

INSIDE SYNTHESIS

EPISODE 004 – FREQUENCY MODULATION

Supplementary Guide

In order to create FM programs with modern digital synthesizers (Alesis ION, Nord Lead, etc), it's important to set the pitch of the modulator to match with exact harmonics.

Here is a table to convert ratios into oscillator tuning settings.

If your synthesizer has you routing oscillator 2 to oscillator 1, oscillator 2 is the modulator and oscillator 1 is the carrier.

RATIO TO PITCH CONVERSION TABLE

FOR THIS RATIO:	SET MODULATOR TO:
1:2 (.5)	-1 oct (-12 semitones)
1:1	Equal to carrier
2:1	+1 oct (+12 semitones)
3:1	+19 semitones + 2 cents ***
4:1	+2 oct (+24 semitones)
5:1	+28 semitones -14 cents ***
6:1	+31 semitones + 2 cents ***
7:1	+34 semitones -31 cents ***
8:1	+3 oct (+36 semitones)

*** *Why the offset? Wouldn't that be dissonant?*

The offset corrects the equal temperament that your synthesizer most likely uses.

Equal temperament is not harmonically perfect; a slight tuning adjustment is a trade off in order to have easy transposition between keys. 99% of modern western music uses this scaling.

It isn't necessary to add the offset, but if you want the exact same result as a DX7 ratio when you're using a virtual analog, you'll need to add it.