ppm**Batch**

Batch Loudness Normalization

User Manual

Version 1.2.1 / 13 December 2022

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1 Introduction

*ppm**Batch*** is an automated loudness analysis and normalization tool created by zplane.development. It allows you to scan a collection of audio files and normalize each file according to various loudness standards faster-than-realtime. In contrast to zplane's PPMulator and FENNEK applications, *ppm**Batch*** is an entirely offline processing application with no realtime audio plug-in component.

*ppm**Batch*** supports the following input file formats:

- WAV
- BWF
- AIFF
- MP3
- OGG
- WMA (Windows only)
- M4A (macOS only)
- FLAC

The normalized output files will always be in WAV format.

1.1 Key Features

- Loudness Standards for broadcast and content delivery with full configurability
- Detailed reports on analysis and normalization jobs
- Faster-than-realtime operation
- Watch Folder function for automatic analysis and normalization of new audio files

1.2 Naming Conventions

In this documentation, the names of on-screen buttons, sliders, and indicators will be written in bold font between brackets, such as **[Files & Reports]** and **[▶]**.

Selectable menu options will be written in bold font between quotes, such as **"Duration"** and **"Added to List"**.

References to numbered pointers in images will be written in bold font between parenthesis, such as **(1)** and **(2)**.

1.3 Installation

In order to download the *ppm**Batch*** installer, you need to register your copy with zplane. After the successful registration, the installers will be available in the download section of your personal account. Find below a step-by-step description of the installation procedure:

1.3.1 Windows

- Download the *ppm**Batch*** Windows Installer application (.exe)
- Double-click on the file to launch the Installer
- Click **[Next]** in the installer window
- Read the End User License Agreement and, if you agree, click **[Next]**, otherwise, click **[CANCEL]** to abort installation
- Follow the instructions of the installer to complete the installation—you can choose which variants of the plug-in you wish to install and which to omit during the installation process

1.3.2 macOS

- Download the *ppm**Batch*** macOS Installer disk image (.dmg)
- Double-click on the downloaded .dmg to mount it, then double-click the installer file (.pkg) contained within
- Click **[Continue]** in the installer window
- Read the End User License Agreement and, if you agree, click **[Next]**, otherwise click **[CANCEL]** to abort installation
- Follow the instructions of the installer installation—you can choose which variants of the plug-in you wish to install and which to omit during the installation process
- When installation is complete, you can unmount the disk image by right-clicking on it and clicking **"Eject"** from the context menu

1.4 Registration & Activation

*ppm**Batch*** is protected by both a *serial number* and a corresponding *unlock key*. The serial number will be sent to you by e-mail upon purchasing *ppm**Batch***. You will receive your unlock key by registering *ppm**Batch*** at the zplane website.

1.4.1 Registering Your Product

In order to receive your unlock key, please log in to your account at the zplane website —please create a new account there if you don't have one already. After logging in:

1. Click the **[REGISTER]** button in the menu bar:
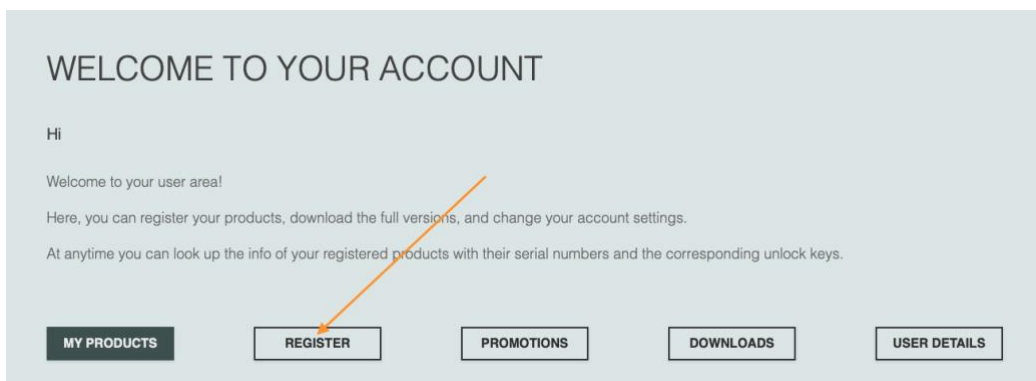
Figure 1: The Account page

2. In the area provided **(1)**, paste in your *ppm**Batch*** serial number and click the **[REGISTER]** button **(2)** to the right:

Figure 2: The Product Registration page

3. Your *ppm**Batch*** unlock key will then be shown.

Note: You can recall any of your serial numbers and unlock keys anytime in the future by logging in to your account and clicking the **[MY PRODUCTS]** button in the menu. This will display the serial numbers and unlock keys for all the zplane products you have registered in your account.

1.4.2 Activating Your Product

Activation of *ppmBatch* is done within *ppmBatch* itself. You must therefore first launch *ppmBatch*. Once you've loaded *ppmBatch*:

1. Click the gear button **(1)** to open the Preferences Window, then click the **[Software Activation]** button **(2)** to open the Activation Window:
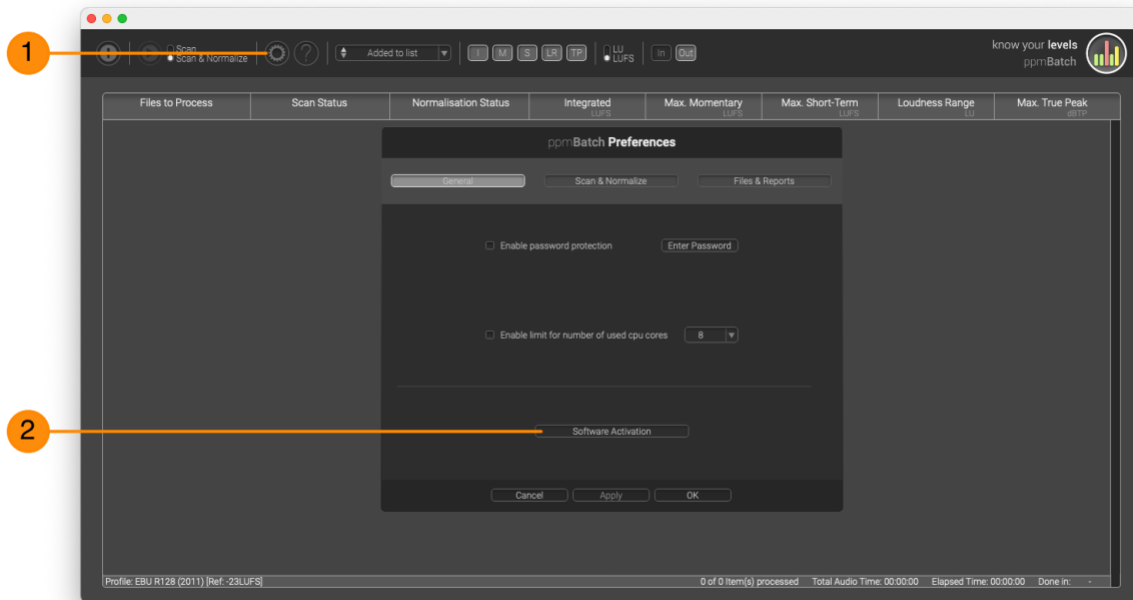
Figure 3: Accessing the Activation Window

2. Paste your Serial Number **(1)** and Unlock Key **(2)** into the spaces provided, then click the **[Save]** button **(3)**:
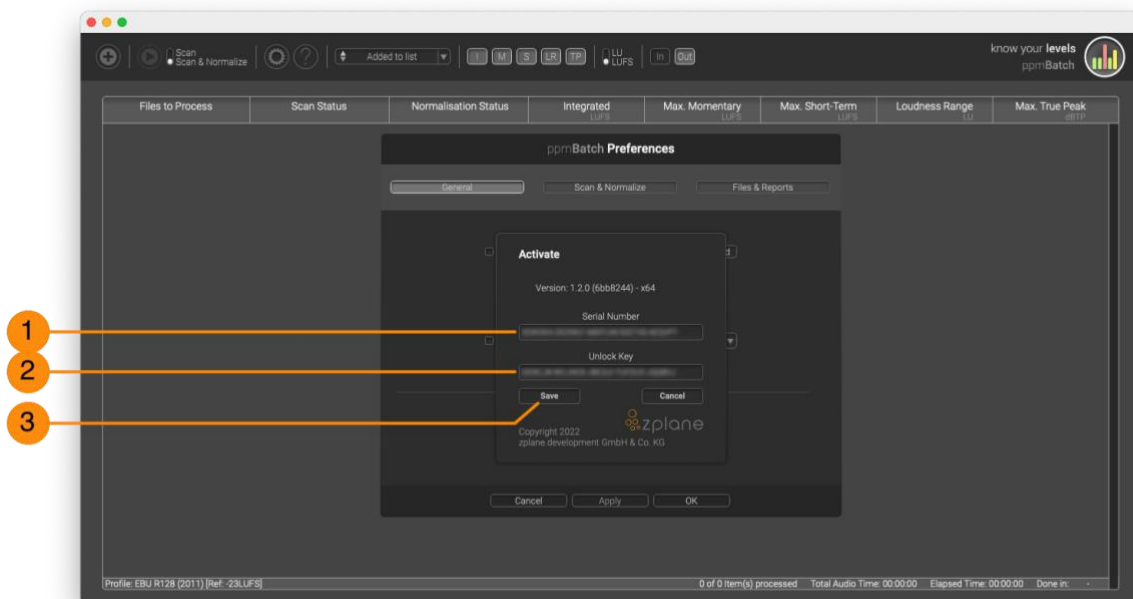
Figure 4: Serial Number and Unlock Key entry areas

3. *ppmBatch* will then be activated and will show your registered serial number. You can now click the **[Close]** button **(1)** to exit the Activation Window:
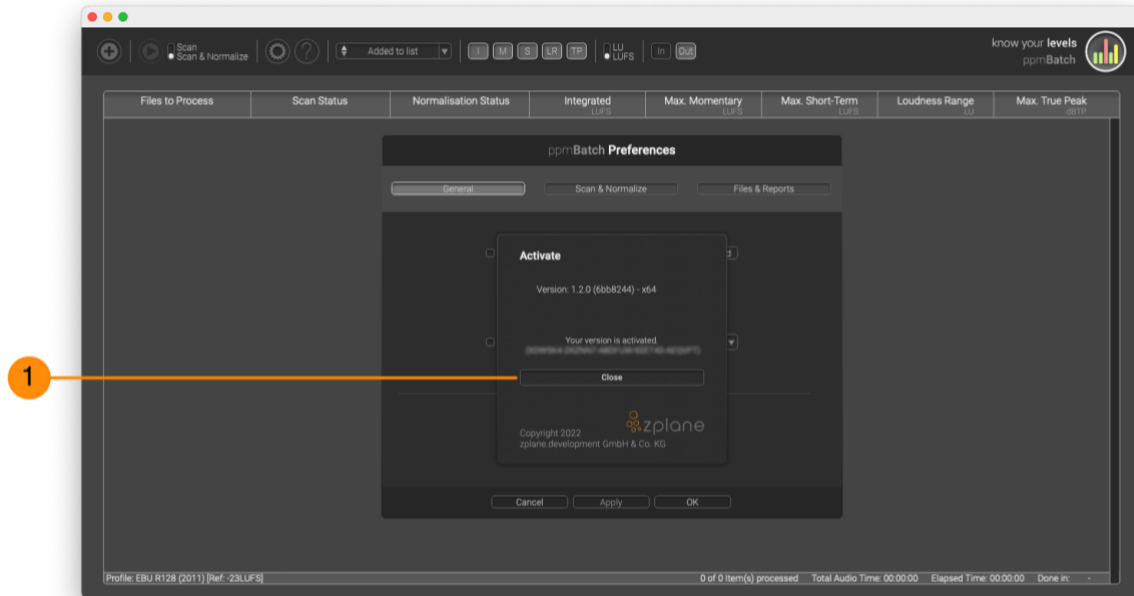
Figure 5: Activation Complete

1.5 Known Issues

At the time of the 1.2.0 release, the following issues are known—we hope to address them in the next *ppmBatch* update.

2 The Main Window

*ppm**Batch*** is an easy-to-use application with nearly all functionality consolidated within the Main Window.
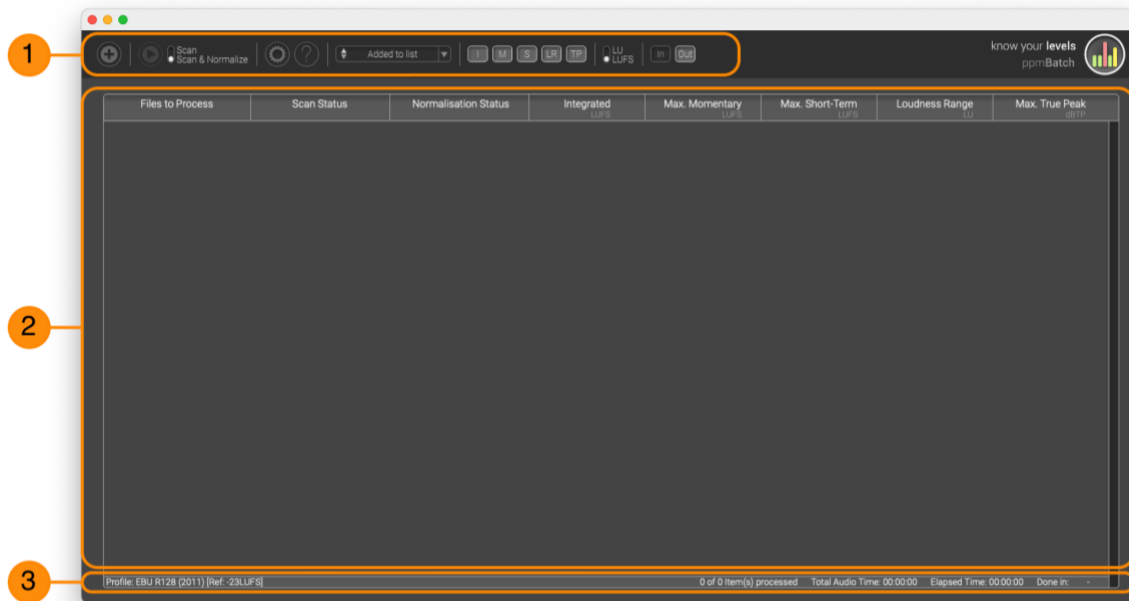
Figure 6: The Main Window

The Main Window has three primary areas, each of which is explained in greater detail in the following sections:

- The Control Bar **(1)** extends across the top of the window and contains various buttons, switches, and menus used to operate processing jobs and configure the display.

- The Processing Table **(2)** dominates the center of the Main Window and is where an ordered list of audio processing jobs is contained.

- The Status Bar **(3)** extends across the bottom of the Main Window and provides information about the current Loudness Profile and various processing statistics.

2.1 Control Bar
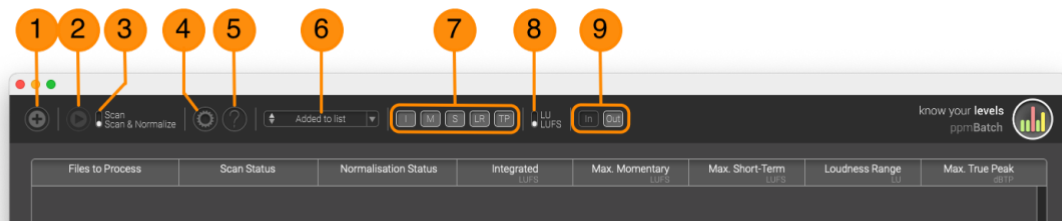
Figure 7: The Control Bar

2.1.1 Add Files Button

The **[+]** button **(1)** is used to add new files to the Processing Table. You can select individual files or folders of files to add—only audio files will be added while other files contained in the folders will be ignored.

2.1.2 Start Processing Button

The **[▶]** button **(2)** is used for starting and stopping the processing jobs in *ppm**Batch***.

2.1.3 Processing Mode Switch

The Processing Mode switch **(3)** selects the type of processing to be conducted on the files in the Processing Table. The **"Scan"** position directs *ppm**Batch*** to only analyze the levels of the files and display the measured results, while the **"Scan & Normalize"** position instructs *ppm**Batch*** to additionally apply normalization and limiting to the files, thus making them conform to the current Loudness Profile.

2.1.4 Preferences Button

Click the **[⚙]** button **(4)** to open the Preferences Window where various behaviors of *ppm**Batch*** can be customized.

2.1.5 Help Button

Click the **[?]** button **(5)** to open the Help Window for useful links and a shortcut to this document.

2.1.6 Table Sorting Menu

The Table Sorting menu **(6)** determines how the audio files in the Processing Table are ordered. By default, they are ordered with the newly-added files at the bottom of the table, but this menu contains options to sort by **"Name"**, **"Duration"**, **"Processing Status"**, and **"Processing Order"**.

2.1.7 Table Configuration Buttons

The Table Configuration buttons **(7)** are comprised of **[I]** (Integrated/Program Loudness), **[M]** (Max. Momentary Loudness), **[S]** (Max. Short-Term Loudness), **[LR]** (Loudness Range) & **[TP]** (Max. True Peak) and will show or hide the columns in the Processing Table. Note that *ppm**Batch*** will still measure these datapoints during analysis even if they are hidden from view.

2.1.8 Units Switch

The Units switch **(8)** toggles the display of loudness measurements between LU and LUFS or dB and LKFS depending on the selected loudness standard profile. The relative units LU and dB use the target Integrated Loudness value as a reference.

2.1.9 Results View Selectors

The **[In]** and **[Out]** buttons **(9)** toggle the table data between the input (scanned) measurements and the output (normalized) measurements.
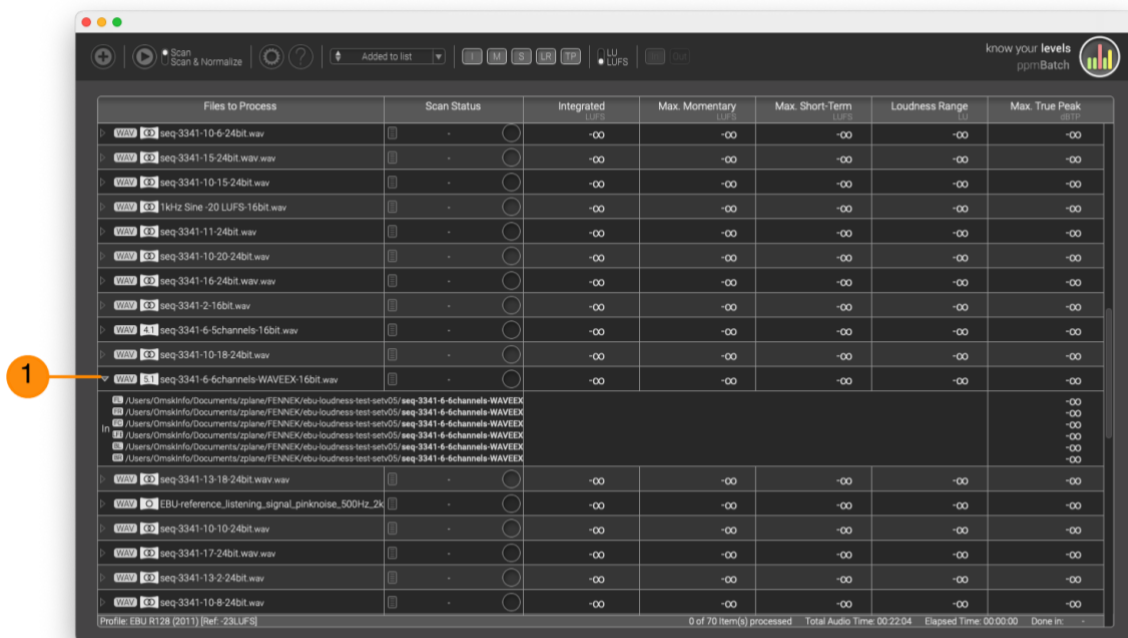
2.2 Processing Table

Figure 8: Processing Table before Scan

The Processing Table collects the audio files that you wish to process as well as showing the results of scanning and normalization. You can drag new audio files into this list to add them, as well as drag existing files up and down to change the

order in which they will be processed (processing will proceed from the top of the table downwards).

When multiple mono files are used for multi-channel material, they are automatically identified as a group. You can inspect the individual files in that group by clicking the small **[▷]** button **(1)** at the left of each entry to "unfold" the contents in the table. This grouping behavior is controlled by the "Use multi-mono files" preference.

Files that have not been processed will look like those in Figure 8 above—they will be grey and measured levels will all be reported as **"-∞"**.

Figure 9: Processing Table with Scan & Normalization Results

Once processing is completed on various audio files, the results will look like those seen in Figure 9, above. The completed audio files will now be color-coded based on the results of processing. The columns **"Scan Status"** and **"Normalize Status"** use a color-coding to indicate whether a file is compliant (green) or non-compliant (red) with the selected Loudness Profile. A yellow-colored cell in the **"Normalize Status"** column indicates that the file was successfully normalized but a limiter had to be applied to satisfy the maximum True Peak criterion.

For example, the item marked **(2)** in Figure 9 shows that this file that was not compliant with the selected Loudness Profile (which is **"EBU R128 ref -23LUFS"**) after initial scan—it is therefore shown as red in the **"Scan Status"** column. However, just to the right in the **"Normalization Status"** column, it is shown as green since *ppm**Batch*** successfully adjusted the gain to make it conform to the Loudness Profile and didn't need to apply any additional peak limiting to do so.

2.3 Status Bar

The applied Loudness Profile, its Reference Level, as well as some general information about the files in the Processing Table, are all displayed in the Status Bar at the bottom of the Main Window. This is a purely read-only display with no interactions.
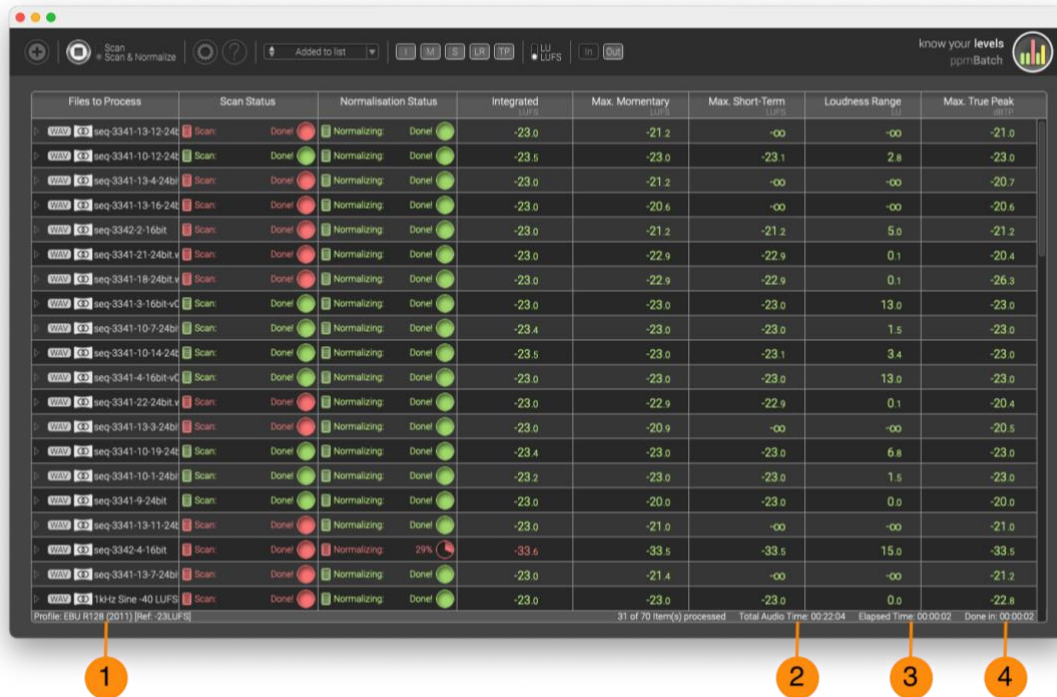
Figure 10: The Status Bar

2.3.1 Current Loudness Profile

If you do want to change the Loudness Profile and Reference Level **(1)**, those changes need to be made in the Scan & Normalize Preferences.

2.3.2 Time Displays

The **"Total Audio Time"** display **(2)** is a sum of the playback durations of all audio files in the Processing Table.

"Elapsed Time" display **(3)** shows how much time *ppmBatch* has spent performing processing functions. While processing is underway, the **"Done In"** display **(4)** provides an estimate of the time remaining to complete all outstanding processing tasks.

3 Using *ppmBatch*

You can use *ppm**Batch*** in two basic ways, either manually or automatically. Regardless of which mode you use, there are a few common steps that need to be taken care of first as described in the next section.

3.1 Setting up *ppmBatch* for Processing

One of the first things you should decide is whether *ppm**Batch*** should merely scan files and provide a report on their measured levels or if it should additionally apply normalization and limiting to conform to a specified Loudness Profile. This choice is made by setting the Processing Mode switch to either **"Scan"** or **"Scan & Normalize"**. You should also ensure that an appropriate folder location is selected in the Preferences for the compliant files at the end of the job.

Lastly, you should check that the correct Loudness Profile and Reference Level are set—you can view this in the Status Bar at the bottom of the Main Window. If you need to change this, you can do so in the Scan & Normalize Preferences.

Once these settings and levels have been selected, you can now begin manual or automatic processing.

3.2 Managing Processing Jobs Manually

The standard way of using *ppm**Batch*** is to manually collect the audio files that you want to have processed, setting the processing order of those files, manually starting the processing, and then reviewing the results.

To get started, add your audio files to the Processing Table either by dragging them into the Main Window or by clicking on the large **[+]** button at the left side of the Control Bar—this will open the file dialog which lets you select individual files and folders (selecting a folder will automatically add all audio files contained in that folder).

You can change the order in which the files are displayed and processed by using the Table Sorting menu. You can also manually change the order of the files by selecting and dragging files to a different position in the table. **Please keep in mind that any manual order is deleted when you select another ordering option from the Table Sorting menu.** Once you start processing, this ordering is remembered as the *Processing Order*.

Processing can now be started by clicking the **[▶] button**. Clicking it again during processing will pause the processing.

When all processing is completed, you can then view the results of the processing in the Processing Table. If selected to do so in the [Files & Reports Preferences](#), files containing the resulting information will also be created at the specified locations.

3.3 Automatic Processing

The alternative method for processing audio files with *ppm**Batch*** is to use the Watch Folder system. This system specifies an input folder which ppmBatch watches and, whenever new audio files are added into this input folder, ppmBatch immediately processes them using the current settings. The processed files are then placed in the output folder along with report files.

The [Watch Folder system](#) merely needs to be enabled in the Files & Reports Preferences and can actually be used concurrently with [manual processing](#). Anytime *ppm**Batch*** processes files in the input Watch Folder, the processing will be shown in the Processing Table but then immediately removed on completion, thus leaving the Processing Table in its previous state.

4 The Preferences Window

The Preferences panel contains three tabs: **[General]**, **[Scan & Normalize]**, and **[Files & Reports]**.

4.1 General Tab

In the **[General]** tab, you can activate your software by clicking the "Software Activation" button. You can enable a password protection of the preference panel in case you would like to restrict access to the preferences. If you would like to reserve certain CPU cores to other tasks you can limit the number of cores used by *ppm**Batch.***
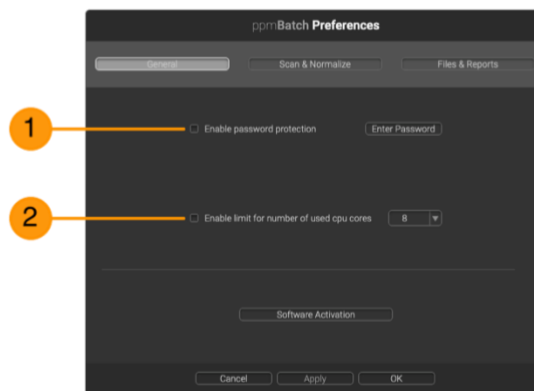
Figure 11: The General Preferences Tab

4.1.1 Password Protection

If you want to prevent changes to the settings in the Preferences, check the **"Enable password protection"** option **(1)** and click the associated **[Enter Password]** button to provide a password. You will be asked to enter this password again when disabling the password protection option.

4.1.2 CPU Cores

*ppm**Batch*** will attempt to process the list of audio files as quickly as possible by using the maximum amount of CPU resources available on the computer. However, in some cases, you might want to reduce the number of CPU cores available to *ppm**Batch*** such as when you are performing other tasks at the same time on the computer. This is especially helpful when using the Watch Folder system so that *ppm**Batch*** doesn't completely take over the computer any time new files are placed in the "Input" watch folder. This parameter can be toggled on and off by checking the box **(2)** and the maximum number of cores to use can be selected from the menu on the right.

4.2 Scan & Normalize Tab

The **[Scan & Normalize]** tab enables the selection of the loudness standard for scanning and/or normalization.
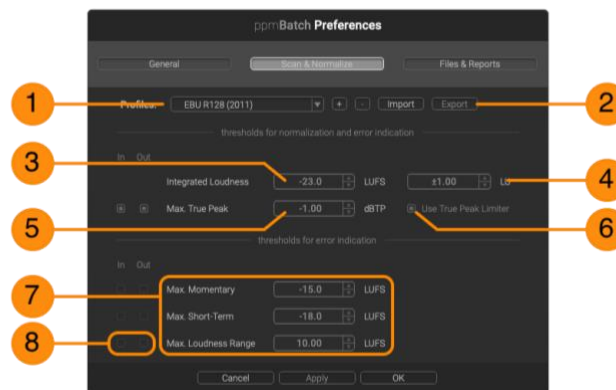
Figure 12: Scan & Normalize tab of the Preferences

4.2.1 Loudness Profile

The Loudness Profile contains the settings for a specific loudness standard—you can choose the profile with the menu **(1)**. None of the above default profiles can be altered. If you need to change any value in these profiles, you have to copy the profile, by using the **[+]** button and give the new profile a unique name. The **[-]** button will delete the currently-selected profile (except for the built-in profiles).

*ppm**Batch*** supports the following standards:

- EBU R.128 (2011) [1]
- EBU R.128 (2014) [2]
- ATSC A-85 [3]
- ARIB TR-B32 [4]
- FreeTV OP-59 [5]
- ITU-R BS.1770-3 [6]

You can also click the **[Import]** and **[Export]** buttons **(2)** to import a saved profile or export the current profile as a file, respectively.

4.2.2 Processing Thresholds

When the Processing Mode switch is set to **"Scan & Normalize"**, these sets of controls determine how the audio is processed after being scanned.

Integrated Loudness **(3)** determines the reference level for use with the selected Loudness Profile **(1)**. The units of this level is either LKFS or LUFS depending on the Loudness Profile selected. Normalization will target the level set here.

The file will appear red in the Processing Table after the scanning stage if the measured Integrated Loudness falls outside of the reference level including the variance amount **(4)**.

In addition, you can specify a **"Max. True Peak"** level **(5)** which the audio files should not exceed. If the box in the **"In"** column at the left is enabled, the file will show up red in the Processing Table after scan if the True Peak level is exceeded. Similarly, if the box in the **"Out"** column at the left is enabled, the file will be shown in red if the True Peak level is exceeded *after* normalization is applied.

Enabling the **"Use True Peak Limiter"** box **(6)** will cause *ppm**Batch*** to apply peak limiting if the True Peak level is exceeded after normalization such that the audio file will conform to the Loudness Profile.

4.2.3 Error Indication Thresholds

The remaining parameters on this screen are for setting visual warnings which will appear in the Processing Table after scan and normalization. Unlike Integrated Loudness and Max True Peak levels, *ppm**Batch*** cannot automatically fix these problems if the audio files don't meet these criteria—you will need to correct the mixes in the audio files if these warnings are triggered.

You set the levels for **"Max. Momentary"**, **"Max. Short-term"**, and **"Max. Loudness Range"** using the value boxes **(7)**.

Checking the boxes for **"In"** and **"Out" (8)** enables the error indication for each threshold on the **[In]** or **[Out]** Processing Results Tables, respectively. If neither box is checked for a parameter, no error will be indicated in any table even if the measured levels exceed these thresholds.

4.3 Files & Reports Tab

The **[Files & Reports]** tab lets you configure how files, folders, and reports are handled.
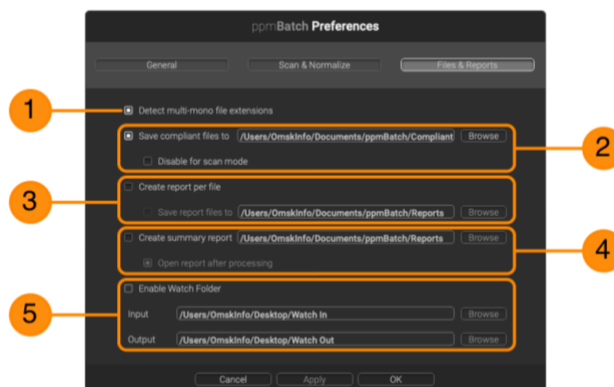

Figure 13: The Files & Reports Preferences

4.3.1 Using Multi-Mono Files

Some software packages, like Pro Tools, handle multi-channel audio using a collection of mono files. If you enable the **"Detect Multi-Mono file extensions"**

parameter **(1)**, *ppm**Batch*** will group these files together and treat them as a single file through normalization—this ensures that the level relationships between all channels are maintained through processing. *ppm**Batch*** identifies the following specifiers in the filenames:

L	Left channel
R	Right channel
C	Center channel
LFE	Low frequency
Ls	Left surround
Rs	Right surround
LB	Left Back channel
RB	Right Back channel
LS	Left Back channel
RS	Right Back frequency
CB	Center Back channel

4.3.2 Saving Compliant Files

A "compliant file" is a file which conforms to the Loudness Profile and Reference Level selected at the time of processing. This includes files that ppmBatch doesn't change at all. By enabling the "Save compliant files to" parameter **(2)**, you can specify a folder where these compliant files should be placed after processing is complete. You can therefore know for sure that all files in that file are compliant with the Loudness Profile. If this option is left disabled, the processing of these files will be done "in place".

If you check the "Disable for scan mode" box, this will prevent files from being moved if the [Processing Mode switch](#) is set to **"Scan"**. You can therefore perform an initial scan while leaving all files in place.

4.3.3 Creating Reports per File

By enabling **"Create report per file" (3)**, *ppm**Batch*** will write a text file with the same name as each processed audio file, the contents of which provide a summary of the measurements and processes applied to the file. By default, these reports will be placed in the same location as the files, but you can choose a separate folder for these reports by enabling the **"Save report files to"** option and selecting a folder.

4.3.4 Create Summary Report

Enabling **"Create summary report" (4)** will cause a single file to be created at the end of a processing job—that is, after the entire contents of the Processing List has been processed—which contains a detailed report on the measurments and changes made to all the audio files in the job. The file will be placed in the folder specified here.

There is also an additional "Open report after processing" option which, when checked, will open the report in your default text editor.

4.3.5 Watch Folder

The Watch Folder system **(5)** allows *ppmBatch* to work automatically while the Main Window is minimized. After setting up your desired Loudness Profile and enabling the Watch Folder, you can then simply drop audio files into the specified input folder and *ppmBatch* will automatically perform analysis on the files without any need to manually click the **[▶]** button. Once a file has been processed, it will be moved to the specified output folder and an accompanying report will be added for the file.

> **NOTE:** The *ppmBatch* application must be running for the Watch Folder system to work. If you quit *ppmBatch,* audio files put into the input folder will not be processed until *ppmBatch* is launched again.

The Watch Folder system only works when the **"Enable Watch Folder"** box is enabled.

The **"Input"** section specifies a folder on your computer into which you will place files that you want processed by *ppmBatch*. Click the **[Browse]** button to select the folder. Similarly, the **"Output"** is a folder on your computer where *ppmBatch* will place audio files and reports after processing. Click the **[Browse]** button to select the folder.

All files placed into the **"Input"** folder will be moved to the **"Output"** folder once processing is complete. This is the case for when *ppmBatch* is in Scan mode as well as when in Scan & Normalize mode.

- When in Scan mode, the files in the **"Output"** folder will be the same as they were when placed into the **"Input"** folder and each will simply have an accompanying loudness report.

- When in Scan & Normalize mode, the files in the **"Output"** folder will have normalization applied as described in the accompanying loudness reports and "_Compliant" appended to their names. **The original files placed into the "Input" folder will be deleted after the compliant versions are created in the "Output" folder.** If any file cannot be made to conform to the selected Loudness Profile, it will be placed in a "non-compliant" sub-folder.

5 Technical Specifications

Operating Systems	• macOS 11, 12 & 13 • Windows 10 & 11
CPU Architecture	• Windows: Intel 32- and 64-bit • macOS: Intel & M1 64-bit
Audio Formats	• 1-2 channels (I/O) • 32kHz - 192kHz sample rate

6 Standards References

[1] European Broadcasting Union, „Recommendation R 128 – Loudness normalisation and permitted maximum level of audio signals," 2011.

[2] European Broadcasting Union, „Recommendation R 128 – Loudness normalisation and permitted maximum level of audio signals," 2014.

[3] Advanced Television Systems Committee, „ATSC Recommended practice: Techniques for establishing and maintaining audio loudness for digital television (A/85:2013)," 2013.

[4] Association of Radio Industries and Businesses, „Operational guidelines for loudness of digital television programs (ARIB TR-B32)," 2013.

[5] Free TV Australia, „Measurement and management of loudness in soundtracks for television broadcasting. Operational Practice (OP-59)," 2013.

[6] International Telecommunication Union, „Recommendation ITU-R BS.1770-3: Algorithms to measure audio programme loudness and true-peak audio level," 2012.

7 Feedback & Support

Our website products.zplane.de always provides the latest information and news about our products. Any issues you encounter may either be addressed in the FAQ section of the appropriate product or reported directly to us via post or email. Before contacting us directly, please ensure you are using the latest version of the product. Please also make sure that your issue is not covered in the manual, the forum, the FAQ or elsewhere on our website.

If you cannot find answers using the methods above and need to contact us directly, please provide the following details to enable us to help you as fast as possible:

- Your registration information (such as the name of your User Account or your login e-mail)

- Your system specifications (hardware, operating system, host software)

- The exact version number of the plugin (see the "About" box by clicking on Help **[?]** button located in the Control Bar of the *ppm**Batch*** interface)

- Include a detailed description of your problem with a step-by-step description of what led up to it so we can try to reproduce the issue

Please use the following contact methods:

✎ :   zplane.development GmbH & Co. KG
       Grunewaldstr. 83
       D-10823 Berlin
       Germany

∅ :   products.zplane.de/support

@ :   support@zplane.de