



DTReplayLIVE

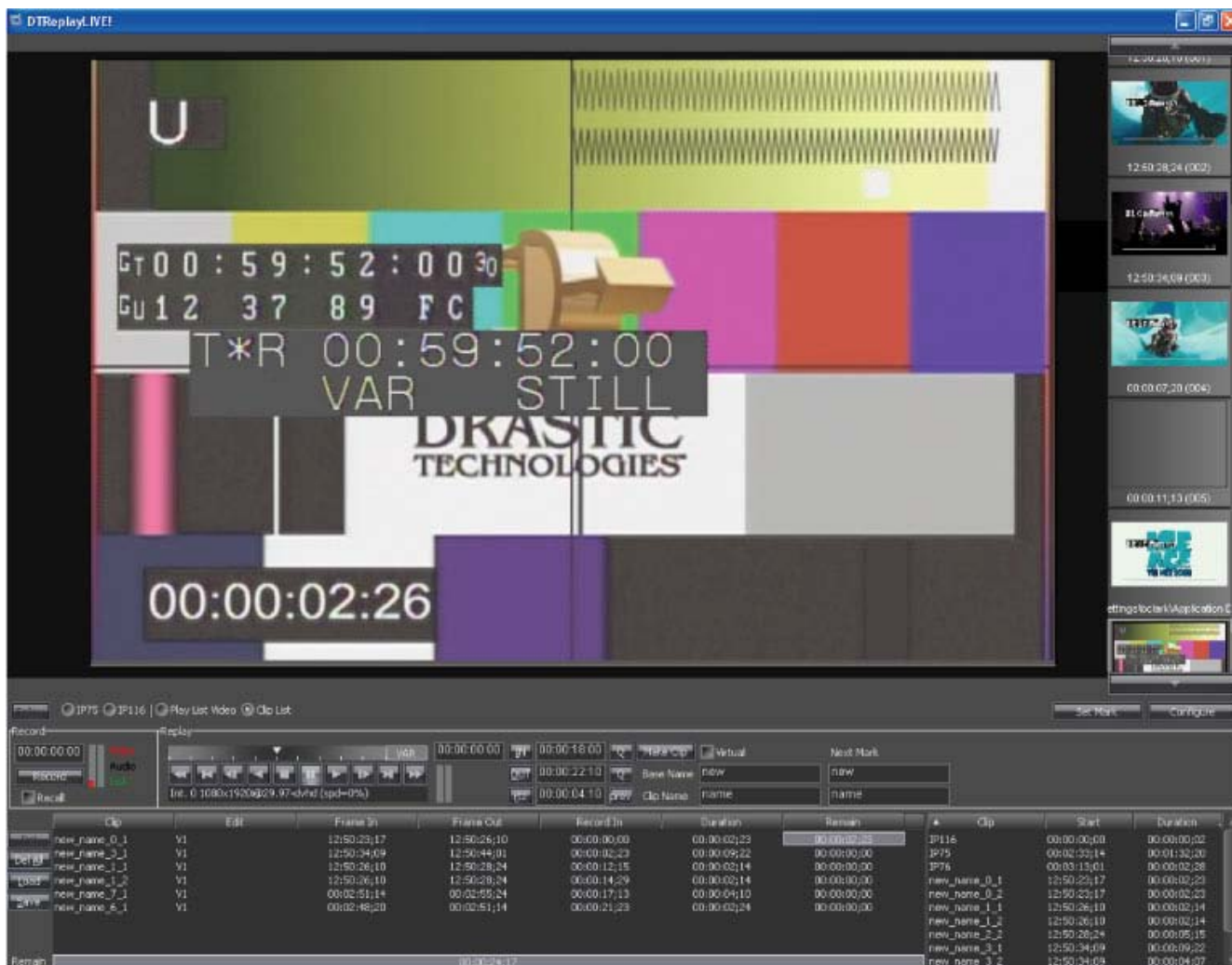
Drastic Technologies Ltd
523 The Queensway, Suite 102
Toronto, ON, M8Y 1J7
Canada
P (416) 255 5636
F (416) 255 8780

(c)opyright 2006-2011, Drastic Technologies Ltd. All Rights Reserved.

Contents

Contents	2
Overview	3
Controls and Displays.....	5
Main View	5
Channel Selector section.....	7
Mark section	8
Configure Pulldown	11
Configure Channels Window	12
Add/Remove Channels Window	14
Application Settings Window.....	16
Record Section	18
Replay Section.....	19
PlayList	21
Clip Bin.....	22
Keyboard Commands.....	23
Hardware	25
Confirm the Connections	25
JL Cooper Serial Controller	27
Controls and Displays	27
Operations.....	30
Map the Remote DDRs	31
Add Channels	31
Record Video	32
Replay Video - Follow.....	32
Play Video - Transport Controls	33
The Application Transport Controls	33
The Attached Controller Transport Controls	33
Using Marks	34
Create Marks.....	34
Mark Status	34
Mark Trimming	35
Mark Context - Remove	36
Make Clips.....	36
PlayList Features	38

Overview



DTReplayLIVE is a digital slow motion replay system for SD and HD video signals. It records an incoming video signal in a loop to a local disk array and allows various playback modes for the captured material. **DTReplayLIVE** runs on a multiple channel DDR system. One channel of the DDR is dedicated to VGA display (replay), and at least one separate channel is dedicated to video capture.

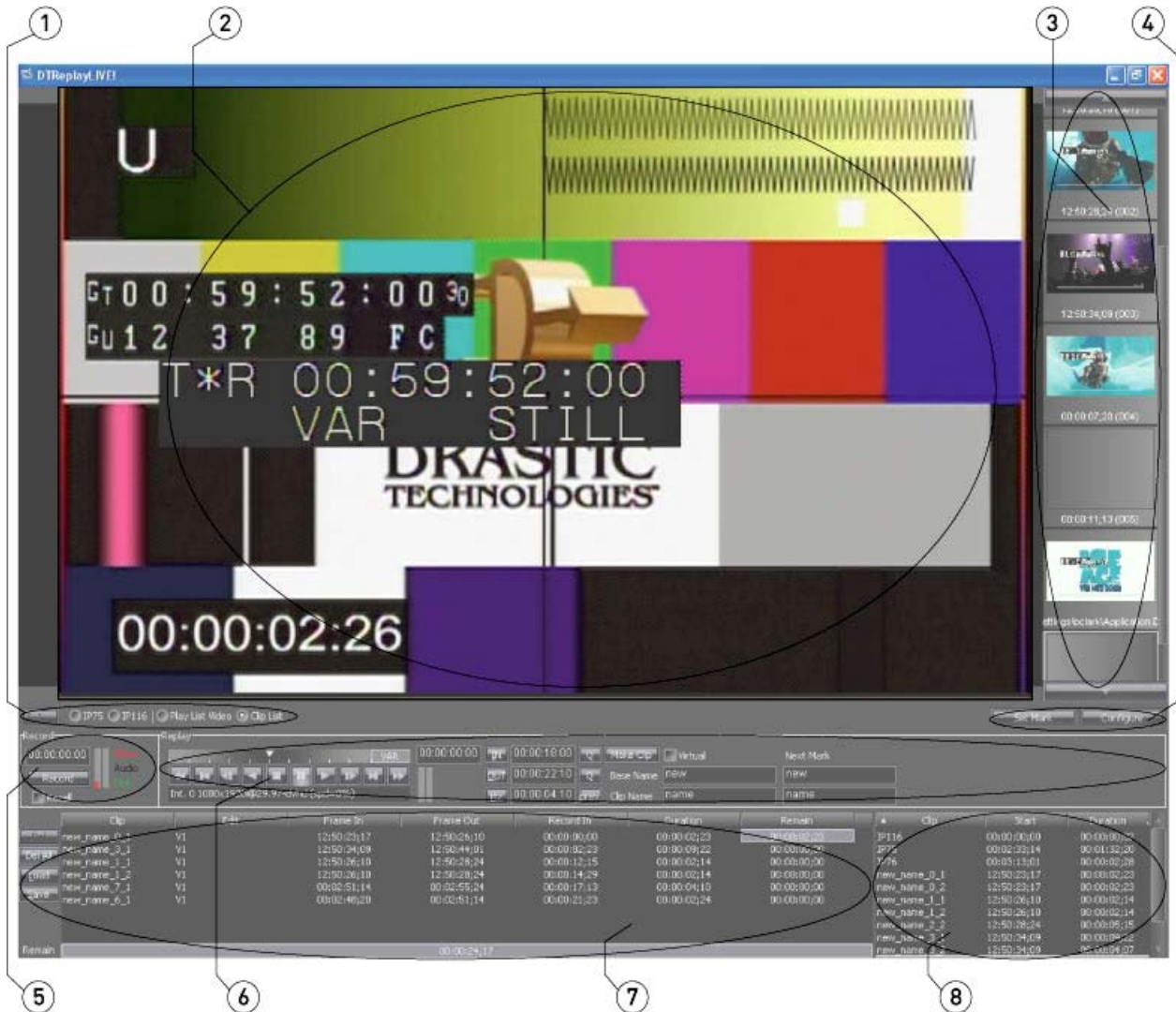
The **DTReplayLIVE** system is typically configured using the following components:

- The **DTReplayLIVE** Digital Disk Recorder (the DDR) to direct the actions of the remote DDRs
- Multiple remote DDRs to record and offer multiple sources for replay
- The video input/output breakout boxes (1U rack mount rear)
- Multi-pin cables between the rack mount units and their breakout boxes
- Technician's/Operator's monitor (1024x768 LCD)
- Referee's monitor (720x486 - within 800x600 LCD)
- Video capture monitor (720x486 NTSC, 720x576 PAL)
- DVD burner which captures the referee's monitor for training purposes
- Referee's Jog/Shuttle Replay Controller (the attached controller)
- Event Mark/Index controller
- Optional Jumbotron/ESPN Box/FoxNet capture cabling

Other configurations may be available depending on the requirements of the application.

Controls and Displays

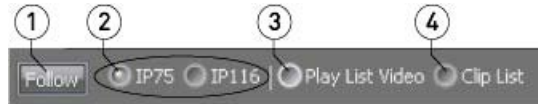
Main View



1	Channel Selector section	The Channel Selector section offers the following choices: Pressing the Follow button cues the video from the selected channel at the follow point (about 3 seconds back) to allow the user to view the replay. Each channel that has been loaded is displayed, along with its selector button. Only one channel may be selected at a time. When a channel selector button is pressed, the Follow and Transport Control features apply to that channel's associated media. Pressing the Play List Video selector allows the user to access PlayList features. Pressing the Clip List selector allows the user to access the clip playback features
2	VGA Monitor display	The in-GUI VGA Monitor provides display of Replay, PlayList and Pass-through (record) video as determined by the selection made in the Channel Selector section.

3	Mark section	The Mark section shows the “marks” the user has created, in numerical sequence. Each mark is displayed with a picon, its number and the In Point time code location. A mark can be selected by clicking on its area, or by using the attached controller to scroll through the marks (via the Last Clip/Next Clip buttons), and pressing the Enter button.
4	Configure button and Set Mark button	Press the Configure pulldown menu to select between: Channels - opens the Channels window, which allows the user to configure the internal channel settings. Add/Remove Device - opens the Add/Remove Device window, which allows the user to add or remove remote DDRs. Application - opens the Application window, which allows the user to set specific operating parameters for the application. Press the Set Mark button to create a mark in the Mark section.
5	Record section	Provides a Record/Stop toggle, a time code field to display the length of the current record, meters for the CPU and buffer, and status indicators for the video and audio input/output, and storage disks.
6	Replay section	Provides Transport Controls for media playback, and Edit Controls to make clips from recorded video.
7	PlayList section	Allows the user to place a number of clips from the Clip Bin into a sequence for playback, to save the list or to load an existing list.
8	Clip Bin section	The Clip Bin offers a list of clips - short sections of media that have either been imported to create a new instance of media on the drive or virtual clips that have been defined only by their In and Out points. The clips may be selected for playback, and for inclusion in a PlayList .

Channel Selector section



1	Follow button	Press the Follow button to see video replay from the beginning of the loop being recorded. The typical setup provides a follow distance of just over minus 3 seconds. So, if you select a DDR during a record and press the Follow button at 00:01:00:00, the frame at somewhere around 00:00:56:20 will be cued for replay.
2	Channel selectors	Connected channels will appear in this area with a selector button available to select between them for replay sequences. During the connection process the user may provide names for these devices or use the default names provided.
3	Play List Video selector	Press the Play List Video selector to access the PlayList features. With this control selected, the user may compose a PlayList made of clips which are available in the Clip Bin . PlayLists may be saved, opened and run as needed.
4	Clip List Video selector	Press the Clip List Video selector to access the Clip List features. With this control selected, the user may select clips for playback and import.

Mark section



1	Up arrow	Use the Up arrow to reveal any marks not shown above the top clip displayed
2	Mark field	The Mark field displays a picon, and the start time code for the media it represents. The user may click on a mark to select it. Double clicking on a mark invokes a set of controls which allow the user to mark the clip as good, bad or neutral, and/or to trim frames off the start or end of the clip. Right clicking on a mark will invoke the context menu for that mark, allowing the user to remove it (or remove all the marks), or to make a clip from the mark.
3	Up/Down slider	Use the Up/Down slider to scroll up or down through the clip section to reveal any clips not shown
4	Down arrow	Use the Down arrow to reveal any clips not shown below the lowest clip displayed

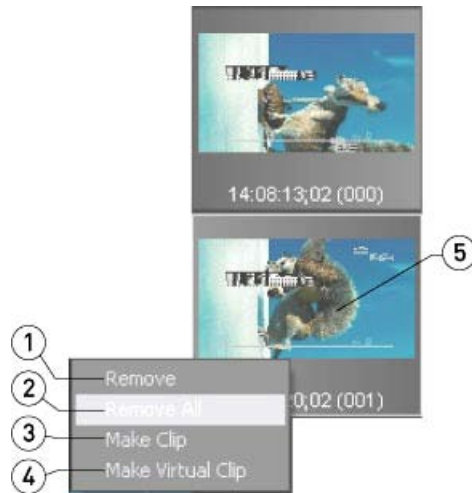
Mark Popout



The **Mark Popout** is opened by double clicking on a clip in the **Mark Section** - the popout hangs over the selected mark until the user presses the **Accept** button. Whatever changes the user has made will then be enabled. A user may label the mark as **Good**, **Bad** or **Neutral**, and/or trim frames from the start or end using these controls.

1	Number field	Displays the position of the mark in relation to all the other marks, as they are numbered starting at 000 at the top of the list, and ending with the last mark the user has made.
2	In time code field	Displays the In Point of the mark, and allows the user to enter a new In Point (must be prior to the Out Point of the mark).
3	Out time code field	Displays the Out Point of the mark (by default the frame prior to the next mark), and allows the user to enter a new Out Point (must be after the In Point of the clip).
4	Accept button	Press the Accept button to set any changes and close the Mark popout menu
5	Picon display	A single frame of the mark is rendered to a small JPEG and displayed as a graphic reminder of which mark is which.
6	Good button	Press the Good button to set the mark's status as good (a keeper!). The status of the mark is updated once the Accept button is pressed, resulting in the mark's time being displayed in yellow
7	Neutral button	Press the Neutral button to set the mark's status as neither good nor bad. The status of the clip is updated once the Accept button is pressed, resulting in the mark's time code being displayed in white.
8	Bad button	Press the Bad button to set the mark's status as bad - perhaps the user has mistakenly created a clip which highlights a non-event, or has other unacceptable non-merits. The status of the clip is updated once the Accept button is pressed, resulting in the mark's time code being displayed in red

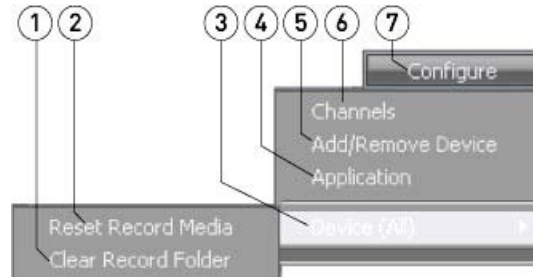
Mark Context Menu



Right clicking on a mark invokes the context menu for the **Mark** section, revealing the following options:

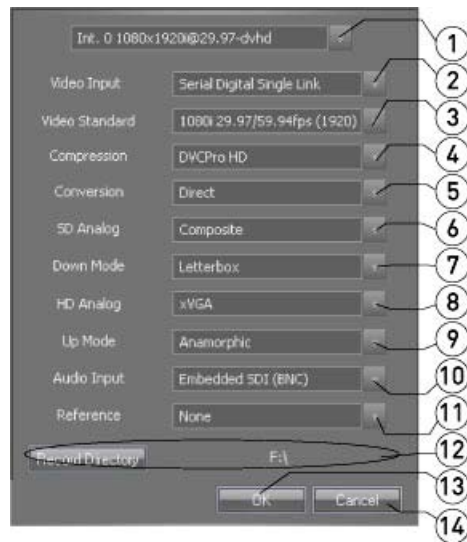
1	Remove option	This option removes the selected mark (the one the user has right clicked on to open this menu).
2	Remove All option	This option removes all of the marks within the Mark section
3	Make Clip option	This option imports the selected mark to the drive of the DDR in MOV format, and adds the media as a clip into the Clip Bin . This action creates a new file on the drive for replay or inclusion in a Playlist.
4	Make Virtual Clip option	This option adds the selected clip to the clip bin without importing a local copy, and adds the media as a clip into the Clip Bin . This action uses the In and Out Points to play the media without creating a second instance either on the remote DDR or the DDR.
5	Mark selected	The mark the user has right clicked to open the context menu will be affected by any of the options selected.

Configure Pulldown



1	Clear Record Folder option	Selecting this option deletes all the media in the record folder of all selected remote DDR, so the user can start with fresh media on this channel.
2	Reset Record Media option	Selecting this option resets the record in point to 00:00:00:00 on the selected remote DDR, so the current record duration matches the Out Point
3	Device (All) tab	The Device (All) tab allows the user to choose between Reset Record Media or Clear Record Folder
4	Application option	Selecting this option opens the Application window, which allows the user to set some of the application's operating parameters.
5	Add/Remove Device option	Selecting this option opens the Add/Remove Device window, which allows the user to add or remove record DDRs
6	Channels option	Selecting this option opens the Channels window, which allows the user to configure the internal channel settings.
7	Configure button	Pressing the Configure button allows the user to select between the options offered within the popout menu

Configure Channels Window

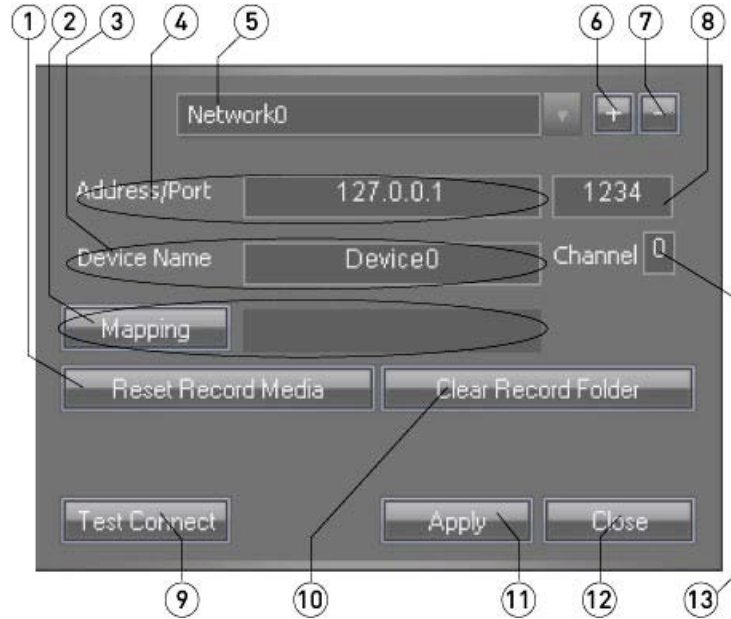


The **Configure Channels** window can be opened by pressing the **Configure** button and selecting **Configure Channels** from the pulldown menu.

1	Channel pulldown menu	Select between available internal video channels on the DDR. Typically one channel is associated with each video board in the DDR. The internal channels are numbered starting at "Int0" (internal channel zero), and increment upward by single integers for each subsequent channel.
2	Video Input pulldown menu	Select between available input sources, i.e. whether SDI or one of various forms of analog. This setting determines which input will be recorded, so for example if you intend to use a digital workflow and you connect an SDI video signal to the video input on the breakout box, one of the more commonly used settings would be Serial Digital Single Link .
3	Video Standard pulldown menu	Select between available video standards, such as SD (NTSC/PAL) or HD (720, 1080) - choices will be limited to standards supported by the video hardware.
4	Compression pulldown menu	Select between available codecs.
5	Conversion pulldown menu	Select between available up- or down-conversion preferences, or select Direct (no conversion).
6	SD Analog pulldown menu	Select between available SD analog input/output choices.
7	Down Mode pulldown menu	Select between available down-conversion modes.
8	HD Analog pulldown menu	Select between available HD analog input/output choices.
9	Up Mode pulldown menu	Select between available up-conversion modes.
10	Audio Input pulldown menu	Select between available audio input sources, i.e. whether embedded, AES/EBU etc.
11	Reference pulldown menu	Select between available reference, or genlock sources. Choices may include:

		<p>Input (lock to the timing signal in the video input),</p> <p>Reference (lock to a reference signal connected to the reference input on the breakout box), or</p> <p>None (do not use a reference source - keep in mind that this setting may adversely affect frame accuracy).</p>
12	Record Directory button and display	Pressing the Record Directory button opens up a browser which allows the user to specify which storage drives the DDR will use to record files onto, or to import clips to. The current setting is displayed to the right of the button.
13	OK button	Press the OK button to set any changes made and close the Channels window.
14	Cancel button	Press the Cancel button close the Channels window without changing any settings.

Add/Remove Channels Window

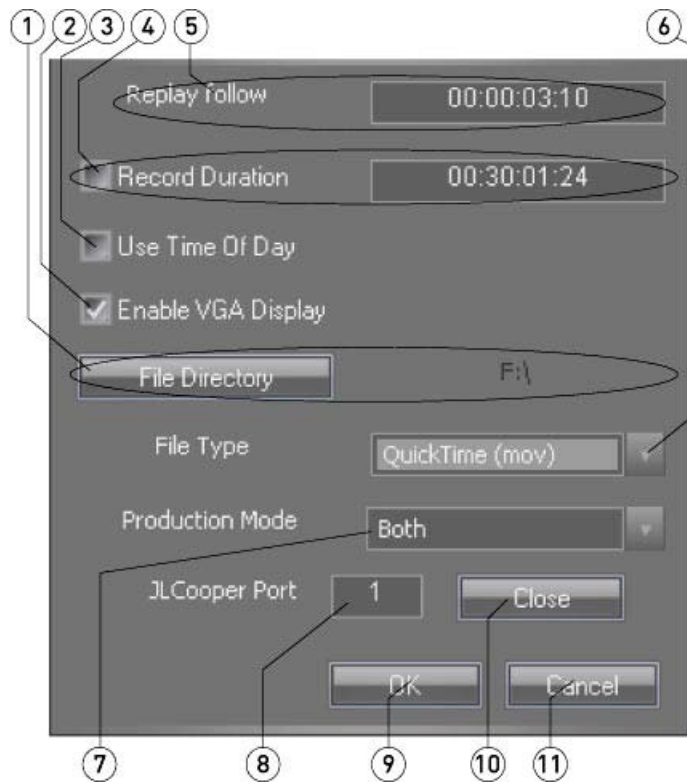


The **Add/Remove Channels** window can be opened by pressing the **Configure** button and selecting **Add/Remove Channels** from the pulldown menu.

1	Reset Record Media button	Pressing the Reset Record Media button causes the next record on the loaded channel to start at 00:00:00:00.
2	Mapping section	Press the Mapping button to open a browser which allows the user to select a mapped drive corresponding to the selected channel. The current mapping for the selected channel is displayed in the field to the right of the button, if available.
3	Device Name field	Displays the device name for the channel. A default name is supplied but a new name may be typed in by the user.
4	IP Address field	The IP Address field is where the user will type in the IP Address of the DDR.
5	Network Channel pulldown menu	The Network Channel pulldown menu allows the user to select between available network channels (channels that have already been added), and displays the current channel that is selected.
6	Add button	Press the Add button to add a channel.
7	Remove button	To remove a channel, select the channel to be removed using the Network Channel pulldown menu, and then press the Remove button.
8	Port field	The Port field displays the default port setting (Port 1234 - this is standard), and allows the user to type in a new port, if necessary.
9	Test Connect button	Press the Test Connect button to test the network connection for the selected channel. Once a valid IP Address has been loaded into the Address/Port field for a network channel, pressing the Test Connect button confirms that there is a DDR there, and tests to see if the DDR has media available on its drives.
10	Clear Record Folder button	Pressing the Clear Record Folder deletes all the media on the loaded channel's drives, so the next record will be able to use the full storage capacity available
11	Apply button	Press the Apply button to set any changes made into memory.

12	Close button	Press the Close button close the Channels window. If any changes have been made since the last time the Apply button was pressed, the changes will not be applied.
13	Channel field	Displays the channel number of the loaded channel

Application Settings Window

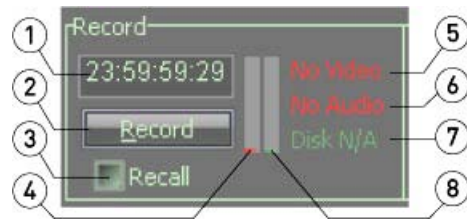


The **Application Settings** window can be opened by pressing the **Configure** button and selecting **Application** from the pull-down menu.

1	File Directory button and drive display	Press the File Directory button to open a browser which allows you to browse for and select the folder into which replay (follow length) files will be recorded. The selected storage drive is displayed to the right of the button.
2	Enable VGA checkbox	When the Enable VGA checkbox is checked, the VGA display in the GUI is active. When this checkbox is empty, the VGA display is disabled.
3	Use Time of Day checkbox	When the Use Time of Day checkbox is selected, records will glean their time code from the time of day based on the system clock
4	Record Duration field	Displays the length of the current record.
5	Replay Follow field	Displays the current length of the replay follow, or the amount of time between the present time code location and the point at which media will be cued when the Follow button is pressed.
6	File Type pull-down menu	Use the File Type pull-down menu to select between available file types for the import process.
7	Production Mode pull-down menu	Use the Production Mode pull-down menu to select between available production modes. Production mode stops a specified action upon encountering a dropped frame. The user may select between On Records , On Playback , Both or Disabled . The opposite of Production Mode is Broadcast Mode, where the system continues to play whether or not it encounters dropped frames.
8	JL Cooper Port	Displays the serial port to which the JL Cooper controller is attached if

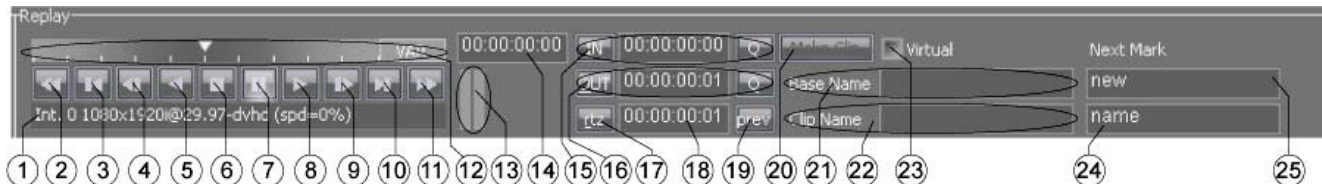
	field	detected
9	OK button	Press the OK button to confirm any changes.
10	Close button	Press the Close button to close the JL Cooper Controller port.
11	Cancel button	Press the Cancel button to close the Channel Settings window without making any changes to the channel settings.

Record Section



1	Time Code field	Displays the length of the current record.
2	Record button	Press the Record button to place the system into record mode. This button turns into a Stop button for the duration of the recording and so functions as an on/off toggle for record mode.
3	Recall checkbox	Select the Recall checkbox to cue the DDR to the last Record Out point if the current (or subsequent) record is interrupted. In a case where recording has been stopped, the DDR will cue to the last Record Out point and begin recording again without deleting any of the media already recorded.
4	CPU meter	Displays the percentage of usage of the CPU
5	Video Status indicator	Displays the status of the video input, if detected.
6	Audio Status indicator	Displays the status of the audio input, if detected.
7	Disk Status indicator	Displays the status of the media storage drives.
8	Buffer meter	Displays the percentage of usage of the buffer.

Replay Section



1	Internal Channel display	This field displays details regarding the channel, including the channel number, the video standard and codec, and transport state.
2	Fast Reverse Play button	Play in reverse, at the fastest speed the system is capable of.
3	Back 10 Seconds button	Cue to the location 5 seconds prior to the present location (or the beginning, whichever is less) and display the frame of video found there.
4	Back 1 Frame button	Cue to and display the frame immediately prior to the current frame, unless the file is already cued to 00:00:00:00.
5	Reverse Play button	Play at minus 100%, or at regular speed in reverse, from the current location toward the beginning
6	Stop button	Discontinue any video playback and go into passthrough (e-e) mode if there is a video input.
7	Pause button	Stop video playback at the current time code location and display the frame of video found there.
8	Play button	Play at 100%, or regular speed, from the current location toward the end.
9	Forward 1 Frame button	Cue to and display the frame immediately after the current frame (the next frame).
10	Forward 10 Seconds button	Cue to the location 5 seconds after the present location (or the end, whichever is less) and display the frame of video found there.
11	Fast Forward Play button	Play at the fastest speed the system is capable of.
12	Position Controller section	The Position Controller provides POS , SHTL , VAR and JOG output modes. Pressing the POS button cycles through available modes. A pointer is provided to display the current clip position or playback speed depending on the mode selected.
13	Buffer meters	Displays the relative level of buffer activity.
14	Time Code field	Displays the main time code, i.e.: location within a clip during playback, current record frame during record.
15	In Point section	<p>IN - Pressing the IN button sets the current time code location as the first frame of the edit, or the new In Point.</p> <p>In Point TC - This field displays the current In Point setting for the edit. The user may enter a location into this field and press the Q button to cue to that location</p> <p>Q - Pressing the Q button cues to the time code location displayed in the In Point TC field.</p>
16	Out Point section	<p>OUT - Pressing the OUT button sets the current time code location as the last frame of the edit, or the new Out Point.</p> <p>Out Point TC - This field displays the current Out Point setting for the edit. The user may enter a location into this field and press the Q button to cue to that location</p> <p>Q - Pressing the Q button cues to the time code location displayed in</p>

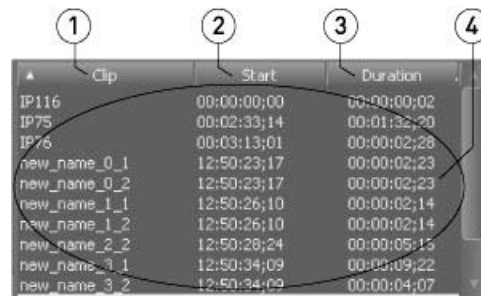
		the Out Point TC field.
17	RTZ button	RTZ - Pressing the RTZ button clears the edit and returns the edit time code to 00:00:00:00.
18	Edit field	Displays the length of the current edit, if any has been set up
19	Preview button	Pressing the Preview button plays the current edit from its In Point to the Out Point, if an edit has been set up
20	Make Clip button	Pressing the Make Clip button makes a clip using the In Point and Out Point currently set, and with the name the user has entered into the Clip Name field. This button becomes active when there is an edit set up with a Clip Name specified.
21	Base Name field -	The base name provides a prefix for the naming of clips created using the edit controls within the Replay section. A default base name is provided or the user may enter their own base name by clicking in the field and typing in a new name.
22	Clip Name field	The clip name provides a body for the naming of clips created using the edit controls within the Replay section. A default clip name is provided or the user may enter their own clip name by clicking in the field and typing in a new name.
23	Virtual checkbox	Select this checkbox to specify that a virtual clip should be created - meaning a new file will not be created as such, rather the In Point and Out Point will be used to play this section of media as a virtual clip from the timeline.
24	Next Mark Base Name field	Where clip creation is achieved by marking an in and out point, the Next Mark Base Name field provides a prefix for naming the clip
25	Next Mark Clip Name field	Where clip creation is achieved by marking an in and out point, the Next Mark Clip Name field provides the body of the clip name irrespective of any suffixes that may be appended

Playlist



1	Del button	Press the Del (delete) button to remove a selected clip from the Playlist .
2	Del All button	Press the Del All (delete all) button to remove all clips from the Playlist .
3	Load button	Press the Load button to load an existing Playlist .
4	Save button	Pressing the Save button opens a browser which allows you to save the current Playlist with the name of and in a location of your choice.
5	Playlist field	Displays all of the clips that have been loaded into the Playlist, and allows the user to select individual clips or the whole Playlist for playback. This field also highlights the current clip that is playing during its playback.
6	Remain field	The Remain field displays the total amount of time before the end of the Playlist, updating dynamically as the list is playing.
7	Clip column	This column displays the name of each clip in the Playlist
8	Edit column	This column displays the edit presets for each clip in the Playlist, or the specific audio and video channels that have been recorded
9	Frame In column	The Frame In column displays time code location associated with the first frame of the clip.
10	Frame Out column	The Frame Out column displays time code location associated with the last frame of the clip.
11	Record In column	The Record In column displays start time code location of the clip within the Playlist .
12	Duration column	The Duration column displays the length of the clip.
13	Remain column	The Remain column displays the amount of time remaining before the end of the Playlist for each clip.

Clip Bin



1	Clip column	Displays the name of each clip.
2	Start column	Displays the start point of each clip in the timeline.
3	Duration column	Displays the duration of each clip.
4	Clip List field	Details regarding the clips are displayed here. A row is offered for each clip in the Clip Bin, allowing the clip to be selected for playback.

Keyboard Commands

<F1>	Help
<Q>	Record (crash record)
<8>, <w>, Num<8>	Preview from in to out
<v>, <k>, Num<.>	Pause
</>, <V>, <+>	Stop (pass through, e to e)
<c>, <l>	Play (forward at normal speed 100%)
Shift<C>	Play double speed (200%)
, <j>	Play reverse (-100%)
<z>	Fast rewind
<x>	Fast forward
<}>, Num<2>, Shift<L>	Step forward 1 frame
Ctrl <L>	Step forward 1 field
<{>, Num<8>, Shift<J>	Step backward 1 frame
Ctrl <J>	Step backwards 1 field
<[>, Shift<X>	Step forward # (def 5) seconds
<]>, Shift<Z>	Step backward # (def 5) seconds
<h>, Num<3>, Arrow<Right>	Shuttle forward faster
<g>, Num<1>, Arrow<Left>	Shuttle backward faster
Shift<H>, ShiftArrow<Right>	Fine shuttle up
Shift<G>, ShiftArrow<Left>	Fine shuttle down
<'>, Shift	Return to 0 or start
<\. Shift<T>	Loop
<m>, Num<4>	Mark in point at current location
<<>, Shift<M>, Num<6>	Mark out point at current location
<Home>, Num<5>	Go to in point
<End>, ShiftNum<5>	Go to out point
<y>	Toggle video edit on/off
<u>	Toggle audio 1 edit on/off
<i>	Toggle audio 2 edit on/off
<o>	Toggle audio 3 edit on/off
<p>	Toggle audio 4 edit on/off
Ctrl<O>	Eject
Ctrl<Q>	Quit
Ctrl Alt <F1>	Select Camera 1
Ctrl Alt <F2>	Select Camera 2
Ctrl Alt <F3>	Select Camera 3
Ctrl Alt <F4>	Select Camera 4
Ctrl Alt <E>	Jump # (def 4) seconds back from current record point

< m >	Make a new mark at the current record point
< n >, Arrow< Up >	Go to the previous mark
< N >, Arrow< Down >	Go to the next mark

Hardware

Confirm the Connections

Confirm that the proper system and AV connections are made between the DDR and its external components.

Power - Connect the AC cable connection on the power supply located on the rear of the DDR to voltage-stable, uninterrupted, surge-protected AC power of the correct voltage using an industry approved, high quality AC cable.

Keyboard and Mouse - Connect a keyboard and mouse to the keyboard and mouse connections on the rear panel.

VGA Monitor - Connect a VGA cable between the connections on the rear panel labelled VGA/DVI and the VGA monitor. This monitor will display the application GUI.

External Storage - If a local disk array is not used, there may be a Fibre Channel or other connection to external storage. Confirm that the storage is up and running before turning on the DDR. Confirm that the storage is connected to its input port on the DDR as specified by the manufacturer's recommendations.

Once the above connections have been made, the DDR may be powered up.

Where the DDR functions as both an input and the output DDR (as in a two channel box) there will be a separate breakout box for each video board in the chassis. One board will be dedicated to video capture and the other will be dedicated to video output.

In more typical applications the DDR will only function as the output DDR, with multiple capture stations connected via the network (and added as network channels).

A/V Cables from DDR to Breakout Box - Connect the audio and video cable or cables (this will likely be a multiple pin cable for all connections) between the video card rail on the rear of the DDR and the breakout box or boxes.

Signal Source – the source signals whether cameras, VTRs or other incoming feeds will need to be connected to the input of their capture channels.

Video Input - Connect the video source signal to the video input on the breakout box of the remote DDR (or to the input of the capture channel if using a two channel DDR).

Audio Input - If the source audio signals are separate from the video, be sure to connect the audio output cable to the audio input connections on the breakout box.

Signal Output – the output of the video hardware used for replay, or output (“the DDR”), will be available for monitoring, or for capture by another device. Often the output is routed to a switcher, for both purposes. This means the video output of the DDR will need to be connected to the proper targets.

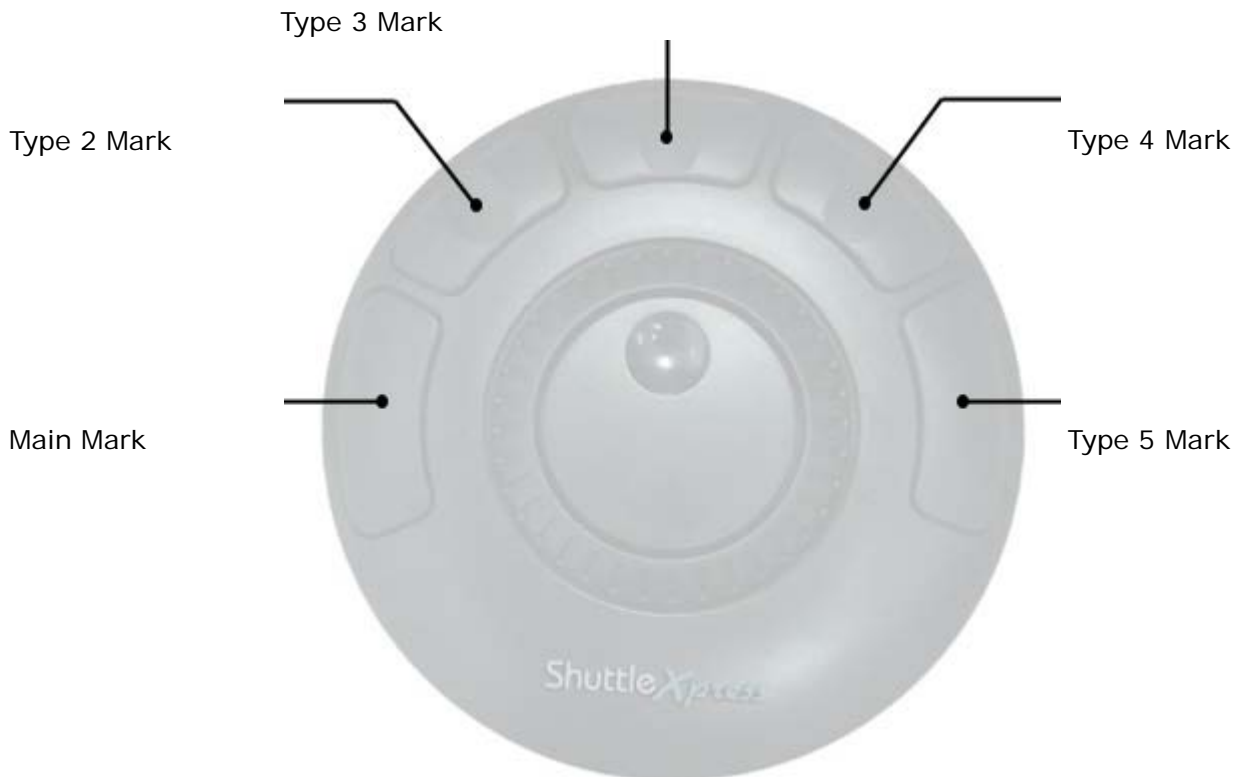
Video Passthrough Output - Connect the first channel of video HD-SDI output from the breakout box to the output target, such as a switcher, and route the signal as well to a monitor for output display. This monitor will display the video being recorded, or passthrough signal.

Video Replay Output - Connect the second channel of video HD-SDI output from the breakout box to the output target, such as a switcher, and route the signal as well to a monitor for output display. The second monitor will display the current playback, or last replay frame.

Controllers – many of the controls and displays offered within the **DTReplay** interface can also be accessed using controller devices.

Attach JL Cooper Controller - Connect the large 25 pin D-Sub connector to the rear of the controller. Secure the connector the unit by screwing the lock screws into the connector. Connect each deck or video server to the smaller 9 pin D-Sub connectors. Some video servers have more than one connector, which allow simultaneous control of the recorder and player. In these cases, connect each port to its own connector on the controller. Lastly, connect the unit to a source of power. This can be either from the power mains using the provided power supply or directly from 9-12 volts DC. The connector is a 2.1mm coaxial power connector. The center pin is positive. A power switch on the rear panel turns the unit on or off.

Attach Index Mark Controller – Connect the USB cable of the mark controller to the USB port on the DDR.



Attach Genlock - if required for proper timing, a timing reference signal can be connected to the genlock input on the breakout box. Confirm that it is of the proper type for the DDR and video standard being used, i.e. blackburst for standard definition NTSC, Tri-level HD genlock for HD etc.

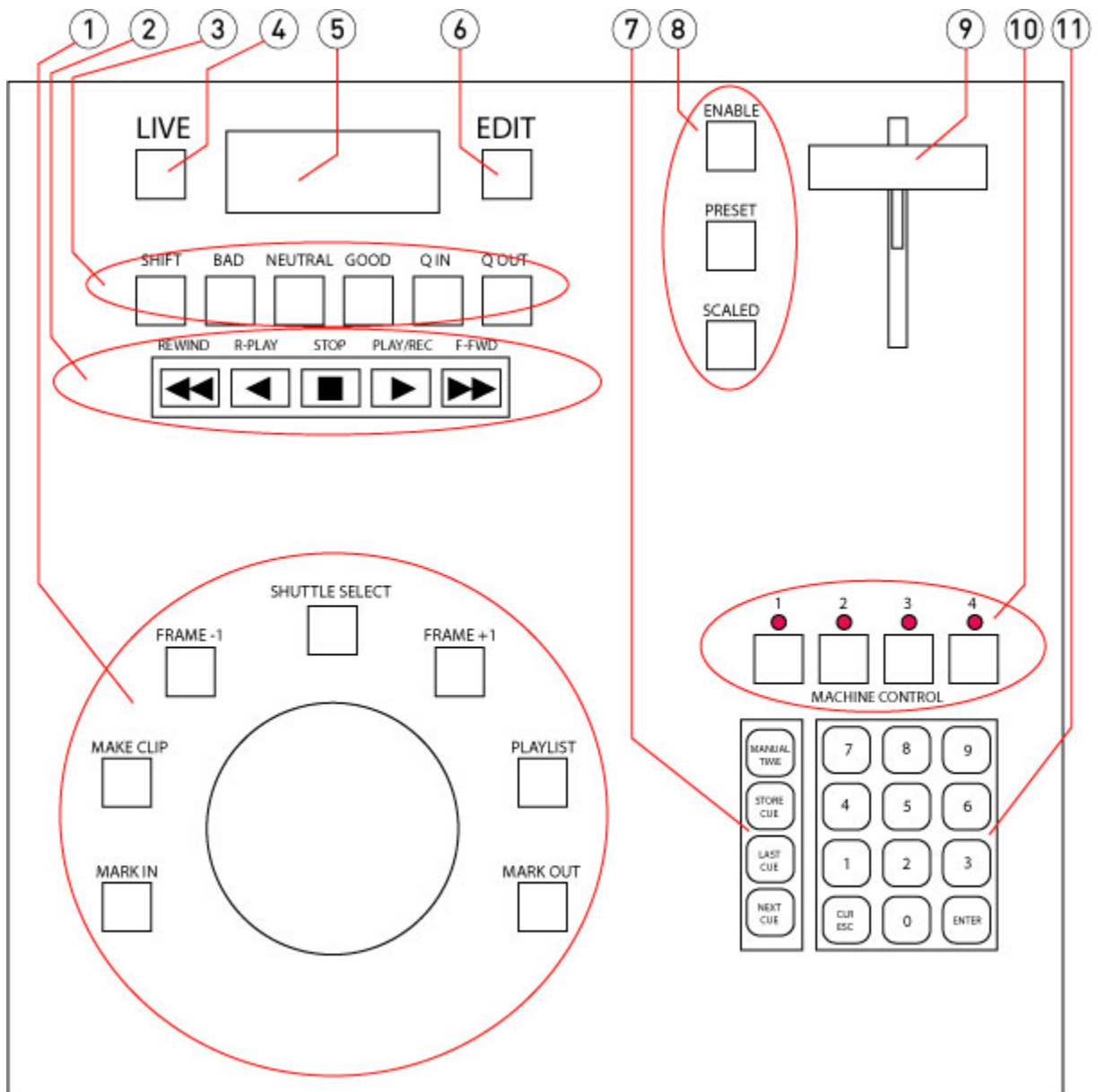
Please note, the first channel output (HD-SDI/SDI) will always display the live, recording picture. The second channel output will always display the current playback or last played frame.

JL Cooper Serial Controller

The **JL Cooper Serial Controller** allows the user to control specific functions of the DDR via a serial connection. Robust cueing and playback functionality include T-bar and Jog/shuttle wheel, as well as forward and reverse playback. A number of custom features offered within Drastic software may be accessed as well such as clip and playlist creation, clip status markers, and live/edit toggle for replay applications.

An easy to read screen on the unit provides status display including time code location and allows the user to view menus for setup.

Controls and Displays



1	Jog Wheel section	The Jog Wheel lets the user cue up to locations within a clip using its capabilities to jog (move a frame or a few frames at a time) and Shuttle (play at non-real time speeds) through a clip.
---	-----------------------------	--

		<p>When the Mark In button is pressed, the DDR stores this time code location to use as the in point for a new clip.</p> <p>When the Make Clip button is pressed, a clip is created based on the In and Out points the user has created.</p> <p>When the Frame -1 button is pressed, the DDR seeks to and cues up the time code location one frame prior to the current location.</p> <p>When the Shuttle Select button is pressed...</p> <p>When the Frame +1 button is pressed, the DDR seeks to and cues up the time code location one frame after the current location.</p> <p>When the Playlist button is pressed, the currently selected clip will be added to the Playlist.</p> <p>When the Mark Out button is pressed, the clip being created will use the current time location as its out point.</p>
2	Transport Controls section	<p>When the Rewind button is pressed the cued clip will be played in reverse at fast speed.</p> <p>When the R-Play button is pressed the cued clip will be played in reverse at -100% of normal play speed.</p> <p>When the Stop button is pressed, any playback or recording action will be stopped.</p> <p>When the Play/Rec button is pressed, in playback mode the cued clip will play at 100% of normal playback speed. In record mode, this action starts a record on the selected channel.</p> <p>When the F-Fwd button is pressed the cued clip will be played at fast speed</p>
3	Clip section	<p>With the Shift button pressed...</p> <p>To mark a clip as "bad", select a clip, press the Edit button, then press the Bad button.</p> <p>To mark a clip as "neutral", (the default condition), select a clip, press the Edit button then press the Neutral button.</p> <p>To mark a clip as "good", select a clip, press the Edit button, then press the Good button.</p> <p>When the Q In button is pressed, the currently selected clip will be cued up to its in point.</p> <p>When the Q Out button is pressed, the currently selected clip will be cued up to its out point.</p>
4	Live button	<p>When the Live button is pressed, the passthrough signal is displayed, meaning the frames currently being recorded if in record mode.</p>
5	Display screen	<p>This 2 x 16 screen displays various menu items and device conditions during setup and operation.</p> <p>Time Code location display:</p> <p>Non-drop frame places an empty space before the hours display, and drop frame places a dot before the hours display</p> <p>Video with field 1 primacy displays a period between the minutes and seconds, and field 2 displays a colon between the minutes and seconds fields.</p>
6	Edit button	<p>When the Edit button is pressed, the clip being edited is displayed.</p>
7	Cue section	<p>When the Manual Time button is pressed, the user may manually enter a time code location using the numbered buttons in the Time Code Entry section</p> <p>When the Store Cue button is pressed, a mark is created within the Mark section</p> <p>When the Last Cue button is pressed, DTReplayLIVE will select the mark prior to its current selection, allowing the user to browse upward through the mark list.</p>

		When the Next Cue button is pressed, DReplayLIVE will select the mark after its current selection, allowing the user to browse downward through the mark list.
8	Functions section	<p>The Enable button when active sets the T-Bar controller to use the speed range of 0 to 100%. This control functions as a toggle, lighting the LED when active. When this control is inactive, the LED will be off and any T-Bar controller movements will not affect the speed of playback.</p> <p>The Preset button when pressed provides playback at the user's saved preset speed. This control functions as a toggle, lighting the LED when active. When this control is inactive, the LED will be off.</p> <p>The Scaled button when pressed sets the T-Bar controller to use the speed range of -100% to +200%. This control functions as a toggle, lighting the LED when active. When this control is inactive, the LED will be off.</p>
9	T-Bar controller	The T-Bar controller provides forward and reverse playback within various speed ranges, depending on which of the Enable , Preset or Scaled buttons are active.
10	Machine Control section	The Machine Control section offers a button and LED for 4 channels, which can be set to allow the user to select between remote DDRs.
11	Time Code Entry section	The Time Code Entry section provides numerical keys which allow the user to enter time code locations and recall cue locations.

Operations

To start **DTReplayLIVE**, run the application at **Programs | <install directory> | DTReplay**. The application will check for any remote DDRs that may have been mapped previously. In that case, the user will see a **ReplayCheck** progress screen while this confirmation takes place. In the following diagram, each of the channels have been successfully "pinged", the system is confirmed as active, the drive check confirms the mapping, and "**Pending**" is displayed if the record folder has no media.



ReplayCheck results

ID column - displays the identification number of each remote DDR, which are typically numbered starting at 128, and which increment upward in single integers for each subsequent device.

Channel column - displays the network channel number, which typically start at Network0 and increment upward in single integers as Network1, Network2 etc.

Device column - displays the name each remote DDR was added as. This item when created (during the **Add** process) offers a default naming convention, but users may enter their preferred name both for clarity (to tell which DDR they refer to) and brevity.

Path column - displays the mapped drive corresponding to the remote DDR

Address column - displays the IP address corresponding to the remote DDR

Ping column - displays **Wait** (in red) while checking, and **Success** (in green) if the remote DDR responds positively to a ping command

System column - displays **Wait** (in red) while checking, and **Success** (in green) if the remote DDR is powered up and running Drastic DDR software (typically QuickClipXO).

Drive column - displays **Wait** (in red) while checking, and **Success** (in green) if the remote DDR is at the current mapped location.

Media column - displays **Wait** (in red) while checking, and **Success** (in green) if the remote DDR still has media on its record drive. Where the record drive has no media (perhaps it has been either delivered, saved elsewhere, archived or otherwise absent from the drive), **Pending** will be displayed in the media column (in purple).

The user may press the **(Re)Start Local** button to run DTReplay on the DDR.

The user may press the **Run Drive Check** to check the record drive of the DDR for media.

The user may press the **Exit** button to exit **ReplayCheck** without starting up **DTReplayLIVE**.

The user may press the **Continue** button to continue with the checking process.

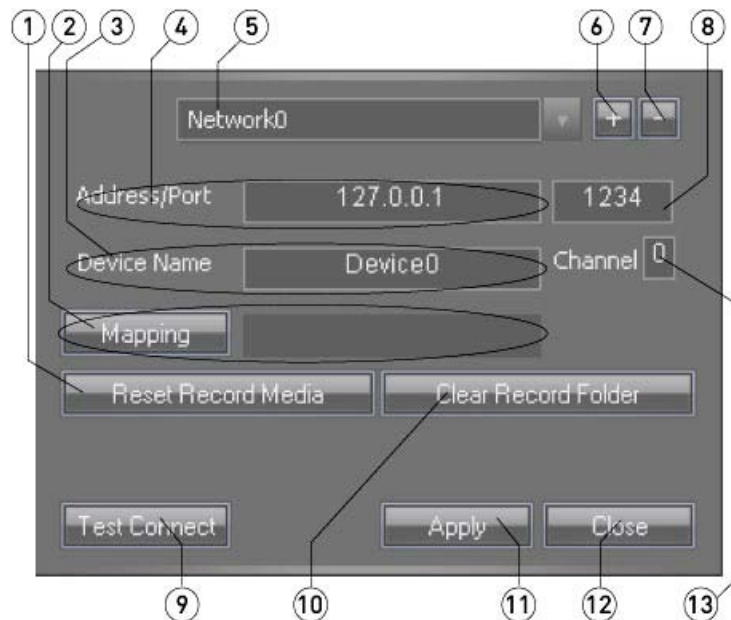
Map the Remote DDRs

In order for **DTReplayLIVE** to control multiple remote DDRs via the network, each of the external Drastic DDRs ("the remote DDRs") being controlled will need to be mapped to a drive letter on the system with the controlling instance of **DTReplayLIVE** ("the DDR").

Use standard procedure for mapping the drives. Here is a quick reminder for Windows OS DDRs. On the DDR, open **My Computer** and choose **Tools|Map Network Drive** from the file menus. Select an unused drive letter, navigate through the network, locate and input the first DDR you want to control. Repeat this step for each remote DDR you need to control.

Add Channels

A network channel will need to be in place for each of the remote DDRs. Once each of the remote DDRs are up and running **QuickClipXO**, they may be added.



The above numbered diagram is referenced in the following section. Here are the steps to add a remote DDR (once it has been mapped) so it will appear on your DDR's GUI as a selectable channel.

On the DDR: with **DTReplayLIVE** running, press the **Configure** button and select **Add/Remove Channels**. (If there are no channels in the **Channel** pulldown menu (5), this means either none have been added or that any previous channels have been deleted)

Add a Channel - Press the **Add** button (6) to add a channel - this assumes you know of (and have already mapped a drive letter for) a remote DDR which will function as a capture head (and that you know its IP address).

Enter the IP Address and Port - Enter the remote DDR's IP Address into the **IP Address** field (4), and use 1234 as the **Port** unless there are reasons to do otherwise (it's the default and should be fine in most cases).

Enter the Device Name - Enter a name into the **Device Name** field (3). Make it short yet

descriptive (such as DDR1); this is the label that will appear as a guide for you to select between channels.

Map the DDR - Confirm that the remote DDR is mapped as the correct drive - the current mapping will be displayed in the field to the right of the **Mapping** button (2). To change the drive assignment, press the **Mapping** button and use the **Browse** window to select the correct drive location corresponding to the remote DDR.

Remote DDR reset to zero - it is possible to reset the remote DDR's media start record time to 00:00:00:00 (used to correspond time code location to event duration in some applications). To accomplish this, press the **Reset Record Media** button (1). This allows the subsequent recording to start at the beginning of time code space.

Remote DDR delete media It is possible to delete all the media in the record folder of the remote DDR. This step should only be taken if you are completely sure the record folder contains no files you wish to keep (copy or move anything important onto safe storage). To delete all files in the record folder, press the **Clear Record Folder** button (10). This allows any new recording that takes place to be saved in a empty folder.

Test the Connection - Press the **Test Connect** button (9) to confirm the IP address is correct and available on the network, and to confirm whether the DDR has media files.

Apply - Once the channel has been added, press the **Apply** button (11) to set any changes and complete adding the channel.

Repeat for Other Channels - where there are additional devices on the network intended to provide capture for this head to replay, they can be added using the same method as above, one channel at a time. Once all channels are present move to the next step.

Close - Press the **Close** button (12) to close the **Add/Remove Channel** window.

Once the channels have been added, they will appear in the **Channels** section, each with a selector button and the name the user has entered.

Record Video

Each remote DDR that has been added is typically intended to function as a record head, with the DDR itself being used to select media for playback. So, once all the remote DDRs are running **QuickClipXO** and each has a valid audio/video input etc, the DDR may place them all into record mode.

To start a recording, press the **Record** button on the **DTReplayLIVE** interface (there is no **Record** button on the attached controller). All channels will begin recording, and the **Record** button will change to **Stop** (so if you press it again the record will end). Time code will start rolling in the record section to indicate the length of the current record. A clip will appear in the **Clip Bin** for each remote DDR that is being used to record.

The recorded media is written to the drive, and the media (prior to the Follow point) becomes accessible for marking, selection, playback and clip/playlist creation. Each remote DDR may be selected by clicking its selector on the interface, or by pressing the **Machine Control** button on the attached controller corresponding to that remote DDR.

Pressing the **Live** button on the attached controller shows the live video being recorded within the VGA display screen of **DTReplayLIVE**. Pressing the **Edit** button shows the clip/mark selected or being edited, or the frame located at the **Follow** distance (prior to the current recording point).

The recording can be stopped at any time by pressing the **Stop** button in the **Record** section. In a typical event application, all remote DDRs would be required to continue recording until the end of the event, at which point the **Stop** button could be pressed.

Replay Video - Follow

Each of the remote DDRs will be recording along, and the user will want to mark where specific portions of the event occur, so they can play these segments back, or make clips.

Each mark that is made places a picon in the **Mark** section to the right of the VGA display. These picons may be selected using the mouse to click on them, or by using the attached controller's **Last Cue/Next Cue** buttons.

Select a remote DDR - To see recently recorded video, select the remote DDR whose playback (angle) you want to see by clicking on its selector button. Using the attached controller, the user will be able to press one of the Machine Control buttons to select the correct remote DDR.

Follow/Live Video - With the correct channel selected, press the **Follow** button, or press the **Edit** button on the attached controller. This cues the just-recorded video which is located at the **Follow** distance, for replay and clip creation purposes.

Use the transport controls or attached controller to view any area that has been recorded.

Play Video - Transport Controls

The Application Transport Controls

The interface offers a number of transport controls to allow the user to view and shuttle through media, for replay, marking and clip/playlist creation.

Media may be cued by clicking on a **Mark**, or by clicking on a clip in the **Clip Bin**.



The transport buttons (1) provide (from left to right) Fast Reverse, 5 Seconds Back, 1 Frame Back, Reverse Play, Stop, Pause, Play, 1 Second Forward, 5 Seconds Forward, and Fast Forward.

The **Position Controller** (2) provides Jog, Shuttle and Variable playback modes, which can be accessed by clicking on the button to the right of the **Position Controller** to toggle through the modes.

The Attached Controller Transport Controls

The attached controller offers a number of transport controls to allow the user to view and shuttle through media, for replay, marking and clip/playlist access.

Marks may be cued to by using the **Last Cue/Next Cue** buttons to scroll to the correct mark, then pressing the **Enter** button to select.

The Transport Controls offer **Fast Reverse**, **Reverse**, **Stop**, **Play**, and **Fast Forward**.

The **Jog/Shuttle Wheel** provides variable speed playback, for fine cueing and replay purposes. The **Frame +1** and **Frame -1** allow the user to find and cue within a section of media to find the

desired frame - useful for cueing up the beginning of an event or creating the In or Out point for clip creation.

The **T-Bar Controller** allows the user to dynamically control playback speed in forward or reverse by pressing the **Enable** button (its light turns on when it is active) and moving the **T-Bar Controller**. The **T-Bar Controller** provides a range of within 0 to 100% of playback speed as a default.

Where the user has set playback to a useful speed using the **T-Bar Controller**, pressing the **Enable** button to deselect - the light will turn off and in this state the playback speed will not be affected by further **T-Bar Controller** movements.

The **Preset** button provides a preset speed for playback which the user can set. Using the T-Bar Controller, the user can find a speed they would like to save, then press the **Shift+Preset** buttons together. Once this has been set the user will be able to press the **Preset** button to resume playback at that specific speed.

The **Scaled** button provides playback using the **T-Bar Controller** within a range of -100% and +200%.

Using Marks

A mark defines an In Point, or a cue to a specific portion of the file being recorded, which the user may select for playback. Each time a mark is created, **DTReplayLIVE** places a picon with the mark number and time code information within the **Mark** section to the right of the VGA display.

Once it has been created a mark may be selected by clicking on its area in the **Mark** section, or by using the attached controller's **Last Cue/Next Cue** buttons to scroll through the list of marks.

Create Marks

To create a mark, select the remote DDR whose record stream you wish to mark by clicking on its selector button on the GUI, or pressing the correspondent device button on the controller.

Then, with the correct stream selected, press the **Set Mark** button in **DTReplayLIVE** or press the **Store Cue** button on the attached controller. A new mark will be created and a picon with associated mark information will be placed within the **Mark** section of the GUI.

Mark Status

A mark is initially created as "neutral", neither good nor bad. In this state, its time code is displayed in white within the **Mark** section of the **DTReplayLIVE** interface. In some applications, the user may wish to identify marks as "good" (perhaps slated for inclusion in a highlight reel for example), or as "bad" (the mark does not point to the start of any great TV moments, delete after show is over).

When a mark is identified as "bad", its time code is displayed in red within the mark section of the **DTReplayLIVE** interface.

When a mark is identified as "good", its time code is displayed in yellow (think "golden") within the mark section of the **DTReplayLIVE** interface.

A mark's status may be returned to neutral by performing the mark status procedure and selecting **neutral**.



To change a mark's status using **DReplay**:

Find the mark whose status you wish to specify. Scroll through the marks using the scroll bar or the up and down arrows until the right mark is revealed.

Double click on the mark to pop out its status controls.

Press the **Good** (6), **Bad** (8) or **Neutral** (7) button to mark the clip.

Press the **Accept** (4) button to set the mark's status.

To change a mark's status using the attached controller:

Find the mark whose status you wish to specify. Use the **Last Cue/Next Cue** buttons to move through the mark list until the correct mark is highlighted. Press the **Enter** button to select the mark.

Press the **Edit** button to go into editing mode with the clip selected.

Press the **Good**, **Bad** or **Neutral** button to change the status of the mark

Press the **Edit** button to accept/confirm the change

The "good", "neutral" or "bad" designations may be changed at any time by selecting the mark and changing the status.

Mark Trimming

A Mark may be edited as to its In point (the time code location at which the mark was created) and Out point (the frame prior to the next mark within the list).

To change a mark's duration using **DReplayLIVE**:

Find the mark whose status you wish to specify. Scroll through the marks using the scroll bar or the up and down arrows until the right mark is revealed.

Double click on the mark to pop out its status controls.

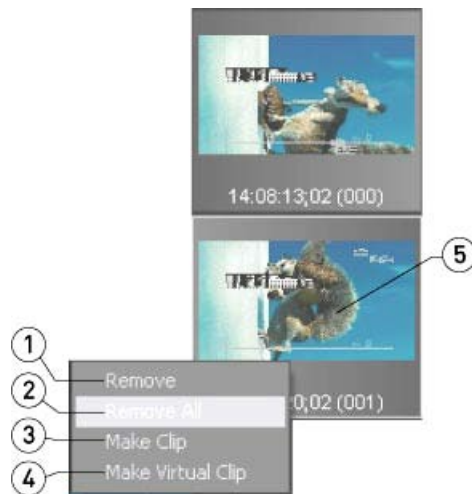
To trim frames off the beginning, enter a new In Point time code location (less than the current Out Point)

To trim frames off the end of the clip, enter a new Out Point time code location (greater than the current In Point)

Press the **Accept** (4) button to set the mark's status.

Mark Context - Remove

The **Mark** section offers a context menu to provide mark-specific functions.



To access the context menu for a mark, select a mark and right click on its picon.

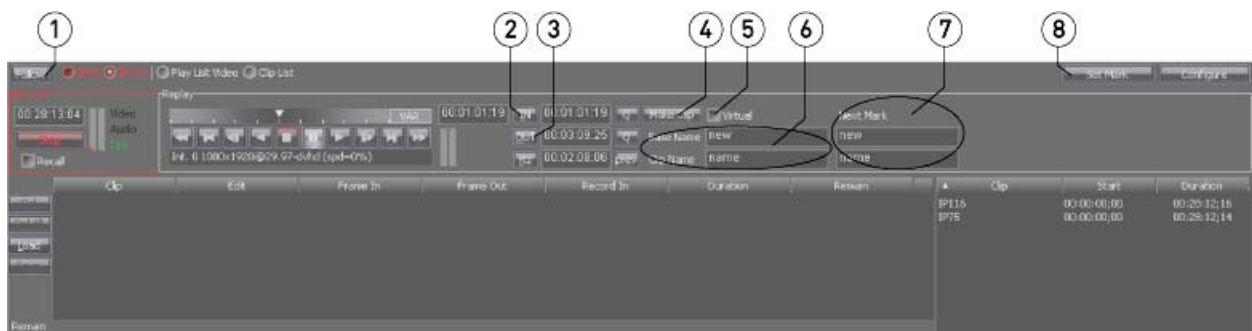
Remove - selecting the **Remove** option (1) will remove the selected mark, and will also renumber all the subsequent marks one integer less to make the numbering scheme for the marks continuous

Remove All - selecting the **Remove All** option (2) from the context menu removes all the marks in the Mark section so the user can start with no marks within this field.

Make Clips

A clip is a section of video with a specified duration which has been recorded into or added during its creation to the **Clip Bin**. The clip may be actual, as in a discrete file on the drive separate from other media files. The clip may also be virtual, in the sense that it only exists as a set of pointers to media within a larger file.

To make clips, the user will need to specify the clip's In and Out points.



The above numbered diagram is referenced in the following section:

To make a clip - perhaps a great play has just been made. Here's how to set up the in and out points to create a clip.

Select the remote DDR - pick the remote DDR that has the good angle on the play by clicking on its selector button, or use the attached controller and press the channel button corresponding to the remote DDR.

Press the **Follow** button (1) or on the attached controller press the **Edit** button. The remote DDR's media should now be displayed on the DDR's VGA display, at a point prior to its current recording point. At this point the transport controls on the GUI or the attached controller allow the user to play the media in forward or reverse at non real time speeds, for cueing purposes.

Cue to a good start point - The user may now use the transport controls on the GUI or the attached controller to cue this media to a good start point.

Mark the In Point - Press the **In Point** button (2) or use the attached controller and press the **Mark In** button to set this location as the start of a clip.

Cue to a good end point - The user may now use the transport controls on the GUI or the attached controller to cue this media to a good end point.

Mark the Out Point - Press the **Out Point** button (3) or use the attached controller and press the **Mark Out** button to set this location as the end.

(4) **Virtual** - make a virtual clip by selecting the **Virtual** checkbox. A default clip name appears in the edit box (which may be replaced by typing over) then click the **Make Clip** button to make a virtual clip and add it to the **Clip Bin**. Virtual clips technically do not create another instance of the clip on the drive, but rather exist as In and Out points on a list for playback purposes. The virtual clip will appear in the **Clip Bin** upon its creation.

(5) **Actual Clip Import** - make a real, imported clip by making sure the **Virtual** checkbox is not selected. The user enters a **Base Name** and **Clip Name** by typing in their respective fields. Pressing the **Make Clip** button imports a clip, typically to the MOV format, for local access and playback. The clip will appear in the **Clip Bin** upon its creation.

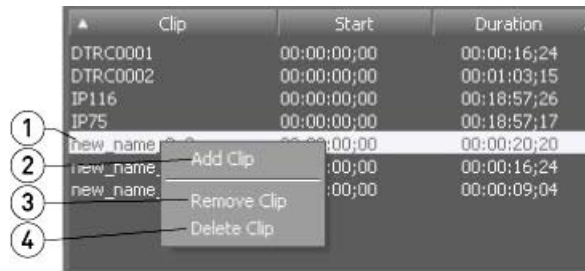
Double clicking on clips in the **Clip Bin** will load them for review. Use the transport controls or attached controller to play the clips.

Make a Clip using a Mark as an In Point - This function is accessed via the context menu for the **Mark** section. To access the context menu for a mark, select a mark and right click on its picon. The last two options in this context menu are:

Make Clip - selecting this option specifies that a clip shall be created through the import process which uses the In point of the mark, and uses the next mark's In point as the Out point. This action causes the DDR to import the specified media via the network to an MOV file on the DDR's record drive for playback and possible Playlist or highlight reel inclusion.

Make Virtual Clip - selecting this option specifies that a virtual clip shall be created which uses the In point of the mark, and uses the next mark's In point as the Out point. This action does not create another instance of the specified media on the drive, rather it creates pointers for playback of the existing media.

Clip Context Menu



The user may right click on a clip in the **Clip Bin** to invoke the context menu. The above diagram shows a **Clip Bin** with a number of clips. The clip the user has right clicked on (1) is highlighted.

Selecting the **Add Clip** option (2) opens a browser which allows the user to search for a media file and add it into the **Clip Bin**.

Selecting the **Remove Clip** option (3) allows the user to remove the selected clip (the one the user has right clicked on). This option does not affect the file as it exists on the drive.

Selecting the **Delete Clip** option (4) allows the user to not only remove the clip from the **Clip Bin**, but also to delete the actual file from the drive. The clip will be permanently gone.

Playlist Features

Playlist Sequenced Playback - a number of clips may be sequenced to provide a quick way to review a number of selected clips.

Place a Clip Into the Playlist - Drag a clip from the **Clip Bin** into the **Playlist** area, and drop it onto the Playlist.

Edit the Playlist - If a clip has been placed on the list but needs to be removed, select it and press the **Del** button to delete it from the **Playlist**. To clear all clips from the **Playlist**, press the **Del All** button.

Load a Clip - To load a clip from the **Playlist**, double click on its row in the list. Once loaded, the transport controls will control its playback.

Playlist as File - A **Playlist** is a simple file and may be saved, copied, moved and so on like any other file.

Save - Once a **Playlist** has been composed, it may be saved to run at a later time. With the correct **Playlist** loaded, press the **Save** button. This opens a standard **Save As** browser - save the file where it can be found later.

Open - If a **Playlist** has been saved and you would like to open it, press the **Load** button. This opens a standard **Open** browser, which allows the user to search for and load the existing **Playlist**.

DTReplayLIVE is a trademark of Drastic Technologies Ltd.