

TC Electronic Triple C Multi-Band Digital Compressor


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Perhaps the Triple C should be called a Triple Threat. It is a digital full-range compressor, multi-band compressor and envelope compressor capable of extreme alteration of attack and release. TC Electronic comes through again with another useful and modern recording processor with some unique twists on the compression process.

The Triple C comes in two different single-rackspace versions: a \$699 single-channel unit (the one I tested ran V. 1.02 firmware) and a stereo version at \$999. Two single-channel versions can be stereo-linked, but the stereo unit cannot be "unlinked" for two separate compressors. The Triple C accepts and outputs audio either as analog with the back panel balanced TRS jacks, or digitally with a pair of S/PDIF RCA jacks. Maximum input analog level is +24 dBu, and maximum output is +20 dBu balanced. A/D conversion is 24-bit with 128x oversampling, and the digital output can be dithered to whatever bit depth is required. The unit clocks to the incoming digital source or is selectable to a 44.1 or 48kHz internal clock when the analog inputs are being used. There is full MIDI implementation that can be used to offload and store the 50 factory and 100 user compressor presets called Styles, as well as control all the unit's parameters using Continuous Controller data.

Knobs, Not Buttons!

All adjustments are made with knobs--yes, knobs! Thankfully, there are no up/down value buttons here, just knobs that, for the most part, have a single function each. The Input Level control has a range of -6 dB to +18 dB, and input and output levels are displayed on two small vertical VU meters at the left side of the comprehensive digital display. Clip indicators show both analog clip at the input or output and digital clip (i.e., one or more samples at or exceeding 0 dBFS).

The compact display includes a 3-band, horizontal linear gain reduction/output meter that

ranges from -18 dB to +18 dB; a graphical display used for the Envelope compressor; "Override" (a means of matching front panel knob settings to values held in the currently selected preset); and status indicators for analog or digital input, sample rate, quality of sync lock to an external clock, and stereo link to another Triple C.

Below the display, a well-lit, 23-character digital readout identifies and changes automatically to the knob and value being adjusted--a nice feature. This readout also shows menus for I/O settings and dither options, factory and user compressor presets, and certain internal fixed compressor parameters, such as the crossover frequencies for the multi-band compressor. These parameters are accessible via the large System parameter wheel, a dual-concentric knob that is pushed in to select various actions. It took me a while to learn how to navigate around the Triple's system. However, after initial setup, I found little need to go there.

Professional Compressor

Like any other professional compressor, the Triple C has the required Threshold, Ratio, Attack and Release knobs. Threshold adjusts from -40 dB to 0 dB, and Ratio ranges from 1:1 to 1: infinity. Attack time is adjustable from 0.2 ms to 70 ms, and Release goes from 20 ms to 2 seconds. The Triple C has a Look Ahead feature in Multi-Band mode, allowing for more precision with complex compressor tasks. However, this mode necessitates that the output be delayed by 3 ms. The nominal A/D processing delay through the Triple is 0.7 ms and should be considered when processing one or more sources within a multiple microphone recording where phase integrity is very important. This delay, although slight, could affect phase coherency in this special recording situation.

The Triple C is an RMS compressor and can be switched to a peak compressor in Multi-Band mode. Softlim, available in all modes, is a peak limiter that works like the version in the TC Finalizer unit and is pretty easygoing. Finally, a master Makeup gain control boosts or decreases the entire processed signal by + or -18 dB after gain reduction, and it has a clever display: The entire VU meter slides to the left with less makeup or toward the right when more makeup gain is applied. Meanwhile, the meter continues to show gain reduction, making this the best compressor metering scheme I have ever seen.

Full-Range vs. Multi-Band

The Triple C's most immediate mode is Full-Range, and all the controls work and act as you would expect, just like any good analog compressor. I usually started in this mode to get a ballpark setting and sound. Increasing the input level pushes more level and causes more compression. I liked the unit a lot in this mode, and I sometimes used the Digital Radiance Generator (another feature borrowed from the Finalizer) to introduce second harmonic distortion on rock guitar tracks.

The fun starts when you switch to Multi-Band mode. For years, multi-band compression has been used at radio stations and in live sound. Now, it is gaining popularity in the recording studio as a means of dealing with difficult dynamics. The user can compress the band most responsible for large level jumps without affecting the rest of the audio with unwanted compressor side effects.

In Multi-Band mode, the VU meter splits into three parallel meters, each reading different gain reductions and levels for the High, Mid and Low bands. Without doing anything, you'll hear a noticeable difference in sound; if you were compressing a mix, the top end will open back up as if you were not compressing at all, and everything else will sound less squashed.

Using the Triple C on a solo piano recording, I first reset the crossover points of the low- and high-band compressors. The crossovers are both identical shelving filters that range from 19.95Hz to 20kHz. I ran the high crossover out to 12 kHz, and, when I was moving the low crossover frequency, it was easy to tell where I wanted it. In real time, I heard and saw the frequency areas that were mostly triggering the compressor, and I could dial in crossover points.

The spectral balance is adjusted with the Lo-Freq and Hi-Freq controls. Increasing either of these controls increases the makeup gain for those respective bands, while maintaining the same gain reduction based on program content and the master threshold setting. Unlike some other multi-band compressors, there is no way to set individual thresholds for each band, making the Triple C much easier to set on-the-fly. This action is indicated again on the sliding VU meters. Decreasing both controls together has the net effect of increasing the mid-band after you turn up the master makeup gain control.

Envelope Compression

Envelope Compression refers to the process of increasing or decreasing the attack and/or release portions of the dynamic envelope of a sound. This is a process that works well on periodic and predictably consistent sound sources, such as kick and snare drums, individual percussion instruments, samples, loops or preprogrammed recurrent synth events.

When Envelope Compression is selected, the four main active controls become Attack Gain, Attack Time, Release Gain and Release Time. One note of caution: Turn your monitors way down when you are switching into this mode, because the sudden changes in level are very dramatic--especially if the two spectral knobs are turned clockwise. In Envelope Compression mode, both the Attack and Release controls set duration times for gain modification in the attack and release portions. Turning the Envelope Attack Gain clockwise increases the level during the attack portion of the envelope up to the maximum output of the Triple C, or +20 dB. Likewise, you can reduce attack level by 20 dB or more by turning the Envelope Attack Gain counter-clockwise.

Once the envelope is in a quiescent state--i.e., after the attack portion is over but before the onset of release--the signal passes unaffected. With the Envelope Release Gain, I could lift the level of the end of a sound for up to a full two seconds and up to the +20dB maximum output. Conversely, I could also reduce the sustain tremendously by turning the Envelope Release Gain control counter-clockwise. This was good for reducing reverb tails and unwanted sonic aftermath. It's a little like a downward expander, only much smoother and more musical.

The Triple C's Envelope Compressor is perfect for greatly increasing the attack or "hit" of a snare drum, or for bringing up the back end of a drum loop, or reducing excessive recorded

reverb or room tone on any individual sound. Furthermore, any noise present will be greatly amplified along with the ring-out sustain. This feature worked more comprehensively than the SPL Transient Designer I reviewed in the January 1999 issue of *Mix*, and unlike the analog-based Transient Designer, the Triple C allows for control over both the length and level of the attack and release portions.

At \$699 (or \$999 for the stereo version), TC Electronic's Triple C is a new kind of digital processor that provides an easy-to-learn introduction to multi-band compression and also offers an alternative dynamic control method with many creative possibilities. I like the new level of precision, adjustability and resettability made possible by the digitally based Triple C, previously only available within digital workstations and impossible with analog compressors.

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