

Panasonic's AG-DVX100 Set-up Menus



Panasonic Broadcast & Television Systems Company

The AG-DVX100 Setup Menus

**A guide for getting the most from your
60i, 30p, 24p Camcorder**

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Introduction

The AG-DVX100 has captured the imagination of creative filmmakers, broadcasters, and video professionals around the world, with its 24p (progressive) capabilities.

Panasonic has won a total of 15 Emmys, 12 of them for advancements in the area of digital video technology. Panasonic's engineers are continuously pushing the limits of product design and the AG-DVX100 is a prime example of their innovation and imagination.

What is 24p?

Lets start with film, which is shot at 24 frames per second. Inherent in this capture rate, is a motion blur that is used by the artistic filmmaker to draw the attention of the viewer to his subject. In the movie theater, film is projected at 48 frames per second due to a shutter in the projector. The AG-DVX100 uses an electronic shutter which the user can set to different speeds.

"When you watch 24p, you know you are being told a story". It's a different look. It's the difference between the look of a soap opera or the six o'clock news and the look of a feature film.

There is a three part answer to what must be done to create the cinematic look in video

What is Cine Gamma?

Fact: The contrast ratio of film is greater than contrast ratio of video. Can the range of bright to dark areas be correctly exposed in a scene? Video has been optimized for high ambient lighting during image capture (studio) and viewing (living room). Therefore image brightness has a been much more important than contrast ratio. Film, when used in cinematic presentations, has a very high wide dynamic range providing great detail in both the brightest and darkest areas of the image. The Cine-like Gamma feature of the AG-DVX100 emulates this wider exposure range characteristic and with the recommended 1/2 f-stop under exposure should help to maintain increased highlight handling abilities.

What is Progressive?

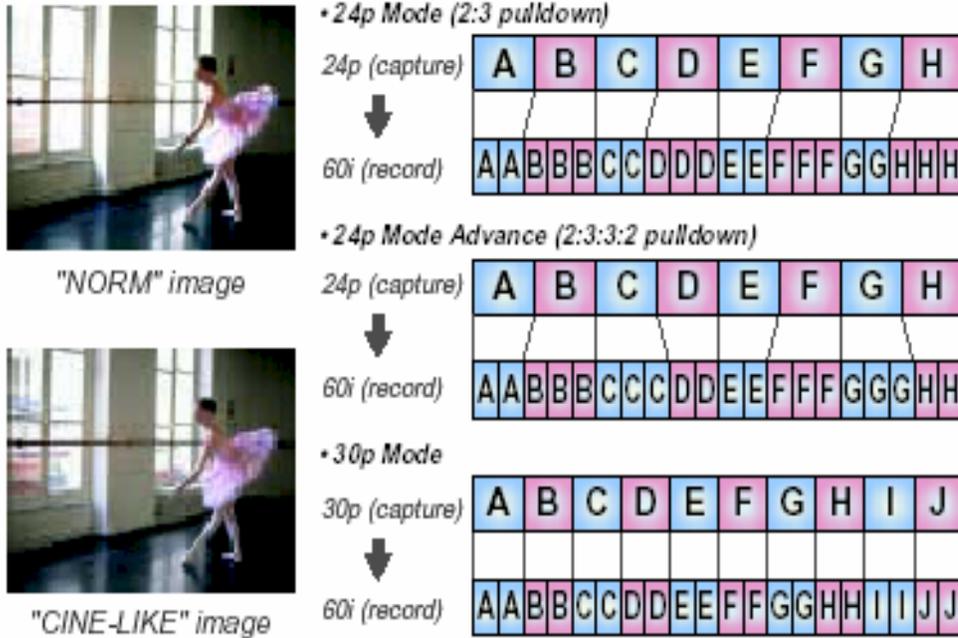
Rather than capturing one half of a picture (the odd lines) and 1/60th of a second later capturing the second half of the picture (the even lines), wouldn't it be better to capture an entire frame of video with no temporal (time) difference? Progressive recording does accomplishes this! What progressive recording does is creates a picture with double the scan lines of a conventional interlaced picture, to create a noticeably sharper image.

What is 24p Playback?

If you made a recording in 24p or 24p advanced and now you want to play it back on a standard NTSC video monitor. The AG-DVX100 has a built in "telecine" or conversion circuit so that you can playback your 24p recordings on a NTSC Monitor. There are two different schemes used in the AG-DVX100, **2:3 and 2:3:3:2**. In 24p playback mode we use a 2:3 pulldown scheme and in 24p Advanced mode we use 2:3:3:2. This is actually a method of mapping the 24p into the 30 frames per second NTSC standard video. See the next page for additional details.

What is 24p Playback? Con't

Here is a graphical view of what is taking place when we playback our 24p recorded video.



Main Features

New CCD Imaging System

Exceptional picture quality, due to a new 1/3 inch, three CCD progressive imaging system that has 410,000 pixels per chip. This new system was developed specifically for broadcast and professional applications. These new CCD's are able to record light as low as three lux, enabling the shooter to record nighttime events in good detail. The picture quality is outstanding, with a high signal-to-noise ratio and low smear in bright areas.

Newly developed Zoom Lens

The DVX100 uses a Leica Dicomar™ lens which incorporates the optical technology of Leica Camera AG. This lens system employs 15 lens elements in 11 groups, including two aspherical lenses, to render a sharper image. A Leica multicoating process is applied to the lenses to reduce flare and ghosts. The 10X zoom has been designed to increase the lens' wide-angle (f=4.5 to 45mm) capabilities. The zoom lens utilizes a cam-driven manual zoom ring, with quick, nimble manual zooming as well as a multi-speed servo driven zoom rocker switch, plus a three-speed handle zoom.

Optical Image Stabilizer Compensates for Hand Held Production

Incorporated in the DVX100 is an OIS (Optical Image Stabilizer) that compensates for slight hand shaking that may occur when shooting handheld.

A gyrosensor detects handshake and sends signals to a linear motor, which adjusts the lens to compensate. This process takes place prior to the CCD image capture rather than in the downstream electronic processing, this minimizes any effect of handshake.

World's First DV 24p Mode and Cine-Like Gamma

The DVX100 is the world's first handheld camera designed with video & cinema looks. You have a choice of three shooting modes, which are selectable, 24p (24 fps progressive) for images with a movie-like look and motion, 30p (30 fps progressive) or standard 60i (60 fps interlaced). Images that are captured in 24p mode, are converted to either 2:3 (24p Mode) or (24p Advanced) with a 2:3:3:2 pulldown sequence. And recorded onto the video tape in the standard 60i Video format, which allows for playback on an ordinary DV VCR and TV monitor and edited on a DV system.

The Gamma settings menu curve allows you to select from four gamma curves:

Gamma	Image
CINE-LIKE	Film-like images
LOW	Images with strong black contrast
NORM	Standard video gamma
HIGH	Bright images with enhanced gradation in dark areas and soft contrast.

Scene File Dial for Quick, Easy Camera Setup

The scene file dial which is located on the back of the camcorder sets up a variety of shooting conditions, and later you can instantly retrieve the settings for future use. Six suggested preset files are provided (F1 to F6) by the factory. **You can freely change any of the six file names and their settings.**

Scene File	Name	Function
F1	-----	Standard settings
F2	FLUO	Indoor shooting under fluorescent lights
F3	SPARK	Events increase color and Detail
F4	B-STR	Enhanced gradation in dark areas of sunset shots
F5	24P	24p mode + Cine-Like gamma
F6	ADVANC	Advanced 24p mode + Cine-Like gamma

User1 / User2 Buttons for Customized Operation

The DVX100 provides two user buttons, each of which can be assigned any one of the nine functions described below. These assigned functions can then be accessed at the touch of a button.

Items	Assignable Functions
COLOR BAR	Display / hide the SMPTE color bars (Not in progressive mode)
SPOTLIGHT	Turns auto iris spotlight on / off
BACKLIGHT	Turns auto iris backlight compensation on/off
BLACKFADE	Fade out to black / with audio
WHITEFADE	Fade out to white / with audio
MODECHECK	Display camera settings in viewfinder
ATW	Turns auto tracking white balance function on/off
ATWLOCK	Lock/unlock white balance in ATW operation
GAIN 18 dB	Switches the gain to +18dB (Not in progressive mode)

Built-In SMPTE Time Code Generator and Reader

The DVX100 records SMPTE- compliant VITC onto the Sub-code area of the videotape. Select from DF / NDF and Free Run/Rec Run modes, and use a preset or regen. User bits (UB) are also provided, letting you record your choice of date, time, TC value, frame rate or user data. In 24p the time code is in NDF mode only.

IEEE 1394 terminal for non-linear production with Synchro Lock Function

Equipped with an IEEE 1394-compliant 4-pin DV terminal that makes it easy to upload data to a PC and dub onto a DV recorder. This terminal also features a new synchro lock function that allows the AG-DVX100 to remotely start and stop an external DV device connected to it via a DV cable, such as the AG-DV1DC portable mini-DV recorder.

XLR Audio Input with +48 Volts Phantom Power Supply

In addition to a built-in stereo microphone, the DVX100 is equipped with two XLR audio input connectors with switchable +48 volts phantom power. Both input 1 and Input 2 can be switched between line and mic with hard switches at the front of the camcorder. Auto gain level can be turned on and off, and the input mic level (-50dB / -60 dB) can be selected from the menu to ensure proper matching to an external MIC output or the environment.

The DVX100 has more special features that will make the Broadcaster or professional shooter's job much easier.

In order to properly control this camera for generating the most powerful video images, more operators should understand camera process terminology.

Experienced camera operators know there are always tradeoffs in every shooting situation. You'll trade shutter speeds for depth of focus, resolution for sensitivity, detail for noise, and the list goes on. The DVX100's extensive menu system will provide the camera operator with additional tools for more creative solutions for image capture.

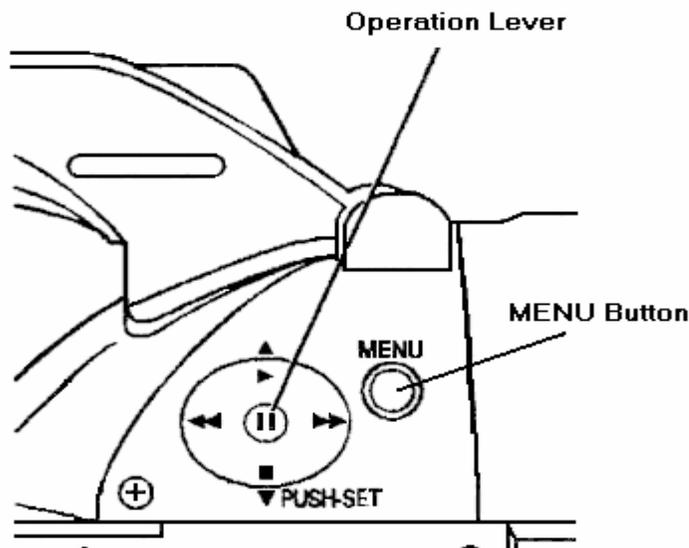
The following menu descriptions show diagrams of these menus and explain the effects of each setup function.

How to use the Setup and operator Menus

The DVX100 offers the operator an extremely flexible setup capability.

There are basically two groups of menus, one for Camera functions and the other for VCR Functions. These two groups give you the opportunity to choose from 73 items. Some of the menu items are used jointly in the camera and the VCR.

In order to access the menus, first make sure you are not in the record mode. Choose the camera or VCR mode, by pressing the Camera/VCR button located on the lower back section of the camcorder. Now press the menu button located near the viewfinder marked MENU.



Once you pressed the MENU button, the menu will appear in the EVF and also on the LCD screen depending on where the DISPLAY menu is set. (EVF ON / OFF)

CAMERA MENU	VCR FUNCTION
1. SCENE FILE	1. PLAYBACK
2. CAMERA SETUP	2. RECORDING SETUP
3. SW MODE	3. AV IN/OUT SETUP
4. AUTO SW	4. DISPLAY SETUP
5. RECORDING SETUP	5. OTHER FUNCTIONS
6. DISPLAY SETUP	
7. OTHER FUNCTION	
PUSH MENU TO EXIT	PUSH MENU TO EXIT

The operator may now change the menu by using the Operation Lever in the up direction ▲ or down direction ▼. This will highlight each selection, one at a time. Highlight any function that you would like to change. Now press the Operation lever like a button, and this will display the items in that menu selection. To chose the item in this menu, once again press the Operation Lever in the up direction ▲ or down direction ▼. To pick your selection press the Operation Lever and this will move the on screen arrow to the selection you want. Now that you have made your selection Press the MENU button two times to exit the menu and return to a normal screen. There is no set button; merely choosing the item then pressing the menu button twice will effect the change.

Note: You can not operate the menu system while you are recording.

AG-DVX100 Menu Index

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Item	Menu	Page
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4 . Camera Menus Screen

4.1 Scene File Screen

The Scene File Menu allows the user to quickly change the setup for up to six scenes with a turn of the scene dial.

The scenes are tailored to various shooting conditions and are stored in the six menu memories and are selected by a six position rotary dial (cine switch), located at the back of the camcorder. You may also set up your own scene files instead of using the factory defaults.

Factory Defaults for	Defaults for Scene File Dial					
	F1	F2	F3	F4	F5	F6
Items	—	FLOU.	SPARK	B-STR	24P	ADVANC
DETAIL LEVEL	0	0	+ 5	0	- 4	0
CHROMA LEVEL	0	+ 2	+ 3	+ 3	0	0
CHROMA PHASE	0	0	0	0	0	0
COLOR TEMP	0	0	0	0	0	0
MASTER PED	0	0	-3	- 1	-5	-5
A. IRIS LEV	0	0	0	- 1	- 3	- 3
GAMMA	NORM	NORM	LOW	HIGH	CINE-LIKE	CINE-LIKE
SKIN TONE DTL	OFF	OFF	OFF	OFF	OFF	OFF
MATRIX	NORM	NORM	NORM	NORM	CINE-LIKE	CINE-LIKE
V DETAIL FREQ	THICK	THICK	THICK	THICK	THICK	THIN
PROGRSSIVE	OFF	OFF	OFF	OFF	24P	24P(Adv)

The factory defaults are set up for six different scenes:

- F1 : SCENE** This file contains the settings suited for standard recording.
- F2 : FLOU** This file contains the settings suited for recording under fluorescent lights.
- F3 : SPARK** This file contains the settings suited to accentuating the subject while recording (for shooting a wedding reception, etc.)
- F4 : B-STR** This file contains the settings suited for recording with extended gradations in the dark areas (for recording scenes at dusk, etc.)
- F5 : 24P** This file contains the settings suited for recording in the progressive 24P mode
- F6: ADVANC** This file contains settings suited for recording in progressive 24p advanced mode.

Note: During recording, you can not change the scene file to progressive. You must be in the record standby mode to change to the progressive mode.

As was explained the scene files are set to factory defaults, but they may be also tailored to your various shooting conditions and stored in the menu memories and you may select them with a six position rotary dial (cine switch), located at the back of the camcorder.

Item	Settings	Default
DETAIL LEVEL	-7 to +7	See Page 14 for all actual Factory Defaults settings
CHROMA LEVEL	-7 to +7	
CHROMA PHASE	-7 to +7	
COLOR TEMP	-7 to +7	
MASTER PED	-15 to +15	
A IRIS LEVEL	-4 to +4	
GAMMA	CINE-LIKE, LOW, NORM, HIGH	
SKIN TONE DTL	ON / OFF	
MATRIX	NORM, FLOU, CINE-LIKE	
V DETAIL FREQ	THIN / THICK	
PROGRESSIVE	OFF, 30P, 24P, 24(ADV)	
NAME EDIT	NAME	
SAVE / INIT	SAVE INITIAL	

Detail Level Changing the detail level will affect the whole picture, this adjustment will allow you to increase or decrease the overall Horizontal and Vertical detail in the picture.

Chroma Level Changing the Chroma Level allows you increase or decrease the amount of color that is in the video image.

Chroma Phase Changing the Chroma Phase allows you to change the phase of the color (tint) of the video image. Keep in mind that this adjustment is a fine adjustment.

Color Temp Color temperature is determined at the temperature when carbon is heated up and emits a light which has a certain spectral response. For example, at 3000 degrees Celsius carbon black emits a light. The color temperature of that light is said to be 3200 Kelvin (3000 Celsius equals 3200 Kelvin). Color temperature generally expresses chromaticity of a source of light such as indoor or outdoor light. For example, if the temperature is relatively low, the light appears reddish. As the temperature increase, the light changed from red to orange to yellow to white. So when a camera is used with light whose color temperature is other than 3200K, use the appropriate color temperature conversion filter or setting. The color Temp setting allow you to finely adjust the color temperature, after the white balance has been adjusted.

Master Ped In standard analog video the Pedestal is normally set at 7.5 IRE or 7% and in digital video it is set at 0 IRE or 0%, this is the black reference for the video signal. This adjustment allows the user to slightly control the pedestal level which is set in the Camera Setup Menu. This will change the black reference for the video signal and allow for either slightly rising of the blacks or the crushing of them.

A Iris Level The **automatic iris level** controls the iris opening or level of the video automatically based upon Auto mode selection (IRIS) on the side of the camcorder.

Gamma Gamma correction is applied in the camera to correct for nonlinear light-output characteristics of the standard TV picture tube. **Picture-tube gamma** stretches the whites and compresses the blacks. **Camera gamma** compresses the whites and stretches the blacks. Camera gamma can be properly set by using logarithmic gray scale charts and a waveform monitor. Camera gamma must be the reciprocal of picture gamma which is 2.2, so the camera gamma is usually 0.45.

The DVX100 has four selections for the gamma curve:

Cine-Like This gamma curve gives the video image a cinema like look. Its best to set the iris about a 1/2 stop lower than standard video settings.

Low This setting allows for a moderate gradient for the low luminance areas. The video image looks a little sharper due to the change in the gamma curve.

Norm Standard video images are produced.

High This setting allows for a sharp gradient for the low luminance areas, thus the dark areas are extended to make them appear brighter.

Skin Tone DTL The “talking head” is probably one of the most common shots on television. The **Skin Tone Detail** is used to improve the head shot quality. When skin tone detail is turned on, the facial skin color has its detail reduced smoothing any skin irregularities, without affecting other areas of the video image.

Matrix The mixture of the primary colors red, blue and green to produce the many hues in the visible spectrum can be adjusted. We often have to compensate the colors due to lighting conditions.

The DVX100 has three settings:

Norm Used for shooting under halogen lighting in the studio.

FLOU Used for shooting under fluorescent lighting.

Cine-Like Used to produce a richer, cinema like color.

V Detail Freq Used in the progressive mode to increase the detail in the vertical portion of the image. This will slightly improve the sharpness of the image. In 24p thick used for video playback, while the thin setting is used for going out to film.

Progressive This selection allows you to choose between four selections:

OFF: Progressive video recording is turn OFF, you will be using standard interlace video (60i).

30P: In this selection you will be recording in the Progressive mode at a 30 frame per second mode. The 30 frames per second video imaged are converted into 60 field interlace signals, and the resulting video signals , and the resulting video signals are output or recorded. In this mode , high-quality still pictures free of vertical shifting, can be obtained in this mode

24P: In this selection you will be recording in the Progressive mode at a 24 frame per second mode, or a Cinema look. The 24P frame per second images are converted into 60 field interlace signals using 3:2 pulldown or conversion system. The resulting video signals are output or recorded. Cinema-like images can be ob-tainted in this mode

24P (ADV): In this selection you will be recording in the Advanced Progressive mode at a 24 frame per second mode. The 24 frames per second video images are converted into 60 field interlace signal by the advanced 2:3:3:2 pulldown method and the resulting video signals are output or recorded. Use this setting when the final product will be transferred to film.

Note: The color bar signal cannot be displayed. The gain cannot be controlled, it is fixed. The auto focus cannot be utilized. When the progress mode has been selected, the sync signal may be temporarily disturbed and no video will be output for 3 seconds. A shutter setting of 1/50 (OFF) or 1/60 is recommended. When using ATW (Auto Tracking White) function the black balance will not function. Since the video is recorded in 5 frame increments in 24P and Advanced mode, the timing at which recording starts may be slightly delayed.

Name Edit This selection allows you to change or edit the name of the scene file selected by the scene file dial,

Save / Init Save, allows you to save changes made in a scene file. Remember to do this or you will revert back to the old settings when power is turned off or you switch to the VCR mode. If the initial mode is chosen the scene file settings will return to the factory defaults.

4.2 Camera Setup Menu Screen

Item	Settings	Default
SYNCRO SCAN	OFF : 1/60.3—1/250 30P : 1/30.1—1/250.0 24P/24PA : 1/24.1—1/250.0	OFF 1/60.3 30P 1/48.0 24P& 24PA 1/48.0
ASPECT CONV	NORM / LETTER BOX	NORM
COLOR BAR	ON / OFF	OFF
SETUP	0% / 7.5%	0%

CAMERA MENU
1. SCENE FILE
2. CAMERA SETUP
3. SW MODE
4. AUTO SW
5. RECORDING SETUP
6. DISPLAY SETUP
7. OTHER FUNCTION
PUSH MENU TO EXIT

Syncro Scan Is used to prevent black or white horizontal bars that may appear across your computer monitor or television, when you are recording a scene that has either of these in it. By setting up the correct syncro scan in the menu, you can press the shutter button on the side of the camcorder and prevent this problem.

What you are doing in the MENU, is trying to synchronize the camera's shutter with the scan rate of the computer monitor or television included in the scene.

Aspect Conversion Allows you to select the aspect ratio of the image to be recorded. The standard images have an aspect ratio of 4:3. When placed in 16:9 aspect ratio the images are recorded with black bands across the top and bottom of the screen creating the 16 by 9 or letter box image. This method is called letterbox and has the major advantage of WYSIWYG (What You See Is What You Get). If you use an external anamorphic lens adaptor, about 25% higher vertical resolution can be obtained which may be more important for film out applications. If Letterbox is selected, the normal CCD based imager signal output of 720 pixels H by 480 pixels V is cropped down to 720 pixels H by 360 pixels V. The remaining 60 pixels at the top and bottom of the picture are forced to black. When an external anamorphic lens is used the source image is optically converted from widescreen 16:9 aspect down to a 12:9 aspect (4:3). Therefore the entire surface of the CCD based imager can be used to capture the image, yielding a full 480 lines of vertical resolution.

Color Bars A SMPTE test signal is generated internally, used to check the cameras performance, it also may be used at the beginning of the videotape as a reference.

You can turn this function off or on in this menu. If you leave it on, it will shut off when the camcorder is placed in the VCR mode or the power is shut off. This function does not work in the progressive mode.

Setup Also called pedestal, this is the video black level in a video image, 0% is the default setting for the DVX-100. Digital Video uses 0% setup (which is the ITU-R-601 Digital standard setting and Standard analog interlace video uses 7.5%.

4.3 SW MODE Screen

CAMERA MENU	
1.	SCENE FILE
2.	CAMERA SETUP
3.	SW MODE
4.	AUTO SW
5.	RECORDING SETUP
6.	DISPLAY SETUP
7.	OTHER FUNCTION
PUSH MENU TO EXIT	

Item	Settings	Default
MID GAIN	0dB, 3dB, 6dB, 9dB, 12dB	6 dB
HIGH GAIN	0dB, 3dB, 6dB, 9dB, 12dB	12 dB
ATW	OFF, Ach, Bch, PRE	OFF
HANDLE ZOOM	L, OFF, H L,M,H	L/OFF/H
IRIS DIAL	DOWN OPEN /UP OPEN	DOWN OPEN
USER 1	COLOR BAR	YES
USER 2	BACKLIGHT	BACKLIGHT

Mid Gain This item selects the video gain at the M position of the GAIN switch located on the side of the DVX-100. There are five settings you can choose from: 0dB to 12dB. The factory default is set to 6dB.

High Gain This item selects the video gain at the H position of the GAIN switch located on the side of the DVX-100. There are five settings you can choose from: 0dB to 12dB. The factory default is set to 12 dB.

ATW Normally, the white balance should be re-adjusted as the lighting conditions change. The Auto Tracking White function, is used during the record mode to continually adjust the white balance automatically. With this menu item you can assign this function to one of positions of the WHITE BAL switch or turn it OFF.

There are four settings:

OFF: This turns off the ATW function and allows the AUTO button or USER button to take control.

Ach: Sets the ATW function to Ach position of the WHITE BAL switch.

Bch: Sets the ATW function to Bch position of the WHITE BAL switch

PRE: Sets the ATW function to PRST (Preset) position of the WHITE BAL switch

Handle Zoom This item sets the zoom speeds of the lens, which are controlled by the HANDLE ZOOM switch located on the handle of the DVX-100.

L/OFF/H: Low/ OFF/ High speeds are set to the 1/2/3 positions of the Handle Zoom switch .

L/M/H: Low/ mid (Medium)/ High speeds are set to the 1/2/3 positions of the Handle Zoom switch.

Iris Dial This item sets the direction of rotation of the IRIS dial in the Manual iris mode. When set to DOWN OPEN, the iris will open when the IRIS dial is turned down. When set to UP OPEN the iris will open when the IRIS dial is turned upward.

User 1 & User 2 the User1 and User2 buttons are used for quick access customized operations of the DVX100. Each button may be assigned any one of the nine functions described in the table below. These assigned functions can then be accessed at the touch of a button.

Items (Choose one)	Assignable Functions
COLOR BAR	Display / hide the SMPTE color bars
SPOTLIGHT	Turns auto iris spotlight on / off
BACKLIGHT	Turns auto iris backlight compensation on/off
BLACKFADE	Fade out to black / with audio
WHITEFADE	Fade out to white / with audio
MODECHECK	Display camera settings in viewfinder
ATW	Turns auto tracking white balance function on/off
ATWLOCK	Lock/unlock white balance in ATW operation
GAIN 18 dB	Switches the gain to +18dB

1.3 Auto Sw Screen

Item	Settings	Default
A IRIS	ON / OFF	ON
AGC	6dB, 12 dB, OFF	6 dB
ATW	ON / OFF	ON
AF	ON / OFF	ON

CAMERA MENU
1. SCENE FILE
2. CAMERA SETUP
3. SW MODE
→ 4. AUTO SW
5. RECORDING SETUP
6. DISPLAY SETUP
7. OTHER FUNCTION
PUSH MENU TO EXIT

A. Iris When set to ON, or when the AUTO button is pressed, the auto iris control is performed. The IRIS button will not operate at this time. When turned OFF the AUTO iris control will not function and the IRIS button can be used.

AGC This setting sets the video gain when the AUTO button is used.

6dB: When the AUTO button is pressed the video gain will increase by a maximum of 6dB.

12dB: When the AUTO button is pressed the video gain will increase by a maximum of 12dB.

ATW Normally, the white balance should be re-adjusted as the lighting conditions change. The Auto Tracking White function, is used during the record mode to continually adjust the white balance automatically. With this menu item you can turn this function OFF or ON when the AUTO button is pressed.

AF When set to the ON position, auto focus operates when the AUTO button is pressed, the FOCUS switch and PUSH AUTO buttons will not function. When AF is set to the OFF position, the auto focus operation will not be performed when the AUTO button is pressed. The FOCUS switch and PUSH AUTO will be functioning. Not available in progressive mode

4.4 RECORDING SETUP Screen
(Same Menu used for the VCR, some functions not used)

Item	Settings	Default
REC SPEED	SP / LP	SP
AUDIO REC	12 bit / 16 bit	16 BIT
MIC ALC	ON / OFF	ON
MIC GAIN 1	-50dB, -60dB	-50 dB
MIC GAIN 2	-50dB, -60dB	-50 dB
TC MODE	DF / NDF	DF
TCG	FREE RUN / REC RUN	REC RUN
FIRST REC TC	REGEN / PRESET	REGEN
TC PRESET	Input Start of Time code	----
UB MODE	USER, TIME, DATE, TCG, FRM RATE	USER
UB PRESET	Setting user's bit	----
INTERVAL REC	OFF, ON, ONE-SHOOT	OFF
REC TIME	0.5s, 1s, 1.5s, 2.0s	0.5s
INTERVAL TIME	30s, 1m, 5m, 10m	30s

CAMERA MENU

1. SCENE FILE
2. CAMERA SETUP
3. SW MODE
4. AUTO SW
- 5. RECORDING SETUP
6. DISPLAY SETUP
7. OTHER FUNCTION

PUSH MENU TO EXIT

Rec Speed This item allows the user to select the recording time, either SP for standard play or LP for long play. SP is preferred for interchange.

Audio Rec Used for selecting the method of recording audio, 12 bit (12bit/32kHz) or 16 bit (16 bit/48kHz). 16 bit audio recording is preferred.

Mic ALC This item Allows the user to turn ON or OFF the automatic level control for the Microphone.

Mic Gain 1 This item allows the user to select the input level of the external microphone that is connected to INPUT 1 connector. Either –50dB or –60 dB, see your MIC’s specs.

Mic Gain 2 This item allows the user to select the input level of the external microphone that is connected to INPUT 2 connector. Either –50dB or –60 dB, see your MIC’s specs.

Time Code A Time code is used for accurate video editing of the recorded video tape. A special internal generator will place an 80 bit code or number on every recorded frame. The VCR will use this number for precise identification of a frame when editing. This code is recorded with the video and audio signals and is stored in the sub code area on the DV tape. This code contains the hour, minute, second and frame number. In the 80 bits of time code you have a lot of information, such as drop frame information, color frame information and user bit information.

The drop frame is used to keep accurate timing between the vertical timing and the actual time. The drop frame is bit number 10, this bit identifies if the drop frame or the non-drop frame format is being used. If it is “1” the unit is placed into the drop frame mode and will account for the missing frame numbers which are missing due to the timing of the vertical and time. If it is “0” it will be placed into the Non-drop Mode. In the 24p mode we use NDF only.

There are 32 User Bits in each 80 bit code, these user bits can be used to identify the user information, the time, the date, the time code generators value, or the frame rate..

There are two ways to start recording time code, record run and free run. Normally, for most productions the VCR’s time code is set to the Record run mode. In this mode the time code will be set to zero at the start of the day’s recording (operates only during record) and a continuous record is produced on each video tape covering all takes. In the free run mode the time code is running regardless of the VCR’s operation mode.

TC Mode This item selects DF (Drop Frame) or NDF (Non-drop Frame) modes and as explained this item corrects timing differences.

Note: When the progressive mode, 24P or 24P ADV is used, the non drop frame mode is set regardless of the setting.

TCG This item selects FREE RUN OR REC RUN, For continuity, its best to leave in the REC RUN mode.

First Rec TC This item allow the user to select the time code that will be used when recording is started.

REGEN: In this mode the time code is regenerated from the time code on the video tape if there is any.

PRESET: Here the time code is recorded using the value set in the TC PRESET item serving as the initial value.

TC PRESET This item is used to set the initial value used, when the PRESET in First Rec TC is selected.

Note: When the 24P or 24P ADV modes are used you must set the frame value to 0 or a multiple of 5. If you use any other value the time code recorded will shift.

UB Mode This item allows the user to set up the information to be recorded as user bits. The user may select one of 5 items:

User: the user's information, which is selected in the UB PRESET item.

Time: The time that the recording was made.

Date: The date that the recording was made.

TCG: The time code generator's value is recorded.

FRM Rate: Is the frame rate information for frame conversion is recorded. This is a 8 bit digital number, which contains the following information: The user's bit value verification information, the frame sequence number, the frame rate information and the recording control information.

UB Preset This item is used for setting the user's bit, make sure that USER is selected in the UB Mode item setting. The user's bit has 8 bits, which can be set 0 to 9, A to F

Interval Rec This item sets the intermittent recording mode, you have 3 selections.

OFF: The Intermittent operation function is turned off.

ON: When the START/STOP button is pressed, recording will be performed for the number of seconds set by the REC TIME item and the INTERVAL TIME item.

One-Shot: This item will set the camcorder into a time lapse recording mode. When the START/STOP button is pressed, the VCR will go into the recording mode controlled by the seconds that were set up in the REC TIME item, then go into the record pause mode.

Note: When placed into the intermittent recording mode or one-shoot, an "I" will flash on the EVF and display it on the top of the screen. Once the recording has started it will stop flashing. If the power is turned off the Interval Rec will return to OFF. When in the 24P or 24P ADV modes you will not be able to use the Interval Rec function.

Rec Time This item is used to set the recording duration for which intermittent recording is to be performed. Normally set to 0.5 seconds, you can change this to 1 second, 1.5 second or 2 seconds.

Interval Time This item sets the duration of the interval time with which intermittent recording is to be performed. Normally set to 30 seconds, you can change this to 1 minute, 5 minutes or 10 minutes.

4.5 DISPLAY SETUP Screen

Item	Settings	Default
ZEBRA DETECT 1	80%, 85%, 90%, 95%, 100%	80%
ZEBRA DETECT 2	80%, 85%, 90%, 95%, 100%	100%
MARKER	ON / OFF	ON
VIDEO OUT OSD	ON / OFF	OFF
DATE / TIME	OFF, TIME, DATE, TIME&DATE	OFF
LEVEL METER	ON / OFF	ON
ZOOM-FOCUS	ON / OFF	ON
TAPE-BATTERY	ON / OFF	ON
OTHER DISPLAY	OFF, PARTIAL, ALL	PARITIAL
LCD BACKLIGHT	HI / NORMAL	NORMAL
LCD / EVF SET	LCD BRIGHTNESS, LCD COLOR LEVEL, EVF BRIGHTNESS	YES
SELF SHOOT	NORMAL / MIRROR	MIRROR
EVF MODE	ON / AUTO	ON

CAMERA MENU
1. SCENE FILE
2. CAMERA SETUP
3. SW MODE
4. AUTO SW
5. RECORDING SETUP
▶ DISPLAY SETUP
7. OTHER FUNCTION
PUSH MENU TO EXIT

Zebra Detect 1 The Zebra Detect function is basically a built in light meter that measures the peak value of white. A black and white striped diagonal pattern indicator, which is superimposed on the picture and only appears in the LCD viewfinder, in portions of the video image corresponding to the pre-set brightness level. This level is set between 80% to 100% and will warn you when the video signal has reached the predetermined level. There are two warning patterns used in the DVX-100, normally, Zebra Dectect1 is set to 80% and Zebra Detect 2 is set to 100%. Zebra Detect 1 is indicated by diagonal strips that start right top and Zebra Detect 2 is indicated by diagonal strips that start at the left top. Remember, you must press the Zebra button to activate the Zebra function, each time the ZEBRA button is pressed you will cycle from OFF to Zebra 1 to Zebra 2 to Marker to OFF. Use these indications as a guide when you use the manual iris control in manual mode to lower the brightness if whites are too high.

Zebra Detect 2 The Zebra Detect function is basically a built in light meter that measures the peak value of white. A black and white striped pattern only appears in the LCD viewfinder or EVF, in portions of the video image corresponding to a pre-set brightness level. This level is set here for 80% to 100%. Zebra Detect 2 is normally, set to 100%. Remember you must press the Zebra button to activate the Zebra function.

Marker This item allows the user to turn OFF or On a measurement value of the video level. When on, at the bottom left of the viewfinder or LCD a measurement of the video level from the center of these displays will be displayed. This is very useful to the user that utilizes manual iris.

Video Out OSD When turned ON all information displayed on the LCD or EVF is output to the video output signal with the video image.

Date/Time This item is used to set the date and /or time that is displayed in the EVF, LCD or video output. You have four selections OFF, TIME will be displayed, DATE will be displayed, and TIME & DATE will be displayed.

Note: If TIME, DATE or TIME & DATE is selected it will be displayed in the video output regardless of the VIDEO OUT OSD setting

Level Meter This item allows the user to display the audio level meter in the display or turn it OFF.

Zoom•Focus This item allows the user to display the zoom and focus values in the display or turn it OFF.

Tape•Battery This item allows the user to display the remaining tape amount and remaining battery charge in the display or turn it OFF.

Other Display The viewfinder and LCD monitor are capable of displaying 21 items of information when the MODE CHK button is pressed, some cases certain information is displayed already. This item has three choices OFF, PARTIAL and ALL. Default is PARTIAL

Display Item	ALL	PARTIAL	OFF
Counter Display	Another setting	Another setting	Another Setting
Record Time Mode display (SP or LP)	Displayed	Displayed VCR, Not Camera	Not Displayed
Auto Iris control status display	Displayed	Displayed	Not Displayed
Shutter speed display	Displayed	Displayed	Not Displayed
Audio level meter display	Another setting	Another setting	Another setting
Audio sampling frequency display	Displayed	Displayed VCR, Not Camera	Not Displayed
Scene filename display	Displayed	Not Displayed	Not Displayed
Progressive display	Displayed	Not Displayed	Not Displayed
Zoom position display	Another setting	Another setting	Another setting
AWB information display	Displayed	Displayed	Not Displayed
Focus control information display	Another setting	Another setting	Another setting
Iris display	Displayed	Displayed	Not Displayed
Gain display	Displayed	Not Displayed	Not Displayed
ND filter display	Displayed	Not Displayed	Not Displayed
Recommended ND filter display	Displayed	Displayed	Not Displayed
Date and time display	Another setting	Another setting	Another setting
Remaining battery charge display	Another setting	Another setting	Another setting
Remaining tape display	Another setting	Another setting	Another setting
Camera shake compensation display	Displayed	Displayed	Not Displayed
Mic level automatic control display	Displayed	Not Displayed	Not Displayed
AUTO button operation display	Displayed	Displayed	Not Displayed

LCD Backlight Allows the user to adjust the LCD's monitor's backlight slightly brighter, NORMAL and HI are the two choices.

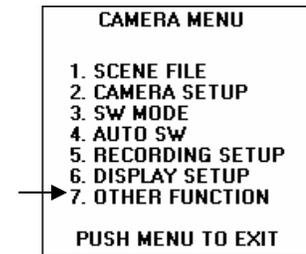
LCD/EVF Set Allows the user to adjust the viewfinder and LCD monitors brightness and the LCD's color level.

Self Shot: When doing a headshot or face-to-face shot you can turn the LCD toward the person so he can monitor himself. When set to Mirror, the LCD monitor will be reversed at the left and right for display during the face to face recording.

EVF Mode This item is used to select when the EVF will be on. When turned ON video image will be shown at all times in the viewfinder. In the AUTO mode, when the LCD monitor is opened the video no longer appears in the viewfinder.

4.6 OTHER FUNCTIONS Screen

Item	Settings	Default
REMOTE	VCR1, VCR2, OFF	VCR1
DV CONTROL	OFF, EXT, BOTH, CHAIN	OFF
DV CMD SEL	REC P / STOP	REC P
REC LAMP	OFF, FRONT, REAR, BOTH	OFF
BEEP SOUND	OFF / ON	OFF
CLOCK SET	SETS INTERNAL CALENDAR	YES
TIME SHIFT	+23h, +1h, OFF, -1h, 23h	OFF
TAPE PROTECT	POWER OFF / STBY	POWER OFF
USER FILE	LOAD, SAVE, INITIAL	----
HOUR METER	VIDEO HEAD HOUR METER	00000H



Remote This item is used to set the operations of the wireless remote control. There are 3 settings, VCR1, VCR2 and OFF. When using two DVX-100's this setting allows the two camcorder to be control from one remote control, by selecting which camcorder you want to control from the remote control. This item makes sure that only that one button (VCR1 or VCR2) will operate this camcorder from the remote control. OFF the remote will not be able to control the camcorder.

IEEE 1394 Or firewire as it is often called is an extremely high speed, high performance Serial Bus with a special protocol (set of rules). Part of that protocol has been used for high speed digital video and audio transfer. Not only can you transfer video and audio, you can transfer time code and control your VCR remotely. The cable used must not be longer then 4.5 meters.

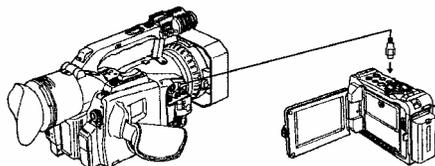
DV Control: This item selects the method for backup recording, using the DV (1394) connector located on the side, under a cover of the DVX-100. There are 4 selections:

OFF: There is no control information supplied.

EXT: The START/STOP button will control the backup recording. In this mode only the backup recorder will record the video and audio. The camcorder does not record.

BOTH: The video is recorded on both the camcorder and the backup unit.

CHAIN: used when additional record time is needed. Once the camcorder approaches the end of its record time the backup unit will automatically start recording. Remember the back up unit must be in the record standby mode to function.



DV CMD SEL: This item sets the record function performed by the backup unit when the START/STOP button on the camcorder is pressed. There are two choices

REC_P: Allows switching between recording and pause.

STOP: Allows switching between recording and stop.

Note: Used when backup unit does not have a pause mode.

Rec Lamp: this item allows the user to control the tally lights, OFF turns both tally lights off. The Front tally lamp selection allows the front tally lamp to function only. Rear selection allows the rear tally lamp to function only. Both allows both tally lamps to function.

Note: The tally lamps supply you with additional information:

Tally Lamp	Operation
8 blinks per second	When a remote operation has been received.
8 blinks per second	When Recording has started.
4 blinks per second	When the video tape has come to the end.
4 blinks per second	When a problem has arisen in the tape transport.
1 blink per second	When there is little tape or battery charge remaining.

Beep sound this item allows the user to turn the beep sound ON or OFF. When the beep tone is sounded the audio signals from the output connectors are muted, and the beep tone is output instead. When turned on, the beep tone have different meanings.

Beeps	Operation
1 beep Sound	When the power has been turned on.
1 beep Sound	When you start to record.
2 beep Sounds	When recording has been temporarily stopped.
10 beep Sounds	When the cassette tape has not been inserted.
10 beep Sounds	When the unit is in the pause mode.
10 beep Sounds	When condensation has formed inside the Camcorder.
10 beep Sounds	When a problem has occurred in the Camcorder.

Clock Set This item allows the user to set the internal time and calendar of the Camcorder. The Year, Month, day, Hour and minutes. Which is held by an internal battery.

Time Shift When you travel, this item allows the user to set the time for different time zones and countries without changing his original home time (CLOCK SETTING) setting. This item effects both the viewfinder, LCD and the clock time recorded on the tape. This adjustment is done in 1 hour increments, from +23 to -23 Hours and also a OFF position which is the factory default.

Tape Protect When the unit has been left in standby for 5 minutes while in the record pause mode, it will be automatically be set to the tape protection mode. There are two choices for this tape protection mode: POWEROFF which shuts off the power and STBY, which only places the video heads in the stop mode.

User File This item has three settings:

Load: which will load the last settings stored in the user file.

Save: this item allows the user to save any settings that have been changed.

Initial: this item allows the user to re-install the factory settings.

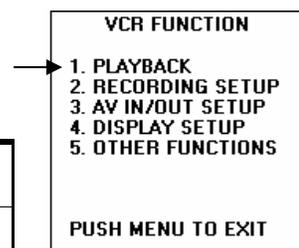
Note: When the LOAD or INITIAL operation has been performed, turn the power OFF and then ON in order to enable the settings.

Hour Meter This item keeps a record of total hours that the video head has been rotating, this is a 5 digit number, measured in 1 hour increments.

5. VCR

5.1 PLAYBACK FUNCTIONS Screen

Item	Settings	Default
END SEARCH	BLANK / REC END	BLANK
12 bit AUDIO	ST1, ST2, MIX	ST1
AUDIO OUT	CH1-CH2, CH1, CH2	CH1-CH2



End Search This item sets up the operation of the END SEARCH button when pressed.
BLANK: In this mode the END SEARCH will look for any blank spaces on the videotape.
Rec End: In this mode the END SEACH will look for the video that was shot last.
Note: When placed in the Rec End function and a new videotape is used, this function will not operate correctly. If the tape is blank the operation will stop at the end of the tape.

12 bit Audio When making a recording in the 12 bit audio mode, this item will choose the audio Channels being used..

There are three selections:

ST1: CH1 signals are recorded on Channel 1 track
 CH2 signals are recorded on Channel 2 track

ST2: CH1 signals are recorded on Channel 3 track
 CH2 signals are recorded on Channel 4 track

MIX: CH1 signals are recorded on Channel 1 and Channel 3 tracks
 CH2 signals are recorded on Channel 2 and Channel 4 tracks

NOTE: If the audio has been recorded in the 16 bit mode, there will be no Channel 3 or Channel 4. In this mode there will only be:
 CH1 signals are recorded on Channel 1 track
 CH2 signals are recorded on Channel 2 track

Audio Out used to set the audio signals that are sent to the RCA connectors when the videotape is played back.

CH1 •CH2 Channel 1 Connector has Channel 1 audio signals
 Channel 2 Connector has Channel 2 audio signals

CH1 Channel 1 Connector has Channel 1 audio signals
 Channel 2 Connector has Channel 1 audio signals

CH2 Channel 1 Connector has Channel 2 audio signals
 Channel 2 Connector has Channel 2 audio signals

5.2 RECORDING SETUP Screen
(Same Menu used for the Camera, some functions not used)

VCR FUNCTION

1. PLAYBACK
2. RECORDING SETUP
3. AV IN/OUT SETUP
4. DISPLAY SETUP
5. OTHER FUNCTIONS

PUSH MENU TO EXIT

Item	Settings	Default
REC SPEED	SP / LP	SP
AUDIO REC	12bit / 16 bit	16bit
1394 TC REGEN	OFF / ON	ON
TC MODE	DF / NDF	-50dB
TCG	FREE RUN / REC RUN	-50dB
FIRST REC TC	REGEN / PRESET	DF
TC PRESET	INPUT START OF TIME CODE	----
1394 UB REGEN	OFF / ON	OFF
UB MODE	USER, TIME, DATE, TCG, FRM RATE	USER
UB PRESET	USER bit	----

Rec Speed allows the user to select the recording time, either SP for standard play or LP for long play

Audio Rec used for selecting the method of recording audio, 12 bit (12bit/32kHz) or 16 bit (16 bit/48kHz)

1394 TC Regen This item is used to select the time code that will recorded from the DV connector.

OFF: The signal recorded will use the time code set up using the TC MODE item, TCG item and the First REC TC item.

ON: The signal recorded will use the time code from signal being recorded from the DV connector.

Note: When ON is used, it will take precedence over TC MODE item, TCG item and the First REC TC item. If no Time code is supplied to the DV connector, TC MODE item, TCG item and the First REC TC item will be used.

TC Mode this item selects DF (Drop Frame) or NDF (Non-drop Frame) modes and as explained earlier this item corrects for timing differences.

Note: When the progressive mode, 24P or 24P ADV is used, the non drop frame mode is set regardless of the setting. See more information about Time Code on page 21

TCG This item selects FREE RUN OR REC RUN, as explain its best to leave in the REC RUN mode.

First Rec TC This item allow the user to select the time code that will be used when recording is started.

PRESET: here the time code is recorded using the value set in the TC PRESET item serving as the initial value.

REGEN: in this mode the time code is regenerated from the time code on the video tape

TC PRESET This item is used to set the initial value used, when the PRESET in First Rec TC is selected.

Note: When the 24P or 24P ADV modes are used you must set the frame value to 0 or a multiple of 5. If you use any other value the time code recorded will shift.

1394 UB Regen This item selects the user's bit to be recorded when the DV connector is used.

OFF: The user's bit selected in the UB Mode item is used for the recording.

ON: The user's bit of the signals input of the DV connector is used for recording.

Note: When set to ON, this setting takes precedence over the UB MODE item setting. The user's bit is not recorded if the signal does not contain the user's bit information And when there is no signal supplied to the DV connector the UB MODE item is used.

UB Mode This selection allows the user to set up the information to be recorded as user bits. The user may select one of 5 items:

User: the user's information, which is selected in the UB PRESET item.

Time: The time that the recording was made.

Date: The date that the recording was made.

TCG: The time code generator's value is recorded.

FRM Rate: The frame rate information for frame conversion is recorded. This is a 8 bit digital number, which contains the following information. The user's bit value verification information, the frame sequence number, the frame rate information and the recording control information.

UB Preset This item is used for setting the user's bit, make sure that USER is selected in the UB Mode item setting. The user's bit has 8 bits, which can be set 0 to 9, A to F

5.3 AV IN / OUT SETUP Screen

Item	Settings	Default
A DUB INPUT	MIC / A_IN	MIC
DV OUT	OFF / ON	OFF

VCR FUNCTION

1. PLAYBACK
2. RECORDING SETUP
3. AV IN/OUT SETUP
4. DISPLAY SETUP
5. OTHER FUNCTIONS

PUSH MENU TO EXIT

A Dub Input This selection allows you to pick the audio source to be used when an audio dub is performed.

MIC: Selects the audio from the internal microphone or the external inputs to be recorded from the INPUT 1 and INPUT 2 XLR jacks. This is chosen with the CH1 SELECT and the CH2 SELECT switches on the side of the DVX-100.

A_IN The audio connected to the RCA AUDIO IN connectors is recorded.

DV OUT This item turns ON or OFF the DV connector. .

5.4 DISPLAY SETUP Screen

Item	Settings	Default
DATE / TIME	OFF, TIME, DATE, TIME&DATE	OFF
LEVEL METER	OFF / ON	ON
TAPE BATTERY	OFF / ON	ON
OTHER DISPLAY	OFF, PARTIAL, ALL	PARTIAL
VIDEO OUT OSD	OFF / ON	OFF
CAMERA DATA	OFF / ON	ON
LCD BACKLIGHT	HI, NORMAL	NORMAL
LCD / EVF SET	LCD BRIGHT, COLOR LEVEL EVF BRIGHTNESS	YES
EVF MODE	ON / AUTO	ON

VCR FUNCTION

1. PLAYBACK
2. RECORDING SETUP
3. AV IN/OUT SETUP
4. DISPLAY SETUP
5. OTHER FUNCTIONS

PUSH MENU TO EXIT

Date/time This item is used to set the date and /or time that is displayed in the EVR, LCD or video output. You have four selections OFF, TIME will be displayed, DATE will be displayed, and TIME & DATE will be displayed.

Note: If TIME, DATE or TIME & DATE is selected it will be displayed in the video output regardless of the VIDEO OUT OSD setting

Level Meter This item allows the user to display the audio level meter in the display or turn it OFF.

Tape Battery This item allows the user to display the remaining tape amount and remaining battery charge in the display or turn it OFF.

Other Display The viewfinder and LCD monitor are capable of displaying 21 items of information when the MODE CHK button is pressed, some cases certain information is displayed already. This item has three choices OFF, PARTIAL and ALL. Default is PARTIAL, See page 24 for the list of displayed items.

Video Out OSD When turned ON all information displayed on the LCD or EVR is output to the video output signal with the video image.

Camera Data This item allows the user to turn ON the camera information, such as camera shake correction, iris value and gain value when the unit is in VCR mode and playing back. OFF turns this feature OFF.

LCD Backlight Allows the user to adjust the LCD's monitor's backlight slightly brighter, NORMAL and HI are the two choices.

LCD/EVF Set Allows the user to adjust the viewfinder and LCD monitors brightness and the LCD's color level.

EVF Mode This item is used to select where the video will be displayed. ON video image will be shown at all times in the viewfinder. In the AUTO mode, when the LCD monitor is opened the video no longer appears in the viewfinder.

5.5 OTHER FUNCTIONS Screen

Item	Settings	Default
REMOTE	VCR1, VCR2, OFF	VCR1
CLOCK SET	SETS INTERNAL CALENDAR	----
TIME SHIFT	+23h—+1h, OFF, 1h—23h	OFF
USER FILE	LOAD, SAVE, INITIAL	----
HOUR METER	VIDEO HEAD HOUR METER	00000H

VCR FUNCTION

1. PLAYBACK
2. RECORDING SETUP
3. AV IN/OUT SETUP
4. DISPLAY SETUP
5. OTHER FUNCTIONS

PUSH MENU TO EXIT

Remote This item is used to set the operations of the wireless remote control. There are 3 settings, VCR1, VCR2 and OFF. When using two DVX-100's this setting allows the two camcorder to be control from on remote control, by selecting what camcorder you want to control on the remote control. This item makes sure that only that one button (VCR1 or VCR2) will operate this camcorder from the remote control. OFF setting the remote will not be able to control the camcorder.

Clock Set This item allows the user to set the internal time and calendar of the Camcorder. The Year, Month, day, Hour and minutes.

Time Shift When you travel, this item allows the user to set the time for different time zones and countries without changing his original home time (CLOCK SETTING) setting. This item effects both the viewfinder, LCD and the clock time recorded on the tape. This adjustment is done in 1 hour increments, from +23 to -23 Hours and also a OFF position which is the factory default.

User File This item has three settings:

Load: which will store the last settings in the user file.

Save: this item allows the user to save any settings that have been changed.

Initial: this item allows the user to re-install the factory settings.

Note: When the LOAD or INITIAL operation has been performed, turn the power OFF and then ON in order to enable the settings.

Hour Meter This item keeps a record of total hours that the video head has been rotating, this is a 5 digit number, measured in 1 hour increments.

6. Video Glossary

24p 24 frames per second progressive, a standard for digital video

4:1:1 A sampling frequency ratio used in digitizing a video picture's luminance and color difference components (Y, R-Y, and B-Y). In this ratio the luminance is sampled at 13.5 MHz and R-Y, B-Y are each sampled at 3.37 MHz.

4:2:2 A sampling frequency ratio used in digitizing a video picture's luminance and color difference components (Y, R-Y, and B-Y). In this ratio the luminance is sampled at 13.5 MHz and R-Y, B-Y are each sampled at 6.75 MHz. This method of digitizing provides a wider chrominance bandwidth relative to luminance.

A

ALC Automatic Level Control, a circuit that is used to maintain a constant signal level.

Amplifier A component that increases the level of an audio signal from line level to speaker level.

Analog A signal that can be continuously varied in amplitude and frequency.

Analog Components Video signals in which a continuously variable voltage or current represents the value of a pixel.

Aspect Ratio The ratio of the width to height of a video screen or film when it is projected on a screen. The old standard NTSC aspect ratio was 1.33 to 1 or 4 to 3, but now with the advent of High Definition technology 16 by 9 is common.

B

Back Light The main function of the backlight is to separate the individual subjects from the background and give them depth and dimension.

Back Porch The period of time during horizontal blanking that follows the horizontal sync pulse and continues to the beginning of active video.

Backlit Refers to the illumination used to light a projector's control panel or the buttons of a remote control, so it can be used in the dark.

Black Level The level of the video signal that corresponds to the maximum limits of the black areas of the picture.

Blanking or Composite Blanking Related to composite sync, this signal has both horizontal and vertical components and is at its negative level whenever video is to be blanked or turned off.

Blanking Level Also known as pedestal, it is the level of a video signal, which separates the range that contains the picture information from the range that contains the synchronizing information. The level of the front and back porches. Is Zero IEEE units.

C

CCD Charge Coupled Device

CCIR - Comite Consultatif International Radiocommunications, the French standards body which now falls under the control of the ITU-R.

CCIR 601 (ITU-R 601) - This standard defines the encoding parameters of digital television.

Charged Coupled Device Is a sensor used in scanners, camcorders, digital cameras, etc., to capture an image. CCDs work by converting light into electrical energy.

Chroma The color information contained in a video signal, consisting of hue (phase angle) and saturation (amplitude) of the color sub carrier. Also, known as Chrominance.

Chrominance The color part of a signal, relating to the hue and saturation but not to the brightness or luminance of the signal, e.g. black, gray and white, have no chrominance, but any colored signal has both chrominance and luminance. U,V: Cr, Cb; I,Q: (R-Y, B-Y) represent the chrominance information of a signal.

Coated Optics Is lens with a special coating to minimize the amount of light reflected back to the lamp, and the amount of ambient light that mingles with the focused light leaving the lens.

Codec Coder Decoder, a device used to encode a signal and decode it.

Color Bars A test signal that should be recorded at the beginning of every videotape. The color bars test signal provides the necessary elements of a video signal that are added during the initial set up of a tape machine.

Color Burst A few (8 to 10) cycles of 3.58MHz color sub carrier, which occur during the back porch interval. Color burst amplitude is 40 IEE units and phase is 180 degrees. The color oscillator of a color television receiver is phase locked to the color burst.

Color Difference Signal The calculation of the chroma signal (R-Y, B-Y and G).

Color Phase The correct timing relationship within a color display - color is considered to be in-phase when the hue is reproduced correctly.

Color Sub carrier The 3.58MHz signal which carries color information. This signal is superimposed on the luminance level. Amplitude of the color sub carrier represents saturation and phase angle represents hue.

Color Temperature A measurement of overall color of a source of light, measured in degrees Kelvin (K). The higher the Kelvin reading the more blue the light, the lower the Kelvin Temperature the redder the light. Normally, video uses lights that are 3200 Degrees Kelvin.

Component The normal interpretation of a component video signal is one in which the luminance and chrominance are sent as separate components, e.g. Analog components in MII and Betacam VCRs, digital components UCRCB in CCIR re 601. RGB is, however, also a component signal. Component video signals retain maximum bandwidth, unlike composite systems.

Composite A composite video signal is one in which the luminance and chrominance information have been combined using one of the coding standards: NTSC, PAL, SECAM, etc.

Composite Sync A signal consisting of horizontal sync pulses, vertical sync pulses, and equalizing pulses only, with a no signal reference level.

Composite Video A mixed signal comprised of the luminance (black and white), chrominance (color), blanking pulses, sync pulses and color burst.

Compression A process used to store digital information in a smaller block of space than it would normally take

Compression Ratio This is the ratio of data in the original video picture signal to the amount of data after compression.

Contrast The range of light and dark values in a picture or the ratio between the maximum and the minimum brightness values. Low contrast is shown mainly as shades of gray, while high contrast is shown as blacks and whites with very little gray. It is also a TV monitor adjustment, which increases or decreases the level of contrast of a televised picture.

Contrast Ratio A method of measuring the dynamic range of an image. A large contrast ratio indicates that the projector works well despite extraneous light.

D

DATA Digital information stored or used by a computer

dB Decibel

dBm A measurement of sound, measurement made across 600 ohms.

DCT - Discrete Cosine Transformer is widely used to compress video; here 8x8 picture elements are converted to 8x8 frequency elements. This way the higher frequency numbers can be minimized and compression made simpler.

DV Digital Video

DVCPRO - New digital format

Decibel (dB) One decibel is one tenth of a Bel and is used to measure audio and video signals expressed by the ratio of two amounts of electric. It is also used to measure power differences in voltage, current, watts and sound pressure.

Depth of Field The front to back zone in a field of view, which is in focus in the televised scene. With a greater depth of field, more of the scene, near to far, is in focus.

Detail Resolution or clarity of the picture.

Drop Frame A type of time code that can be used as a real time reference.

E

Error Concealment Use to conceal errors in digital recorded.

F

Fade Used in editing to gradually increase or decrease the video signal from black. Fading in is from black to full strength and fade out is from full strength to black.

Field One half of a scanned image. A field can be referred to as an odd field or an even field. Each field is made up of 262 1/2 lines. There are two fields per frame and 60 fields per second.

Two fields make up a complete television picture (frame). The lines of Field 1 are vertically interlaced with Field 2 for 525 lines of resolution.

Flying Erase Head A special video erase head that allow for cleaner edits.

F Number In lenses with adjustable irises, the maximum iris opening is expressed as a ratio, (focal length of the lens) (maximum diameter of aperture).

Focal Length The distance from the center of the lens to a plane at which point a sharp image of an object viewed at an infinite distance from the camera is produced. The focal length determines the size of the image and the angle of the field of view seen by the camera through the lens. That is the distance from the center of lens to the pickup device.

Foot Candle The amount of light reflected by a white surface one foot away from a lit candle. The metric equivalent is the lux.

Foot Lambert One lumen or one foot candle of light over a one square foot surface.

Format In recording of video, C, U-Matic, Betacam, M, Betacam SP, M-II, D1 D2, D3, D5, DV, DVCPRO, Beta, VHS, Hi8, 8mm and S-VHS are all current formats.

Frame The combination of an odd and even field of the video signal. In each frame of video there are 525 lines of information in the NTSC system. There are thirty frames in a second. (625 lines, 1/25 sec. in Europe and many other countries).

Frame Rate The amount of frames per second that has been set up for a particular television system. Black and white television uses a thirty frame per second rate, while color television uses 29.97 frames per second rate.

Frequency Response The frequency range that both audio or video systems can reproduce a signal within a stated amplitude range.

Front Porch That period of time during horizontal blanking that starts from the end of the scanned video image and goes to the horizontal sync pulse.

G

Gain The amplification of a unit.

Gray Scale A series of tones, which range from true black to true white, it is usually expressed in 10 steps.

H

HDTV High Definition Television

Hz Hertz

Head The parts of a tape machine that play back or record signals on the tape.

Herz A measurement of cycles per second.

High Definition Television (HDTV) Refers to the new television format which has an elongated shape and a significantly higher resolution than current television.

Horizontal Blanking The period of time which the electron beam is blanked off while it moves back to the left side of the picture to get ready to start scanning the next line.

Horizontal Frequency The inverse of the time it takes for a monitor to scan from the beginning of one line to the beginning of the next line; typically stated in kilohertz.

Horizontal Resolution Smallest increment of a television picture that can be discerned in the horizontal plane. This increment is dependent upon the video bandwidth and is measured in frequency.

Hue The degrees of the vector on the vectorscope which represents a color.

(A) Distinction between colors. Red, blue, green, yellow, etc. are hues. White, black, and gray are not considered hues. (B) The dimension of color that is referred to a scale of perceptions ranging from red through yellow, green, blue, black to red.

I

IC - Integrated Circuit

IRE *Institute of Radio Engineers*

ITU *International Telecommunications Union*

Impedance A measure of how much something resists (impedes) the flow of electricity.

Insert Edit A type of edit where new video or audio is recorded onto existing materials. The existing materials control track remains unchanged.

Interlace Scanning The process of combining two fields of video information. One field has the odd lines of the image scanned and the other field has the even lines of the image scanned. The two fields, odd and even, are interlaced together to form one complete image, or frame of video.

IRE Units of measurement dividing the area between the bottom of sync and white level into 140 equal units. 140 IRE units are equal to 1 volt peak-to-peak.

Iris The amount of light transmitted through a lens is controlled by an adjustable diaphragm, or iris, located in the lens barrel. The opening is referred to as the aperture, and the size of the aperture is controlled by rotating the aperture control ring on the lens barrel. The graduations on the lens barrel are expressed in terms of the focal length f of the lens divided by the diameter of the aperture at that setting. This ratio is called the f -number.

J

JPEG Joint Photographic Experts Group is a subcommittee of the International Standards Organization (ISO), which defines standards for digital photographic compression and decompression.

Jitter Small and rapid variations in a waveform due to mechanical disturbances, changes in the characteristics of components, supply voltages, imperfect synchronizing signals, circuits, etc.

K

K - Or Kilo is the term used in computers to define 1,024 bytes.

KHz Kilohertz

Kelvin An International standard unit of color temperature. This standard is measured in digress.

Kilohertz (KHz) A 1000 Hertz

L

LCD Liquid Crystal Display -- a display that works by controlling the opacity of LCD "glass" by varying the electrical signal. Each individual pixel acts as a shutter, to modulate light

being passed through.

Letterbox Format used to fit wide screen movies (1.85:1 and 2.35:1, for example) on the average, 1.33:1 TV screen. The image is shrunk to fit the screen, leaving blank space on the top and bottom.

Line Frequency The rate or number of video lines that are being read or scanned by the electron beam per interval. There are 262 1/2 lines scanned per field, 525 lines scanned per frame and 15,750 lines of video information scanned every second.

Liquid Crystal A liquid in which the molecules are arranged in a regular pattern.

LTC (Longitudinal Time Code) This is another expression for the SMPTE time code signal recorded onto the third audio track of a videocassette tape.

Luminance refers to the amount of visually effective light emitted by a light source. Typically expressed in nits, foot lamberts (fL) or candelas per square meter (cd/m²). One fL = 3.43 cd/m² or 3.42626 nits, One cd/m² = 0.292fL or 1 nit

Lux A unit of measuring the intensity of light. (1 FC=10.76 lux).

M

MHz Short for megahertz, which is 1 million Hz.

MPEG *Motion Pictures Expert Group*

Megabyte One million bytes of data.

Memory A storage place for computer data.

Microphone A piece of equipment that will convert sound into electrical signals for recording and use by audio equipment, such as sound amplifiers.

N

NTSC *National Television Systems Committee*

National Television Standard Committee (NTSC) This organization formulated the NTSC system, 525 lines 60 field; usually taken to mean the NTSC color television system itself, or its interconnect standards.

Non-Drop Frame A type of time code that runs at thirty frames a second and does not allow for the slower color frame rate of television.

NTSC Color Bars A pattern generated by the NTSC Generator, consisting of eight equal width color bars. Colors are white (75%), black (7.5% set-up level), 75% saturated pure colors red, green, and blue, and 75% saturated hues of yellow, cyan, and magenta. (Mixtures of two colors in 1:1 ratio without third color).

O

One Volt "Peak to Peak" - A reference to the measurement of a video signal which should go from -40 IRE units for sync up to 100 IRE units for the luminance level. The distance from -40 to 100 (140 IRE units) is referred to as 1 volt peak to peak.

P

PCM Pulse Code Modulation

Peak White The white portion of the video signal.

Pedestal The level of the video signal representing black, normally set at 7.5 IRE units.

Phone Plug This type of plug is mostly used on a microphone or pair of headsets. There are basically two types stereo and mono.

Phono Plug Known as a RCA plug it is used with audio amplifiers.

Pixel Picture Element or Pix Element; related to a particular image address in digital systems or to the smallest reproducible element in analog systems.

Pixel Depth The number of bits used to address a pixel. Also called color depth, the bit depth determines the number of colors that can be displayed at one time.

Power Zoom A zoom lens that has a motor, which allows you to zoom in and out from the

projector's control or remote control.

Primary Colors Colors usually three, which are combined to produce the full range of other colors within the limits of a system. All non-primary colors are mixtures of two or more of the primary colors. In television, the primary colors are specific sets of red, green, and blue.

Progressive scan Computer images are all progressively scanned. Now, we are using this type of scanning for HDTV. Instead of having two fields and interlacing them together to form a frame or an image, we show each frame of a video image completely, from top to bottom, not interlaced.

Q

R

RCA jacks RCA connections for RCA cables, carrying line-level audio signals and sometimes video signals.

Resolution (A) A measure of the ability of a camera or television system to reproduce detail. That is the number of picture elements that can be reproduced with good definition. It is a factor of the pickup device or the TV CRT characteristics and the signal bandwidth.

(B) Generally called horizontal

resolution. It can be evaluated by establishing the limit to which lines can be distinguished on a test pattern. A larger resolution value means a broader frequency band of the video signal. (C) A measure of the greatest amount of detail that can be seen, or resolved, in an image. Often incorrectly expresses as a number of pixels on a given line. More correct is the bandwidth.

RGB, RGB Format, RGB System Red, Green, and Blue: The basic parallel component set in which a signal is used for each primary color; or the related equipment or interconnect formats or standards. The same signals may also be call "GBR" as a reminder of the mechanical sequence of connections in the SMPTE interconnect standard.

S

SW - Switch

S-VIDEO - The generic name for Y/C video, applied to S-VHS or Beta ED

Sampling A process in which an analog signal is converted into a series of digital values.

Saturation The quantity of chrominance information present, (for example, the difference between red and pink is that red is more saturated than pink.)

Set Up - A reference to the black level in the videotape signal, also known as pedestal.

Signal A variation in an electrical current that represents either an audio signal or a video signal.

Signal-to-Noise Ratio (S/N) - An S/N ratio can be given for the luminance signal, chrominance signal; and audio signal. The S/N ratio is the ratio of noise to actual total signal, and it shows how much higher the signal level is than the level of noise. It is expressed in decibels (dB), and the bigger the value is, the more crisp and clear the picture and sound will be during playback.

Sub carrier Also SC, 3.58, 3.58CW - This is the basic signal in all NTSC sync signals. It is a continuous sine wave, usually generated and distributed at 2 volts in amplitude, and has a frequency of 3.579545MHz. Sub carrier is usually divided down from a primary crystal running at 4.318180MHz, and that divided by 4 is 3.579545. All other synchronizing signals are directly divided down from sub carrier.

Sync Also Composite Sync - This signal is derived from a composite or combination of horizontal and vertical drives, with some slightly narrowed and delayed pulses as well as the addition of equalizing pulses. It is one of the more popular signals used in video

systems today, and when used, is usually accompanied by sub carrier.

T

Tape A medium capable of storing an electronic signal and consisting of backing, binder, and iron oxide coating. The orientation of the iron oxide determines whether the tape can be used for helical scan video recording.

Tape Guides Guides that are replaced on a VTR that make sure the tape stays within the correct path from the supply reel to the take up reel.

Test Signals Signals such as color bars, stair step, multiburst and cross hatch that are used in the setting up and checking out of a VTR.

Time Code - A labeling system that is used to identify a specific frame of videotape. It can be an audio signal recorded on Track 2 or a video signal that is recorded in the vertical interval of a tape.

Time Code Editing By recording a sequential time code along with the video and audio material, you can obtain a more precise reference for editing. Each frame has its own number or code, which tells the time in hours, minutes, and seconds, and includes a frame number. The world standard code is called SMPTE (Society of Motion Picture and Television Engineers) and has also been adopted by the IEC (International Electrotechnical Commission). Time codes permit very fast and accurate editing. Automatic editing is possible under computer control.

Tripod A three-legged stand on top of which a camera is mounted

Tripod Head The top portion of a tripod where its legs meet and the camera is mounted; friction or fluid-head tripod designs are available.

U

UL - *Underwriters Laboratory.*

Underwriters Laboratory (UL) A non-profit safety organization in the U.S. that inspects and certifies the products sold in the U.S. for their safety standards.

V

VCR - Video Cassette Recorder.

VITC - Vertical Interval Time code

VTR Video tape recorder

Vertical Interval That portion of the video signal that includes the vertical blanking, the vertical sync pulses and the pre and post-equalizing pulses. It is also the area where other information that is carried with the television signal, such as captioning and satellite instructions, are inserted.

Vertical Scan The action of the electron beam sweeping across the entire face of the display.

Video Level A measurement of the video level or luminance level of the video signal. The video level should not exceed 100 IRE units.

W

Watt Is a unit of measurement of power.

WFM (WAVEFORM MONITOR) - A type of oscilloscope that is used to display the luminance, chrominance and timing diagrams of the video signal.

White Balance A method of setting a camera for the correct color temperature.

X

Y

Y Signal The luminance portion of the color signal.

Z

Zoom Lens A lens with a variable focal length. Which allows you to adjust the size of the image on a screen by adjusting the zoom lens.