

# Connections and General information

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## DVS 2000 Video Store MPEG Digital Video Store.

### General

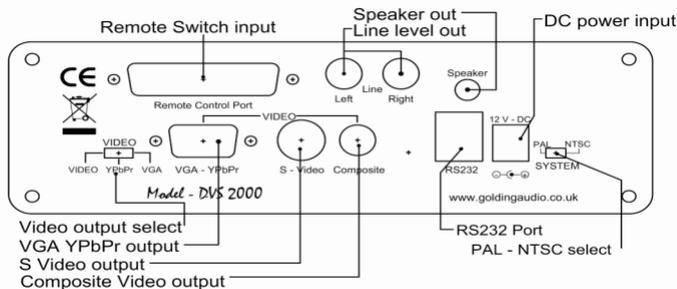
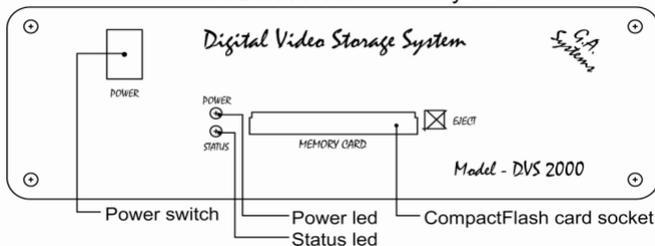
The DVS 2000 is an MPEG Video playback unit designed for use with TV's, Video Monitors, Plasma screens and projectors. It can play MPEG-1 and MPEG-2 video files as well as hi resolution stills.

The DVS 2000 can operate in various modes but is shipped to operate in one of the two modes detailed on page 2 & 3. If you require control options other than those covered in this datasheet please contact us to discuss your requirements.

- MPEG-1 video
- MPEG-2 video
- JPEG stills
- PAL & NTSC standard
- Composite & S-Video signal output
- VGA output
- Component YPbPr output
- Stereo audio output
- 16 Trigger inputs
- RS232 control

### General Layout

DVS 2000 case front layout



### Front Panel

#### Power Switch

Main power switch.

#### Power LED

Indicates when power is on.

#### Status LED

Flashes when unit is playing files, or system is busy.

#### Compact Flash socket

Compact Flash memory socket with eject button.  
Supports CF type1 and type 2.

### Rear Panel

#### Remote Control port (25 way D type socket)

Pin 1 = Trip 1 (play)	Pin 2 = Trip 2 (stop)	Pin 3 = Trip 3 (pause)
Pin 4 = Trip 4 (repeat)	Pin 5 = Trip 5 (next)	Pin 6 = Trip 6 (vol down)
Pin 7 = Trip 7 (vol up)	Pin 8 = Trip 8 (mute)	Pin 9 = Trip 9
Pin 10 = Trip 10	Pin 11 = Trip 11	Pin 12 = Trip12
Pin 13 = Trip 13	Pin 14 = Trip14	Pin 15 = Trip 15
Pin 16 = Trip 16	Pin 17 = NC	Pin 18 = NC
Pin 19 = NC	Pin 20 = NC	Pin 21 = NC
Pin 22 = 5v out *	Pin 23 = Ground	Pin 24 = Ground
Pin 25 = 12v out*		NC = No Connection

The switch inputs can be used to either control functions on the DVS2000 such as Play, Stop, Pause, Next track, Volume up and down etc. Or as direct trip inputs for up to 16 .mpg video clips or .jpg stills.  
See operation modes covered on page 2 & 3.

Items in brackets are Basic Play Mode functions.

\*For external sensors, do not draw more than 100mA from these outputs.

#### VGA / YPbPr output 15 way Hi density D-Type socket

Pin 1 = Red(Pr)	Pin 2 = Green(Y)	Pin 3 = Blue (Pb)
Pin 4 = Gnd	Pin 5 = Gnd	Pin 6 = Gnd
Pin 7 = Gnd	Pin 8 = Gnd	Pin 9 = NC
Pin10 = GND	Pin11 = NC	Pin12 = NC
Pin13 = Hsync	Pin14 = Vsync	Pin15 = NC

#### S - Video output ( 4 way mini din)

Pin 1 = Ground	Pin 2 = Ground
Pin 3 = Luma Out	Pin 4 = Chroma Out

#### Composite Video output ( phono socket Yellow)

Center pin = Composite video output, 0.7Vp-p  
Outer sleeve = Ground

#### Audio Line level left and right ( 2 x phono sockets )

Center pin = Audio channel output  
Outer sleeve = Ground  
Left out = White socket  
Right out = Red socket

#### Speaker output ( 3.5mm Stereo Jack socket )

Output 1watt into 4R  
Tip = Left speaker + Mid = Right speaker + Base = Common

#### Power Jack input ( 5.5mm plug )

Outer = 0v (5.5mm dia)  
Inner Pin = +12v (2.5mm dia)  
12V DC, 1.2 amp minimum regulated supply.

#### RS232 (RJ11)

Pin 1 = NC	Pin 2 =NC	Pin 3 = TX data	Pin 4 = RX Data
Pin 5 = Gnd	Pin 6 = NC	Pin 7 = NC	Pin 8 = NC

### Output selection and resolution setup.

#### Svideo or Composite

Set 'Video' switch to Video  
Set 'System' switch to PAL or NTSC as appropriate for material

#### Component (YPbPr)

Set 'Video' switch to YPbPr  
Set 'System' switch to **PAL for 640 x 480**  
**NTSC for 1280 x 720**

#### VGA

Set 'Video' switch to VGA  
Set 'System' switch to **PAL for 640 x 480**  
**NTSC for 1280 x 720**

**Note: Set these switches with power off.**

# Operation Modes

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MPEG Digital Video Store.

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## Compact Flash card requirements.

### Compact Flash cards supported

Type 1 and 2. 40 X speed or greater formatted as **FAT32** only.

### File types supported.

MPEG 1 video files .mpg  
MPEG 2 video files .mpg  
JPEG Images .jpg

## Operation Modes.

The DVS2000 unit can operate in various modes but is shipped to operate in one of the two modes detailed below. If you require control options or specific interactivity other than those listed below, please contact us to discuss your requirements.

### Basic Play mode.

Basic play mode requires only .mpg video files or .jpg files to be present on the Compact Flash card.

On power up the DVS 2000 will replay files in alphabetical sequence continuously until power is removed. If only one file is present on the compact flash card, that file will loop continuously.

#### Example:

APPLE.MPG	<i>Plays first</i>
CAR.MPG	<i>Plays second</i>
PLANE.MPG	<i>Plays next</i>
SPACE.MPG	<i>Plays last</i>
	<i>Repeat list</i>

### Still Images.

The DVS2000 will replay still images for a preset time in alphabetical sequence in Basic Play Mode.

#### Example:

LOGO5.JPG	<i>(displayed for 5 seconds)</i>
APIC9.JPG	<i>(displayed for 9 seconds)</i>

The number before the dot in the above example denotes the length of time the still will be displayed before the next still or video is displayed. If no number is present before the dot in the filename, the still will be displayed for 5 seconds.

The files must be placed on the compact flash card in a directory named 'MEDIA'

### Trip Inputs

Trip inputs 1 to 8 detailed on page 1 are configured to operate as follows in **Basic Play mode.**

#### **PLAY (Trip 1)**

Resumes playback from the start of the last selected video after STOP has been pressed.  
Resumes playback of any PAUSED track from the point that it had been set to PAUSE.

#### **STOP (Trip 2)**

When STOP is pressed the video stops playing and a black screen is displayed.

#### **PAUSE (Trip 3)**

When PAUSE is pressed the video image instantly freezes or a still image will remain on screen.  
Press PAUSE again or PLAY to resume normal playback from the position where it was paused.

#### **REPEAT (Trip 4)**

When REPEAT is pressed the current track or still image will loop continuously.

To disable the repeat mode, press REPEAT or STOP.

If repeat mode is enabled and NEXT TRACK is pressed, the next track will also loop.

#### **NEXT TRACK (Trip 5)**

The NEXT TRACK function can be activated only when a track is already playing. When NEXT TRACK is pressed, the current video stops playing and jumps directly to the start of the next track in the sequence.

#### **VOLUME DECREASE (Trip 6)**

Decreases audio output.

#### **VOLUME INCREASE (Trip 7)**

Increases audio output.

#### **MUTE (Trip 8)**

When MUTE is pressed, all audio output is muted.

Press MUTE again to resume normal sound of all tracks.

#### *Note 1:*

*The selected function will be displayed on screen briefly when a trip is activated.*

*Contact Golding Audio if you wish to disable the on screen messages in 'basic play mode'*

#### *Note 2:*

*Files must be named in 8.3 format which means the first part of the file name must be no more than 8 characters followed by a dot then the three digit extension of mpg for video or .jpg for stills.*

# Operation Modes

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### Direct Trip Mode

Direct Trip Mode enables up to 16 video files to be replayed directly via a momentary contact closure on trip inputs 1 to 16.

#### Trip inputs

Accessing trip 1 replays TRACK1.MPG.  
Accessing trip 2 replays TRACK2.MPG etc.  
After playback of a particular track has finished the, DVS2000 will display the 'STANDBY.MPG' file until a new valid trip input is applied.

#### One shot operation

Trip inputs have one shot operation i.e. if any trip input is held on, the relevant track will be played once only. The trip input must be cleared and re-applied for the track to play again.

#### Project files

The supplied CD contains different project types including the following which provide different methods of triggering the DVS2000. These and other project files can be downloaded from our website [www.goldingaudio.co.uk](http://www.goldingaudio.co.uk)

The "DV2 Any interrupts" project allows any MPEG file to be interrupted by any other MPEG file including the one that is currently playing. For example, if TRACK1.MPG is playing and trip1 is activated, TRACK1.MPG will restart from the beginning.

The "DV2 Any other interrupts" project will allow any other file to interrupt the currently playing file but will not allow itself to re-start if re-triggered during playback.

With the "DV2 Uninterruptible" project, an MPEG file will be allowed to finish before accepting a new trigger from the trip inputs.

The "DV2 loop8" project provides eight looping tracks and 8 triggered tracks. Tracks 1 to 8 will loop when they are triggered. Tracks 9 to 16 will play once when triggered and then return to standby.

The "DV2 loop16" project provides sixteen looping tracks. Tracks 1 to 16 will loop continuously when they are triggered.

The "DV2 Stills16" project allows display of 16 hi-resolution (1280 x 960) still images by direct access using the trigger inputs to select each image.

#### Files required when using Direct Trip Mode

The following files must ALL be present on the Compact Flash card when using Direct Trip Mode.

Sixteen MPEG video files named TRACK1.mpg, TRACK2.mpg up to TRACK16.mpg, STANDBY.mpg, ??????.PLL, DEFAULT.PRJ and BARCODE.INI  
?????.PLL is the appropriate file for the triggering method required.

#### Example of contents of compact flash card when using video files:

TRACK1.mpg	TRACK9.mpg
TRACK2.mpg	TRACK10.mpg
TRACK3.mpg	TRACK11.mpg
TRACK4.mpg	TRACK12.mpg
TRACK5.mpg	TRACK13.mpg
TRACK6.mpg	TRACK14.mpg
TRACK7.mpg	TRACK15.mpg
TRACK8.mpg	TRACK16.mpg
STANDBY.mpg	
NOINT.PLL	
DEFAULT.PRJ	
BARCODE.INI	

#### Note:

The above files MUST be placed in a folder (directory) named MEDIA at the root of the compact flash card.

#### Example of contents of compact flash card when using stills:

1STILL.JPG	9STILL.JPG
2STILL.JPG	10STILL.JPG
3STILL.JPG	11STILL.JPG
4STILL.JPG	12STILL.JPG
5STILL.JPG	13STILL.JPG
6STILL.JPG	14STILL.JPG
7STILL.JPG	15STILL.JPG
8STILL.JPG	16STILL.JPG
STANDBY.JPG	
LPSTILLS.PLL	
DEFAULT.PRJ	
BARCODE.INI	

#### Note:

The above files MUST be placed in a folder (directory) named MEDIA at the root of the compact flash card.

#### Supplied files

TRACK1.mpg contains a test track.  
TRACK2.mpg to TRACK16.mpg files supplied with the DVS2000 contain a default black screen.  
Once generated, your MPEG video files will replace any or all of these files depending if that particular trip input is required. Any trip inputs not required must have the supplied default black screen file left on the Compact Flash card for the system to operate correctly.

1STILL.JPG TO 16STILL.JPG are black images. Replace these with your images but make sure the same names are used otherwise the project will not function.

#### STANDBY.mpg file

The supplied STANDBY.mpg file contains a black screen image. This image is displayed while none of the video files stored on the DVS2000 are being played. This file can be replaced by another video file with the same name containing text, a logo, a still image or a video track. This new file will then be displayed whenever the DVS2000 is not playing a tripped file. A video track would continuously loop if used as the STANDBY.mpg file.

#### Transferring files on to the Compact Flash card

Files can be transferred to the compact flash card by placing the card in a standard flash card reader connected to a PC. The files can then be copied using normal methods. Please contact Golding Audio Ltd to obtain a card reader.

#### EXAMPLE: Adding files to the DVS2000 (Direct trip mode)

If for instance you require the DVS2000 to replay four video clips accessed by trip 1 to trip 4 without being interruptible you would do the following:

1. Create a directory named "MEDIA" on a blank compact flash card.
2. Copy the entire contents of the directory named "DV2 uninterruptible/media/" from the CD into the "MEDIA" directory of the compact flash card.
3. Create or view your .mpg video files on your PC.
4. Rename your MPEG files to TRACK1.mpg to TRACK4.mpg.
5. Replace the default files TRACK1.mpg to TRACK4.mpg on the DVS2000's Compact Flash card with your newly generated files.

#### Note 1

The DEFAULT.PRJ file must be taken from the same subdirectory as the .PLL file on the CD.

#### Note 2

The video MPEG files must be named exactly as described above for the project files to work correctly.

#### Note 3

Ensure that the compact flash card has a directory named "MEDIA" and all of the files are copied in to it.

# Notes on MPEG

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### File formats

File formats that can be played on a DVS2000 are MPEG-1 and MPEG-2 video. These are described in the following text.

### MPEG 1

Compressed video format with audio. Output quality is equivalent to what you would get from a VCD-player. MPEG-1 images have a filename that ends in .MPG (e.g. "track1.mpg")  
MPEG-1 formats differ depending on whether it is NTSC or PAL format.

#### PAL MPEG-1 FORMAT:

Video:
 

- Size: 352x288
- PAL Pixel Aspect Ratio
- 2 Fields Interlaced 25fps
- Field order must match input file if transcoding from Quicktime or AVI

Audio:
 

- 44.1 kHz Stereo
- Mpeg must be encoded with an audio stream, even if audio is not used.

Data Rates:
 

- Video: 1,120,000 bps
- Audio: 224 kbps
- Multiplex: 170 kbps

#### NTSC MPEG-1 FORMAT:

Video:
 

- SIZE: 352x240
- NTSC Pixel Aspect Ratio
- 2 fields Interlaced 25fps
- Field order must match input file if transcoding from Quicktime or AVI

Audio:
 

- 44 kHz Stereo
- Mpeg must be encoded with an audio stream, even if audio is not used.

Data Rates:
 

- Video: 1,119,200 bps
- Audio: 224 kbps
- Multiplex: 170 kbps

### Notes on MPEG 1:

- Maximum data rate of video & audio content is 1.15Mb/s.
- Increasing screen size of MPEG 1 beyond these specifications will not improve picture quality and in most cases will make playback worse.
- Increasing data rates will also not create significantly better MPEG-1 as the format can only hold a limited amount of information.
- MPEGs must be tested on the DVS2000. Testing on a different machine such as a PC is no guarantee of compatibility or of quality.
- 16x9 Aspect ratios can be used however due to lack of industry standardisation of hardware there is no guarantee that the DVS2000 or any other hardware will auto-detect this flagging. Content must therefore be previewed on the DVS2000.

### MPEG-2

Compressed video format with audio. Output quality is similar to what you would get from a DVD-player. File size is therefore considerably greater than MPEG-1 file size. MPEG-2 files have a filename that ends in .MPG (e.g. "track1.mpg")  
MPEG-2 format is different depending on whether it is NTSC or PAL format.

#### PAL MPEG-2 FORMAT:

Video:
 

- Video Size: 720x576
- PAL Pixel Aspect Ratio
- 2 Fields Interlaced 25fps
- Field order must match input file if transcoding from Quicktime or AVI

Audio:
 

- 48 kHz Stereo
- Mpeg must be encoded with an audio stream, even if audio is silent.

Data Rates:
 

- Video: 2-6 Mbps
- Audio: 224 kbit/s

#### NTSC MPEG2 FORMAT:

Video:
 

- Video Size: 720x480
- NTSC Pixel Aspect Ratio
- 2 fields Interlaced 29.97fps
- Field order must match input file if transcoding from Quicktime or AVI

Audio:
 

- 48 kHz Stereo
- Mpeg must be encoded with an audio stream, even if audio is silent.

Data Rates:
 

- Video: 3Mbps/s to 6Mbps/s (\*)
- Audio: 224 kbit/s

(\*) the format supports higher bit rates but these will not work reliably on the DVS2000.

#### Data rates:

- We recommended a maximum data rate of 6Mbps.
- Variable bit rate encoding can be used, but a fixed rate is recommended for general use.

### File Creation – Encoding Chart

When creating video from an animation program on your computer, the table below indicates what size to create your material, what size to export at and what size to actually encode at.

Format	Create at	Export Video	Encode At
MPEG 1 PAL	704 X 576	352 X 288	352 X 288
MPEG 1 NTSC	704 X 540	352 X 240	352 X 240
MPEG 2 PAL	768 X 576	720 X 576 PAL	720 X 576 PAL
MPEG 2 PAL WIDE	1024 X 576	720 X 576 PAL	720 X 576 PAL
MPEG 2 NTSC	720 X 540	720 X 480 NTSC	720 X 480 NTSC
MPEG 2 NTSC WIDE	864 X 480	720 X 480 NTSC	720 X 480 NTSC

### Widescreen Video (16:9) format

The DVS2000 will replay 16:9 material correctly if the mpeg file has been encoded correctly. Refer to this table for correct encoding parameters depending on the output display aspect ratio.

Video	Display	Encode	View
4:3	4:3	4:3	Correct
4:3	4:3	16:9	Horizontally squeezed
4:3	16:9	4:3	Horizontally stretched
4:3	16:9	16:9	Correct (Pillarbox)*
16:9	4:3	4:3	Correct (Letterbox)*
16:9	4:3	16:9	Horizontally squashed
16:9	16:9	4:3	Vertically squashed
16:9	16:9	16:9	Correct

\*Pillarbox means black bars left and right of picture  
Letterbox means black bars top and bottom of picture

### Still Images

The DVS2000 will produce high definition still images. To display the still images correctly, ensure they are sized according to this table.

Output	Pixels
Video	720 x 576
VGA	1280 x 960
YPbPr	1280 x 720

# Specification

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### RS232 Control

The DVS2000 can be controlled by a PC or show control system by utilising the RS232 port on the back of the unit.

Supplied with the DVS2000 is an adapter lead that plugs into the RJ11 socket and provides a 9 way Male D type socket to connect to.

The RS232 does not function in 'Basic Play Mode'

#### RS232 protocol

Baud rate 9600, 8 bit, no parity, 1 stop bit (9600 8N1)

The commands are as follows.

Command	Function	Response
P00 cr	Play "STANDBY.MPG"	STANDBY cr
P01 cr	Play "TRACK1.MPG"	TRACK1 cr
P02 cr	Play "TRACK2.MPG"	TRACK2 cr
P03 cr	Play "TRACK3.MPG"	TRACK3 cr
" " "		
P16 cr	Play "TRACK16.MPG"	TRACK16 cr

'Command' is the ascii string to send to the DVS2000

'Function' is what happens

'Response' is the ascii string returned by the DVS2000

'cr' is carriage return.

If playing stills images, '1STILL', '2STILL' will be the response.

#### Note1:

If a track is looping, such as "STANDBY.MPG", the response string will be sent every time the track re-starts.

#### Note2:

RS232 commands will always interrupt any playing file even if an uninteruptible file is playing.

The currently playing file will restart if the same command is sent.

### Troubleshooting.

"ERROR 52 FILE NOT FOUND"

This will occur when using 'Direct access mode' and one or more of the tracks are either missing or named incorrectly.

Trigger inputs not working as expected.

Check the following files are present in the 'MEDIA' directory.

Check they are taken from the correct project directory on the supplied CD rom.

'DEFAULT.PRJ'

'?????????.PLL'

'BARCODE.INI'

### Specification

<b>Playable Formats</b>	MPEG 1 (1.15Mb/s) MPEG 2 Variable Bit Rate 6Mb/s max MPEG2 Constant Bit Rate 6Mb/s max JPEG 1280 x 960
<b>Memory medium</b>	Compact Flash card Type 1 and 2 Speed 40X minimum FAT32 format
<b>Video Output</b>	Composite, S-Video, YPbPr and VGA
<b>Video Format</b>	PAL or NTSC
<b>Output Resolution</b>	<b>Composite, S-Video</b> Video MPEG1 352 x 288 pixels (PAL) 352 x 240 pixels (NTSC) Video MPEG2, JPEG 720 x 576 pixels (PAL) 720 x 480 pixels (NTSC)
	<b>VGA &amp; YPbPr</b> 'NTSC' position Video MPEG2 1280 x 720 (upscaled) JPEG 1280 x 720  'PAL' position Video MPEG2 640 x 480 JPEG 640 x 480
<b>Audio Outputs</b>	Phono sockets 3.2 V p-p max 5K ohm Stereo 3.5mm jack 1.5 watt per channel into 4 Ohms
<b>Signal to Noise</b>	96dB
<b>Power input</b>	12V DC regulated, 500mA typical
<b>Power consumption</b>	6 W
<b>Trigger input</b>	Contact closure 25 way D-type socket Internal 10k pull-up to 5V. Response time approx 450 to 600mS.
<b>RS232</b>	RJ11, 9600 8N1
<b>Size</b>	W 160mm x H 54mm x D 93mm