

Harmonic Media Tools

TrackTool

RELEASE 2.0

User Guide



Manual Part No. 28-0066, November 2006

March 2013

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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. |



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Chapter 1

Introduction

Harmonic MediaTools are low cost, easy-to-use utilities, designed to ensure greater operability for broadcast customers. Each MediaTool is tightly integrated with the Harmonic Spectrum and MediaGrid Systems, and each runs on a Windows® 2000 or XP platform.

TrackTool is a MediaTool used for adding tracks to clips, rearranging tracks within clips, labeling tracks with language tags and for applying aspect ratio conversion tags.

The document provides installation and operating instructions for TrackTool in the following sections:

- [Installing TrackTool](#)
- [Using TrackTool](#)

Media Compatibility

Please note that for self-contained QuickTime and MXF Op1a clips, TrackTool only supports adding audio and video track tags. The **Edit** menu options of **Add Track(s)**, **Delete Track**, **Move Track Up** and **Move Track Down** are not available for these types of clips.

New in this Release

TrackTool 2.0 includes the following enhancements:

- This release of the software supports ARC (Aspect Ratio Conversion) tagging, which allows you apply aspect ratio conversion tags to clips. The ARC tagging options available depend on the track's format: standard definition or high definition. Refer to [Aspect Ratio Conversion \(ARC\)](#) for more information.
- TrackTool now supports track addition and tagging on Harmonic MediaGrid systems in addition to its use on Spectrum systems.

Chapter 2

Installing TrackTool

The following topics are discussed:

- ❑ [System Requirements](#)
- ❑ [System Compatibility](#)
- ❑ [What Gets Installed](#)
- ❑ [TrackTool Installation](#)
- ❑ [TrackTool Licensing](#)



IMPORTANT: The MediaGrid File System Driver must be installed on your system to use TrackTool with the MediaGrid system. See the *Harmonic MediaGrid Installation and Configuration Guide* for installation instructions.

System Requirements

Prior to installing TrackTool, your PC must conform to the following minimum requirements, and must be connected by Gigabit Ethernet to the target Harmonic server:

- Pentium 4 or equivalent CPU
- 512 megabytes (MB) of RAM
- 20GB 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*
- Gigabit Ethernet (Fast Ethernet is adequate for track tagging operations only)

TrackTool must parse and modify text in QuickTime .mov files. Since QuickTime .mov files do not support Unicode, the correct character set must be selected for QuickTime using the SystemManager application for both TrackTool and the MediaDirector to work properly. Select the ANSI character set appropriate to the version of Windows that TrackTool is running on from the following page:

<http://www.microsoft.com/globaldev/nlsweb>

If English is the only language used in your facility, the default UTF-8 character set should be used.

System Compatibility

TrackTool 2.0 is compatible with Harmonic Spectrum System software v4.6 or higher. You must install the MediaGrid File System Driver version 1.1 and Harmonic Spectrum System software v4.6 to use TrackTool with the MediaGrid system. See the *Harmonic MediaGrid Installation and Configuration Guide* for instructions.

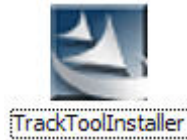
What Gets Installed

The application consists of the main TrackTool executable plus a pdf file of this guide.

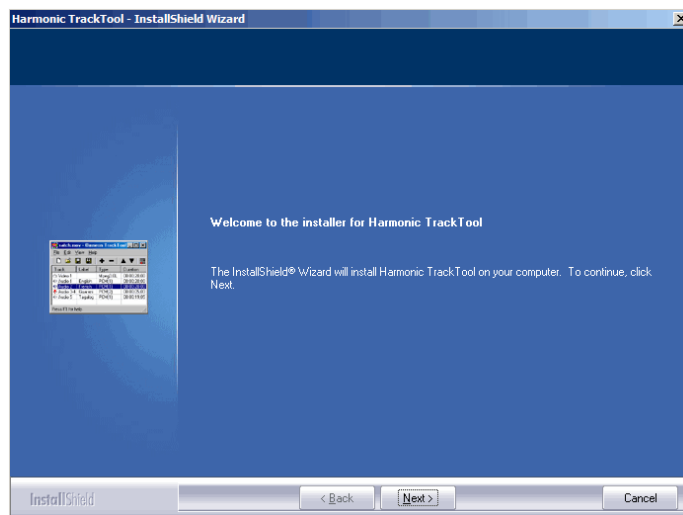
TrackTool Installation

Use the following steps to install TrackTool on your PC.

1. Ensure that the PC on which the TrackTool application will be installed is booted and connected by Ethernet to your Harmonic MediaDirector when running the application. It is also highly recommended that you exit all Windows programs at this point.
2. If you have not already done so, open the **TrackTool.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.
3. Locate the **TrackTool** executable file icon from the TrackTool.zip folder.



4. Double-click the **TrackTool Installer** icon to begin the installation.



5. Click **Next** and then follow the installation steps to install TrackTool.

This completes the TrackTool installation procedure. Refer to [Using TrackTool](#) to begin using the application.

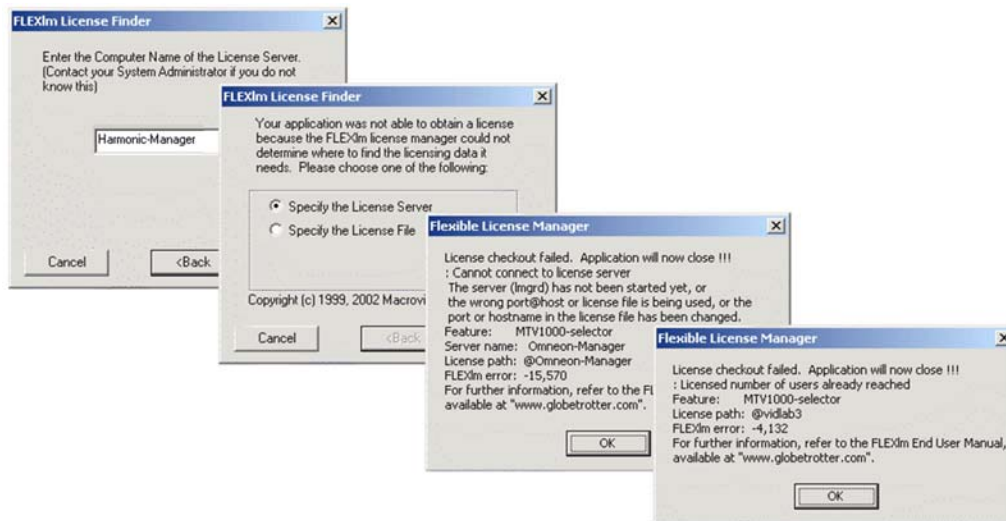
TrackTool Licensing

A license file (provided by Harmonic) supplies the licenses for the TrackTool components. This file is installed on the "license server" computer.

One license is required for each instance of TrackTool 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 4 TrackTool licenses and you have installed the product on 20 computers, you can run up to 4 instances of TrackTool 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 TrackTool

The following topics are discussed:

- ❑ [TrackTool Description](#)
- ❑ [TrackTool Reference](#)
- ❑ [TrackTool Operating Procedure](#)
- ❑ [TrackTool Notes](#)

TrackTool Description

TrackTool is used for adding tracks to, and rearranging tracks within, clips, tagging tracks with language labels and for adding aspect ratio conversion tags. TrackTool can be used to:

- ❑ Add additional tracks to provide foreign-languages or descriptive audio commentary.
- ❑ Change the track stacking order to change the channels on which audio plays out.
- ❑ Add track tags so that a Harmonic MediaDirector can automatically route the audio to the appropriate channels.
- ❑ Create a new clip from essence files (raw encoded audio and video data).
- ❑ Add tags to convert a clip's aspect ratio.

TrackTool is designed to work with Harmonic clips and raw essence files using the following formats:

- ❑ DV25
- ❑ DV50
- ❑ MPEG-2, I-frame-only and long-GOP
- ❑ AIFF, 16-bit and 24-bit uncompressed, mono or stereo
- ❑ WAV, 16-bit and 24-bit uncompressed, mono or stereo

Refer to [TrackTool Limitations](#) for additional information on file formats.

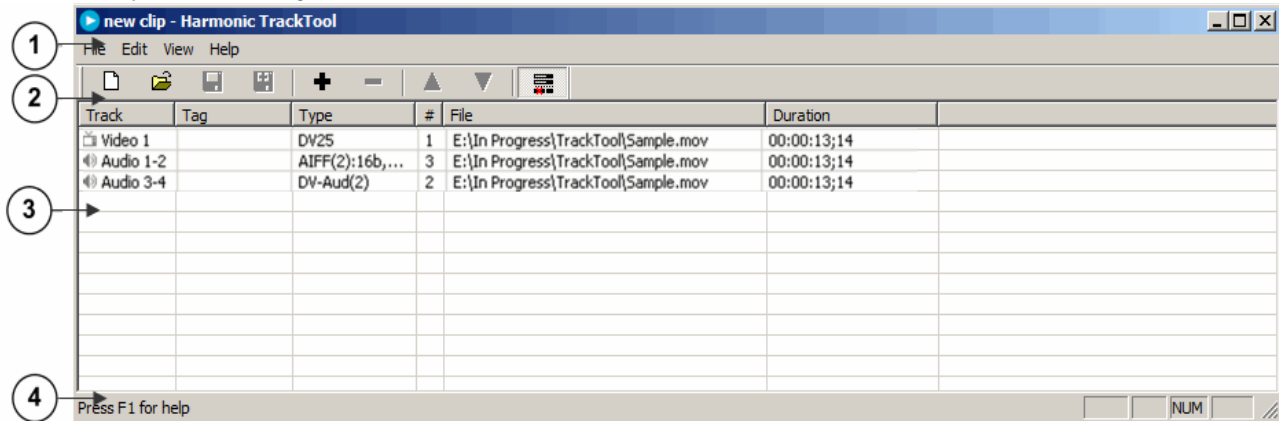
TrackTool Reference

This section describes the main TrackTool window, and covers each control function and feature. The following topics are covered:

- ❑ [Main Window](#)
- ❑ [File Menu](#)
- ❑ [Edit Menu](#)
- ❑ [View Menu](#)
- ❑ [Help Menu](#)

Main Window

The TrackTool **Main** window provides a central control panel to display tracks in a clip and provide editing functions.



| | |
|-------------|-----------------------------|
| 1. Menu Bar | 3. Track Information Fields |
| 2. Toolbar | 4. TrackTool Status Bar |

Following are descriptions of each section as itemized above:




1. Menu Bar

The **Menu Bar** provides menus for **File**, **Edit**, **View**, and **Help** that are used to access and operate the TrackTool application. Refer to [File Menu](#), [Edit Menu](#), [View Menu](#), and [Help Menu](#) for complete details.

2. Toolbar

The **Toolbar** area provides a variety of icons used to operate the TrackTool application as described in the following table.

| Icon | Function | Icon | Function |
|------|-----------|------|-----------------|
| | New Clip | | Delete Track |
| | Open Clip | | Move Track Up |
| | Save Clip | | Move Track Down |

| Icon | Function | Icon | Function |
|---|--------------|---|--------------------------|
|  | Save Copy |  | Trim Raw Audio PreCharge |
|  | Add Track(s) | | |



NOTE: Trimming audio precharge is used to maintain synchronization when adding audio to Harmonic clips that have been generated by reference to raw track files. Refer to [Trimming Audio Precharge](#) for more information.

3. Track Information Fields

The following information is provided for each track:

Track: Shows the track type (video, audio, etc.) and the track assignment for the current stacking order. Track assignments change as you shuffle tracks around.

Video tracks have a TV set icon. Audio tracks have a speaker icon. If you have duration warnings enabled, and a track is shorter or longer than other tracks, the icon displays with a red exclamation point on it. If an audio track has an unsupported bitrate, the icon appears with an **X** through it.

Tag: Shows the currently assigned track tag, if any, including aspect ratio conversion tags for video tracks.

Type: Shows the media type, channel count, and bitrate (if applicable) for the media contained in the track. Audio is shown as AIFF, WAV, or PCM (if the type can't be determined); the bit depth (16 or 24) and the sample rate in kilohertz are also shown.

#: Shows the track's "load number" (the order in which it was loaded into TrackTool). The load number helps distinguish between unlabeled tracks with similar track types and file names. It is reset whenever you save a clip or start work on a new clip.

File Duration: Shows the duration of the track as follows:

- ❑ Times are shown as HH:MM:SS:FF. Drop-frame calculations are used for 29.97/59.94Hz media types.
- ❑ Raw audio tracks display as if they were 29.97Hz media. Audio tracks contained in clip files show the correct timing for their native frame rate, 25Hz or 29.97Hz.
- ❑ If you load a raw MPEG media file, the time shown is an estimate and "(est.)" follows the duration.
- ❑ If you have enabled duration warnings, and the track is too short or too long, the notation ("SHORT" or "LONG)" follows the duration.

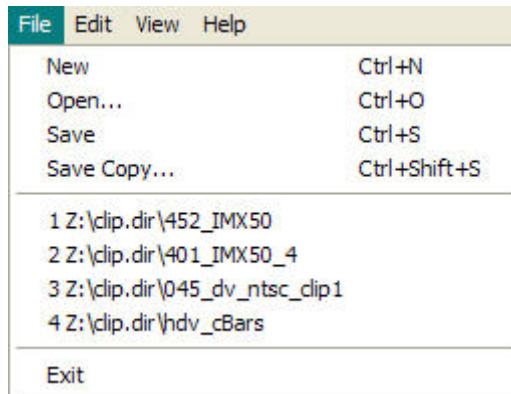
4. TrackTool Status Bar

The following information is provided:

- ❑ The left area of the status bar describes the actions of menu items as you use the arrow keys to navigate through the menus. This area also displays messages that describe the actions of toolbar buttons as you depress them.
- ❑ The right area of the status bar indicates if any of the Lock keys are enabled.

File Menu

Descriptions of all **File** menu items are provided in this section.



- ❑ Click **New** to create a new, empty clip to which tracks may be added. If a modified, unsaved clip is loaded, you are asked whether to save it before opening the new clip.
- ❑ Click **Open** to open an existing .mov or .mxf file on disk for stacking. If a modified, unsaved clip is loaded, you are asked whether to save it before opening the new clip.
- ❑ Click **Save** to save a modified clip back to its original filename. No media are copied; the clip is rewritten to include the essence files in the order given with track tags applied.

Save is enabled whenever you have loaded a clip with **Open** and have modified it by adding, deleting, and/or shuffling tracks, or by changing track tags.



NOTE: If you save after deleting tracks from the original clip, TrackTool asks if you want to delete the affected media files. If you answer "Yes," the files are deleted and cannot be recovered.

- ❑ Click **Save Copy** and then select the file type to save a modified clip under a new filename.

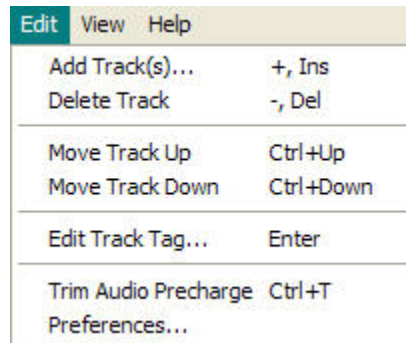


NOTE: The file type selection defaults to .mov for all files, including .mxf when you select **Save Copy**. Make sure to select .mxf if you are saving a .mxf file.

- ❑ Essence files are copied to the media.dir folder below the clip's destination (the folder is created if necessary) and the new clip is written to reference the new files in the order given. No original clip or essence files are modified or deleted. "**Save Copy**" is enabled whenever a clip is present with one or more tracks.
- ❑ The last four recently opened clips are shown and can be opened directly from the File menu.
- ❑ Click **Exit** to exit the program. If a modified, unsaved clip is loaded, you are asked if you want to save it before exiting.

Edit Menu

Descriptions of all **Edit** menu items are provided in this section.



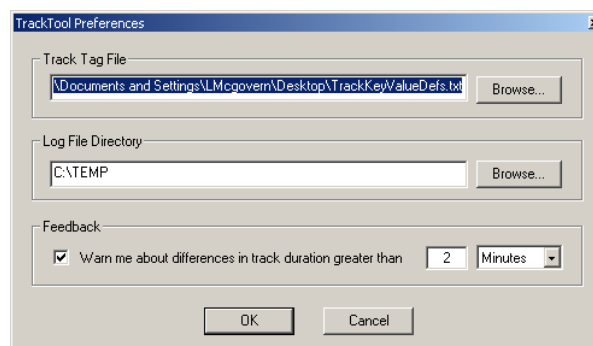
NOTE: For self-contained QuickTime and MXF Op1a clips, TrackTool only supports adding audio and video track tags. The **Add Track(s)**, **Delete Track**, **Move Track Up** and **Move Track Down** options are not available for these types of clips.

- ❑ Click **Add Track(s)** to display a file list dialog from which video and audio essence files are selected. By default, DV and MPEG files are listed if no video track is loaded; AIF, AIFF, and WAV files are shown otherwise. You can select either video or audio files regardless of the default listing.
- ❑ Click **Delete Track** to delete the selected track from the stacking window. That track is not included in a subsequent “**Save**” or “**Save Copy**” operation.



NOTE: If a “**Save**” is performed that orphans an essence file, that file is deleted at the successful completion of the save operation.

- ❑ Click **Move Track Up** to move the selected track up one level in the stack.
- ❑ Click **Move Track Down** to move the selected track down one level in the stack.
- ❑ Click **Edit Track Tag** to select an aspect ratio conversion tag to be applied to a video clip. Refer to [Aspect Ratio Conversion \(ARC\)](#) for more information.
- ❑ Click **Trim Audio Precharge** to enable/disable the trimming of precharge “headers” from raw essence files to match the precharge amount of the clip. Refer to [Trimming Audio Precharge](#) for more information.
- ❑ Click **Preferences** to open the **TrackTool Preferences** window, as shown below.



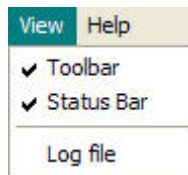
Here you can set the following items:

- ❑ Location of the control file containing the track tagging (language) codes.

- Location of Log Files output by TrackTool. Logs are tagged with a day-of-month code in the file name (for example, TrackToolLogOL.txt) so they never number more than 31 in any given location since newer logs overwrite older ones.

View Menu

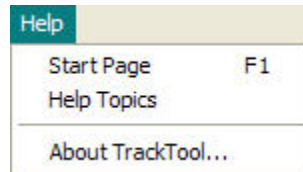
Descriptions of all **View Menu** items are provided in this section.



- Click **Toolbar** to hide/show the Toolbar.
- Click **Status Bar** to hide/show the status bar at the bottom of the window.
- Click **Log file** to open Notepad and view the contents of the Log file.

Help Menu

Descriptions of all **Help Menu** items are provided in this section.



- Click **Start Page** to open TrackTool Help on the main page.
- Click **Help Topics** to view a table of contents and index for the help topics.
- Click **About TrackTool** to show the **About TrackTool** box with the version, date, and copyright information for TrackTool.

TrackTool Operating Procedure

Use the following steps to operate TrackTool.

1. Launch TrackTool:
 - a. Click **Start > Programs > Harmonic TrackTool** to launch TrackTool.
By default, the installer also places a shortcut to TrackTool on the desktop.
2. Navigate to the MediaDirector on which you wish to work.
3. Edit Existing Clips:
 - a. Click **File > Open**, or pick from the recent clips list to open a clip.
 - b. Click **Edit > Add Track(s)** to add track files.
 - c. Click **Edit > Move Track Up** or **Edit > Move Track Down** to shuffle the track order.
 - d. Click **Edit > Edit Track Tag** (or double-click the track) to apply an aspect ratio conversion tag. Refer to [Aspect Ratio Conversion \(ARC\)](#).
 - e. Click **Save** to save the clip to disk, or click **Save Copy** to create a new clip, leaving the original clip untouched.
4. Create New Clips:
 - a. Click **File > New** to create a new file.

- b. Click **Edit > Add Track(s)** to add new tracks.
 - c. Click **Edit > Move Track Up** or **Edit > Move Track Down** to shuffle the track order.
 - d. Click **Edit > Edit Track Tag** (or double-click the track) to change track tags.
 - e. Click **Save Copy** to save the new clip.
5. Add New Tracks to a Clip:
 - a. Click **Edit > Add Track(s)** to select a file containing the tracks you want.
6. Change Stacking Order:
 - a. Using the mouse, select the track you want to move.
 - b. Use **Edit > Move Track Up**, or press **Control+Up Arrow**, to move the track up in the stacking order.
 - c. Use **Edit > Move Track Down**, or press **Control+Down Arrow**, to move the track down in the stacking order.
7. **Change a Track Tag:**
 - a. Using the mouse, select the track you want to edit.
 - b. Use **Edit > Edit Track Tag** to display the **Track Editing** dialog. Alternatively, press the Enter key, or double-click the track.

If editing an audio track, you can select the track tag using the arrow keys or mouse. Double-click a tag or click **OK**, or press **ENTER** to accept the new tag.
 - c. Click **Cancel** or press the **ESC** key to quit the editor without changing the tag.

TrackTool Notes

The following topics are discussed in this section:

- ❑ [Aspect Ratio Conversion \(ARC\)](#)
- ❑ [Trimming Audio Precharge](#)
- ❑ [Track Tag Files](#)
- ❑ [Track Tag File Format](#)
- ❑ [Log Files](#)
- ❑ [TrackTool Limitations](#)

Aspect Ratio Conversion (ARC)

TrackTool allows you to convert the aspect ratio of individual video tracks to various video formats. You must have a Harmonic 4100 series HD MultiPort to convert the aspect ratio.

The tags that you add using TrackTool define how aspect ratio conversion takes place when a clip is up-converted (from standard to high definition) or down-converted (from high to standard definition). The MultiPort 4100 series can up-convert standard definition (SD) clips to high definition (HD), and down-convert HD clips to SD. The tags added to the clips using TrackTool indicate what should happen when performing this up or down conversion.



NOTE: The available ARC options are defined by the system and cannot be changed.

Standard definition tracks have the following conversion options:

- ❑ (no track tag): conversion depends on the player configuration
- ❑ **14x9:** top and bottom cropped to display as 14x9
- ❑ **Anamorphic:** image stretched to fill an aspect ratio of 16x9
- ❑ **Full:** sides cropped to fit an aspect ratio of 4x3

- ❑ **Pillarbox:** image shown full height with black side bars

High definition tracks have the following conversion options:

- ❑ (no track tag): conversion depends on the player configuration
- ❑ **14x9:** top and bottom cropped to display as 14x9
- ❑ **Anamorphic:** image squeezed to fit an aspect ratio of 4x3
- ❑ **Full Height:** sides cropped to fit an aspect ratio of 4x3
- ❑ **Letterbox:** image shown full width, with black bars on the top and bottom of the image

The selected tag type is shown in the clip's **Tag** field and applied to all video tracks in the clip that are of the same initial format (SD or HD). Any existing tag is replaced. Video tracks in the opposite format are unaffected. ARC settings are not stored in the tag file.

Clip ARC tags take precedence over the conversion settings configured in SystemManager unless SystemManager is configured to use an external conversion. If SystemManager is configured to use an external conversion, all clip tags are ignored.

Trimming Audio Precharge

Trimming audio precharge is used to maintain synchronization when adding audio to Harmonic clips that have been generated by referencing raw essence files.

Follow these guidelines for using this feature:

- ❑ Trimming should be **ON** when all of the following conditions are met:
 - ❑ If your new audio was built by loading the original video or audio essence (track files of types .aiff, .wav, .m2v, and/or .mpg) into a digital audio workstation or nonlinear workstation;
 - ❑ The video format is MPEG;
 - ❑ You are adding the new audio to the Harmonic clip (.mov file).
- ❑ Harmonic MPEG clips are not stored starting with the first frame since MPEG clips have one or more "hidden" video frames in them to "precharge" the codec. This is of no concern unless you are trying to add additional audio tracks to the clip and want them to stay in sync.
- ❑ Trimming should be **OFF** if your new audio was created while using a Harmonic MediaPort together with a Harmonic MediaTool or third party device controlling the Player.
- ❑ Trimming is not a relevant issue if you are working with video formats other than MPEG (i.e., DV or DV50), or if you are building new clips from scratch by using **New Clip** and then adding track files to it.
- ❑ Avoid creating audio tracks by reference to Harmonic MPEG clips (as seen in Harmonic MediaTools), and then building a new clip from the raw track files. The resulting clip will not be in sync. Always add such tracks to the Harmonic clip, not to the raw track files comprising the clip.

Refer to TrackTool **Help** for more detailed information about this feature.

Track Tag Files

A Track Tag file contains the track tags used in your facility for labeling tracks and routing tracks. By using a consistent set of tags throughout your facility, a Harmonic MediaDirector can read the labels and automatically route the audio to the appropriate channels. TrackTool refers to the Track Tag file to ensure that the tracks attached to media clips are the same ones used in the configuration of MediaDirector players.

SystemManager is used to configure players with language rules. At playout time, the rules are used to search out the appropriate audio tracks and send the matching audio to the right destination channels. See the *Harmonic SystemManager Installation and User's Guide* for more information.

By default, the Track Tag file (**TrackKeyValueDefs.txt.**) is located on the Harmonic MediaDirector's file system at: **fs\config\TrackKeyValueDefs.txt.** where "fs" is the actual filesystem name.



NOTE: When modifying the Track Tag file using a text editor, make sure to save the file as UTF-8 encoding if there are tags with non-English characters. Both Microsoft Word and Windows Notepad provide this encoding option.

Track Tag File Format

The following format conventions are used in Track Tag files. Each file can include these items on separate lines:

- Optional comment line(s), which start with a hash character # followed by any comment text. For example:

This is a comment and will be ignored.

- A mandatory keycode line indicating the key being configured. This item must be included once in the file, just before the track tag code mentioned below. The line starts with the letter K followed by a colon, followed by the key code. For track tags, the key code is "ovn_trackmatch". For example:

K:ovn_trackmatch

- Optional track code line(s). The line starts with the letter A followed by a colon, followed by the language code, which may be any US-ASCII character sequence. For example:

A:French

In addition:

- Tag names must not exceed 20 characters in length and must not include a comma, slash, or ampersand (&). A tag name with an ampersand will be saved but will not be selectable.
- Adding **silence1** through **silence8** inserts 1-8 channels of silence on the next channel(s). Choose the number of "silence" tags as required by your facility, up to a maximum of eight.
- Adding **tracknum0** through **tracknum7** causes play of the audio track whose position in the clip's track stack matches the number specified in the tag. Choose the required number of "tracknum" tags, up to a maximum of eight. Note that since the numbering scheme for tracknum tags starts with zero, **tracknum0** would match the first audio track in the clip's track stack.
- The strings "**NONE**" and "**None**" are reserved. Do not use in this file.
- "**silence**" and "**tracknum**" tags should not be assigned to tracks in TrackTool.
- Track tagging rules are applied to non-tagged clips if the rules contain any "tracknum" tags.

A sample Track Tag file is as follows:

```
# Harmonic clip and player track-tagging file
# Comment lines start with #
# The first line should always be 'K:ovn_trackmatch'
# The following lines start with A: for audio track tags;
# the rest of the line is the tag value.
```

```

K:ovn_trackmatch
A:English
A:Tagalog
A:Native Cornish Dialect
A:Guarani
A:Esperanto
A:Elvish

```

Log Files

TrackTool writes Log Files to record its operations. The log is useful for seeing what tracks were added to a clip after the fact, or for diagnosing problems. The following is a sample Log File:

```

2004-04-02 17:12:21 I - Starting TrackTool Version 0.8, 2004.03.24
2004-04-02 17:26:23 I - Saving clip O:\ajw\satchWithFrench.mov as a
copy; trim raw is off.
2004-04-02 17:26:23 I - AddTrack: src:0 dst:0 in:0 ok:1
type:Mpeg3.0L file:O:/ajw/media.dir/satch.m2v
2004-04-02 17:26:23 I - AddTrack: src:1 dst:1 in:3 ok:1 type:PCM(1)
file:O:/ajw/media.dir/satch_1.aiff
2004-04-02 17:26:23 I - AddTrack: src:2 dst:2 in:3 ok:1 type:PCM(1)
file:O:/ajw/media.dir/satch_2.aiff
2004-04-02 17:26:23 I - AddTrack: src:0 dst:3 in:0 ok:1 type:PCM(2)
file:O:\ajw\media.dir\HitItPlus15.aif
2004-04-02 17:26:36 I - set file property [ovn_creation] [TrackTool;
O:\ajw\satchWithFrench.mov; 04/02/04 17:26:36].
2004-04-02 17:26:36 I - set track 1 property
[ovn_trackmatch] [English].
2004-04-02 17:26:36 I - set track 2 property
[ovn_trackmatch] [English].
2004-04-02 17:26:36 I - set track 3 property
[ovn_trackmatch] [French].
2004-04-02 17:26:41 I - TrackTool exited.

```

Note the following:

- ❑ Each line starts with a date and time stamp, followed by “I” for an information line, “W” for a warning line, or “E” for an error line. The rest of the line is the log message itself.
- ❑ Most lines are “I” lines. “W” or “E” lines indicate some sort of problem.
- ❑ Logs are written to files of the form TrackToolLog##.txt, where ## is the day of the month. If the log from the previous month is present, it is overwritten.

TrackTool Limitations

- ❑ TrackTool is designed for and tested on DV and MPEG format clips. Use of TrackTool with other video file types is not supported.
- ❑ TrackTool only supports the following audio file types:
 - ❑ **WAV**: stereo or mono, 16-bit, 48kHz. WAVs from Pinnacle/Steinberg Nuendo have been tested and are supported. 24-bit WAVs recorded by Harmonic are supported. WAVs from other applications may not work.
 - ❑ **AIF/AIFF**: stereo or mono, 16-bit, 48kHz. Files generated using QuickTime 6.5 applications (QuickTime Player Pro and Soundtrack) on Macintosh have been tested and are supported. 24-bit AIFFs recorded by Harmonic MediaDirectors are supported. AIFFs from other applications may not work.

- ❑ When using **Save**:
 - ❑ The original .mov file is overwritten, and some metadata may be lost. To avoid this possibility, use **Save Copy**.
 - ❑ The original media files in their original locations are used. Be sure the media files you added reside on the Harmonic MediaDirector before adding their tracks to a clip. Added tracks residing elsewhere on the network or on the local PC will not be played back by the Harmonic MediaDirector. To copy added tracks to the MediaDirector from within TrackTool, use **Save Copy**.
- ❑ The TrackTool load function is not case sensitive.
- ❑ TrackTool incorrectly reports the bit rate of MPEG Long GOP clips that have been recorded in PAL. For example an MPEG Long GOP 12Mb video track will be reported in the TrackTool **Main** window **Type** field as "Mpeg25.OL" instead of "Mpeg12.OL". This issue will be addressed in a future release.

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

