True Iron

Kazrog

User guide - version 1.3.0
February 10, 2021
By Shane McFee and Devin Powers
https://kazrog.com

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True Iron was developed to capture the true essence of the subtle warmth of outboard line input transformers - a secret weapon of pro audio engineers in a wide range of styles and applications. We live in a period of unprecedented recorded audio fidelity and headroom, which can result in tracks that sound incredibly pure, yet disconnected and artificial to our human ears. Many plugins exist today to emulate various chains of analog components - often adding very obvious distortion, phasing, crosstalk, and other anomalies to a degree that can be too extreme or exaggerated for many applications. By contrast, True Iron emulates a single component circuit, purpose built with fidelity in mind, while still imparting analog character.

While line transformers were originally intended to provide isolation, they have unique and unintended side effects that happen to sound pleasing to us - adding harmonics at a low level ("warmth") to the original signal, without ever introducing obvious harmonic distortion until pushed significantly past their impressive headroom. In True Iron, we've chosen to emulate some of the most famous transformer models from the Powers Music collection - all of which have their own unique signature sounds.

Usage Notes

True Iron is a low CPU footprint plugin by design, and is intended to be usable on every track and/or bus in a mix. Used in front of other processors such as compression and EQ, True Iron can mimic the input stage of analog equipment that is so often left un-emulated or under-emulated by many (otherwise very accurate) analog modeling plugins. On the stereo bus, True Iron is excellent as a beginning stage of a mastering chain, bringing similar benefits to a console emulation, without many of the drawbacks.

As a creative tool, True Iron sports the "Crush" control and wet/dry "Mix" control, allowing for customization of the sound and blending capability that would be cumbersome in the analog domain.

- Shane McFee
CEO/CTO, Kazrog Inc

2. Transformers Modeled

About the "108X" voicing (based on UTC HA 108X)

When Ampex built some of the very first commercial mutitrack machines and preamp machines in Redwood City California in the 1950s, they chose UTC 100 series transformer for their superior sound stage and excellent frequency response, from 30 Hz to over 20kHz.

When the classic LA2A limiter was created, the only real input transformer choice was the UTC HA100x. UTC was used on nearly every Universal Audio / URei compressor, limiter, preamp channel and EQ during their early history. The amount of outboard recording gear and the records made using the UTC 100 Series is virtually endless. The UTC HA108x has a warm thick sound that is delicious and harmonic, a true USA classic.

About the "4001B" voicing (based on Malotki E4- M 4001B)

In 1953 Rhode und Schwarz developed the U23 limiter, and it was commercially introduced in late 1954. This unit is very similar to a Fairchild 660 in both design and sound. This highly sought after limiter used Malotki input and output Transformers. As it evolved into the U73b limiter (considered the German Fairchild), a smaller, yet similar transformer was used. Danner, Haufe and Malotki represent some of the highest fidelity European transformers every manufactured, and can be found in products made by Neumanm, Telefunken, Tab, Siemens, Lorenz, Maihak, and a wide variety of mastering and mixing consoles. In addition to various compressor / limiters like the U73b, the Malotki 4001b was used in the mid/side mastering process of almost all records produced, mastered and commercially released in Europe from the mid-1950s to the early 1980s.

The V71 was only made by Malotki, and used all Malotki transformers. The earlier, more rare version on the V72a, V72, and V76 (later built by Siemens) were known as a huge part of the sound of The Beatles' early recordings. Malotki are beloved for their dynamic sound and superior frequency Range 10 Hz to nearly 100 kHz.

About the "V178" voicing (based on Haufe V178)

Haufe along with Malotki were the two predominant high end transformer manufacturers in Europe, during the golden age of vintage analog gear. The Haufe V178 was used in countless recording consoles, preamps, and other audio products by companies like Neumann, Telefunken, Siemens, Tab, and others. Of the many things we know about Haufe, probably the most remarkable is, there has never been a microphone built by the Georg Neumann GmbH Company that did **not** include a Haufe transformer of one type or another! They all share a highly dynamic, rich and full sound, that has a lovely lower and upper midrange push, euphoric and harmonic, almost tube like in tone. Neumann clearly knew these transformer were special!

About the "111C" voicing (based on Western Electric 111C)

Long known for their superb sonic integrity and ample headroom capacity, the Western Electric 111C still can outperform most (if not all) the audio transformers of its type made today. These have become a favorite of high end audiophiles to run CD players into, adding analog warmth to the listening experience while maintaining a high relative transparency. Recording engineers and producers working with digital recordings also fell in love with the rich warm sound produced by these 2 lb. wonders. Originally used for radio and telephone transmission lines, everything Western Electric made was built to an incredibly high standard hard to beat even today. The WE111c loves to be pushed and stays thick, balanced and warm the whole time!! Highly recommended for mastering applications.

About the "1166" voicing (based on Marinair LO1166/A)

The Vintage Marinair LO1166/A Transformers were most famously used in the original Neve 1073 mic preamp/EQ and 1272 mic/channel preamps. These transformers are getting harder to find, expensive on the rare occasion they do come up for sale anymore, and impart a lush mid-focused sound, used on countless records world wide.

About the "O-12" voicing (based on UTC O-12)

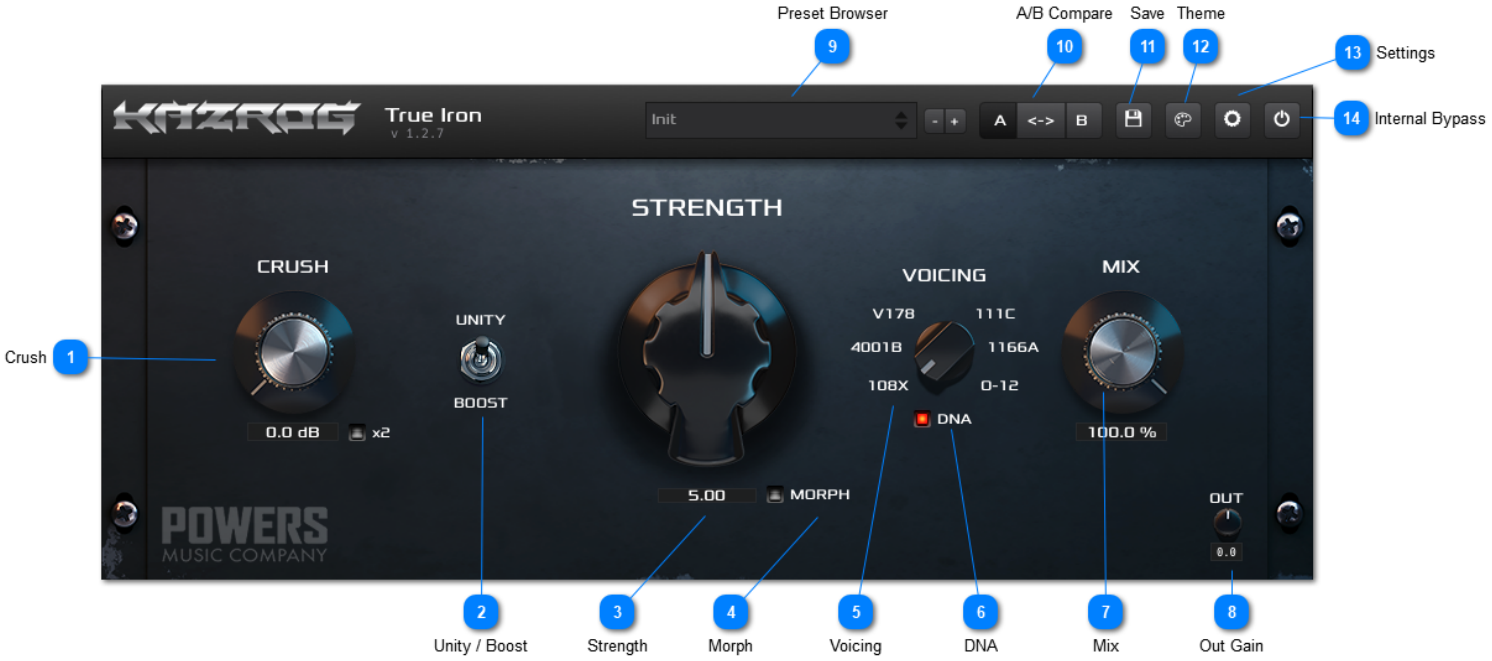
The UTC O-12 input transformer was used in the UREI Revision “A" Blue Stripe 1176 compressor, and through all the classic revisions to revision “F". This aggressive transformer has a lot to do with the sound of the older vintage units, and despite its classification as an “ouncer” for its diminutive size, it has a large lovely attitude that is all its own.

- Devin Powers
Powers Music

3. Using True Iron

True Iron is a transformer emulator, designed for use on tracks, buses, and masters. Every effort has been made to make the interface as simple as possible, so you can focus on making music.

3.1. Main Controls



1 Crush

Adjusts the amount of compensated gain in the circuit. Useful for creating overdriven effects on individual tracks. Enable the "x2" toggle to double the amount of gain displayed, useful for creating distortion effects.

2 Unity / Boost

Sets the input impedance of the virtual transformer. At unity, the transformer is balanced for stereo program material. In boost mode, a 3dB input gain boost is applied, which can be useful on mono instruments such as guitars, kick drums, monosynths, or vocals.

3 Strength

Adjusts the tendency toward nonlinearity within the virtual transformer. Turn up for more saturated sounds, or down for extended clean headroom. At the default setting of 5.0, the harmonic response matches that of the modeled hardware.

4 **Morph**

When Morph is enabled, the Strength control not only adjusts the nonlinearity of the transformer, but also shapes the modeling tolerance to morph the harmonic overtone response profile. Higher settings are more saturated with even-order harmonics, bringing additional variation beyond the original modeled hardware. Generally, this will result in higher THD and a more "vintage" style timbre.

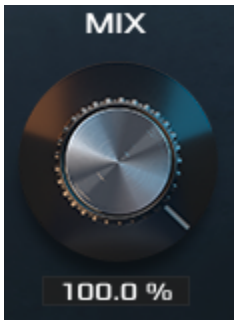
5 **Voicing**

Changes the transformer voicing between the six different models.

6 **DNA**

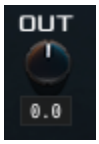
New in 1.2! Enables (or disables) DNA mode. This is an enhanced level of frequency response modeling based on Devin Powers' individual transformer stereo pairs. This mode will incur additional CPU usage, but is even more accurate with the original hardware being emulated. Disabling it reverts back to the simplified, ultra-efficient yet still highly accurate modeling used in True Iron 1.1.5 and earlier.

7 **Mix**



The Mix control adjusts the final ratio of wet (processed) to dry (unprocessed) signal.

8 **Out Gain**



Adjusts the final output gain level of the plugin, post-processing.

9 **Preset Browser**

Browse presets, for fun and (hopefully) profit!

10 **A/B Compare**

Every instance of True Iron has two slots for a currently loaded preset. Click on the inactive slot to try different settings out, then compare to the other slot by clicking on its button. Use the copy button (in between A and B) to copy the currently active slot's settings to the inactive slot.

11 **Save**

Saves the current preset to the presets folder, using a standard system file requester. All presets are stored as cross platform XML files, so they can be exchanged between users on any platform.

12 **Theme**

Changes the UI theme of the plugin from black to green. Saved on a per-preset and per-instance basis, useful for color coding within a session, or just for fun!

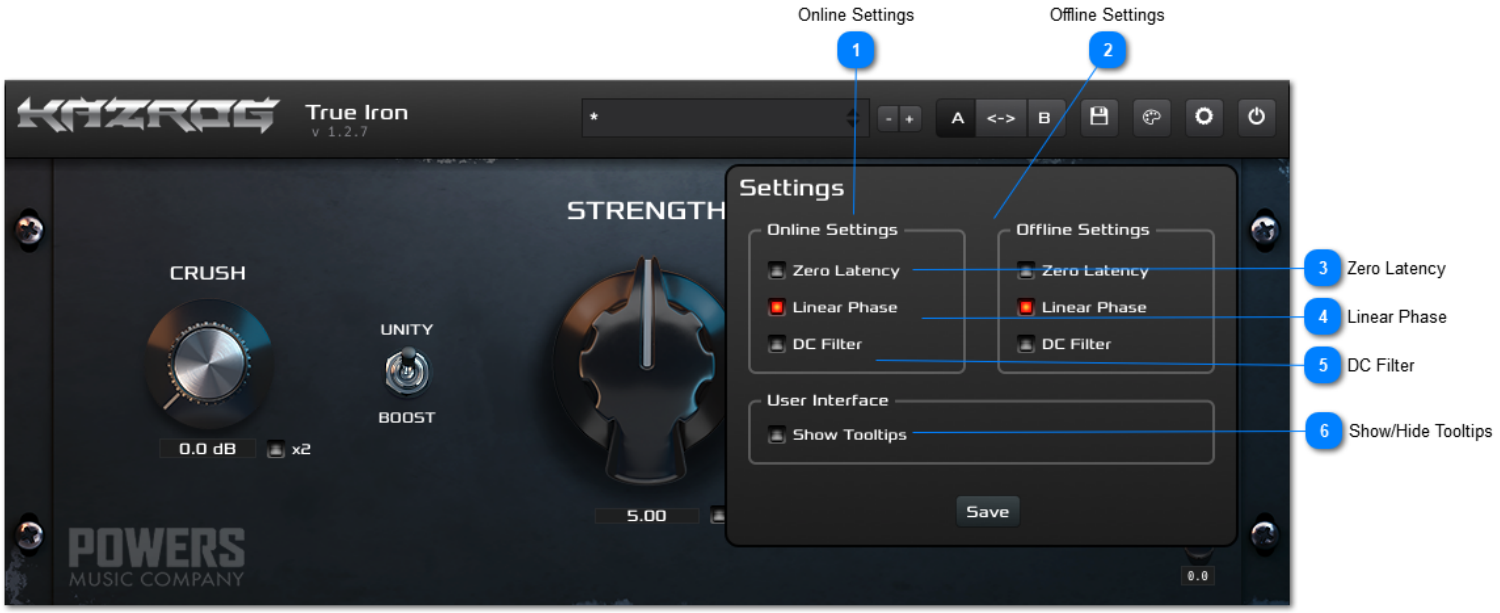
13 **Settings**

Opens the Settings panel, where global settings for the plugin are found.

14 **Internal Bypass**

Just in case your DAW lacks a plugin delay compensation (PDC) aware bypass feature, this internal bypass is provided so you can quickly A/B your processed and unprocessed audio.

3.2. Settings



1 Online Settings

These global settings affect realtime monitoring in your DAW.

2 Offline Settings

These global settings affect non-realtime bounces in your DAW. Note: not all DAWs support this - in those hosts, the Online Settings will be used for both realtime and non realtime purposes.

3 Zero Latency

Enables zero latency processing offline (useful for realtime bounces.) This disables oversampling, but will not audibly alias unless Crush is pushed to extremes.
Note: you must reload the session for changes to this setting to take effect.

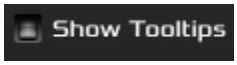
4 Linear Phase

Enables linear phase oversampling, whenever Zero Latency monitoring is **disabled**.
Note: you must reload the session for changes to this setting to take effect.

5 DC Filter

Enables the DC filter, which reduces the DC component of the analog emulation, at the expense of some subsonic low end content.

6 Show/Hide Tooltips



Shows or hides the quick help popups when hovering the mouse over the plugin controls. Some people find these helpful, some find them annoying - be happy!

4. Version History

True Iron - Version 1.30- February 10, 2021

Changes

• Apple Silicon support (VST, VST3, and AU)
• Added nice tooltips explaining each transformer model
• Updated SDKs and frameworks

True Iron - Version 1.2.9 - August 10, 2020

Changes

• Resolved an edge case issue where the wrong block size could be reported to some code modules, resulting in wrong processing and/or automation
• Updated SDKs and frameworks

True Iron - Version 1.2.8 - July 6, 2020

Changes

• New and improved installers on Mac and Windows
• Apple Silicon-ready, cross platform optimized DSP replaces older Intel proprietary DSP. Users on both Mac **and** Windows should experience greater stability and compatibility as a bonus.

True Iron - Version 1.2.7 - June 17, 2020

Maintenance update for True Iron 1.2.x - recommended for all users.

Changes

• Adds a handy option to disable tooltips
• New vectorized top toolbar for greater resolution independence

Fixes

• Fixed a bug where the presets menu was not alphabetized on newer macOS versions

True Iron - Version 1.2.6 - October 10, 2019

Maintenance update for True Iron 1.2.x - recommended for all users.

Changes

• Automation improvements affecting Latch and Touch mode in multiple hosts.

True Iron - Version 1.2.5 - May 21, 2019

Maintenance update for True Iron 1.2.x - recommended for all users.

Changes

• Offline bounce stutter issues in Logic Pro have been resolved.

• Preset and preferences path permissions issues affecting Logic and other sandboxed hosts on the Mac have been resolved.
• All remaining instances where "Kazrog LLC" has been used as the company name for metadata and/or paths have been renamed to "Kazrog".

True Iron - Version 1.2.4 - April 30, 2019

Maintenance update for True Iron 1.2.x - recommended for all users.

Changes

• Geek Tweaks panel introduced
• Wet/dry mix control no longer stutters in Logic Pro X, or any other host tested, under any conditions.
• Sample rate dependent level calibration has been updated to avoid issues found in Ableton Live 10.

True Iron - Version 1.2.3 - March 5, 2019

Maintenance update for True Iron 1.2.x - recommended for all users.

Changes

• VST3 default channel layout bug fixed - prevents rare crash on instantiation bug in Cubase 10.
• Delayed response of subsonic audio pulse signals corrected.
• Buffering issues in Logic Pro X resolved.
• Improved compatibility for Windows 7 and 8 users.
• Frameworks updated.
• Minor UI tweaks.

True Iron - Version 1.2.2 - February 21, 2019

Critical Bug Fix Update for True Iron 1.2.x - recommended for all users.

Changes

• Fixed extreme level spike with wet/dry mix in Logic Pro X and Cubase 10 when using multiple instances of True Iron in series during live virtual instrument playback.
• Fixed level inconsistencies in DNA mode affecting sample rates at or above 88.2 kHz
• CPU efficiency and stability improvements
• Updated SDKs and frameworks

True Iron - Version 1.2.1 - February 13, 2019

Changes

• Fixed bypass glitch noise bug when wet/dry mix was set to less than 100%.

True Iron - Version 1.2.0 - February 12, 2019

Changes

• Added 1166 and O-12 transformer models.
• Added DNA mode.

True Iron - Version 1.1.5 - January 30, 2019

Changes

• New demo versions added
• Frameworks updated

True Iron - Version 1.1.4 - November 9, 2018

Changes

• Incremental build, new AAX wrapper identity.

True Iron - Version 1.1.3 - October 24, 2018

Changes

• Internal maintenance - prepared for delivery via new e-commerce platform.

True Iron - Version 1.1.2 - October 10, 2018

Fixes:

• Fixed internal bypass "clicking" sound at 88.2 kHz and above resolutions.

True Iron - Version 1.1.1 - September 5, 2018

Fixes:

• Fixed possible voicing mode parameter selection issue affecting Xeon CPUs.

True Iron - Version 1.1.0 - September 4, 2018

Changes:

• Added two new transformer models (V178 and 111C)
• Added Morph toggle
• Made Out Gain control permanently visible
• Decoupled UI theme from transformer model, added Theme button
• Added new factory presets
• Increased resolution of Mix control by a factor of 10

Fixes:

• Fixed VST3 channel support issues affecting FL Studio and many other hosts
• Fixed UI theme loading issue during automation and recall

True Iron - Version 1.0.6 - July 10, 2018

• Initial release

5. Troubleshooting

True Iron is designed for efficiency and stability, and shouldn't present you with issues in general, even on older hardware.

General

• Sample rates of 96 kHz or above are more taxing for your CPU. Consider a lower sample rate, unless the project requires it for some reason.
• Buffer sizes lower than 256 samples/buffer are more taxing for your CPU. Consider a higher buffer size, unless you need realtime monitoring of live instruments through plugins in your DAW.

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