

VRDV7000

Dual-channel HD/SD Video Recorder

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Key Features

- Support for SDI (SD/HD/3G), CVBS/S-Video, RGsB and RGBHV video
- Simultaneous recording of up to two channels of video and two channels of stereo audio
- Simultaneous playback while recording
- SD card and USB flash drive for removable storage
- Up to ten hours of recording on a single SD card or USB flash drive
- DZUS® mounting for aircraft control panels
- Support for KLV metadata
- Controllable from the front panel, from Curtiss-Wright's family of rugged displays, or via Ethernet

Applications

- Evidential recording
- Mission debrief
- Post-mission training

Overview

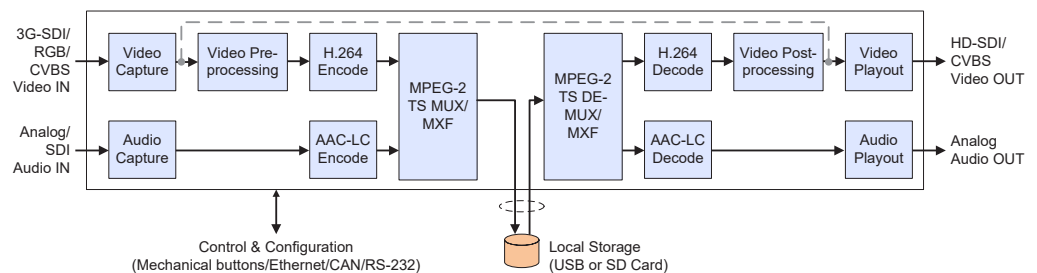
VRDV7000 is the latest member of Curtiss-Wright's family of small form factor, lightweight, ruggedized digital video recorders. The recorder combines and enhances many of the features offered in other members of the family, including support for both digital (HD-SDI) and analog (RGB, S-Video and composite) video.

VRDV7000 uses MPEG-4 Part 10 (Advanced Video Coding)/H.264 video compression technology to provide the highest quality video recording at a bit rate that allows many hours of recorded video to be stored on a Secure Digital (SD) card or a USB Flash drive. A standard non-proprietary file format is used so that recordings may be played back on standard media player software without any further processing required.

Flexible Video Interfaces

VRDV7000 supports the HD-SDI digital video standard, with two SD-SDI/HD-SDI/3G-SDI video inputs and two outputs. Each input supports video resolutions up to 1080p60. Recording is at a maximum frame rate of 30fps for each channel. Furthermore, VRDV7000 supports recording of metadata and audio present on the HD-SDI video inputs.

VRDV7000 also makes provisions for recording of analog video to support existing or legacy equipment. VGA or RGB video (sync on green or separate syncs) may be connected to the recorder up to a resolution of 1600x1200 or 1920x1080. The VRDV7000 also supports STANAG-3350A/B/C video formats. This is complemented by two channels of standard definition video (either single-wire CVBS or S-Video) supporting PAL and NTSC. These video inputs may be used in different combinations to a maximum of two recorded channels; for example, two HD channels (whether from HD-SDI or RGB), or one HD channel and one SD channel.



VRDV7000 internal architecture

Specifications

Physical

- Dimensions (W x D x H)
 - + 5.75 x 4.53 x 1.50" (146 x 115 x 38 mm)
- Mass
 - + 26.46 oz (750 g)
- Power: 15W at 28VDC
- Environmental: Qualified to DO160G

Video inputs – two from:

- 2 x 3G-SDI/HD-SDI
- 1 x S-Video
- 2 x Composite
- 1 x RGsB/RGBHV

Video outputs

- 2 x 3G-SDI/HD-SDI (loop-through/replay) or
- 1 x Composite/S-Video and 1 x 3G-SDI/HD-SDI (loop-through/replay)

Video formats

- SDI
 - + SMPTE 259M (SD-SDI), SMPTE 292M (HD-SDI) and SMPTE 424M (3G-SDI)
 - + 1920x1080i @ 59.94 Hz
 - + 1920x1080p @ 59.94, 50, 29.97, 25 Hz
 - + 1280x720p @ 59.94 Hz
 - + 720x486i @ 29.97 Hz
 - + 720x576i @ 25 Hz
- Composite
 - + PAL CVBS (ITU-R BT.1700)
 - + NTSC CVBS (RS-170A)
 - + PAL Y/C
 - + NTSC Y/C
- RGB
 - + VGA (640x480)
 - + XGA (1024x768)
 - + WXGA (1280x768)
 - + SxGA (1280x1024)
 - + UXGA (1600x1200)
 - + HD1080 (1920x1080)
 - + STANAG-3350A/B/C
 - + Other formats may be supported on request

Audio

- 2 x stereo channels, line level

Metadata

- KLV compliant

Features

- Support for SDI (SD/HD/3G) digital video to 1080p60
- Support for CVBS/S-Video composite video (PAL/NTSC)
- Support for RGsB and RGBHV analog video to 1600x1200 and 1920x1080
- Simultaneous recording of up to two channels of video
- Supports two channels of stereo audio recording
- Simultaneous playback while recording
- Uses standard widely-available SD memory cards and USB flash drives for removable storage
- Provides up to ten hours of recording on a single SD card or USB flash drive
- DZUS mounting for aircraft control panels
- Metadata support
- Supports overlay of text on playback of recorded video
- Can be controlled from the front panel, from Curtiss-Wright's family of rugged displays or via Ethernet

Input Options

The VRDV7000 supports two simultaneous inputs which may be a selected from the following:

- Input 1: 3G-SDI/HD-SDI or S-Video or Composite
- Input 2: 3G-SDI/HD-SDI or Composite or RGsB/RGBHV

Loop-through and Playback

VRDV7000 supports active loop-through on each of its HD-SDI and CVBS/S-Video inputs to corresponding outputs. While recording or in quiescent mode, the input signals are regenerated and looped out to facilitate connection to monitors without the need for external video switching. While playing back, the selected output presents recorded rather than live video.

VRDV7000 supports simultaneous recording and playback. While one or two channels are being recorded, a single channel may be selected for playback while recording continues, thus providing an on-platform debrief facility without the need for separate playback equipment.

Metadata and Audio

As well as capturing digital audio supplied on its HD-SDI interfaces, VRDV7000 can also capture analog audio input, time-synchronizing it to video recordings with lip-sync accuracy. Two stereo audio channels with line level inputs are provided. VRDV7000 can also accept metadata from its SDI interfaces, and record this metadata alongside video and audio.

Control

VRDV7000 provides a number of methods for control. The simplest is by means of its front panel buttons and indicators. The front panel control facility allows recording to be initiated, paused and stopped. Controls are also provided to enable on-platform replay of recordings, with the ability to skip to the next marked event or section of the recording and play at variable rate both forward and backward from a given point.

For more complex installations, VRDV7000 may be controlled remotely. VRDV7000 supports the CANbus-based serial control protocol that is common to all members of the Curtiss-Wright video management family, including displays and video management systems. This enables operators using Curtiss-Wright displays to use bezel buttons or on-screen soft buttons to control the operation of one or more video recorders without needing to use the recorder's front panel. For those customers wishing to control the VRDV7000 via its Ethernet interface, a network-based API is supported.

Streaming and Storage

The VRDV7000 has SD card and USB flash drive interfaces for storing video, in addition the VRDV7000 is also able to generate network streams using the RTP protocol, allowing connected equipment to receive and decode these streams (whether live or from previously recorded data) for viewing.

Ordering Options

TABLE 1 VRDV7000 ordering options	
PART NUMBER	DESCRIPTION
VRDV7000-000	System recorder (controllable from Curtiss-Wright displays)
VRDV7100-000	Stand-alone recorder (front panel or Ethernet control)
CBL-V7000-0001	Power breakout cable
CBL-V7000-0002	Audio, video, and communications breakout cable

Environmental

TABLE 2 Environmental	
PARAMETER	DO160G
Temperature, altitude	DO160G Section 4 Category B › Operating: -40 to 70°C › Non-operating: -55 to 85°C › 25,000 ft
Temperature variation	DO160G Section 5 Category C › 2°C/minute
Humidity	DO160G Section 6 Category A › RH 0 to 95%
Vibration	DO160G Section 8 Category U › Sine: 2 G peak, 10-2 kHz › Random: 0.02 g ² /Hz 10-2 kHz
Shock	DO160G Section 7 Category B › 6 g's peak, 11 ms wide
Crash safety	DO160G Section 7 Category B
Explosion proofing	DO160G Section 9 Category E Environment III
Waterproofing	DO160G Section 10 Category R
Fluid susceptibility	DO160G Section 11 Category F
Sand and dust	DO160G Section 12 Category S
Fungus resistance	DO160G Section 13 Category F
Salt spray	DO160G Section 14 Category S

TABLE 3 EMC and power input	
PARAMETER	DO160G
Magnetic effect	DO160G Section 15 Category A
Power input	DO160G Section 16 Category B
Voltage spike	DO160G Section 17 Category A
Audio frequency	DO160G Section 18 Category Z
Induced susceptibility	DO160G Section 19 Category B
Conducted/Emitted susceptibility	DO160G Section 20 Category S
Conducted/Radiated emission	DO160G Section 21 Category B
Electrostatic discharge	DO160G Section 25 Category A
Fire, flammability	DO160G Category C