



33609/N

Dual Compressor / Limiter

User Manual
527-409
Issue 1.1



Important Safety Instructions

***For your own safety and for the protection of others,
please observe the following safety precautions:***

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture
- 6) Clean only with dry cloth.
- 7) Do not block any ventilation openings.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 10) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 11) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped

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The Neve 33609 is a popular diode-bridge compressor / limiter. In manufacture since the early 1980s it has gone through several design changes over the years, and has emerged as a reference standard for studio dynamics. The discrete class-A design offers fast and slow attack times, multiple release times and threshold levels.

The 33609/N accommodates two separate compressor / limiters in a stand-alone 2U rack-mount unit. The two channels are suitable for mono, stereo or independent operation, with the option to link to other units for multi-channel use. At its core, the 33609/N retains the same basic circuitry as earlier discrete models, now with extra control options and a classic appearance.

Configuring the 33609/N

To use the 33609/N, configure as follows:

- ▶ Connect the unit to a suitable mains power source with the IEC mains 'kettle' lead. The unit functions normally with 100V to 230V mains voltages
- ▶ Connect your line input source/s to the XLR input/s on the rear of the unit.
- ▶ Connect the line output XLR/s on the rear of the unit into your system
- ▶ Switch on the 33609/N
- ▶ Set the front panel controls as required



power switch: Switches the unit on or off. The switch is illuminated when the unit is ON

gain reduction meters: Show the amount of gain reduction occurring on each channel, in decibels

external / internal: In internal mode all front panel toggle switches operate normally and the adjacent LEDs light red. In external mode the bypass / in and mono / stereo toggle switches will be overridden by external control via the D-sub connector on the rear of the unit; adjacent LEDs light green to indicate the operational state of these switches regardless of the position of toggle switches themselves. External tallies are available via the rear panel D-sub connector

NOTE: When the unit is first switched on, external control will reset to bypass and mono by default.

bypass / in: Switches the audio of the corresponding channel between a true straight-through bypass or through the compressor/limiter circuit (even if the compress and limit sections are not selected)

NOTE: While the unit is switched off it reverts to true straight-through bypass.

mono / stereo: In mono mode both audio channels operate completely independently. In stereo mode the two side chains are linked together internally; this causes both channels always to be compressed by the same amount

(LIMIT) limit in: Switches the limiter into the audio chain

(LIMIT) attack fast / slow: Sets how fast the limiter responds to a sudden increase in audio level; fast ~2ms, slow ~4ms

(LIMIT) threshold dBu: Sets the audio level at which limiting takes place

(LIMIT) recovery ms: Sets how slowly the gain reduction subsides after a loud passage has ended. In the a1 and a2 positions the recovery time is self-adjusting; recovery is rapid for transient peaks but slower for persistent high levels, so the impression of normal dynamic range is better preserved

(COMPRESS) compress in: Switches the compressor into the audio chain

(COMPRESS) attack fast / slow: Sets how fast the compressor responds to a sudden increase in audio level; fast ~3ms, slow ~6ms with reduced sensitivity to <100Hz signals (preferred for percussive and plosive sounds)

(COMPRESS) threshold dBu: Sets the audio level at which compression begins to take place. A high threshold with a low ratio will preserve the dynamic range and maintain a higher signal to noise ratio. A low threshold with a high ratio will behave as a partial limiter

(COMPRESS) recovery ms: Sets how slowly the gain reduction subsides after a loud passage has ended. In the a1 and a2 positions the recovery time is self-adjusting; recovery is rapid for transient peaks but slower for persistent high levels, so the impression of normal dynamic range is better preserved

(COMPRESS) gain: Sets the amount of make-up gain applied to the compressed audio. This is used to boost the compressed audio back up to mean programme level

(COMPRESS) ratio: Sets how severely the audio is compressed. For example, with a ratio of 3:1, audio that is below the compression threshold is amplified three times more than audio that is above the threshold. However, the control characteristic is soft and progressive, so the true ratio is only attained >5dB above the threshold



Channel 1 I/P: Balanced line input for channel 1

Channel 2 I/P: Balanced line input for channel 2

Channel 1 O/P: Balanced line output for channel 1

Channel 2 O/P: Balanced line output for channel 2

Tandem Control Voltage & External Control Signals: Connections for external control of bypass / in and mono / stereo mode, corresponding tallies, and control voltage link to other 33609 units for multi-channel use. The pins and signals are;

Pin#	Signal
1	0v common
2	L+R bypass / in *
3	stereo / mono
4	+5v (current limited)
5	Right control voltage
6	L+R bypass tally
7	stereo tally
8	external control tally
9	Left control voltage
10	R bypass / in (33609N only) *
11	L bypass / in (33609N only) *
12	no connection
13	R bypass tally (33609N only)
14	L bypass tally (33609N only)
15	no connection

**Note: EITHER a "L+R bypass" switch (Pin#2 as in older 33609s) OR the separate left and right bypass switches (Pins#10 & #11 -33609/N only) should be implemented, but not all three at once which will lead to confusion because of the way the latching logic works.*

IEC inlet: Mains power input.

- ▶ Elevated Operating Ambient- If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (50°C) specified by the manufacturer.
- ▶ Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- ▶ Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not created by improper or uneven mechanical loading.
- ▶ **Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).**

Unit does not power up

- ▶ Check that the mains power source is switched on
- ▶ Replace mains fuse with T 1.6 Amp HBC (ceramic)
- ▶ If unit still does not power up, refer to vendor

No audio at the line output

- ▶ Check all connections to the unit. For example, check that the input and output are plugged into the same channel

LEDs do not respond to toggle switches

- ▶ Set the unit to 'internal control' mode; LEDs will light red

No gain reduction at any setting

- ▶ Check that the relevant channel is set to 'in'. The unit must be set to 'internal control' mode if you are **not** using an external control source; LEDs light red for internal control mode
- ▶ Check that the relevant channel is set to 'compress in' and/or 'limit in'
- ▶ Turn the compress and/or limit threshold control to a lower setting

Both channels shows the same gain reduction at all settings

- ▶ If you need both channels to operate independently, set the unit to 'mono' mode

Dimensions

Stand-alone Modules	Width mm (inches)	Height mm (inches)	Depth mm (inches)	Approx. Weight kg (lbs)
33609/N Module	480 (19)	88 (3.5)	255 (10)	5 (11)

Module	Power
33609/N	100 – 230Vrms, 50/60Hz, 28W

Specifications

► Input

Input Impedance 10k Ω (internally switchable to 600 Ω , refer to vendor).

► Output

Maximum output >26dBu into 600 Ω , balanced and earth free.

► Distortion

<0.075% at 1kHz (bypass in, compress and limit out, input level 9dBu); <0.2% at 1kHz (compress in, ratio 6:1, gain 20dB, recovery 800ms, threshold -18dBu); <0.45% at 1kHz (limit in, compress out, recovery 800ms, input level 22dBu, threshold -18dBu)

► Frequency Response

\pm 0.5dB 20Hz to 20kHz rel. 1kHz

► Noise

-75dBu, 22Hz – 22kHz, input terminated with 600 Ω (bypass in, compress and limit out), -55dBu (compress in, gain 20dB)

► Limit Threshold

4dBu to 15dBu

► Limit Ratio

Change in output level <0.1dB with 10dBu to 20dBu step input

► Limit Attack Time

Fast 2ms \pm 1, slow 4ms \pm 1

► Limit Recovery Time

50ms to 800ms, a1 (auto): 100ms/2000ms, a2 (auto): 50ms/5000ms

► Compress Ratio

1.5:1 to 6:1

► Compress Attack Time

Fast 3ms \pm 1, slow 6ms \pm 1 with 100Hz first order high-pass filter

► Compress Recovery Time

100ms to 1500ms, a1 (auto): 100ms/2000ms, a2 (auto): 50ms/5000ms