

Harmonic Media Tools

ClipTool Pro™
RELEASE 3.2

User Guide



March 2013

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Documentation Conventions

This guide may use some special symbols and fonts to call your attention to important information. The following symbols appear throughout this guide:



DANGER: The Danger symbol calls your attention to information that, if ignored, can cause physical harm to you.



CAUTION: The Caution symbol calls your attention to information that, if ignored, can adversely affect the performance of your Harmonic product, or that can make a procedure needlessly difficult.



LASER DANGER: The Laser symbol and the Danger alert call your attention to information about the lasers in this product that, if ignored, can cause physical harm to you.



NOTE: The Note symbol calls your attention to additional information that you will benefit from heeding. It may be used to call attention to an especially important piece of information you need, or it may provide additional information that applies in only some carefully delineated circumstances.



IMPORTANT: The Important symbol calls your attention to information that should stand out when you are reading product details and procedural information.



TIP: The Tip symbol calls your attention to parenthetical information that is not necessary for performing a given procedure, but which, if followed, might make the procedure or its subsequent steps easier, smoother, or more efficient.

In addition to these symbols, this guide may use the following text conventions:

Convention	Explanation
Typed Command	Indicates the text that you type in at the keyboard prompt.
<Ctrl>, <Ctrl>+<Shift>	A key or key sequence to press.
<i>Links</i>	The <i>italics in blue</i> text to indicate Cross-references, and hyperlinked cross-references in online documents.
Bold	Indicates a button to click, or a menu item to select.
ScreenOutput	The text that is displayed on a computer screen.
<i>Emphasis</i>	The <i>italics</i> text used for emphasis and document references.



NOTE: You require Adobe Reader or Adobe Acrobat version 6.0 or later to open the PDF files. You can download Adobe Reader free of charge from www.adobe.com.

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Chapter 1

Introduction

ClipTool Pro Release 3.2 is an application that allows you to monitor and control Players. It provides four basic categories of clip control:

- **Transport Control Functions** (such as Play, Stop, Record, Crash Record, Loop Record, and Shuttle)
- **Clip Management Functions** (such as Create Clip, Delete Clip, and View Clip List)
- **Display Functions** (such as displaying frame count, timecode, and Player status)
- **Editing Functions** (such as Mark In, Mark Out, Clear Marks, and Merge Timeline)

You can install and launch ClipTool Pro on any computer running Windows[®] 2000 or Windows XP that has TCP/IP connectivity to the SystemManager and MediaDirector. ClipTool Pro is compatible with Spectrum System software v4.6SR2 (Service Release 2) or higher.

ClipTool Pro can monitor any Player's operation, and manually control the Players through a VTR-like control panel. Players do not need to have ClipTools running for them to work. (Automation systems can control Players, for example.) If you exit from ClipTool Pro or start a new instance of the application, it does *not* affect the Player; only explicit actions do.

The guide provides installation and operating instructions for ClipTool Pro in the following sections:

- [Installing ClipTool Pro](#)
- [Using ClipTool Pro](#)

New in this Release

This release of the software includes the following enhancements:

- **Added Display of Available Recording Time**
When recording a clip, the blue bar gauge, which displays the amount of storage available, now displays the amount of time remaining, rounded to the nearest 0.25 of an hour. For details, refer to [Clip Management Area](#).
- **Changes to the 'Type or Select a Directory' Dialog Box**
The dialog box used for selecting a working directory now allows you to select a directory from an expandable directory structure. For details, refer to [Menu Bar](#).
- **Added Initialization File for Changing Default Settings for New Clips and Clip List**
An added initialization file now allows you to specify default settings for recording new clips or to display currently loaded clips in the Clip List window upon start-up. For details, refer to [Changing Default Settings for New Clips and the Clip List](#).

Chapter 2

Installing ClipTool Pro

This section provides installation instructions for ClipTool Pro—a product in Harmonic’s line of MediaTools. The following topics are covered:

- [System Requirements](#)
- [System Compatibility](#)
- [What Gets Installed](#)
- [ClipTool Pro Installation](#)
- [ClipTool Pro Licensing](#)

System Requirements

Prior to installing ClipTool Pro, your PC must conform to the following minimum requirements, and must be connected via Ethernet to your facility’s LAN:

- 2.4 GHz Pentium 4 or equivalent CPU
- 256 megabytes (MB) of RAM
- 20 GB hard drive
- At least 3 Megabytes of free disk space
- Windows 2000 Service Pack 3 (SP3) or later, or Windows XP
- Display resolution should be set to 1024 x 768 *minimum*
- 100 BaseT (Gigabit Ethernet recommended)

System Compatibility

ClipTool Pro is compatible with Harmonic Spectrum System software v4.6SR2 (Service Release 2) or higher.

What Gets Installed

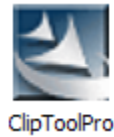
The application consists of the main ClipTool Pro executable plus a PDF version of this guide.

ClipTool Pro Installation

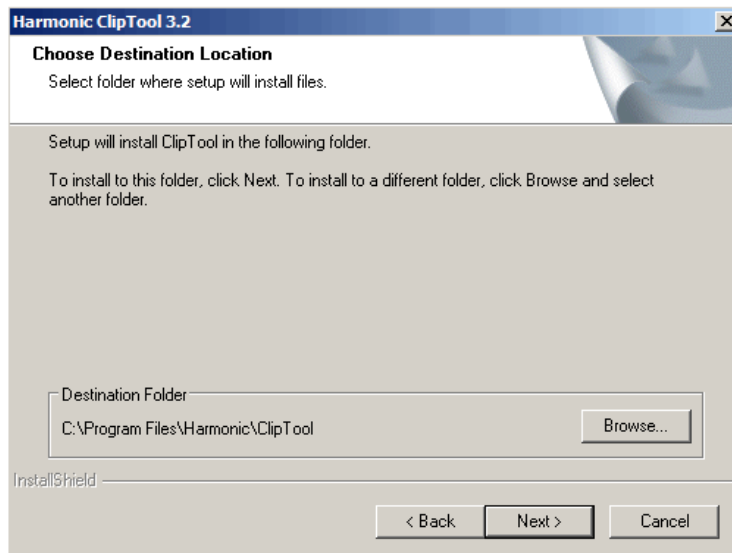


NOTE: Using ClipTool Pro on the SystemManager PC may affect the system performance of the SystemManager software and the ClipTool Pro application. It is recommended that you install ClipTool Pro on a different PC.

1. If you have not already done so, open the **ClipTool Pro.zip** folder that you downloaded from the Harmonic support Web site, and extract the files using the password provided by Technical Support. Contact Technical Support for assistance.
2. Locate the **ClipTool Pro** executable file icon.



3. Double-click the **ClipTool Pro** icon to begin the installation.



4. Click **Next** and then follow the installation steps to install ClipTool Pro.
Refer to [Launching ClipTool Pro](#) to begin using ClipTool Pro.

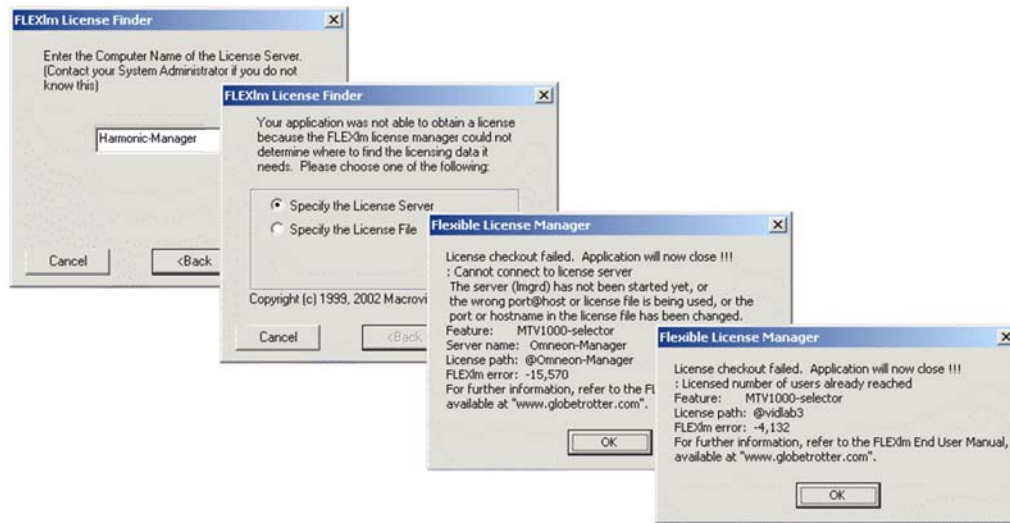
ClipTool Pro Licensing

A license file (provided by Harmonic) supplies the licenses for the ClipTool Pro components. This file is installed on the Harmonic SystemManager computer.

One license is required for each instance of ClipTool Pro that is in use. These are “floating licenses” so any connected computer can run the application, until the total number of purchased (and licensed) copies are active.

For example: If you have purchased four ClipTool Pro licenses and you have installed the product on 20 computers, you can run up to four instances of ClipTool Pro at any one time. The remaining 16 installations cannot run the tool until one of the first four exits.

A variety of dialogs may appear at startup time if the application encounters licensing issues (for example, the license server is down, the license file cannot be found, all licenses are used, etc.). The figure below shows examples of some of the possible messages you may encounter.



Follow the directions in these dialogs and/or contact your Network Administrator as required to resolve any issues that arise. Contact Harmonic Sales to purchase additional licenses.

Chapter 3

Using ClipTool Pro

This section covers the operation of the Harmonic ClipTool Pro application. Choose from the following topics:

- [Launching ClipTool Pro](#)
- [ClipTool Pro Main Window Orientation](#)
- [Loading Clips for Playback](#)
- [Deleting Clips](#)
- [Renaming Clips](#)
- [Copying Clips](#)
- [Recording Clips](#)
- [Playout while Recording](#)
- [Merging Clips](#)
- [Clip Dubbing](#)
- [Saving and Opening Playlists](#)
- [Changing Default Settings for New Clips and the Clip List](#)
- [ClipTool Pro Keyboard Shortcuts](#)



NOTE: ClipTool Pro Version 3.1 can be installed on *any* PC that is connected to the **MediaDirector** and SystemManager via TCP/IP. ClipTool Pro is compatible with Harmonic Spectrum System software v4.6SR2 (Service Release 2) or higher. See [for installation instructions](#).

Launching ClipTool Pro

ClipTool Pro Version 3.1 must be assigned to a specific MediaDirector host and a specific Player. You can run multiple ClipTools simultaneously on a PC, but a new ClipTool Pro Version 3.1 window is required for each Player.

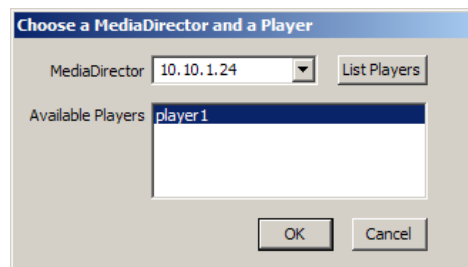
Keep the following important points in mind:

- If you launch ClipTool Pro Version 3.1 by clicking the **Open Hyperlink** on the **Player List** (in the SystemManager application), the **MediaDirector/Player** dialog box is bypassed. This occurs because on the **Player List**; you are by default selecting a valid Player that is *already* attached to a MediaDirector.
- If this is the *first time* that you click the **Open hyperlink**, you will see a dialog box *similar* to the installation dialog box. Choose the **Open this file from this location** button, clear the **Always Ask** check box, and click **OK**. This procedure will not need to be repeated again.

To launch ClipTool Pro Version 3.1:

1. Ensure that ClipTool Pro Version 3.1 is properly installed. See [for installation instructions](#).
2. Ensure that audio and video sources (and monitors) are connected to each MediaPort.
3. Launch ClipTool Pro by double-clicking the ClipTool Pro **desktop icon** or by selecting **Start > All Programs > Harmonic > Clip Tool Pro**.

When no MediaDirector is specified, or when the specified MediaDirector cannot be contacted, the **MediaDirector/Player** dialog box appears, as shown below.



When the MediaDirector host is known, the **MediaDirector Name** field is filled in, the Players on that MediaDirector host are automatically listed and the focus is set to the **Available Players** box. If you have previously used other MediaDirectors, click the drop-down list box to choose a different one.

4. In the **MediaDirector Name** field, type the current name, DNS name or IP address of the desired MediaDirector host. To check a MediaDirector host's *current* name, click the **Configuration** tab in the SystemManager application. The name appears beside the small MediaDirector icon.



NOTE: Your system can have multiple MediaDirectors. ClipTool Pro must be associated with a MediaDirector host before it can be linked to a Player on that host.

5. With the MediaDirector host name entered, click the **List Players** button (you can also press **Tab** or **Enter**). The label "**Searching**" appears, after which the list of all *active* players for the selected MediaDirector host appears in the **Available Players** box.

If only one active Player exists, it is selected automatically and the dialog box closes (as if **OK** had been pressed).

6. With multiple Players listed, highlight a Player in the list and click **OK** (or press **Enter**). Arrow keys move the highlight from one Player to the next.



NOTE: If required, click **Cancel** (or press **Esc**) to cancel the selection of a MediaDirector and Player, and close the ClipTool Pro application.

Once a MediaDirector host and Player have been selected, the dialog box closes and the main ClipTool Pro window appears. Refer to [ClipTool Pro Main Window Orientation](#) to continue.

Adding a Customized ClipTool Pro Shortcut on your Desktop

This procedure allows you to place a convenient ClipTool Pro icon (shortcut) on the desktop, which when clicked, loads the application *and* calls a specific Player and MediaDirector host. This method bypasses the **MediaDirector/Player** dialog box.

1. Ensure that ClipTool Pro is properly installed. See for installation instructions.
2. Run the Windows "**Notepad**" application (**Start > Programs > Accessories > Notepad**).
3. Type the name (or IP address) of the target MediaDirector host and Player on a single line, separated by a colon. For example:
DIR01046:Sun_Play
4. On the Notepad **Menu Bar**, click **File > Save As** to display the **Save As** dialog box.
5. In the **Save As** dialog box, click the **Desktop** icon in the left-hand column.
6. In the **File Name** field, type a name for this ClipTool Pro's shortcut, followed by the ".player" extension. For example:

Sun_Play.player

7. Click **Save**. This places a shortcut on the desktop.
8. Close Notepad by clicking the **X**, or by clicking **File > Exit**.

When the shortcut is double-clicked, the application opens with the specified MediaDirector host and Player. To edit the shortcut, right-click the shortcut on the desktop, then click **Open With > Notepad**. This launches the Notepad application and allows you to change the shortcut's attributes.



NOTE: When using non-English character sets, you should save the file as UTF-8.

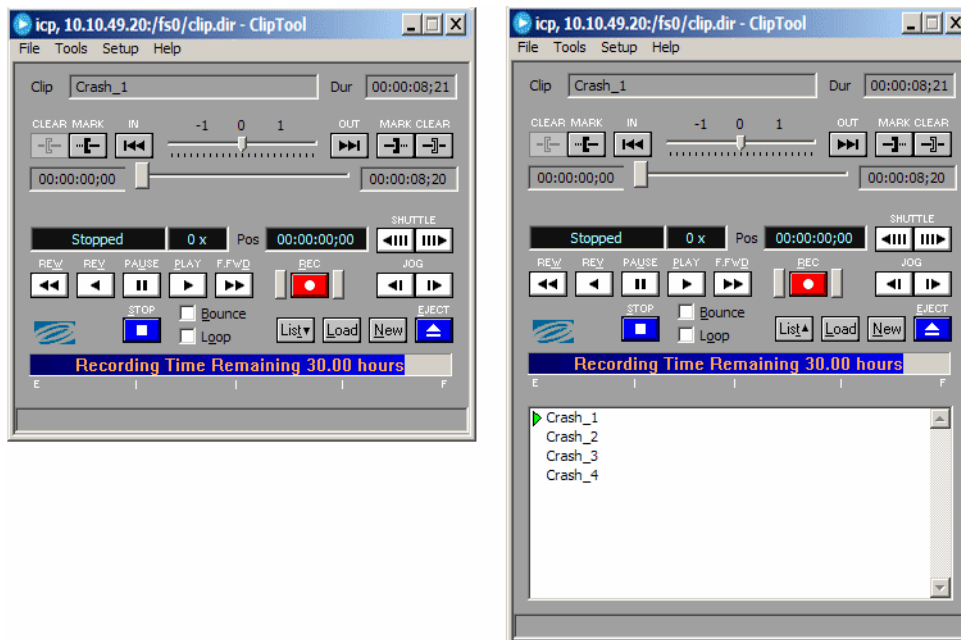
The previous procedure uses the default clip directory, as set in the SystemManager on the **Edit Player** screen (in the **Default Clip Directory** field). If you want to override the default clip directory in the ClipTool Pro shortcut, and enter a different "specific" clip directory, add the directory's name to the ".player" file (as created above in step 3). For example:

```
DIR01046:Sun_Play/fs1/news.dir
```

This shortcut, when placed on the desktop, opens the Player "**Sun_Play**" on MediaDirector **DIR01046**, and specifically selects the "**news.dir**" directory on the "**fs1**" filesystem, for use with all new and previous clips.

ClipTool Pro Main Window Orientation

The figure below illustrates two sample ClipTool Pro **Main Windows**—one with the playlist hidden and the other with the playlist visible.



The **Main Window** is a scalable control panel with two different views. By clicking the **List** button, the **Clip List Window** is alternately shown or hidden. The **Clip List Window** contains *this* Player's playlist, with the current active clip indicated by a green arrow. See [Loading Clips for Playback](#) for instructions on loading clips.

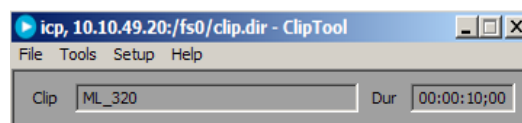
Within the **Main Window**, VTR-style controls are labeled for clarity, and all controls have ToolTips that display when you place your mouse over the control. The ToolTips describe the control's function, and list any keyboard shortcuts that are *not* already indicated by the GUI (Graphical User Interface). For example, if you place your mouse over the **Stop** button, **Alt+S** is not shown as a ToolTip. This occurs because the underlined **S** in the **Stop** button's label indicates that pressing **Alt+S** is the keyboard shortcut for the **Stop** button. The ToolTip **Shift+Space** is shown because the GUI does not provide this label.

Several fields in the **Main Window** are *time* fields (**Duration**, **In-point**, **Out-point**, and **Position**). They display time either as raw frame counts or as timecode — depending on a user setting. The blue “**Gas Gauge**” above the **Clip List Window** indicates the amount of storage remaining on the MediaStore. The gauge turns red when there is less than 5 percent of free space remaining.

ClipTool Pro is arranged into four different groups of controls and displays. From top to bottom, these are the **Clip Status Area**, the **Editing Area**, the **Transport Controls**, and the **Clip Management Area**.

Clip Status Area

The figure below illustrates a sample **Clip Status Area**.



The **Clip Status** area is provided for information, allowing you to obtain quick status on the current Player, MediaDirector and Clip. The following areas are included:

- **Title Bar** — Lists the Player name, the selected MediaDirector and the current directory from which clips will be loaded, and the application name (ClipTool Pro). The directory is also the one in which new clips will be saved.
- **Menu Bar** — Provides four function menus: **File**, **Tools**, **Setup**, **Help**. See [Menu Bar](#) for details.
- **Clip (Name)** — This field lists the name of the current active clip.
- **Dur(ation)** — This field shows the specified duration of the current clip. Note the following:
 - When recording a clip, the **Duration** is the limiting length for the clip, as specified when the clip was created — it is not the current amount on disk.
 - When a recording is stopped, the **Duration** is adjusted to be equal to the amount recorded.
 - When playing back a recorded clip, this field shows the **Duration** between the clip's in-point and out-point — if any have been set.

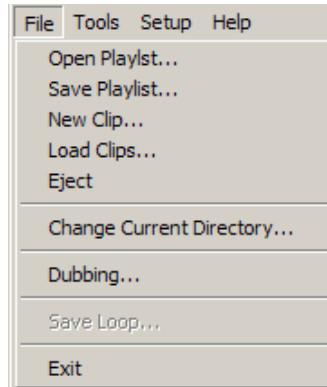
This readout is affected by the **Timecode**, **Time Count**, or **Frame Count** selections in the **Setup** menu. See [Menu Bar](#) for details on the **Setup** menu.

Menu Bar

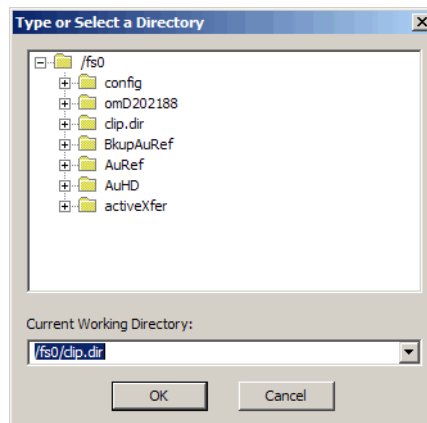
This section discusses the four **Menu Bar** headings and their associated functions.

File Menu

1. Click **File** to display the **File** menu as shown below.



2. Click **Open Playlist** to browse to and open an XML file containing a playlist. See [Saving and Opening Playlists](#) for instructions on opening playlists.
3. Click **Save Playlist** to save the current playlist as an XML file. See [Saving and Opening Playlists](#) for instructions on saving playlists.
4. Click **New Clip** to open the **New Clip** dialog box. See [Recording Clips](#) for instructions on recording new clips.
5. Click **Load Clips** to open the **Load Clips** dialog box. See [Loading Clips for Playback](#) for instructions on loading clips.
6. Click **Eject** to eject the selected clips in the playlist. You can eject a clip while another clip is playing. You can also select multiple clips to eject at one time.
7. Click **Change Current Directory** to display the **Type or Select a Directory** dialog box, a sample of which is shown in the figure below.



To change directories, type the desired directory name in the **Current Working Directory** field, or select the directory from the expandable directory structure.



NOTE: The directory that appears by default depends on the entry in the **Default Clip Directory** field on the Player's **Edit Player screen**. Refer to the *Harmonic SystemManager User's Guide* for more information.

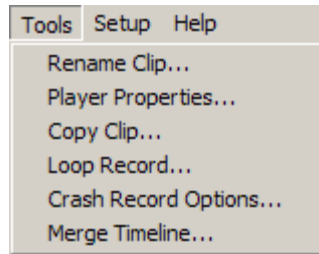


IMPORTANT: Changing the Player's Clip Directory using ClipTool Pro will not affect the Clip Directory that is used by other ClipTools, nor will it affect the Clip Directory used by control applications (for example, VDCP, OmniBus, BVW, etc.).

8. Click **Dubbing** to initiate the clip dubbing procedure, and display the **Choose Recording MediaDirector/Player** dialog box. See [Clip Dubbing](#) for instructions.
9. Click **Save Loop** once you have recorded a loop and want to save it. This menu item is only active if a loop has been recorded. See [Recording a Loop](#) for instructions.
10. Click **Exit** to exit the ClipTool Pro application.

Tools Menu

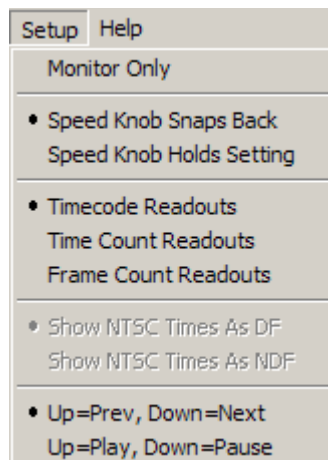
1. Click **Tools** to display the **Tools** menu, as shown below.



2. Click **Rename Clip** to change the name of the currently active clip.
3. Click **Player Properties** to display the Player frame rate and its current capabilities.
4. Click **Copy Clip** to copy and save a section of a clip. Refer to [Copying Clips](#) for instructions on copying clips.
5. Click **Loop Record** to start a Loop Record. Refer to [Recording a Loop](#) for instructions.
6. Click **Crash Record Options** to change the default name used for the Crash Record. Refer to [Performing a Crash Record](#) for instructions on Crash Recording.
7. Click **Merge Timeline** to create a single clip out of the current list of clips or subclips. Refer to [Merging Clips](#) for instructions.

Setup Menu

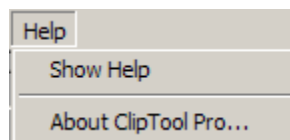
1. Click **Setup** to display the **Setup** menu, as shown below.



2. Select **Monitor Only** to gray out all controls. This special view-only mode is designed for situations in which you (or others) want to monitor clip activity (such as with an automation system), but also want to prevent accidental clip control. To return to full control, simply clear the option.
3. Click **Speed Knob Snaps Back** to cause the **Speed Knob** to always snap back to 0 (zero) when it is released.
4. Click **Speed Knob Holds Setting** to cause the **Speed Knob** to remain at its current position (and speed) when it is released. See [Editing Area](#) for details on the **Speed Knob**.
5. Click **Timecode Readouts** to cause all time-related fields and readouts in the application to display the internal timecode of a clip.
6. Click **Time Count Readouts** to cause all time-related fields and readouts in the application to display a relative time count in which the starting point of a clip is always zero.
7. Click **Frame Count Readouts** to cause all time-related fields and readouts in the application to display frame counts.
8. **Show NTSC Times as DF**. If this grayed-out menu item is indicated with a dot, then the active clip is in Drop Frame format.
9. **Show NTSC Times as NDF**. If this grayed-out menu item is indicated with a dot, then the active clip is in Non Drop Frame format.
10. Click **Up=Prev, Down=Next** to change the behavior of the keyboard's ARROW keys:
 - a. **UP ARROW** – Press to select the previous clip in the clip list window. Pressing **Up Arrow** does *not* change the position of the player.
 - b. **DOWN ARROW** – Press to select the subsequent clip in the clip list window. Pressing **Down Arrow** does *not* change the position of the player.
11. Click **Up=Play, Down=Pause** to change the behavior of the keyboard's ARROW keys:
 - a. **UP ARROW** – Press to play the current clip in the list.
 - b. **DOWN ARROW** – Press to pause the current clip in the list.

Help Menu

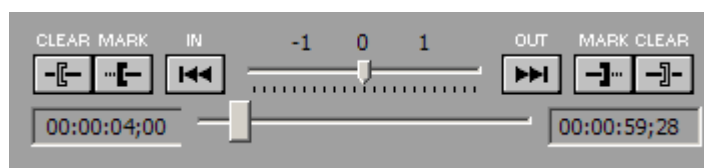
1. Click **Help** to display the **Help** menu as follows.



2. Click **Show Help** to open the PDF version of the user's guide.
3. Click **About ClipTool Pro** to display the **About ClipTool Pro** dialog box, which provides the current version and copyright information.

Editing Area

The figure below illustrates the **Editing Area**.



Just below the **Clip Status Area**, the **Editing Area** provides tools for marking and trimming clips. On the left-hand side, controls are grouped that affect the clip's in-point. On the right-hand side, controls affect the clip's out-point. The following controls are included:

- **Mark [In], Mark [Out]** – These two buttons set the clip's in-point and out-point – the starting and ending frames for clip playback. Clicking a **Mark** button sets that point on the clip's current frame. Both the in-point and out-point are *inclusive*; the frames thus marked are the first and last frames to be shown during clip playback.



NOTE: By contrast, in some editing applications, the out-point is *exclusive* – that is, the first frame *not* to be shown. Older linear editors worked this way, but many newer non-linear editors use inclusive out points.

- **Clear [In], Clear [Out]** – Clicking a **Clear** button clears the corresponding marked point. Please note:
 - When no in-point is set, the default in-point is the first frame of the clip and the corresponding **Clear** button is grayed out and disabled.
 - When no out-point is set, the default out-point is the last frame of the clip and the corresponding **Clear** button is grayed out and disabled.
 - The **Time Fields** below the **Mark** and **Clear** buttons show the clip's current in-point and out-point. These fields are affected by the **Timecode**, **Time Count**, and **Frame Count** selections in the **Setup** menu.

Refer to [Menu Bar](#) for details on the **Setup** menu.

- **[Goto] In, Out** – Click the **In** or **Out** button (adjacent to the **Speed Knob**) to jump to the current in-point or out-point, respectively.
- **[Goto] In and Out Timefields** – Edit the timefields below the In or Out buttons to change the current in-point or out-point. You can also double-click the In or Out Timefields, type + or - and then type the number of time units or frames you wish to change.
- **Speed Knob** – Click and drag the **Speed Knob** to adjust playback speed to any of the following multiples of real time:

-32, -16, -8, -4, -2, -1, -1/2, -1/4, -1/16, -1/32, 0, 1/32, 1/16, 1/8, 1/4, 1/2, 1, 2, 4, 8, 16, 32.

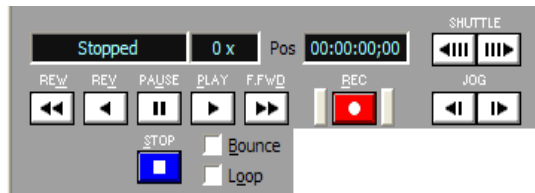
As you click and drag the knob, the **Transport Status** fields update with the new speed. By default, the **Speed Knob** snaps back to zero when released, but it can be set to hold its current setting through the **Setup** menu. The **Speed Knob** also serves as an indicator – it moves to reflect the speed that is set using other ClipTool Pro commands.

Refer to [Menu Bar](#) for details on the **Setup** menu.

- **Timeline** – The **Timeline** represents the current “selected area” within the clip – the area between the default (or marked) in-point and out-point. The **Timeline's** handle indicates the point of playback; it moves along its track as the clip progresses. Dragging the handle moves the current clip position. The **Timeline** dynamically adjusts so that the current in-point is always at the left-most limit and the current out-point is at the right-most limit.

Transport Controls

The figure below illustrates a sample **Transport Control** area.



The transport controls comprise the VTR-style buttons and readouts. Note that most transport controls are grayed-out when no clips are loaded.

The following controls are included:

- **Transport Status** – This readout displays the current transport status. Depending upon the current ClipTool Pro mode, the following “status” labels are shown:
 - **Rewind** (-32x to -2x)
 - **Reverse Play** (-1x)
 - **Slow Reverse Play** (-1/2x to -1/32x)
 - **Paused** (0x, still frame shown)
 - **Stopped** (0x, E-E mode)
 - **Slow Forward Play** (1/32x to 1/2x)
 - **Play** (1x)
 - **Fast Forward** (2x to 32x)
 - **RECORDING** (Shown when recording is in progress)
 - **Cued for Record** – Shown when the transport is in the appropriate cued status. This mode is the state set by ClipTool Pro when a new clip is created, allowing recording to start immediately.
 - **Cued for Play** – Shown when the transport is in the appropriate cued status. This mode is usually not seen, except when it is set up by another control program, or when ClipTool Pro is preparing to dub the timeline.
- **Transport Speed** – This readout (to the right of **Transport Status**) shows the current playback speed, from “-32 x” to “32 x.”
- **Clip Position** – This readout shows the current frame of the current clip (the frame at the handle’s current location). This readout is affected by the **Timecode**, **Time Count**, and **Frame Count** selections in the **Setup** menu. Refer to [Menu Bar](#) for details on the **Setup** menu. The **Clip Position** field can be used in the following ways:
 - To cue a timecode, click in the **Clip Position** field, type a timecode and then press **Enter**. If the display mode is in Frames, type the frame count and then press **Enter**.
 - To jump forward or backward in a clip, double-click in the **Clip Position** field, type the value you wish to jump to, and then press **Enter**.



NOTE: When the display mode is set to either Timecode or Time Count, the field separators are added automatically. For example, 1000 = 10:00 (ten seconds). When the display mode is set to Frame Count, then the default input is frames. For example, 1000 = 1000 frames.

- **Shuttle** buttons – The following transport speeds are supported, as multiples of normal forward play: -32, -16, -8, -4, -2, -1, -1/2, -1/4, -1/16, -1/32, 0, 1/32, 1/16, 1/8, 1/4, 1/2, 1, 2, 4, 8, 16, 32.
 - Clicking the left **Shuttle** button changes the Clip’s current speed to the next faster *reverse* speed.

- ❑ Clicking the right **Shuttle** button changes the Clip's current speed to the next faster *forward* speed.
- ❑ Clicking a **Shuttle** control while the Player is stopped plays the Clip at $-1/32x$ or $1/32x$, respectively.
- **REW** – (Rewind) Plays the clip at $-32x$.
- **REV** – (Reverse) Plays the clip at $-1x$.
- **PAUSE** – Plays (pauses) the clip at $0x$, presenting a still frame. If no clip is loaded, black is played.
- **PLAY** – Plays the clip at $1x$ (normal play mode).



IMPORTANT: Clips can only be played back using a Player that has the *same configuration* as the Player that was originally used for content recording. For example, if a clip was recorded using a DV25 Player, a DV25 "playback" Player must be used to play it out. Note that DV and DVCPR0 clips can be played back-to-back because they both use a 25Mbps bitrate.

- **FFWD** – (Fast Forward) Plays the clip at $32x$.
- **REC** – (Record) Records a new clip at $1.0x$.



NOTE: The three readouts (**Transport Status**, **Transport Speed**, and **Clip Position**) display white text on a red background while recording is in progress. The **Transport Status** field flashes.

- **JOG** buttons – Pauses any playback in progress, and backs up (left **JOG** button) or advances (right **JOG** button) the clip by one frame.
- **STOP** – Stops the playback or recording of a clip, leaving the Player in E-E mode.
- **BOUNCE** – Select the **Bounce** check box to repeatedly play a clip from its IN point and OUT point and then back again. In this mode, the clip reverses when it reaches its OUT point, playing back and forth. Select the **PLAY** button to play the clip. The clip plays continuously until **Stop** is clicked.

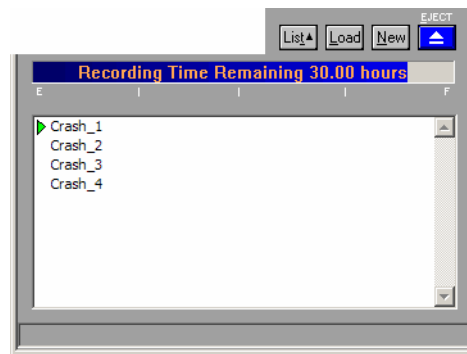


NOTE: Bounce mode works only with DV clips. It does not work with MPEG I-frame or Long GOP clips.

- **Loop** – Select the **Loop** check box to cause the playlist to restart upon reaching its end, in either direction. In this mode, the clip plays continuously until **Stop** is clicked. Inactive clips (not shown in red) can be selected and moved while the player is in Loop mode. Note that the Player must be stopped before the Loop mode can be activated. See [Recording a Loop](#) for instructions on setting up a continuous loop recording.

Clip Management Area

The figure below illustrates a sample **Clip Management Area**.



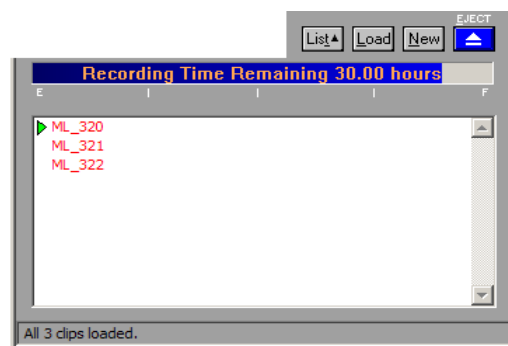
The four **Clip Management** buttons allow you to list clips, load clips, eject clips and create new clips for recording. The following controls are included:

- **List** – Click to alternately show and hide the playlist (within the **Clip List Window**). A small triangle on the button itself points *down* when the playlist is hidden or *up* when the playlist is shown, to indicate the “next window action” when the button is pushed.
- **Load** – Click to open the **Load Clips** dialog box. Refer to [Loading Clips for Playback](#) for instructions on loading clips.
- **New** – Click to open the **New Clip** dialog box. Refer to [Recording Clips](#) for instructions on recording new clips.
- **Eject** – Click to eject the selected clip(s) in the playlist. You can eject a clip while another clip is playing. You can also select multiple clips to eject at one time. To select multiple clips:
 - Hold down **Shift** and click to select a continuous range.
 - Hold down **Ctrl** and click to select a discontinuous range.
 - Press **Ctrl + Shift** to eject all clips.

The blue “**Gas Gauge**” above the **Clip List Window** represents the amount of storage remaining on the MediaStore. The gauge turns red when there is less than 5 percent of free space remaining. The gauge displays the amount of time remaining using the current parameters for the player/recorder in use. This value is rounded to the nearest 0.25 of an hour.

The **Clip List Window** (when open) shows the clips on the Player’s playlist. This list of clips is also referred to as a “**timeline**.” The **Clip List Window** can be scaled to show a larger list than the default view. The current active clip is indicated with a green arrow.

Double-click to select a clip. When a clip is selected, you can press **Enter** to begin playing the clip. If a clip is playing or within 5 seconds of being played, the title of that clip will appear in red text, as shown in the following figure.



You can change the order of clips in the Clip List Window by dragging and dropping individual clips.



NOTE: Clips cannot be dragged and dropped or ejected while they are playing or appear in red text.

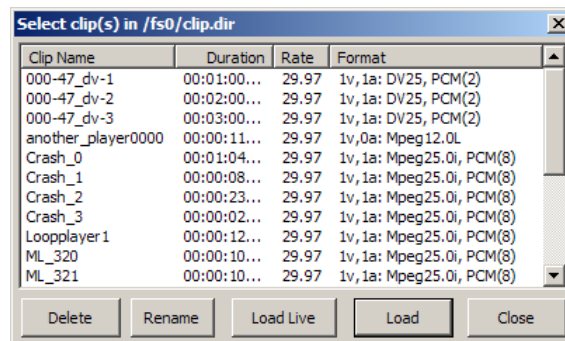
The status message below the Clip List Window indicates the number of clips that have been loaded and shows whether an error has occurred in loading the clip(s). The following section provides more information about loading clips.



NOTE: To modify the default settings for displaying currently loaded clips in the Clip List window, refer to [Changing Default Settings for New Clips and the Clip List](#).

Loading Clips for Playback

Click the **Load** button in the **Clip Management Area** (or click **File > Load Clip**) to display the **Load Clips** dialog box, a sample of which is shown below.



The **Load Clips** dialog box displays a scrollable, multi-column list of clips in the filesystem. You can scale the **Load Clips** window, or resize the columns by clicking and dragging the boundary between the column headers. Click any of the columns to sort the clips based on what you clicked.

- The **Clip Name** column shows the clip's name.
- The **Duration** column shows the total clip length (regardless of stored in and out-points).
- The **Rate** column shows the clip's frame rate.
- The **Format** column shows how many video and how many separate audio channels are recorded, followed by a list of up to six separate channels' worth of information (such as the selected video format and any associated audio or VBI channels).

The list is arranged in alphabetical order and shows all clips in the current directory (not just the clips that can be loaded in this ClipTool's player). By listing all clips, you can easily see what names have been used (and if desired, what clips you want to delete).

Several methods are available to select clips:

- Use the **Arrow** keys to move the highlight, or simply click the mouse on the desired clip.
- Hold down **Shift** and click to select a continuous range.
- Hold down **Ctrl** and click to select a discontinuous range.

To load the clip(s) in the **Clip List Window**, several methods are available:

- Drag and drop one or more clips from the **Load Clips** dialog box to the **Clip List** window.
- Double-click to enter a single clip.
- **Shift**+double-click to enter a range of clips.
- Press **Enter** to enter a single clip or a range of clips.
- Click the **Load** button to enter a single clip or a range of clips.



NOTE: When multiple clips are selected, they are loaded in alphabetical order. To load clips in a different order, select and load them one at a time. Loading does not close the dialog box.

When clips are loaded, the status message below the Clip List Window indicates the following:

- “<clip name> loaded” for a single clip.
- “X of Y clips loaded” for multiple clips (where X is the number of clips successfully attached out of Y total clips selected).

If an error occurs, the clip(s) will not be loaded, and the status message will indicate an error in the following format:

“<clip name> not loaded: <explanation of error>”

Additional controls are as follows:

- Click **Load Live** to load a clip with a duration of 24 hours instead of its listed duration. In this manner, a clip that is currently being recorded (a “live” clip) can be loaded with an indeterminate out point, allowing it to be played up to (and past) its current length.
- Click **Close** (or press the **Esc** key) to close the dialog box without performing further actions.

Deleting Clips

Use the following steps to delete clips:



IMPORTANT: Use caution when deleting clips. Once deleted, clips are permanently removed from the filesystem, and cannot be recovered.

1. Click the **Load** button in the **Clip Management Area** to display the **Load Clips** dialog box.
2. In the **Load Clips** dialog box, select the clip(s) that you want to delete. You can select a single clip or a range of clips.
3. Click the **Delete** button. When the **Confirm** dialog box appears, click **Yes** to delete the clip(s), or **No** (or **Cancel**) to cancel the procedure without deleting any clips.



NOTE: If the system is unable to delete a clip, there are two possible reasons. Either the clip's “Protection Bit” has been set by an external application (such as an automation system), or the clip is on a playlist.

Renaming Clips

Use the following steps to rename clips:

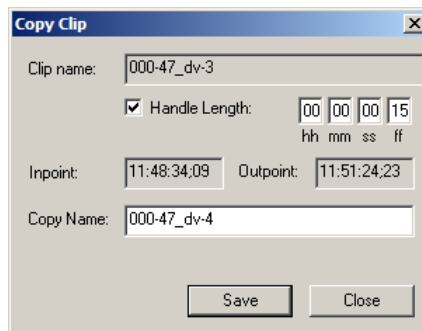
1. Click the **Load** button in the **Clip Management Area** to display the **Load Clips** dialog box.
2. In the **Load Clips** dialog box, select the clip that you want to rename.
3. Click the **Rename** button. Click **OK** once you have renamed the clip, or **Cancel** to cancel the procedure without renaming the clip.



NOTE: You can also rename the currently active clip by selecting **Rename clip** from the **Tools** menu.

Copying Clips

Use the **Copy Clip** function to copy a frame accurate section of a clip and save it as a separate clip. The following figure shows the **Copy Clip** dialog box.



To copy a clip:

1. From the **Tools** menu, select **Copy clip** to display the **Copy Clip** dialog box.
2. Select the **Handle Length** check box if you would like to copy additional content before the in-point and after the out-point. Enter a value for the desired handle length. The copy will still play from in-point to out-point, but adding handles allows you to widen the clip duration at a later time.

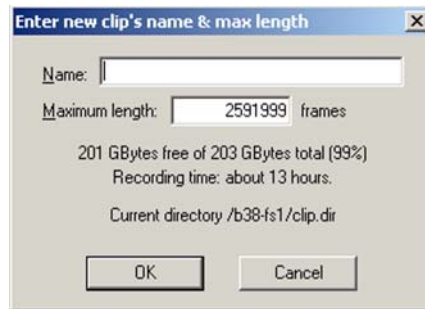


NOTE: No beginning handle is added if the in-point is at the beginning of the clip and no ending handle is added if the out-point is at the end of the clip.

3. An available name is provided for the copy of the clip in the **Copy Name** field. You can either use this name or type a different name.
4. Click the **Save** button.

Recording Clips

Click the **New** button in the **Clip Management Area** (or click **File > New Clip**) to display the **New Clip** dialog box. The dialog box appears in one of two forms, depending on whether ClipTool Pro's Time Mode is set to "**Timecode**" or "**Frame Count**" readouts. Choose these readouts from the **Setup** menu. See [Setup Menu](#) for a description of each readout.



Setup: Frame Count Readouts



Setup: Timecode Readouts

Note the following important points:

- The **Name** field is focused when the dialog box is displayed.
- Clip names are limited to 63 characters or less in length.
Refer to “Notes on Naming Files and System Elements” in the *Harmonic SystemManager User’s Guide* for proper naming conventions.
- The **Maximum Length** field (in both dialog boxes) is preset to 24 hours minus one frame, but this value can be changed if desired. This setting only limits how much storage can be allocated; if you stop recording before hitting the limit, the clip duration will be set to the amount of material actually recorded.



NOTE: To modify the default settings for the Maximum length, refer to [Changing Default Settings for New Clips and the Clip List](#).

- Both dialog boxes show the current directory, the amount of free space and total space on the current filesystem, plus an estimate of the free time available for recording (using the current Player’s format). For example, a DV Player will indicate more recording time available than a 10-bit SDI Player will.
- When recording, all clips are ejected from the playlist.

To record a clip:

1. Enter the desired clip name.
2. Enter the clip’s (estimated) maximum length, or leave the default value.
3. Click **OK** or press **Enter** to accept the new clip name and duration. Click **Cancel** (or press **Esc**) to cancel the dialog box and discard the new clip.



NOTE: If the clip length you entered exceeds the amount of storage available in your system, then a warning message appears indicating that you have insufficient space for the new clip.

4. When **OK** is clicked, an empty clip is created and attached to your timeline. The Player is placed in the “**Cued for record**” mode and the **REC** (Record) button is enabled.
5. Click **REC** to begin recording.
6. Click **Stop** to end the recording.

Performing a Crash Record

A **Crash Record** allows you to record a clip without having to name the clip or set up its recording duration. This type of recording is beneficial when a quick recording is required.

Note the following important points:

- The Player must be set up for “Record Only” or “Play and Record” in the SystemManager.
- Starting a crash record ejects all clips on the current Player’s timeline.
- The crash record uses a default name (e.g., “Crash record 1”) to save you time. To change the default name, select **Crash Record Options** from the **Tools** menu. Each successive crash record uses the default name along with the next sequential number added to the end.

To perform a Crash Record:

1. Click **REC** to begin recording.
2. Click **Stop** to end the recording.



NOTE: To rename the clip once it’s been recorded, select **Rename clip** from the **Tools** menu.

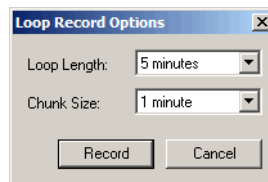
Recording a Loop

The **Loop Record** function allows you to set up a continuous loop recording, comprised of several chunks, and then save a specific section of the loop as a single clip.

Note the following important points:

- Loop Record mode only works with DV and MPEG I-frame clips.
- The first chunk uses a default name (e.g., “Loop record0000”). As the Loop Record is performed, each successive chunk uses the default name along with the next sequential number added to the end.

The following figure shows the **Loop Record** dialog box.



To perform a Loop Record:

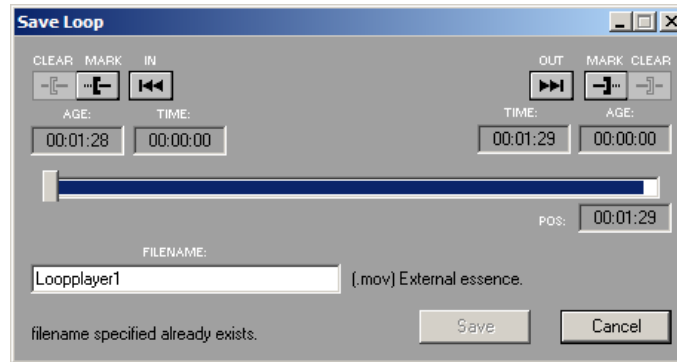
1. Select **Loop Record** from the **Tools** menu.
2. In the **Loop Record Options** dialog box, select the **Loop Length** and the **Chunk Size**. For example, a Loop Length of 1 hour with 10 minute chunks.
3. Click the **Record** button.
4. When **Record** is clicked, a clip name is created and added to your playlist. Recording then begins. When the Loop Record reaches the end of its Loop Length, the first chunk is replaced by the most recent chunk (once the recording has reached four times its loop length).

Saving the Loop Record

Creating a new clip requires ClipTool Pro to read and write various MediaDirector-resident essence files, a system and network intensive process that may take longer than real time. ClipTool Pro records four times the user-selected loop length; however, if the PC, MediaDirector or network resources are insufficient, a failure will occur.

Perform one or more of the following for optimal performance:

- Use gigabit Ethernet connectivity between the PC and the MediaDirector.
- Reduce other activity on the MediaDirector host.
- Reduce other activity on the PC.
- Stop other ClipTool Pro operations while saving the new clip.



1. While the loop is recording, select **Save Loop** from the **File** menu.
2. In the **Save Loop** dialog box, you can use the **Mark/In** or **Mark/Out** buttons to specify the in-point and out-point of the segment of Loop to be saved.
 - The two **AGE** fields show the ages of the in-point and out-point frames (in other words, how long ago they were recorded). The maximum value in an **AGE** field is the length of the loop.
 - The two **TIME** fields show the internal timecodes of the in-point and out-point of the loop. The values in these **TIME** fields should correspond to the values of the **In** and **Out** Time fields in the editing area of the main window.
 - The **POS** field shows the current position of the Player.
3. In the **FILENAME** field, specify the filename.
4. Click the **Save** button to save the chunks as one clip. A dialog box shows progress of the save. Click the **Cancel** button if you are not ready to save the loop.
5. Click the **Stop** button in the **Transport Control** area to stop the Loop Record.

Playout while Recording

When using ClipTool Pro, the **Load Live** function allows you to load a clip with an open-ended duration of 24 hours instead of its listed duration. In this manner, a clip that is currently being recorded (a “**live**” clip) can be accessed by a “**Playout**” Player, loaded with an indeterminate out-point, and played back while the recording continues.

System problems can occur in this mode if the playback point (on the “**Playout**” Player) gets too close to the point of recording. In order to avoid problems, note the following important rules:

- If the “**Playout**” Player is on the *same* MediaDirector host as the “**Record**” Player, do not select a playback point that is within 10 seconds of the record point. Maintain a minimum 10-second safe zone between the playback and record points.
- If the “**Playout**” Player is on a *different* MediaDirector or host from the “**Record**” Player, do not select a playback point that is within 40 seconds of the record point. Maintain a minimum 40-second safe zone between the playback and record points.

These rules apply to ClipTool Pro, the Harmonic Player API, and any automation system that is controlling a Player.

Merging Clips

The **Merge Timeline** function allows you to create a single clip from several combined clips or subclips. You can also delete segments of clips before they are merged to further customize the final merged clip. Refer to [Editing Clips Prior to Merging](#) for instructions.

Merging a clip requires ClipTool Pro to read and write various MediaDirector-resident essence files, a system and network intensive process that may take longer than real time. Perform one or more of the following for optimal performance:

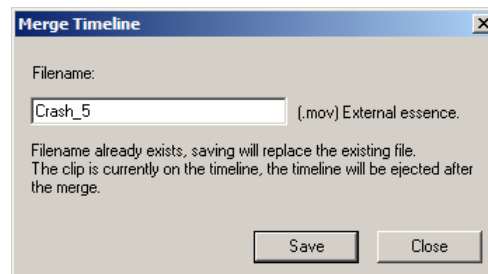
- Use gigabit Ethernet connectivity between the PC and the MediaDirector.
- Reduce other activity on the MediaDirector host.
- Reduce other activity on the PC.
- Stop other ClipTool Pro operations while saving the new clip.



IMPORTANT: Only intra-frame compressed material such as MPEG iFrame or DV files can be merged. LongGOP or IMX material *cannot* be merged.

To merge clip timelines:

1. Click the **Load** button in the **Clip Management Area** to display the **Load Clips** dialog box.
2. In the **Load Clips** dialog box, select the clips that you want to merge.
3. Close the dialog box when you have finished selecting clips.
4. Select **Merge Timeline** from the **Tools** menu.



5. Type a new name to save the merged clips as a separate file, otherwise the current clip name shown is used and that clip is replaced by the newly merged clip.



NOTE: All clips on the timeline are ejected if you choose a name for the merged file that matches the name of a clip on the timeline.

6. Click the **Save** button to merge the clips. The new file is placed in the current clip directory. The merge will not occur if the timeline contains clips with incompatible formats, differences in bitrates or other incompatibilities.

Editing Clips Prior to Merging

In addition to combining entire clips, you can delete segments of clips before they are merged. For example, you may only want to keep the beginning and end of a clip. The example below describes editing the same clip before it is merged.

1. Click the **Load** button in the Clip Management Area and then load the same clip *twice*.
2. Adjust the first clip's out-point so that it is *before* the segment you want removed.
3. Adjust the second clip's in-point so that it is *after* the segment you want removed.
4. Combine the clips as described in [Merging Clips](#). When the clips are merged, the middle section of the clip is deleted and the new clip now consists of the beginning and the end of the original clip.

Clip Dubbing

Choose from the following topics:

- [Introduction to Clip Dubbing](#)
- [Clip Dubbing Operations](#)
- [Clip Dubbing Restrictions](#)

Introduction to Clip Dubbing

Clip dubbing is a special ClipTool Pro function (configured in the SystemManager) by which you connect a **Source Player** to one or more **Target Players**, and trigger all Players in sync in order to copy the material that is present on the source Player's timeline. The Target "recording" Players may be located on the same MediaDirector as the Source Player, or on other MediaDirectors.

Two types of connections can be made between the Source Player and the Target Player:

- A direct IEEE 1394 connection may be used, in which case the dubbed material is a direct copy of the source. For example, if a DV25 clip is the source, a DV25 clip is recorded. This type of connection cannot be used between Players on a single MediaDirector, but it can be used between multiple MediaDirectors. Note that Long GOP MPEG can be dubbed with direct IEEE 1394 connections, if you dub *one clip at a time*.
- MediaPorts can be used, with a physical (BNC) connection from the output of the source MediaPort to the input of the target MediaPort. This configuration allows a format conversion during the dubbing process. For example, if a DV25 clip is the source, an MPEG clip can be recorded on the target. This type of connection can be used on a single MediaDirector or between multiple MediaDirectors.

During the dubbing process, ClipTool Pro controls a single "gang" comprised of a Source Player (the Player normally controlled by ClipTool Pro) and one or more Target Players that are slaved to the source. The "gang" is invisible to normal ClipTool Pro operations, and consumes no processing time unless dubbing is in progress. When a dub is made, only the Source Player's status is reflected in the ClipTool Pro's user interface.

A gang may be specified before ClipTool Pro is started. This function is performed in the SystemManager application, in the **Edit Player** screen's **Clip Dubbing Section**. Refer to "Edit Player Screen" in the *Harmonic SystemManager User's Guide* for orientation information and an explanation of the **Player-to-Player Dubbing Section**.

The "preset" gang may have an arbitrary number of Target Players in it, and this gang will be used whenever dubbing is invoked. If no gang was specified prior to startup, ClipTool Pro asks you for a single Recorder to connect for dubbing, when the dub function is requested.

Note the following important points:

- ClipTool Pro's dubbing function simply records the current contents of the Source Player's timeline onto the ganged Target Players.
- The source timeline may include one clip or a sequence of clips (for DV and non-Long GOP MPEG clips). For Long GOP MPEG clips, only one clip may be dubbed at a time.
- You can dub to identically named clip(s) on the Target Player(s), or the entire timeline may be dubbed to a single new clip on the Target(s). If there are multiple clips on the Source timeline in the latter case, the dub can be thought of as compiling a new clip from edited segments of existing clips. In this way, ClipTool Pro serves as a simple, cuts-only editor.

When dubbing is invoked, a series of important tests are performed:

- Are all Recorders connected, communicating, and enabled for recording?

Dubbing cannot proceed if any communication or connection function fails, or cannot be performed.

- Do all gang members reside on the same MediaDirector, or share the same timecode reference?

If all gang members are on the same MediaDirector, they can all be triggered on the same reference frame count. If all share the same reference timecode, they can all be triggered frame-accurately. If neither condition is met, frame-accurate recording cannot be guaranteed. ClipTool Pro will refuse to dub unless the gang has a common reference, or all members reside on the same MediaDirector.

- Are all gang members running at the same frame rate?

All ganged Players must be running at the same frame rate for correct dubbing.

- Are there any duplicate clip names in the timeline?

If clips are to be dubbed to clips of the same name on the destinations, only one clip (or clip segment) of a given name may be present on the target timeline, otherwise the first dub to that name will be overwritten by the following dub of that name.

Multiple copies of a clip may still reside on the source timeline, as long as you dub that timeline to a single target clip with a *new name*. For example, if you have an hour-long sports clip that contains many highlights, you can place multiple instances of it (each with the same name) on the source timeline. You can then trim heads and tails on each clip to isolate desired highlights. The resulting "edited" version can be dubbed to a Target Player, but the target clip must have a different name than the source clips.

- Do any destination names conflict with the names of existing clips?

ClipTool Pro will not allow you to overwrite existing clips. If clips are found on the target players' filesystems that have the same names as source clips, a warning is issued. This rule applies both to the names of the source clips and to names you specify. ClipTool Pro only allows you to dub clips with non-conflicting names.

For example, if you want to convert a DV clip named "Harmonic" to an SDI clip named "Harmonic," the system will not permit it if the source and target files are in the same filesystem. In this case, rename the target clip to perform the dub.

- Do the Target Players have enough space available to record the timeline?

ClipTool Pro compares the length of the source timeline with the “free time” reports from each of the Target Players. If any of the targets fall short of the required time, you will see a warning. Dubbing, however, may still proceed because the “free time” estimate is a dynamic number that changes depending on the actions of many filesystem processes. You can also cancel the dub and make adjustments accordingly.

Once all the tests have been passed, dubs proceed in real time. ClipTool Pro shows the source Player in play mode. All controls other than **Stop** are disabled, and the **Transport Status** readout displays a red label that alternates between “**DUBBING**” and the current transport mode.

Dubbing proceeds until the source timeline has completed. Dubbing is halted if ClipTool Pro loses contact with any Source or Target Player, if any error is reported, if the Source Player stops playing, if any Target Player stops recording, or if any targets report “no free space” left. Click **Stop** at any time to halt the dub prematurely. Upon conclusion of the dub, all Target Players are stopped and their timelines are ejected. A window displays a summary of the actions taken.

Clip Dubbing Operations

Use the following steps to dub clips:

1. Determine if you want to dub via IEEE 1394, or via physical I/O devices (e.g., MediaPort to MediaPort). Please note:
 - ❑ If you elect to dub via IEEE 1394, the SystemManager will handle all connections, but format conversion is *not* allowed. An IEEE 1394 connection is required to dub between MediaDirectors.
 - ❑ If you elect to dub via physical I/O devices, all physical (BNC) connections are your responsibility — the SystemManager does not handle them. Format conversion *is* allowed in this configuration. As required, connect cables between the Source MediaPort’s output and the Target MediaPort’s input.
 - ❑ If you elect to use multiple targets, they must be on different active filesystems.
2. Pre-select Target Player(s) using the SystemManager:
 - a. Select the desired MediaDirector host, and navigate to the **Player List**.
 - b. Select (or create) the Target Player that you want to use. If the Target Player already exists, click the **Edit Hyperlink** to display the **Edit Player** screen. If the Player is new, the **Edit Player** screen will be automatically accessed when you enter the new Player name.
 - c. Assign the desired audio and video formats to the Target Player.
 - d. If you are performing dubbing via physical I/O devices, connect the tracks on the Target Player to the appropriate devices. Refer to “Creating a .Player File” in the *Harmonic SystemManager User’s Guide* for player creation and editing instructions.
 - e. If you are performing IEEE 1394 clip dubbing, ensure that the Player is disconnected from any MediaPorts.
 - f. For both types of clip dubbing, ensure that the Player is inactive.
 - g. Repeat this step to create additional targets — on the same MediaDirector (only if you elect to dub via physical I/O devices), or on a different MediaDirector for both types of clip dubbing.
3. Pre-select a Source Player using the SystemManager:
 - a. Select the desired MediaDirector host, and navigate to the **Player List**.
 - b. Select (or create) the Source Player that you want to use.
 - c. If the Source Player already exists, click the **Edit Hyperlink** to display the **Edit Player** screen. If the Player is new, the **Edit Player** screen will be automatically accessed when you enter the new Player name.

- d. Assign the desired audio and video formats to the Source Player.
 - e. If you are performing dubbing via physical I/O devices, connect the tracks on the Source Player to the appropriate devices. Refer to “Creating a .Player File” in the *Harmonic SystemManager User’s Guide* for player creation and editing instructions.
 - f. If you are performing IEEE 1394 clip dubbing, ensure that the Player is disconnected from any MediaPorts.
4. From the Source Player’s **Edit Player** screen, you can now configure the Source-to-Target connection:
 - a. At the bottom of the **Edit Player** screen, in the **Target Player** drop-down box, choose the target Player. The SystemManager lists all valid Players (of which it has knowledge) on all MediaDirectors within the Harmonic system.
 - b. Click **Connect via 1394** or **Connect via I/O Device** (depending upon the method by which you choose to dub). Repeat this step to connect additional targets. The **Player List** will reflect your source and target choices.



NOTE: When the Source-to-Target connection is successful, the name of the Target Player’s MediaDirector appears in each track’s list of attached devices.

On the **Player List**, note that the label “(Source:#)” appears after the Source Player’s status indicator, and label “(Target)” appears after the Target Player’s status indicator. The # indicates the number of Target Players connected.

5. With all connections complete, activate the Source Player. This action automatically activates all Target Players.

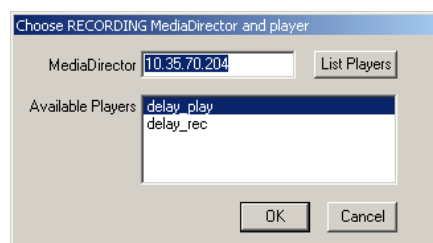
Refer to “Activating and Deactivating Players” in the *Harmonic SystemManager User’s Guide* for instructions.

6. On the Player List, click the **Open Hyperlink** to open ClipTool Pro for the selected Source Player.
7. Place one or more clips on the source timeline and trim the clips as required.



IMPORTANT: Long GOP IEEE 1394 clip dubbing can be performed, if it is done one clip at a time.

8. On ClipTool Pro’s **Menu Bar**, click **File > Dubbing**. Please note:
 - ❑ If you preconfigured your Source and Target “gang” and launched ClipTool Pro from the SystemManager, the **Choose Recording MediaDirector/Player** dialog box does not appear. Please continue with step 9.
 - ❑ If the gang was *not* predefined or if you launched ClipTool Pro from the desktop, the **Choose Recording MediaDirector/Player** dialog box appears, asking you to select a Target Player.
 - ❑ A sample **Choose Recording MediaDirector/Player** dialog box is shown in the figure below.



This dialog box allows you to define a gang on the fly for ad-hoc dubbing. Select the desired Target Player (only one may be selected) and click **OK**.

9. The **Dub Timeline Selection** dialog box appears, asking that you choose what action to take on the Target Player(s).



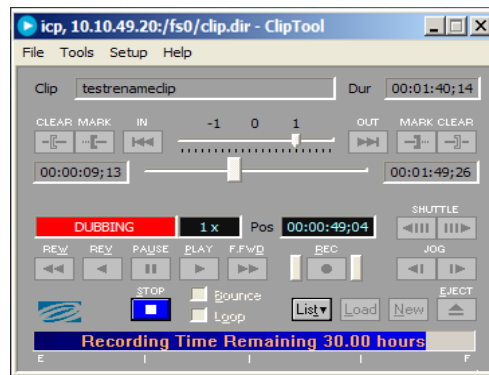
10. Select **...clip(s) of the same name(s)** to record all source clips to clips of the same name on the Target Player(s). In this mode, source clips will be dubbed to the Target(s) one-for-one. This selection can only be used with Targets residing on another filesystem.
 - Additionally, the marked in-points and out-points will be preserved in the dubs. For example, if a source clip has been trimmed to frames 100-200, then the dubs will all start at frame 100 and end at frame 200.
11. Select **...a single new clip** to record the entire source timeline to a single target clip with a name you specify. Fill in the name of the desired target clip.
 - In this mode, the entire timeline is recorded to a new clip starting at frame 0. Even if you dub a single clip and specify its existing name as the “new” name, it will start at zero.
12. With your selection made, click **OK**. ClipTool Pro now checks the pending dub operation. If no problems are found, the dub begins. If, however, potential problems are found, the **Dub Preprocessing** dialog box appears, a sample of which is shown in the following figure.



The scrolling window dialog box shows a comprehensive list of status checks, including sync status, the names of the gang members and any possible problems detected. The line of text below the list reports the most pressing problem.

13. Click **Cancel** (or press **Enter** or **Esc**) to cancel the dub. **Cancel** is the default selection.
14. Click **OK** to proceed with dubbing. ClipTool Pro will also process any conflicts by ejecting source clips with conflicting names. It will then load the target timelines with appropriately named and sized clips in which to record.

When dubbing commences, the Source Player cues at the head of the timeline and the Target Players cue into record. All transport controls other than **Stop** are disabled, and the **Transport Status** readout flashes between the current state and “**DUBBING**.”



Note the following points regarding the dub in progress:

- ❑ Use the **List** button to hide and show the clip list, but remember that all other controls (other than **Stop**) are unavailable.
- ❑ Press **Stop** to halt the dub. In this case, dubbing stops and the clip currently being recorded on the Target(s) will be incomplete.
- ❑ ClipTool Pro monitors the dubbing process and halts on any of the following conditions:
 - ❑ The Source or Target Player fails to respond or reports an error.
 - ❑ A Target Player runs out of space.
 - ❑ The Source Player reports a status other than “Cued for Play” or “Play”.
 - ❑ A Target Player reports a status other than “Cued for Record” or “Record”.
 - ❑ The end of the playback timeline is reached (normal completion).
 - ❑ **Stop** is pressed.

When dubbing ends, the **Dub Information** dialog box appears with a summary of the operations performed and the reason that the dubbing ended.

15. Repeat the procedure from [Step 7](#) to dub additional clips.



Clip Dubbing Restrictions

When using the “**Clip Dubbing**” feature or when performing dubbing using the Harmonic API, please note:

- All Players concerned should have MediaPorts attached (and the MediaPorts should be connected to each other for the dub), or
- None of the Players should have MediaPorts attached (and IEEE 1394 dubbing should be performed).

Internally, Harmonic Players detect the presence or absence of MediaPorts, and adjust their timing appropriately, as MediaPorts add a certain amount of delay to the video. When no MediaPorts are connected and direct IEEE 1394 dubbing occurs, the source Player and recording Player start at the same time, and a frame-accurate dub occurs. When a MediaPort-to-MediaPort dub is performed, the source Player and the recording Player(s) retime their payout and recording start times so that frame-accurate dubbing still occurs – despite the delay added by the MediaPorts.

It is possible to “break” dubbing by setting up an IEEE 1394 dub between Players, one or more of which has a MediaPort attached. In such cases, the Players adjust their timing to take into account the MediaPort-induced delays, but as the actual connection is via a direct IEEE 1394 link, the recording will be off by several frames.

For example, for monitoring purposes, one might be tempted to attach a MediaPort to a direct IEEE 1394 dubbing Player or recorder. Unfortunately, doing so will break dubbing. Therefore, the following rules need to be observed:

- For direct IEEE 1394 dubs, none of the Players may have a MediaPort attached.
- For dubbing to/from a Player with a MediaPort, connect it using a baseband SDI connection between MediaPorts – not a direct IEEE 1394 link.

Saving and Opening Playlists

ClipTool Pro allows you to save a playlist of all the clips in the Clip List Window. The playlist retains all the Mark **In** and Mark **Out** points of each clips. To save a playlist, click **File** and then select **Save Playlist**. The playlist will be saved as an XML file.

To open an existing playlist, click **File** and then select **Open Playlist**. Browse to the XML file that contains the playlist you want and select to open it.

Opening a playlist will cause ClipTool Pro to stop the player, eject any content that was already loaded, load the new clips, and then reset the time fields to the beginning of the first clip in the playlist.

Changing Default Settings for New Clips and the Clip List

The initialization file, **ClipToolPro.ini**, located in the ClipTool Pro application folder allows you to modify certain default settings. By modifying this .ini file you can:

- Specify the default recording duration for a new clip
- Specify whether or not ClipTool Pro, upon start-up, automatically displays all the currently loaded clips for the player with which it’s associated in the Clip List window.

To modify the default settings:

1. Locate the file, **ClipToolPro.ini**, in the same folder which contains the ClipTool Pro application. (The default location is C:\Program Files\Harmonic\ClipTool Pro).
2. Open **ClipToolPro.ini** with a text editing program such as NotePad.
3. Type in the following parameters below the line, `FrontKey=1`:

`Duration=<default recording duration specified in frames>`

`ClipList=<1 displays loaded clips, 0 does not display loaded clips>`

The following is an example of a modified ClipToolPro.ini file:

```
[User Options]
```

```

FrontKey=1
Duration=7500
ClipList=1

```

4. Save and close ClipToolPro.ini.
5. Restart ClipTool Pro in order for your changes to take effect.

ClipTool Pro Keyboard Shortcuts

The following keyboard shortcuts are available with ClipTool Pro.

Table 3–1: Keyboard Shortcuts

ClipTool Pro Shortcuts	Action
Alt+F4	Exit the ClipTool application
F10, Alt (by itself)	Select first menu
Alt+<underlined character>	Same as pressing the button associated with that character.
ENTER	Accept dialog box settings
Tab	Focus next field
Shift+Tab	Focus previous field
Esc	Cancel dialog box
Ctrl+X	Cut text or timecode entry
Ctrl+C	Copy text or timecode entry
Ctrl+V	Paste text or timecode entry

JKL keys are a common NLE shortcut for motion control:

- Pressing J or L alone works like pressing the left and right shuttle buttons, except that speeds below 1x are not selected. The speeds obtainable are thus -32, -16, -8, -4, -2, -1, 1, 2, 4, 8, 16, and 32, listed as multiples of normal forward play speed.
- Pressing J changes the current speed to the next leftward speed (towards faster reverse speeds), while pressing L changes the current speed to the next rightward speed (towards faster forward speeds).
- When stopped or paused, or in slow play, pressing L starts forward playback at normal speed, while pressing J starts reverse playback at normal speed.
- J and L do not auto-repeat. To speed up or slow down (move to the next speed setting), you must release the key, and then press it again.
- Pressing K pauses the video.
- Pressing J and K in combination, or K and L in combination, causes slow (quarter-speed) playback in reverse or forward respectively. Releasing J or L while K is depressed pauses playback. Releasing K while J or L is depressed starts reverse or forward play at normal speed until K is pressed again or the J or L key is released, at which point playback pauses.

Appendix A

Contacting the Technical Assistance Center

Harmonic Global Service and Support has many Technical Assistance Centers (TAC) located globally, but virtually co-located where our customers can obtain technical assistance or request on-site visits from the Regional Field Service Management team. The TAC operates a Follow-The-Sun support model to provide Global Technical Support anytime, anywhere, through a single case management and virtual telephone system. Depending on time of day, anywhere in the world, we will receive and address your calls or emails in one of our global support centers. The Follow-the-Sun model greatly benefits our customers by providing continuous problem resolution and escalation of issues around the clock.

Table A-1: For Distribution and Delivery (Legacy Harmonic) Products

Region	Telephone Technical Support	E-mail
Americas	888.673.4896 or 408.490.6477	support@harmonicinc.com
EME	+44.1252.555.450	support.emea@harmonicinc.com
Asia Pacific – Other Territories	+852.3713.9300	hongkongtechsupport@harmonicinc.com
India	+44.1252.555.450	support.emea@harmonicinc.com
Russia	+7.495.926.4608	rusupport@harmonicinc.com
Africa	+44.1252.555.450	support.emea@harmonicinc.com
Mainland China	+86.10.8391.3313	chinatechsupport@harmonicinc.com

Table A-2: For Production and Payout (Legacy Omneon and Rhonet) Products

Region	Telephone Technical Support	E-mail
Americas	888.673.4896 or 408.490.6477	omneon.support@harmonicinc.com
EMEA	+44.1252.555.450	omneonemeasupport@harmonicinc.com
Asia Pacific – Other Territories	+65.6542.0050	apacsupport@harmonicinc.com
Japan	+81.3.5565.6737	japansupport@harmonicinc.com
China - Mainland	+86.10.8391.3313	chinasupport@harmonicinc.com
Russia and CIS	+7.495.926.4608	rusupport@harmonicinc.com

The Harmonic Inc. support website is:

<http://www.harmonicinc.com/content/technical-support>

The Harmonic Inc. Distribution and Delivery product software downloads site is:

<ftp://ftp.harmonicinc.com>

The Harmonic Inc. Playout and Production software downloads site is:

<ftp://ftp.Omneon.com/Updates/Omneon/Current/>

The Harmonic Inc. corporate address is:

Harmonic Inc.
4300 North First St.
San Jose, CA 95134, U.S.A.
Attn: Customer Support

The corporate telephone numbers for Harmonic Inc. are:

Tel. 1.800.788.1330 (from the U.S. and Canada)
Tel. +1.408.542.2500 (outside the U.S. and Canada)
Fax.+1.408.542.2511

Appendix B

Compliance, Safety, and Agency Approvals

NOTE: The information in this appendix may apply to purchased products.

This equipment generates, uses, and can radiate radio frequency energy. It may cause harmful interference to radio communications if it is not installed and used in accordance with the instructions in this manual. Operation of this equipment in a residential area is likely to cause harmful interference. If this occurs, the user will be required to correct the interference at his or her own expense.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15, Subpart B of the Federal Communications Commission (FCC) rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Connections between the Harmonic equipment and other equipment must be made in a manner that is consistent with maintaining compliance with FCC radio frequency emission limits. Modifications to this equipment not expressly approved by Harmonic may void the authority granted to the user by the FCC to operate this equipment.

WEEE/RoHS Compliance Policy

Harmonic Inc. intends to comply fully with the European Union's Directive 2002/96/EC as amended, on Waste Electrical and Electronic Equipment, also known as "WEEE," and Directive 2002/95/EC, as amended, on the Restriction of use of Hazardous Substances, also known as "RoHS."

Harmonic will ensure that product which cannot be reused will be recycled in compliance with the WEEE Directive. To that end, users are advised that (1) Harmonic equipment is not to be discarded in household or office garbage, (2) Harmonic Inc. will pay the freight for shipment of equipment to be disposed of if it is returned to Harmonic, (3) customers should call the normal RMA telephone numbers to arrange for such shipment, and (4) for additional and updated information on this process customers may consult the Harmonic website: http://harmonicinc.com/pa_weee_recycle.cfm.

Harmonic will ensure that its products will be either reused or recycled in compliance with the WEEE Directive. For the latest information concerning Harmonic's WEEE/RoHS Compliance Policy and its Recycling and Take-Back process, please visit our web site.



Restricted Substance Statement

Harmonic products contain less than the permitted limits for the six restricted substances except where exemptions published in the RoHS Directive are applicable. This statement is based on vendor-supplied analysis or material certifications, and/or lab test results of the component raw materials used in the manufacture of Harmonic products.

Restricted Substance	Permitted limit*
Cadmium (Cd)	≤ 0.01% (Cd)
Lead (Pb)	≤ 0.1% (Pb)
Chromium (VI) (Cr (VI))	≤ 0.1% (Cr VI)
Mercury (Hg)	≤ 0.1% (Hg)
Polybrominated Biphenyls (PBBs)	≤ 0.1% (PBBs)
*Homogeneous material definition as per the EU Directive.	

产品中的有毒有害物质或元素的名称及含量表

Names and Contents of Toxic and Hazardous Substances

This section lists the names of contents of toxic or hazardous substances, or elements in the products if the part is present.

该表显示哈雷公司产品中可能含有的有毒有害物质元配件的信息，除了来源于元配件供应商的物料成分资料，亦来自其它相关的机构与资料。哈雷产品不一定使用这些元配件。

This table shows those components where hazardous substances may be found in Harmonic products based on, among other things, material content information provided by third party suppliers. These components may or may not be part of the product.

除非特殊注明，哈雷公司产品的环保使用期限 均为 20 年。该环保使用期限的有效条件为：必须遵循该产品使用手册的规定，对该产品进行使用或存储。

The Environmental Protective Use Period for Harmonic products is 20 years unless displayed otherwise on the product. The EPUP period is valid only when the products are operated or stored as per the conditions specified in the product manual.

部件名称 (Part name)	有毒有害物质或元素 (Hazardous Substance)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CrVI)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷线路板 (Printed Circuit Assemblies)	X	O	O	O	O	O
机械组件 (Mechanical Subassemblies)	X	O	O	O	O	O
光学组件 (Optical Subassemblies)	X	O	O	O	O	O

部件名称 (Part name)	有毒有害物质或元素 (Hazardous Substance)					
	铅 (PB)	汞 (Hg)	镉 (Cd)	六价铬 (CrVI)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电源 (Power Supplies)	X	O	O	O	O	O
缆线 / 线束 (Cables, harnesses)	X	O	O	O	O	O
屏幕 / 显示器 (Screens, Monitors)	X	O	O	O	O	O
金属零件 (Metal Parts)	O	O	O	O	O	O
塑料 / 发泡材料 (Plastics, foams)	O	O	O	O	O	O
电池 (Batteries)	O	O	O	O	O	O

O: 表示在该部件的所有均质材料中，此类有毒有害物质的含量均小于 SJ/T11363-2006 标准所规定的限量。

O: Indicates the content of the toxic and hazardous substances at the homogeneous material level of the parts is below the limit defined in SJ/T11363 2006 standard.

X: 表示至少在该部件的某一均质材料中，此类有毒有害物质的含量超出 SJ/T11363-2006 标准规定的限量。

X: Indicates that the content of the toxic and hazardous substances in at least one of the homogeneous materials of the parts is above the limit defined in SJ/T11363 2006 standard.

기종별	사용자 안내문
A급 기기 (업무용 정보통신기기)	이기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못 판매 구입 하였을 때에는 가정용으로 교환하시기 바랍니다.

Standards and Agency Approval

The following tables list regulatory standards and agency approvals:

North America

Standards	Agency Approval
EMI: FCC Part 15, Subpart B, ICES-003, Issue 2, Class A	FCC
Safety: UL60950-1, CAN/CSA C22.2 No. 60950-1	cTUV-us Mark

Europe

Standards	Agency Approval
EMI/EMC: EN55022 Class A, EN55024, EN61000-3-2 and EN61000-3-3	CE
Safety: EN 60950-1, EN60825-1	TUV-GS or T-Mark, CE
RoHS2: Directive 2011/65/EU	CE

Japan

Standards	Agency Approval
EMI: VCCI V-3, VCCI V-3 / 2000.04, VCCI V-3 2009	VCCI

Australia and New Zealand

Standards	Agency Approval
EMI: AS/NZS CISPR22	AS/NZS CISPR22

Canadian EMC Notice of Compliance

English: This digital apparatus does not exceed the Class A limits for the radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Commerce.

French: Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

EU Manufacturer's Declaration of Conformity

We: Harmonic, Inc.

Declare under our sole responsibility that the products identified below comply with the following EU Directives and Harmonized Standards stated.

Applicable EU Directives for ContentBridge:

Regulatory Compliance	Directive(s)	Notes
ContentBridge 1000		
EMC	FCC Part 15, ICES-003 CISPR 22 2004/108/EC Electromagnetic Compatibility including amendments	Class A for Digital Equipment, USA, Canada EN55022, EN61000-3-2, EN61000-3-3, and EN55024
Safety	TUV 2006/95/EC Low Voltage Directive including amendments	UL60950-1, CAN/CSA-C22.2 No. 60950-1 Safety of Information Technology Equipment
ContentBridge 2010A		
EMC	FCC ICES CE Mark VCCI BSMI C-Tick SABS CCC MIC	Class A Class B EN 55022 Class B, EN55024, EN61000-3-2, EN61000-3-3 Class B Class A Class B Class B Class B Class A
Safety	UL CAN/CSA EN IEC	UL 60950-1 CAN/CSA-C22.2 No. 60950-1 EN 60950-1, EN60825-1, EN60825-2 IEC60950-1

Regulatory Compliance	Directive(s)	Notes
ContentBridge 2010B/2010C		
EMC	ACMA or C-Tick BELLIS KVALITET ICES CNCA or CCC KONCAR CE SII VCCI OTAN – CKT INSM NEMKO GOST SABS KCC BSMI UKRTEST or UKRSERTCOMPUTER FCC STZ ICT	Class A
Safety	IRAM BELLIS SCC CNCA or CCC KONCAR CE TUV IECEE IECEE CB SII OTAN – CKT KEBS KUCAS NYCE or NOM INSM SONCAP NEMKO GOST KSA ICCP NRCS BSMI UKRTEST or UKRSERTCOMPUTER NRTL STZ	

Applicable EU Directives for ContentDirector:

Regulatory Compliance	Directive(s)	Notes
ContentDirector 1000C, 10000D, and 2000		
EMC	ACMA or C-Tick BELLIS KVALITET ICES CNCA or CCC KONCAR CE SII VCCI OTAN – CKT INSM NEMKO GOST SABS KCC BSMI UKRTEST or UKRSERTCOMPUTER FCC STZ ICT	Class A
Safety	IRAM BELLIS SCC CNCA or CCC KONCAR CE TUV IECEE IECEE CB SII OTAN – CKT KEBS KUCAS NYCE or NOM INSM SONCAP NEMKO GOST KSA ICCP NRCS BSMI UKRTEST or UKRSERTCOMPUTER NRTL STZ	

Applicable EU Directives for ContentServer and ContentStore:

Regulatory Compliance	Directive(s)	Notes
ContentServer 1042B/1042C-DP		
EMC	FCC Part 15, ICES-003 CISPR 22 89/336/EEC Electromagnetic Compatibility including amendments	Class A for Digital Equipment, USA, Canada EN55022A:1998+A1:2000 +A2:2003 EN61000-3-2:2000, EN61000-3-3:1995+A1:2001 EN55024:1998 +A1:2001+A2:2003 Immunity
Safety	TUV 73/23/EEC Low Voltage Directive including amendments	UL60950-1: 2003 CAN/CSA-C22.2 60950-1-3 Safety of Information Technology Equipment
ContentServer 2122/2124		
EMC	FCC Part 15, ICES-003 CISPR 22 89/336/EEC Electromagnetic Compatibility including amendments	Class A for Digital Equipment, USA, Canada EN55022 EMISSIONS EN61000-3-2, EN61000-3-3 EN55024 Immunity
Safety	UL60950 73/23/EEC Low Voltage Directive including amendments	IEC 60950 CAN/CSA-C22.2 60950 Safety of Information Technology Equipment
ContentServer 3000		
EMC	FCC (CFR 47, Part 15) Class A IECS-003, Issue 3, Class A	EN 55022, EN1000-2-3, EN1000-3-3 EN55024, AS/NZS 3548 (CISPR-22 Class A) VCCI V-3
Safety	IEC/EN 60950-1: CB report and CB certificate UL/CSA 60950-1: cTUVus-mark	
ContentStore 3160		

Regulatory Compliance	Directive(s)	Notes
EMC	FCC (CFR 47, Part 15) Class A IECS-003, Issue 3, Class A	EN 55022, EN1000-2-3, EN1000-3-3 EN55024, AS/NZS 3548 (CISPR-22 Class A) VCCI V-3
Safety	IEC/EN 60950-1: CB report and CB certificate UL/CSA 60950-1: cTUVus-mark	

Applicable EU Directives for Network Switch 2924, 2948 and 5406:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	EN60950-1 Safety of Information Technology Equipment
EMC	FCC VCCI EN CISPR-22	Class A Class A 55022 Class A
Safety	CSA 22.2 UL IEC EN	No. 60950-1 60950-1 60950-1 60950-1

Applicable EU Directives for the MediaDeck 7000:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive (73/23/EEC) including amendments	EN60950-1: 1992, A1 + A2 + A3 + A4 Safety of Information Technology Equipment
EMC	FCC Part 15, ICES-003 ICES-003 Directive of Electromagnetic Compatibility EN55022: 1998 EN55024: 1998 CISPR 22	Class A for Digital Equipment, USA Class A for Digital Equipment, Canada (89/336/EEC) including amendments Emissions from Information Technology Equipment Immunity for Information Technology Equipment Class A Others

Applicable EU Directives for the MediaDirector 2201, 2202, 2251, 2252, and the MediaCenter:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is 2006/95/EC, EMC directive is: 2004/108/EC	EN 60950-1 Safety of Information Technology Equipment
EMC	FCC Part 15 Class A ICES-003 VCCI Class A CISPR 22 Class A CNS 13438 EN 55022 Class A KN22 Class A	USA Canada Japan Australia, New Zealand, EU Taiwan EU Korea
Safety	UL 60950-1 First, Second Edition CSA C22.2	

Applicable EU Directives for MediaPort Series 5000, MediaPort 7000 Series, and ChannelPort:

Regulatory Compliance	Directive(s)	Notes
MediaPort 5000 Series, MediaPort 7000 Series, and ChannelPort		
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	EN60950-1 Safety of Information Technology Equipment
EMC	FCC Part 15, ICES-003 ICES-003 Directive of Electromagnetic Compatibility EN55022 EN55024 CISPR22	Class A for Digital Equipment, USA Class A for Digital Equipment, Canada (89/336/EEC) including amendments Emissions from Information Technology Equipment Immunity for Information Technology Equipment Class A Others
Safety	UL/CUL, CAN/CSA C22.2 No. 950-95 Third Edition and UL1950 Third Edition UL/CUL, CAN/CSA C22.2 No. 60950-1-03 First Edition and UL60950-1 First Edition	
ChannelPort		
Safety	UL 670950-1, 2nd Edition CSA C22.2 No. 60950-1-03, 2nd Edition IEC 60950-1:2005 (Second Edition) EN 670950-1,2006 + A11:2009	

Applicable EU Directives for the Ellipse1000 and 2000:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22, KN22 and KN24	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Applicable EU Directives for the Electra 1000, 5000, 5400, and 9200 encoders:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Applicable EU Directives for the Electra 8000 encoders:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22, KN22 and KN24	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Applicable EU Directives for the ION AVC HD, ION AVC SD, ION MPEG-2, ION MPEG-4 AVC, and ION Multichannel encoders:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Applicable EU Directives for ProStream 1000, 2000, 4000, 4500, 5000, and 8000:

Regulatory Compliance	Directive(s)	Notes
CE	Low Voltage Directive is: 2006/95/EC, EMC directive is: 2004/108/EC	
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Applicable EU Directives for the MV400, MV450, and MV500 MPEG-2:

Regulatory Compliance	Directive(s)	Notes
EMC	EN55022, EN61000-3-2, EN61000-3-3 and EN55024. VCCI V-3, AS/NZS CISPR22	
Safety	EN60950-1, EN60525-1, EN60825-2, UL60950-1, CSA C22.2 No. 60950-1	

Important Safeguards and Notices

This section provides important safety guidelines for both the Operator and Service Personnel. Specific warnings and cautions are found throughout the guide where they apply, but may not appear here. Please read and follow the important safety information, noting especially those instructions related to risk of fire, electric shock or injury to persons.

Safety and Regulatory Information for the ContentServer 3000 and ContentStore 3160

Danger: Class 1 laser product.



Attention: Produit laser de classe 1


Warnung: Laserprodukt der Klasse 1

This equipment contains optical transceivers, which comply with the limits of Class 1 laser radiation. Visible and invisible laser radiation may be emitted from the aperture of the optical transceiver ports when no cable is connected. Avoid exposure to laser radiation and do not stare into open apertures.

Lithium Battery Notice for Service Personnel

This product contains a lithium battery. Although the battery is not field-serviceable, observe the following warning:



Mark	Notes
	<p>CAUTION: Danger of explosion if battery is replaced with incorrect type. Replace only with the same type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.</p> <p>WARNING: CALIFORNIA PERCHLORATE ADVISORY Some lithium batteries, may contain perchlorate material. The following advisory is provided: "Perchlorate Material – special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate/" for information.</p> <p>ATTENTION: Il y a danger d'explosion s'il a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un type equivalent recommande par le constructeur. Mettre au rebut les batteries usees conformement aux instructions du fabricant</p> <p>WARNUNG: Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.</p>
	<p>WARNING: This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).</p> <p>ATTENTION: Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifier qu'un fusible ou qu'un disjoncteur de 120 V alt., 15 A U.S. maximum (240 V alt., 10 A international) est utilisé sur les conducteurs de phase (conducteurs de charge).</p> <p>WARNUNG: Dieses Produkt ist darauf angewiesen, daß im Gebäude ein Kurzschluß- bzw. Überstromschutz installiert ist. Stellen Sie sicher, daß eine Sicherung oder ein Unterbrecher von nicht mehr als 240 V Wechselstrom, 10 A (bzw. in den USA 120 V Wechselstrom, 15 A) an den Phasenleitern (allen stromführenden Leitern) verwendet wird.</p>


Mark	Notes
	<p>WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. These guidelines are provided to ensure your safety:</p> <ul style="list-style-type: none"> ■ This unit should be mounted at the bottom of the rack if it is the only unit in the rack. ■ When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack. ■ If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
	<p>ATTENTION: Pour éviter toute blessure corporelle pendant les opérations de montage ou de réparation de cette unité en casier, il convient de prendre des précautions spéciales afin de maintenir la stabilité du système. Les directives ci-dessous sont destinées à assurer la protection du personnel.</p> <ul style="list-style-type: none"> ■ Si cette unité constitue la seule unité montée en casier, elle doit être placée dans le bas. ■ Si cette unité est montée dans un casier partiellement rempli, charger le casier de bas en haut en plaçant l'élément le plus lourd dans le bas. ■ Si le casier est équipé de dispositifs stabilisateurs, installer les stabilisateurs avant de monter ou de réparer l'unité en casier.
	<p>WARNUNG: Zur Vermeidung von Körperverletzung beim Anbringen oder Warten dieser Einheit in einem Gestell müssen Sie besondere Vorkehrungen treffen, um sicherzustellen, daß das System stabil bleibt. Die folgenden Richtlinien sollen zur Gewährleistung Ihrer Sicherheit dienen:</p> <ul style="list-style-type: none"> ■ Wenn diese Einheit die einzige im Gestell ist, sollte sie unten im Gestell angebracht werden. ■ Bei Anbringung dieser Einheit in einem zum Teil gefüllten Gestell ist das Gestell von unten nach oben zu laden, wobei das schwerste Bauteil unten im Gestell anzubringen ist. ■ Wird das Gestell mit Stabilisierungszubehör geliefert, sind zuerst die Stabilisatoren zu installieren, bevor Sie die Einheit im Gestell anbringen oder sie warten.

The Technical File is available to proper authorities and the product is marked.

Safety Symbols

The product is marked with these symbols when it is necessary to refer to the manuals to prevent damage to the product.

Symbol	Name	Description
	<p>Caution</p>	<p>Please observe the following important cautions:</p> <ul style="list-style-type: none"> ■ When installing this equipment, always comply with the National Electrical Standard and local electrical standard for attachment of the power cords. ■ Risk of explosion if battery is replaced incorrectly or with an incorrect type. There are no user-serviceable batteries inside Omneon products. Refer to Omneon qualified personnel only to service the replaceable batteries. Dispose of batteries according to the instructions. ■ Use only specified replacement parts. ■ Follow static precautions at all times when handling this equipment. ■ Slots and openings in the chassis are provided for ventilation. Do not block them. Leave the back of the frame clear for air exhaust cooling and to allow room for cabling – a minimum of 6 inches (15.25 cm) of clearance is recommended. ■ Disconnect <i>all</i> AC power supplies when servicing any unit.
	<p>Warning</p>	<p>Please observe the following important warnings:</p> <ul style="list-style-type: none"> ■ Any instructions in this guide that require opening the chassis or removing a board should be performed by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing unless you are qualified to do so. ■ Heed all warnings on the unit and in the operating instructions. ■ Do not use this product in or near water. Disconnect all AC power before installing any options or servicing the unit unless instructed to do so by this manual. ■ This product is grounded through the power cord grounding conductor. To avoid electric shock, plug the power cord into a properly wired receptacle before connecting the product inputs or outputs.

Symbol	Name	Description
		<ul style="list-style-type: none"> ■ Route power cords and other cables so that they are not likely to be damaged. Disconnect power before cleaning. Do not use liquid or aerosol cleaners; use only a damp cloth. ■ Dangerous voltages exist at several points in this product. To avoid personal injury, do not touch exposed connections and components while power is on. Do not insert anything into either of the system's two power supply cavities with power connected. ■ Do not wear hand jewelry or watches when troubleshooting high current circuits, such as the power supplies. ■ To avoid fire hazard, use only the specified correct type, voltage and current rating as referenced in the appropriate parts list for this product. Always refer fuse replacement to qualified service personnel. ■ Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading."
	Laser Warning	<p>Please observe the following laser warnings:</p> <ul style="list-style-type: none"> ■ Invisible Laser Radiation, when open or when operating with the fiber disconnected. AVOID DIRECT EXPOSURE TO THE BEAM. Never operate a unit with a broken fiber or with a separated fiber connector.

Safety Precautions

To avoid injury and prevent equipment damage, observe the following safety precautions:

- Do not move or ship equipment unless it is correctly packed in its original wrapping and shipping containers.
- Only Harmonic trained personnel can undertake equipment service and maintenance.
- To prevent damage by lightning, ground the unit according to local regulations.
- Do not permit unqualified personnel to operate the unit.

AC Power Supply to the Unit

To ensure correctly and safely operation of the unit, the following are required:

- Adding to the system a UPS (Uninterrupted Power Supply) and an AVR (Automated Voltage Regulator) is highly recommended.

- Installing the main power supply by a qualified electrician, according to power authority regulations. Make sure all powering are wired with an earth leakage, according to local regulations.
- It is recommended to install the encoder within 1.5m (approximately 5 feet) from an easily accessible grounded AC outlet.
- When the encoder is rack-mounted, ensure that the rack is correctly grounded.



DANGER: To ensure that the rack is correctly grounded by a qualified electrician. Incorrectly grounded equipment may result in electrical shock.

DC Power Supply to the Unit

In the case the unit is fitted with DC power inputs, the following are required:

- Never work on DC powered equipment while power is applied. Disconnect power before making connections to the device.
- Ensure a suitable overcurrent device is inline between the equipment and the power source.

Rack Mount Instructions

- Elevated Operating Ambient: If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing: Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Handling Fibre Channel Cables

- Always read and comply with the handling instructions on the shipping container.
- Follow all ESD precautions and approved fiber cleaning procedures.
- The fiber is made of a very pure, expensive glass and should be treated with great care. Handle fibers only in areas that are very clean and do not contain sharp objects.
- Wear finger cots or gloves as dirt and oils can damage the fiber and contaminate connectors.
- Do not allow kinks or knots to develop in the fiber. If tangles occur, carefully work out the tangles avoiding pulling or bending the fibre beyond its bend radius.
- Always use the correct tools for stripping and cleaving the fiber. It will save time and reduce breakage caused by scratches.

- If you must secure a bundle of fiber cables together, avoid plastic and metal tie wraps; secure with velcro instead.

Product End-of-Life Disassembly Instructions

This section provides instruction for the disassembly of the indicated Harmonic Spectrum MediaDeck 7000 product family in order to remove components requiring selective treatment, as defined by the EU WEEE Directive (2002/96/EC).

Description	Notes	Qty in the product	Location
Printed Circuit Board Assemblies (PCBA) (PCBA)	With a surface greater than 10 sq. cm (Additional PCBA-s may be present depending on the configuration)	2	Inside the chassis
Batteries	All types including standard alkaline and lithium coin or button style batteries	1	LITHIUM COIN, P/N 57-1006 3V,20MM,2PIN on the main Base board. California USE Only: Perchlorate Material - For handling see: www.dtsc.ca.gov/hazardouswaste/perchlorate
Mercury-containing components	For example, mercury in display backlights, switches, batteries	None	
Liquid Crystal Displays (LCD) with a surface greater than 100 sq cm	Includes background illuminated displays	None	
Video display device	With a screen size of more than 10 cm measured diagonally	None	
Cathode Ray Tubes (CRT) None		None	
Capacitors / condensers (Containing PCB/PCT)		None	
Electrolytic Capacitors / Condensers measuring greater than 2.5 cm in diameter or height		None	
External electrical cables and cords		2	
Gas Discharge Lamps		None	

Description	Notes	Qty in the product	Location
Plastics containing Brominated Flame Retardants		None	
Components and parts containing toner and ink, including liquids, semi-liquids (gel/paste) and toner		None	
Components and waste containing asbestos		None	
Fiber-optic cables		None	
Laser parts		None	
Radioactive components, parts or materials		None	

The following table lists the required tools.

Description	Size
Philips screw drivers	#1 and #2
Flat-head screw driver	small
Flat-head screw driver	large
Diagonal-cutting pliers, long-nose pliers	~5"
Sockets	11/32", 1/2", 5/8", and 9/16" (deep)
Special tools to remove specific components	Not needed

Product Disassembly Process

1. Disassemble equipment at a dedicated area only, gather the needed tools for disassembly.
2. Remove covers, housing, etc.
3. Remove and separate subassemblies (i.e. lasers, cables, metals, displays, fans, etc.).
4. Separate hazardous materials from the remainder of the material.
 - a. Sort hazardous materials into their different types (i.e., batteries, hazardous liquids, hazardous solids, fiberglass, etc.).
 - b. Proceed with hazardous waste management processes only.
5. Identify re-usable materials/subassemblies and separate these from the rest of the material.
6. Identify and separate recyclable materials as per below examples:
 - a. Scrap material to be sent to smelter(s).
 - b. E-waste such as displays, CPU's, cables and wires, hard drives, keyboards, etc.
 - c. Metals such as steel, brass, and aluminum.
 - d. Plastics such as fan casings, housings, covers, etc.

- e. Fiber optics and plastic tubing not containing electrical or data wiring.

Safety Rules

Recycler personnel are to wear personal protective equipment including proper eye protection, proper hand protection, and proper breathing protection if needed.

Recycler personnel shall be experienced with using the proper tools required for disassembling equipment. Untrained personnel shall not disassemble Harmonic products. Unfamiliarity with tools can cause damage and injury.

HEADQUARTERS

Americas Sales

4300 North First Street
San Jose, CA 95134 U.S.A.
T 1 800 828 5521 inside the U.S.
+1 408 542 2559 outside the U.S.
F +1 408 490 6001

ASIA-PACIFIC

Harmonic (Asia Pacific) Limited

Suite 2301, L23, Office Tower
Langham Place, 8 Argyle St
Mongkok, Kowloon Hong Kong
T +852 3713 9300
F +852 2116 0083

EUROPE AND MIDDLE EAST

United Kingdom

250 Fowler Avenue, Ground Floor
IQ Farnborough
Farnborough Hampshire GU14 7JP
United Kingdom
T +44 (0)1 252 555 400
F +44 (0)1 252 377 171

Africa, India, Russia and CIS Countries

10 Haamel St
Park Afek
Rosh Ha'ayin, 48092 Israel
T +972.3.9007777
+972.3.9007800
F +972.3.9007766

