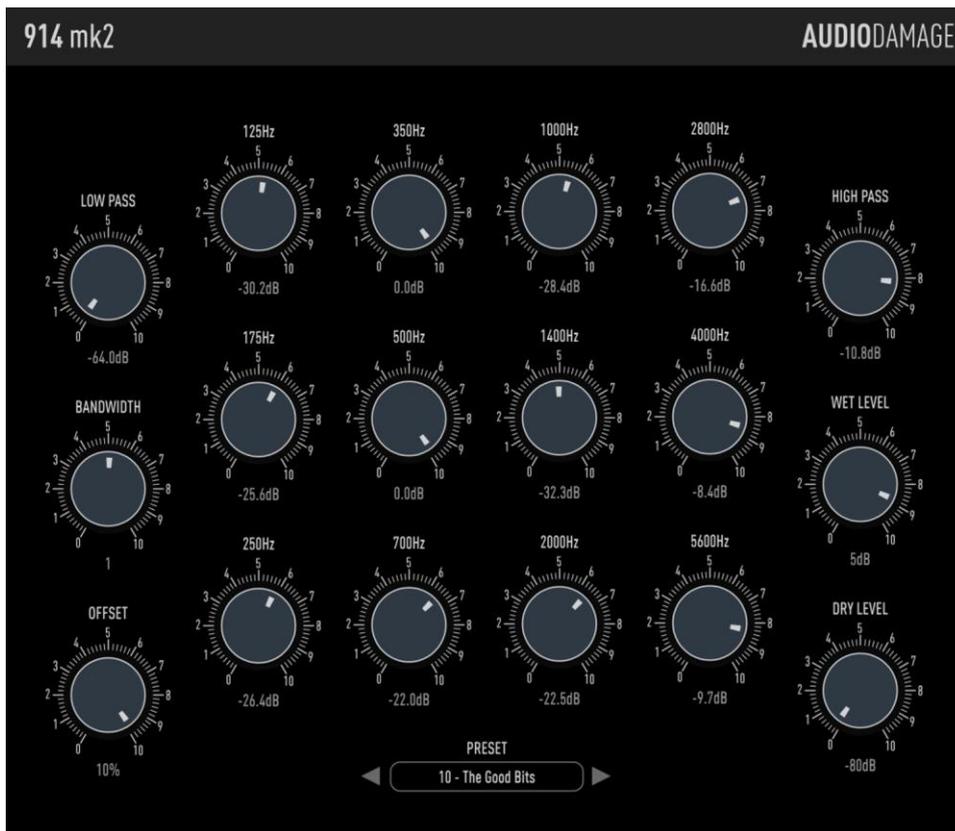


# 914 Fixed Filter Bank

## User's Guide

Audio Damage, Inc.

Release 2.0



23 August 2017

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## Introduction

Thank you for purchasing the 914 Fixed Filter Bank (hereafter referred to simply as “914”, or “914 mk 2” to differentiate it from the previous version), Audio Damage’s plug-in emulation of the Moog 914 Fixed Filter Bank module. This plug-in creates a variety of tonal effects by passing its input signal through twelve band-pass filters, one low-pass filter and one high-pass filter. The relative output levels of these filters can be adjusted independently, creating peaks and dips in the frequency spectrum of the signal. Quoting from the owner’s manual for the Moog Modular:

“The Fixed Filter Bank is often referred to as a formant filter because it can be set to emphasize or attenuate midrange frequencies which fall within a particular band, no matter how the frequencies of the signal are moved. Like many acoustic instruments, a characteristic set of formants are always a part of the resultant output (given a particular complex waveform).”

*Moog Modular Owner’s Manual*, by Dan Wyman. Moog Music, Inc. 1981

Our 914 plug-in is a faithful recreation of the Moog hardware filter bank, accurately reproducing both the frequency responses and phase-shift characteristics of its filters. Of course, it also provides all of the modern conveniences of a software plug-in, such as a true stereo signal path, zero background noise, preset storage and recall, parameter automation, and as many instances as your CPU can handle.

Because of the tolerance ranges of the components used to manufacture the original Moog synthesizers, there is quite a bit of tonal variation between modules of the same model such as the 914. The degradation of some components (capacitors in particular) over time also contributes to changes in performance. Our software recreation represents an idealized instance of the original hardware in its factory-new condition.

To avoid possible confusion, a couple of things are worth mentioning explicitly. First, despite the presence of a bunch of knobs marked with frequencies, the 914 is *not* an equalizer. If the term equalizer was coined to describe devices which amplify or attenuate ranges of frequencies to even out (that is, equalize) the overall frequency content of a signal, the 914 might accurately be described as an unequalizer. Second, the 914 had a completely different filter architecture and implementation than the filter found in the Minimoog, and hence does not possess “that Moog filter sound”.

## New in Version 2.0

Version 2.0 adds an Offset knob to adjust the frequencies of all the filters relative to their default values, and a soft saturation processor at the mixing point to provide better tonalities at high signal levels. There are also several utilitarian features and enhancements:

- A new, resizable user interface, appropriate to contemporary display technologies
- VST 3 and AAX compatibility
- A cross-platform XML-based preset file system
- Built with up-to-date code libraries for better host compatibility and future-proofing

914 mk 2 has a different name and internal identifier than version 1. This means that you can install version 2 alongside whatever version you are currently using, and continue to use the older version in your existing projects. Version 2 cannot be directly substituted in existing projects and cannot read preset files created by version 1.

Also, direct MIDI control assignment has been removed. Host DAWs have progressed considerably since 914's last major revision and it's now appropriate to leave MIDI mapping up to them.

## System Requirements

914 is provided as 32- and 64-bit VST2 and VST3, and 64-bit AAX plug-ins for Windows. On OSX, 914 is provided as Universal Binary Audio Unit, VST2, VST3 and AAX plug-ins.

914 is a plug-in, not a standalone application. To use it, you'll need a host application such as Ableton Live, Steinberg Cubase, Apple Logic, Avid ProTools, etc\*. Obviously you'll also need a computer capable of running one of these applications. We assume that you are familiar with using plug-ins with your particular host. If you have general questions about using plug-ins with your host, please refer to its documentation. 914 is a true stereo processor that can process either mono or stereo signals, and can be used as an insert effect or on an effects-send channel in your host's mixer. If used in a stereo context (for example, as an insert on a stereo channel in your DAW's mixer), the left and right channels are processed independently with no summing.

We support the use of 914 mk 2 under Microsoft Windows 8 or newer, and Apple OS X version 10.8 or newer.

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\* Product names are copyrighted by their respective owners.

## Installation

To install 914 mk 2, double-click the 914 Installer icon, and follow the instructions. You can choose which plug-in formats to install and, for some formats, the plug-in destination folder.

To un-install from OS X, simply delete the plug-in from your VST folder, which is usually located at `/Library/Audio/Plug-Ins/VST/Audio Damage`, and your Audio Units folder, which is located at `/Library/Audio/Plug-Ins/Components/`. To un-install from Windows, delete the file named `914 mk 2.dll` from your VST folder(s). The presets are stored in separate files which you can also delete, although they occupy very little space. On OS X, they're in `/Library/Application Support/Audio Damage` . On Windows, they're in the hidden folder `C:/Program Data/Audio Damage/` .

# Operation

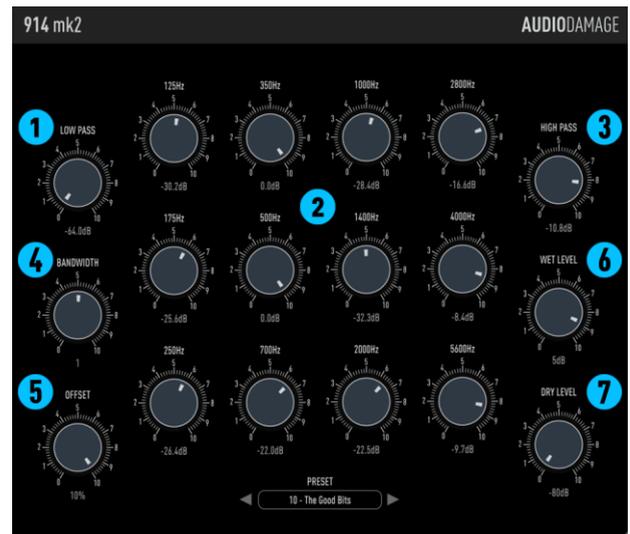
Like its hardware predecessor, the 914 plug-in is simple to operate. There are no mysterious modulators, no critical level-dependent settings, no hidden windows or menus. Just turn the knobs until you like the way it sounds. Simple, eh? If you'd like a more detailed explanation of what it does, read on.

The 914 contains fourteen filters: twelve band-pass filters, a low-pass filter, and a high-pass filter. These names refer to how the filter blocks signals of some frequencies and passes signals of other frequencies. A band-pass filter permits only a range (or band) of frequencies to pass through, blocking frequencies above and below its center frequency. A low-pass filter passes signals below its corner frequencies and blocks higher-frequency signals. A high-pass filter does the opposite: it passes signals above its corner frequency and blocks lower-frequency signals.

The filters in 914 operate in parallel; that is, the input signal is fed to all the filters simultaneously, and their outputs are mixed together. Each filter has a knob which attenuates its output, controlling the amount of its signal that is present in the plug-in's output. The original 914 had passive filters; they only removed frequencies from the input signal, not boosted them.

## The Controls

1. The **LOW PASS** knob controls the level of the output of the low-pass filter. The low-pass filter's corner frequency is 80Hz, so this knob controls the loudness of all signal content with a frequency of 80Hz or below.
2. The group of knobs in the middle of the panel controls the levels of the outputs of the band-pass filters. Each knob is labeled with the center frequency of its filter. The frequencies are 125, 175, 250, 350, 500, 700, 1000, 1400, 2000, 2800, 4000, and 5600Hz. Each knob controls the loudness of signal content with frequencies near these center frequencies.
3. The **HIGH PASS** knob controls the level of the output of the high-pass filter. The high-pass filter's corner frequency is 8000Hz, so this knob controls the loudness of all signal content with a frequency of 800Hz or above.



The filter-level knobs in our software recreation of the 914 behave in the same manner as the original. If you rotate a knob fully clockwise, the output of the corresponding filter is passed to the plug-in's output without attenuation. As you rotate the knob counter-clockwise, the level of the filter's output is reduced. If you rotate the knob fully counter-clockwise, the filter's output is attenuated by 64dB, which nearly silences the filter.<sup>†</sup>

The following controls are not present in the original Moog hardware. We added them to our software version partly in response to comments made by users, and to make this plug-in more versatile:

4. The **BANDWIDTH** knob varies the shape of the band-pass filters. When the knob is rotated fully counter-clockwise, the band-pass filters have a broad response shape, gently attenuating frequencies on either side of the center frequency indicated by the knob's label. As you rotate this knob clockwise, the filters become narrower and more sharply reduce frequencies away from the center frequency. The result is that the filters have more drastic and audible effects as you rotate the knob clockwise. This also reduces the overall output signal level of the filters, which you can compensate for by turning up the wet level knob.
5. The **OFFSET** knob adjusts the frequencies of the filters relative to their labeled values. Rotating the knob clockwise increases the frequencies by up to 10%, rotating it anti-clockwise lowers the frequencies by at most -10%. Use this knob to tune the filter bank to suit the tonality of your material.
6. The **WET LEVEL** knob controls the loudness of the filtered output signal of the plug-in. If the knob is rotated fully counter-clockwise, the signal is attenuated by 80dB, which makes the filtered signal inaudible. As you rotate the knob clockwise, the filtered signal becomes louder. Rotating the knob fully clockwise boosts the filtered signal by +15dB, which compensates for the attenuation of the filters. Note that this means you can potentially overload your host's mixer (or whatever the output of the plug-in is connected to). If you hear crackling or other distortion when you use this plug-in, try turning this knob counter-clockwise.
7. The **DRY LEVEL** knob controls the amount of the original, unfiltered input signal that is present in the output of the plug-in. If the knob is rotated fully counter-clockwise, the signal is attenuated by 80dB, which makes the original signal inaudible. As you rotate the knob clockwise, more and more of the unfiltered input signal is mixed into the output signal. If the knob is rotated fully clockwise, the input signal is passed to the output without any reduction.

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<sup>†</sup> In case you're wondering, we didn't just pull -64dB out of the air. -64dB is the signal bleed-through amount stated in the specifications of the original hardware.

During your initial experimentation with this plug-in you will find it useful to use an input signal with wide frequency content, such as a buzzy synthesizer pad. For example, if you turn all of the knobs fully counterclockwise, then turn up the knob labeled **1000**, you will hear only signals with frequency content at or around 1000Hz. If your input signal doesn't have any frequency content near 1000Hz, you may not hear anything at all.

## Presets

914 comes with a selection of presets to illustrate its capabilities and provide you with starting points for creating your own settings. You can flip through the presets by clicking the arrows on either side of the preset name near the bottom of 914's window.

You can also click the name itself to invoke a popup menu with several handy features. The menu lists all the factory-installed presets. There is a Save As command for saving your settings in individual files. If you place these files in Replicant's own folder (located at `C:\ProgramData\Audio Damage\914mk2\Presets\User` on Windows, `/Library/Application Support/Audio Damage/914mk2/Presets/User` on OS X), your presets will appear on this menu.

There are also commands for copying the current settings to the system clipboard, and pasting settings from the clipboard. The settings are presented in a plain-text XML format so that you can exchange them online in forums, copy them between a Windows computer and a Macintosh, email them to famous film composers, etc.

## And Finally...

Thanks again for purchasing 914. We make every effort to ensure your satisfaction with our products, and want you to be happy with your purchase. Please write [info@audiodamage.com](mailto:info@audiodamage.com) if you have any questions or comments.