

AVDU Rugged Mission Displays

**CURTISS-
WRIGHT**

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Key Features

- High brightness and advanced optical stack provide anytime readability
- Night vision compatibility
- Full touchscreen capability
- Touchscreen over USB
- Messaging and control over RS-422
- Multiple video inputs and operator views
- Highly configurable and field upgradeable
- Fully ruggedized and sealed unit

Applications

- Airborne (rotary and fixed wing)
- Civil (police, search and rescue) and military
- Naval and ground vehicles

Overview

Curtiss-Wright's [AVDU](#) range of rugged mission displays offers a unique combination of new technology, including optically-bonded glass and dual mode NVIS-compatible LED backlighting, and a rich feature set including a highly flexible video input capability and touchscreen over USB support.

Enhanced software features enable system configuration flexibility and touchscreen capabilities that fulfill a wide range of mission requirements.

Touchscreen over USB support

Pre-integrated software enables in-field upgrading, calibration initiation, test mode, external storage, as well as a USB slave role for connection to an external PC, thus making the AVDU an HID touchscreen device. As a HID touchscreen, the AVDU supports basic clicking, double clicking, and drag and drop functionality.

Messaging and control support over RS-422

The AVDU allows a separate protocol to be configured for one or more of the inputs, allowing messaging and control over the RS-422 port. Messages allow for enabling and disabling the on screen display, pressing soft keys, as well as displaying or removing custom text message anywhere on screen.

A writable area for custom configuration

The test mode functionality of the AVDU has been extended to display both the software version as well as customer configuration settings.



Figure 1: 21.5" AVDU5515 and 14.1" AVDU3615

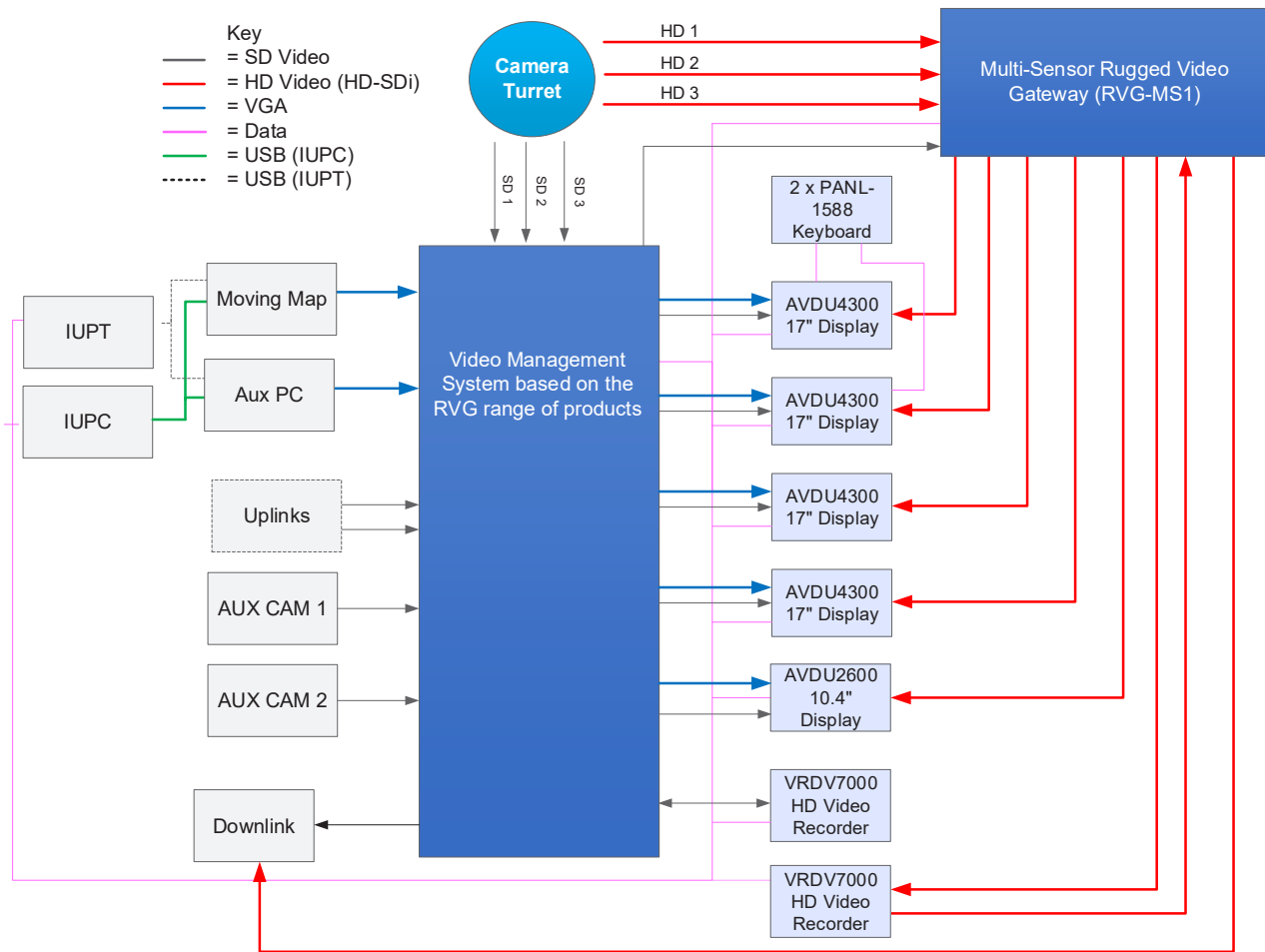


Figure 2: Architecture of a typical video management system

Boot up time optimization

Boot up time has been optimized so that the video output appears on the screen faster than before, after power on.

The AVDU is currently available in five display sizes and resolutions to address a wide variety of applications on ground, airborne, and naval platforms. Fully qualified to established environmental standards, the displays can be used in standalone mode, where multiple video input capability can be used to present a number of configurable operator views, or as part of a [Curtiss-Wright video](#)

[management system \(VMS\)](#) alongside video distribution, switches, and recorders. When used in a VMS, the displays’ touchscreen capability allows all the functionality of these units to be easily controlled by the operator.

The displays feature multiple control inputs including Ethernet, CANBus, RS-232/RS-422 and USB, and the most widely used video interfaces including DVI HD-SDI, VGA, and composite video, offering maximum flexibility to system integrators. They are fully interoperable with the latest turret and downlink solutions on the market.

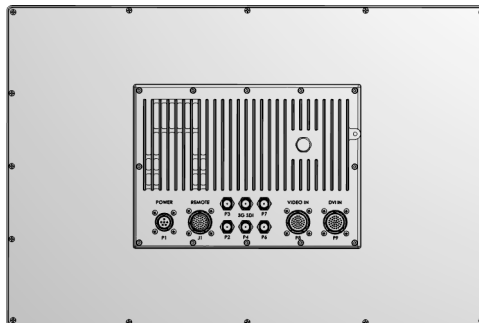


Figure 3:
Mechanical Drawing –
back of AVDU

Specifications Summary

Video inputs

- 2 x DVI
- 2 x HD-SDI
- 4 x Composite/S-Video
- 2 x RGBHV/RGsB

Video outputs

- 2 x HD-SDI Loop-through
- 1 x HD-SDI Display out

Control interfaces

- 1 x Gigabit Ethernet
- 1 x USB Host
- 1 x USB Device
- 1 x CANBus
- 2 x RS-232/RS-422
- 2 x Day/night/NVG discrete
- 1 x External inhibit

Display readability

- High brightness LED day/NVIS backlight
- Bonded optical stack
- Circular polarizing filter

Enhanced software features

- Touchscreen over USB support
- Messaging and control support over RS-422
- A writable area for custom configuration
- Boot up time optimization

Additional features

- Five-wire resistive touchscreen
- Built-in heater for operation in cold climates
- Built-in quad generator to show up to four video feeds at once
- Day/night/NVG discrete inputs for control of lighting mode changes
- Customer-specific configurations and software updates applied using USB memory stick

Powerful

The versatile displays offer touchscreen operated “soft” keys for customized functions as well as “hard” bezel keys. By pressing the On Screen Display (OSD) key, the soft keys are shown around the outside of the display, overlaid on top of the video. These soft keys can be customized at the factory to customer requirements from a number of standard options, such as Curtiss-Wright video recorder control, picture in picture, and quad view selection. The hard bezel keys along the bottom of the display control the displays core functions such as power on/off, brightness, and channel selection. The display comes with a five-wire resistive touchscreen as standard and can be customized to operate with today’s leading digital moving maps. Multiple control interfaces are available to communicate with peripheral equipment such as USB, Ethernet, and RS-422/232. The popular built-in quad screen feature allows users to view four images on a single display, giving the operator his critical mission video at a single glance.

Daylight Visibility

The displays offer market-leading daylight visibility by means of powerful LED backlights and optical bonding to reduce internal reflection and enhance contrast. This is further enhanced by the use of a circularly polarizing filter to reduce intrusive reflections and improve readability. The mission displays are suitable for use in conditions of high incident light including open cockpits.

Night Vision

Night Vision Goggle (NVG) compatibility to MIL-STD-3009 NVIS B as standard. The display is fitted with a dual-LED light source including NVG-filtered LEDs at low levels for NVG operations. All front-panel LEDs and key backlighting are NVG-filtered. The brightness of the bezel lighting is controlled along with the brightness control of the display, but can be customized to connect to an aircraft lighting bus.

Video Management

The displays are powerful products used on their own, but add even more value when fully integrated as a part of the [Curtiss-Wright VMS](#). The VMS is the ultimate solution for video management in an aircraft allowing complete control over all video signals in the system. By using video distribution such as the [RVG-MS1](#) at the heart of the system, the display operator is able to select any video signals at any time using his bezel keys, control any connected Curtiss-Wright video recorder such as the [VRDV7000](#) using the touchscreen operated soft keys, or change the channels going to onboard downlinks. The VMS supports multiple displays and recorders in the system and is only constrained by the number of outputs on the chosen distribution unit.

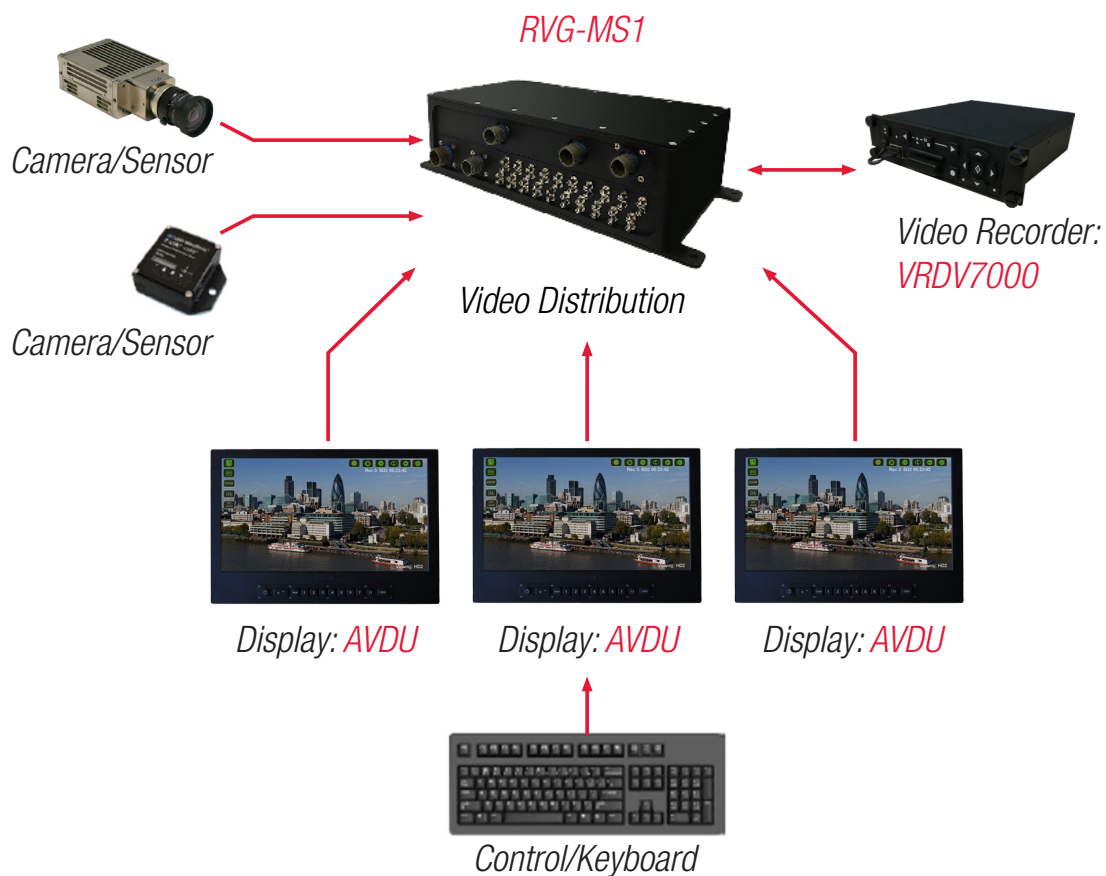


Figure 4: Curtiss-Wright's Video Management System

Environmental Specifications

TABLE 1 EMC and power input	
FEATURE	COMPLIANCE
Magnetic effect	DO160G Category A
Power input	DO160G Category B
Voltage spike	DO160G Category B
Audio frequency	DO160G Category Z
Induced susceptibility	DO160G Category B
RF susceptibility	DO160G Category S
RF emission	DO160G Category B
Electrostatic discharge	DO160G Category A
Fire, flammability	DO160G Category C

TABLE 2 Environmental	
FEATURE	COMPLIANCE
Temperature	DO160G Category A1 › Operating: -20 to 55°C › Short-term operating: -20 to 70°C › Non-operating: -55 to 85°C
Temperature variation	DO160G Category C (2°C/minute)
Humidity	DO160G Category A (RH 0 to 95%)
Vibration	DO160G Category U › Sine: 2 G peak, 10-2 kHz › Random: 0.02 g ² /Hz 10-2 kHz
Shock	DO160G Category B (6 g's peak, 11 ms wide)
Crash safety	DO160G Category B
Explosion proofing	DO160G Category E Environment III
Waterproofing	DO160G Category W
Fluid susceptibility	DO160G Category F
Sand and dust	DO160G Category D
Fungus resistance	DO160G Category F
Salt spray	DO160G Category S

Ordering Options

TABLE 3 AVDU Rugged Mission Display ordering options					
PART NUMBER	AVDU2615-000	AVDU3015-000	AVDU3615-000	AVDU4315-000	AVDU5515-000
Screen size (diagonal)	10.4"	12"	14.1"	17.3"	21.5"
Dimensions (including connectors)	9.6 x 7.9 x 3.2" 250 x 200 x 82 mm	12.2 x 9.5 x 3.2" 310 x 241 x 82 mm	14.1 x 10.8 x 3.4" 357 x 274 x 87 mm	16.9 x 11.8 x 3.2" 430 x 300 x 82 mm	20.8 x 13.9 x 3.2" 529 x 352 x 82 mm
Format (aspect ratio)	4:3	16:10	16:10	16:9	16:9
Resolution	1024 x 768	1280 x 800	1280 x 800	1920 x 1080	1920 x 1080
Brightness	750 cd/m ²	1000 cd/m ²	1000 cd/m ²	700 cd/m ²	1000 cd/m ²
Mass	8.8 lb 4.0 kg	10.8 lb 4.9 kg	13.2 lb 6.0 kg	13.7 lb 6.4 kg	19.4 lb 8.8 kg
Power, not including heaters	40W	55W	55W	70W	85W
Power, including heaters	80W	105W	95W	120W	140W