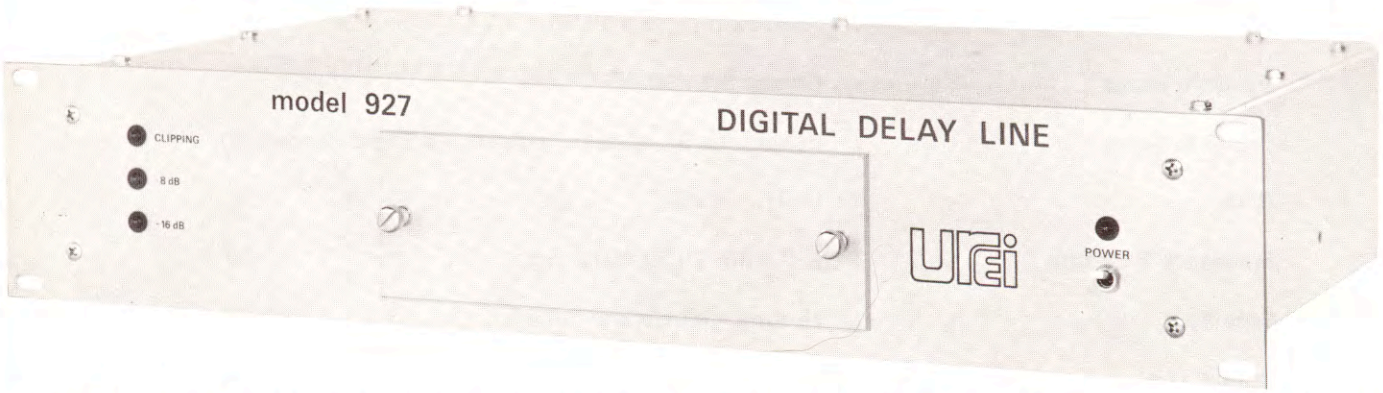
Universal Audio

DIGITAL DELAY LINE

FOR SOUND SYSTEMS APPLICATIONS

MODEL

927



Model 927 Digital Delay Line is designed for use in sophisticated sound reinforcement systems where one or more delayed outputs are necessary. This device has one input and four outputs which are independently delay adjustable. Each output can be adjusted in 1 millisecond increments from 0 to 127 milliseconds with convenient binary weighted DIP switches.

The Delay Line permits proper acoustic synchronization of the direct sound and the sound from multiple loudspeakers in larger rooms by eliminating or minimizing differences in arrival time. This increases intelligibility and naturalness of the system, and avoids the shift of apparent sound localization away from the original sound source.

Although the model 927 is primarily intended for application in sound reinforcement systems, in auditoriums, theaters, churches, arenas, outdoor concerts, etc., it may be used to great advantage in the recording studio. In combination with a reverberation chamber (or other reverb device) early field effects are possible, simulating large reverberant spaces. Additional applications include special effects and research in the field of psychoacoustics.

Delay is achieved through the use of static random access memory, combined with a dedicated audio processor. A sophisticated real time floating point A to D and D to A conversion technique eliminates the need for troublesome analog signal processing used in some competitive products. Without audio compression and/or pre-emphasis and de-emphasis the 927 achieves a useful dynamic range of greater than 90 dB. As a result, a clean 93 dB signal to noise ratio is realized without objectionable gain pumping and transient clipping or degradation of full power bandwidth.

The addition of very sharp cut-off filters at the outputs eliminates any audible frequency beating which usually accompanies waveform sampling processes at program frequencies near the band limit. The controls for the four outputs are binary weighted in 8 sections, easily accessible behind the front security cover. To warn of any overload conditions during setup or operation an array of 4 LED indicators monitors the program level in 8 dB increments, allowing establishment of optimum operating levels without accessory instruments.

FEATURES:

- 12 kHz bandwidth.
- 4 outputs with individually selectable delays.
- Simple front panel switching and set-up.
- Each output is independently adjustable in one millisecond increments over the entire range of the unit.
- High density IC (circuit) cards minimize size and weight.
- Instantaneous floating point A/D, D/A.
- LED array level indicators.
- 4k x 14 bit static memory.
- Reliable, trouble free interface through bridging input, and transformer isolated outputs.
- No pre-emphasis, de-emphasis necessary.
- No frequency response change at different delay settings.
- Large dynamic range of more than 90 dB.

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MODEL 927

TECHNICAL SPECIFICATIONS

ELECTRICAL:

Input	:	Balanced bridging differential amplifier.
Input Impedance	:	40 kohms, used as balanced input. 20 kohms, used as unbalanced (single ended) input.
Maximum Input Level	:	+20 dBm (7.75 V RMS).
Dynamic Range	:	Greater than 90 dB.
Signal to Noise	:	Better than 93 dB at full output, (15.7 kHz Bandwidth).
Gain	:	Unity, ±1 dB.
Frequency Response	:	±0.5 dB, 20 Hz to 12 kHz.
Outputs	:	Floating, transformer isolated.
Output Load	:	150 ohms or greater.
Power Output	:	+20 dBm into 600 ohm load.
Distortion	:	Less than 0.5% THD, 20 Hz to 12 kHz at maximum rated output. (typically 0.07% at 2 kHz, maximum rated output.)
Number of Inputs	:	One
Number of Outputs	:	Four
Time Delay	:	0 to 127 milliseconds in one millisecond steps.
Delay Accuracy	:	±0.03 millisecond
Pre-emphasis/De-emphasis	:	None
Filters	:	8 pole, 6 zero Cauer at input and each output.
Headroom Indicators	:	4 LED indicators showing 0, −8, −16, −24 dB relative to overload condition.
Controls	:	Four groups of thumbwheel switches for independent delay selection in 1 ms increments. Input level control.
Power Requirements	:	100 - 125 VAC, or 200 - 250 VAC, 50/60 Hz switch selectable, less than 50W.
Environment	:	Operating 0°C to +50°C; storage −20°C to +60°C

PHYSICAL:

Dimensions	:	483 x 89 mm rack panel, depth behind panel 305 mm. (19" x 3½" x 12")
Finish	:	Panel is 3.18 mm (⅛") brushed clear anodized aluminum. Chassis is cadmium plated steel.
Weight	:	6.80 kg (15 pounds).
Shipping Weight	:	9.07 kg (20 pounds).

3/78 1,500
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