



msCALC PRO

ProduNET Audio

msCALC



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NORMALDOTTEDTRIPLET

1/1

2000 ms

1/2

1000 ms

1/4

500 ms

1/8

250 ms

Ext. I

7.82 ms

1/16

125 ms

1/32

62.5 ms

1/64

31.25 ms

1/128

15.63 ms

Ext. II

3.91 ms

CompressorReverbFrequenciesHarmonicsDelay

Recommended values

Attack time

Very fast7.82 ms

Fast15.63 ms

Half31.25 ms

Slow62.5 ms

Release time

Very fast15.63 ms

Fast31.25 ms

Half125 ms

Slow171.88 ms

Hold time

Very fast3.91 ms

Fast7.82 ms

Half15.63 ms

Slow31.25 ms

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v1.4

www.carlosmarino.es

consultas@carlosmarino.es



Description:

Imagine having a powerful tool at your disposal that not only calculates but optimizes every aspect of tempo in your musical project. msCALC PRO is the ultimate solution for demanding musicians and producers seeking perfection in every note.

What makes msCALC PRO unique?

Surgical Precision in Compression: With msCALC PRO, you can perform attack and release calculations with surgical precision in compressing your instruments. Obtain extremely tight values to highlight every detail of your tracks without sacrificing quality.

Eight-Octave Frequency Exploration: Discover and adjust frequencies across eight octaves intuitively. Additionally, you can choose between A3-440hz (Franco-Belgian Notation) or A3-220hz (Anglo-Saxon Notation) formats, adapting to your personal preferences.

Enhance Psychoacoustics with Harmonics: Our tool includes a special section to work with harmonics and leverage psychoacoustics to enhance the tones related to the essence of your project.

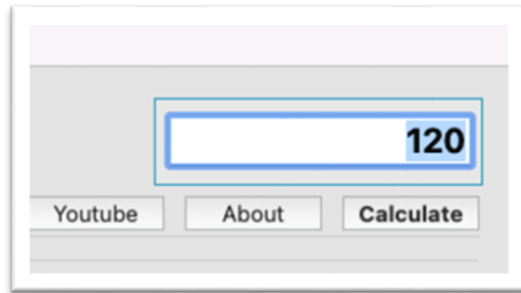
msCALC PRO is designed to meet the needs of all users, from passionate musicians to experienced producers. Regardless of your level of expertise, msCALC PRO will provide you with the necessary tools to take your music to the next level.

Don't settle for the ordinary when you can achieve the extraordinary with msCALC PRO. Optimize every aspect of your music and elevate your compositions to a new level of excellence.

Join the musical revolution today!



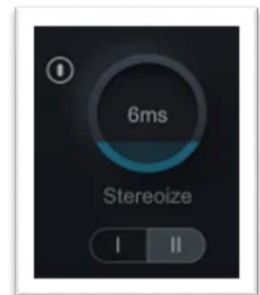
Operations:



Set the tempo of your project and click Calculate. msCALC PRO will automatically compute all the values you will use in your musical project in milliseconds. The tempo values range from 30 to 300 BPM.

In the main panel shown in the following image, you will see the values in milliseconds (ms) for each of the rhythmic figures you can use in your project. We have added two extra values below the 1/128 subdivision, labeled Ext. I and Ext. II, which you can use in various audio plugins or production techniques, such as:

1. You can use the Ext. I value to create the Haas effect in track displacement, synchronized with your project's tempo, by adding that result to the track Delay that you can find in the Cubase PRO or Nuendo inspector. Personally, I add the 1/128 value to another track to add texture to the main track.
2. In plugins like iZotope's Imager, when using the Stereoize parameter, since these are extremely small milliseconds, the Ext I and II parameters will help synchronize that stereo movement with your tempo.

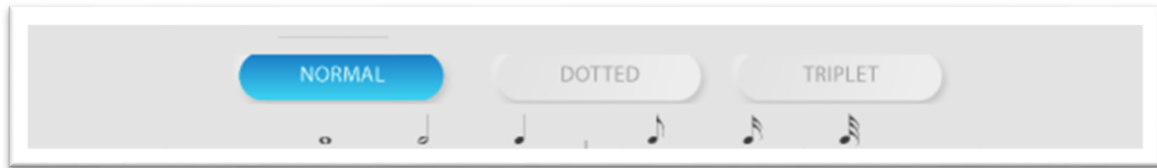


NORMAL			DOTTED			TRIPLER		
1/1		2000 ms	1/16		125 ms	1/2		1000 ms
1/2		1000 ms	1/32		62.5 ms	1/4		500 ms
1/4		500 ms	1/64		31.25 ms	1/8		250 ms
1/8		250 ms	1/128		15.63 ms	Ext. I		7.82 ms
Ext. I		7.82 ms	Ext. II		3.91 ms			

The Normal – Dotted – Triplet buttons will provide us with the Normal values for binary subdivision measures (4/4 - 2/4 - etc.), dotted notes, or for ternary subdivision measures



(6/8 - 12/8 - etc.) and triplets, respectively. Its automatic system will change all values based on your selection.



Compression Data.

Attack time		Release time	
Very fast	7.82 ms	Very fast	15.63 ms
Fast	15.63 ms	Fast	31.25 ms
Half	31.25 ms	Half	125 ms
Slow	62.5 ms	Slow	171.88 ms
Hold time			
Very fast	3.91 ms	Half	15.63 ms
Fast	7.82 ms	Slow	31.25 ms

This chart is divided into three sections: Attack, Release, and Hold time, each with four values to choose from. *These results are not optimal for hardware emulation plugins.*

1. In the Attack section, you can choose values for the attack time based on your instrument, with minimum values synchronized to your tempo. In other words, it is not recommended to select values lower than the one you choose.
2. In the Release section, you will get synchronized results for your compressor's release. Unlike the attack, these are maximum values of musical subdivision, and it is not recommended to increase their value unless it is extremely necessary.
3. The Hold Time provides results for keeping compression active for milliseconds if necessary. Like the other parameters, this data is synchronized with the tempo value of your project.



Calculations for Reverberation.

Adjusted Reverb Time		Reverberation tools	
1/1	1992.18 ms	Very Long	7992.18 ms
1/2	992.18 ms	Long	3992.18 ms
1/4	492.18 ms	LargeRec. booth	117.18 ms
1/8	242.18 ms	SmallRec. booth	54.68 ms

Pre-Delay		Choose your Pre-Delay		Pre-Delay		Early Reflection References	
7.82	<input checked="" type="checkbox"/> Very Fast	Half	<input type="checkbox"/> 62.5	DL1	3.91	DL4	31.25
15.63	<input type="checkbox"/> Fast I	Slow	<input type="checkbox"/> 125	DL2	7.82	DL5	62.5
31.25	<input type="checkbox"/> Fast II	Very Slow	<input type="checkbox"/> 250	DL3	15.63	DL6	125

In this section, msCALC PRO provides the optimal reverberation results based on the Pre-Delay you select. In other words, it subtracts the Pre-Delay time from the milliseconds value of the rhythmic figure you want to work with.

For example, in a project with a tempo of 120 BPM, if you need reverb for a Snare Drum with a duration of whole notes (by default, the duration of a whole note is 1000ms), and you add a Pre-Delay of 31.25ms to that reverb, the reverb will be delayed by that amount. To make the adjustment, you need to subtract the Reverb Time minus the Pre-Delay, which results in $1000 - 31.25 = 968.75$. The result is precisely the duration of a whole note and does not overlap with the next instrument or itself. You can simply experiment with msCALC PRO and select the settings that suit your needs best.

LargeRec. booth	117.18 ms
SmallRec. booth	54.68 ms

In the Large and Small Rec booth settings, msCALC PRO provides the necessary calculations to create an insert reverb on a track to simulate a recording room. Sometimes, we come across very dry and neutral tracks with a lot of presence. If what we need is to

push the track back and add color to it, we can insert a small reverb like RoomWorks SE in Cubase and Nuendo, and set the parameters for recreating the room. Now, you just have to shape the sound with the diffusion and EQ of the reverb itself. Our advice for this reverb is to have 25% of Bass and 25% of Treble in the EQ – the result is magnificent. If you need a shimmering effect, increase the % of treble, and you'll get more emphasis on high harmonics. For a lead vocal track, this technique will add air and naturalness to your track.



Early Refections:

I remember back in 1993, when I came across the instruction manual for the iconic LEXICON 480 reverb, and a section on Early Reflections caught my attention. It said something like, "The importance of early reflections in reverberation has been accepted as an indisputable fact. We call it a myth. Much of the myth of early reflections results from attempts to emulate the discrete reflections from the floor, stage area, and ceiling of a real auditorium. This sounds reasonable in theory, but our experience has shown that the resulting pre-echoes are very different from the early reflections present in real auditoriums, and recorded music is often better off without them."

"The reason for the difference is not hard to discover. Early reflections in artificial reverberation are often discrete, simply a delayed version of the original sound. Transients such as clicks, timpani, marimbas, or Snare Drums are clearly heard as discrete reflections, resulting in a harsh and grainy sound. But the reflective surfaces in real auditoriums have complex shapes, and the reflections they produce are smoothed or diffused. Their responses in time and frequency are altered, making them much more interesting. In a good auditorium, it is difficult to identify discrete reflections as such."

"Some engineers consider any kind of early reflection undesirable. In classical music, many recordings are made with the orchestra in the center of the auditorium, with the specific intention of avoiding early reflections. Too much early reflected energy makes the sound confusing and doesn't add richness or spaciousness. This is partly because reflections and reverberation also exist in the listening room."

"The 480L reverb algorithm still offers the option to add early reflections (pre-echoes), but we have turned them into diffuse clusters of pre-echoes. The density of the cluster is adjusted using the DIFFUSION control. We recommend using these pre-echoes with caution unless you are trying to match the sound of reverberation to a specific location where such reflections are intense."

Teniendo en cuenta la información de LEXICON y que en su 480 tendrías una sección de Early Refection dotada de "6" controles independientes, en la **msCALC PRO** hemos añadido los ajustes quirúrgicos para esos 6 Delays de la sección de E.R.



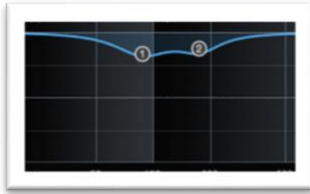
Early Reflection References			
DL1	3.91	DL4	31.25
DL2	7.82	DL5	62.5
DL3	15.63	DL6	125

The chart displays the results of the 6 early reverberations that you can use in the LEXICON hardware, as well as in the Relab Development Lexicon 480L VST plugin. If you don't have this plugin, you should look for the E.R. (Early Reflections) section in your reverb.

You need to copy the results from msCALC PRO into that section to recreate your early reflections or pre-echo..



Frequencies:



Many times, we encounter instrument tracks where we notice an accentuated bass level. One of the most common mistakes is to immediately attenuate the low-frequency area, as shown in the left image, without paying attention to the sonic characteristics of the instrument. It's crucial to listen to the musician's performance in conjunction with the sound to determine what's happening.

In many cases, the resonances are produced by the instrument's physics, meaning the instrument itself has specific acoustic characteristics. Using Organology in these cases is essential. Let's take an example.

There are instruments like the Fender Bass that, starting in 1965 when Clarence Leonidas Fender (Leo), with significant health issues, decided to sell his Fender company to the CBS Corporation. They modified some of the guitars' sound characteristics and, in our case, the bass guitars. An increase in resonances around 80Hz and 170Hz is detected. In a slow-paced and unaccented musician's performance, you will notice these increases. Specifically, these are the frequencies of F1 (Fa 1) and F2 (Fa 2). Locating these frequencies is very simple.

In the Frequencies section of msCALC PRO, you can select the note and octave, and you will get the exact frequency you need for a specific note.



In this section, you can work in Franco-Belgian (European) notation, where A3 is 440Hz, or in the Anglo-Saxon mode, where A3 is 220Hz. If we look up the frequencies of the notes F1 and F2 in msCALC PRO for our example Fender Bass, we get 87.31Hz and 174.62Hz, respectively.

Now, in the EQ, you only need to attenuate those resonances (F1 - 5.0dB and F2 - 7.0dB), without having to reduce all the bass, as shown in the image. The result is that, as if by magic, the bass stabilizes with the rest of the notes in the passage.

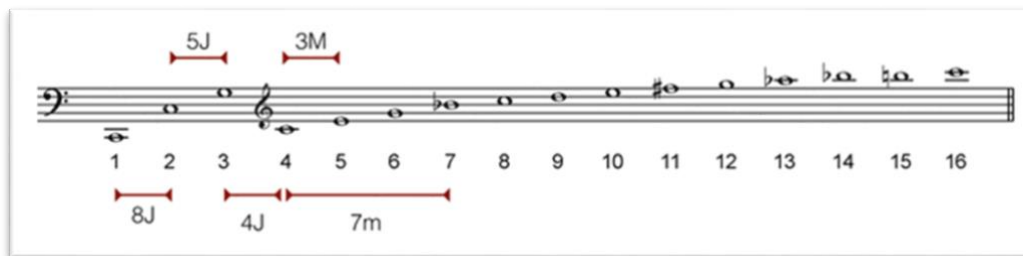


What we've seen in the previous example is very interesting, and working with Psychoacoustics can be incredibly helpful in our mixes. On the flip side, raising the volume of a specific harmonic is extremely useful. That's why we've added the "Harmonics" section in msCALC PRO.

Harmonics and Psychoacoustics.

In this section - Harmonics - ideal for all types of percussion, msCALC PRO will help you enhance the resonance in tune with the fundamental pitch of your mixing project. Based on the physical aspect of sound and its harmonic series, we have selected the first four fundamental harmonics from the harmonic series for tuning enhancement of an instrument.

Here is an example of the harmonic series below. Please note that the series in the photo is truncated, meaning there are more than 16 harmonics per note, approximately 21 in total, but it serves as a valid example:

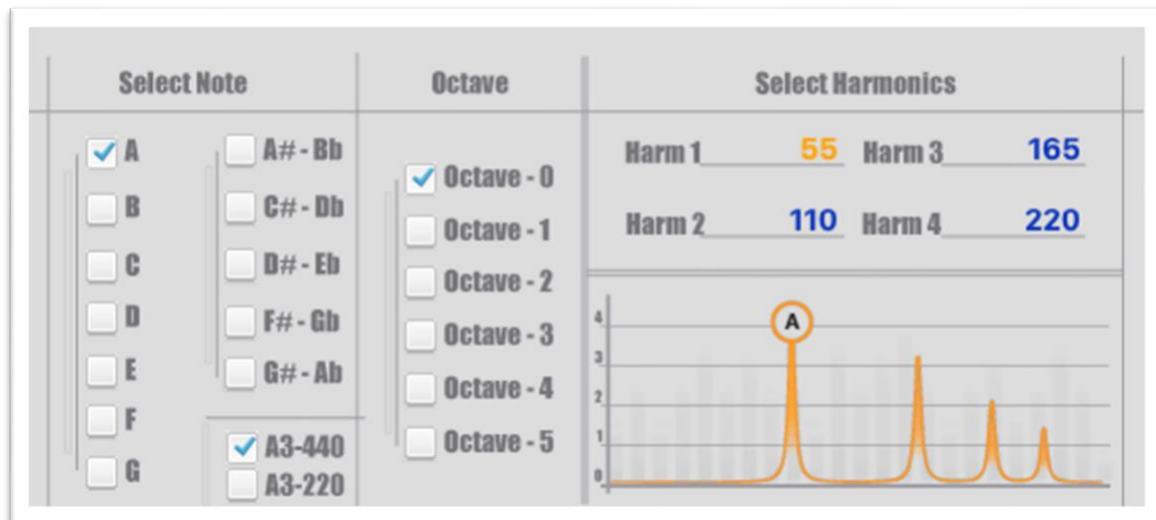


This harmonic enhancement technique can be particularly effective for percussion instruments, allowing you to emphasize specific harmonics and achieve desired tonal qualities in your mix.

If you look at the graph, the first four harmonics are tonal, meaning they include the fundamental, its octave, its fifth, and its third octave. The result is a fundamental followed by three harmonics that are crucial for our purpose.

In msCALC PRO, you only need to select the tonal base or fundamental pitch. If your project is in A minor, for example, you would select the note A and the octave you need. Automatically, msCALC PRO will provide you with the first four harmonics of the selected tonal series.

This feature allows you to target and enhance specific harmonics related to the fundamental pitch of your project, helping you achieve the desired tonal character in your mix, especially for percussion and other instruments where harmonic emphasis matters.

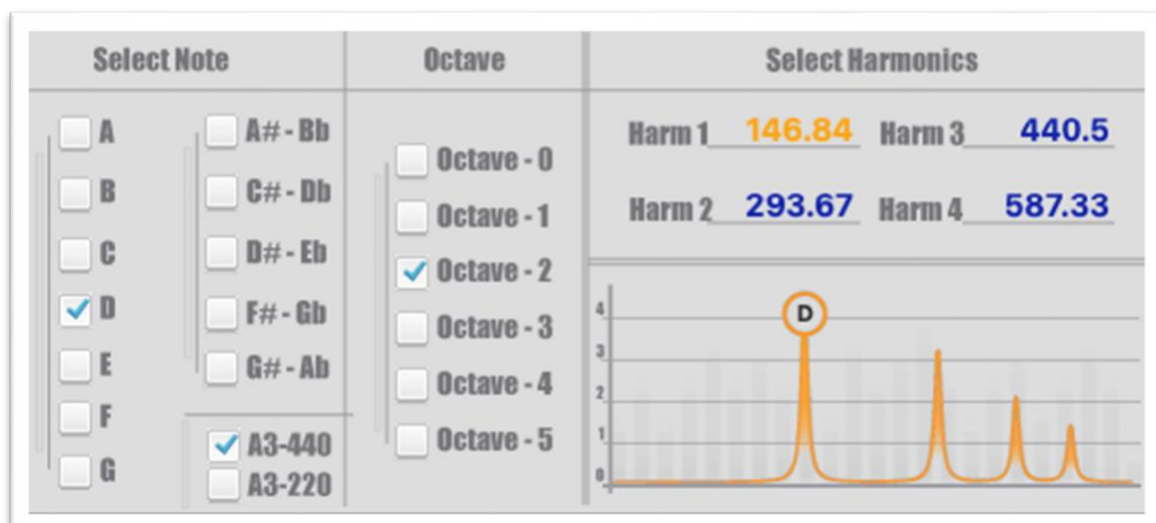


In the example from the image, we could add resonance to the harmonics of a resonant Kick Drum in A. This psychoacoustic combination of harmonics is resonating at the fundamental pitch of our project, which generates great stability.

If what we need is for the Snare Drum to fit within our A minor tonality, we would go to octave 1, enhancing harmonics at 110Hz, 220Hz, 330Hz, and 440Hz as a result.

On the other hand, if we have a Tom or Snare Drum where a harmonic resonates excessively, we just need to locate it and find the corresponding series in msCALC PRO to lower the volume of those harmonics. If it helps, you can use a VSTi with a Piano sound while listening to the specific track to locate the tuning of that troublesome harmonic.

For example, if in that Tom or Snare Drum, or even in a drum loop, you hear a very strong harmonic, and once located, it's a D from the second octave, you would input it into msCALC PRO to see the attenuation results to use, as shown in the following image:



This technique allows you to precisely control the harmonics of your instruments to fit them into your desired tonal context and achieve a more balanced and pleasing mix.



For enhancing or attenuating harmonics, it is advisable to use a 4-band EQ in the first insert of the track channel so that all subsequent processes work in accordance with the changes you make with Psychoacoustics.

We hope you enjoy our software and make the most of it. We have taken great care to minimize graphic resources, RAM usage, and CPU consumption by the application to give top priority to your DAW so that you can work seamlessly with msCALC PRO.

We will be releasing new updates and will keep you informed through our social media channels.

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