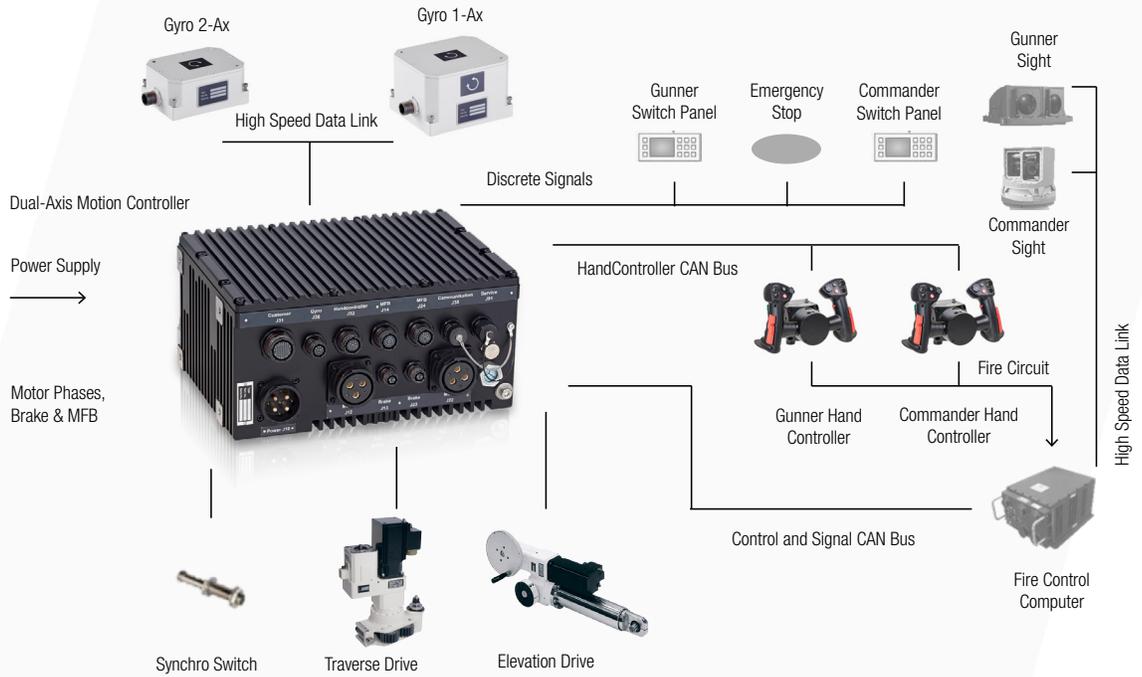
The TDSS's modularity meets the performance requirements of a range of aiming and stabilization functionality, matching the needs of our customer's mission across the full range of turret sizes.

System / Applications:

-  Remote weapon stations
-  Small to medium-sized systems/turrets
-  Large systems/turrets

Excellent stabilization that is globally recognized for its high performance and reliability

**Power
Distribution
Unit**



Gear Drives

Curtiss-Wright has a range of mechanical and electromechanical rotary and linear gear drives. The rotary gear line of drives provides a critical component in the traverse and elevation of a turret by accurately transferring the motor’s motion while aiming at constant low speeds and in stabilize mode, controlling highly dynamic movements.

Linear drives are used in a wide range of applications and consist of a roller screw that transmits the rotation of the motor to a linear movement. An elevation linear gear (ELG) can be easily installed within the available space for upgrades and replacements of existing elevation hydraulic drives.

All linear and rotary drives are modular, enabling the servo drive and hand crank to be repositioned when location and space are restricted. Dual redundant brakes and a manual backup drive (for use when power is off) are also included for system security.



ERG 400



Elevation Drive
ELG10 Linear Drive



ELG 60 Linear Drive



Nano Controller 80A



Twin X 300A (2 Axis)



Twin X 600A (2 Axis)

Motion Controllers

Curtiss-Wright's range of motion controllers is ideally suited for use on weapons stations or main battle tanks. The system power, I/O, performance, and assembly have been designed for the most demanding dynamics and precision requirements and can be easily modified to our customer's specifications.

The entire range of motion controllers includes EMI filtering, power electronics, embedded system software, control algorithms, a common service tool, and the electrical interfaces required.

Features

- Modular and scalable design (from 1.5 kW to 24 kW)
- High power density
- Mobile solution (battery powered)
- Ruggedized and field-proven components
- Improved maintainability and reliability
- Functional safety to IEC61508 / IEC6180
- 28VDC @ 80 Amps to 900 Amps
- 36VDC and 48VDC variants on request

Use Cases

- Turret drive and stabilization for weapons and turrets
- High power motion control systems
- Naval applications

Designed for the most demanding dynamics and precision requirements



Gyroscope

Single and dual-axis fiber optic gyroscopes (FOG) deliver the high performance and reliability required for military applications. FOGs provide compensated angle or yaw rates to the asynchronous or synchronous digital Integrated Ballistics Identification System (IBIS) interface. The gyroscopes can withstand extreme shock and vibration in accordance with MIL- STD-810 ground mobile profile, are entirely digitized, including online BIT, and have no moving parts.



Single-Axis Gyroscope



Dual-Axis Gyroscope

Hand Controllers

Curtiss-Wright's ruggedized, field-proven hand controllers (HC) offer leading reliability and user comfort. They are highly customizable for various applications and available as a one or two-hand grip shell style. Each ergonomically designed motion control handle can hold several independent sealed switches adaptable to the customer's requirements.

Digital HCs process data via a central processing unit that enables built-in test (BIT) and definable output characteristics. The standard version has an RS-422 or CANbus data link interface, typically connecting to servo electronics or the customer's subsystem. All HCs are fully galvanic isolated and equipped with electrostatic discharge (ESD) protection and can be integrated into tanks, UAVs, ships, simulators, or other military vehicles.



1 Hand Controller



2 Hand Controller



Customized Hand Controller

One Stop Shop Solution

Curtiss-Wright's commitment to customer support in our projects extends beyond delivering our solutions. Customers gain a dedicated partner with industry insights that enhance their team's capabilities with consultation, training, program management, and Total LifeCycle Management™ program services.

We also provide a range of software and hardware tools that allow customers to take ownership of maintenance and repairs. These range from specially developed service software with user-friendly graphical user interfaces (e.g., DacsVIEW and HandleVIEW) to sophisticated test benches. For example, this facilitates a user to be guided step by step through the testing, fault localization, and independent replacement of a damaged component.

Features associated with these service tools:

- 2 to 6 channel real-time measurement
- System characterization measurements and analysis
- System performance measurements and analysis
- Customized analysis tools & user interfaces
- System parameterization

Resulting benefits for the customer:

- Reduced maintenance time and commissioning efforts
- Easy and fast system setup and optimization
- BIT visualization (Level I & II)



About Curtiss-Wright Defense Solutions

Curtiss-Wright Corporation (NYSE:CW) is a global integrated business that provides highly engineered products, solutions and services mainly to Aerospace & Defense markets, as well as critical technologies in demanding Commercial Power, Process and Industrial markets. Headquartered in Davidson, North Carolina, the company leverages a workforce of approximately 8,600 highly skilled employees who develop, design and build what we believe are the best engineered solutions to the markets we serve. Building on the heritage of Glenn Curtiss and the Wright brothers, Curtiss-Wright has a long tradition of providing innovative solutions through trusted customer relationships. For more information, visit <http://www.curtisswright.com>.



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