CIQT-1 COMPIQ TWAIN DUAL-BAND / STACKED PRO COMPRESSOR PEDAL MANUAL V2.1

Last modified: January 10, 2025

TECHNICAL SPECIFICATIONS

Input impedance: > 1MΩ
VCA Output Impedance: ~100Ω
DITOS Output Impedance / Gain: 10KΩ / +6dB (default)
0dB input reference level: -20dBu (77.5mVrms)
THD VCA & DITOS: <0.12% @ 1kHz, 0dBu in/out, 600Hz crossover, 600Ω load, 24KHz BW, 9-18VDC power, through 6th harmonic
Frequency response: -1dB @ 20Hz; 0dB @ 40Hz - 25KHz
Power Voltage: 9-18VDC(max), Center Negative Barrel
DC Power Plug Barrel: Ø 5.1/2.1mm, 12mm long
Power Consumption: < 170mAh
Product Size: Length: 105mm, Depth: 120mm, Height: 54mm
Product Weight: 275 gr. / 395 gr. with DITOS
Packed Weight: 435 gr. / 455 gr. with DITOS
Packed Shipping Weight (one unit): approx 560 gr.

INTRODUCTION & EFFECT CONTROLS

Thank you for choosing the CompIQ TWAIN Pro Compressor as your dynamic processing tool. The TWAIN is a state-of-the-art compressor/limiter pedal featuring two independent high-performance 4320 THAT Analog Engines® and Burr-Brown™ FET ICs, ensuring transparent, high-end audio processing without altering your instrument's tone. The TWAIN operates in two modes: Dual-Band compression with a variable crossover point, or fully Stacked compression, where the compressor engines are routed in series.

DUAL-BAND / STACKED – A side-mounted switch sets the operation mode of the pedal. In Dual-Band mode, the signal passes through the variable-point crossover, and each frequency band is sent to its engine for parallel processing. In Stacked mode, the crossover's re-combined signal is routed in series through each compression engine. Each mode creates a different tone-print flavor: Stacking compressors feels like an optical glueing compressor, while Dual-Band processing feels like a mastering dynamics tool. Switching the mode of operation with the pedal engaged, especially while audio is passing through, can generate a popping sound, which is normal.

CROSSOVER – The X-OVER control ranges from 70Hz to 1 KHz, with around 300Hz in the middle. The input signal always passes the Crossover for both lines, Dry and Wet, which ensures correct phase alignment from input to output. In Dual-Band mode, what is below the Crossover's set point is sent to the Lows engine and what is above is sent to the Highs engine. In Stacked mode, the Crossover sends a full-frequency mixed signal to the compressors in series, and the Dry Line.

PREAMP INPUT TRIMMER – Adjust the input signal from -12dB attenuation to +12dB gain. With the trimmer set at noon, the preamp passes the signal unchanged. This setting can act as a compression driver or a one-knob balancer for the pedal's overall audio effect. The PEAK level indicator lights Green when the input signal peaks at -2dBu (1.74Vp-p, or about 0.6Vrms) and Red when the output stages peak above +2dBu (2.75Vp-p, or about 1Vrms). If both thresholds are met simultaneously, the LED turns orange. If the red LED is constantly lit, level adjustments might be needed to keep the internal signal just below the +4dBu professional line level. However, signals up to +10dBu can be processed safely from input to output. The peak level indicator responds to positive adjustments in both, preamp and make-up gains.

RATIO – This control is available for each engine and sets how much the audio signal is compressed once it exceeds the threshold. It ranges continuously from 1:1 to Infinite:1. At 9 o'clock, the control sets a 2:1 ratio, providing mild, musical compression that gently evens out signal peaks. At 12 o'clock, it sets a 4:1 ratio. At 3 o'clock, it corresponds to a 10:1 ratio, which is more aggressive and useful for sustaining notes. An Inf:1 ratio applies over 20dB of compression, resulting in a limiting effect. **TIP** – The more compression is dialed in, the more make-up gain is required, which can increase amplification noise.

THRESHOLD – Available for each engine, the Threshold sets the signal amplitude level at which compression begins. Compression is applied only to the portion of the signal that exceeds the threshold. When set very low, compression engages quickly, even for small input signals. When set higher, it allows a significant portion of the signal to remain untouched. With a 50dB threshold range, the CompIQ TWAIN can accommodate a wide variety of audio signals from many electric instruments, not just guitar or bass. The CompIQ TWAIN can also be used with line-level signals. **TIP** – With a higher threshold, only strong strokes are compressed, leaving the core of the audio signal intact. This results in greater transparency and a rise in output level, requiring less make-up gain, consequently reducing amplification noise.

TIMING – Available for each engine, the Auto Dynamic Timing adjusts Attack and Release in real-time, responding to playing dynamics. Two presets are available: Auto Fast (F), with 5-7ms Attack and 70ms Release, and Auto Slower (S), with 10-15ms Attack and 100-220ms Release. Both settings respond gracefully to any playing style. **TIP** – The Fast timings setting accentuates the compression feel, especially with higher ratios. The Slower timings setting allows more air into the compression, making it feel more natural, even with higher ratios.

MAKE-UP GAIN – This control is available for each engine. The more compression is applied, the more recovery gain is needed to compensate, up to a max of +20dB. In stacked compression, these controls must be adjusted carefully, as they can quickly increase noise and overload the available headroom with huge amounts of gain. The input preamp boost also contributes to raising the signal significantly, and that adds up too. **NOTE** – In Feed-Back (FB) mode the Make-up Gain serves two purposes: it compensates for gain reduction on working signal and also adds gain to the feedback signal sent to the RMS detector, proportional with the ratio used. This can affect compression settings, requiring fine-tuning of all parameters to get the desired dynamics and output level. **TIP** – Raise the Threshold before adding Make-up Gain. Set moderate compression Ratios and use Soft Knee and Slower timing to keep noise in check. Additionally, blending in some Dry signal can help balancing heavy compression. **TIP** – In Dual-Band mode, de-balancing gain levels function like a tilting EQ with a variable pivot point set by the Crossover.

SIDE CHAIN FEED - The FEED switch selects between Feed Forward (FF) and Feed-Back (FB) compression types, with a combination of the two in the middle position: Feed Forward for Lows and Feed-Back for Highs. While some FB and milder FF settings may yield similar audible results, FB compression is more about 'feel' than 'precision,' offering a smoother, airy compression with less punch. FB mode has a less distinct Knee effect compared to FF. FB mode may not be ideal for hard-limiting purposes. This is why we set the combined mode with FF for Lows, which are in more needs for

limiting. Slower timing and Soft Knee enhance FB compression's smoothness even further. **NOTE** – Maximum Gain in FB mode can trigger compression from small signals like buzz or hum due to amplified signals reaching the RMS detector. Sensitivity in the FB side chain can be reduced by adjusting Gain, Ratio, Threshold, timing, Soft Knee, boosting control signal with the Side Chain Filters, or a combination of these techniques.

SIDE CHAIN FILTER (SCF LO & HI) – Rotating the knobs CW increases the amount of cutting, while CCW rotation boosts the same frequencies in the side-chain. Both filters remain neutral when the knobs are at noon. The Low-cut/boost SCF available on the Lows compressor is specifically designed for bass instruments (±12dB @ 70 Hz, 12dB/octave). When the compressor is triggered by high-amplitude low frequencies, it may excessively compress them, especially if the crossover is set higher in Dual-Band mode; or in Stacking compressors mode, where overcompressing can lead to an undesirable muffled sound. By cutting lows in the side-chain, their compression at the output is reduced and they become louder. A complementary adjustable High-cut/boost SCF further refines this balance (±9dB @ 3 kHz, 12dB/octave). Cutting highs in the side-chain ensures they are not over-compressed at the output, maintaining a naturally bright sound and the overall energy balance in the lows. Boosting lows and highs in the side-chain effectively extends the threshold range downward and increases the compressor's sensitivity to those frequencies. This can be particularly useful for dealing with low-amplitude signals, such as thin-sounding single-coil pickups or weaker passive bass pickups.

SOFT/HARD COMPRESSION KNEE – Available for both engines, the Compression Knee determines how compression is applied. With Hard Knee, compression kicks in with a sharp corner, making it quite audible. At higher compression ratios, it clearly emphasizes the limiting effect, while at lower ratios, it provides a good, musical compression effect. Soft Knee, on the other hand, applies compression progressively, resulting in a gentler effect, desirable when compression should be more subtle. This goes well in tandem with Feed-Back compression mode and Slower timing. **TIP** – When used along with higher thresholds, Soft Knee adds even more transparency to the sound, softening the compression feel. Think of it as a mastering tool for refining audio content.

DRY/WET MIX – This control acts like an audio mixer, allowing you to blend the clean signal with the compressed signal coming from both compressors (a.k.a. the New York compression style). This helps restore transients or squished frequencies that are less perceived by ear when reduced by compression. In the middle position, the blend of signals is 50-50.

COMPRESSION DISPLAY – Available on each band, the 6-LED Gain Reduction display provides accurate information from the RMS-level sensors. Separate displays help visualize the compression effect precisely, especially in Dual-Band mode, where different compression can be applied to notes on different strings of the instrument, depending on crossover's setting. The displays are calibrated for a -20dBu (77.5mVrms) reference input level.

FOOTSWITCH – When engaged, the audio signal is routed through the active circuitry and the power LED marked COMP is lit Green. When pushed again, the signal is routed True Bypass from Input to Output. **NOTE** – Since the Twain output buffer and DITOS input buffer share the same IC which require powering, there's a slight signal level difference between powered and non-powered bypass due to this DITOS's always-connected active load.

INPUT & OUTPUT – On the input TS connector you may connect either an instrument directly, or the output of another pedal, or a signal taken from the amplifier's SEND FX-loop. The Output TS connector sends the processed signal to the next effect pedal, or to an amplifier's input, or to the RETURN FX-loop of an amplifier. The output signal can also be recorded directly into a Hi-Z interface input.

DC POWER – We recommend using 9-12VDC unless large amplitude signals must be accommodated, in which case maximum 18VDC power supply ensures more headroom. Use only good filtered and protected power supplies, within a voltage range of 9-18VDC, center negative. Use a DC Power Plug Ø5.1/2.1mm, 12mm long barrel.

DITOS • Transformer-Coupled Balanced Output DI – The optional transformer-coupled balanced output in 1/4" TRS format is suitable for direct recording or for sending the signal to a mixing console or recording interface (equivalence to XLR: Tip = Pin 2, Ring = Pin 3, Sleeve = Pin 1). The DITOS follows the main VCA output. Even when the main VCA output is true bypassed, the signal still passes through the transformer (dry or wet). The DITOS output can also function as an unbalanced floating output for use with a TS mono plug, sending the signal to another pedal or amplifier. The boards V2.1 and onwards include an additional +6dB of default gain on the DITOS output. The main VCA output remains functional and in-phase at all times. The transformer voicing complements the Burr-Brown™ general signal conditioning exceptionally well. The DITOS tone is filled with natural warmth, delivering tight and punchy lows, enhanced low-mids, and warm-ringing highs.

GROUND LIFT JUMPER – A chassis ground lift jumper is available only if the DITOS transformer DI output is present. The jumper is set to ON (closed) by default, connecting the circuit's ground to the sleeve in the DITOS output, which is always in contact with the Twain's chassis. When the jumper is removed, the circuit ground is disconnected from the chassis, though the chassis still acts as an extension of the balanced cable shielding. Remove the jumper if ground loops cause issues. **NOTE** – It is advisable to leave the jumper ON if a mono TS cable is used with the DITOS output.

BECOS

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OPERATION MANUAL V2.1

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TRUE BYPASS

COMPIQ TWAIN

PRO COMPRESSION

Thank you for using the BECOS products!

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SCAN FOR THE COMPIQ 101 INFO

Hand built in Vienna, Austria, EU

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