

Audio Loudness Analyzer User Manual

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1 Audio Loudness Analyzer

This manual documents release 1.30 of the Audio Loudness Analyzer

1.1 Introduction

Grass Valley products that feature Loudness Monitoring save the results of the monitoring process in a log file that can be analyzed later. The AUDIO LOUDNESS ANALYZER is a software package that extracts data from these log files, analyzes it, and presents the results to the user in a convenient and informative manner. The results can be viewed on-screen, and printed reports can be generated for the convenience of the user in analysis and distribution.

Version 1.20 and later enables the integration of data from the program playout log to identify specific program segments and content during the analysis of the Loudness Log files.

The Audio Loudness Analyzer module can be used as a stand-alone software package, and is also integrated into some Grass Valley products that feature loudness monitoring.

1.2 Features

The Audio Loudness Analyzer extracts and displays the following information to the user:

Service Identification:	Audio type Service name Audio PID
Integrated data:	Integrated input loudness True peak maximum Loudness range Momentary maximum Input DIALNORM Target
Plotted vs time:	Short-term input loudness Integrated input loudness Dialnorm

The Audio Loudness Analyzer can present its output to the user in several formats:

- On-screen graphic within the application running the analyzer package.
- Summary report in PDF format for distribution and archiving.
- Data file in CSV format for detailed analysis (opens in Excel)

Version 1.30 and later supports automated batch analysis and reporting, and in particular allows for the creation of single-button triggers within iControl Web to initiate pre-defined loudness analysis and reporting activities.

2 Access

The user can access the Audio Loudness Analyzer in five ways:

- The Audio Loudness Analyzer is a service running on a Grass Valley Application Server, and can be accessed through iControl Navigator.
- The Audio Loudness Analyzer can be launched in iControl Solo.
- The Axino Multi-program Transport Stream Loudness Processor serves a webpage for user operation via Ethernet, and the Loudness Analyzer software can be launched from within the Axino application.
- The Loudness Analyzer can be triggered from iControl Web to run a pre-defined analysis without further operator intervention. See section 5.4 for further information.
- The loudness analyzer can be invoked from a batch file, so that scheduled analysis and report generation can be programmed without the need to access the user interface. See section 5.5 for further information.

3 How to Analyze a Loudness Log File – Step-by-Step

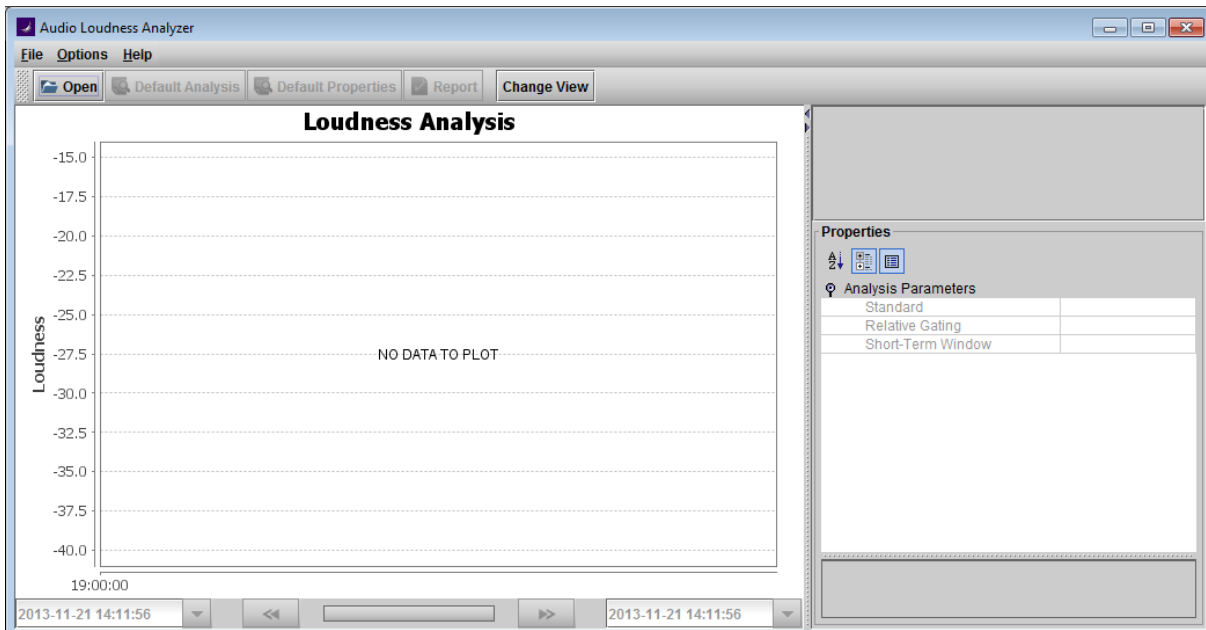
The Loudness Log Analyzer can analyze log files generated by a Grass Valley Loudness Measurement application. Data imported from the playout system that gives timing and program content details, called *As-Run* files, can also be imported to complement the Grass Valley loudness analysis data.

Follow these steps to analyze a loudness log file using the Audio Loudness Analyzer. Note that this is a short-form version – more detail on each step is available through the linked sections.

3.1 Launch the software

- **From within Axino:** go to the Loudness Probing Status window, and click the icon in the LOG column beside the service whose logs you wish to analyze.
 - This will open the current log file associated with the service. Skip to 3.3 if this is the correct file.
- **From iControl Navigator or iControl Solo:** double-click the Loudness Analyzer icon, most easily located in the *Managers* folder in Logical view.

The *Audio Loudness Analyzer* window opens.



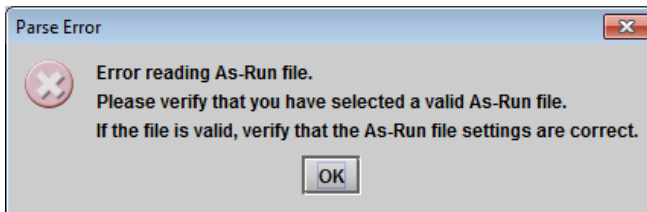
3.2 Browse to the folder containing the loudness logs, and open the log file

1. Click the *Open* button or select *File – Open* from the pulldown menu
2. In the *Logs* portion of the *Open Logs* dialog, navigate to the root folder containing the log files, and then use the *Audio descriptor* pulldown to select the logs for a specific loudness logging device.
3. Note that you can set the maximum number of directory levels that will be searched for loudness log files – the default is 1. See [Options - View Settings](#) on page 7 to change this setting.
4. In the *Segment Information* section of the *Open Logs* dialog, navigate to the As-Run file that corresponds to the loudness log selected above, and select it - it will be a .txt file.
5. Click *OK* to open the files for analysis

Note: The open file is always being analyzed, so you will see analysis results immediately, and they will change as you modify the analysis tools and select a portion of the file.

Possible problems with As-Run files:

In step 4, if you browse to a file that is not a valid As-Run file, or, if you browse to a valid file but it is not the type specified in the *Options – As-Run Log File Settings* dialog, you will see this error message when you click the OK button to open the files for analysis in step 5.

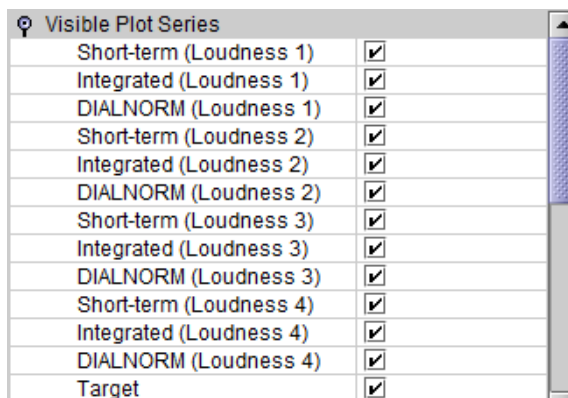


When you click OK here, the file will open in the analyzer without any As-Run data. You will need to verify the file validity and As-Run file settings before you can re-open the file and use the As-Run data.

3.3 Configure the analysis tools

In the right-hand portion of the window:

- Select which of the available properties will be displayed in the chart and included in the analysis, by selecting their checkboxes in the *Visible Plot Series* pane:



Note that the Plot Series names are set by the logging device and may differ from those shown here.

Decide which of the available visual markers will appear in the plot, by selecting their checkboxes.

Visual Markers	
Segment Markers	<input checked="" type="checkbox"/>
1: Measurement is paused	<input checked="" type="checkbox"/>
2: Video input loss	<input checked="" type="checkbox"/>
3: Video error	<input checked="" type="checkbox"/>
4: Invalid audio(1)	<input checked="" type="checkbox"/>
5: Invalid audio(2)	<input checked="" type="checkbox"/>
6: Invalid audio(3)	<input checked="" type="checkbox"/>
7: Invalid audio(4)	<input checked="" type="checkbox"/>
8: Loudness off(1)	<input checked="" type="checkbox"/>
9: Loudness off(2)	<input checked="" type="checkbox"/>
10: Loudness off(3)	<input checked="" type="checkbox"/>
11: Loudness off(4)	<input checked="" type="checkbox"/>

Note that the Marker names are set by the logging device and may differ from those shown here.

- Select the loudness standard that will be used in the analysis, using the pull-down in the *Analysis Parameters* pane:

Analysis Parameters	
Standard	A85 1770-2
Relative Gating	-10dB
Short-Term Window	10s

Click on the name of the standard to open the pull-down list and select one of these standards:

- EBU G8
- EBU G10
- ARIB TR-B32
- A85 1770-1
- A85 1770-2
- A85-1770-3

Each of these standards has an associated value for *Relative Gating* and *Short-term Window*, and these are loaded automatically when the standard is selected. You may change them manually as described here, but then the selected standard is no longer applicable, and the *Standard* window will display “Custom”.

Relative Gating: Use the pull-down in the right-hand column to select from the available options:

- -8 dB
- -10 dB

Short-term window: Use the pull-down in the right-hand column to select the short-term window duration. Available values are 1 sec, 2 sec, 3 sec, ..., 9 sec., 10 sec.

See *Analysis Properties* on page 15 for more information.

3.4 Select the portion of the file you wish to analyze

The loudness analysis is performed on the displayed section of the file, not on the entire file, so you can narrow down the analysis to a period of interest within a large file if required.

Use the selection controls located below the chart along with your mouse to select the time period that will be displayed in the chart. Use the time scale on the bottom of the chart as a reference. Several different control methods are provided:

- Enter the time intervals (date and time) directly into the data windows or use the pull-downs to enter data.
- Click and drag within the chart window to select a portion of the display (in [PLOT view](#) only).
- Use the slide range arrows beneath the display to move full chart widths left or right.
- Use the right click-zoom controls to zoom in or out.

To reset the display to its initial state, click *Default Analysis* above the chart.

*The **Default Analysis** selects the portion of the log file that corresponds to the As-Run file, or the last three hours of the log file if no As-Run file was loaded.*

See [D Analysis Range Controls](#) on page 13 for a detailed description of the available controls.

3.5 Print the report

- Click *Report* above the chart
- In the Save dialog, choose a location to save the report file.

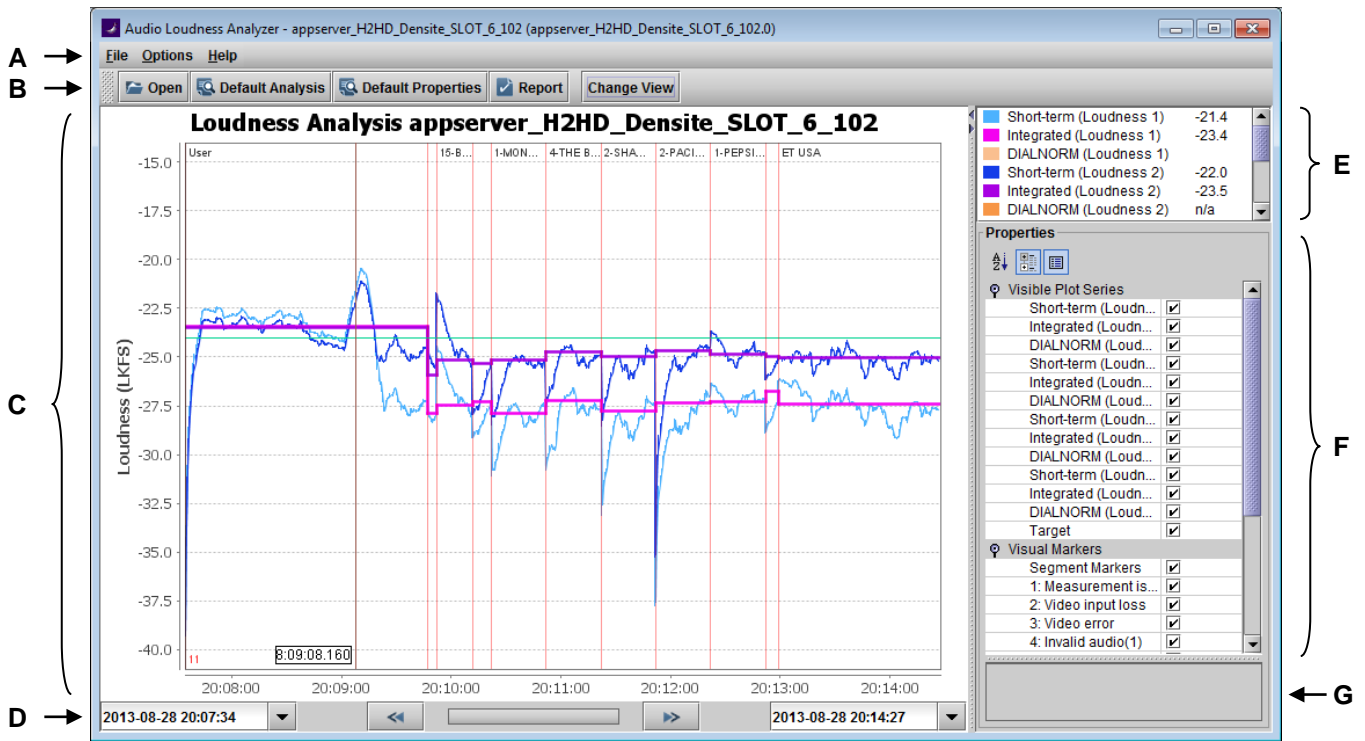
The report format depends on the view selected in the [loudness analysis window](#).

See [Section 5.3 Loudness Log Analyzer Reports](#) for a detailed description.

4 The user interface

When the Audio Loudness Analyzer is started, its window appears on the desktop. The key areas of this window are shown in the figure, and described below. For this description, a log file has been loaded and analyzed.

The window edges can be dragged to change the window size.

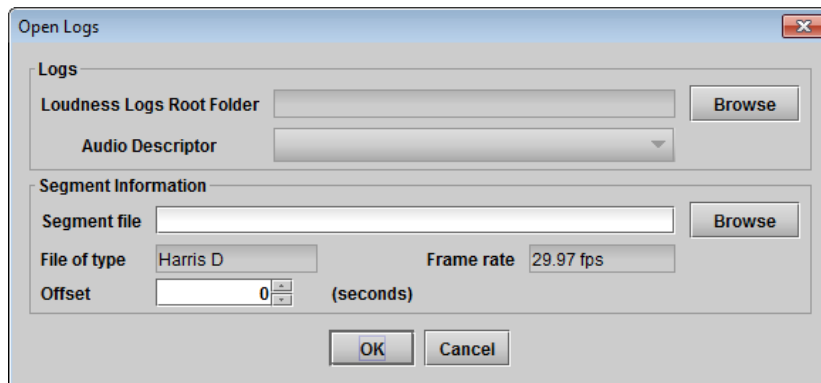


A Menu Bar

This is a typical Windows pull-down menu bar. For the Audio Loudness Analyzer, there are three pull-down menus:

File – Open

Invokes the Open Logs window, allowing the user to browse to the folder containing loudness logs, and once there to select a file for analysis.

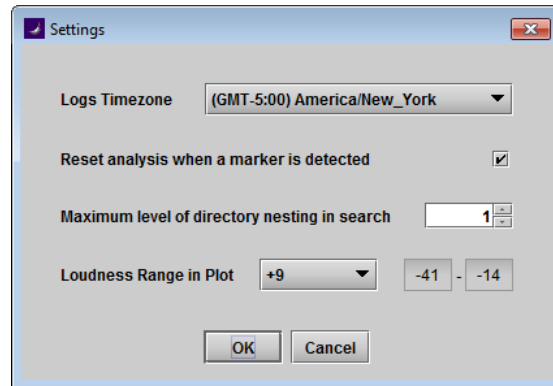


File – Quit

Quit the Audio Loudness Analyzer application.

Options – View Settings...

Invokes the Settings window, where the user can establish a few operational settings for the Audio Loudness Analyzer.



Logs Timezone: Set the time zone where the log files were created. This allows correlation between the times in the log file (which are specified in UTC) and local time, if the files were imported from a different time zone. If an As-Run file has been loaded, the selected time zone also applies to the As-Run file.

Reset analysis when a marker is detected – select the checkbox to trigger a reset each time a segment marker is encountered in the log file. Select this to analyze individual segments in TABLE view (recommended to leave this selected)

Maximum level of directory nesting in search specifies the number of levels below the root level that the loudness analyzer will search when seeking loudness log files in the root folder. The default is 1, and the user should be aware that searching a greater number of levels may be time-consuming.

Loudness Range in Plot allows the user to set the vertical scale on the loudness plot to optimally display the results. The pulldown offers these choices:

- +9 The scale is set from -41.0 LUFS/LKFS to -14.0 LUFS/LKFS (-18.0 LU/dB to +9 LU/dB)
- +18 The scale is set from -59.0 LUFS/LKFS to -5.0 LUFS/LKFS (-36.0 LU/dB to +18.0 LU/dB)
- Custom The lower and upper limits of the scale can be entered independently in the data boxes

Options – As-Run Log File Settings

This window is required because As-Run log files imported from playout systems are not standardized, and individual users can configure some details of them to their own requirements.

The *File Type* pulldown allows the general file structure to be identified. At the time of writing, three types are supported:

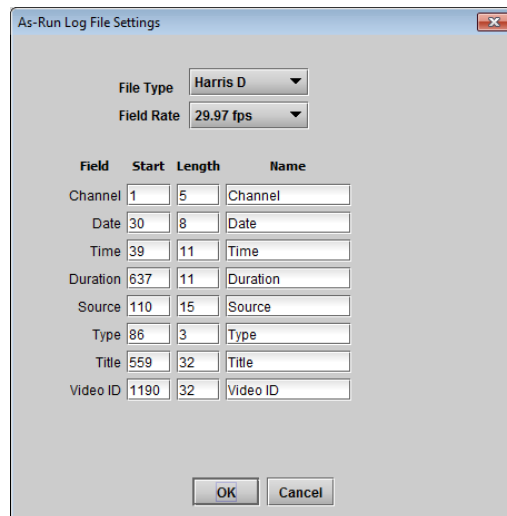
- Harris D
- Harris ADC
- Sundance

The *Field Rate* pulldown is required because the data is not saved in the As-Run file, and must be specified to synchronize the As-Run file with the Loudness Log file. Select the field rate at which the payout system was operating:

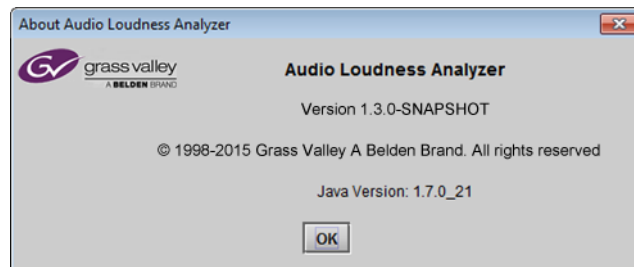
- 23.976
- 25
- 29.97
- 50
- 59.94
- 60

This window identifies the data fields in the As-Run file, and gives the start point and length (in characters) of each field, expressed in column numbers in the data file.

Additionally, the user can specify a name for each field that differs from the nominal default name shown under **Field**. This name will appear on any reports prepared by the loudness analyzer.



- Help – Manual Opens a copy of this user manual in the on-screen window (pdf file)
- Help – Release notes Opens a copy of the release notes for this Grass Valley product (pdf file)
- Help – About Invokes the *About Audio Loudness Analyzer* window, showing the version number of the installed software, and the java version in use.

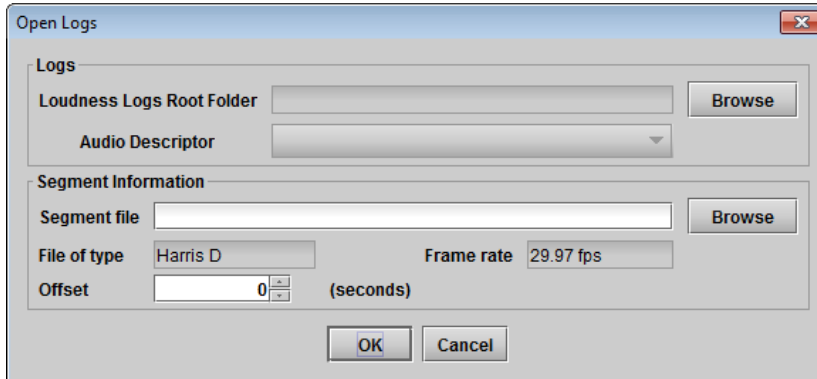


B Audio Loudness Analyzer file management controls

This group of controls allows the user to quickly invoke a few key operational functions.



Open Invokes the *Open Logs* window, allowing the user to browse to the folder containing loudness logs, and there to select a file for analysis. The As-Run file giving segment information from the playout system is also loaded from this window. This is exactly the same as using the File – Open menu command.



Default Analysis - Resets the chart to display the default analysis range, which is the range that is loaded when the file is first opened. This is useful if you have used the [analysis range controls](#) to select a portion of the file to analyze, and want to easily go back to viewing and analyzing the default range.

- If you have loaded an As-Run file, the “default range” is that portion of the loudness log file that corresponds to the As-Run file.
- If you have not loaded an As-Run file, the default is the most recent three hours of the loudness log file.

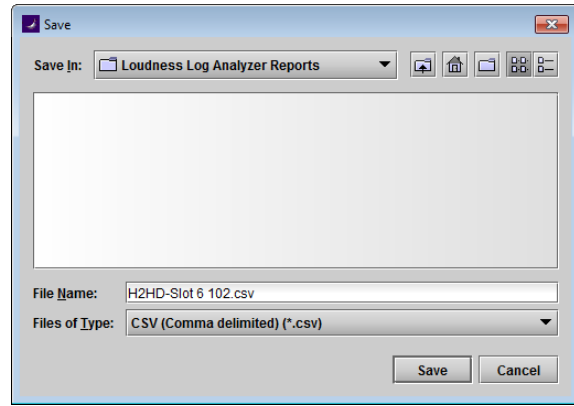
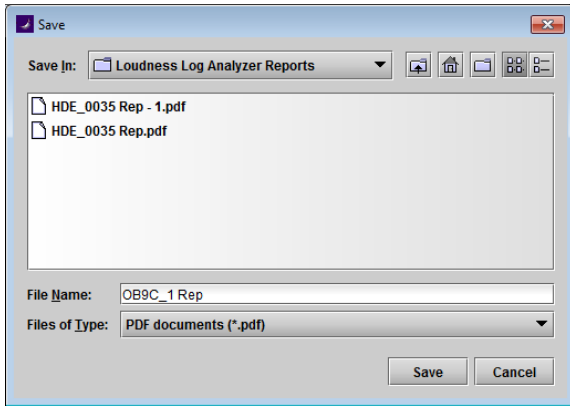
Default Properties – resets all the selections in the Properties pane at the lower right side of the Loudness Analyzer window to their default values – all checkboxes ticked, and the default analysis standard selected.

Report Opens the Save window, allowing the user to select the location at which the Audio Loudness Analyzer’s report will be saved. The user must specify a name for the file.

The report format depends on the current view of the results in the Loudness Analyzer window:

- If you are in PLOT view, showing a graphical representation of the results, the report will be a pdf file that includes the graph and some extracted data
- If you are in TABLE view, the report will be a CSV file that duplicates the contents of the table displayed in the analyzer window, with some reformatting for convenience.

See Section 5.3 [Loudness Log Analyzer Reports](#) for detailed descriptions of both formats.



Change View – changes the main window display between PLOT and TABLE view.

PLOT view – a graphical representation of the results of the loudness log analysis. A detailed description is given below.



TABLE view – a tabular presentation of the results of the loudness log analysis, with detailed results presented for each program segment. A detailed analysis is given below.

Date	Time	Duration	Source	Type	Title	Video ID	Segment	IT	TS
2013-08-29	06:00:00	00:07:30.08	CH44N01	01	Early Morning News	18F58617	Normal	-23.6	
2013-08-29	06:07:30.08	00:00:07.00	004320994		15-BIG BROTHER (G) HQ: T4 B7C 7	18F50ECC	Normal	-23.4	
2013-08-29	06:07:37.08	00:00:30.00	004349373		3-FORD MOTOR CO OF CANADA-Cars	18F50ECC	Normal	-23.7	
2013-08-29	06:08:07.10	00:00:15.00	004339370		4-THE BRICK WAREHOUSE LP Adv-Fur	18F50ECE	Normal	-23.7	
2013-08-29	06:08:22.10	00:00:30.00	004339683		18-WIREMOBILE-GLOBAL LIVE-Celeb	18F50ECC	Normal	-23.5	
2013-08-29	06:08:52.10	00:00:30.00	004377221		18-BANKING SPIDER SOLUTIONS INC	18F50ECC	Normal	-23.6	
2013-08-29	06:09:22.12	00:00:30.00	00427874		10-SANDALS RESORTS-Cruises & Res	18F50ECC	Normal	-23.3	
2013-08-29	06:09:52.12	00:00:15.00	00387575		4-DL DUTCH HEAD OFFICE-Restaurant	18F50ECC	Normal	-23.1	
2013-08-29	06:10:07.12	00:00:15.00	004346011		10-THE BLACKLIST (G) SP ZZ SEF 2	18F50ECC	Normal	-23.2	
2013-08-29	06:10:17.12	00:00:30.00	CH44N01	02	Early Morning News	18F58618	Normal	-23.5	
2013-08-29	06:19:47.13	00:00:15.00	004331711		15-CHAM PEPPI LIEBE	18F50ECC	Normal	-24.0	
2013-08-29	06:19:57.13	00:00:15.00	004338553		2-CAPP C/O DAVE RIGBY-Services	18F50ECC	Normal	-23.8	
2013-08-29	06:20:12.13	00:00:15.00	00427888		18-COMBE INC-Femmina Hygiene	18F50ECC	Normal	-23.9	
2013-08-29	06:20:27.13	00:00:15.00	004336993		18-BELL CANADA-Cellular Phones	18F50ECC	Normal	-23.7	
2013-08-29	06:20:42.13	00:00:30.00	00436114		18-PROCTER & GAMBLE INC-Batterie	18F50ECC	Normal	-23.6	
2013-08-29	06:21:12.15	00:00:30.00	00427818		18-NESTLE CANADA INC-Food- Pets	18F50ECC	Normal	-23.1	
2013-08-29	06:21:42.15	00:00:15.00	00434306		18-FIN EVER CANADA-Hair Products	18F50ECC	Normal	-22.7	
2013-08-29	06:21:57.15	00:00:30.00	00436996		2-PACIFIC NATIONAL EXHIBITION-Cu	18F50ECC	Normal	-22.7	
2013-08-29	06:22:27.17	00:00:07.00	00436572		15-THE BLACKLIST (G) SP MONDAY S	18F50ECC	Normal	-22.7	
2013-08-29	06:22:34.17	00:00:57.18	CH44N01	03	Early Morning News	18F58619	Normal	-23.1	
2013-08-29	06:28:32.07	00:00:07.00	00435865		15-BRONXIDE (G) SP	18F50ECC	Normal	-22.9	
2013-08-29	06:28:39.07	00:00:30.00	004339374		31-CBLDT COMPANIES LIMITED-Food	18F50ECC	Normal	-23.8	

C Loudness Analysis Window

This window presents the results of the loudness log analysis. Two different representations are available – switch between them using the *Change View* button above the window:

PLOT view

The window shows level-vs-time plots of the parameters that are selected in the Analysis Properties pane (F). The analysis range is set using the analysis range controls (D) located beneath the chart.

You may **manually expand the range display** of a section of the visible chart. Click and drag the cursor across a section of the display. The selected range will be highlighted in blue. When you release the mouse, the highlighted area will expand to fill the chart.

Click at any point in the chart to **select that instant** in the time axis. A marker line will be drawn through the chart, and the exact time denoted by the marker will be displayed at its base. The value at that time of each of the plotted parameters, as selected in the Analysis Properties pane (F), will be displayed in the Plot Identification and Results pane (E).

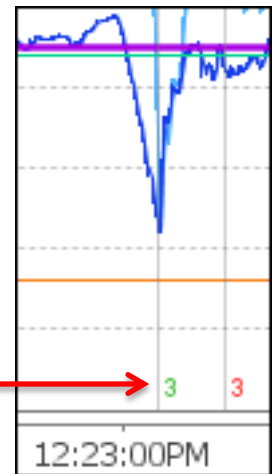


The markers that are enabled in the Visual Markers pane in the Properties section (see [Visual Markers](#) below) are displayed across the bottom of the plot.

Error and Warning markers are identified by number, as given in the Visual Markers pane. The presence of a marker indicates a change of status, and the color of the number indicates the new status:

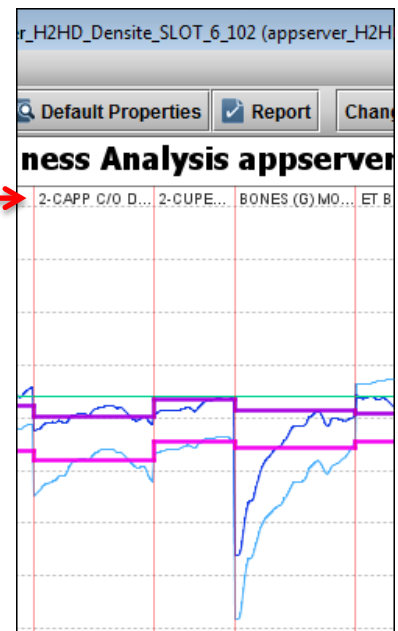
- Red = ON (i.e. error)
- Green = OFF (i.e. back to normal)

Visual Markers	
Segment Markers	<input checked="" type="checkbox"/>
1: Input - Last segment in error	<input checked="" type="checkbox"/>
2: Output - Last segment in error	<input checked="" type="checkbox"/>
3: Input - Short window warning	<input checked="" type="checkbox"/>
4: Output - Short window warning	<input checked="" type="checkbox"/>



Segment Markers divide the plot into time segments. These are detected directly from the Grass Valley log files, or are generated from the As-Run file, and will display text identifying the program material contained within the segment at the top of the plot.

Visual Markers	
Segment Markers	<input checked="" type="checkbox"/>
1: Input - Last segment in error	<input checked="" type="checkbox"/>
2: Output - Last segment in error	<input checked="" type="checkbox"/>
3: Input - Short window warning	<input checked="" type="checkbox"/>
4: Output - Short window warning	<input checked="" type="checkbox"/>



Segment markers and information from an As-Run will always be shown if present, replacing markers from the log file.

TABLE view

Table view presents a detailed spreadsheet giving the results of the loudness log analysis. The table is typically much larger than the size of the window, so horizontal and vertical scroll bars are provided if needed.

Vertically, the results are presented on a single line for each segment that has been analyzed, with the first segment on the top line and subsequent segments below.

Horizontally, each line contains identifying information about the segment, and the results of the loudness log analysis. All of these will be described here, in the sequence in which they normally appear.

Note that you can resize columns by dragging their edges, and change the order of the columns by dragging the column headings with your mouse, and you can hide columns by right-clicking the heading and selecting “Remove **** from view”. You can re-display hidden columns by right-clicking in any heading and selecting “add other columns” to re-display any particular column, or all hidden columns. Re-displayed columns do not appear in their original position, but at the extreme right side of the table. Any changes you make are remembered by the application.

The left-most columns display identification information about the segment. The column headings depend on whether an As-Run file was loaded or not.

WITH an As-Run File

Channel *	Channel name (not used in all As-Run file formats)
Date (YYYY-MM-DD) *	The date on which the loudness log file and As-Run file were recorded
Time (hh:mm:ss:ff) *	The time of day at which this segment started.
Duration (hh:mm:ss:ff) *	The duration of this segment.
Source *	Identification of the source of the program segment, from the As-Run file.
Type *	Identifies individual segments of a larger program that is interrupted by commercial breaks, usually numerical, e.g. 01, 02, 03, etc..
Title *	The title of the segment, from the As-Run file.
Video ID *	Video segment ID number, from the As-Run file
Segment Type	Indicates whether the segment was completely analyzed. These types are possible: <ul style="list-style-type: none"> • Full Complete segment analyzed. Both segment boundaries are shown in the PLOT view. • Partial Incomplete segment, usually the result of zooming in the PLOT view where the edge of the analysis window does not coincide with a segment boundary

* Note that all of these column headings (except Segment Type) can be relabeled in *the As-Run Log File Settings* panel in the Options pull-down menu.

WITHOUT an As-Run File

Start Day (YYYY-MM-DD)	The date on which the recording of the loudness log file was started.
------------------------	---

Time (hh:mm:ss)	The start time of the loudness data for this segment.
Segment Type	Indicates whether the segment was completely analyzed. These types are possible: <ul style="list-style-type: none"> • Full Complete segment analyzed. Both segment boundaries are shown in the PLOT view. • Partial Incomplete segment, usually the result of zooming in the PLOT view where the edge of the analysis window does not coincide with a segment boundary. Also occurs when opening a log file without included segment markers and no As-Run file.
Segment Name	Name from the log file, if included. Default is "User"/

Data Columns

The right-most columns display the results of the loudness log analysis. These are the same in all cases. Values in error are shown in **RED**.

I1 (LKFS)	Integrated loudness
TPmax1 (dBFS)	True peak maximum
LRA1 (dB)	Loudness range
Mmax1 (LKFS)	Momentary maximum
D1 (dBSF)	Input DIALNORM

These five columns may be repeated up to three more times, one set for each of the supported audio programs, and labeled by number, e.g. I1, ..., I2, ..., I3, ..., I4, etc.

- The number of audio programs embedded in the data file coming from the loudness measuring application is not controllable from the loudness log analyzer.
- If all of these are not occupied by data, the results columns for the unused programs will all show "n/a". [Hiding](#) these columns will reduce the width of the displayed data set.

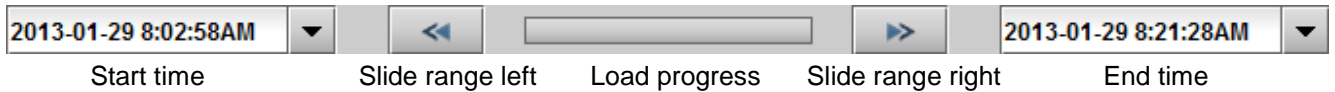
T (LKFS)	The Target loudness value for this segment.
Data Fill (%)	The percentage of data samples that are filled with data in this segment.

D Analysis Range Controls

The loudness analysis is carried out on the portion of the loudness log file that is displayed in the chart.

The Default Analysis range, which is shown when the file is first opened, and which can be recalled by clicking the Default Analysis button above the chart, is the portion of the loudness log file that corresponds to the time period of the As-Run file. If the As-Run file overlaps multiple log files, the appropriate sections of each log file are selected.

The controls below the chart allow the user to zoom into a portion of the loudness log file for more detailed analysis.



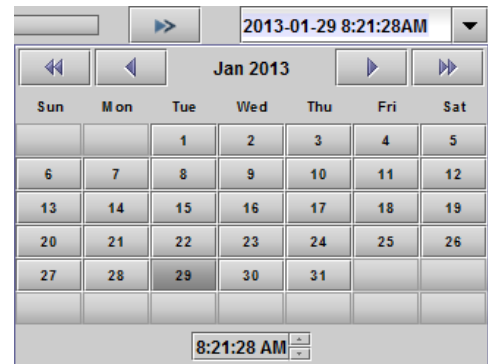
The **Start time** and **End time** refer to the portion of the loudness log data displayed in the chart.

- When the chart is first opened, the windows show the start and end times for the default analysis.
- When the chart has been manipulated, they display the start and end times for the portion of the file currently displayed in the chart.
- To reset the display, click the *Default Analysis* button at the top of the chart.

You can use the Start Time and End Time displays to select a portion of the loudness log file for analysis. If you know the time interval over which you want to analyze the loudness data (e.g. from an alarm log), you may enter the data directly in the display window – select the data to be changed, and type in the new values.

Alternatively, click the down-arrow to the right of the display window to open a calendar/time display that allows you to select a date and time.

Note that the window can display a maximum time interval of 24 hours. If you set the start time using the calendar pulldown, the end time is automatically set to 1 day later, while if you set the end time, the start time is set to 1 day earlier.



The Time scroll box at the bottom of the calendar adjusts only the hour. Type directly into the data box at the top to change minutes and seconds.

If you are looking at an expanded version of the chart, you can use the **Slide range left** and **Slide range right** buttons to move the chart’s window right or left in one-chart-width steps.

As explained in the previous section, you can click and drag your mouse within the chart (in PLOT view) to select a portion of the waveform, which will then expand to fill the chart.

E Plot Identification and Results

This pane displays a list of all the parameters that have been flagged for display in the Analysis Properties pane (F). A color chip beside the parameter name shows the color of the associated trace on the chart.

The value of any integrated parameters is always displayed.

Short-term (Input Loudness)	-19.0
Integrated (Input Loudness)	-18.8
Short-term (Output Loudness)	-24.2
Integrated (Output Loudness)	-23.8
DIALNORM	-31.0
Target	-24.0

- See the note about plot series names in section F below.

If a measurement point has been selected by clicking in the chart, the value at that instant of all the plotted parameters is displayed in this pane, as shown in the figure.

F Analysis Properties

The Analysis Properties Pane contains three categories of items:

1. Visible Plot Series

This is a list of all the properties that can be extracted from the analysis and plotted.

- Short-term (*name 1*)
- Integrated (*name 1*)
- DIALNORM (*name 1*)
- Short-term (*name 2*)
- Integrated (*name 2*)
- DIALNORM (*name 2*)
- (*etc.*)
- Target

Visible Plot Series	
Short-term (Loudness 1)	<input checked="" type="checkbox"/>
Integrated (Loudness 1)	<input checked="" type="checkbox"/>
DIALNORM (Loudness 1)	<input checked="" type="checkbox"/>
Short-term (Loudness 2)	<input checked="" type="checkbox"/>
Integrated (Loudness 2)	<input checked="" type="checkbox"/>
DIALNORM (Loudness 2)	<input checked="" type="checkbox"/>
Short-term (Loudness 3)	<input checked="" type="checkbox"/>
Integrated (Loudness 3)	<input checked="" type="checkbox"/>
DIALNORM (Loudness 3)	<input checked="" type="checkbox"/>
Short-term (Loudness 4)	<input checked="" type="checkbox"/>
Integrated (Loudness 4)	<input checked="" type="checkbox"/>
DIALNORM (Loudness 4)	<input checked="" type="checkbox"/>
Target	<input checked="" type="checkbox"/>

The text for (*name 1*) and (*name 2*) is extracted from the log file, and depends on the application that generated the log file. In the example above, (*name 1*) is “Loudness 1” and (*name 2*) is “Loudness 2”.

Each property is provided with a check-box. Select the checkbox to display that property in the chart.

2. Visual Markers

Markers identifying segments (data from the log file or As-Run file), and error/warning conditions flagged by the loudness logging device, can be displayed in the plot.

Select the checkbox to turn the indicated warning ON.

Visual Markers	
Segment Markers	<input checked="" type="checkbox"/>
1: Measurement is paused	<input checked="" type="checkbox"/>
2: Video input loss	<input checked="" type="checkbox"/>
3: Video error	<input checked="" type="checkbox"/>
4: Invalid audio(1)	<input checked="" type="checkbox"/>
5: Invalid audio(2)	<input checked="" type="checkbox"/>
6: Invalid audio(3)	<input checked="" type="checkbox"/>
7: Invalid audio(4)	<input checked="" type="checkbox"/>
8: Loudness off(1)	<input checked="" type="checkbox"/>
9: Loudness off(2)	<input checked="" type="checkbox"/>
10: Loudness off(3)	<input checked="" type="checkbox"/>
11: Loudness off(4)	<input checked="" type="checkbox"/>

3. Analysis Parameters

These parameters identify the analysis tools that were used to extract the loudness results.

Standard: use the pulldown in the right-hand column to select from among the available loudness standards:

- EBU G8
- EBU G10
- ARIB TR-B32
- A85 1770-1
- A85 1770-2
- A85 1770-3

Each of these standards has an associated value for *Relative Gating* and *Short-term Window*, and these are loaded automatically when the standard is selected. You may change them manually as described here, but then the selected standard is no longer applicable, and the *Standard* window will display “Custom”.

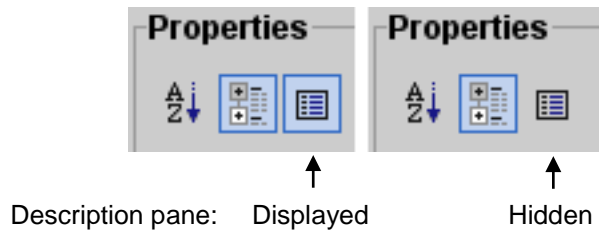
Relative Gating: Use the pulldown in the right-hand column to select from the available options:

- -8 dB
- -10 dB

Short-term window: Use the pulldown in the right-hand column to select the short-term window duration. Available values are 1 sec, 2 sec, 3 sec, ..., 9 sec., 10 sec.

G Description Pane

This pane contains a description of whichever parameter is selected in the Analysis Properties pane (F). You can select whether this pane is hidden or displayed by clicking the icon at the top of the Analysis Properties pane.

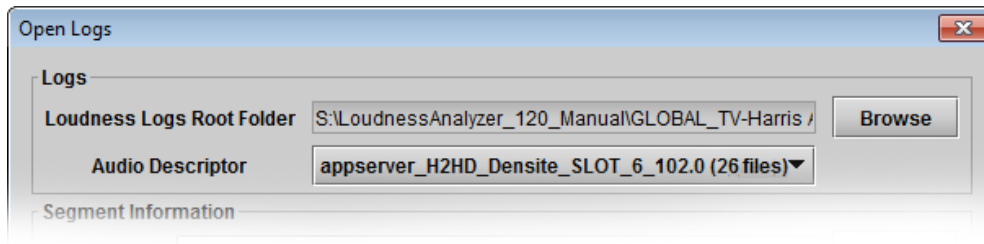


5 Useful Information

5.1 About Loudness Log Files

The Loudness Log files produced by the Grass Valley product that performs loudness measurements are saved in a folder on a remote or local shared hard drive. A folder contains all the log files generated by a device over a 24-hour period.

When you browse to this root folder in the open logs window, the loudness analyzer searches the folder, and sub-folders down to the level specified in the [Options-View Settings](#) dialog. It gathers all the files associated with each logging device that is saving log files to that folder into groups, and displays the name of each logging device, and the number of files associated with that device, in the Audio Descriptor pulldown.



The As-Run file that is loaded from the Segment Information section of the window identifies a specific time range, and the Loudness Log Analyzer selects the portions of the available log files that correspond to that time interval. Note that the maximum time interval displayed in the window is 24 hours.

5.2 About Loudness Measurements

The user can specify two basic parameters for the analysis:

- Standard – there exist a number of standards that can be applied to the analysis of loudness, and Grass Valley's Audio Loudness Analyzer allows the user to select among the following using the pulldown in the Analysis Properties pane.
 - EBU G8 per EBU R128 with -8dB gate
 - EBU G10 per EBU R128 with -10dB gate
 - ARIB TR-B32 per ARIB (Japan) standard TR-B-32, based on ITU BS.1770-2 with -10dB gate
 - A85 1770-1 per ATSC A/85, referencing ITU BS.1770-1 (2007) without gating
 - A85 1770-2 per ATSC A/85, referencing ITU BS.1770-2 (2011) with gating
 - A85 1770-3 per ATSC A/85, referencing ITU BS.1770-3 (2012) with gating

The user is encouraged to consult the appropriate standards documents to further understand the process of loudness measurement.

- Time period – the analysis is carried out on the portion of the loudness log data displayed in the chart shown on the Audio Loudness Analyzer. The user has controls to select the portion of the data for analysis, and these are described in sections 4-C and 4-D of this document.

The file is analyzed using the settings in place when the file is opened. If any of these settings is changed, the file is re-analyzed immediately and the new analysis results are displayed.

5.3 Loudness Log Analyzer Reports

The report produced by the Loudness Log Analyzer when the Report button above the Loudness Analysis window is clicked depends on the view selected in that window. Two different views are available. The report format associated with each is described here.

PLOT VIEW

The report contains these items:

DATE – the date and time at which this report was generated.

ANALYSIS RANGE – the time period of the loudness logs analyzed in this report. The time is also displayed on the scale beneath the plot, but the date is only shown here.

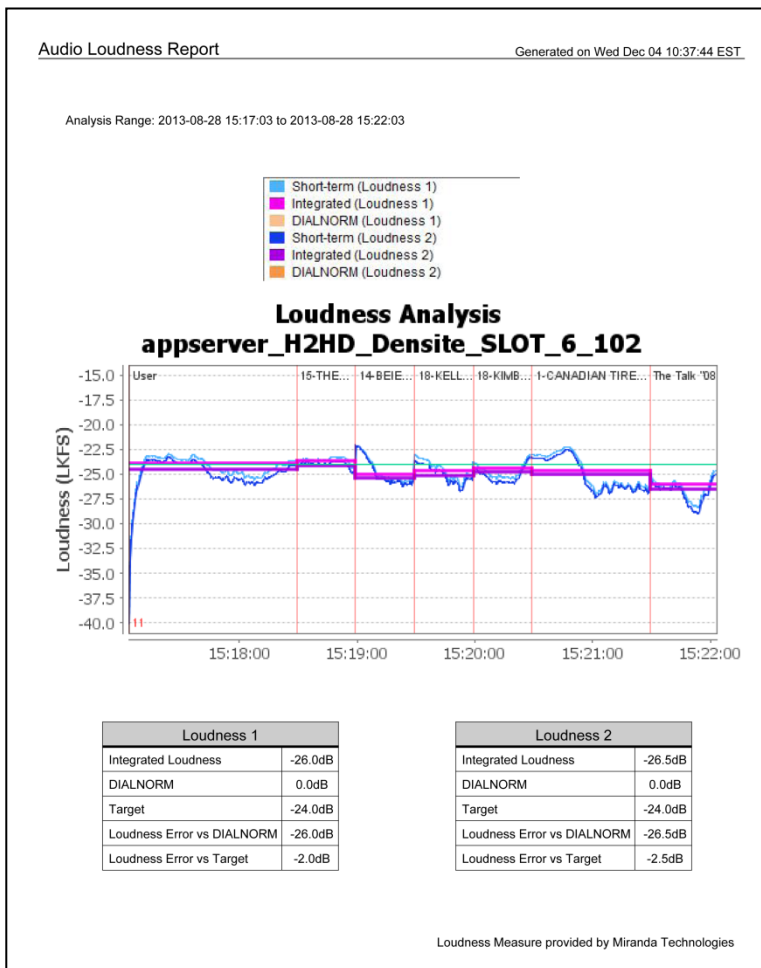
COLOR CHIPS – shows the color associated with the various parameters that appear in the plot.

LOUDNESS ANALYSIS PLOT – reproduces the Loudness vs Time plot from the Loudness Log Analyzer window. The heading names the loudness log file whose analysis is displayed.

LOUDNESS ANALYSIS RESULTS – tables at the bottom of the page show the results of the loudness analysis. These results are shown:

- Integrated Loudness
- DIALNORM
- Target
- Loudness Error vs DIALNORM
- Loudness Error vs Target

Note that these results are calculated over the entire displayed plot, which may include many segments and complete programs, or which may have been zoomed in to show only a few segments.



The loudness log may contain more than one loudness measurement. The PLOT report shows all of these in one plot, but individual summary tables are provided for each one. Two of these appear at the bottom of the page below the chart, and multiple pages are generated to accommodate all of the loudness measurements. Note that some of these loudness files may be present in the loudness log, but were not populated with data by the loudness measuring device. These will be shown in the report, but the missing data will be indicated by “n/a”.

TABLE VIEW

The table view report is a CSV (comma separated values) data file that can be opened in Microsoft Excel or other appropriate program. The contents of the file are the same as those that are displayed in the Loudness Analysis window in the TABLE VIEW of the Loudness Log Analyzer.

A few formatting changes have been incorporated to accommodate the different presentation:

- The column sequence in the report matches the default sequence in the analyzer. Any changes you have made to the table window in the analyzer (columns moved or hidden) will not be incorporated in the report.
- Errors are flagged in the analyzer display by coloring them red, but the report identifies them by adding an extra column that lists the columns in error for that segment. This method is not dependent on any display parameter and is therefore more resilient.

The left-most columns display identification information about the segment. The column headings depend on whether an As-Run file was loaded or not.

WITH an As-Run File

Channel *	Channel name (not used in all As-Run file formats)
Date (YYYY-MM-DD) *	The date on which the loudness log file and As-Run file were recorded
Time (hh:mm:ss:ff) *	The time of day at which this segment started.
Duration (hh:mm:ss:ff) *	The duration of this segment.
Source *	Identification of the source of the program segment, from the As-Run file.
Type *	Identifies individual segments of a larger program that is interrupted by commercial breaks, usually numerical, e.g. 01, 02, 03, etc..
Title *	The title of the segment, from the As-Run file.
Video ID *	Video segment ID number, from the As-Run file
Segment Type	Indicates whether the segment was completely analyzed. These types are possible: <ul style="list-style-type: none"> • Full Complete segment analyzed. Both segment boundaries are shown in the PLOT view. • Partial Incomplete segment, usually the result of zooming in the PLOT view where the edge of the analysis window does not coincide with a segment boundary

* Note that all of these column headings (except Segment Type) can be relabeled in *the As-Run Log File Settings* panel in the Options pull-down menu.

WITHOUT an As-Run File

Start Day (YYYY-MM-DD)	The date on which the recording of the loudness log file was started.
Time (hh:mm:ss)	The start time of the loudness data for this segment.
Segment Type	Indicates whether the segment was completely analyzed. These types are possible: <ul style="list-style-type: none"> • Full Complete segment analyzed. Both segment boundaries are shown in the PLOT view. • Partial Incomplete segment, usually the result of zooming in the PLOT view where the edge of the analysis window does not coincide with a segment boundary. Also occurs when opening a log file without included segment markers and no As-Run file.
Segment Name	Name from the log file, if included. Default is "User"/

Data Columns

These columns display the results of the loudness log analysis:

I1 (LKFS)	Integrated loudness
TPmax1 (dBFS)	True peak maximum
LRA1 (dB)	Loudness range
Mmax1 (LKFS)	Momentary maximum
D1 (dBSF)	Input DIALNORM

These five columns are repeated up to three more times, one set for each of the supported audio files, and labeled by number, e.g. I1, ..., I2, ..., I3, ..., I4, etc.

- The number of files is embedded in the data file coming from the loudness measuring application and is not controllable from the loudness log analyzer.
- If all of these are not occupied by data, the results columns for the unused files will all show “n/a”. These “empty” columns cannot be hidden in the report.

T (LKFS)	The Target loudness value for this segment.
Data Fill (%)	The percentage of data samples that are filled with data in this segment.
In Error	Identifies columns in this row whose data is in error. The columns are identified by heading, i.e. parameter name, and not by column number.

5.4 Access via iControl Web

In v130 and later of the Audio Loudness Analyzer, support is provided for the implementation of single-trigger analysis within iControl Web without the need for the operator to interact with the user interface to locate log files, select analysis ranges and parameters, etc. All of the necessary information is included in the script that is triggered from the interface. The report is generated and presented to the user.

This upgrade is available for existing iControl 4.4x application servers, and subsequent iControl releases.

The creation of the scripts necessary to implement this feature is a function of iControl Web site design. Full details can be found in iControl Web under JavaScript Help, in the *Loudness Analyzer Scriptable* section.

Implementation Note:

Accessing the NAS hosting the loudness log files from an Audio Loudness Analyzer using a non-domain-managed Windows 7 client machine results in a username/password prompt even if no users are configured on the NAS. This disrupts the execution of the script. In this case:

1. Create a user account on the NAS, with a user name and password
2. Access the NAS using Windows Explorer on your client machine, sign in using the user name and password you created in step 1, and ensure that “Remember Username and Password” is checked.
3. Run the script to ensure that it functions correctly..

Accessing the NAS from an Audio Loudness Analyzer using a Windows XP client machine or a domain-managed Windows 7 machine presents no issues.

5.5 Batch File Analysis

Using the same basic control feature set as the iControl Web trigger process, the Audio Loudness Analyzer can be activated from a batch file and run in the background on a scheduled basis, generating reports as required by the user.

Contact Grass Valley Technical Support for details of implementation.

6 Grass Valley Technical Support

For technical assistance, please contact the Grass Valley Technical Support Center nearest you:

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