

DVR Master

NDT 200™ Digital Video Recorder Control Software

User's Manual

For

Revision 2.2b

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Fast Forward Video
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DVR Master – Table of Contents

INSTALLATION	1
CONNECTION	1
TOP DISPLAY	2
COMPRESSION	2
TIME REMAINING.....	2
TIME DISPLAY	2
TRANSPORT CONTROLS.....	2
PASS-THRU BUTTON	2
RECORD BUTTON.....	2
TABBED WINDOWS – CONTENTS VARY PER MODEL.....	3
UPDATING DVR FIRMWARE	4
FILE SIZE.....	5
CALCULATIONS.....	6
MINUTES / GIGABYTE	6
TOTAL TIME.....	6
TIME REMAINING.....	6
TIME LAPSE RECORDING - OPTION	7
FRAMES PER SECOND.....	7
ONE FRAME EVERY	7
CHARACTER OVERLAY.....	8
TIME CODE OR DATE DISPLAY.....	8
USER DATA FIELDS.....	8
INPUT FORMAT	9
PRE-EVENT - OPTION.....	9
MIN	9
EVENT TRIGGER	9
LOOP PLAY - OPTION.....	10
LOOP RECORD - OPTION	10
SINGLE FRAME RECORD - OPTION.....	10
DISPLAY SOURCE TC @ PLAY - OPTION.....	10
DISK.....	11
DELETE ALL VIDEO.....	11
ACCESS HARD DRIVE USING USB	11
SETTINGS	12
VIDEO STANDARD	12
SET REAL TIME CLOCK - OPTIONAL	12

DVR Master for NDT 200™ Control Software

DVR Master is the software used to configure and control various operations of Fast Forward Video's line of Digital Video Recorders or DVRs.

Installation

DVR Master requires Microsoft's .NET frameworks, Version 2.0 in order to run. If your system is not currently configured with this software, the supplied CD will install it on your system.

Once the .NET plug-in is installed, the DVR Master software installation will proceed. Just follow the install wizard's prompts.

The driver for the USB to Serial port IC in the NDT 200™ must be installed. The self-extracting file specific for your operating system is included on the CD in the folder titled "CP210x Drivers...". Run the file specific for your system and remember where the files are stored to browse for this when the Windows installer asks for them, or as needed in other OS's.

Connection

Connect the DVR to your computer system via a USB cable.

If there is no DVR connected to your system when the software is launched you will see this error:



Click the OK button to get past the error and allow the software to start for demo use only. If your intention was not to use the software in Demo Mode, close the software program prior to attempting to control a DVR.

Check your connections, make sure the DVR is ON, and re-launch the DVR Master software.

Top Display



Compression

In the upper left hand corner of the DVR Master Interface screen you'll find the indicator showing the current compression setting. To change this setting, for capturing new video, see the tabbed sheet named **File Size**.

Time Remaining

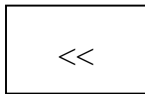
This indicator is a calculation of space on the media still available, based in time rather than bytes. Space left for capturing audio and video, using whatever media is currently installed (hard disk or compact flash) at the current compression setting. This is an estimate since the amount of space required for each frame is not the same.

Time Display

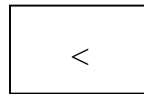
This indicates the time position or time code of the current or active frame in hours, min, sec, and frames HH:MM:SS.FF.

Transport Controls

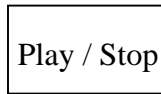
Below the Time Display are the transport controls, similar but not exactly as might be expected from a VTR.



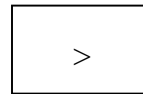
Beginning of Clip



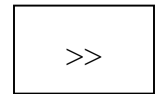
1 Frame Back



Play / Stop / Pause



1 Frame Forward



End of Clip

Pass-Thru button

Sets the DVR in a mode allowing video to pass through to a monitor without being recorded. This button puts the DVR in "Record Ready" mode.

Record button

This button starts recording the video being passed thru. Pressing Pause during Recording will stop the record, leaving the DVR in Pass-Thru mode.

Tabbed Windows – Contents vary per model.

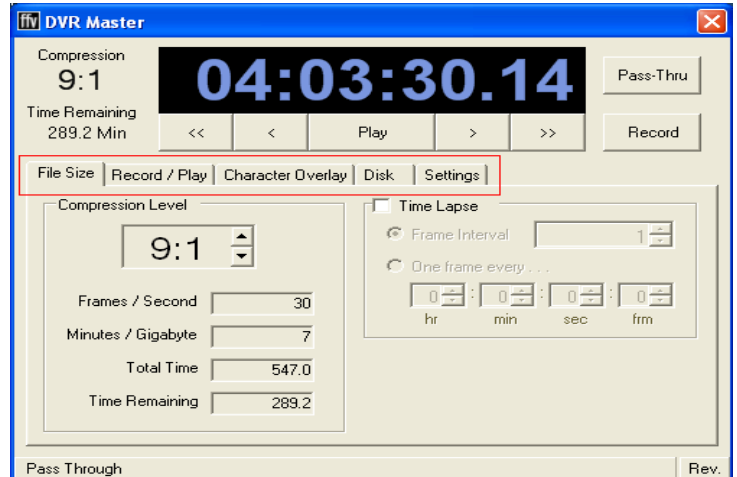
File Size - Various settings and calculations regarding the video file to be captured including user selectable compression settings and file attributes.

Record / Play - Record and Play settings such as Video Input, Loop and Single Frame Recording.

Character Overlay - Settings regarding overlaying text on the video image.

Disk - Disk based operations such as deleting all video, USB connection and Disk / File formatting.

Settings - Additional DVR settings; Personality, Video Standard, Output Format and clock settings.



In the lower right corner of the DVR Master Interface screen you'll see a small button labeled "Rev."

If you click on this Button you will see the following placard detailing your current versions of both the Controller Software and the DVR's firmware.

As you can see from this Placard, the Controller Software is at Version 2.2b.

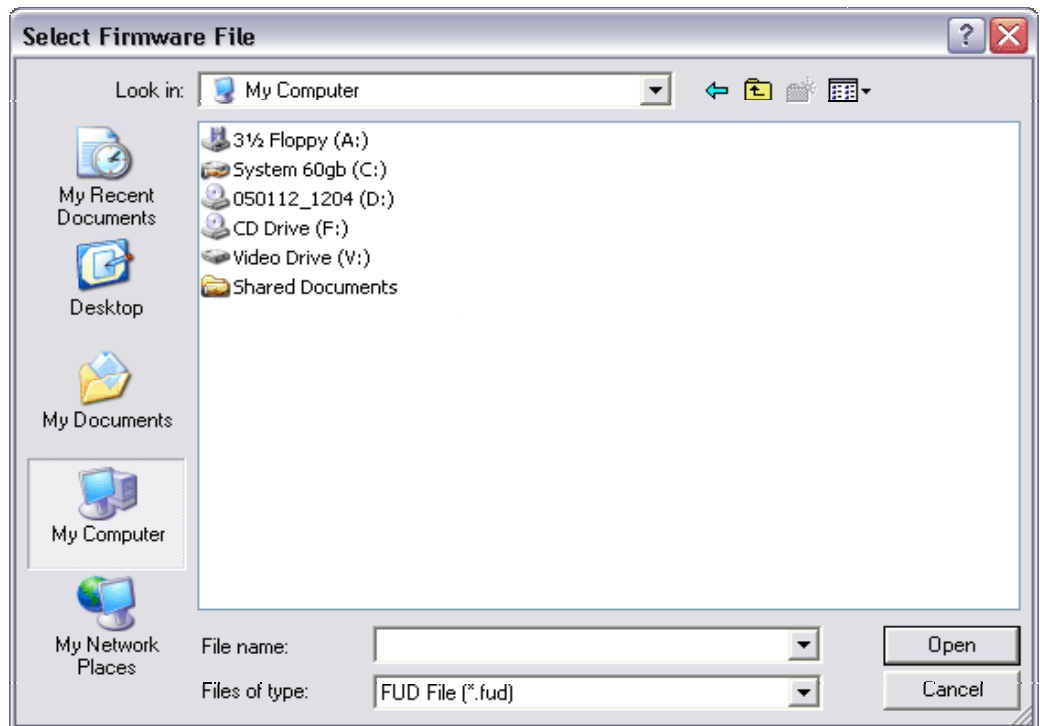


If the two fields regarding the DVR firmware revisions are blank it means there is no device connected to the computer at this time.

Updating DVR Firmware

DVR Firmware revisions are available for downloading on the Support page of the Fast Forward Video Web site: www.ffv.com

The download will consist of a *.zip file of one or two *.FUD files, FUD stands for Firmware Update. Once saved on your host system, with your DVR connected you can update your firmware by pressing the "Update" button on the Revision Placard and navigating to the location of the downloaded FUD file. Boot Firmware revision information is for FFV Service. Boot code is not usually field-programmable.



*** Note: You should probably save a couple of previous versions of the firmware revisions on your local hard drive when updating, in case you have to revert back to a previous version.**

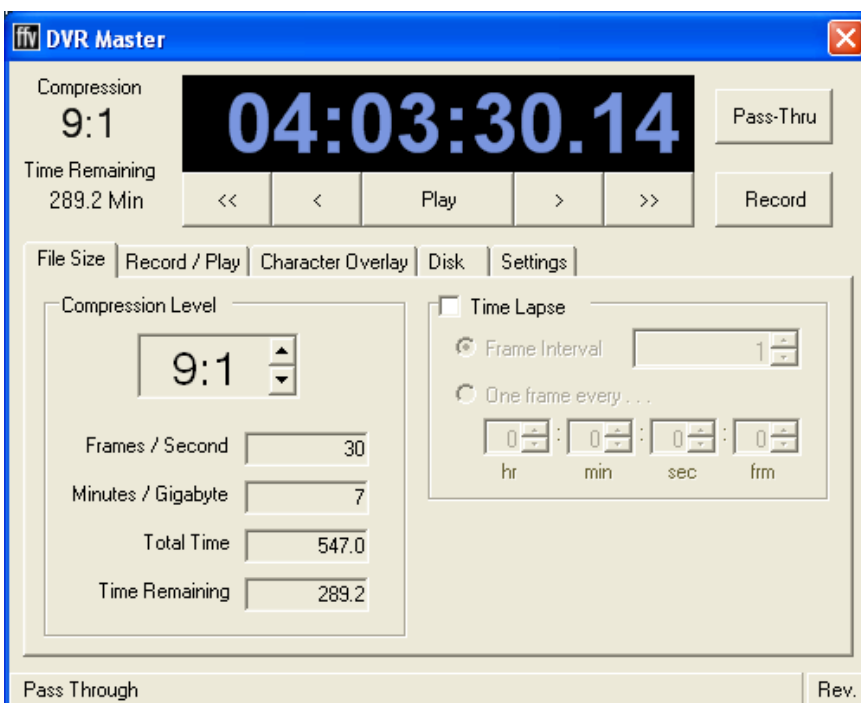
Firmware updates often include new features that may or may not be in line with your needs. Some firmware updates can interfere with custom modifications that users have made to their DVRs.

File Size

Compression Level

Video recorded on Fast Forward Video DVRs are using a compression algorithm to get high quality video onto a single drive or compact flash chip. The compression system is known as Motion-JPEG. This is an adaptation, for moving pictures, of the algorithm developed by the Joint Photographic Experts Group, originally created for compressing still pictures. The benefits are:

- A. You still have discreet access to each and EVERY frame of video you shoot.
- B. You have a choice as to how much or how little you compress.



The more compression you use, the more time you will have to record on the media in your DVR. However, the more you compress, the more degraded your image will become. Different applications call for differing amounts of visual image quality so it is up to you to decide how much compression is acceptable in your use of the video images you record.



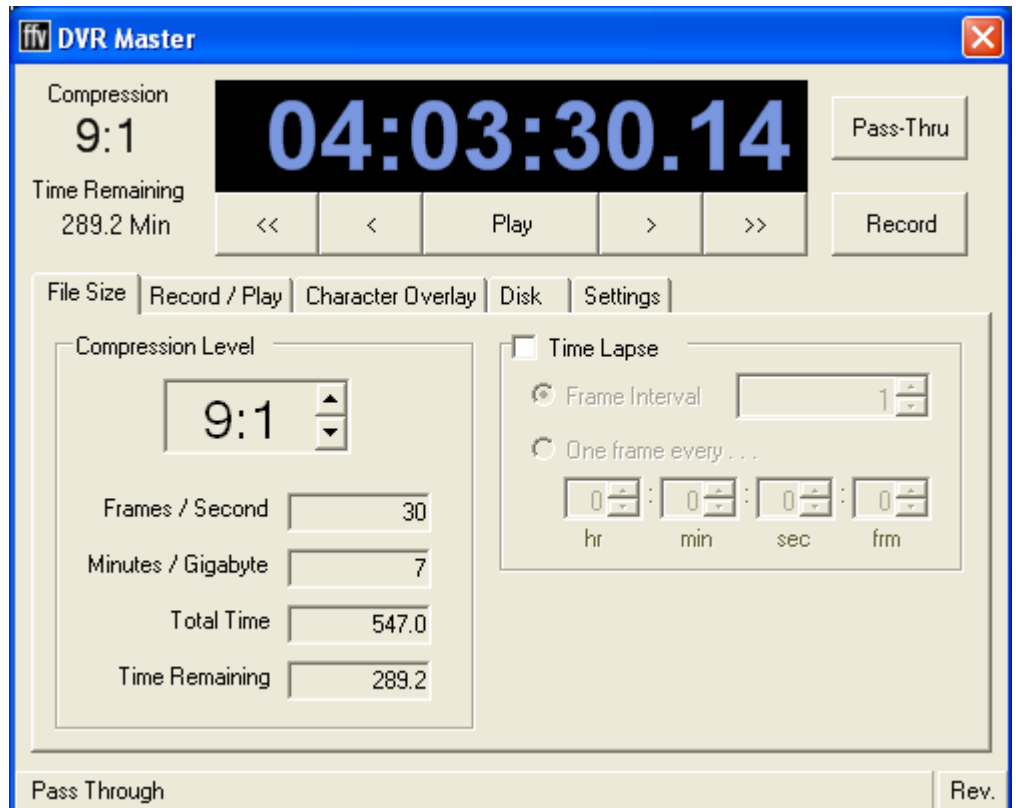
The minimum amount of compression selectable is 4:1, the maximum amount of compression is 30:1.



What does that mean?

It means at 4:1, the lowest amount of compression available, your image will be approximately one fourth the size it would take to store every pixel recorded in that still frame of video. That's approximately, because it is not a literal 4 to 1 reduction. The JPEG algorithm is based on a principle known as "quantization" and makes its reduction based on the similarity of colored pixels next to each other. Simple images such as a tripod steady shot of a Speaker at a podium will compress more at a given compression level than a pan of crowded stadium at the same compression level. So when specifying Compression levels we use the term approximate in regard to the number you choose. When it comes to video images there is little to no image degradation at 4:1 or below, most people will not see any degradation below 6:1 or 7:1. You will have to experiment with your images, your subject, your lighting, and your cameras to determine what compression levels are acceptable to you.

File Size (continued)



Calculations

In the lower left corner of the File Size tabbed sheet you'll find the results of three calculations:

Minutes / Gigabyte

This number is based on the Compression Level. You will be able to record approximately this number of minutes for every gigabyte of storage you have in your DVR.

Total Time

The amount of storage in your connected DVR is read into the software and this calculation tells you how much time you could record, at the current compression setting, if you use all the DVR's storage at this compression level.

Time Remaining

The amount of storage that has not yet been used by your connected DVR is read into the software and this calculation tells you how much time you have left to record, at the current compression setting, if you use the remaining storage at this compression level.

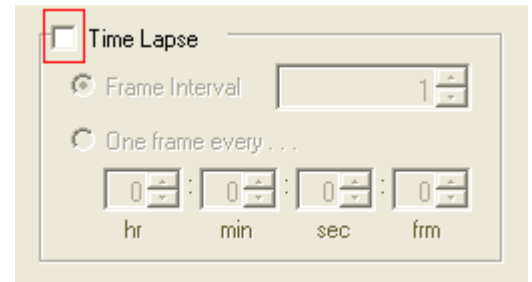
File Size Continued

Time Lapse Recording - Option

Some of Fast Forward Video's DVRs have Time Lapse recording capabilities.

If your DVR has Time Lapse capabilities, in order to use this feature you must first enable it, by clicking in the Time Lapse Check box.

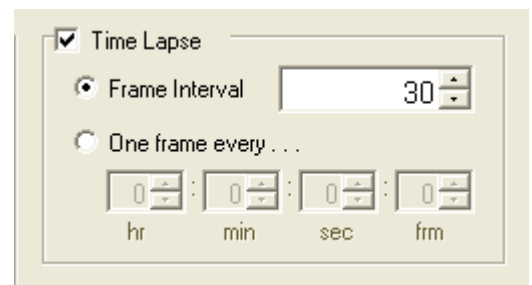
You will now have to choose whether you will be recording your program based on so many frames per second, or a certain number of frames every given time period. One option excludes the other.



Frames per Second

To simply speed things up, you'll want to record in the "frame interval" mode, click the round button next to "Frame Interval" and using the up and down arrows or simply typing in the appropriate number, selection is 1 frame every "X" of normal video.

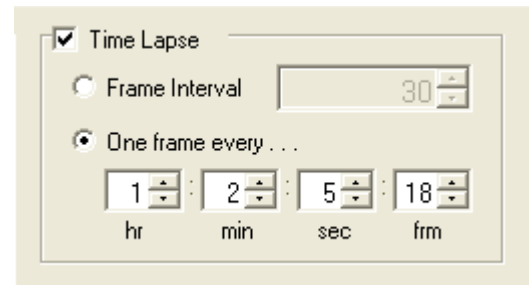
Since the U.S. standard for video is almost 30 fps, recording at an interval of 15 would give you half as many frames in the same amount of time, but when played back as standard video the program would appear as being twice as fast.



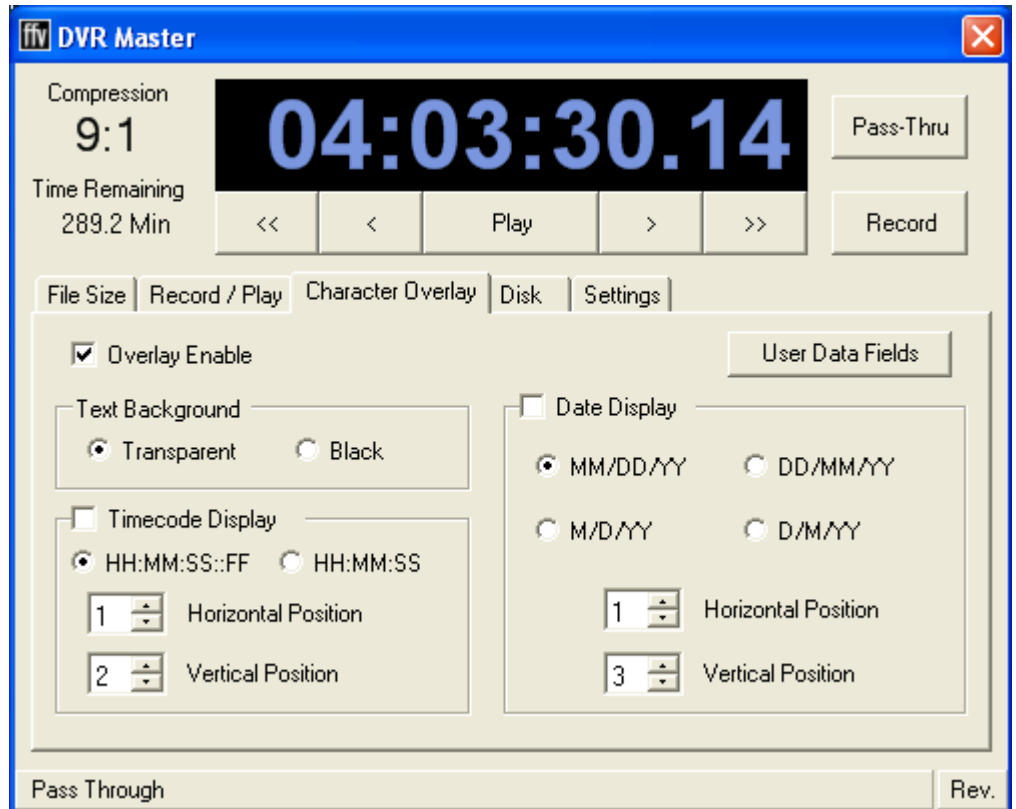
One Frame Every

For programs requiring much longer intervals between recorded frames, such as a flower opening up or ice melting you will need this next option because one frame every second may still be too many frames to capture and record a long slow event.

Click the round button next to "One frame every...", Determine how often you want the DVR to record a frame and then type or use the arrows for each time component field as needed. If you are typing the numbers in, use the Tab key on the keyboard to move from field to field.



Character Overlay



Overlay Option

Fast Forward Video's family of DVRs allows the user to overlay text on top of the video. That text can be in the form of time code, date, or user prescribed text. Some DVRs allow overlay information to be written over the video while recording, others only when playing. Overlay information written during the record process is permanent and will destroy some of the video information. Overlay during playback will not be visible if not played on the DVR.

To use this feature you must first enable it by clicking in the **Overlay Enable** checkbox.

Text Background

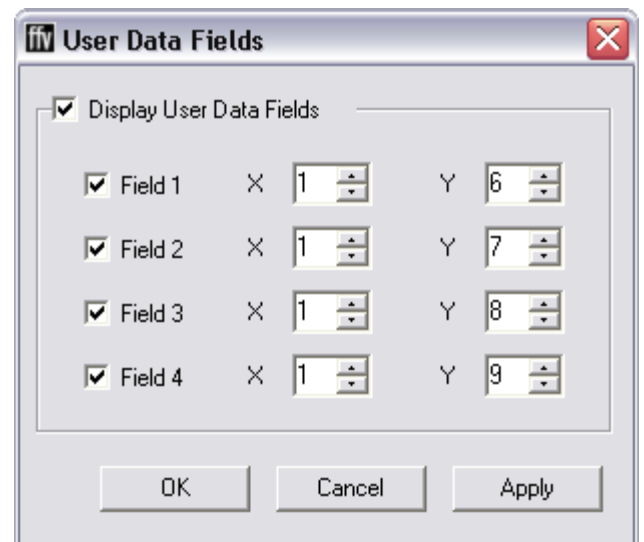
Choose the background for the text overlay either transparent or when the video image is very light or white you'll want your text backed with black.

Time code or Date Display

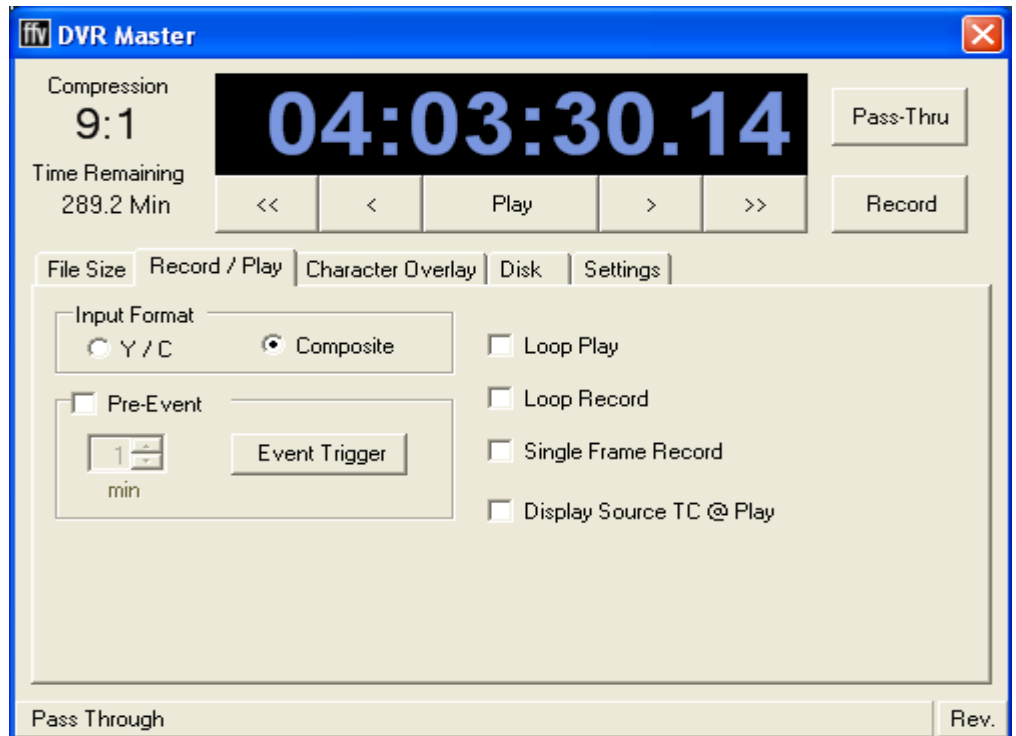
If you want the Time code or Date imposed over the video image, enable it by clicking in the appropriate Display checkbox, choose a format, Time code can be displayed with or without frame count, and the Date display has four format options. You can then adjust both horizontal and vertical positions by clicking on the up and down arrows next to each of their respective fields.

User Data Fields

Currently, there is no provision for entering user text in DVR Master. Users may use either GPS input or Serial Protocol commands to enter text into the user data fields and use DVR Master to control where it is placed on the screen.



Record / Play



Input Format

Select the signal coming into the DVR from either a camera or another source. Choose one, Y/C or Composite by clicking in their respective select buttons. One negates the other.

Pre-Event - Option

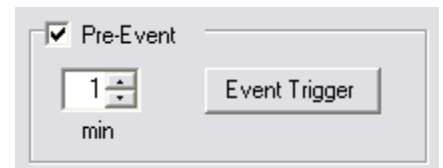
Used in conjunction with loop record. This option allows users to have the DVR recording video, and click on the event trigger after something important or worth saving has occurred and save 'x' (1-15) minutes of video **prior** to the 'Event Trigger' plus all video until Pause is clicked.

Min

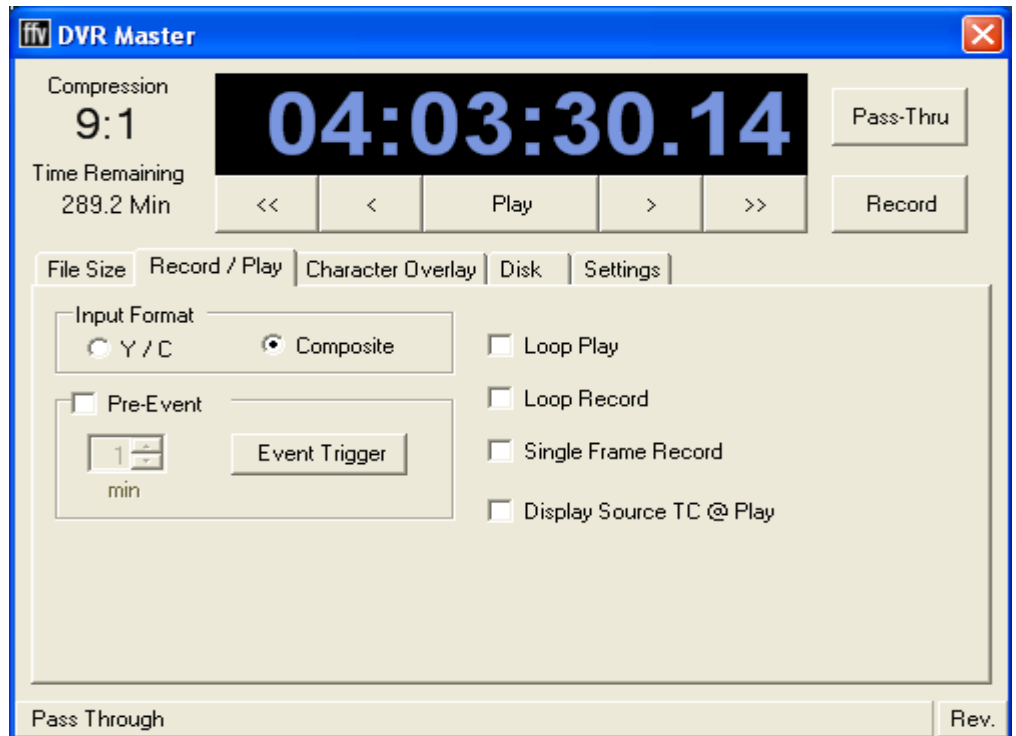
The number of minutes of video to be saved prior to the Event Trigger being sent.

Event Trigger

The button to click, when in Pre-Event record mode, to mark an event, save a predetermined number of minutes prior to be saved, and all following video until the pause button is selected.



Record / Play (continued)



Loop Play - Option

Check this box if you want the video playing back to play again and again from the beginning when the program recorded comes to end.

Loop Record - Option

Check loop record box if you want to record continuously instead of stopping when the storage media in the DVR is full. This method of recording will record over previously recorded material over and over again. This mode is great for instant replay of sports events or for security applications.

Note: This mode only records over empty space available on the storage media at the start of the present recording. No previously recorded clips will be deleted or recorded over.

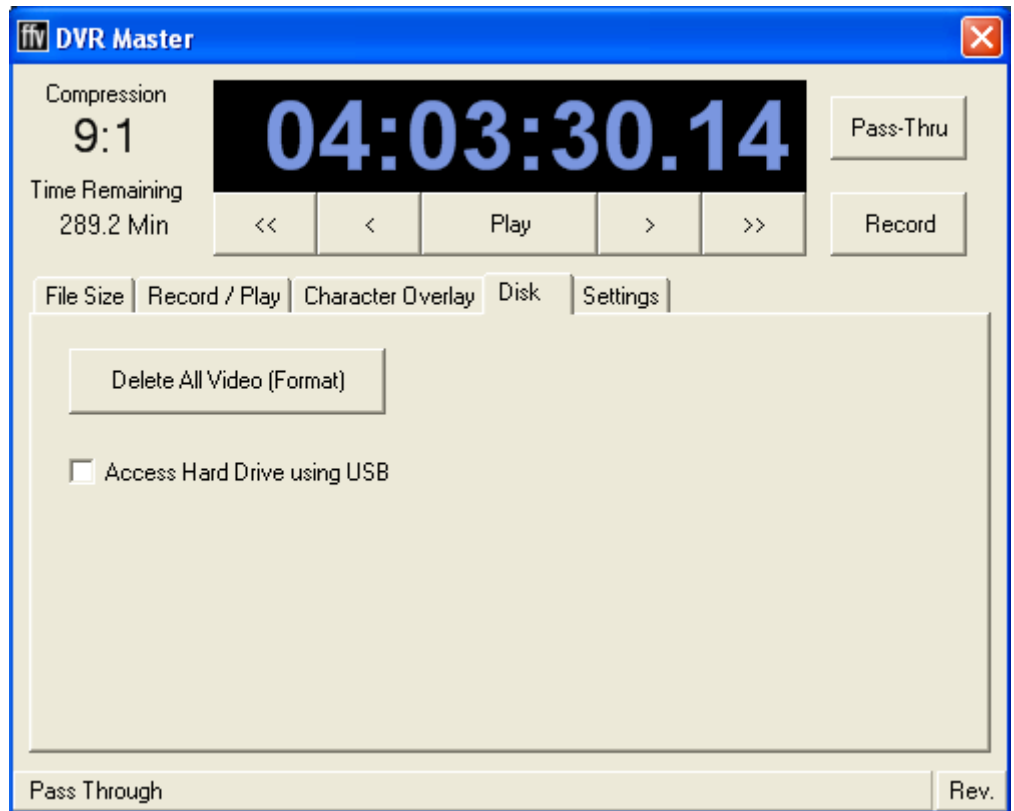
Single Frame Record - Option

Checking this box will allow the user to record single frames of video by clicking the record button for each frame desired. It is also on during Time Lapse recordings.

Display Source TC @ Play - Option

Click this box to have the Overlay during Play to use the Time Code form the video file. Eliminates the need to turn off the Overlay during Play.

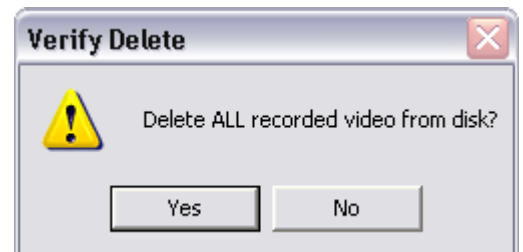
Disk



Delete All Video

Press this button when you intend to dump all video image data from the recorder's storage media. When you press this button you will get a confirmation dialog like this:

Press "Yes" to confirm deletion of **ALL** video
Press "No" to exit this confirmation without deletion.

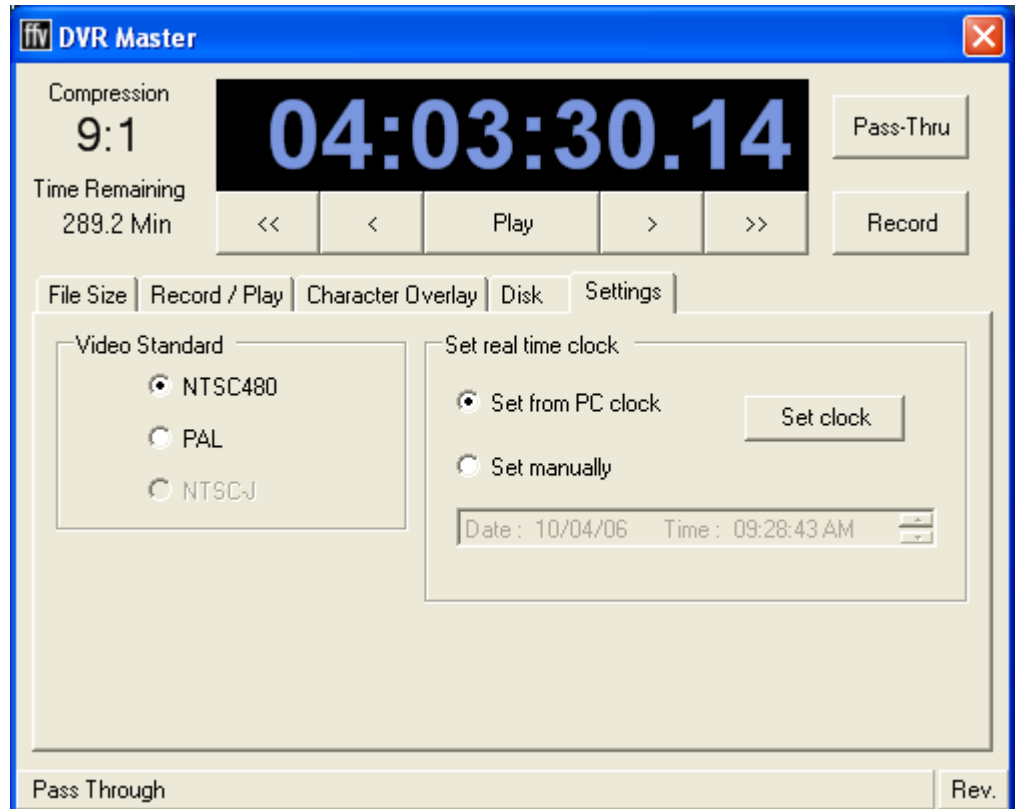


Access Hard Drive using USB

Click to connect PC to DVR hard drive using USB to download video files from the hard drive. This will not connect if DVR is recording. Always use the DVR to delete video files that are no longer needed.

Unclick to disconnect PC's USB control of hard drive. This must be done before any files will be deleted by the DVR since only one device can access the hard drive at a time.

Settings



Video Standard

Switch Input recognition between:

The North American Standard 720 x 480 at 60 fields per second (NTSC; National Television System Committee),
The European Standard 720 x 576 at 50 fields per second (PAL; Phase Alternating Lines),
and **Optional** NTSC Japan 720 x 486 at 60 fields per second.

Note: This software or the DVR is not capable of transcoding NTSC to PAL or PAL to NTSC. However, it can record either standard, then playback whichever standard the video was recorded in.

Set Real Time Clock - Optional

The DVR does have an internal Real Time Clock that can either be Set from the PC's clock that is running the DVR Master Software, or Set manually by the user. Choose the method and if setting Manually, enter the correct Time and Date. Then press the "Set Clock" button.