

Operators Manual

VRDV-4010-xx-OPS

Issue B

OPERATORS MANUAL

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Ruggedised Dual Video Recorder (Flash)



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1 General Description

This manual applies to the Dual Deck VRDV-4010-xx digital Video Recorder system.

The xx designates the version of the unit

VRDV-4010-01 625 line PAL Version
VRDV-4010-51 525 line NTSC Version

This manual relates to an upgrade to the base operation man machine interface version. Upgrades to the man machine interface are indicated in a firmware upgrade identification plate at the rear of the unit and on the On Screen Display (OSD) of the associated monitor

This manual relates to the following man machine interface versions:

Control system Version 1.0 (Baseline configuration)

Recorder encoding Version 1.0.3

The recorder system features multiple video inputs which may be factory programmed.

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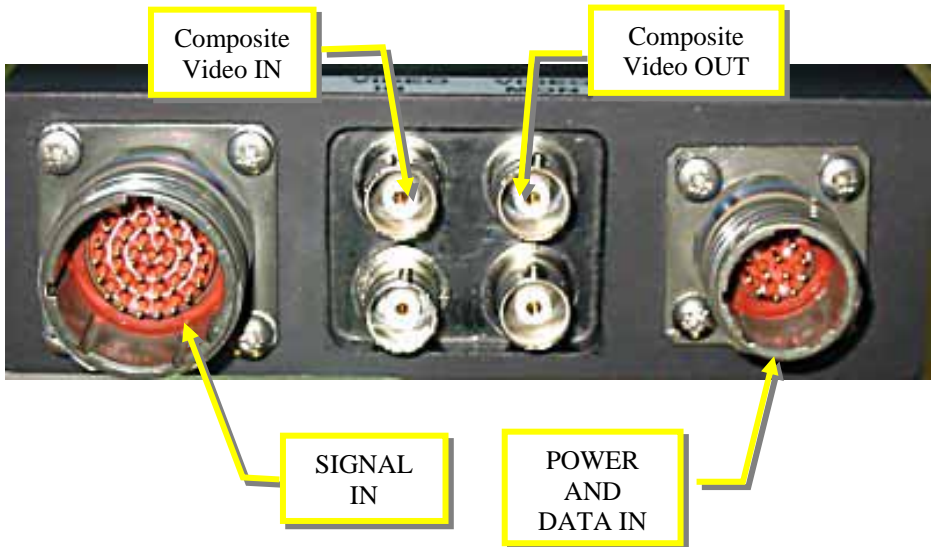
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2 Introduction

VRDV-4010-xx is a highly compact dual deck digital video recorder designed especially for airborne applications. The unit houses two independent Flash recorders with separate inputs and outputs and recording functions. The system utilises broadcast standard MPEG-2 video compression to record high quality real-time video and audio to a Compact Flash card (CF). Once a recording has been made, the flash card may be removed and played on a PC or laptop using a standard media player application such as "real-Player or Microsoft's Windows media player. They may also be archived to DVD using standard DVD burning software application.

The unit is housed in a small and rugged enclosure with Dzus rail mountings, ideal for airborne installations. The system is DC powered and has optional audio inputs at line level. As the VRDV-4010-xx is small and contains no moving parts the unit is capable of operation where normal VCRs are not. With VRDV-4010-xx, recording in harsh environments, such as continual shock and vibration over extended temperatures, is now possible.

3 Equipment connections



Ensure power is removed when connecting or disconnecting cables.

The Power connector carries Power to the unit together with configuration data this connector also carries a remote Record switch input.

The signal connector carries alternate video inputs to the recorder.

The unit outputs composite video through the BNC on the rear of the unit when the unit is in record mode. (This output is turned off when the unit is in standby).

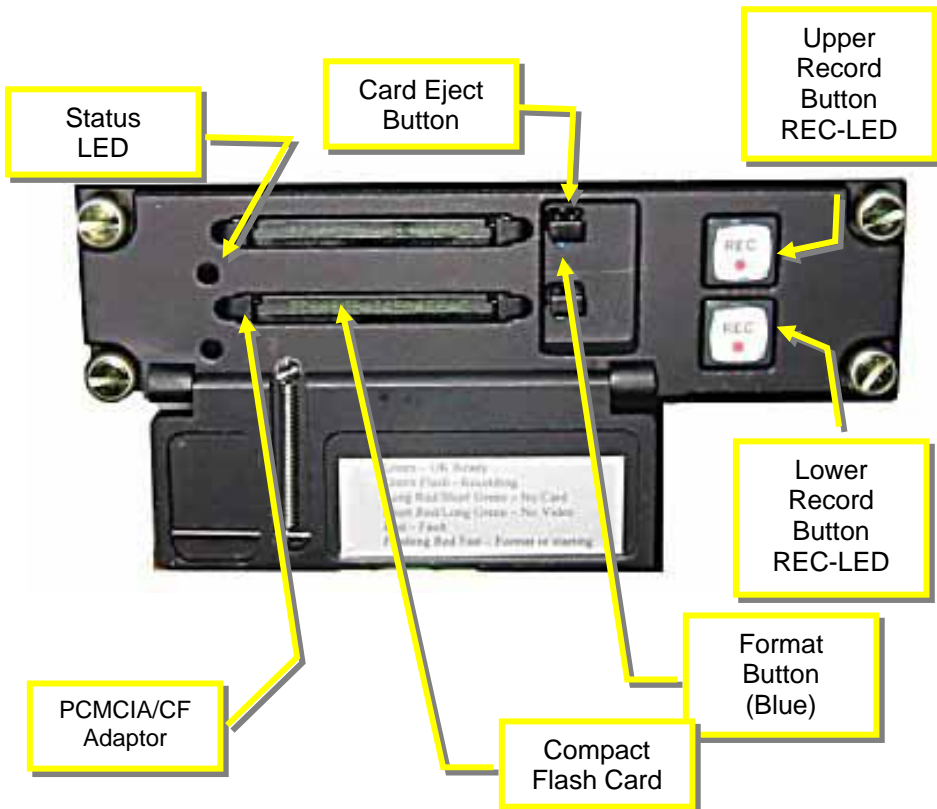
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4 Power on

The unit is powered as soon as power is applied to the power connector.

When power is applied to the recorder the pre-programmed input (Composite or Y/C) is selected.

The unit will go into standby (after several seconds) when there is no input on the video port or record mode is not selected. The video monitor output will go blank while in standby.



5 Recorder Operation

The following refers to a set of two record push buttons and indicators that are fitted to the front right of the unit. In addition to the record buttons the unit features a card eject button, a card format button (blue-operated with a ballpoint) and a bi colour status LED for each recorder.



To make a recording:

Check that video, power or the optional external record switch are connected. Check that the external record switch is set to the open position (not recording).

Apply DC power The status LED under the card cover shows the status of each recorder unit. If the LED shows static green the system is ready to record.

NB: if the status LED is not static green, refer to in Table 1, below (an abbreviated version of this table is reproduced on the inside of the card cover.)

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On power up, the status LED will light for approximately 6 seconds before the unit enters a low current stand-by mode. The unit will wait in this mode until the front panel record button is pressed or the external record switch is made.

Important: Before making a recording, ensure there is enough card space available. Card space may be checked by making a trial recording and viewing the units status LED (as described below). If there is insufficient space reformatting may be achieved by pressing VRDV-4010-xx's format switch (blue) with a pen or stylus for 4 seconds. (see photo)



To start recording close the external recording switch or press the Record button of the appropriate recorder. The green record LED inside the Record button will illuminate after 3 seconds. The status LED under the card cover will also flash fast red for approximately 1 second as it prepares to record. Once recording, the status LED will flash green for 3 seconds with a mark space ratio showing the disk capacity remaining. i.e.

With an empty disk the LED will flash for approx 3 seconds.

With 50% disk capacity the LED will flash 1.5 sec on, 1.5 off.

With 10% remaining LED will flash for .3 sec on, 2.7 sec off.

To stop recording, open the external record switch or press the Record buttons again. The LED inside the RECORD button will go out. The status LED under the card cover will also revert to showing static green.

The disk may now be removed and placed into a PC with a suitable PCMCIA disk slot or Compact Flash adaptor.

6 Status LED

The table below shows the function of VRDV-4010-xx's front panel status LEDs (Under the card cover).

In general terms:

A green LED indicates the unit is functioning OK.

A red LED a fault or reset condition.

Status Led Operation (under the card cover)	Description
Static green	VRDV-4010-xx is ready to record (video & disk OK)
Flashing long red / short green (with no gaps)	In stand-by (or unable to record) with disk not present, faulty or full. Video OK.
Flashing long green / short red (with no gaps)	In stand-by (or unable to record) with video not present but disk OK.
Flashing equally green / red (0.5s red / 0.5s green with no gaps)	Unit is under external control of the VRDV-4010-xx PC configuration software.
Static red (long green / short red with no gaps)	Unable to record as video & disk not present, faulty or full. Or system faulty.
Flashing green	Recording OK. The longer the green flash the greater the disk space remaining. Eg: With an empty disk the LED will flash for approx 3 seconds. With 50% disk capacity remaining the LED will flash 1.5 sec on, 1.5 off. With 10% remaining LED will flash for .3 sec on, 2.7 sec off.
Fast flashing green / red	Recording but video is not present (ie audio only is being recorded)
Flashing red (fast)	System reset / preparing to record or disk format.

Table 1: Status LED Operation

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7 Flash Memory Cards

VRDV-4010-xx is compatible with **most** fast PCMCIA or Compact Flash (CF) cards on the market. Real-Time Vision recommends SanDisK, Lexar or Pretec cards as they have given excellent results with the VRDV-4010-xx unit. VRDV-4010-xx can address up to 32 GB, so is compatible with flash memory cards for the foreseeable future.

Important: For the recording in high quality, it is vital the card has a sustained write speed of x16 or faster.

Compact flash cards are useable with an adapter. See photo below.

If the card is too slow, video will playback with missing frames. This problem can be alleviated by recording at a lower video quality. See section 8.3

Important: disks will only operate if formatted as FAT32. Check any new disk before using with VRDV-4010-xx. If supplied as FAT16, reformat to FAT32





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8 Specification

Disk Interface:

Disk interface	PCMCIA (CF compact flash via adapter)
Maximum address range	32 GB
Disk supply voltage	3.3 V
Disk format	IBM PC, FAT-32
File format	MPEG-2 (.MPG) Windows Media Player compatible

Video:

Video standards supported	PAL (625 lines), NTSC (525 lines) Composite & S-Video (Factory programmed)
Video compression	MPEG-2
Video input level	1 Vpp, 75 Ohm, $\pm 10\%$
Digital sampling (PAL)	576 lines by 720 pixels (lower Resolutions possible)
Power up to record time	< 2 seconds
Video monitor output	1 Vpp, 75 Ohm, $\pm 10\%$ (includes on-screen display)

Audio:

Number of channels	2
Input level	+3dBv
Input impedance	> 10 k Ohm
Audio monitor output	0 dBV (nominal)
Audio monitor output impedance	< 100 Ohm

Misc:

Record switch input	Ground to pin 8 to record (Do not apply any voltage to this input)
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9 Troubleshooting

VRDV-4010-xx will not operate with new flash memory card.

The most likely cause is the new disk has the incorrect file system. To check the disk's File System, insert the disk into a PC and display the disks properties. For more information refer to "Operation With A New Flash Disk"

VRDV-4010-xx indicates the drive is full even though I have deleted all the files on the drive.

As far as the VRDV-4010-xx is concerned, deleting files on the removable flash drive / card does not recover disk space. Only a reformat will recover disk space. So, once a recording has been made which you wish to keep, transfer the file to your PC's hard drive and then perform a reformat.

Video Playback is "jerky" or "hesitates".

This is normally caused by the transfer rate from the Flash card to the PC not being fast enough.

The solution is to copy the file to the computer's hard disk and then play the copied file. In some situations where the transfer rate is nearly high enough, it is sufficient to pause playback for a few seconds to allow Media Player to fill its buffers and then play. Often the file will play correctly from then on, and this saves the time-consuming transfer to the PC's hard disk.

VRDV-4010-xx files will not play using Windows Media Player and attempts to download a new video decoder file.

VRDV-4010-xx files have an MPEG-2 format, the same used by DVD disks. If the PC does not have a DVD drive / player installed, it may be necessary to purchase a plug-in Codec for Media Player or use a 3rd party MPEG-2 player.



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When using Windows Media Player the navigator bar fails to operate.

On some installations using InterVideo's MPEG-2 decoder, the navigator bar does not work correctly making navigation difficult. At the moment the only known fix is to install another MPEG Decoder such as PowerDVD from CyberLink.

Video Playback is "jerky" and the picture is incomplete or has extra lines.

Check that the VRDV-4010-xx is configured for video of the same standard (PAL or NTSC) as the video source. This can be checked by referring to the part number the VRDV-4010-xx is PAL the VRDV-4010-51 is NTSC

A general guide to troubleshooting the recorder system it is worth considering the system as separate elements, such as:

- External Equipment; PC settings, video format
- Power supply connections
- Flash Recording card and adaptor

Through step-by-step cross checking with instruction manuals and by a process of elimination to isolate the problem it is usually possible to clearly identify the problem area.

Removing power from the system may clear a system lockup or return the settings to their default condition.

Continued failure:

If unit after unit keeps failing consider and investigate whether you are short circuiting the equipment or doing something else seriously wrong. Generally after common sense issues have been resolved we recommend step-by-step substitution of known working parts to isolate the problem.

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10 Essential User Information

Please read this section before using the VRDV-4010-xx system.

Deleting Files.

As far as the VRDV-4010-xx is concerned, deleting files on the removable flash drive / card does not recover disk space. Only a reformat will recover disk space. So, once a recording has been made which you wish to keep, transfer the file to your PC's hard drive and then perform a reformat. Quick format is sufficient..

Using A New Removable Flash Disk / Card.

VRDV-4010-xx will only operate with disk / card formatted with FAT32 (File Allocation Table) File System. Before using a new disk check it's File System by inserting into a PC running Windows XP and displaying the disk properties by right clicking the disk icon in "My Computer". If supplied as FAT16 reformat to FAT32.

Before Making a Recording.

Before a recording session, if possible, clear the disk / card by a reformat so that maximum disk space is available. Format may be achieved by the VRDV-4010-xx unit's Format button (blue) or via a PC

NB: Ensure any useful recordings have been archived before reformat.



11 Handling Precautions

Handling of the Remote Control should be in compliance with Real-Time Vision's handling principles.

- 1) Be sure to turn off power supply when inserting or disconnecting the input connectors.
- 2) Wipe off water or fluid droplets immediately. Long contact with water or other fluids may cause discoloration or spots.
- 3) Since CMOS LSI is used in this module, take adequate static electricity precautions and ensure correct human earth bonding when handling.
- 4) Do not open nor modify the Assembly.
- 5) At the insertion or removal of the Remote Connectors, ensure that the sockets are free from debris and be sure not to damage the Interface pins

Manufactured and Published in the United Kingdom
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