



CL089

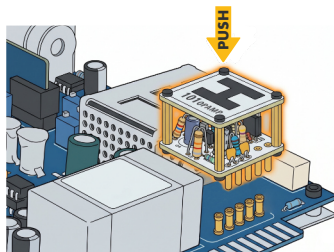


**Vintage Swiss PWM compression.
Reborn.**

READ BEFORE USE!

Before using the CL089 for the first time, you need to insert the supplied H101 op amp into its socket.

Align the pins and gently push it down. You can secure it with the zip tie provided if needed.



INTRODUCTION

Introduced in 1968, the 089 was Studer's first fully "transistorized" mixing console—simpler, lighter, ran cooler, and easier to maintain. Transparent and true to the source, yet punchy and dynamic, the 089 became part of recordings by artists from classical pianist Glenn Gould to drum & bass producer Dom & Roland, or Japanese free jazz cellist and bassist Keiki Midorikawa.

Most of these modular consoles featured a dual Compressor/Limiter module (1.091.070), primarily intended for the master section. With limited controls and remarkably transparent PWM gain reduction, it was designed as an all-purpose compressor. But the transparency of the late '60s is not quite the transparency of today—and this design has plenty of character to offer modern productions.

Originally designed with Swiss broadcasting and classical recording in mind, the 089 console was built around a high-fidelity philosophy of "capturing the truth." PWM compression fit that philosophy perfectly: controlled, unobtrusive gain reduction with excellent transient handling and high-frequency preservation.

Where many compressors of the era could sound gritty, pumping, or aggressive, the Studer approach offered something different: solid, rich, and controlled. Emerging soon after the legendary PYE compressors, it was also one of the earliest uses of PWM gain reduction in professional audio.

The CL089 reinterprets the original Studer® circuit in the convenient API®500 format. It features the same 100% analog PWM generator, driven by a custom-wound transformer, and thru-hole components along the signal path.

Legendary Swiss compression. Reborn.

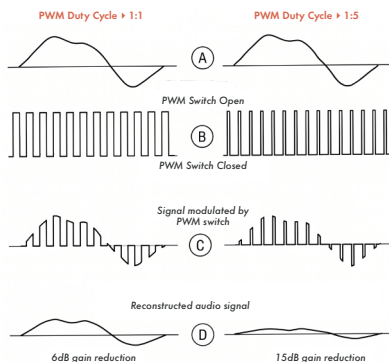
ABOUT PWM COMPRESSION

Unlike VCA, FET, optical, or diode-bridge compressors, a Pulse Width Modulation (PWM) compressor controls gain by switching the audio signal at a very high frequency and varying the width of those pulses. **B C**

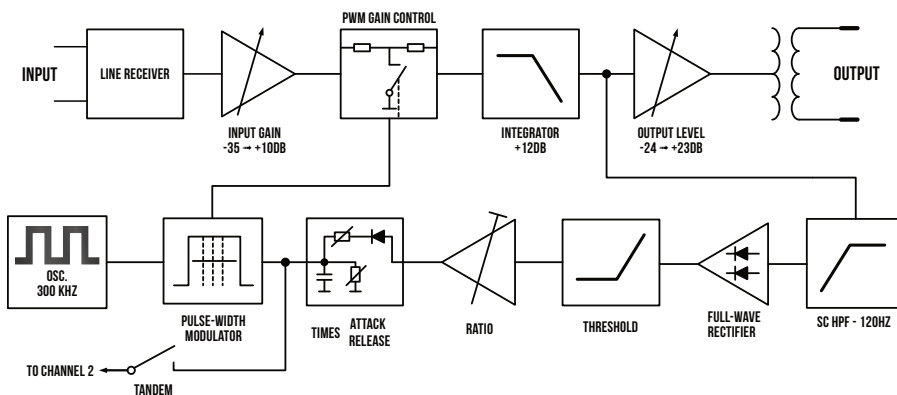
After filtering, the audio waveform is reconstructed at the desired level. **D**

The result is extremely fast and precise gain control while preserving transients and high-frequency detail.

PWM remains remarkably rare in professional audio—which is exactly why we wanted to bring this forgotten Studer approach back to life.



THE STRUCTURE OF THE CL089



SPECIFICATIONS

- ▶ Max level (input & output): +28dBu
- ▶ Input impedance: 48kΩ | Output impedance: 60/240Ω (see page 6)
- ▶ Output circuit: Lundahl LL1588 transformer driven by H101 op amp
- ▶ Frequency response (1kΩ load/light compression): ±0.3dB from 6Hz to 20kHz
- ▶ SNR: >108dB (0.2% THD) | 0.005% THD @ 0dBu
- ▶ Relay-operated bypass circuit
- ▶ Designed and assembled in our workshop in France.



MAIN OVERVIEW



BYPASS

The CL089 features a relay-operated true bypass, ensuring perfect transparency when disengaged.

INPUT GAIN

Like many classic compressors, the CL089 has a fixed compression threshold. You then set the amount of compression with the input gain.

i The input gain range is approx. 45dB.

RATIO

Choose the desired ratio from a gentle 1:1.5 up to the more aggressive LIMITER setting.

BULB INDICATOR

The bulb indicator reflects the amount of compression by varying intensity.

RELEASE TIME

Switch between 4 different release times to suit your source, from 0.1s (100ms) to 2 seconds.

i In the AUTO/2s position, the actual release time will depend on the internal switch position (see page 6).

SLOW ATT (ATTACK TIME)

Disengaged → Original attack time (≈ 0.6ms)

Engaged → Slower attack time (≈ 10ms)

SIDECCHAIN FILTER

Applies a 120 Hz high-pass filter to the detection circuit of the CL089.

STEREO LINK - TANDEM

Use the tandem switch to link the compression of two CL089 units (page 6 for more information).

i All controls remain independent on each module!

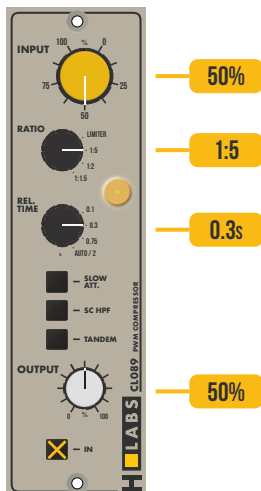
OUTPUT GAIN

Use the output gain (also known as makeup gain) to compensate for the loss in level caused by compression.

This can be used to match input and output levels for easier comparison.

i The output gain range is approx. 47dB.

HOW TO USE THE CL089



Due to the "vintage" approach to the CL089's gain structure, including the fixed compression threshold, it may take some time to get used to its workflow.

We recommend starting with the following setup. With an input level around 0 dBu, you should get light compression and a good balance between the bypassed and treated levels.

Increasing the input gain will increase the amount of compression, which is shown by the brightness of the bulb indicator.

Thanks to a gain range of over 40 dB on both the input and output knobs, the CL089 can be used in any situation, whether you're tracking at a low level or processing hot synths or line-level DAW sends.

AUTO / 2s RELEASE SETTING

The longest release time can be set to 2 different values by an internal switch.

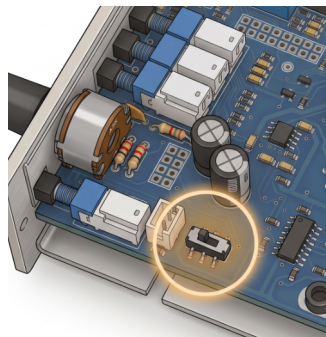
→ 2 seconds release time

Advantages: the original dynamics remain unaltered to a certain degree.

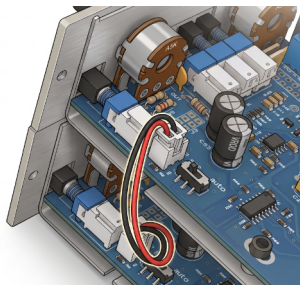
Disadvantages: short overloads reduce the level of the whole program for longer times. Overall level control is limited.

→ "AUTO" release time

The AUTO release time serves to eliminate the disadvantages mentioned above. This is a program-dependent combination of a short, a medium, and a long release time. In this way the density (ratio of mean value to peak value) determines the ratio of the fast to the slow parts of the recovery.



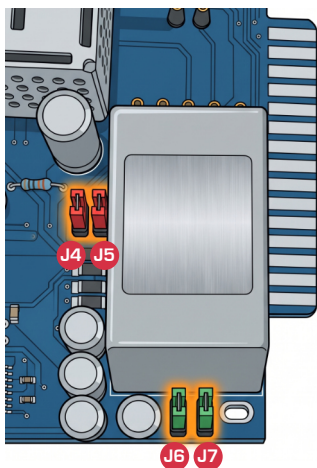
STEREO LINKING (TANDEM)



Both the TANDEM function and its name are inherited from the original Studer® 089 mixing console. Connect the included cable to the LINK connectors to sum the detection signals of two CL089 modules, while keeping independent controls on each module.

Push the TANDEM switches on both modules to activate or deactivate the link function.

OUTPUT TRANSFORMER CONFIGURATIONS



You can switch between three different output transformer wirings and adjust the output level by using internal jumpers. This will also slightly alter the character of the output stage.

Factory configuration



Primary winding › Parallel
Secondary winding › Series
Output gain › +6dB | Impedance › 240Ω

Low gain configuration



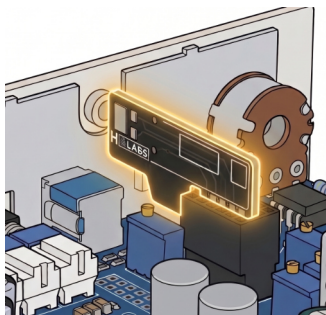
Primary winding › Series
Secondary winding › Parallel
Output gain › -6dB | Impedance › 60Ω

Full Parallel configuration



Primary winding › Parallel
Secondary winding › Parallel
Output gain › 0dB | Impedance › 60Ω

BULB REPLACEMENT



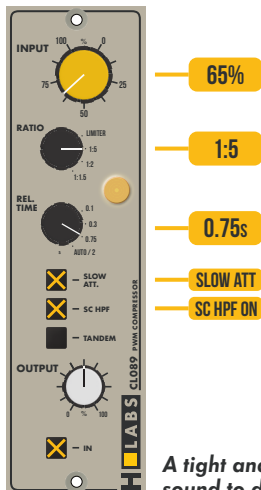
The compression level is indicated by a tiny incandescent bulb whose warm glow no LED can match.

Like every light bulb, it has a limited lifetime and will eventually need replacing in a few years. We have made this a simple process by placing the bulb on a separate board that can easily be replaced. Contact us to get a replacement board for free!

EXAMPLE SETTINGS

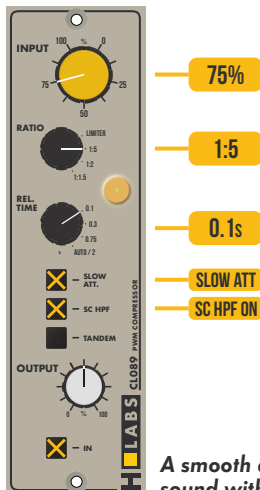
1 For all these examples, adjust input level to your source level, then adjust output to match bypassed level.

PUNCHY KICK



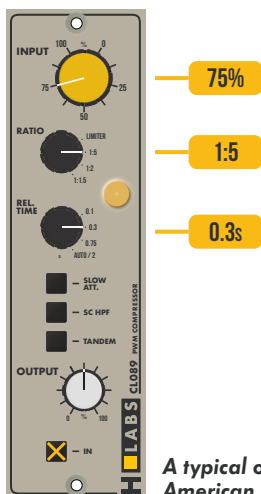
A tight and impactful kick sound to drive the beat.

SMOOTH VOCAL



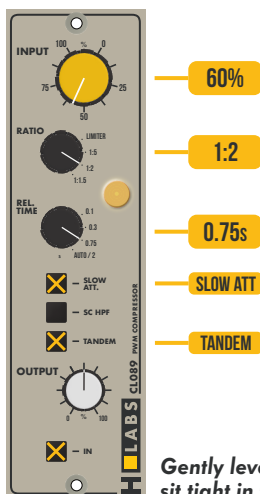
A smooth and chesty vocal sound with controlled levels.

SQUASHED ACOUSTIC GT



A typical over-compressed American acoustic guitar.

OVERHEAD LEVELING



Gently leveled overheads to sit tight in the mix.

THANK YOU

for your purchase



**If you have any questions,
feel free to contact us at
support@hlab.audio**

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