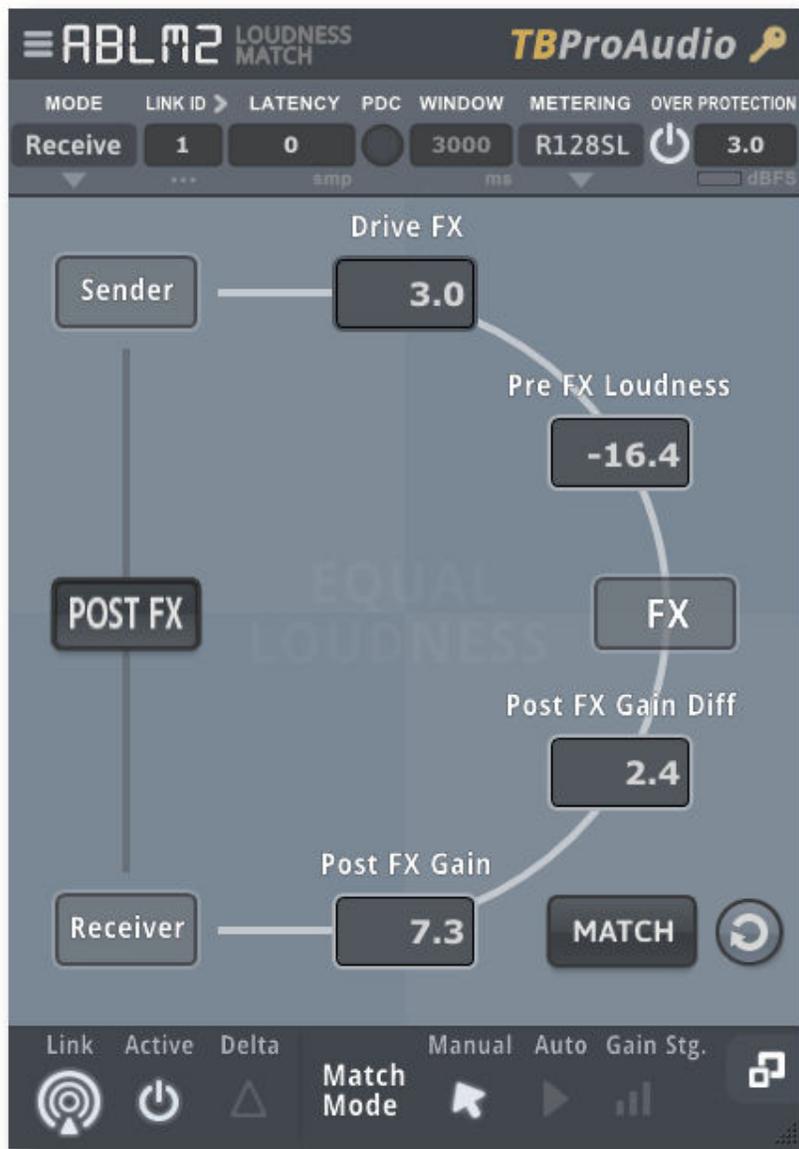


AB Loudness Match 2

Manual



by TBProAudio 2023

1 Introduction

Welcome to ABLM 2, a gain control which enables level matched and sample accurate AB comparison of FX chains. ABLM 2 is the successor of ABLM. ABLM2 introduces a GUI with focus on the most important controls.

We at TBProAudio found us very often in mixing or mastering situations where we need to quickly identify the contribution of a certain plug-in (FX) or even a complex FX chain to the sound. Most DAWs can easily enable/disable (AB) single plug-ins or even whole FX chains, but in most case there is an audible loudness difference between both cases.

In order to compare the impact of a plug-in chain objectively the loudness of the incoming signal should match with the loudness of outgoing signal.

Comparing the plug-in effect at equal loudness levels avoids the "louder is better" - pitfall.

In fact ABLM compares constantly the pre and post-FX loudness and displays the gain difference. Based on this information you can either set the match-gain manually or let ABLM do this automatically.

ABLM is based on the free AB Level Matching JSFX for Reaper, which should demonstrates the superior functionality of the scripting language JS in Reaper. Many thanks to the developer from Cockos!

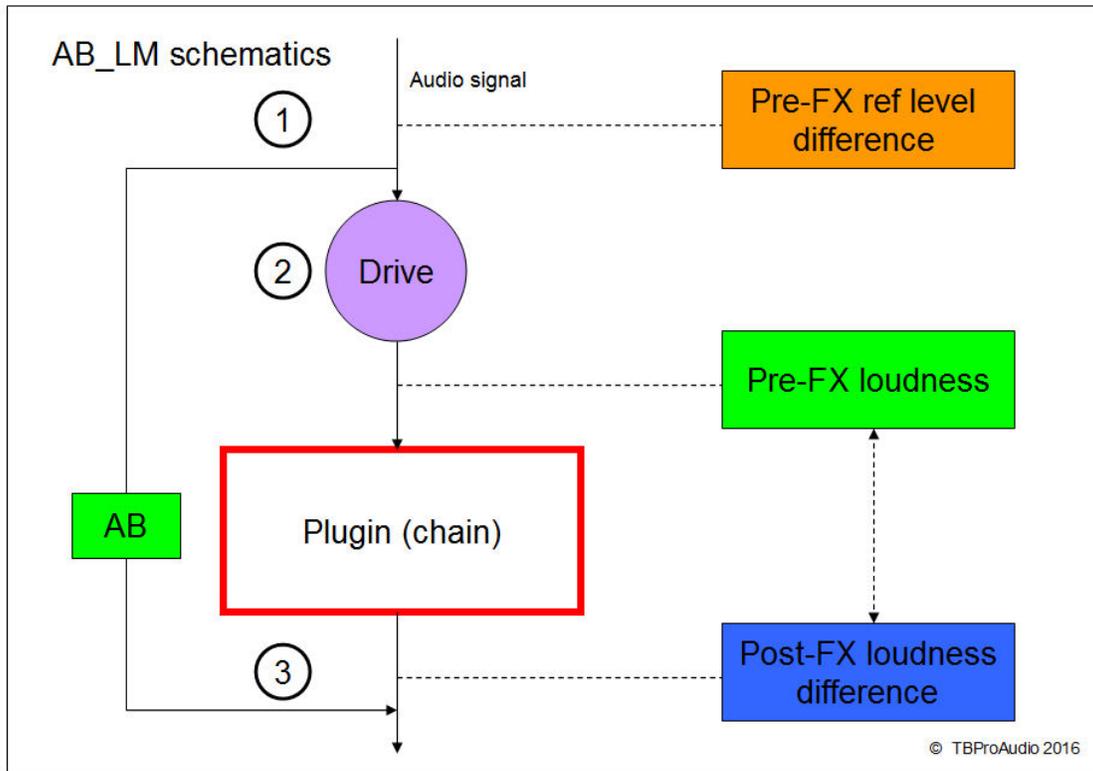
2 Features

ABLM offers following features:

- simple and expert GUI
- match pre and post-FX loudness
- inverse match mode
- 3 loudness match modes: manual, auto and gain stage
- match pre-FX loudness with reference level
- delta signal monitoring
- FX chain drive
- up to 256 sender/receiver pairs including auto link support
- automatic latency measurement/compensation
- 6 measurement modes: RMS SUM, RMS AVG, EBU R128 SL, EBU R128 ML, VU, Max Peak
- adjustable RMS measurement window
- auto gain changes min/max limits
- auto gain changes tolerance limit
- bypass ABLM pair
- 4 snapshot slots
- control several ABLM instances simultaneously
- very CPU friendly
- large and easy to use GUI
- scalable GUI

3 Design

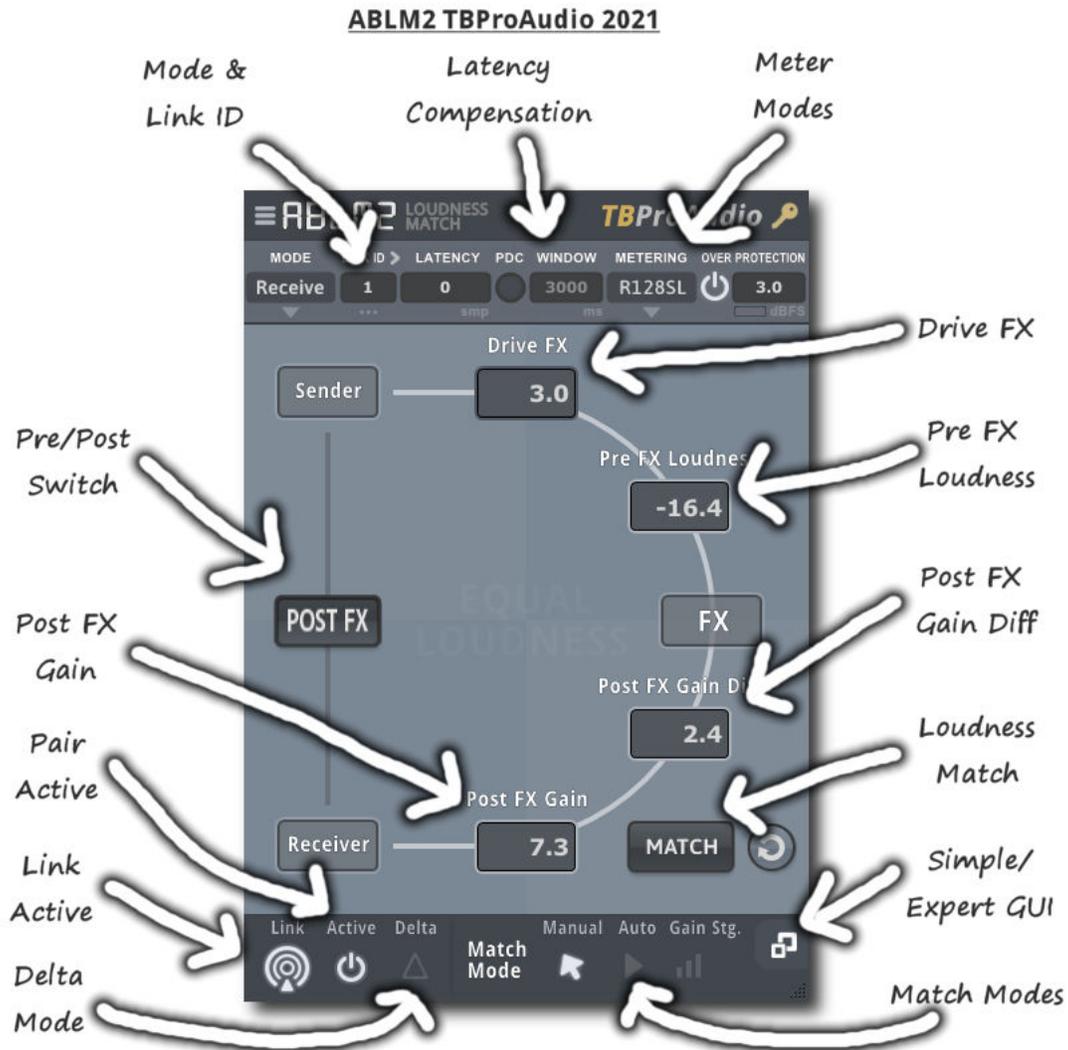
ABLM consists of 3 gain stages:



1. The incoming signal is (optionally) leveled to a certain reference level. This keeps your ears fresh and balanced, even if you work with different audio material over a longer time period.
2. This stage changes (optionally) the signal gain fed into plug-in chain.
3. This stage matches the pre and post-FX loudness levels.

The AB button toggles seamless and loudness matched between pre and post-FX signal.

4 Overview (Simple GUI)



Plugin Mode & Link ID

Sets the mode of the plug-in, either Sender or Receiver and the link ID for the communication. Sender is placed before the plug-in(s) which should be AB level matched, Receiver is inserted after. Use the ">"-button (Link) to quickly set next (free) sender/receiver ID.

Click to open the link menu. The menu helps you find a new link ID either for the sender or receiver.

Each entry has a number and the info if the number is already used by a sender (S) or receiver (R) instance. Grayed entries are not selectable.

Auto link ABLM pairs

For each new ABLM instance just click on the ">"-button (auto link).

If there are only linked pairs, the new instance will get a sender with the next free link ID. If the last instance was a sender, the next new instance will get a receiver with the matching link ID.

Latency Compensation

Some plug-ins add latency to the plug-in chain. For a sample-exact AB loudness comparison audio streams need to be synchronized. This can be done automatically (just press PDC button and wait 1-2 seconds) or manually by entering the latency value (in samples).

Drive FX

This parameter adjusts the additional pre X gain.

Pre X Loudness

This meter shows the loudness of pre X signal.

Post FX Gain Diff/Gain

This meter shows the loudness difference of pre and post X signal. The match button lets you set the additional post-FX gain (match mode "Manual") based on the loudness difference.

Match mode "Auto" does this automatically.

Pre/Post FX Switch

This button lets you seamless switch between pre and post FX audio signal.

Simple/Expert GUI

This button lets you switch from the simple to expert GUI.

Match Modes

ABLM lets you match the loudness either manually, or automatically. In addition ABLM can operate in pure gain staging mode.

- **Auto:** Matches automatically the loudness of pre and post FX signal
- **Manual:** Matches the loudness of pre and post FX signal by pressing the match button (post FX Gain Diff/Gain)
- The match gain is added after FX chain.
- **Gain Stg. (Gain staging):** this mode works differently. There is no loudness match of pre and post FX signal. The pre FX gain and additional drive FX gain is just removed from the audio stream right after the FX chain, for "pure" gain staging purposes.

Delta Mode

Lets you listen to the difference of pre and post FX signal.

5 Overview (Expert GUI)

ABLM2 TBProAudio 2021



Plugin Mode & Link ID

Please refer to chapter 4.

Auto link ABLM pairs

Please refer to chapter 4.

Latency Compensation

Please refer to chapter 4.

Reference Level Section

This section lets you match to a given reference loudness level, e.g. -18dB. This ensures that the following FX chain operates in sweet spot.

Pre-FX Section

This meter shows the current and maximum loudness of the audio stream just before the plug-in(s). Many plug-ins work best at a certain loudness level (e.g. -18 dBFS)

FX Drive & Pre/Post listen

The drive control increases or decreases the gain fed into the FX chain. Pre/post control lets you seamlessly switch between pre and post FX audio signal.

Post-FX Section

This meter shows the loudness difference of pre and post-FX signal. The match button lets you set the additional post-FX gain (match mode "Manual") based on the loudness difference. Match mode "Auto" does this automatically.

Match Modes

Please refer to chapter 4.

Snapshot Slots

ABLM provides 4 snapshot slots to store and recall settings for FX drive and Post-FX gain. So you can test your plug-in chain with different gain levels, all loudness matched.

6 How to use

You can setup a plug-in (chain) controlled by ABLM very easily with 3 steps:

Step 1: Insert ABLM before your plug-in (and configure it as "Sender" and select link 1)

Step 2: Insert any plug-in, e.g. EQ, compressor etc.

Step 3: Insert ABLM after your plug-in (and configure it as "Receiver" and select link 1)



Now start playing, modify the EQ or any other plug-in, monitor the gain difference, press the match button and later the Pre/Post FX button.

NOTE: please do not mix sender and receiver of different plugin formats. Otherwise, sender and receiver cannot communicate to each other.

7 Minimum System Requirements

- Windows 7, OpenGL 2 GFX card
- Mac OS X 10.11, Metal GFX card
- SSE2 CPU
- Win: 32/64 Bit VST, 32/64 Bit VST3, 32/64 Bit AAX
- OS X: 64 Bit VST, 64 Bit VST3, 64 Bit AU, 64 Bit AAX
- Tested with: Cockos Reaper, Steinberg Cubase/Nuendo/Wavelab 6+, FL Studio 12+, PT2018+, Reason 9.5+, Studio One, Ableton Live
- For latest information please visit www.tbproaudio.de

8 Plug-in Controls

8.1 Plugin Mode & Link ID

Sets the operation mode of ABLM: either Sender or Receiver. Up to 256 link IDs can be set. Use the ">"-button to set next free sender or receiver mode and the next free sender or receiver link ID.

Only one pair per link ID is allowed: Sender 1 - Receiver 1, Sender 2 - Receiver 2 etc. The pair should be placed on one track, connections across tracks may not work. Pairs could be nested.

8.2 PDC & Latency Compensation

Press the PDC button to start the automatic latency measurement. Or enter the latency value manually (up to 176.000 samples).

Note: Some DAWs require "play" mode in order to send audio through the plug-ins.

Note: The quality of latency measurement is increased by setting the effect of the FX chain initially as neutral as possible.

Note: it could be helpful to start/stop DAW before start latency measurement. It synchronizes all audio buffers (DAW and ABLM2).

8.3 Metering Mode

Either pure **RMS Sum** (stereo channel summed RMS), **RMS Avg** (stereo channel averaged RMS), **EBU R128-2014 ML** (momentary loudness, 400ms) or **EBU R128-2014 SL** (short term loudness, 3000ms). Both EBU R128 modes do pre-filtering according to EBU R128-2014 specification.

Additionally **VU metering** can be used (300ms raise and fall time), 0VU = -18dBFS

Max Peak mode uses the current max peak level as loudness level. Please reset PRE FX loudness values if you change FX parameters of sandwiched plugins.

8.4 RMS Window

This parameter sets the loudness measurement (RMS) window (in ms) (RMS Sum/Avg only).

Note: Too small values may cause audible gain changes in match mode "auto".

8.5 RMS Window

This parameter sets the loudness measurement (RMS) window (in ms) (RMS Sum/Avg only).

Note: Too small values may cause audible gain changes in match mode "auto".

8.6 Over protection

The over protection avoids channel muting during big gain jumps. The function can be activated. The LED lights if the output signal goes above over level.

8.7 Reference level

If you work with calibrate audio systems set the loudness reference level (in dBFS or VU) for the incoming signal.

8.8 Pre FX: Diff, Gain

The meter displays the loudness difference of incoming signal level and reference level (in dB or VU). Press the match button to balance the current loudness with the reference level (ctrl mouse click balances the max loudness with reference level, alt mouse click all instances). Click on the reset button resets the measurement (alt click for all ABLM instances).

8.9 Pre FX: Cur, Max Loudness Level

The meter displays the current and maximum loudness (in dBFS or VU) of the signal fed into FX chain (Pre-FX loudness). Click on the reset button resets the measurement (alt mouse click for all ABLM instances).

8.10 Active

This button/LED lets you activate/deactivate the ABLM pair. Alt mouse click activates/deactivates all instances.

8.11 Drive FX

Increases/Decreases gain of incoming signal fed into FX chain. Alt mouse drag affects all instances.

8.12 Pre/Post FX Switch

This button/LED lets you switch between pre and post FX signal.

Note: latency needs to be set correctly in order to get a sample-exact comparison. Alt mouse click toggles all instances.

8.13 Delta Monitoring

Monitors the difference between output und input signal depending on match modes.

e.g. in match mode “auto” only loudness changes of the sandwiched FX are audible.

If you need to monitor also static loudness changes use match mode “manual” and set Post-FX gain to 0 dB (by clicking on the reset button). Alt mouse click toggles all instances.

8.14 Configuration Page

Min/max auto gain limits the auto gain changes.

Auto gain tolerance sets the threshold of auto gain changes. Gain is only applied if the absolute value of the gain difference is above the threshold.

8.15 Post FX: Diff, Gain

The meter displays the loudness difference of pre and post-FX signal (in dB or VU).

Depending on match mode you can balance the gain difference manually (match mode

“Manual”) or automatically (match mode “Auto”) with the match button (Alt mouse click for

all instances with match mode “Manual”). Click on the reset button resets the measurement (Alt mouse click for all ABLM instances).

8.16 Match Mode

Manual: pre/post-FX gain difference is balanced by a click on the match button

Auto: pre/post-FX gain difference is balanced by AB-LM automatically

Gain: pre-FX gain difference (compared to reference level) is balanced by a click on the match button

8.17 Inverse Match

Inverse Match Mode (match mode “Manual” and “Auto” only): If enabled, no gain matching is happening. As soon Pre-FX listening is enabled the Pre-FX loudness is matched to last Post-FX loudness.

This mode allows to switch from Post-FX signal to loudness matched Pre-FX signal.

8.18 Snapshots

4 slots keep the settings for FX drive and post-FX gain.

8.19 Global controls

The following parameter can be controlled across all ABLM instances by holding the alt key:

- FX Drive
- AB FX
- Delta Monitoring
- Active/Inactive
- Disable automatic update of gain difference

8.20 Plugin info

Click on the AB-LM logo to get information about the plugin, online version check, open the online manual, open the change log, toggle tooltips and reset GUI scaling.

Disable automatic update of gain difference: During match mode “Auto” ABLM updates by default internally the last gain difference value. This helps to get the right gain value during project load phase. In some DAWs this could create many undo data. So use the switch to enable/disable automatic storage feature. Alt mouse click toggles all instances.

Save to default: This command saves all settings as plugin default settings.

9 Demo mode versus Registered Mode

In demo mode (without activation) the plug-in mutes audio every 90 seconds for a short period. This could be circumvented by clicking on the "TBProAudio" logo within 90 seconds.

10 Plugin activation

The plugins needs to be registered/activated to remove demo restrictions. Please go to www.tb-proaudio.de to purchase the activation key. After purchase you will receive an email from TBProAudio with either the (zipped) activation key file or the activation key in text form. Go to the plugin menu->Activate plugin. Please follow the steps described here: <https://www.tbproaudio.de/support/productactivation>. After successful activation the key symbol shown in the GUI appears in golden colour.



11 GUI Design

All credits for the GUI design go to Crimson Merry (<http://twitter.com/twittersaya>). He did an incredible job by designing this clearly structured and easy to read user interface. Thank you!

12 Conclusion

So finally if you have any questions or suggestions just let us know. And have fun with our tools and visit us here: www.tbproaudio.de.

Your team from TBProAudio :-)