



# Millennia

Music & Media Systems

## TCL-2 Twin Com Stereo Compressor / Limiter

Pure Processing  
Tubes or Solid State? YES



### Control Dynamics With Total Signal Integrity

- Two paths to perfection with Twin Topology™
- Stereo optical compressor/limiter with unprecedented sonic purity & integrity
- All triode 300 V vacuum tube signal path or...
- All discrete J-FET solid state signal path
- Both topologies are entirely transformerless, high voltage, pure Class A
- Minimalist design: only one active stage in the audio path
- Threshold: Infinity to + 20 dBu
- Ratio: 1.4 : 1 to 30 : 1
- Attack: 2 to 100 ms
- Release: 100 ms to 3 s
- Large meters: switchable for VU or Gain Reduction
- Constructed for demanding professional applications
- Ultra-Premium components throughout
- Gold relays, connectors, switches, tube sockets
- Silver Teflon power wiring
- Mogami Neglex OFC audio wiring

### Options

- Musically rich vintage vacuum tubes

### Not Quite What You Need?

- STT-1 Origin Twin Topology Recording Channel

### Less is Everything

The minimalist design of TCL-2 puts just one single active gain stage in the entire audio signal path. Through a painstaking process that has included hundreds of hours of critical listening, TwinCom's active stage has been optimized as input buffer, EQ amplifier, and output driver. Millennia's minimal circuit topology preserves the integrity of the input signal to a degree that's impossible using multiple active stages (up to seven in some designs).

### Transformerless Topologies

In Millennia's Twin Topology™ designs, both solid state and tube circuit paths are entirely transformerless.

The TCL-2 is designed to preserve sonic purity even as it controls dynamic range. Our unique circuit design avoids audio transformers, realizing the musicality of pure Class A gain control and optical compression without introducing coloration, character or "vibe."

### Pure Dynamic Control

Whether you choose the euphonic spatiality of tubes or the absolute accuracy of solid state, TwinCom is designed to smooth out dynamic extremes without announcing its presence in any way. Optical compression and limiting is the most musically neutral analog dynamics processing we have found. We're not just labeling TCL-2 "mastering-grade;" it is the dynamics processor of choice in top mastering studios around the globe.

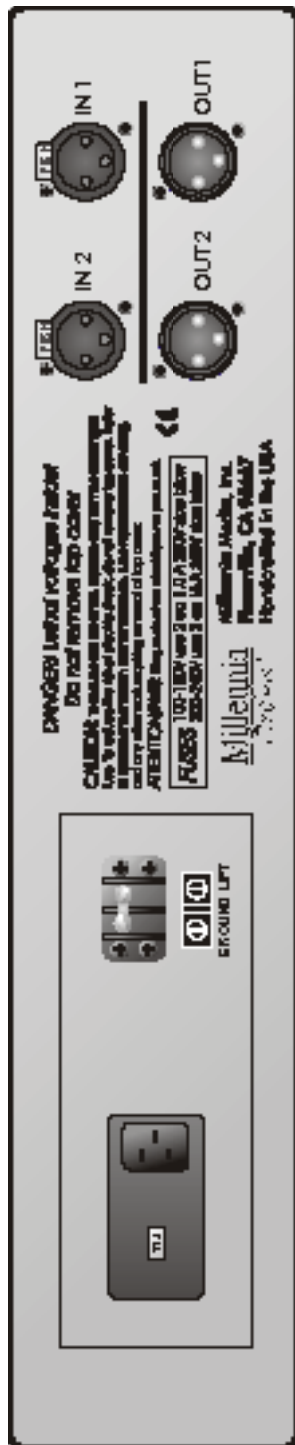
### Digital Delivery Demands Total Clarity

Data compression algorithms (MPG, AC3, DTS etc.) are unable to distinguish signal from noise, so preserving absolute signal integrity through the recording and production process is critical to communicating the artist's intention and individuality. The recording and mastering process entails amplifying the original source by as much as 1000:1. Coloration or distortion become part of the signal: once lost, sonic information can never

be recovered. Millennia's unique circuit designs amplify and adjust the original input signal with an absolute minimum of alteration, controlling dynamics in way that seems to have part of the original performance, not a pasted-on "effect."

### You Can Pay More, You Can't Spend Less

Initial purchase price is never a design target at Millennia Media. We aim to maximize return on investment and minimize lifetime cost. Developed in a rigorously empirical process whose goal is absolute accuracy and sonic realism, TCL-2 is accurate enough for the most critical recordings – the choice of recording and mastering engineers at the top of the profession. This is a tool you can build a career around, one that will remain essential no matter how far your sonic explorations take you. Acquiring a TwinCom is a step off the upgrade treadmill: a step that will ultimately save you much more than your initial investment.



## TCL-2 Specifications

Threshold Range	Infinite to +20 dBu, Continuously Adjustable
Maximum Output Level	> + 32 dBu
Maximum Input Level	+ 30 dBu
Output Gain Control	Continuously Adjustable
Frequency Response	+0 / -3 dB sub 2 Hz to beyond 100 kHz
Noise (20 Hz - 22 kHz)	-87 dBu (SS), -82 dBu (VT)
Attack Range	2 ms to 100 ms, Continuously Adjustable
Release Range	100 ms to 3.0 S, Continuously Adjustable
Compression Ratio Range	minimum 1.4 : 1, maximum 30 : 1 Continuously Adjustable
THD + Noise, 20 Hz - 30 kHz	< .01 %, typ .003 % (VT or SS)
Common Mode Rejection Ratio 10 Hz - 20 kHz, 100 mV C.M.	> 50 dB, Typ > 70 dB
Dynamics Bypass For Each Channel?	Yes
Meter Gain Reduction Or VU Selection?	Yes
Stereo Linking Switch?	Yes
Input Impedance	25k Ohms
Minimum Output Load Impedance	300 Ohms (SS), 1k Ohms (VT)
Recommended Minimum Load	600 Ohms (SS), 3k Ohms (VT)
Output Impedance	< 5 ohms (SS), < 300 ohms (VT)
Twin Topology Compressor Amplifiers	Switch In: Pure Class-A Discrete J-FETs Switch Out: Pure Class-A Triode Tubes
Power Consumption	55 watts maximum
Power Requirements	Selectable: 100-120, 200-240 V ac 50/60 Hz
Dimensions/Shipping Weight	19" W x 12.5" L x 3.5" H, 26 lbs.

**Millennia**  
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Hand made in the USA.  
One year limited warranty.  
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“We’ve been using our [eight channels of] TCL-2 Twincoms for a number of stereo and six channel surround mastering projects with great results. The ability of each unit to sound either as transparent as the Class A solid state electronics or as warm as the vacuum tube electronics is a big advantage. The Twincom has become our reference analog dynamics mastering processor.”

*Bob Ludwig, Gateway Mastering & DVD*

“The Millennia Media TCL-2 sounded nothing short of fabulous on voices (especially male voices), guitars (electric and acoustic), and most keyboards. It does a great job of controlling the dynamics of sustained, high energy programme material, and it bestows interesting dynamic effects on more transient audio. I was often surprised that sources I expected to benefit from the valve amplifier chain actually worked better with the solid-state path, and vice versa.”

*Hugh Robjohns, Sound On Sound, UK*

“The Millennia Media TCL-2 is an amazing dynamics processor. The subtle differences between the two circuit topologies allow me to be much more precise when choosing the appropriate character for a signal, and the purity of the signal path preserves more of the original signal than any other compressor I’ve used. This is the way that high end audio equipment is supposed to be -- well designed, well built and with a wonderful sound.”

*Dave Martin, Audio Media US Magazine*

“This is a clean, great sounding compressor. The two topologies both sound pure, transparent, and, in most circumstances, remarkably similar, with the J-FET circuit sometimes marginally more detailed.... For the purist, this is a good value, high-performance compressor.”

*George Shilling, Studio Sound Magazine, UK*

“The TCL-2 is beautifully constructed and is as sonically neutral as anything I have heard.”  
*Joe Palmaccio, Senior Recording Engineer, Sony Music, NYC*