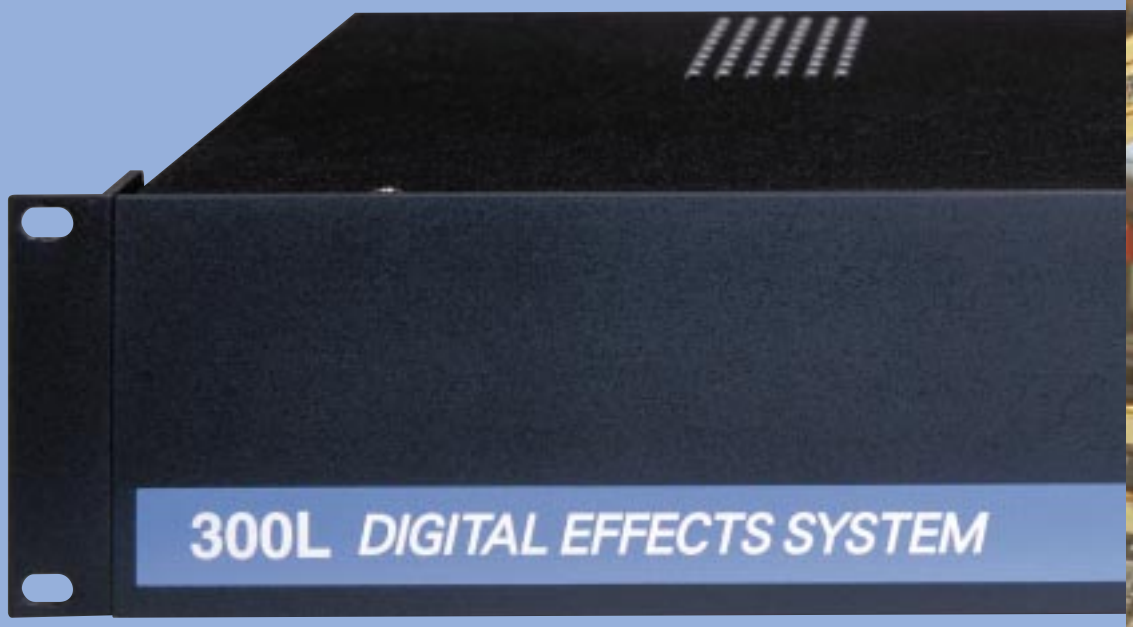
Lexicon

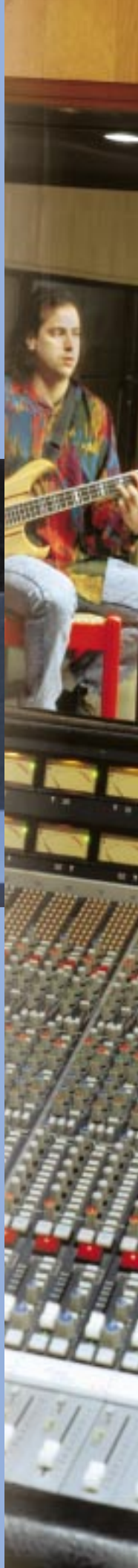
STUDIO

SERIES



MODEL 300L

DIGITAL EFFECTS SYSTEM



STUDIO SERIES

Model 300L Digital Effects System

The Lexicon 300L Digital Effects System is a powerful example of Lexicon's world-class digital effects systems. It is an updated version of the popular and versatile *Model 300*, with the addition of LARC *(Lexicon Alphanumeric Remote Console)* control.

The 300L also offers extensive analog and digital interfacing capabilities. With both *AES* and *S/PDIF* digital I/O, it digitally interfaces with a wide range of digital recording systems. Its multi-machine architecture also allows both the analog and digital inputs to be used simultaneously. In post-production facilities, the 300L is also the system of choice for its extensive MIDI- and timecode-based effects automation.

LARC

In a majority of the acclaimed facilities around the world, you'll find a LARC. It provides easy access to all the 300L's functions and parameters, and its lightweight design allows you to set it on top of a console or hold it in your hand. The supple, thin cable provides a direct link with the mainframe from up to 1,000 feet away. Large alphanumeric LED displays provide pertinent information at a glance and can be read at almost any viewing angle – a must in the high-pressure environment of your critical mixes.

Most significantly, the LARC allows you to control all of your most important processing parameters without moving from the ideal monitoring position.

Setups and Effects

In the 300L, *Single 'Setups'* run two proprietary Lexicon DSP engines in a single unified stereo configuration. One program is loaded, with both analog and digital inputs simultaneously available and capable of being mixed together. Input levels and pans can be stored, automated, and later recalled.

The 300L's multiple machine architecture also allows for two different types of *Split* configurations: *Dual Mono* and *Cascade*.

Dual Mono creates two independent parallel DSP machines, each being dedicated to input pans. Additional routing is possible, to send both analog inputs to machine A and both digital inputs to machine B. *Dual Mono* setups also offer patch points which are in either 'pre' or 'post' processor location.

The second type of split configuration is the

Cascade mode. In this mode, the two DSP engines are arranged serially: the output of machine A feeds the input of machine B. A feedback control routes the output of machine B back to the input of Machine A. Each machine has independent mix controls. *Cascade* patch points include locations either 'Pre A', 'Post A (Pre B)' or 'Post B'.

The effects algorithms for the 300L are divided into two main categories: *Single Effects* and *Split Effects*.

Single Effects algorithms include: *Random Hall*, *Random Ambience*, *Stereo Adjust/Delay*, *Stereo Pitch Shift*, and *Rich Plate*.

In the Split Effects, the available algorithms are *Dual Delays*, *Chamber*, *Mono Pitch Shift*, *Small Stereo Adjust*, *Compressor*, and *PONS*. Any of the 'split' effects can be run in either Machine A, Machine B, or both.

Updating your existing Model 300 is a snap – just plug in the new ROMs

Single Effects

Our research into the physics of classical acoustics is embodied in the Random Hall algorithm. Echograms of real halls have dispelled the myth of pre-delay and early reflections. In actual spaces, there is no empty interval between the direct sound's arrival and maximum reverb density, to be filled in by early reflections. Instead, ambience builds gradually, with diffuse and complex reflections which do not color the timbre of the sound the way that fixed delay taps do.

Random Hall's unique *Size*, *Shape* and *Spread* parameters control the buildup and decay of the ambient envelope. *Size* determines how large the environment will be. *Shape* controls the contour of the ambient build: at its highest settings, it provides an inverse envelope for effects and gating. *Spread* controls the duration of *Shape* – the ambient envelope – setting the buildup and sustain. There are also precision filters for spectral control of reverberation time, and the unique *Spin* and *Wander* parameters add random movement to the entire algorithm, insuring silky smooth reverberant decay.

We created Random Ambience specifically for the post-production environment. It enables accurate matching of a previously-recorded ambience, enabling new elements to be blended in seamlessly and realistically. You can place sound effects, dialogue, or even musical instruments and recorded music, at different depths and panning within the 'space'.

The Stereo Adjust program is a two-channel digital mixer that provides high-precision level, stereo balance, and shelving equalization control in the digital domain. Also included are unique controls like *Rotation* for binaural panning, *Spatial Equalization* that can add or subtract stereo width, *DC Offset Nulling*, and a *Shuffler Boost* for binaural recording. *Stereo Adjust* also enables M/S decoding in the digital domain.

This algorithm also incorporates a stereo delay line capability of up to five seconds maximum, with single-sample fine adjustment and feedback capability.

The 300L also includes a true stereo Pitch Shift with musical interval notation, plus delay and feedback on each voice. The range of pitch shift on each voice is two octaves down to one octave up.

The Rich Plate algorithm is designed to simulate plate reverberation devices popular in the '70s and '80s. Typically, plates are bright and highly diffused, with characteristically colored reverberation content. Two stereo preechoes can be used to create soft-diffused or hard, non-diffused reflections. A third stereo preecho can be routed back to the input, allowing independent recirculating echoes separate from the reverb.

Split Effects

The Dual Delay algorithm includes multiple stereo delay lines with independent diffusors. An internally generated LFO

allows effects such as 'over the top' flanges and auto panning effects to be created.

Chamber is a new Lexicon reverb algorithm with a wide range of adjustable parameters. Ideally suited for vocals, it provides a virtually perfect recreation of traditional reverb chambers.

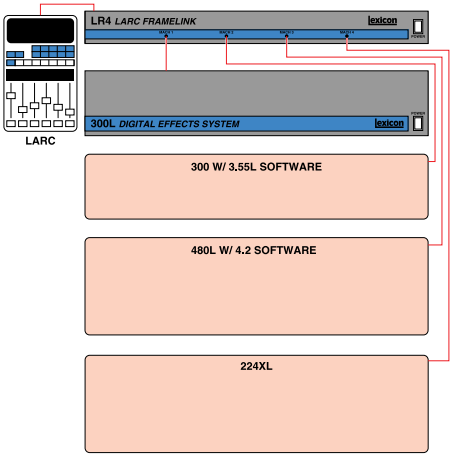
Mono Pitch Shift features a pre-delay line feeding the pitch shifter with a feedback loop back into the pre-delay. The range of pitch shift is +1, –2 octaves.

The LR-4 FrameLink allows up to four Lexicon processors to be controlled by one LARC

A modified version of the full *Stereo Adjust* program, Small Stereo Adjust can be used in the split modes in conjunction with any of the other split algorithms.

The Compressor program is designed for digital mastering, and provides an increase in gain below the threshold while maintaining unity peak above the threshold. This means that peak information can remain unaltered while overall loudness is increased.

The new PONS *(Psychoacoustically Optimized Noise Shaping)* algorithm is designed to achieve optimal dynamic range results when mastering 20-bit or 18-bit audio to a 16-bit medium, improving the signal-to-noise ratio of 16-bit recordings by up to 6 dB.



The LR–4 allows any combination of 300L, 480L or 224XL effects systems to be controlled by one LARC remote unit. The machine select button on the LARC is used to choose the device to work with.

Automation

For those applications where automation plays an important role in the production process, the 300L can be utilized in a number of ways. In MIDI environments, the 300L uses MIDI Program Changes as well as sysex effect parameter changes, which can be recorded into a MIDI sequencer and be recalled as part of the MIDI playback file.

For non-MIDI environments, the 300L has a time-code input which can be used to automate Setup and Machine Effects changes as well as parameter glides for the previously-loaded Setup or Effect.

LR–4 FrameLink

Recognizing that a large number of facilities will be running a 300L in conjunction with a Lexicon *480L* with *v4.2* software, or a *224XL* (or all three), we created the LR–4 FrameLink. The LR–4 allows any combination (up to four total) of these mainframes to be run by a single LARC. The LR–4 is another example of Lexicon's continued commitment to the high-end facility, where brilliant sound is a priority, but space is limited.

Updating an Existing Model 300

Thanks to the *Model 300*'s ROM-based system software, updating your existing unit to 300L capability is simple.

The update requires the installation of new ROMs, the LARC and interface cable. The procedure is simple: all you need to do is open the unit up, insert the new ROMs, connect the LARC and you're ready to go. Contact your Authorized Lexicon Professional Dealer for update information.

Professional Commitment

The 300L offers a host of features and effects that set the standard for professional digital effects processing. It embodies Lexicon's commitment to the audio professional—with creative control and superlative sound, backed with uncompromising support.

Arrange to audition the 300L for yourself by calling Lexicon or an authorized distributor.

LARC SPECIFICATIONS

L.A.R.C. *(Lexicon Alphanumeric Remote Console):*

Controls: Three mode select buttons (BANK, PROG, REG) used with ten numeric buttons (1 to 0); SETUP/VAR key for selecting Setups; page select button (PAGE); control program key (CTRL); machine select key (MACH); 3 auxiliary control buttons (MUTE, STO, ENTER); 6 sliders for control of up to 128 parameters per program with associated display select buttons.

Display: Two lines of 12 alphanumeric LED's for interactive display; additional line of 24 alphanumeric LED's (six groups of four for each slider); dual 10-position LED headroom indicator (calibrated –24 to +12 dBm with overload warning).

Connector Type: DE9

Cable: 50 feet, extra flexible cable. Cables can be linked.

Operating distance: Up to 100 feet when powered from mainframe. Up to 1,000 feet with optional remote power source.

Power: 10-24 VDC; normally powered by 300L mainframe; miniature jack accepts optional remote power supply (for operation at distances greater than 100 feet from mainframe).

Dimensions: 5.9W x 9.5H x 3.2D in (150 x 242 x 82 mm)

Weight: 1.9 lbs. (0.9 kg)

LR–4 SPECIFICATIONS

LR–4 Rear Panel

Controls: AC Power Switch only (machine is selected from LARC remote)

Indicators: Power LED, machine LEDs

Interconnections: 5 female DE-9 connectors, RS-422 serial communications, 9600 bits/sec.

Power: 230/120/100 VAC, 50–60 Hz, 10 W, via IEC connector

Dimensions: 19W x 1.75H x 4D in (483 x 45 x 102 mm)

Weight: 2.5 lbs (1.15 kg)

The 300L is designed to meet the rigorous needs of the audio professional. With tools for mastering and audio post-production, as well as a host of reverberation and effects programs for music production applications, the 300L is a world-class effects system that effortlessly services a wide range of studio requirements

MODEL 300L

MODEL 300L SPECIFICATIONS

Audio Input and A/D Conversion

Input Channels (2):	Balanced XLR, pin 2 high
Input Impedance:	50kΩ unbal; 100kΩ balanced
Full Scale Input Level	
Gain switch in 0dB position:	+2dBu min, +20dBu max
Gain switch in +16dB position:	–14dBu min, +4dBu max
Common Mode Rejection	
DC to 2kHz:	60dB minimum
2kHz to 20kHz:	40dB minimum
Frequency Response	
48kHz Sampling Rate:	10Hz to 21.5kHz, ±0.2dB
44.1kHz Sampling Rate:	10Hz to 20 Hz, ±0.2dB
Phase Linearity:	±5 Degrees, 10kHz to 20kHz
Delay (Frequency Independent)	
From Analog In to Digital Out:	0.75ms
Crosstalk:	–80dB maximum, 10Hz to 20kHz
Signal to Noise Ratio:	90dB minimum, A-weighted
Total Harmonic Distortion:	0.01% maximum, 10Hz to 20kHz
Intermodulation Distortion:	0.01% maximum *(SMPTE)*
Dynamic Range:	90dB minimum
Pre-emphasis:	15µs (±0.9µs) and 50µs (±3µs)
Gain Control:	20dB in 0.1dB increments

D/A Conversion and Analog Out

Output Channels (2):	Balanced XLR, pin 2 high
Output Impedance:	75Ω
Full Scale Output Level:	–2dBu to +18dBu
Frequency Response	
48kHz Sampling Rate:	10Hz to 21.5kHz, ±0.2dB
44.1kHz Sampling Rate:	10Hz to 20 Hz, ±0.2dB
Phase Linearity:	±5 Degrees, 10kHz to 20kHz
Delay (Frequency Independent)	
From Digital In to Analog Out:	1.8ms
Crosstalk:	–90dB maximum, 10Hz to 20kHz
Signal to Noise Ratio:	100dB minimum, A-weighted
Total Harmonic Distortion:	0.01% maximum, 10Hz to 20kHz
Intermodulation Distortion:	0.01% maximum *(SMPTE)*
Dynamic Range:	90dB minimum
De-emphasis:	15µs (±0.9µs) and 50µs (±3µs)
Gain Control:	20dB in 0.1dB increments

Unless otherwise indicated, specifications presume 48kHz sample rate, Emphasis off, Gain switch and Gain Control at unity (0dB)

Analog Input to Analog Output

Frequency Response:	10Hz to 21.5kHz, ±0.2dB
Crosstalk:	–80dB maximum, 10Hz to 20kHz
Signal to Noise Ratio:	90dB minimum, A-weighted
Total Harmonic Distortion:	0.01% maximum, 10Hz to 20kHz
Intermodulation Distortion:	0.01% maximum
Dynamic Range:	90dB minimum

Digital Audio Interfaces

AES/EBU Professional Digital Audio Interface

Balanced female XLR digital input; balanced male XLR digital output. Conforms to both the AES ANSI S4.40-1985 spec and the EBU doc tech 3250. Both input and output are transformer-coupled. Input/Output levels and impedance comply with CCITT V.11 EIA-422A specification.

EIAJ CP-340/SPDIF Consumer Digital Audio Interface

Unbalanced coaxial RCA-type digital input and output; SPDIF compatible Optical (fiber optic) type digital input and output.

Sample Frequency

host:	48kHz ±5Hz; 44.1kHz ± 5Hz
client:	42kHz to 50kHz;

Control Interfaces

Time Code Input:	Balanced female XLR, EIA-422 input, 100mV p-p minimum.
Formats Supported	*Speed Range*
SMPTE	0.75 to 1.18
EBU	0.80 to 1.33
Film	0.82 to 1.33
MIDI Interface:	5-pin DIN connectors provided for MIDI In, MIDI Out and MIDI Thru.

General

Dimensions:	19.0W x 3.5H x 13.6D in (483 x 89 x 346 mm) 19in rack mount standard, 2U high
Net Weight:	18.9 lbs (8.6 kg)
Shipping Weight:	24.5 lbs, (11.1 kg)
Power Requirements:	100/120/220/240 VAC (–10, +5%) 50-60 Hz, 3-pin IEC connector
Power Consumption:	75 VA maximum

Environment

Operating Temperature:	32° to 95°F (0° to 35°C)
Storage Temperature:	–22° to 167°F (–30° to 75°C)
Humidity:	95% max without condensation
Safety Approvals:	CLA Approval

All specifications are subject to change without notice.

Studio Photo: Tom Gatlin; Courtesy of Masterfonics, Nashville, TN.

300L Rear Panel Connections

Lexicon

HEARD IN ALL THE RIGHT PLACES

A Harman International Company

3 Oak Park, Bedford, MA 01730-1441 Tel: (617) 280-0300 Fax: (617) 280-0490. E-Mail: info@lexicon.com Web: www.lexicon.com