

V1

Reference Manual

Version 4.40

(8 / 2004)

For use with:

V1 & MCS Servers

*w/ Silver Front Panel
& firmware 4.40 and higher*

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WARNING**THIS APPARATUS MUST BE EARTHED****IMPORTANT****WARNING**

Power requirements for electrical equipment vary from area to area. Please ensure that your V1 meets the power requirements in your area. If in doubt, consult a qualified electrician or Doremi Labs, Inc. dealer.

120VAC
220-230/240VAC
240VAC

@60Hz for USA and CANADA rating 1A
@50Hz for Europe rating 0.5A
@50Hz for Australia rating 0.5A

AVIS

Le voltage peut differer d'un pays a l'autre. Il faut que le V1 soit ajuste au voltage du pays.

LA SOURCE DE PUISSANCE DOIT AVOIR UN CONDUCTEUR CONNECTE A LA TERRE.

Toutes reparations doivent etre effectuees par une personne qualifiee.

AFIN D'EVITER UN CHOC ELECTRIQUE, VEUILLEZ NE PAS ENLEVER LE CAPOT.

PROTECTING YOURSELF AND THE V1

Never touch the AC plug with wet hands

Always disconnect the V1 from the power supply by pulling on the plug, not the cord.

Allow only a Doremi Labs, Inc. dealer or qualified professional engineer to repair or reassemble the V1. Apart from voiding the warranty, unauthorized engineers might touch live internal parts and receive a serious electric shock

Do not put, or allow anyone to put any object, especially metal objects into the V1

Use only an AC power supply. Never use a DC power supply.

If water or any other liquid is spilled into or onto the V1, disconnect the power, and call your dealer.

Make sure the unit is well ventilated, and away from direct sunlight.

To avoid damage to internal circuitry, as well as the external finish, keep the V1 away from sources of direct heat (stoves, radiators, etc.).

Avoid using aerosol insecticides, etc. near the V1. They may damage the surface, and may ignite.

Do not use denatured alcohol, thinner or similar chemicals to clean the V1. They will damage the finish.

Modification of this equipment is dangerous, and can result in the functions of the V1 being impaired.

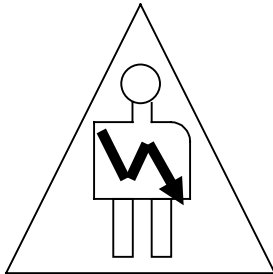
Never attempt to modify the equipment in any way.

In order to ensure optimum performance of your V1, select the setup location carefully, and make sure the equipment is used properly. Avoid setting up the V1 in the following locations:

1. In a humid or dusty environment
2. In a room with poor ventilation
3. On a surface which is not horizontal
4. Inside a vehicle such as a car, where it will be subject to vibration
5. In an extremely hot or cold environment

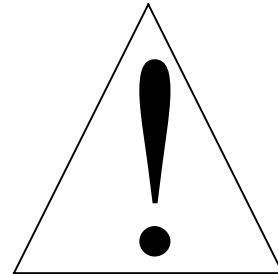
WARNING!!

To prevent fire or shock hazard, do not expose this appliance to rain or moisture

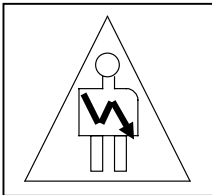


CAUTION

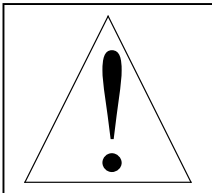
**RISK OF ELECTRIC SHOCK
DO NOT OPEN**



**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**



The lightning flash with the arrowhead symbol superimposed across a graphical representation of a person, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure; that may be of sufficient magnitude to constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CE NOTICE

Marking by the symbol \mathcal{C} indicates compliance of the device to the EMC (Electromagnetic Compatibility) directive and to the Low Voltage directive of the European Community. Such marking is indicative that this device meets or exceeds the following technical standard:

- EN 55022 "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment."

A "Declaration of Conformity" in accordance with the above standard has been made and is on file at Doremi Labs, Europe, Valbonne, France.

INTRODUCTION

Thank you for your V1 purchase. The V1 is a random access video recorder that uses magnetic drives (hard drives) as a recording medium.

To record video on a hard drive it should be digitized which means that the analog video information must be converted to a digital data stream.

The V1 line of products includes uncompressed video recorders (8 and 10 bit encoding) and compressed video recorders, the trade off is between storage requirement and video quality.

V1 Uncompressed

The V1-U series records the video directly on the hard drive without the use of compression. (V1-U for standard definition video and the V1-UHD for HDTV video).

V1 Compressed (DCT vs MPEG2)

Doremi's V1 product line includes models that use DCT compression (the V1, V1m, V1d, and V1x2) and MPEG2 compression (V1-MP2).

DCT compression (Discrete Cosine Transform) consists of compressing every field of video and saving the data on the drive.

MPEG2 is a more advanced compression technique that yields better video quality when compared to DCT at the same bit rate. Consequently, larger servers can be built with V1 MPEG2 units. However, V1 DCT units can be set to higher bit rates to achieve quality similar to MPEG2.

MCS Server

Doremi's MCS servers use MPEG2 video compression. MCS Servers have multi-channel record and play capability. A typical MCS Server would have two record and two playback channels.

The CBS algorithm

The V1 uses a constant block size (CBS) algorithm. With traditional compression algorithms, depending on video complexity, the size of each compression field can vary thus requiring maintaining a list to indicate the start of each field on the drive. With CBS all fields have the same maximum size. Consequently, CBS does not require maintaining a list indicating the start of each field because they are all the same size. This results in a more reliable video recorder with faster video access and frame accurate recording.

Audio and Time Code

In addition to the video, and regardless of the compression ratio used, the V1 records 2, 4, 6 or 8 tracks of uncompressed audio (sampled at 48Khz). It also records the LTC and VITC timecodes.

Hopefully this introduction has explained to the reader the basic technical principles of digital video disk recording.

DESIGN OF MANUAL

This reference manual covers the V1 DCT, MPEG2 and Uncompressed series. Although the basic operation of all V1 products is the same, there are minor differences. When a feature refers to only one product series that function will be highlighted in bold with the name of the product as seen in the examples below:

>> DCT Only	– for the DCT compression product series, V1, V1m, V1d, V1x2
>> MP2 Only	– for the MPEG2 compression product series. V1-MP2
>> UncompSD Only	– for the Uncompressed standard definition video product series. V1-U
>> UncompHD Only	– for the HDTV Uncompressed product series. V1-UHD

This manual was written with the product firmware numbers below:

DCT (V1, V1m, V1d, V1x2)	4.40
MPEG2 (V1-MP2):	4.40
Uncompressed (V1-U):	4.40
HDTV Uncompressed (V1-UHD):	4.40

Front Panel (RCV2) firmware **1.16**

The V1 firmware can be checked by going to the Option Menu (hold the **OPTION** button then press the **MENU** button). Press the up ▲ or down ▼ Menu buttons till you reach menu number 00. Press ++ until you see the version number V1 (no.).

Check the front panel firmware in the Controller Menu. Hold the **ESCAPE** button and press **MENU**. And then scroll to *Firmware*.

If you have a newer firmware than shown above, check the addendum pages on the back of this manual for a list of changes and additions. If you have recently upgraded your firmware please print out the README document included in the zip file with the new firmware. You can also download the latest V1 manual from our tech support page “manual” section on the Doremi website www.doremilabs.com

If you have an older firmware than shown above, and you want to upgrade to **Version 4.40** to benefit from the Multi File System, please contact Doremi’s sales department.

If you will not be upgrading, you can download older manuals from the Doremi FTP page.

Menu Customs

CAPITAL & BOLD text is used when referring to buttons on the front panel.

Lower Case Bold text is used when referring to menu items on the LCD screen.

Menu (no.) text provides the Menu, Option Menu, or Controller Menu name and the menu function #.

CAPITAL is used when referring to rear panel connections.

1 Applications

This chapter is designed to get you started quickly with your V1. Each section provides connection and operation information for common applications of the V1. Each section will reference menu functions that are described in further detail in the Menu, Option Menu and Controller Menu chapters.

1.1 Getting Started

This quick start guide assumes the most common hardware setup: Single video channel V1 equipped with a removable hard drive using the Kingston Data Express drive carrier and receiver.

The external SCSI termination supplied with the V1 should be mounted before powering up. *If there is no SCSI connector on the back then the terminator has been mounted internally.*

1. Plug the hard drive carrier in the Data Express receiver and turn the key counter clockwise until it locks.
2. Power the unit ON by pressing the Power ON Switch. If you keep watching the LCD display you will see a “Scanning” message displayed for about 30 to 60 seconds (the time it takes for the hard drive to be mounted). “Stop” is displayed after the drive is mounted.
3. Plug a valid video source on the video input of the V1.
4. Plug a working monitor on the video output of the V1.
5. Go to the **Sync Source** in Menu (3) and select your sync source. Ensure the selected sync source is present.
6. Go to the **Vid Source** in Menu (5) and select the video source format connected to the V1.
7. If you have video recorded on the disk, it will be displayed on the monitor when you press **PLAY**. If the proper sync source is present, you will see a dot to the left of the PLAY on the 4 line LCD display.
8. Pressing the **REC** button only will set the unit to EE mode. (displays the video on the input).
9. If you see a valid video signal on your monitor, you can press **REC** and **PLAY** at the same time to start recording on the V1.
10. Press **STOP** to finish the recording.

1.2 Audio Post

This section describes general connection procedures to digital audio workstations (DAW). It also details several popular applications used in Audio Post.

1.2.1 Most Common Connection

This connection scheme is used to connect the V1 to Audiofile, Audiovision, Dyaxis II, Post-Pro, Protocols 4.0, StudioFrame, etc. For detailed instructions on your specific DAW refer to the Appendix.

1. Feed house sync to the V1 and the DAW.
2. Connect the time code out of the V1 to the time code input of the DAW.

3. Connect the serial cable between the V1 RS422 port 1 and the DAW.
4. Run the DAW software which will control the V1.

1.2.2 Overdubbing Video & Audio Tracks

To overdub both video and audio on a section of your disk, you need to execute the “Chase Command” by holding **OPTION** while pressing **PLAY**.

1. Use Option Menu (13) **Edit Prst** and select **Assemble ON**.
2. Both the source machine and the V1 **should be synchronized** to the same reference (House Sync) and time code should be fed from the source machine into the TIME CODE input of the V1.
3. Execute the Chase command by holding down **OPTION** and pressing **PLAY**
4. Place the V1 into EE (Input Monitor) by pressing the **REC** button
5. Begin playback of the source machine before the section that you want to overdub. The V1 will begin playing as soon as it sees time code that matches what is on the current disk. Wait until the V1 LCD displays **PLAY** with a black dot, this indicates that the V1 is playing in sync and chasing the time code from the source machine.
6. When you reach the point where you want to punch in, hold down **PLAY** and press **REC** to start recording. Press **PLAY** or **STOP** to stop overdubbing.

1.2.3 Overdubbing/Insert of Video or Audio Only

This feature allows the insert/overdub of selected audio track(s) and/or video on existing recordings while the other track(s) is monitored at the same time. Since insert mode requires fast disk drives, it is recommended that you use the fastest drives available. For the V1-U, you need at least 2 drives to successfully insert at 8 or 10 bit resolution. Users who want to use this feature with other drives should test at 8 bit resolution.

To use this feature:

1. Use Option Menu (13) **Edit Prst** to select which audio track(s) you want to insert.
2. Provide the same House Sync to the source machine and the V1.
3. Connect the time code out from the source machine into the TIME CODE input of the V1.
4. Begin playback of the source machine before the section that you want to insert on the V1.
5. Hold down **OPTION** and press **PLAY** “Chase Command” to engage synchronized playback with the source, wait until the V1 LCD displays **PLAY** with a black dot (This indicates that the V1 is now in sync with the house sync), then hold down **PLAY** and press **REC**. The V1 will record the insert. Then press **STOP** or **PLAY** to end the insert segment procedure.

1.3 Using the V1 with Edit Controllers

Before using the V1 with an Edit Controller ensure that Option Menu (1) **Transport** is set to **Emulate DVW-500, BVW-75 or V1**. Use the V1 and your edit controller as you would with a typical tape machine setup.

1.4 Synchronizing Multiple Units

To synchronize the operation of multiple units you have three options.

1. Use the Doremi RCV2-9p remote controller and set to **Gang Mode** in Controller Menu (7).
2. Use an external controller that sends RS-422 commands to all V1 machines simultaneously.
3. Use the chase mode in Menu (4) **Chase Mode**. See section 2.6.

1.5 Playback for Presentations

To use the V1 for presentations, you will first need to record video and audio onto the V1 and then create segments and playlists using the front panel or download software from the Doremi website under support. www.doremilabs.com

To record video on the V1 follow the “Getting Started” section 1.1 of the Applications Chapter

To create play lists and video segments via the front panel see the “Play List and Looping” section 2.5.4 of the Recording & Playback Chapter

To create play lists and video segments via Doremi’s software read the readme document that comes with the software download.

1.6 Time Delay

This section describes how to set a V1-MP2 for broadcast time delay applications.

Note Regarding Sync

Units with serial number below 11000 must have the playback channel locked to input if the recorder channel is recording. If for any reason, the input disappears and the unit is recording, the playback will fall out of sync. For this reason, Doremi recommends placing a frame synchronizer before the input.

1. Feed the source video signal to a frame synchronizer (highly recommended).
2. Feed the video signal from the frame sync. to the corresponding input of the V1-MP2 or MCS Server.
3. Feed sync to the frame synchronizer and adjust its timing.

Units with serial numbers above 11000 now have an extra circuitry to lock the playback channel to external sync even if the record channel is in record. However, to record properly, the input must be locked to external sync.

1.6.1 V1-MP2 - Time Delay (1 Channel)

The system is based on the simultaneous Record/Play engine. Ensure that channel-1 is in 1R1P mode by checking Option Menu 0.

The **1 2 3 4** button on the front panel of the unit will allow access to the channels:

Button **1** will select the Recorder

Button **2** will select Player 1

Buttons **3 & 4** have no effect

Operation:

All menus are pre-configured at the factory. Just make sure that **LOOP MODE** is set to **ON** on the Recorder and on the Player:

1. Press the **1** button to select the Recorder.
2. Go to Menu 7 and make sure that the available recording time exceeds the duration of the delay. If not hit **OPTION CLEAR** and erase previous CLIPs one by one until the remaining time in Menu 7 exceeds the duration of the delay.
3. Go to Option Menu 3 and set the **Dur:** to a value that exceeds your delay by 30 seconds and hit **ENTER**, then hit **ESCAPE**.
4. Hold the **OPTION** key and hit **SAVE**, then hit **ENTER** to accept the CLIP name assigned by RCV2.
5. Press the **2** button to select Player 1
6. Hold the **OPTION** key and hit **RECALL**, then turn the JOG WHEEL until you see the CLIP you just created in step 4., then hit **ENTER** to load the CLIP on Player 1.
7. Hold the **ESCAPE** Button and press the **Up Arrow** key
8. Keep pressing the **Up Arrow** Key until you see **Delay**
9. Press the **TOGGLE** button and enter 01:00:00:00 (or any other delay) using the numeric keypad then press the **ENTER** button. This will locate both recorder and player to 0 time code. The recorder will start recording and the player will wait for an hour (or any value set in delay), then it will start playing
10. Press the **ESCAPE** button

To end the time delay operation, select the record channel (channel 1), go to the Controller Menu (4) **Delay Mode** and press the **TOGGLE** button.

To stop the playback but keep the V1 recording, select the playback channel, go to the Controller Menu (4) **Delay Mode** and press the **TOGGLE** button.

1.6.2 MCS - Time Delay (2 Channel)

Note if your MCS Server system has shared storage follow the instructions in this section. If your MCS Server is a 2r2p with two non-shared drives then follow the instructions in section 1.6.1 for each delay channel (rear-panel bottom row would be one delay channel, and top row is a second delay channel)

The system is based on the simultaneous Record/Play engine in conjunction with a Play Only engine. Ensure that channel-1 is in 1R1P mode by checking Option Menu 0.

The 1 2 3 4 button on the front panel of the unit will allow access to the channels:

Button **1** will select the Recorder

Button **2** will select Player 1

Button **3** will select Player 2

Button **4** will have no effect.

Connections:

The back panel is divided in two halves, the lower half is labeled channel-1 and contains the Recorder and Player 1, and the upper half contains Player 2.

1. Feed the video signal to the corresponding input of channel-1
2. Feed the 2 analog audio signals to channel-1

Operation:

All menus are pre-configured at the factory. Just make sure that **LOOP MODE** is set to **ON** on the Recorder and all Players:

1. Press the **1** button to select the Recorder.
2. Go to Menu 7 and make sure that the available recording time exceeds the duration of the delay. If not hit **OPTION CLEAR** and erase previous CLIPs one by one until the remaining time in Menu 7 exceeds the duration of the delay.
3. Go to Option Menu 3 and set the **Dur:** to a value that exceeds your delay by 30 seconds and hit **ENTER**, then hit **ESCAPE**.
4. Hold the **OPTION** key and hit **SAVE**, then hit **ENTER** to accept the CLIP name assigned by RCV2.
5. Press the **2** button to select Player 1
6. Hold the **OPTION** key and hit **RECALL**, then turn the JOG WHEEL until you see the CLIP you just created in step 4., then hit **ENTER** to load the CLIP on Player 1. Press the **2** button to select Player 1
7. Hold the **Escape** Button and press the **Up Arrow** key
8. Keep pressing the **Up Arrow** Key until you see **Delay**
9. Press the **TOGGLE** button and enter 01:00:00:00 (or any other delay) using the numeric keypad then press the **ENTER** button. This will locate both recorder and player to 0 time code. The recorder will start recording and the player will wait for an hour (or any value set in delay), then it will start playing

10. Hit the **ESCAPE** button
11. Press the **3** button to select Player 2
12. Hold the **OPTION** key and hit **RECALL**, then turn the JOG WHEEL until you see the CLIP you just created in step 4., then hit **ENTER** to load the CLIP on Player 1. Press the **2** button to select Player 1
13. Hold the **Escape** Button and press the **Up Arrow** key
14. Keep pressing the **Up Arrow** Key until you see **Delay**
15. Press the **TOGGLE** button and enter 03:00:00:00 (or any other delay) using the numeric keypad then press the **ENTER** button. This will locate both recorder and player to 0 time code. The recorder will start recording and the player will wait for three hours (or any value set in delay), then it will start playing

To end the time delay operation, select the record channel (channel 1), go to the Controller Menu (4) **Delay Mode** and press the **TOGGLE** button.

To stop the playback but keep the V1 recording, select the playback channel, go to the Controller Menu (4) **Delay Mode** and press the **TOGGLE** button.

1.7 Slow Motion Replay

This section describes how to set the V1-UHD or V1-MP2 for slow motion replay applications.

1.7.1 V1-MP2 – Slow Motion Replay

The system is based on a simultaneous Record/Play engine. Ensure that Channel-1 is in 1R1P mode by checking Option Menu 0

The **1 2 3 4** buttons on the front panel of the unit will allow access to the channels:

Button **1** will select the Recorder

Button **2** will select the Player

Buttons **3 & 4** have no effect

Setup:

1. Go to the Option Menu (01) **Transport** and set FrameMod to *OFF*.
2. Go to the Option Menu (01) **Transport** and set PL1Field<% to "0".
3. Go to the Option Menu (05) **Save Setngs** to save the settings above.

Connections:

1. Feed the signal from the camera to a frame synchronizer (highly recommended)
2. Feed the video signal from the frame sync. to the corresponding INPUT of the V1-MP2.
3. Feed sync to the frame sync. And adjust its timing

Operation using a SloMo controller:

1. If you want your SloMo device to control the recorder channel, connect it to RS422-1 on the back of the V1-MP2
2. Connect your SloMo controller to RS422-2 on the back of the unit, which will control the player channel.
3. Follow the operating instructions of your SloMo controller.

Operation using the V1 front panel (RCV2 controller):

1. Go to the Controller Menu and select **SloMo Mode ON**.
2. Press **1** to select the Recorder. Go to the start of the disk by pressing **CLEAR** then press **GOTO**, then start recording by simultaneously pressing the **REC** and **PLAY** buttons.
3. Press **2** to select the Player, and press the **REC** button to go in EE mode. When you see an event worth marking press **SAVE**, this will increment the segment number and save the IN point of the segment minus the **Preroll** value setting. (The Preroll value is set in the Controller Menu 05)
Every time you hit **SAVE**, the segment number will increment and the new time code will be captured. If you want to recall a specific segment press the ++ or -- buttons until you see the desired segment number displayed, then press **RECALL**. (You can do this while in EE mode).
4. When you press **SLOMO**, the unit will start playing from that point at the slow motion speed selected by the shuttle wheel.
5. To stop and go back in EE, press **STOP** followed by the **REC** button.

1.7.2 V1-UHD – Slow Motion Replay

The system is based on a simultaneous Record/Play engine. Ensure that Channel-1 is in 1R1P mode by checking Option Menu 0.

The **1 2 3 4** buttons on the front panel of the unit will allow access to the channels:

Button **1** will select the Recorder

Button **2** will select the Player

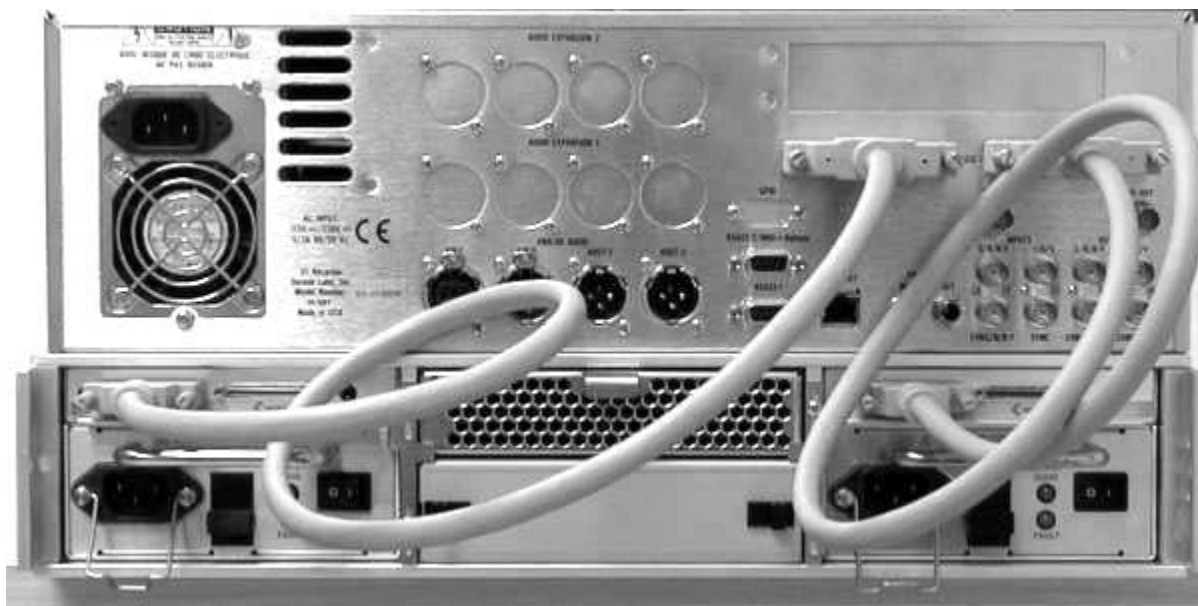
Buttons **3** and **4** have no effect

Setup:

4. Go to the Option Menu (01) **Transport** and set FrameMod to “off”.
5. Go to the Option Menu (01) **Transport** and set PL1Field<% to “0”.
6. Go to the Option Menu (05) **Save Setngs** to save the settings above.

Connections:

1. Feed the HDSDI signal from the camera to the HDSDI input of the V1-UHD.
2. Connect the included SCSI cables as illustrated in the picture below



Operation using a SloMo controller:

1. If you want your SloMo device to control the recorder channel, connect it to RS422-1 on the back of the V1-UHD
2. Connect your SloMo controller to RS422-2 on the back of the unit, which will control the player channel.
3. Follow the operating instructions of your SloMo controller

Operation using the V1 front panel (RCV2 controller):

1. Go to the Controller Menu (06) and select **SloMo Mode** to *ON*.
2. Press the **1** button to select the Recorder. Locate to 0 and start recording
3. Press the **2** button to select the Player.

4. Press the **RECORD** button to go in EE mode. When you see an event worth marking press **SAVE**, this will increment the segment number and save the IN point of the segment minus the **Preroll** value setting. (The Preroll value is set in the Controller Menu 05). Every time you hit **SAVE**, the segment number will increment and the new time code will be captured. If you want to recall a specific segment press the ++ or -- buttons until you see the desired segment number displayed, then press **RECALL**. (You can do this while in EE mode).
5. When you press **SLOMO**, the unit will start playing from that point at the slow motion speed selected by the shuttle wheel.
6. To stop and go back in EE, press **STOP** followed by the **Record** button.

1.8 Broadcast Automation

This section describes how to setup the MCS-1r2p and MCS-DCT-1r2p for broadcast automation.

1.8.1 MCS-1r2p

Setup

1. Connect a cross over Ethernet cable between Channel-1 and Channel-2
2. Channel-1 is the Record channel
3. Channel-2 is the preview channel
4. Channel-3 is the Play only channel
5. To control Channel-1 connect your serial cable to RS422-1 (back bottom)
6. To control Channel-2 connect another serial cable to RS422-2 (back second from bottom)
7. To control Channel-3 connect another serial cable to RS422-1 (back second from top)
8. Connect the Video I/Os. Even though Channel-2 has video and audio inputs, these are not active. If you want to lock to House Sync, you need to feed it to both channels on the SYNC-IN inputs and make sure that **Sync Source** is set to *Sync In* from Menu (3). If not, you will not need to feed Sync to the channels, but you will need to set the **Sync Source** to *Internal*.

Recording Test

When you power up the unit, watch the front panel's 4-line LCD display for messages. Line two will alternate between "No Disk" and "Scanning.." Wait for these messages to disappear and replaced with time code on line 1 and "STOP" on line 2.

At this stage, you should be able to hit **PLAY, FORWARD**, etc... to view previously recorded video material.

Make sure Channel-1 is selected on the front panel (press the "1" button under the 4-line LCD). press **OPTON** and hit the **SAVE** button, the display will show "CLIP 001" (or another number), hit **ENTER** to accept the file name to be created. From Channel-2, press the **RECORD** button by itself to put the unit in EE mode. If you don't see your source video on the confidence monitor, check Menu (5), **Vid Source**, and make sure you selected the same video input that you are feeding to the unit. Once you see your video input, you can go back to channel-1 and hold the **RECORD** and **PLAY** buttons to go in record. You can do as many recordings as you want on the file that you have open.

If you have more than 1 file, you can browse through them by holding the **OPTION** and hitting the **RECALL** button. Use the Jog wheel to browse all file names.

Compression Test

The unit was set up with an I-Only GOP structure. This can be verified by going to Option Menu (3) **New Rec Set** and scroll to the **GOP** setting. To change the compression ratio or the bit rate of the unit, in the same Option Menu (3) scroll to **BitRate** and select a new bit rate value. Next press **ESCAPE**, then hold **OPTION** and hit **SAVE** to create a new file using the new parameters. If you don't create a new file, the changes you make to the compression ratio or to

the GOP structure will not have an effect. Other menus can be changed and will have an effect without creating a new file like the **Sync Source** or the **Vid Source**, etc..

Record the same material on different files using different bit rates and make a decision on the best bit rate for your application.

Automation Test

At this stage you should be familiar with the system and you can start using your automation system to record using channel-1, preview using channel-2 and playback using channel-3.

1.8.2 MCS-DCT-1r2p

Setup

1. Connect the Ethernet cross over cable between Channel-1 and Channel-2
2. Channel-1 is the Record/Preview channel
3. Channel-2 is the Play only channel
4. To control Channel-1 connect your serial cable to RS422-1 (back bottom)
5. To control Channel-2 connect another serial cable to RS422-1 (back second from top)
6. Connect the Video I/Os. Even though Channel-2 has video and audio inputs, these are not active. If you want to lock to House Sync, you need to feed it to both channels on the SYNC-IN input and make sure that **Sync Source** is set to *Sync In* from Menu (3). If not, you don't need to feed Sync to the channels, but you need to set the **Sync Source** to *Internal*.

Recording Test

When you power up the unit, watch the front panel's 4-line LCD display for messages. Line two will alternate between "No Disk" and "Scanning.." Wait for these messages to disappear and replaced with time code on line 1 and "STOP" on line 2.

At this stage, you should be able to hit **PLAY**, **FORWARD**, etc... to view previously recorded video material.

From the front panel, hold the **OPTION** button and press **SAVE**, the display will show "CLIP 001" (or another number), press **ENTER** to accept the file name to be created.

Make sure Channel-1 is selected on the front panel controller (press the "1" button under the 4-line LCD). Hit the Record button by itself to put the unit in EE mode. If you don't see your source video on the confidence monitor, check Menu (5), **Vid Source**, and make sure you selected the same video input you are feeding to the unit. Once you see your video input, you can hold the **REC** and **PLAY** buttons to go in record. You can do as many recording as you want on the file that you have open.

If you have more than 1 file, you can browse through them by holding the **OPTION** and pressing the **RECALL** button. Use the Jog wheel to browse all file names.

Compression Test

The unit was set up with 5:1 compression. To change the compression ratio of the unit go to Option Menu (3) **New Rec Set**, select a new compression value. Next press **ESCAPE**, then hold **OPTION** and press **SAVE** to create a new file using the new parameters. If you don't create a new file, the changes you make to the compression ratio will not have an effect. Other menus can

be changed and will have an effect without creating a new file like the **Sync Source** or the **Vid Source**, etc..

Record the same material on different files using different bit rates and make a decision on the best bit rate for your application.

Automation Test

At this stage you should be familiar with the system and you can start using your automation system to record and edit files using channel-1 and play them back using channel-2.

2 Recording & Playback

Note about terminology used in this chapter: The terms **clip** and **file** are interchangeable. “Clip” is the term used in the V1 front panel and RCV2-9p remote to call-up and save the different files stored on the V1. The term “File” is used in many sections of this manual because it is more descriptive.

The term **segment** is used to describe what is created when IN and OUT time based reference points are marked on the open file.

2.1 Single File versus Multi-File System (MFS)

Single file system (SFS) treats the whole storage area as a single file. To record multiple recordings and be able to locate to them, they should be identified by their time code location just like a tape machine.

Multi-file system (MFS) allows the user to create up to 2000 files that are identified by names. Each file can be loaded and created using the serial connection running the Odetics or VDCP (Louth) protocol and can also be accessed using the V1 front panel or Doremi’s RCV2-9p stand-alone remote control box.

The benefits of MFS include:

- Odetics and VDCP protocol compatibility
- Each file can have individual video segments made.
- Deletion of individual files without deleting entire disk
- Each file can be created with unique compression, bit rate etc. although not recommended for seamless playback using different files.

2.2 Using the V1 Multi-File System

The Default File

The V1 will always contain one default file. The primary purpose of the default file is to allow operation without using files, thereby maintaining compatibility with existing video tape recorders.

The default file will not be included in the list of available files maintained by the V1, and will not be returned when a list of available files (clips) is requested. The default file may be specified and used for all other purposes. If no other valid file has been specified and loaded, such as on initialization and errors, the V1 will load the default file.

Creating a new file

Hold **OPTION** and press **SAVE**, the LCD will show you the automatically assigned name, press **ENTER** to create the file or **ESCAPE** to abort.

Loading an existing file

Hold **OPTION** and press **RECALL**. Turn the **JOG WHEEL** to browse through existing files, press **ENTER** to load the selected file or **ESCAPE** to abort.

Erasing a file

Hold **OPTION** and press **CLEAR**. Turn the **JOG WHEEL** to browse through existing files, press **ENTER** to erase the selected file or **ESCAPE** to abort.

Files and Time Code

Each file is considered to have available a “pre-stripped” time code range with continuous ascending time code beginning at 00:00:00:00 through the largest valid time code position specified in Option Menu 3 “New Rec Set”, the default value is 24 hours. Video material may be recorded at any time code position within the file. Time code positions that have never been recorded over are considered to be black video.

Setting Recording Parameters for each file

Each file can have different recording parameters. The recording parameters that will be saved when a new file is created are in the Option Menu (3) **New Rec Set** which includes compression ratio, bit rate, number of audio tracks, duration, NTSC or PAL, 1080i or 720p HD formats etc. The available settings depend on the V1 model in use and the options installed.

Mixing Recording Parameters

Every file can have its own recording parameters (such as compression ratio), but to create playlists that use more than one file, the recording parameters should be the same for all files. If they are not, the transition between files during playback will no longer be seamless.

Connecting multiple units

You can connect multiple units to share the same file system. You can only have up to 8 video channels. The recorder broadcasts messages over the Ethernet port to notify the players of new files and to update the file system. All Ethernet ports within the same system should be connected together. If only 2 channels are used, you can use a crossover Ethernet cable, if more than 2 channels are used, all Ethernet ports should be connected to the same hub or switch.

2.3 Recording modes

To avoid having repetitive time code within the same file, the V1 records in different ways depending on the Time Code Mode selected in Menu 2.

- If Time Mode is set to Time Code or to VITC, the V1 will read the incoming time code selected and synchronizes itself to record at the proper position.
- In all other modes, the V1 will record at the current position or at the end of file depending on the “Rec at:” setting in Option Menu 1 “Transport”.

2.4 The V1 and Supported Control Protocols**Serial Machine Control (SONY 9 pin and Pioneer Laser Disk) Protocols**

When the V1 is set to emulate Sony 9pin mode (BVW-75 or DVW-500 decks) in Option Menu (1) **Transport > Emulate** or Pioneer Laser Disk in Option Menu (15) **SERIAL PRT** the remote control commands will only access the video in the current opened file.

Odetics and VDCP (Louth) Protocols

The V1 supports the Odetics and VDCP (Louth) protocol. To select a protocol, go to Option Menu (1) **Transport** and select the desired protocol in **Emulate**.

Limited Mode

The V1 has an emulation mode called Limited Mode. When a file is loaded and you are in Limited Mode operation will be “limited” to the recorded video part of that file. Option Menu (1) **Transport > Emulate** set to *Odetics LMTD*

In this mode, the playback boundaries of the file, will be set by the IN and OUT PRESET values specified when the file is loaded. Limited Mode can only be accessed when using the V1 in Odetics mode.

- If the IN PRESET is before the start of recorded video, the start boundary will default to the start of the recorded video.
- If the OUT PRESET is after the end of recorded video, the end boundary will default to the end of the recorded video.

2.5 Creating Video Segments & Play Lists

2.5.1 What is a Segment?

A segment is a recording on the active drive defined by a time IN and a time OUT points. Up to 2000 segments can be defined on the V1.

2.5.2 Segments and the V1's Multi-File System

Segments are created on the loaded file (or the default file if no file has been loaded. When you recall a segment it will load the file associated with it when it was created. This means that segments can be used to create play-lists that use multiple files.

2.5.3 Creating a Segment

To work with segments, first ensure that Option Menu (01) **Transport Emulate** is set to *V1*.

To create a segment, press **IN** button where you want the in point to be and press **OUT** where you want the out point to be. You may enter these values on-the-fly while you are playing or you can locate to each point individually (Enter timecode and push **GOTO** or locate command on RS422) and enter the in and out points separately.

Press **SAVE** and enter a number from **0001 to 2000** to identify the segment and then press **ENTER**. To recall any defined segment for playback, press **RECALL**, enter the number of the segment from **0001 to 2000**, and then press **ENTER**. The segment will play automatically and the LCD will display the segment information as indicated in the following section.

NOTES :

The V1 will not save any segment number above 2000 and will not save segment number 0000.

When you enter a segment number, the V1 will locate to the start of the segment after a certain delay. If you do not want the V1 to locate to those intermediate segment numbers, you should enter the whole number quickly. If a segment does not exist, the V1 will locate to the start of the disk.

If you want to define the segment that will play directly after the one you have just entered, before you hit **ENTER** press the up arrow key and enter the next segment (you can also define the previous segment) then press **ENTER**.

2.5.4 Creating Play List & Loops

Once the segments are fully defined as described above, a play list can be defined to automatically chain or loop segments during playback. In order to implement this list, each segment requires the definition of a "next segment" parameter and, optionally, a "previous segment" parameter.

To define the next segment :

- ◆ Press **RECALL**, enter the number of the segment to modify, press ++, the LCD will display "**Next Seg:**", enter the segment number of the segment you want to play next and press **ENTER**. Note that you are only allowed to enter valid segment numbers.
- ◆ Do the above for each segment you want to chain.
- ◆ To create a "play list" that loops simply have the last segment of the chain point to the first segment of the chain
- ◆ If you want to create a loop of a single segment, recall a segment and set the "next segment" to the same number as the segment you just recalled.

Define a previous segment only when you want to insert a segment into an existing play list:

- ◆ Press **RECALL** and enter the number of the segment to be inserted, press --, the LCD will display "**Prev Seg:**", enter the segment number that will precede it in the play list and press **ENTER**.
- ◆ Press **RECALL** and enter the number of the segment to be inserted, press ++, the LCD will display "**Next Seg:**", enter the segment number that will follow in the play list and press **ENTER**.

NOTE: *You are only allowed to enter valid segments.*

Examples:

To play the following list of segments: (4, 3, 8, 1, 4) the 4 at the end will cause the V1 to loop.
*Ensure all these segments have been defined with the **IN**, **OUT** and **SAVE**:*

Press RCL 004	++	Next Seg	=	003	ENTER
Press RCL 003	++	Next Seg	=	008	ENTER
Press RCL 008	++	Next Seg	=	001	ENTER
Press RCL 001	++	Next Seg	=	004	ENTER

To insert segment 5 in the play list: (4, 3, 8, **5**, 1, 4)

Press RCL 005	--	Prev Seg	=	008	ENTER
Press RCL 005	++	Next Seg	=	001	ENTER

The "Previous Segment" is only used to insert a segment in a previously defined play list. The V1 will automatically display the previous segments for each play list item when you recall the segment and move to "Prev Seg".

Defining more than one play list

The segment definition and playback feature allows the user to define more than one play list, as long as the segment numbers do not conflict. i.e. the user can define: Play list A: (5, 4, 3, 2, 1, 5) and Play list B: (10, 9, 8, 7, 10). To play list A, the user can recall any segment from that list (1, 2, 3, 4 or 5) or play list B by recalling any segment from that list (7, 8, 9 or 10).

Modifying a list during playback

A list can be modified during playback. This is useful to allow jumps from one list to the other. If we use the two play list defined above, if during playback of list one, the user Recalls segment 2 and enter 10 as the next segment (instead of 1), the V1 will jump from list 1 to list 2 as soon as it finishes playing back segment number 2.

Using a segment as a Marker

A segment can also be used as a marker. Locate to the point you want to put a marker on, hit the **IN** key followed by the **OUT** key and save the segment number as "**no.**" Any time you recall segment "**no.**" the V1 will locate to that point and stops.

Segments and A-Time

The Segment definition uses the A-Time (absolute time) as a reference, this means that even if you set a Time Code Offset, your segments will not change, they will only display the new time code when played.

Remaining Time of a Segment During Playback

When you RECALL a segment or a play list, the LCD will display the segment number playing back along with the remaining time up to the OUT point of that segment in the following format:

Segment No. : MM.SS

Where **No.** is the segment number played from 0001 to 2047 and **MM.SS** is the remaining time up to the OUT point in mn:sec.

2.6 Chase Command and Chase Modes

The V1 can chase in two different ways. The Chase Command will force the V1 to synchronize to the incoming LTC and start playback, it will not stop when the LTC stops. In Chase Mode, the V1 will synchronize to the incoming LTC, Serial Time Code or Biphase and stay synchronized as long as they are present, The V1 will stop when the time code stops.

While in chase mode, if the time code stops, the V1 can be set to “free-wheel” for up to 10 frames. Select the number of frames in Option Menu (01) **Transport Chase FWL**. If your LTC is reliable set this to “1”.

The Chase Command

To execute a Chase command press **OPTION** and hit **PLAY**. Both the source machine and the V1 **should be synchronized** to the same source of House Sync and the time code should be fed from the source machine into the LTC IN of the V1.

Begin playing the source machine. The V1 will begin playing as soon as it sees time code that is within the range defined for the active drive and will continue playing **in stand alone mode**, so a stop on the incoming LTC will not stop the V1.

During this chase (**OPTION PLAY**) the V1 LCD displays “PLAY” with a black dot to indicate that the play is in sync with the source.

Chase Mode, CHASE to LTC Time Code

To put the V1 into "Chase to LTC" mode, set Menu (04) **Chase Mode** to *Chase to LTC*. Both the source machine and the V1 **should be synchronized** to the same source of House Sync and the time code should be fed from the source machine into the LTC IN of the V1. Begin playing the source machine. The V1 will begin playing as soon as it sees time code that is within the range defined for the active file and will continue to play LOCKED to the incoming LTC, so a stop on the incoming LTC will also stop the V1.

During this chase play, the V1 LCD displays "VAR" to indicate that it can chase at different speeds.

Chase Mode, CHASE to RS422 or Serial Time Code

To put the V1 into the Chase to RS422 or Serial Time Code mode, set Menu (04) **Chase Mode** to *Serial TC*. Both the source machine and the V1 **should be synchronized** to the same source of House Sync and the time code should be fed from the source machine into the RS422 port of the V1. Begin playing the source machine. The V1 will begin playing as soon as it sees a time code within the range defined for the active file and will continue to play LOCKED to the incoming RS422 time code.

During this chase play, the V1 LCD displays "VAR" to indicate that it can chase at different speeds.

Chase Mode, CHASE to BI-PHASE

To put the V1 into the Chase to Biphase mode, 3 steps are required:

- Select the input frequency using Option Menu (14) **Bi-Phase #Clks/Fr**
Select between 01, 02, 04, 10. The selection represents the number of clicks on the incoming Biphase signal per video frame (01= 1 click per frame). In PAL 25 frames/sec, 01=25Hz, 02=50Hz, 04=100Hz, 10=250Hz.
- Set Menu (04) **Chase Mode** to *BiPhase* and Menu (02) **Time Mode** to *A Time*

Both the source machine and the V1 **should be synchronized** to the same source of House Sync and the Biphase signal should be fed from the source machine into the second RS422 port of the V1. Locate the source machine at a reference position, locate also the V1 to the same reference position (frame) and then enter the required Time code Offset on the V1. (see Time Code Offset in the next section)

Begin playing the source machine. The V1 will begin playing in chase and will continue to play LOCKED to the incoming Biphase signal, so a stop on the incoming Biphase will also stop the V1.

During this chase play, the V1 LCD displays "VAR" to indicate that it can chase at different speeds.

2.7 Using Discontinuous Time Code on the open File

IMPORTANT NOTE: Discontinuous time code can cause many playback problem.
If the incoming LTC or VITC are not needed, set the unit in A-Time mode
If the incoming LTC or VITC are needed, set the unit in Time Code or VITC before you start recording. For projects that might have the same timecode, Doremi Labs, strongly recommends creating a file for each continuous time code section.

2.8 Time Code Offset

This function will allow you to offset your time code track starting at any location (frame) on the disk. NTSC users should first select their time code frame rate from the Menu (2) **Time Mode**. To enter your Time Code Offset locate to any position on the drive, manually enter the new time code desired at that location and then hold down **OPTION** while hitting the **IN** key. The Time Code offset will be permanently saved on the drive.

This Time Code Offset function is useful to transform an Absolute Time track into a Time Code track; once the right offset is set for a recording done in A-Time, it will behave as if time code was recorded on the drive.

3 Front Panel Description

The V1 front panel (called the RCV2) contains space for two (3 1/2") half-height SCSI drives or 3 (3 1/2") Low Profile SCSI drives, keypad, menu controls, transport controls, LCD display and an optional LCD video confidence monitor.

To *disable* the front panel and prevent accidental operation, hold the **OPTION** button then press **ESCAPE**. Press again to unlock the RCV2. When the RCV2 is in "disable mode" the letters "DIS" will be displayed in the top right corner of the LCD.

To *reset* the controller (soft reset) hold the 1,2,3 or 4 buttons and press **CLEAR**. This may be necessary to reset the LCD video monitor if you switch between NTSC & PAL formats.

3.1 Keypad Area



1, 2, 3, 4 (Channel Selection): If your V1 has more than one channel use these buttons to switch between the different channels. For single channel V1 machines channel "1" should always be selected.

AUD. SEL: Audio Select button: Switches between audio channel pairs for the headphone connection.

ALPHA-NUMERIC KEYPAD: This keypad is used to enter numeric data such as time code addresses, in and out points, locate points, etc. To enter data, simply begin typing the numbers and the display will automatically overwrite. To abort an operation, press the **ESCAPE** button. The display will revert to its previous setting. The **BKSP** (Backspace) button can be used to correct typing errors. The keypad can also be used to name Video Segments by using the corresponding letters. *(This Feature is not yet available)*

RECALL: Recall a saved video segment.
For more about segments See [Creating Video Segments & Play Lists](#)

SAVE: Save a video segment into a memory location number or name.

- CLEAR:** Clears the display to enter new data.
- ENTER:** Press after selecting a segment to play. Also to answer YES to the V1's "are you sure?" question
- OPTION + SAVE:** Creates a new file.
For more about files see Using the V1 Multi-File System
- OPTION + RECALL:** Recalls an existing file.
- OPTION + CLEAR:** Deletes an existing file.

3.2 Menu Controls and Jog/Shuttle



- IN:** Select the In time point for a Video Segment.
- OUT:** Select the Out time point for a Video Segment.
- GOTO:** To locate to a specific frame (field) from the V1 front panel, enter the time code location numbers from the numeric keypad and press **GOTO**.
- ESCAPE:** This is the escape button. Press it when you want to exit the menu mode.
- OPTION:** Selects the options menu. Hold down option button and press the **MENU** button.
- TOGGLE:** Use this button to change selections within most menus and options.
- Nudge the value backward. Also locates one field or frame back from the current position. This depends if you are in frame or field mode (Option Menu 6).

++	Nudge the value forward. Also locates one field or frame forward from the current position. This depends if you are in frame or field mode (Option Menu 6).
MENU ▲ ▼	Pressing one of these buttons will engage the V1 MENU. (See Menu) Pressing the ESCAPE button will return the V1 to the time code display mode. Scroll forward and backward through the menu by pressing the ▲ or ▼ keys
OPTION + MENU	Holding the OPTION button and pressing the MENU button will engage the V1 OPTION MENU. (See Option Menu)
ESCAPE + MENU	Holding the ESCAPE button and pressing the MENU button will engage the V1 CONTROLLER MENU. (See Controller Menu)
OPTION + ESC	Holding the OPTON button and pressing ESC will disable/enable the front panel controls of the V1. “DIS” will appear in the upper right corner of the LCD when the front panel controls are disabled.
OPTION + IN	Holding the OPTION button and pressing IN will create a time code offset. For more information see Time Code Offset

JOG/SHUTTLE WHEEL FUNCTIONS: Activates the following function when lit:

- JOG:** In Jog mode, the rotation of the Internal wheel will generate "Jog" steps in forward or reverse. Also does the same function as the – and the ++ buttons.
- SHUTTLE:** In Shuttle mode, the angle of the external wheel from its initial position will control the shuttle speed with 7 different values in each direction: **10%, 20%, 48%, 100%, 200%, 500%, 1000% in >> or <<.**
- The value used and the direction (">>", "<<") is displayed on the bottom line of the LCD during the shuttle operation.
- SLO MO:** Activates the external wheel for slow motion control. The slow motion is forward only with predefined values of **0%, 3%, 10%, 15%, 20%, 26%, 30%, 39%, 48%, 60%, 65%, 75%, 81%, 87%, 93%, 100%**
- The V1 uses a line shifting inter-field processing technique for smoother motion during slow motion mode on standard definition machines.

3.3 Transport Controls



The V1's standard transport controls include:

REC	Record control button. This button also has other functions described elsewhere in this manual.
STOP	Stop control button. The stop button will cause the V1 to stop any transport control (Play, record, rewind, fast forward).
PLAY	Play control button. If the active drive has recorded material, pressing the PLAY button will start playback from the current location at normal speed. If the sync source selected is present, a dot will appear to the left of the PLAY message on the 4 line LCD display.
REW	Rewind control button with a speed of 40 times normal. When the rewind is close to the beginning of the recording, the speed is slowed down to normal until it reaches the start. Pressing this button again will increase the speed. There are three speed levels REW+REW+REW.
FF	Fast forward control button with a speed of 40 times normal. When the fast forward is close to the end of the recording, the speed is slowed down to normal until it reaches the end. Pressing this button again will increase the speed. There are three speed levels FF+FF+FF.
OPTION + REW	Reverse Play. Holding OPTION and then pressing PLAY will cause the V1 to play video at 100% reverse speed.
OPTION + PLAY	Executes the Chase Command. Hold Option and press PLAY . See Chase .

3.4 LCD Time Code Display



The First line of the display shows the following:

- Time location of the video material using the following format: “**HH:MM:SS:FF F1/F2**”
- "HH" represent the hours from 00 to 23, "MM" represent the minutes from 00 to 59, "SS" represents the seconds from 00 to 59, "FF" represents the frames from 00 to 24 in PAL and 00 to 29 in NTSC, "F1/F2" represent the field: "F1" for odd fields and "F2" for even fields.
- This display will show either **Absolute Time** or **Time Code** depending upon what the user has selected in Menu (2) **Time Mode**. The display also shows Drop/NonDrop information; “.” Means NonDrop and “;” means DROP frame. Field one shows “.” Field two shows “:” or “;”

The Second line displays the following:

- At the V1 start-up, the bottom left displays the version of the front panel (RCV2) software installed on the flash EPROM (example, V 1.2 when version 1.2 is installed), then **No Disk** and **Scanning** messages will alternate on the left side and **Stop** is displayed on the right side until a valid drive is recognized on the SCSI bus of the V1, in such case **No Disk** will disappear and only **Stop** will be displayed indicating that the V1 is now ready to access the drive. If **No Disk/Scanning** is still displayed even though a disk was installed, the V1 did not recognize the disk.
- During transport controls, the current operation is shown on the right side of the display: **Servo-Lock Dot, PLAY, STOP, REWIND, FORWARD, RECORD, JOG, SHUTTLE, VAR..** "VAR" is indicated during play in chase on LTC/MTC or in variable speed from RS422.
- During shuttle movement, the shuttle speed is shown as :
If forward shuttle: ">> xx %" with xx % = 10%, 20%, 48%, 100%, 200%, 500%, 1000%
If reverse shuttle: "<< xx %" with xx % = 10%, 20%, 48%, 100%, 200%, 500%, 1000%
- During segment playback, the remaining time up to the OUT point is shown as "no. : MM.SS", where "no." is the number of the segment played from 001 to 2047, "MM.SS" is the remaining time up to the OUT point of the segment played in mn:sec
- During formatting, the message **Formatting...** is shown. During initialize, the message **Initializing** is shown. During drive copy, the message **Copying...** is shown, once done, **Copy Complete** is shown and if source drive has invalid recording, **Bad Segment** or **Copy aborted** is shown.
- During the drives mounting (insert) and un-mounting (eject), the message **No disk** is displayed.

The Third and Fourth lines of the LCD display the Audio Level meters.

3.5 SCSI Drives

The V1 is shipped with either a standard SCSI storage device: 3 1/2" half-height or low-profile (LP) hard drives mounted internally inside the V1 or in a removable tray (Data-Express).

When mounted in a removable tray, hard drives can be removed (or installed) while the V1 is on-line (without the need to shut the unit off).

To remove (or install) a drive, insert the supplied drive key into the key slot on the receiver below the lit SCSI ID number and turn it clockwise (or counter-clockwise). When removing a drive, turning the key clockwise will unlock the drive and cut power off from it causing it to spin down.

Before removing a drive, wait until it has completely finished spinning down. This will usually take about 30 to 40 seconds depending on the drive.

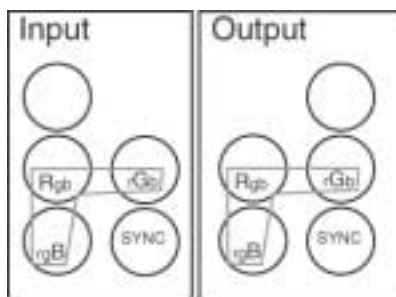
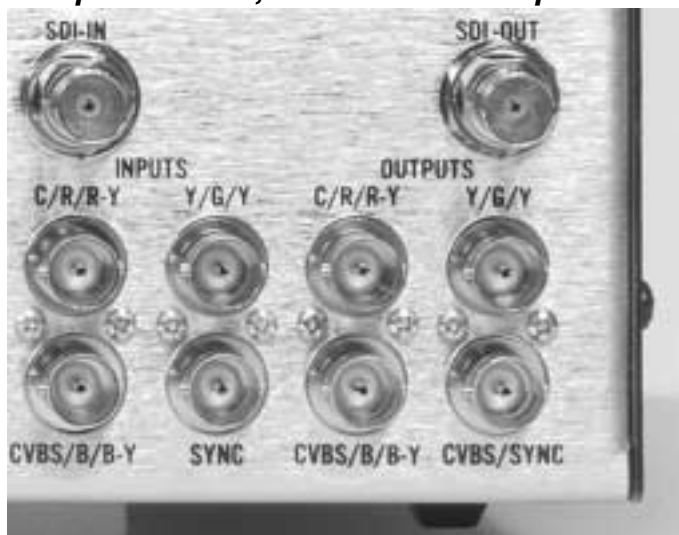
3.6 LCD Video Display



Optional LCD video confidence monitor. The display can be turned OFF or ON in the Controller Menu (1) **Video** option.

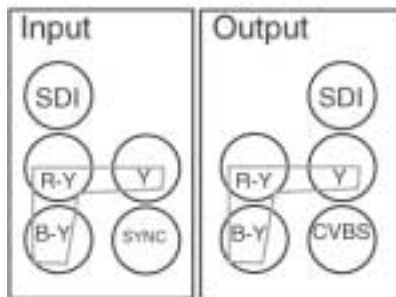
To *reset* the entire front panel controller (soft reset) hold the **1,2,3** or **4** buttons and press **CLEAR**. This may be necessary to reset the LCD video monitor if you switch between NTSC & PAL formats.

4.1 Video Inputs / Outputs >>DCT, MPEG2 & Uncomp SD



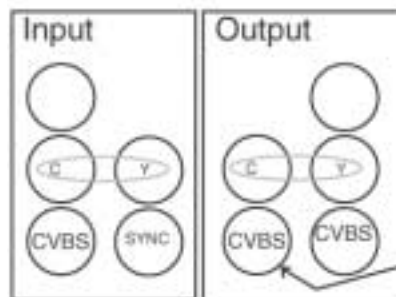
RGB: Red, Green & Blue
 **Output must include sync

SYNC Input: Sync for Genlock
 SYNC Output: Internal Sync Output



R-Y, Y, B-Y: Component YUV Video
 SDI: Serial Digital Interface, Digital Component Video (available with embedded audio option)

SYNC Input: Sync for Genlock



CVBS: Composite Video
 Y & C: S-VHS video

SYNC Input: Sync for Genlock

Note: Only available when video out selection is set to YC

Note : Do not use YUV/RGB output and Y/C (S-Video) outputs at the same time because these signals are coming from the same buffered outputs and this will produce a mismatch on impedance loads.

Sync In House Sync input BNC connector for the V1 synchronization reference. Use only Black Burst Sync here. Sync input should **not exceed 1V P-P**.

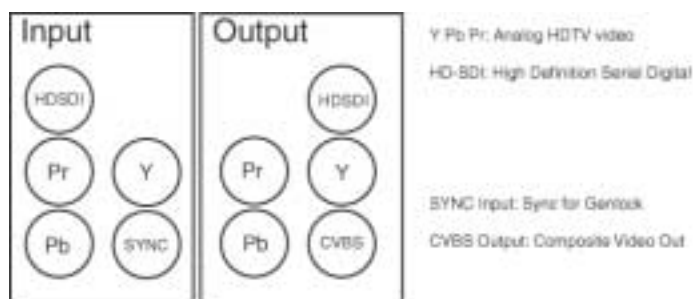
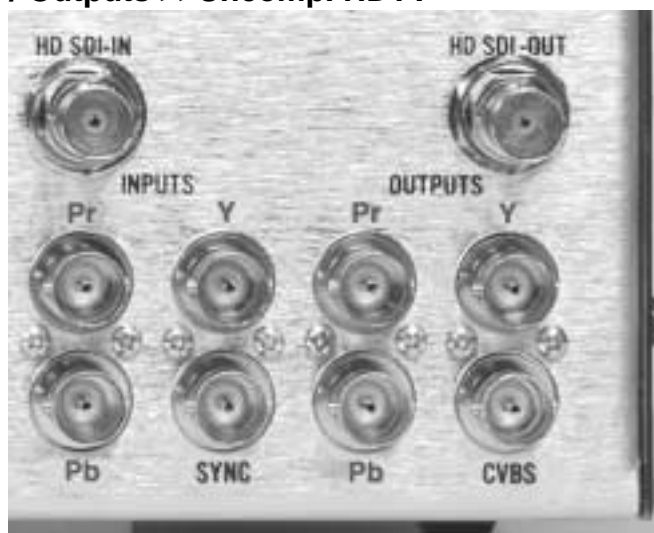
Video Analog Composite video input and output BNC connectors. Video IN is where you connect your video signal for recording to the V1 and Video OUT is for connection to a video monitor or another video recorder.

S-Video Two separate Y and C BNCs. You must use a Y/C to Mini DIN-4 adaptor for single cable S-VHS applications.

SDI (option) Optional. Serial Digital Interface input and output BNC connectors

RGB/YUV (option) Optional. Three RGB or YUV selectable BNC output connectors

4.2 Video Inputs / Outputs >>Uncomp. HDTV



HDSDI Serial High Definition digital Video

Y Pb Pr Analog Component High Definition Video

SYNC Input Tri-level sync input. Locks the V1 to an external sync source

CVBS Composite Video Reference Output – (Standard Video Resolution)

4.3 Audio Inputs / Outputs

Analog Audio 2 channel analog XLR inputs and outputs. These XLR connectors are the balanced analog audio inputs and outputs. Pin 2 is hot (+), pin 3 is cold (-), and pin 1 is ground.

Digital Audio (option) 4 channel digital XLR inputs and outputs. Transformer balanced AES/EBU input and output. Pin 2 is hot (+), pin 3 is cold (-), and pin 1 is ground.

Audio Expansion1 Expansion Card Slot holds one of the following optional cards
A- 4 Channels AES / EBU
B- 2 Channels analog audio

Audio Expansion2 Expansion Card Slot holds one of the following optional cards
A- 4 Channels AES / EBU
B- 2 Channels analog audio

Embedded Audio on SDI (option) Up to 8 channels of audio can travel with the SDI video.

4.4 9 Pin Connectors

GPIO: Optional. General Purpose inputs and outputs

RS-422-1: Primary serial interface connector to the V1. Connector 1 should be connected to your edit controller or workstation, while connector 2 can be used to connect the optional **RCV2-9p** external remote control from Doremi Labs.

RS-422-2 / + Biphase:

If all 9 jumpers on J34 are set to the RS422 position, this connector will be used as a second RS422 port (this is the default setting when the unit is shipped). If all 9 jumpers on J34 are set to MIDI+BP position, this connector will be used as a Biphase input with a +5V supply.

4.5 Ethernet Connector

Ethernet: RJ45 connector 100BaseT. You can set a unique IP address for the V1 in Option Menu (00) **INFO/MODE IP (no.)**

4.6 Time Code

Balanced TRS 1/4" input and output connectors for LTC time code. The V1 time code input accepts balanced signals (tip hot, ring cold & sleeve is ground). If you are feeding an unbalanced signal to it, **both** ring and sleeve **should** be connected to GND. You **can** use an **unbalanced** jack (tip and sleeve) on the **time code input** of the V1. The V1 time code output is a balanced signal (tip hot, ring cold & sleeve is ground). If you are feeding it to an unbalanced input, **ring should**

not be connected to anything. You **cannot** use an **unbalanced** jack (tip and sleeve) on the **time code output** of the V1. If you connect time code from one V1 to another the cable should be balanced on both ends.

4.7 SCSI

Standard 68-pin female connector for connection to external SCSI drives. When no external SCSI devices are used, make sure the supplied terminator is connected here. When connecting external drives, the last drive in the chain should be terminated. All V1 internal drives supplied by Doremi Labs, Inc. are non-terminated.

This connector may not appear on your unit because the terminator was placed inside the unit.

5 Menu Reference Chart

From the front panel, you have access to three different menus.

MENU: Press **MENU**
 OPTIONS MENU: Hold **OPTION** and press **MENU**
 CONTROLLER MENU: Hold **ESC** and press **MENU**

Operation and navigation information are provided in the Chapter 6, 7 and 8.

5.1 Menu Chart

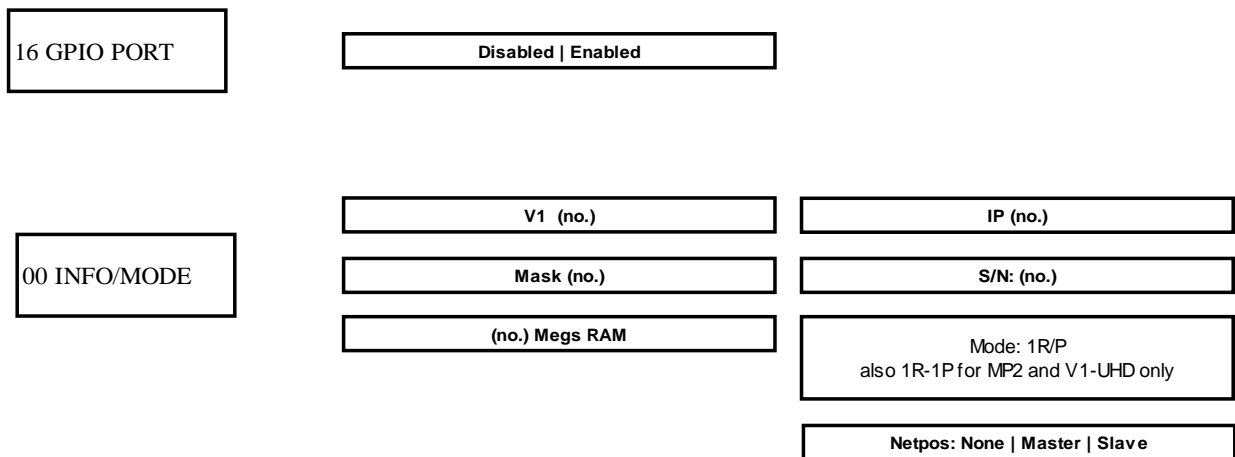
1 Control	Local Remote
2 Time Mode	A Time A Time DF A Time as LTC A Time LTC DF Time Code VITC Time
3 Sync Source	Internal for PAL or Internal 59.94 for NTSC Auto Sync In Input
4 Chase Mode	Off LTC Serial TC BiPhase
5 Vid Source	Composite S-VHS YUV RGB SDI or YPbPr HD-SDI for High Def.
6 Aud Source	Analog AES/EBU SDI
7 INFO/T-LEFT	HH:MM:SS:FF
	Audio Trck (no.)
	Bit Rate (no.) Mbs or 1:1 (no.) Bits or (no.): 1
	NTSC PAL or (HD Format)
	Mode: 1R/P also 1R-1P for MP2 and V1-UHD only

5.2 Option Menu Chart

1 TRANSPORT	DiskAcc PL-RE Play	FrameMod On Off Play
	StopMod Still EE	Jog On Ch (no.) & (no.)
	FastMod Norm Enhan	JogSpeed FULL 100%
	PL1Field< % (no.)	ChaseFWL: (no.)
	LimToSeg (no.)	LoopMode OFF ON
	Emulate (V1 DVW-500 Odetics Odetics LMTD BVW-75 VDCCP)	
	StepRec off ALL Video	Rec at: Cur P. End F.
2 AUTO PLAY	Segment#: (no.)	
	NoVidDly 000s	
3 NEW REC SET	BitRate (no.) Mbs or 1:1 (no.) Bit or (no.):1	NTSC PAL or (HD Format)
	# Aud Trks (no.)	GOP: I Only IB IP for MPEG2
	Decimation No Decimation for DCT & HD	#Lines 480/512 NTSC 576/608 PAL
	Dur : HH:MM:SS	
4 INIT DISK	MultiFile	Bus: (no.)
	Stripe on: (no.)	#RaidSets: (no.)
	bus:1, id: (no.)	bus:2, id: (no.) for High Def.
5 SAVE SETNGS	No Are you sure?	
6 SCSI SETUP	SCSI ID (no.)	V1 Rec/Play Play Only
	Clock: 10 20 40 (MHz)	Width: 8 Bit 16 Bit
	term'n: ON OFF	
7 MEDIA SETUP	Mount No Are you sure?	Format No Are you sure?
	Init No Are you sure?	
8 DISK COPY	Copy ?	File (file name)
	In: HH:MM:SS	Out: HH:MM:SS
	Paste ?	Clear ?

Option Menu Chart Cont...

9 VID IN	Vitc In Off On	LumaCont:+ (no.)
	LumaBrit:+ (no.)	ChromSat:+ (no.)
	ChromHue:+ (no.)	CompBrit:+ (no.)
	CompCont:+ (no.)	CompSat:+ (no.)
	S.F. In: ON OFF for High Def	Comb Filter ON OFF for SD units
10 VID OUT	Out (YUV RGB S Video)	CH PH (no.)
	HTRIG off on	HTRIG + (no.)
	VTRIG + (no.)	Black 7.5IRE 0.0IRE
	PAL Switch 0	BIW Pos: (T/L T/C T/R B/R B/C B/L)
	BIW mode: (off W-B B-W)	Vitc Out Off Line (no.)
	CC Out Off On	Pattern Off On
	S.F. Out: ON OFF for High Def	Blank All None
11 AUD IN LVL	CH (no.): (no.) + db	
12 AUD OUT LV	CH (no.): (no.) + db	
13 EDIT PRST	A (no.): Off On	TC: Off On
	Video Off On	Assemble: Off On
	Insert: Off On	Edit In: (no.)
	Edit Out: (no.)	
14 BI-PHASE	#Clicks/Fr (no.)	
15 SERIAL PRT	1: P2 Protocol 2: LD Protocol	2: P2 Protocol 2: LD Protocol

Option Menu Chart Cont...

5.3 Controller Menu Chart

01 Video	ON OFF
02 Composite Out	ON OFF for High Def.
03 Burn In Window	ON OFF
04 Delay Mode	ON OFF for MP2 & HD 1R-1P
05 Preroll	HH:MM:SS:FF for MP2 & HD 1R-1P
06 Slomo Mode	ON OFF for MP2 & HD 1R-1P
07 Gang Mode	ON OFF
08 4224 Clip Mode	ON OFF
00 Firmware	RCV2 version (no.)

6 Menu

The V1 menu includes the most frequently used settings. Call up the V1 menu by pressing the menu up \uparrow arrow key (or down key \downarrow). Use the arrow keys to scroll through the menu selections. The **TOGGLE** button changes the parameters for the selected menu. Press **TOGGLE** increment or change a value and hold **OPTION** and **TOGGLE** to decrease.

- (1) **Control** This setting emulates the Local/Remote switch found on many Video Tape Recorders and required by some remote control devices.

Local	For front panel control of the V1
Remote	For control of the V1 by an external edit controller or workstation via the rear panel RS-422 connectors

- (2) **Time Mode** Selects the Time Code source of the V1 during recording and playback.

A Time	Absolute Time, the time code displayed on the V1 front panel and present on the TIME CODE OUT connector during playback or record is generated internally by the V1. A Time represents the time elapsed since the start of the recording unless a time code offset has been set. <i>See Section 2.8</i>
A Time DF	Absolute Time as above with Drop Frame. (NTSC Only)
A Time as LTC	If you are using A Time (with or without an offset) as your time code and if your controller requires time code, you should choose this option, which will make the A Time look like Time Code on the RS422 connection.
A Time LTC DF	Absolute Time as above with Drop Frame (NTSC Only)
Time Code	During record, the time code present on the TIME CODE IN connector will be recorded on the time code track (guide track) of the V1 active drive, a valid LTC signal should first be fed to the V1 LTC IN connector. The time code displayed on the V1 front panel and present on the TIME CODE OUT connector during playback or record is the same time code recorded on the time code track, unless a time code offset has been set. <i>See Section 2.8</i>
VITC Time	During record, the time code embedded in the video input signal (VITC) will be recorded on the VITC track of the V1 active drive. The time code displayed on the V1 front panel and present on the VITC OUT connector during playback or record is the same time code recorded on the VITC track, unless a time code offset has been set. <i>See Section 2.8</i>

- (03) **Sync Source** Specifies the sync reference during playback. The V1 is always locked to the **Input** when recording.

Internal	The V1 syncs to its own internal clock (PAL)
Internal 59.94	The V1 syncs to its own internal clock (NTSC)
Auto	The V1 syncs to the SYNC IN input.
Sync In	The V1 syncs to the SYNC IN input. Auto and Sync In are the same.
Input	The V1 syncs to the VIDEO IN input.

MP2/MCS Only (Sync. Source) The sync source in units above 11000 is used to synchronize both recording and playback. If the input is not locked to the sync source, a message will be displayed on the 4 line LCD display of the recorder channel. For proper recording, the input must be locked to the sync source selected on the V1. See the chart below for operation differences between units with serial number above and below 11000.

Sync Source	Units >11000 (1R-1P)	Units <11000 (1R-1P)
Internal	Recording: Not proper Playback: Locked to internal No SC Phase adjustment	Recording: Proper Playback: Locked to input during record No SC Phase adjustment
Input	Recording: Proper Playback: Locked to input No SC Phase adjustment	Recording: Proper Playback: Locked to input SC Phase adjustment possible
Sync in	Recording: Proper only if input is locked to sync in Playback: Locked to sync in SC Phase adjustment possible	Recording: Proper Playback: Locked to input during record SC Phase adjustment possible
Auto *	Recording: Proper Playback: Locked to sync in SC Phase adjustment possible	Recording: Proper Playback: Locked to input during record SC Phase adjustment possible

* Auto Mode: In this mode the unit normally works like sync in, but in certain conditions outlined below it will change the way it locks.

- If the input disappears or becomes unlocked, the unit will display a message on the record channel and starts to record black. The playback will continue normally. When the input comes back, the unit will continue recording normally and the playback will not be disturbed.
- If the sync in disappears, the unit will display a message on both channels, it will stop and start the recording and playback for less than a second to lock record and play to the input signal. When sync comes back, the unit will stop and start again to lock to sync in.
- If both input and sync in disappear, the unit will stop and start to lock to internal, the recording will be black and the playback will be normal. The unit will stay in internal until sync comes back. If input comes back without sync, the unit will continue recording black and will stay locked to internal

If you have a delay system and the input to the V1 was absent for 5 minutes, you can use the v1log.exe application posted on our web site to capture messages with more information on what happened and when. This information can be used to switch the output before the delay channel reaches the black area.

(04) Chase Mode Specifies how the V1 will chase to time code.

Off	Normal mode of operation when the unit is controlled by a workstation via the 9 pin RS-422 connection.
LTC	In this mode the V1 will chase the time code fed through the TIME CODE INPUT jack. This mode is recommended when no RS422 9 pin control is present. <i>See Section 2.6</i>
Serial TC	In this mode the V1 will chase the time code received on the RS-422 connection. This mode requires a special cable and it is recommended only if no RS422 9 pin control is present.
Biphase	In this mode the V1 will chase the Biphase input clock signal. Option Menu (14) Bi-Phase should be set properly in order to select the clock frequency. To use the Biphase mode, jumpers on the main motherboard should be set correctly. <i>Please refer to Section 12.8</i>

Note: The Chase to LTC Mode above is different than the OPTION PLAY Command also referred to as Chase Command (see *section 2.6*)

(05) Vid Source Specifies which video input format of the V1 is active. Select between *COMPOSITE*, *S-VHS*, *YUV*, *RGB*, *SDI*, *HD-SDI*, *YPbPr*. Formats available depend on the V1 model and options you have installed.

(06) Aud Source Specifies the audio input format. Select between *Analog*, *AES/EBU* or *SDI* (for embedded audio on SDI). Formats available depend on the V1 model and options installed.

AES/EBU Note: To ensure lossless audio on the digital input, it must be sampled at 48.000Khz and phase locked to the video input. If you feed digital audio at a different frequency, or if it is not phase locked to the video, the V1 will re-sample the audio at 48Khz which may produce undesirable clicks.

(07) INFO/T-Left This menu selection provides information on the current V1 settings. None of these settings can be changed in this menu.

HH:MM:SS:FF	Will display how much time is still available on the disk from the end of the existing recording. The total duration is calculated using the disk capacity detected, the compression rate, and the number of audio channels. After an Initialize Command, T-Left displays the full capacity of the drive in "HH:MM:SS:FF" format. If you call this menu during recording, it will show the time left at the moment it was activated. When the drive is fully recorded, "Time Left" will display 00:00:00:00 and you are only allowed to record over existing material. When this menu selection is active pressing the ++ key will update the time left.
Audio Trck (no.)	Displays the number of audio tracks available for record. This setting changes if you create a new file or perform an initialize command with a different audio track number specified.
1:1 (no.) Bit Bit Rate (no.)Mbs (no.) : 1	The information provided depends on the V1 model in use. -> For Uncompressed 1:1 The sample bit rate is displayed -> For MPEG2 the Mbs is displayed -> For DCT compression the compression ratio is displayed
NTSC or PAL HD Format	NTSC or PAL is displayed for standard definition V1. And the HD format for the High Definition video V1.
1R/P 1R-1P	1R/P indicates the V1 can record or play 1R-1P indicates the V1 has a simultaneous record and play engine installed.

7 Option Menu

To call up the Option Menu Hold the **OPTION** and press the **MENU** ↑ (or down key ↓) buttons. Use the arrow keys to scroll through the menu selections.

Use the ++ or -- buttons to scroll through the sub-menus. The **TOGGLE** button sets the parameters for the selected sub-menu. Press **TOGGLE** to increase or increment a value and hold **OPTION** and **TOGGLE** to decrease or use the **JOG** wheel.

TOGGLE is also used to execute a command (Option Menu 5 and 6), you will be prompted “are you sure?” press **ENTER** for yes or **ESC** for no.

To enter time code numerals use the numeric keypad. To enter numbers for the IP, Time and Date use the keypad and press the “.” button to skip from one section to the next (i.e. month to date). Press **ENTER** to save your settings.

Commands that change the mode of operation, such as changing the IP, Subnet Mask, SCSI ID, rec/play mode etc, will require you to reboot the V1. Please wait 30 seconds before rebooting the V1 to ensure that the new settings take effect.

(00) Info/Mode

V1 (no.) Displays the V1 Version number

IP and Mask below must be set to conform to your LAN so that you can operate the V1 and upgrade the firmware via the Ethernet connection.

IP (no.) Displays the current IP number of the V1. (Only part of the IP number is displayed, to view the rest press **TOGGLE**)

Set the IP number by using the keypad. Press “.” to jump between the sections. After inputting the IP numbers press **ENTER**. You will also need to go to **OPTION MENU (05) Save Setngs** and save.

Wait 30 seconds and restart the V1 for the setting to take effect.

Mask (no.) Displays the current IP number of the V1. (Only part of the IP number is displayed, to view the rest press **TOGGLE**)

Set the Mask number by using the keypad. Press “.” to jump between the sections. After inputting the Mask numbers press **ENTER**. You will also need to go to **OPTION MENU (05) Save Setngs** and save.

Wait 30 seconds and restart the V1 for the setting to take effect.

The functions below provide general information about your V1. Please have this information on hand prior to contacting Doremi tech support.

S/N: (no.) Displays the unique serial number of your V1.

(no.) Megs RAM The total RAM on the V1 motherboard.

Mode **1R/P:** Indicates a standard record or play engine
1R-1P: Indicates a simultaneous record and play engine. *MP2 & UnocmpHD only*

To change the mode press the **TOGGLE** key and the hit **ENTER**. You will next need to save your settings, wait 30 seconds and recycle power on the V1.

Netpos

None: For all units that are not sharing storage between channels except for dual channel units that are set to 1R-1P modes.

Master: For MCS units with shared storage. Only one recorder channel should be set to Master

Slave: For MCS units with shared storage. All channels should be set to Slave except the Master.

To change the mode press the **TOGGLE** key and the hit **ENTER**. You will next need to save your settings; wait 30 seconds and recycle power on the V1.

7.1 Transport

The Transport settings feature functions that affect the general playback and record operation of the V1.

Disk Access	This option will allow you to write protect your drive. Select between Play and PL-RE (Play & Record (Default)). When Play is selected, you will not be able to record on the disk or initialize it.
Frame Mode	Select between Frame Mode ON , OFF and Play . When ON the V1 will stop on a frame and in slow motion it will play frame by frame. When OFF the V1 will stop on a field and in slow motion it will play field by field. In PLAY , the V1 will stop on a field and in slow motion it will play frame by frame. This setting also affects the Step Recording option. For Slow Motion application, the frame mode must be OFF . When the V1 is in stop (freeze) mode and Frame Mode is set to ON a full video frame will be displayed.
StopMod	Select the video output to be displayed after the V1 receives a stop command. Set stop mode to either show a field/frame from the drive (Still) or show the image present on its input (EE).
Jog On Ch	Select between “ 1&2 ”, “ 3&4 ”, “ 5&6 ” and “ 7&8 ”. When the V1 is playing at any speed below 100%, the audio will output from only two channels. Use this option to select which tracks the audio will be on when the V1 is playing at any speed below 100%.
FastMod	Select between Norm (normal) and Enhanc (enhanced). Enhanced mode will provide the best video preview in Fast Forward and Fast Rewind Set Fast Mode to Enhanced on all single channel units, the V1x2 with dual-drives and the V1-MP2 in 1R/P mode. Set to Normal for units connected to the V1Xserver and multi-channel units like the V1x2-1r2p, V1-MP2-1r2p & 1r-1p, V1-UHD-1r-1p, V1-MP2 1r-1p.
JogSpeed	Sets the maximum speed in Jog mode to 100% or FULL (no limit).
PL1Field<%	The speed shown in percentage will define the speed under which the V1 will only play odd fields. If you want to play odd and even fields at all speeds, select 0%. For Slow Motion applications you must set this parameter to “0” and save it.
ChaseFWL:	The number of frames defined in this option will set the free-wheel of the chase mode between 1 and 10 frames or “0”. If your time code is reliable set to “0”. When set to a value between 1 and 10, the V1 will play the same field for the specified amount of frame(s) before it stops and wait for the new time code to chase.

This function is useful to reduce the audio noise during the chase command. If you know that your source does not have drop-outs in the time code, set this value to 1.

- LimToSeg** Limit to Segment; specifies the operation of “Loop Mode” below. When “LoopMode” is set to **ON**, the V1 will record (play) in a loop specified by the segment number. If the segment selected in this option is 0, the loop will be the entire length of the file (24 hours).
- LoopMode** Select between **OFF** and **ON**. When **ON** the V1 will loop back to beginning of the recorded video when it reaches the end of the file or segment as specified in “LimToSeg” above. When set to **OFF** the V1 will stop.
- Emulate** Select between **V1** (default), **BVW-75**, **DVW-500**, **Odetics**, **Odetics LMTD** and **VDCP** (Louth).
- StepRec** This option is for Step Recording. When enabled, every time the V1 goes into record, it will only record one frame. This option is useful for animation. When Step Recording is disabled, the V1 is in normal mode of operation.
- Select **ALL** to record the video and audio. If you want to record video only without altering the previously recorded audio, select **Video**.
- Note:** Step record cannot be enabled on the MPEG2 products
- Rec at:** The function tells the V1 to record at the current position (**Cur P.**) or at the end of the last recorded video in the file (**End F.**). If you are working in any of the A-Time modes and want to avoid recording over existing material, set this option to **End F.**
- Note :** Rec at: End F. is not valid if the Time Mode is set to Time Code or to VITC. In those two modes, the unit will synchronize to the incoming time code to determine the recording position.

7.2 Auto Play

The Auto Play settings allow the V1 to automatically start playing a segment when the V1 is powered on and the drive is mounted.

- Auto Play** Enter a predefined segment number. The V1 will now play that segment every time it mounts that drive. This function can also be used to automatically locate to a start point every time the disk is mounted. All you need to do is set the **IN** and **OUT** time at the same location for the auto-play segment.
- NoVidDly 000s** V1 Screen Saver. This parameter sets the delay until the video output goes black (screen saver) in 10 second increments. "000" will disable this feature. Example: "010" will cause the unit to output black video when the unit is idle for 10 seconds.

7.3 New Rec Set

The New Record Settings contain all the main options used to define a V1 File.

If you are using multiple files on the V1 you must create a new file after changing a setting in this section. For instructions on how to create a file *see section 2.2*

If you are using a single file (the default file created by the V1) you will need to reinitialize after changing a setting in this section. *See section 7.7*

The options below determine the amount of compression or the sample bit rate of the recording:

- BitRate** **MP2 Only** Select the Mbs (Mega Bits Per Second) from 5 to 50Mbs. The higher the number the better the video quality and more storage space required.
- 1:1 (no.) Bit** **Uncomp SD & HD only** Select 8bit or 10bit.
- (no.) : 1** **DCT Only** Select the compression ratio. The smaller the ratio the better the video quality and more storage space required.

The first three options below determine the Format of the recording, and the max number of audio tracks to be recorded.

- NTSC or PAL** Select NTSC or PAL resolution and frame rate. Applies to Standard Definition V1.
- (HD Format)** **UncompHD Only** Select between the different HD formats.

720 59.94p	Selects 720 line progressive 59.94 frame /sec standard
720 60p	Selects 720 line progressive 60 frame /sec standard
1080 29.97p	Selects 1080 line progressive 29.97 frame /sec standard
1080 30p	Selects 1080 line progressive 30 frame /sec standard
1080 59.94i	Selects 1080 line interlaced 59.94 field /sec standard
1080 60i	Selects 1080 line interlaced 60 field /sec standard
1080 25p	Selects 1080 line progressive 25 frame /sec standard
1080 50i	Selects 1080 line interlaced 50 field /sec standard
1080 23.98p	Selects 1080 line progressive 23.98 frame /sec standard
1080 24p	Selects 1080 line progressive 24 frame /sec standard
1080 48i	Selects 1080 line interlaced 48 field / sec standard
1080 47.95i	Selects 1080 line interlaced 47.95 field/ sec standard

- # Lines** Select between 480 or 512 for NTSC or 576 or 608 for PAL. This sets the total number of lines recorded for NTSC or PAL.
- No Decimation** Select between Decimation and No Decimation. For DCT units decimation will record half the pixels. For HD units decimation will compress the component Pb and Pr and leave Y uncompressed (411 encoding). When Decimation is selected you will double your recording time on V1 DCT units and increase the recording time by 25% on V1-UHD units.
- GOP** **MP2 Only** Determines the type of MPEG2 compression to be used. There are different performance and storage space trade offs between the three different types offered.
- # Audio Trks (no.)** Select between 2, 4, and 8 which designate the number of audio channels to be recorded.
- Dur:** The default value of this parameter is 24 hours (24:00:00) but it can be set to any other value below 24 hours to define the time code length of the file. If you want a file to start at 0 and end at 1 hour instead of 24 hours, you should set this

parameter to 01:00:00, hit **ENTER** then create a new file. This parameter can be saved to flash and is essential for time delay applications.

7.4 Init Disk

The Initialize Disk settings will set the parameters and configuration of the drive(s). These settings are preconfigured at the factory (when the drives are purchased from Doremi Labs) and typically will not require change.

You must initialize the drive(s) after changing any of the settings in this section.

MultiFile Type	This option indicates that the drive will be initialized with Doremi's Multi-File System (MFS). This setting cannot be changed
Bus: (no.)	Select the number of SCSI buses to use. For all standard definition V1 this should be set at 1. For the high definition it can be 1 or 2.
Stripe on: (no.)	Sets the number of disks in the RaidSets (see option below). This parameter should be set to the total number of drives in the Raid set.
#RaidSets:(no.)	Sets the number of RaidSets to be defined. This parameter should be set to 1.
Bus1.id(no.)	Sets the first SCSI ID of bus 1. All other drive IDs for Bus 1 should be consecutive to the first drive ID.
Bus2.id(no.)	UncompHD Only. Sets the first SCSI ID of bus 2.

7.5 Save Setngs

This menu option will save all the current menu settings of the V1 to the internal memory so that upon restart the settings will be preserved. All saved settings will remain on the drive, so that if the drive is placed in another V1 the settings will be preserved.

To write the settings to memory (Flash EPROM (see Note below), press **TOGGLE**. A message will appear on the LCD screen: "Are you sure?"

- ◆ If you want to save, press **ENTER**. The V1 will write the changes on the Flash EPROM.
- ◆ If you change your mind and don't want to save, press **ESCAPE**.

NOTE: THIS FUNCTION SHOULD NOT BE ABUSED BECAUSE THE FLASH EPROM CAN ONLY BE WRITTEN 2000 TIMES. If you save your settings on the flash EPROM more than 2000 times you might damage it and need to replace it by sending the unit back to Doremi Labs.

7.6 SCSI Setup

The SCSI Setup settings will set the parameters and configuration of the drive(s). These settings are preconfigured at the factory (when the drives are purchase from Doremi Labs) and typically will not require change.

You must initialize the drive(s) after changing any of the settings in this section.

SCSI ID (no.)	Sets the SCSI ID number of the V1 after restart. Do not use a SCSI ID number for the V1 that conflicts with any installed drive. The default SCSI ID is 7.
----------------------	---

V1 (type) Select between **Rec/Play** and **Play Only**. This option is used when more than one V1 unit is connected to the same drive or RAID. You can only have one unit set in Rec/Play and all the rest should be Play Only. The Rec/Player is the only unit allowed to record.

Important Note: When the unit is in **Play Only** mode, all operations that write to the active drive are denied, including record, initialize, format, etc.

The settings below are used to set the SCSI Parameters. Below are the recommended settings:

- DCT and MPEG2 standalone units the settings should be: 20-16-ON.
- V1-U settings should be: 40-16-ON
- For units installed with the V1Xserver, the settings should be: 10-16-ON.

Note: For the MPEG2 and DCT units with a loop SCSI cable (2 SCSI connectors in the back), the Termination should be OFF.

Clock Used to set the SCSI speed in MHz; *10, 20 or 40*

Width Used to set the SCSI bus width; *8 bit or 16bit*

Termination Used to set the Termination mode; *ON or OFF*

Warning: You should not set the termination to off unless it was originally configured by Doremi or when requested by a Doremi Labs technician.

7.7 Media Setup

To activate the commands in this section. Press **TOGGLE**. The message "Are you sure?" will appear on the LCD screen. To accept press **ENTER**. If you change your mind press **ESCAPE**.

Mount If you have more than one drive powered up, this command will mount the drive with the highest SCSI ID number.

Format This command deletes all previous recording and prepares the active drive for optimal V1 performance. Brand new drives do not need formatting. The Format command should always be followed by an **Initialize** command (see below).

When the format command is executed the LCD will display "Formatting..." and will format the disk. Once done, "Formatting..." is cleared and the LCD displays "No MD Present". The drive is now ready for the **Initialize** operation.

CAUTION NOTE !!

Formatting a drive is a long procedure, please do not attempt to use the V1 until the format operation is complete and DO NOT SHUT OFF THE V1 DURING THE FORMAT OPERATION

If the V1 is switched off during the format operation, you will need to restart the format operation.

CAUTION NOTE !!

Option Menu (04) **Init Disk** should be set properly before formatting a drive.

Once Format and Initialize have been executed on a drive, it is not necessary to Format again. Initialize is enough for erasing the drive.

Init The **Initialize** command deletes all previous recordings and files (clips), and writes all the new set-up parameters selected in the menus on the active drive. A disk that was never initialized on the V1 will display the message "No MD Present" until it gets initialized.

CAUTION NOTE !!

Ensure that the settings under Option Menu (04) **Init Disk** are set properly before initializing the drive.

7.8 Disk Copy

The Disk Copy functions will allow you to copy a whole file or a segment within the same disk or from one disk to another. The copy operation is based on a Copy Paste approach.

- Load the source file
- Locate to the start of the segment you want to copy and hit **IN** (optional)
- Locate to the end of the segment you want to copy and hit **OUT** (optional)
- Go to Option Menu 8, the display should be "**Copy ?**", hit **ENTER** to mark the segment or file for copy.
- The display will show you the file name and if you hit ++, it will show you the IN and OUT points followed by the "**PASTE ?**" prompt.
- Load the destination file
- Locate to the timecode where you want the video to be pasted to
- Go to Option Menu 8 and when you see the prompt "**Paste ?**" hit **ENTER** and the copy will start.
- To copy another segment, go the "**CLEAR ?**" prompt, hit **ENTER** and repeat the above steps.

Line 2 of the LCD display will show the copy progress status. When done it will display the message "Completed".

To copy a file from one disk (or set of disks) to another, use the Mount command in Option Menu 7. Every time you issue a Mount command, the unit will search all drives for valid V1 Multi File systems and it will mount the next available one.

7.9 Vid IN

The Video Input settings below affect the video **prior** to recording on the drive.

VITC In	Select off or the line number the source VITC is on (10 to 18 for NTSC & 6 to 20 for PAL) (Recommended Values: NTSC:14 - PAL:19)
Luma Cont	Luma Contrast. Set value of the analog input.
Luma Brit	Luma Brightness. Set value of the analog input.
Chroma Sat	Chroma Saturation. Set value of the analog input.
Chroma Hue	Chroma Hue. Set value of the analog input.
Comp Brit	Composite Brightness. Set value of the analog input; Component YUV/RGB
Comp Cont	Composite Contrast. Set value of the analog input; Component YUV/RGB
Comp Sat	Composite Saturation. Set value of the analog input; Component YUV/RGB

S.F. In	UncompHD only. Select between segmented and non-segmented frame on the input. S.F. ON or S.F. OFF.
Comb Filter	Select ON or OFF. Enables or disables the 3 line comb filter on the composite video input.

7.10 Vid OUT

The Video Output settings below affect the video **on the output** (during playback from the drive)

Out	Select the video format on the output (YUV, RGB, S Video) <i>See section 4.1</i> for information on what formats are available simultaneously.
CH PH	Increase or decrease the chroma phase from 0 to 360.
HTRIG	Horizontal Trigger adjustment. Set the HTRIG adjustment ON or OFF.
HTRIG +	Enter the Horizontal Trigger value.
VTRIG +	Vertical Trigger adjustment. A positive number will move the picture upwards, and a negative number downwards.
Black 7.5 IRE	Used in NTSC only. Sets the black level to 0.0IRE for the Japanese standards and 7.5IRE for the American standards.
PAL Switch	Select 0 or 1. Set the value according to the PAL standard used in your area (A or B)
BIW Pos	Time Code Burn-in window. Position on the screen at Top-Left, Top-Center, Top-Right, Bottom-Right, Bottom-Center, Bottom-Left (Analog Video Outputs Only) (For HD always present on the standard definition composite output. Available on HD-SDI and YpbPr only when enabled)
BIW mode	Select between off, black on white, or white on black numerals.
VITC Out	Vertical Interval Time Code. Select off or the line number to output VITC on (10 to 18 for NTSC and 6 to 20 for PAL) (Recommended Values: NTSC:14 - PAL:19)
CC Out	Close Caption. Set to on or off to allow close caption to pass through the V1. (Analog and SDI Video)
Blank	Select all or none. Will either blank or show the extra lines for 512 line (NTSC) or 608 line (PAL) recordings.
Pattern	Video Pattern. Select on or off.
S.F. Out	UncompHD Only. Select between segmented and non-segmented frame on the output. S.F. On or S.F. off.

7.11 Aud IN LVL

Sets the audio input level for each analog audio channel separately.

7.12 Aud OUT LV

Sets the audio output level for each analog audio channel separately.

This feature is not yet enabled.

7.13 Edit Prst

The settings in Edit Presets allow for the insert/overdub of audio, time code or video individually, while the non-selected track(s) are monitored at the same time. **The settings are used for manual insertion. This is not a recommended practice. Doremi Labs strongly recommends using an edit controller.**

If you are using an edit controller **the edit controller will set these options automatically**. The settings the edit controller has selected will be reflected here.

NOTE: For the V1-U the overdub feature is only supported on the Seagate Cheetah SCSI 15k RPM drives. For the V1-MP2 & DCT you can use 10k RPM drives. For the V1-UHD it requires at least 4 15000 RPM drives or the dual-SCSI external drive setup.

A (no.):	Select the audio track number(s) and then select off or on. On indicates the track will be overdubbed.
TC	To insert/overdub time code on the guide track, select On.
Video	To insert/overdub video, select On.
Assemble	If this option is set to On, all the previous 3 submenus above will default to the On position and the drive is set for normal recording (video, audio and time code). The reason for this option is to allow the V1 to record while in PLAY mode (Usually required by Editors using RS422 control), in this case, the sub-menu Assemble must be set to On.
Insert	Enables or disables the ability to insert video or audio using the front panel.
Edit In	Specifies the Record delay for the IN point in number of frames. The V1 will wait x frames before it starts recording after receiving an EDIT ON command. For MPEG2 units this should be set to 5 or higher.
Edit Out	Specifies the Record delay for the OUT point in number of frames. The V1 will wait x frames before it stops recording after receiving an EDIT OFF command. For MPEG2 units this should be set to 5 or higher.

7.14 Bi-Phase

Select between 01, 02, 04, 10. The selection represents the number of clicks on the incoming Biphase signal per video frame (01= 1 click per frame). In PAL 25 frames/sec, 01=25Hz, 02=50Hz, 04=100Hz, 10=250Hz.

7.15 Serial Port

Defines the protocol used on the RS422 PORT1 and RS422 PORT2 located on the back of the unit. Each port can be individually set to emulate:

P2 Protocol: Sony P2 protocol at 38400 bauds

LD Protocol: Pioneer Laser Disk Protocol at 4800 or 9600 bauds.

1: For Serial Port 1. Select *P2* or the *LD* protocol

2: For Serial Port 2. Select *P2* or the *LD* protocol

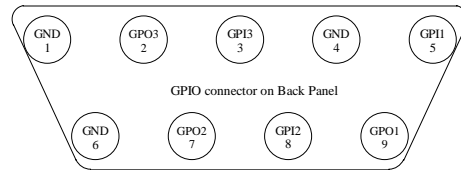
7.16 GPIO Port

For the General Purpose Interface (GPI) port on the back of the unit. Select between *enabled* and *disabled*.

Note: GPI cannot be enabled if your V1 was not purchased with the GPI option. If the Option board is not installed, this option menu should be disabled.

A future software release will allow the user to specify the functions of the 3 GPIs and GPOs. In the current software the 3 GPIs are set to:

- GPI 1: Play previous available segment (= Pin 1 to set at GND level),
- GPI 2: Reset segment number to 0 (= Pin 7 to set at GND level),
- GPI 3: Play next available segment (= Pin 3 to set at GND level).



GPI inputs are TTL ACTIVE LOW signals to be controlled by closing contacts: Contact closed (Between GPI & GND) = Level 0 on that GPI = Command as listed
(Open GPI has a voltage of TTL high level so between 3.5 & 5V)

The V1 sends a trigger signal to either GPO pin number 1, 2 or 3 after it completes the playback of a segment. The GPO pin number the trigger is sent to is determined by the remainder value when dividing the segment number by the number three.

- If remainder is 1 the trigger is sent to GPO1
- If remainder is 2 the trigger is sent to GPO2
- If remainder is 0 the trigger is sent to GPO3

8 Controller Menu

The front panel controls of the V1 are called the “RCV2 controller”. The RCV2 controller communicates with the V1 via RS-422. The controller has several unique functions. To call up the Controller Menu hold the ESCAPE button and press the menu up $\hat{\uparrow}$ arrow key (or down key $\hat{\downarrow}$). Use the arrow keys to scroll through the menu selections. The **TOGGLE** button changes the parameters for the selected menu. Press **TOGGLE** to increase the parameter and hold **OPTION** and **TOGGLE** to decrease the parameter.

To *disable* the RCV2 and prevent accidental operation, hold the **OPTION** button then press **ESCAPE**. Press again to unlock the RCV2. When the RCV2 is in “disable mode” the letters “DIS” will be displayed in the top right corner of the 4 line LCD.

To *reset* the controller (soft reset) hold the **1,2,3** or **4** buttons and press **CLEAR**. This may be necessary to reset the optional Video LCD display if you switch between NTSC & PAL formats.

- (00) **RCV2 Version** Displays the firmware version number for the RCV2 controller.

- (01) **Video** Use the TOGGLE button to switch the front panel LCD monitor “on” or “off”. Default is “on”

- (02) **Composite Out** **For V1-UHD only.** Switches the composite output on the rear panel of the V1-UHD “on” or “off”. Default is “on”.

- (03) **Burn In Window** When ON, the burn in window will be enabled on the confidence LCD monitor (it needs to also be enabled in the Option Menu setting). - Default is “on”.
(UncompHD Only – Always active on LCD monitor and on composite output)

- (04) **Delay Mode** **Dual-channel V1x2 configured for single drive operation or V1-MP2 1R2P or V1-UHD 1R2P.**
This is used for broadcast delay to define the time delay between the recorder and the player(s). Ensure that the V1 is not recording.

Select the player (channel 2) and enter the delay time desired and press ENTER. The record and play channel will locate to 0 time code, the recorder will start recording and the player will wait for the time set for delay to elapse, and will then start playing back automatically.

The transport controls on the player (channel 2) will be disabled when the time delay function is engaged. To stop the delay function select the recorder (channel 2) and press STOP.

Default is “off”.

- (05) **Preroll** Used in conjunction with Slomo Mode (See below). When a time value is entered the RCV2 identifies the pre-roll time from the location point. This helps to compensate for the delay between the action being recorded and the push of the save button.

(06) Slomo Mode Dual-channel V1 configured for single drive operation or V1-MP2 & HD 1R-1P only .

Used for sports slow motion replay applications. When ON, the RCV2 operates like a slow motion controller.

Note: To use Slom Mode, ensure that Menu (02) **Time Mode** is set to *A-Time*. To operate with Time Code, you will need to use an external controller.

Select Channel 1. Go to the start of the disk by pressing CLEAR then press GOTO, then start recording.

Select Channel 2 and press the Record button to go in EE mode.

When you see an event worth marking press SAVE, this will increment the Segment number and save the IN point of the clip minus the Preroll value setting. (see Preroll above)

Every time you hit SAVE, the Segment number will increment and the new time code will be captured.

If you want to recall a specific segment press the ++ or – buttons until you see the desired Segment number displayed, then press RECALL. (You can do this while in EE mode)

When you press SloMo, the unit will start playing from that point at the slow motion speed selected by the Shuttle wheel.

To stop and go back in EE, press STOP followed by the RECORD button.

Default is “off”.

(07) Gang Mode Dual-channel V1 only or control of two single channel V1 decks. When ON, it will insure that both channels are always at the same time code location. Used to synchronize the recording and playback operation of two channels. Default is “off”.

(08) 4224 Clip Mode Dual-channel V1 only or control of two single channel V1 decks. For applications such as logo insertion plus key. Allows you to record Logo plus Key separately, then find the in points and make clips that are locked together.

In this mode the RCV2 will insure that all clips are created with the same duration on both channels, the only distinction is that the IN and Out points will be different.

Define the IN and OUT on Channel 1, then define the IN only on channel 2 and hit SAVE clip# ENTER. The RCV2 will automatically calculate the duration from channel 1 and create an equal length clip on channel 2. When you RECALL clip# ENTER, the unit will play both clips synchronously even if they don't have the same start time. Default is “off”.

9 Troubleshooting Information

9.1 Unable to control V1 remotely

If you have a normal RS422 9 pin control connection and you cannot control the V1, check Menu (4) **Chase Mode**. It should be set to **OFF**. In addition, ensure that the controller protocol and the emulation mode match. (Option Menu (01) **Transport Emulate** and Option Menu (15) **Serial Port**)

9.2 Recording in case of tape drop-out

When recording with external timecode, two kinds of drop-out might occur:

- ◆ If the time code drops out but the video signal is still valid, the V1 will keep recording the timecode (it will free-wheel for 4 frames and then records any right or wrong time code fed on the TIME CODE IN jack) and the valid video signal.
- ◆ If the video signal is not valid, the V1 will 'pause' (stop recording but will stay in record mode) until the video signal becomes valid, then the V1 will continue recording. *This case may result in bad video/audio recording. We recommend using a frame synchronizer for video, and delay the audio by the same amount if needed.*

9.3 V1 identification for editors and DAW on the RS422 port

The V1 can reply with two different Machine Ids when connected to a controlling device like a Sony 9-Pin editor.

If Option Menu (1) **Transport** is set to BVW75, it will reply with a "BVW75" identification.

If Option Menu (1) **Transport** is set to V1 (default), the V1 will reply with a "V1" identification.

If Option Menu (1) **Transport** is set to DVW-500, the V1 will reply with a "DVW500" identification.

Caution note: Some DAWs or Editors will not initialize the RS422 port correctly if the Id returned on the RS422 port is unknown by them. In this case, set the EMULATION to BVW75.

9.4 The Video has no colors

If the video is not stable and is not displaying colors properly, you have set the Menu (3) **Sync Source** to **Auto** or **Sync In** but you do not have a black burst signal fed to the SYNC IN connector. If the video stabilizes when you switch to **Internal**, the problem is definitely your **Sync Source** setting.

9.5 No Audio from input monitor

If you cannot hear the audio when you go in input monitor, check the Option Menu (11 & 12) for your Audio Levels and check the audio input source menu.

9.6 Unable to write to active drive

If you are not able to write to your active drive, i.e. cannot record, initialize or format, check Option Menu (6) **SCSI Setup** and set V1 to **Rec/Play**

9.7 Forcing power ON in any condition

The V1 can be set to remain on even if AC power is cycled OFF then ON again. To force a "always ON" operation please consult our tech support department.

10 TECHNICAL SUPPORT

Technical Support Contact Information:

On the web: www.doremilabs.com select the “support” button

Tel. 818 562-1101

Fax. 818 562-1109

Email Support@doremilabs.com

306 E. Alameda Ave,
Burbank, CA 91502
U.S.A.

11 WARRANTY

Doremi's warranty obligations are limited to the terms set forth below:

Doremi Labs, Inc. ("Doremi") warrants this hardware product against defects in materials and workmanship for a period of ONE (1) YEAR from the date of original retail purchase.

If you discover a defect, Doremi will, at its option, repair, replace, or refund the purchase price of this product at no charge to you, provided you return it during the warranty period, with transportation charges prepaid, to the authorized Doremi distributor from whom you purchased it or to any other authorized Doremi distributor within the country of original retail purchase. (You can obtain additional information by contacting Doremi at the address printed on this certificate). To each product returned for warranty service, please attach your name, address, telephone number, and a copy of the bill of sale bearing the appropriate Doremi serial numbers as proof of date of the original retail purchase.

If your product fails during the warranty period while you are out of the country of original retail purchase, you may have it repaired (no refunds or replacements are provided) at your expense by an authorized Doremi distributor in the country in which the product failed. You may obtain a refund for the repair costs by submitting a claim to Doremi (instructions are obtained by contacting Doremi at the address printed on this certificate).

This warranty applies only to hardware products manufactured by or for Doremi that can be identified by the "Doremi" and "V1" trademark, trade name, or logo affixed on them. Doremi software is warranted pursuant to a separate written statement packed with the software. Doremi does not warrant any products that are not Doremi products. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication; if the product has been modified without the written permission of Doremi; or if any Doremi serial number has been removed or defaced.

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12 APPENDIX

12.1 Instructions for Initial Setup and Transport

Before any transport :

- ◆ **Lock the Data-Express (Key ON as for normal use).**
Note: Doremi highly recommends shipping drives separately.
- ◆ **Switch the V1 OFF.**
- ◆ **Remove the SCSI termination on rear** (Leaving it in may break the SCSI connector during transport).

12.2 Upgrading the V1 firmware

The V1 firmware can be checked by going to the Option Menu. Scroll with the menu arrow keys until you reach Option Menu (00) **Info/Mode**.

The V1 firmware can be upgraded from a PC or Mac using the VUploader utility posted on our support page at: <http://www.doremilabs.com>

The latest firmware upgrades are posted on the support page of the Doremi web site:

The manual for VUploader is included in pdf format with the VUploader compressed file.

12.3 Upgrading the RCV2 firmware

All silver V1 decks have two firmwares, one for the V1 motherboard and another for the front panel (the RCV2).

Check your RCV2 firmware version

Enter the Controller Menu by holding the **ESCAPE** button and pressing **MENU**. Scroll to *Firmware*.

The VUploader utility

The RCV2 can be upgraded using the VUploader utility version 1.08 or higher. Download the VUploader utility from www.doremilabs.com in the support page.

Connect the 9pin cable between the RCV2-9P port labeled RS422 (1-2) (do not use the port labeled RS422 (3-4)) to any of the ports on the back panel of your V1 deck.

Check that your V1 is running firmware version 4.16c or higher. If not use VUploader to upgrade it first.

Power up the unit while holding the Channel 1 button under the 4 line LCD display, you should see a message saying "Flash mode"

Run VUploader. For detailed instructions see the VUploader README file that comes with VUploader.

When you receive the message from VUploader asking to select a port, choose the RS422 port that you connected to on the back of the V1.

12.4 DCT Compression Chart

(H:M:S)
NTSC DCT Compression according to CCIR-601

Compression Ratio	18GB	36GB	73GB	147GB	180GB	360GB	1.26TB	2.16TB
						<i>External Drive Chassis</i>		
2:1	27:38	0:55:16	1:50:32	3:41:04	04:36:20	9:12:40	32:14:20	55:16:00
2.5:1	34:16	1:08:32	2:17:04	4:34:08	05:42:40	11:25:20	39:58:40	68:32:00
3:1	39:48	1:19:36	2:39:12	5:18:24	06:38:00	13:16:00	46:26:00	79:36:00
3.5:1	47:28	1:34:56	3:09:52	6:19:44	07:54:40	15:49:20	55:22:40	94:56:00
4:1	56:06	1:52:12	3:44:24	7:28:48	09:21:00	18:42:00	65:27:00	112:12:00
5:1	1:04:56	2:09:52	4:19:44	8:39:28	10:49:20	21:38:40	75:45:20	129:52:00
6:1	1:17:08	2:34:16	5:08:32	10:17:04	12:51:20	25:42:40	89:59:20	154:16:00
7:1	1:28:10	2:56:20	5:52:40	11:45:20	14:41:40	29:23:20	102:51:40	176:20:00
8:1	1:42:50	3:25:40	6:51:20	13:42:40	17:08:20	34:16:40	119:58:20	205:40:00
9:1	1:52:12	3:44:24	7:28:48	14:57:36	18:42:00	37:24:00	130:54:00	224:24:00
10:1	2:03:24	4:06:48	8:13:36	16:27:12	20:34:00	41:08:00	143:58:00	246:48:00
12:1	2:17:08	4:34:16	9:08:32	18:17:04	22:51:20	45:42:40	159:59:20	274:16:00
14:1	2:34:16	5:08:32	10:17:04	20:34:08	25:42:40	51:25:20	179:58:40	308:32:00
16:1	2:56:20	5:52:40	11:45:20	23:30:40	29:23:20	58:46:40	205:43:20	352:40:00
20:1	3:25:42	6:51:24	13:42:48	27:25:36	34:17:00	68:34:00	239:59:00	411:24:00
24:1	4:06:50	8:13:40	16:27:20	32:54:40	41:08:20	82:16:40	287:58:20	493:40:00
34:1	5:08:34	10:17:08	20:34:16	41:08:32	51:25:40	102:51:20	359:59:40	617:08:00

PAL DCT Compression according to CCIR-601

Compression Ratio	18GB	36GB	73GB	147GB	180GB	360GB	1.26TB	2.16TB
						<i>External Drive Chassis</i>		
2:1	27:40	0:55:20	1:50:40	3:41:20	04:36:40	9:13:20	32:16:40	55:20:00
2.5:1	33:40	1:07:20	2:14:40	4:29:20	05:36:40	11:13:20	39:16:40	67:20:00
3:1	44:44	1:29:28	2:58:56	5:57:52	07:27:20	14:54:40	52:11:20	89:28:00
3.5:1	50:50	1:41:40	3:23:20	6:46:40	08:28:19	16:56:38	59:18:13	101:39:48
4:1	56:56	1:53:52	3:47:44	7:35:28	09:29:20	18:58:40	66:25:20	113:52:00
5:1	1:07:18	2:14:36	4:29:12	8:58:24	11:12:59	22:25:58	78:30:53	134:35:48
6:1	1:17:56	2:35:52	5:11:44	10:23:28	12:59:20	25:58:40	90:55:20	155:52:00
7:1	1:26:28	2:52:56	5:45:52	11:31:44	14:24:39	28:49:18	100:52:33	172:55:48
8:1	1:38:44	3:17:28	6:34:56	13:09:52	16:27:20	32:54:40	115:11:20	197:28:00
9:1	1:53:56	3:47:52	7:35:44	15:11:28	18:59:20	37:58:40	132:55:20	227:52:00
10:1	2:03:26	4:06:52	8:13:44	16:27:28	20:34:20	41:08:40	144:00:20	246:52:00
12:1	2:28:06	4:56:12	9:52:24	19:44:48	24:41:00	49:22:00	172:47:00	296:12:00
14:1	2:44:34	5:29:08	10:58:16	21:56:32	27:25:40	54:51:20	191:59:40	329:08:00
16:1	3:05:08	6:10:16	12:20:32	24:41:04	30:51:20	61:42:40	215:59:20	370:16:00
20:1	3:31:36	7:03:12	14:06:24	28:12:48	35:16:00	70:32:00	246:52:00	423:12:00
24:1	4:06:52	8:13:44	16:27:28	32:54:56	41:08:40	82:17:20	288:00:40	493:44:00
34:1	4:56:14	9:52:28	19:44:56	39:29:52	49:22:20	98:44:40	345:36:20	592:28:00

Restrictions:

Due to drive speed variations, the following drives should not have a total record time lower than the value specified in this table:

Due to drive speed variations, the following drives can only be used at the compressions specified in this table:

Drive type	ST34371N/W ST34572N/W ST19171N/W	ST34501N/W ST19101N/W	ST34573N/W/LW ST39173N/W/LW ST39175LW ST118273N/W/LW ST318275W/LW ST136475LW ST150176LW All newer Barracuda	ST34502LW ST39102LW ST39103LW ST118202LW ST318203LW ST136403LW ST373405LW All newer Cheetah
Minimum Compression Ratio (2 Fields)	4:1 or higher	3:1 or higher	2.5:1 or higher	2:1 or higher

12.5 MPEG2 Compression Chart

(H:M:S)

NTSC MPEG2 Compression at 720x480

Compression Bit Rate	18GB	36GB	73GB	147GB	180GB	360GB	1.26TB	2.16TB
						<i>External Drive Chassis</i>		
50 Mbit/s	0:40:46	1:21:32	2:43:04	5:26:08	6:47:40	13:35:20	47:33:40	81:32:00
45 Mbit/s	0:45:14	1:30:28	3:00:56	6:01:52	7:32:20	15:04:40	52:46:20	90:28:00
40 Mbit/s	0:50:38	1:41:16	3:22:32	6:45:04	8:26:20	16:52:40	59:04:20	101:16:00
35 Mbit/s	0:57:41	1:55:22	3:50:44	7:41:28	9:36:50	19:13:40	67:17:50	115:22:00
30 Mbit/s	1:06:46	2:13:32	4:27:04	8:54:08	11:07:40	22:15:20	77:53:40	133:32:00
25 Mbit/s	1:19:17	2:38:34	5:17:08	10:34:16	13:12:50	26:25:40	92:29:50	158:34:00
20 Mbit/s	1:38:02	3:16:04	6:32:08	13:04:16	16:20:20	32:40:40	114:22:20	196:04:00
15 Mbit/s	2:07:33	4:15:06	8:30:12	17:00:24	21:15:30	42:31:00	148:48:30	255:06:00
12 Mbit/s	2:36:41	5:13:22	10:26:44	20:53:24	26:06:50	52:13:40	182:47:50	313:22:00
10 Mbit/s	3:04:15	6:08:30	12:17:00	24:34:00	30:42:30	61:25:00	214:57:30	368:30:00
8 Mbit/s	3:43:35	7:27:10	14:54:20	29:48:40	37:15:50	74:31:40	260:50:50	447:10:00
5 Mbit/s	5:26:13	10:52:26	21:44:52	43:29:44	54:22:09	108:44:18	380:35:03	652:25:48

PAL MPEG2 Compression Chart at 720x576

Compression Bit Rate	18GB	36GB	73GB	147GB	180GB	360GB	1.26TB	2.16TB
						<i>External Drive Chassis</i>		
50 Mbit/s	0:40:48	1:21:36	2:43:12	5:26:24	6:48:00	13:36:00	47:36:00	81:36:00
45 Mbit/s	0:45:13	1:30:26	3:00:52	6:01:44	7:32:10	15:04:20	52:45:10	90:26:00
40 Mbit/s	0:50:41	1:41:22	3:22:44	6:45:28	8:26:50	16:53:40	59:07:50	101:22:00
35 Mbit/s	0:57:40	1:55:20	3:50:40	7:41:20	9:36:40	19:13:20	67:16:40	115:20:00
30 Mbit/s	1:06:53	2:13:46	4:27:32	8:55:04	11:08:50	22:17:40	78:01:50	133:46:00
25 Mbit/s	1:19:35	2:39:10	5:18:20	10:34:40	13:15:50	26:31:40	92:50:50	159:10:00
20 Mbit/s	1:38:15	3:16:30	6:33:00	13:06:00	16:22:30	32:45:00	114:37:30	196:30:00
15 Mbit/s	2:08:22	4:16:44	8:33:28	17:06:56	21:23:40	42:47:20	149:45:40	256:44:00
12 Mbit/s	2:37:05	5:14:10	10:28:20	20:56:40	26:10:50	52:21:40	183:15:50	314:10:00
10 Mbit/s	3:03:40	6:07:20	12:14:40	24:29:20	30:36:39	61:13:18	214:16:33	367:19:48
8 Mbit/s	3:43:10	7:26:20	14:52:40	29:45:20	37:11:40	74:23:20	260:21:40	446:20:00
5 Mbit/s	5:27:06	10:54:12	21:48:24	43:36:48	54:31:00	109:02:00	381:37:00	654:12:00

Note: This table is compiled for video at the indicated bit rate with 2 audio channels.
 You can use any Seagate Cheetah hard disk that ends with the extension LW or a Barracuda 180gig.
 If you are planning to do insert editing, use only Cheetah 1500RPM drives(X15) like the ST318452 and ST336752.

12.6 Standard Definition Uncompressed Chart

Uncompressed Recording Time					
Model Number	Drive Size	Drive Qty	8Bit	10Bit	
V1-Ux2-23 <i>per channel</i>	36 GB	1	0:29:03	0:23:21	
V1-U-46	36GB	2	0:58:07	0:46:43	
V1-U-93	73 GB	2	1:56:14	1:33:25	
V1-U-186	147 GB	2	3:52:28	3:06:50	
<i>With External Storage Chassis</i>					
360GB	360GB	1	4:50:35	3:53:34	
1.26TB	1260GB	1	16:57:02	13:37:27	
2.16TB	2160GB	1	29:03:30	23:21:21	

12.7 High Definition Uncompressed Chart

		Model#	14R	29R	78	31T	62E	125E	219E
		<i>Drive Size</i>	36 GB	73 GB	147 GB	73 GB	73 GB	147 GB	147 GB
		<i>Drive Qty</i>	3	3	4	4	8	8	14
<i>HD Format</i>	<i>Bit Coding</i>								
1080 50i	8 411		0:23:32	0:47:03	2:05:28	1:02:44	2:05:28	4:10:57	7:19:09
or	8 422		0:17:39	0:35:17	1:34:06	0:47:03	1:34:06	3:08:13	5:29:22
1080 25p	10 422		0:14:07	0:28:15	1:15:19	0:37:40	1:15:19	2:30:38	4:23:37
1080 60i	8 411		0:19:36	0:39:13	1:44:34	0:52:17	1:44:34	3:29:08	6:05:59
or	8 422		0:14:42	0:29:25	1:18:25	0:39:13	1:18:25	2:36:51	4:34:29
1080 30p	10 422		NA	NA	NA	0:31:22	1:02:45	2:05:30	3:39:37
1080 48i	8 411		0:24:31	0:49:01	2:10:43	1:05:22	2:10:43	4:21:27	7:37:31
or	8 422		0:18:23	0:36:46	1:38:02	0:49:01	1:38:02	3:16:05	5:43:09
1080 24p	10 422		0:14:42	0:29:25	1:18:26	0:39:13	1:18:26	2:36:51	4:34:30
720 60p	8 411		0:21:56	0:43:52	1:56:58	0:58:29	1:56:58	3:53:57	6:49:24
	8 422		0:16:27	0:32:54	1:27:44	0:43:52	1:27:44	2:55:28	5:07:03
	10 422		NA	NA	NA	0:35:20	1:10:39	2:21:19	4:07:18

V1-U: (46, and 93 versions) Use two DE300i-SWC160/B with Seagate Cheetah 15000RPM drives that end with the LC extension. If the V1-U is equipped with ST318452 or ST336752, it can be initialized in Single File system, which does not allow striping but allows daisy chaining and allows for the clips to be saved on the drive.

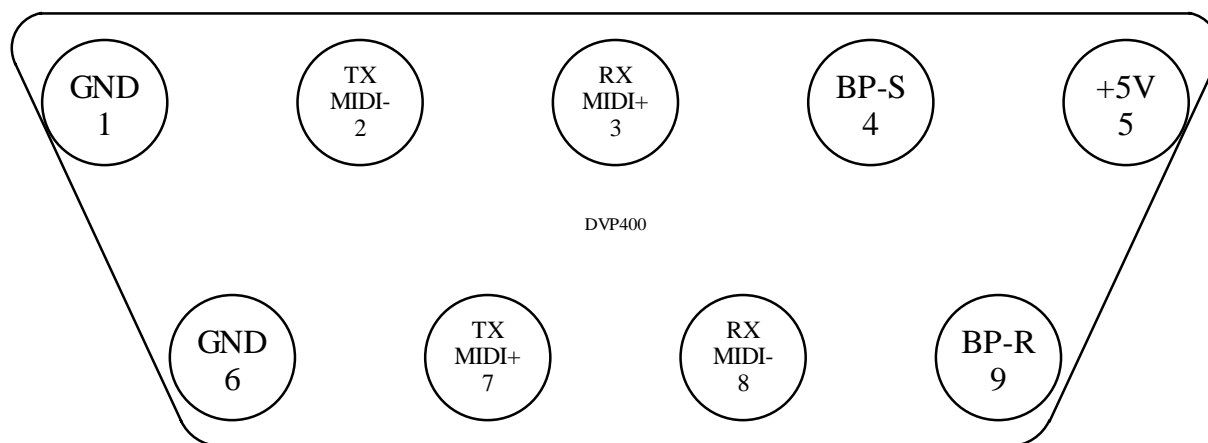
V1-U-231: Use two DE100i-SWC160/B

V1-UHD: Internal non-removable, use Seagate Cheetah 15000RPM drives that end with the LW extension

V1-UHD: External removable, use Seagate Cheetah 15000RPM drives that end with the LC extension.

12.8 BiPhase Settings

Pin 5: +5V will provide a 5V power signal
 Pin 4: Biphase S signal
 Pin 9: Biphase R Signal
 Pin 1: Ground Signal
 The rest of the pins are used for MIDI chase, which is still not implemented.



12.9 Connecting V1 to Audio Workstations & Edit Controllers

Most Common Connection

This connection scheme is used to connect the V1 to StudioFrame, Audiofile, Audiovision, Post-Pro, Dyaxis II, Protocols 4.0 etc.

1. Feed house sync to the V1 and the DAW,
 2. Connect the time code out of the V1 to the time code in of the DAW,
 3. Connect the serial cable between the V1 RS422 port 1 and the DAW,
- Run the DAW software which will control the V1.

Connection to the DAWN workstation (v 4.3c or later)

1. Feed house sync to the V1 and the DAWN
2. Connect the time code out of the DAWN to the time code in of the V1
3. Connect the RS422 port 1 of the V1 to one of the serial ports on the Macintosh
4. Make sure the V1 is in Chase Off mode
5. Make sure the V1 Sync source is "Auto"
6. Run the DAWN software
7. You should see a V1 track at the bottom of the mix view
8. Make sure House Sync is checked
9. Toggle Master/Slave and then make sure you end up in master mode
10. Hit play, both units should play in sync

11. Hit Stop, both unit should stop.
The DAWN should always be in master mode.

Connection to the Akai DD-1500 with RS422 control (recommended)

1. Use the standard RS422 direct cable male-male 9 pins (Master to Slave)
2. Feed House Sync to the V1 and to the DD1500
3. Connect the serial cable between the V1 RS422 port 1 and the DD1500
4. Set the DD1500 Word Sync to Video A (29.97 for NTSC, 25fps for PAL)
5. Set the Ext M/C of the DD1500 to Master
6. Make sure the V1 is in Chase Off mode

Please contact Akai to get the best connection with the DD-1500 and the DD-8.

Connection to the Akai DD-1500 in CHASE RS422 Mode

1. If you did not receive a special serial cable that is DB9 Male to Male specific to the DD1500, you need to make one with the following pin-out (This is a twisted Slave to Slave cable) :
 - pin 1 -> pin 1
 - pin 2 -> pin 8
 - pin 3 -> pin 7
 - pin 4 -> pin 6
 - pin 5 -> pin 5
 - pin 6 -> pin 4
 - pin 7 -> pin 3
 - pin 8 -> pin 2
 - pin 9 -> pin 9
 2. Feed house sync to the V1 and to the DD1500
 3. Connect the serial cable between the V1 RS422 port 1 and the DD1500
 4. Set the DD1500 Word Sync to Video A (29.97 for NTSC, 25 fps for PAL),
 5. Set the Ext M/C of the DD1500 to Full Slave,
 6. Set the Chase mode of the V1 to Serial TC.
- Use the DD1500 as if it is standalone, the V1 will chase to it at any speed.

Connection to the Fairlight

1. Feed House Sync to the V1 and the Fairlight
2. Connect the serial cable between the Fairlight and the V1 RS422 port 1
3. On the V1, set Option Menu (1) **Transport JogSpeed** to 100% (No Limit) and save using Option Menu (5).
4. Run the Fairlight software, Hit the Machine 1 button to put the V1 on-line
5. Push buttons for setup of M1
6. Set Lace parameters to UNLACE=ON
7. And the LACE time parameter to 0 SEC

The Fairlight software will control the V1 properly

Connection to the Microlynx, the Lynx 1 and Lynx 2 synchronizers

1. Feed house sync to the V1 and the lynx,
2. If you are using a Lynx 1, connect the time code out of the V1 to the time code in of the Lynx
3. Connect the transport serial cable between the Lynx and the V1
4. In the Transport menu, select the machine as DVR10.
5. Set the Preroll to zero
6. If you are using a Microlynx or a Lynx 2, select Serial TC.

The Lynx will control the V1 and lock it to the system

Connection to the Sonic Solutions

1. Feed house sync to the V1 and the Sonic Station,
2. Connect the time code out of the V1 to the time code in of the Sonic,
3. Connect the serial cable between the V1 RS422 port 1 and the Sonic,
4. Select D-2 as the type of machine in the Sonic Machine list

The Sonic software will control the V1.

Connection to the Pro-Tools 4.0

Establishing Machine-control from Protools on the Macintosh

1. Connect the 9 pin RS422 cable between the V1's lower RS422 port and the Macintosh's Modem-port, Printer-port or G-Port serial port. You can also connect it to the serial port on your D24 or MIX card, but note that the VTPRO software will NOT operate through this port.
2. Connect the V1 LTC output to your LTC-to-MTC converter (for example: MOTU's MTP2 / MTP-AV, Opcode Midi interfaces, Digidesign USD etc.)
3. Connect the LTC-to-MTC converter to your Macintosh. In doing so, check that your Macintosh receives MTC data from your interface.
4. Install Digidesign's PostView or Machine Control Option on your Macintosh.
5. Power-up the V1. Make sure it operates correctly.
6. After your V1 has booted, run the Protools software.
7. Select the *Machine-Control* menu (*Protools -> Setups -> Peripherals -> Machine Control*).
8. Enable "9-pin serial". If it's grayed-out, try re-installing your Machine-Control software.
9. Under "Port", select the serial port that you connected your V1 to (see step 1).
10. Under "Machine Type", select "Sony-9 pin"
11. Under "Node", select "V1".
12. Under "Pre-Roll", set Pre-Roll to *30 frames*
13. Select the *Synchronization* menu (*Protools -> Setups -> Peripherals -> Synchronization*)
14. Under "Device", select the correct LTC-to-MTC converter. If you're not using a Digidesign device to perform this function, select "Generic MTC reader".
15. Under "Port", select the serial or USD port that you connected your LTC-to-MTC converter to.
16. Set "Minimum sync delay" to *30 frames*.
17. Select *Protools -> Setups -> Preferences -> Operation*. Activate "Machine Follows Selection/Scrub"
18. Locate the Transport Control on your screen. If you don't see it, select *Protools -> Display -> Show Transport*
19. Make sure "transport = protools" is set and that the "online" button (the one that looks like a clock) is selected.
20. Select *Protools -> OMS Midi*. Please be sure to deselect the serial port used by Protools for V1 control to avoid a conflict with OMS operation.

Protools will now be able to control the V1. The way it works is as followed:

- You hit play in Protools
- Then Protools will cue the V1 to the current play location MINUS the amount of frames set in step 12
- Next, the V1 will send LTC to your LTC-to-MTC converter
- Finally, Protools will receive the MTC and start chasing this timecode

If problems persist, please consult the "Protools and V1 control" FAQ's

Connection to the Orban AUDICY VX

1. Feed house sync to the V1 and to the reference video inputs on Audicy's timecode and digital input modules.
2. Connect the time code out of the V1 to Audicy's time code input, You don't need to connect Audicy's time code output.
3. Connect the RS422 port 1 of the V1 to the Audicy's RS-422 output, through the Orban adapter cable supplied.

4. Make sure the V1 is in Chase Off mode.
5. Make sure Audicy's I/O Setup has Sync Source set to Video and your local sync rate (NTSC or PAL). You may set this as a default.
6. Make sure Audicy's VTR Setup is set for +2 frame Timecode Delay, and normal Chase Dynamics and Lock Criterion. You may set this as a default.

If you press Audicy's Machine Control button, the V1 will follow every move you make on the Audicy. If you press Audicy's Chase button, it will follow every move you make on the V1. You may switch freely between these functions during a session.

Connection to the Dyaxis II

This connection scheme is used to connect the V1 to StudioFrame, Audiofile, Audiovision, Post-Pro, Dyaxis II, Protools 4.0 etc.

1. Feed house sync to the V1 and the DAW,
2. Connect the time code out of the V1 to the time code in of the DAW,
3. Connect the serial cable between the V1 RS422 port 1 and the DAW,
4. From the Dyaxis II software choose the following two options:
 - Internal Time Code on 9 Pin
 - Time Code on Audio Tracks

List of DAWs & Editors currently supported by the V1^(*)

Adams-Smith SuperController, Akai DD1500, AMS Neve Audiofile, Augan OMX, DAR, Digidesign Protools 4.0, Digigram X-Track, Doremi Labs Dawn II v. 4.3+, Fairlight MFX3, Fast Video Machine, Sadie, Sonic Solutions, Sony BVE, Spectral, Studer Dyaxis, SSL/ScreenSound, Synclavier, TimeLine Vista Waveframe/StudioFrame, TimeLine Lynx & Micro Lynx Synchronizers .

Special note for the SSL/ScreenSound :

On the ScreenSound, go into the page 'Setup Serial' and select 'Motion Off'. The V1 will be controlled by the ScreenSound. The offset on the ScreenSound must then be set to 0; if not the ScreenSound will operate as if a real offset is present between the V1 and the audio tracks on the ScreenSound.

^(*) This list is not absolute, contact Doremi Labs if your product is not listed above

13 ADDENDUM

4.40c release notes:

In software 4.40c, the segments are associated with files. Unlike 4.40, you can now use segments to create playlist with multiple files.