ERS 250 Reverb Plugin by DDMF

Manual

Thank you for using this fine piece of digital audio equipment! To get the most out of it, we recommend to quickly have a look at this manual.

Introduction: This plugin has been originally developed by Harrie Munnik (EmptyRoomSystems), with initial help by DDMF. When Harrie stopped working on audio software, DDMF took over the distribution and further development of the ERS line. The ERS 250 has been developed to sound like the first digital reverb in history, the EMT-250. This reverb is known for its warm sweet sound and has been used on thousands of recordings worldwide. Only 250 of these machines were ever built and they are now museum pieces, needing to be handled with care. This legendary & rare piece of hardware is now available, as close to its original as possible, in digital form.

Installation: simply run the installer and select the plugin format(s) you want to use. If you are on Windows, and have chosen to install the plugin in VST(2) format, you will need to specify your VST plugin directory (twice, even, if you are using both the 32 and the 64 bit version). All other formats will be automatically installed in the correct, system-wide default directories.

Usage:

The plugin has four major controls and two smaller ones. From the left to the right the big handles with the round knobs control the following parameters:

- Reverb decay time (from 0.4 to 4.5 seconds)
- Low response (x0.5 = half the reverb time, x2 = twice the reverb time at lower frequencies, etc.)
- High response (the way the decay is handled at higher frequencies)
- Pre-delay (the time before the reverb starts in milliseconds). You can use it to set the reverb apart from the source.

The small sliders at the bottom are enhancements to the original design: With the left slider you can control the frequency of a low pass filter. Moving the slider to the left makes the reverb sound darker. The right slider is a mix control. Use this to set the balance between unprocessed input signal and processed signal – in other words, use this to determine how much reverb you want to add.

The red REV button can be used to turn the effect off and on. It's on by default, when you click it the plugin will go into bypass mode and forward any incoming signal to its output without any processing.
The "LED bar" meter on the left monitors input signal provided to the plugin. When the Alarm LED lights up the level of the input signal is too high and nasty-sounding digital clipping may occur in the plugin. It is best to set the send levels in your DAW that the levels on the left side are in the green (-12 to -3 dB) range.
The yellow SET button can be used to open a new set of controls on the backpanel.

Backpanel

The backplate of the EMpTy 250 V2.0 lets you access a new range of controls. You can use the switch "vintage"and "modern" between the classic and the modern version of the reverb. These versions are based on the same algorithm, but have different qualities. While the Vintage version sounds close

to the hardware EMT-250, the modern version is richer sounding on melodic instruments.

On the right there is a switch that controls the front/back outputs of the EMpTy 250. These have different soundcolours. The front outputs are more the face sounding with more early reflections while the back outputs sound more distant. These also work this way on the 5.0/5.1 channels.

With the 5 sliders the volume of the left, right, center left and right surround channels can be changed.

On the left are the "Led bar"and the "Rev" knob that work in the same way like on the front panel. This also counts for the mix slider. The back switch brings you back to the frontpanel.

Parameters of the ERS 250 reverb

Reverb (short for reverberation) is a very commonly used effect in recording and mixing that places instruments, vocals or sounds in a room or hall. In the early days of recording reverb was made by recording the sound of an actual room using speakers and microphones or placing microphones at a large distance from the sound source.
To simulate this, digital reverb adds this effect using calculations done on the original signal. This is called DSP – Digital Signal Processing. The biggest advantage of DSP's over real spaces is the easy way of changing the room sound without physical changes. To get the sound of a tiled room it is easy to change the sound of a digital reverb, but in a real room you would have to place actual tiles in the room. When working on a mix of recorded material several kinds of digital reverb can be added to the material so it does or does not sound like it was played in a real room, bottom line being that its creative use can greatly enhance the listening experience.
The reverberation in a real room has several phases:

- The initial silence, called pre-delay
- The early reflections, these are the first reflections of the sound waves bouncing on the walls, floors and ceiling of the room and reaching the ear. These reflections will be separately perceived by the ear in the beginning of the reverb sound.
- The tail of the reverb (decay). The amount of reflections increases with time (the first reflections are being reflected again and again) while their loudness decreases. These reflections cannot be heard separately because they mix with each other in random ways depending on many different factors like frequencies present in the signal, room structure and size, damping or resonances in the room etc.

Predelay: The pre-delay is an important property. Basically, it represents the physical distance between the signal source and the space around it or, put in other words, how deep a performer or instrument is in a room. The position of

a performer in the space can be altered by changing this parameter. It is possible to change this parameter in the EMpTy 250 reverb to mimic real spaces, but it can also be used for creative purposes.

Silence can be an amazing tool in music. For example, with a long pre-delay it is possible to add a reverb with a long decay to a vocal, thus creating a nice atmosphere, while still being able to keep the words from the lyrics intelligible. It can be used in a creative way to make a large pre-delay in a room with a small reverb decay, which would not be possible in a real room.

Early reflections: The amount/spread of the early reflections in the ERS 250 cannot be changed, just like on the first hardware digital reverb. The colour of the early reflection can be changed, by togling the front to back switch.

Reverb tail (decay): There are three controls that influence the reverb tail. The most important one is the decay time. Setting it short will give a room like response. Setting it longer will create a hall sound. The decay algorithm in the ERS 250 is a so-called constant density type, where randomizers help to create varieties in the reflections. Without these randomizers in delay time and amplitude the reverb sounds metallic.
The sound of the reverb tail can be further altered using the decay controls for the higher and lower frequencies. In a real large room the decays in the lower frequencies are longer than those in the higher frequencies. This is because most damping materials in real spaces dampen higher frequencies better than lower frequencies. So the controls can be used to lengthen the decay in the lower frequencies and shorten them in the higher frequencies.
The high response control has a maximum setting at which the reverb can sound quite sharp to imitate bright-sounding rooms.
The low response control has a setting at which decay times can be shortened. This helps with material that has a lot of low frequency content. It can help cleaning up low frequency content from the reverb tail when needed.

Low pass filter: A lot of digital reverbs have a low pass filter to filter away sharpness from digital colorations. It also dampens the emulated room sound. We added a sweepable filter in the EMpTy 250 as an extra control for the high frequency content in the reverb tail. Moving the slider to the left makes the reverb sound darker.

System requirements

The ERS250 plugin is available in VST, VST3, AAX and AU (Mac only) format. It needs a host/DAW that supports at least one of those formats to be operated. ERS250 comes as a 32 and a 64 bit Intel binary on both Mac and Windows, and as a 64 bit Apple Silicon binary for compatible Apple computers. The plugin should work with Windows 7 and higher, and with OSX >= 10.7.

For support/questions/remarks please contact support@ddmf.eu!