

1176LN PEAK LIMITER



FEATURES:

Pushbutton selection of four compression ratios.

Attack time front panel adjustable from 20-800 microseconds.

Release time front panel adjustable from 50 ms to 1.1 seconds.

High impedance, balanced, bridging input.

Balanced, transformer output.

The 1176LN Limiter has, during the more than ten years since its introduction, become the world's most popular limiter. For recording, broadcast, sound reinforcement: any application which requires precise automatic control of Peak signal levels—the 1176LN has become the favored product over all others. With more than 7000 in use in recording studios, disc mastering facilities and broadcast installations around the world, the 1176LN has literally become the standard of the audio industry.

The current Model 1176LN is not an out-of-date product which has been bypassed by technology. Rather, continuing engineering advances have improved its performance and increased its reliability. The latest update became effective with

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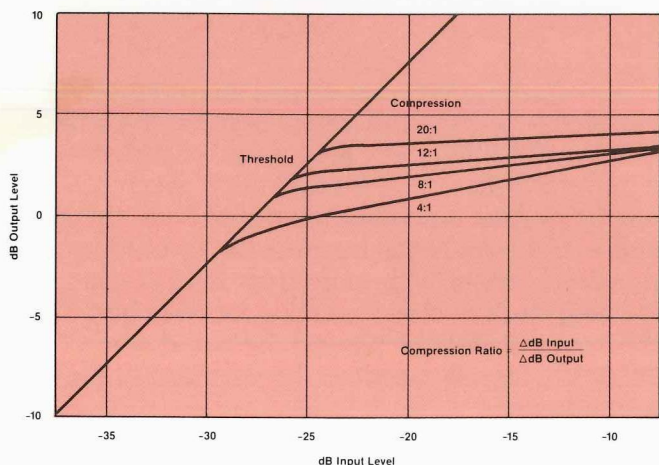
1176LN

serial number suffix G. Provided are several new features, including a high impedance, bridging input which now permits the 1176LN to accommodate a wider range of source impedances, and increased threshold sensitivity to allow use at lower input signal levels. An integrated circuit voltage regulator in the power supply reduces current consumption and heat within the unit, resulting in increased stability and longer component life. In addition, an adjustment in gain structure has improved the signal-to-noise ratio at normally used control settings. No changes have been made, however, which alter the attack and release times, compression ratios, or excellent subjective performance of the unit.

Limiting is accomplished in the 1176LN by utilizing an FET as a voltage variable resistor. Unique circuitry permits severe limiting without added distortion. Front panel adjustments of attack time, release time, and compression ratio allow the characteristics of the 1176LN to be optimized for various program material.

The meter of the 1176LN may be switched to read amount of gain reduction, or output level calibrated to either +4 dBm or +8 dBm. The limiter requires only 3½" of rack space and is operable from 100-125 VAC or 200-250 VAC, 50/60 Hz.

Typical Input Versus Output Level Curves of 1176LN at Various Compression Ratios.



SPECIFICATIONS:

ELECTRICAL:

Input:	Balanced, bridging differential amplifier.
Input Impedance:	20 kohms, used as balanced input. 10 kohms, used as unbalanced (single ended) input.
Input Level:	+20 dBu max.
Maximum Gain:	45 dB, ±1 dB.
Frequency Response:	±1 dB, 20 Hz to 20 kHz.
Output Circuit:	Floating, transformer isolated.
Output Load:	600 ohms or greater.
Power Output:	+24 dBm
Distortion:	Less than 0.5% THD from 50 Hz to 15 kHz with limiting, at 1.1 seconds release setting (as with all limiting devices, distortion of low frequency peaks increases with faster release time).
Signal-to-Noise Ratio:	Greater than 81 dB at threshold of limiting 30 Hz to 15 kHz.
Attack Time:	Less than 20 micro-seconds for 100% recovery. Adjustable to 800 microseconds with front panel control.
Release Time:	50 ms minimum, 1.1 seconds maximum (for 63% recovery). Adjustable with front panel control.

Threshold vs. Output Level:

Compression Ratio Setting	Input Level at Minimum Limiting Threshold ±2 dB	*Relative Output at Threshold
20 : 1	-24 dBu	+10 dBm
12 : 1	-25 dBu	+ 9 dBm
8 : 1	-26 dBu	+ 8 dBm
4 : 1	-30 dBu	+ 7 dBm

*with Output gain control set to provide a reserve of approximately 10 dB.

Connections:	Rear chassis barrier strip for input and output. Power through 3-wire IEC style connector.
Stereo Interconnection:	Phono jack at rear of chassis. Requires 1176 SA Stereo Adapter to couple two units.
Power Requirements:	100-125 VAC, or 200-250 VAC, 50/60 Hz, switch selectable, less than 10 W.
Environment:	Maximum ambient operating temperature 70°C (158°F).

PHYSICAL:

Dimensions:	483 x 89 mm rack panel, depth behind panel 203 mm (19 in. x 3½ in. x 8 in.).
Finish:	Panel is 3.18 mm (1/8 in.) brushed clean anodized aluminum in two shades. Chassis is cadmium plated steel.
Weight:	5.0 kg (11 lbs.).
Shipping Weight:	6.6 kg (14.5 lbs.).
Accessories:	Stereo Adapter 1176 SA. Model 301 XLR/QG Adapter for signal input and output. Model SC-2 Security Cover, smoke gray transparent plastic; covers all operating controls.
NOTE:	0 dBm = 0.775 volt / 600Ω = 1mW 0 dBu = 0.775 volt / Load not specified

JBL/UREI continually engages in research related to product improvement. New materials, production methods and design refinements are introduced into existing products without notice as a routine expression of that philosophy. For this reason, any current JBL/UREI product may differ in some respect from its published description but will always equal or exceed the original design specifications unless otherwise stated.



Universal Audio PEAK LIMITER

MODEL
1176LN



The Universal Audio 1176 was a major breakthrough in limiter technology. It brought to the professional audio industry for the first time a true peak limiter with all transistor circuitry and superior performance on all types of program material. The 1176LN retains all of the features of the 1176, but generates 6 dB less noise. In addition, a redistribution of noise spectrum leaves even less noise in the sensitive 500 Hz to 3 kHz range.

Since its introduction in 1968, the 1176 has become the industry leader. The 1176LN will carry on that tradition with the following plus features:

- FET Gain Reduction ahead of first stage. No tricky balancing required, ever. No distortion adding active element in gain reduction circuit.
- Pushbutton selection of four different compression ratios, to satisfy every program requirement.
- ULTRA FAST attack time . . . independent of peak duration or frequency. Adjustable from front panel during operation.
- Release time adjustable from front panel . . . independent of the degree of limiting.
- Extremely stable operation . . . no costly maintenance . . . no tubes to select or replace.
- Stereo operation of two units easily accommodated, so peak in one channel causes equal limiting in both.
- Contemporary styling . . . eye pleasing industrial design.

Limiting is accomplished in the 1176LN by utilizing an FET as a voltage variable resistor, ahead of the first stage of amplification. Unique circuitry permits severe limiting without added distortion, and no balancing is ever required. Attack time is adjustable from less than 20 microseconds to 800 microseconds. (This is the time in which complete recovery to the limited level is accomplished . . . there is no undershoot). Using the tone burst method, a 50 kHz peak is fully stabilized at the limited level within one cycle. Release time is also adjustable on the front panel from 50 ms to 1.1 seconds.

A feature of the 1176LN is the use of pushbutton switches to select compression ratios of 20:1, 12:1, 8:1 or 4:1. Another pushbutton switch assembly selects meter functions and applies power to the unit. Provision is made for remote metering.

The compact 1176LN requires only 3½" of vertical space in a 19" rack, with self-contained regulated power supplies, operable from either 110-125 VAC or 220-240 VAC, 50/60 Hz.

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