

**CURTISS -
WRIGHT**

Man-Machine Interface for Critical Missions

Command with Precision



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Curtiss-Wright Hand Controllers

The hand controller is a critical man-machine interface (MMI) component that provides mission-critical performance in defense and industrial applications. Curtiss-Wright Defense Solutions provides ruggedized hand controllers in single-grip, dual-grip, and portable designs. Each ergonomic controller is highly configurable, enabling the selection of the quantity and type of sealed buttons and switches to precisely meet specific operator preferences and application requirements.

All hand controllers are qualified, fully galvanically isolated, and equipped with electrostatic discharge (ESD) protection, ensuring safe systems integration into a wide range of applications and platforms such as industrial vehicles, tanks, UAVs, ships, simulators, and more.

The hand controllers can connect via multiple interfaces for seamless integration into a customer's subsystem. An integrated Central Processing Unit (CPU) enables Built-In Test (BIT) data and definitions of custom output characteristics.



Six Steps to a Custom Hand Controller

Every application is unique, and choosing the right hand controller can improve usability, comfort, and ease of operation, thus ensuring mission success. Curtiss-Wright offers commercial off-the-shelf (COTS) predefined configurations and customizable hand controllers to ensure the best fit for each customer's application.

The six-step configuration process begins with the hand controller selection: single or dual, left or right-handed, with or without deflection. Then, additional controller characteristics such as steering box type, switches, interfaces, connector layouts, and physical appearance are specified. A comprehensive list of available options, including hand size personalization, allows customers to customize their hand controllers to their specific needs. At the end of the process, a part number and a unique identification key are created to facilitate discussions and further refinements with Curtiss-Wright's technical experts.

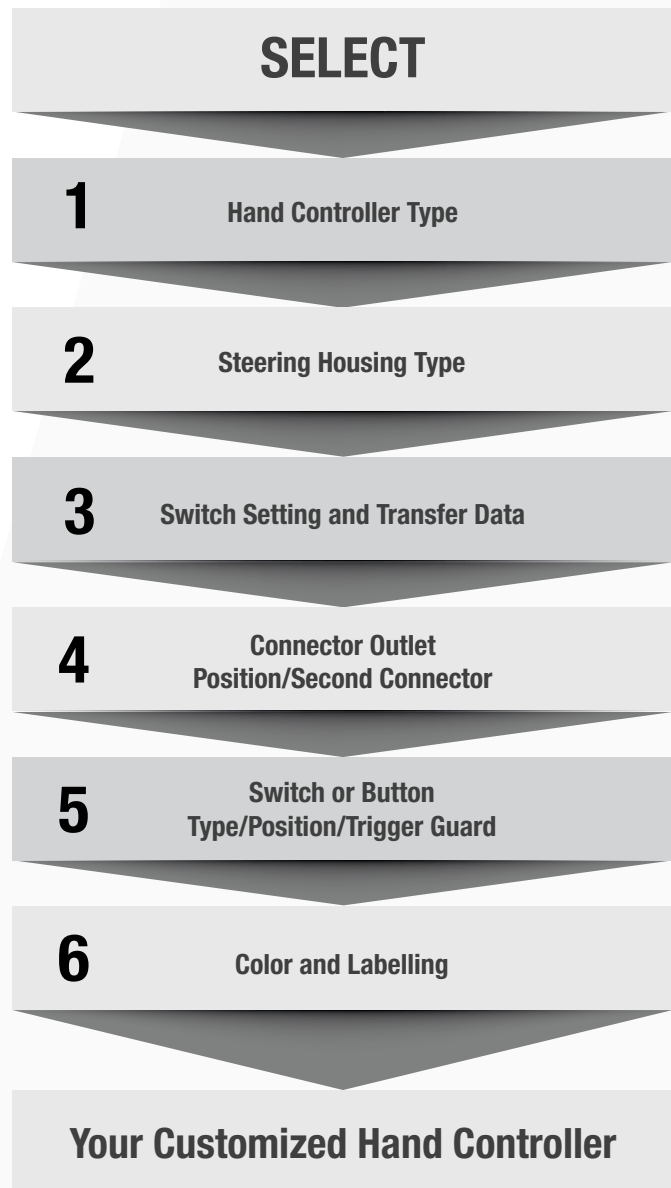
Step 1 & 2: Select the Hand Controller and Steering Housing

The compact one-handed controller can be designed for left, right, or symmetrical use and features connectors with configurable position and orientation. It can be configured with a fixed or a deflection-type joystick. The fixed variant incorporates a thumb sensor to facilitate movement.

To provide precise control, the two-handed controller uses fine graduation in pitch and roll. It is available in horizontal or vertical grip styles, providing users with excellent support in mobile systems operating in challenging conditions.

The one-handed and two-handed controllers allow simultaneous control of multiple axes via the deflection type, four or five-way switches, or a thumb sensor. To meet application, ergonomic, and control requirements, various grip options are available.

The portable control station hand controllers resemble many game controllers. They are lightweight and can accommodate a variety of switch types, providing versatility for many applications that require mobility.



Step 3: Switch Setting and Data Transfer

All hand controllers are based on a modular system structure and can be designed to application-specific needs via the interface, including:

- Switch connection: discrete signals (via additional connector) or via communication interface
- Palm and fire triggers connected in parallel or serial (two-hand variant)
- RS-422/RS-485, CAN bus, USB, or analog
- Up to five customer-defined programmable output characteristics, selectable during operation via the communication interface

Step 4: Connector Outlet Position/Second Connector

The position/orientation of the connectors is customizable to optimize integration and usability. The palm and trigger switches are always accessible as discrete signals on the first connector. A second connector is available when additional discrete signals are required.

Step 5: Switch or Button Type/Position/Trigger Guard

Curtiss-Wright offers a wide range of high-performance switches, including pushbuttons, toggles, slides, and rotary types. These ruggedized switches provide both digital and analog output options.

Step 6: Color and Labelling

Controllers are painted and labeled exactly to customer specifications to ensure the durability and longevity of paintwork. Constructed from high-quality materials by expertly trained staff, these controllers deliver long-lasting results that exceed expectations.



HandleVIEW Service Software

The USB connectivity kit connects the hand controllers to a PC or notebook. The Windows-based HandleVIEW software supports all relevant commissioning and service tasks, such as software download, configuration, BIT, check calibration, and aiming profile setup. Polynomials can be configured and adjusted as aiming profiles to fit the operator's and/or mission needs precisely.

Features

- Comprehensive user interface
- Easy setup and software maintenance
- Facilitates exact configuration to your user and application needs
- Track controller health status with the BIT monitor and passive measurement

Specifications

Power

- Nominal voltage +24 VDC
- Nominal current 80 mA (@24 VDC)
- Operating voltage range +18 to +36 VDC
- Nominal power consumption 2 W

Physical Characteristics

(subject to type and configuration)

- 1.2 kg up to 2.8 kg
- 190 mm up to 320 mm (total height*)
- 110 mm up to 300 mm (total width*)
- 110 mm up to 160 mm (total depth*)
* without possible deflection

Start-up time

- 2 s (max. up to 4 s)

Interface

- RS-422/RS-485
- USB
- Analog
- CANopen or native CAN
- Fully galvanically isolated



Discrete Output Palm- and Fire-Switches

- Palm-and Fire-switches are safety-critical switches. Their status is available as discrete hardwired outputs or softwired via interface protocol
- Voltage: +5 to +36 VDC
- Palm: maximum continuous current 0.5 A
- Palm: maximum peak current 1 A
- Fire: maximum continuous current 1 A
- Fire: maximum peak current 2 A

Discrete Output Other Switches

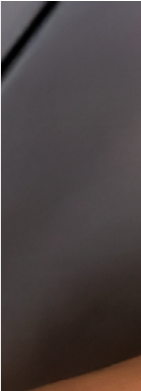
- In the serial configuration (SER), all other switches (excluding Palm- and Fire-) are directly connected to the hand controller electronics and have no discrete output

Deflection

- One-handed controller: +/- 20°
- Two-handed controller: +/- 24°
- Fixed: none

Qualification


- Environmental: MIL-STD-810F
- EMI/EMC: MIL-STD-461F
- ESD protection: IEC 61000-4-2
- Power Supply: MIL-STD-1275



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