



D1280 DIGITAL DELAY

OWNER'S MANUAL (version 1)

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CONTENTS

INTRODUCTION

FEATURES

PRECAUTIONS

CONTROL FUNCTIONS

REAR PANEL

INITIAL SET-UP

INPUT/OUTPUT ADJUSTMENT

REMOTE FUNCTIONS

REGENERATION SECTION

REPEAT HOLD

PHASE

DELAY SECTION

MODULATION

PATCH DIAGRAMS

FIGURE:

- 4-1 CLASSIC FLANGE**
- 4-2 EVEN/ODD HARMONIC**
- 4-3 THICK CHORUS**
- 4-4 LESLIE CHORUS**
- 4-5 STEREO DOUBLING**
- 4-6 REPEAT ECHO**
- 4-7 REPEAT HOLD**
- 4-8 BATHTUB REVERB**

SPECIFICATIONS



1.0 INTRODUCTION

Thank you for purchasing the ADA D1280 DIGITAL DELAY. The D1280 combines the latest in digital technology with an innovative yet cost effective design. It fulfills your long delay and special effects processing needs with full bandwidth at all delay settings, with more useful features and better sound quality than anything else in its class.

To properly set-up and familiarize yourself with the D1280, read and follow these operating instructions completely. Also, please take this time to fill-out and return your enclosed WARRANTY CARD.

1.1 FEATURES

- Up to 1280ms of delay at 15kHz bandwidth
- Flanging, chorusing, doubling, slapback, long echos, infinite repeat
- LED RATE indicator displays delay time for accurate, realtime echo setting
- PHASE reversal switch for positive and negative flanging
- Remote footswitch control of EFFECT BYPASS and REPEAT HOLD (with optional FS-2 DUAL FOOTSWITCH)
- REGENERATION HI-CUT (EQ) variable between 15kHz to 1.0kHz
- 5:1 sweep for flanging and chorusing effects that sweep over a 20% wider range than competing digital delays
- 90dB dynamic range

1.2 PRECAUTIONS

WARNING: To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

CAUTION: To prevent electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

2.0 CONTROL FUNCTIONS

HEADROOM	A 4-step LED meter with a 30dB range which displays signal level relative to clipping level.
INPUT LEVEL	A boost/attenuate preamp that accepts levels from -10dBV to +20dBV.
INPUT IN	Engages or bypasses the effect section of the D1280 (remotely controllable). LED indicates effect is engaged.
OUTPUT MIX	Determines the mix between the delay and dry signal.
OUTPUT LEVEL	Adjusts the EFFECT OUTPUT signal level up to +20dBm.
REGENERATION LEVEL	Controls the amount of the delayed signal fed back to the input.
REGENERATIONHI-CUT	Reduces the high frequency content in the delayed audio signal that is fed back to the input. Adjustable from 15kHz to 1.0kHz.
REPEAT HOLD	Engages the infinite repeat function (remotely controllable). LED indicates, REPEAT HOLD is engaged.
PHASE	Reverses the polarity of the delayed audio signal which is being fed back to the delay line input and to the OUTPUT MIX potentiometer.
DELAY RANGE	Six interlocking pushbuttons for selection of the delay time range.
DELAY RATE	An LED indicator that "blinks" at the rate of the precise delay time interval.
DELAY MULTIPLIER	Allows a continuous .20X to 1X adjustment of any selected delay range.



- MODULATION DEPTH** Determines the range of delay time that will be swept by the low frequency oscillator.
- MODULATION SPEED** Sets the speed of the low frequency oscillator that sweeps the delay time from 0.1 sec to 25sec.
- TRIANGLE LED** Indicates power is "ON".

2.1 REAR PANEL

- FUSE** Externally mounted 0.5AMP fuse. Replace with equivalent type and rating only.
- POWER SWITCH** ON/OFF rocker switch located near power supply to prevent the leakage of AC line hum into the audio circuitry.
- REMOTE** Remote control of EFFECT BYPASS and REPEAT HOLD functions. Used with standard 1/4" stereo cord and dual footswitch (momentary type).
- EFFECT OUT** A 600 ohm unbalanced output. The level is set with the OUTPUT LEVEL control and carries the mix of dry and delayed signal set by the OUTPUT MIX control.
- DIRECT OUT** A 600 ohm unbalanced output of dry signal only. The level is the same as the input signal level.
- INPUT** An unbalanced high impedance input which interfaces with low or high impedance sources and low and high signal levels.

**FIGURE 3-1
INITIAL FRONT PANEL SET-UP**



3.0 INITIAL SET-UP

The D1280 interfaces with a wide variety of input sources including high level microphones, electric instruments and mixing consoles. The INPUT is high impedance which functions properly with both low or high impedance sources and low (-10dBV) and high (+24dBV) signal levels.

- (A) To prepare the D1280 for use, set the front panel controls as shown above.
- (B) Connect your signal source to the INPUT jack located on the rear panel.
- (C) Connect the EFFECT OUTPUT on the D1280 to your amplifier input or mixing console effects receive input. The DIRECT OUTPUT is used with a second amplifier for stereo effects.
- (D) Be sure the rear panel POWER SWITCH is in the "OFF" position. Set your amplifier's input level at minimum before connecting the D1280's AC CORD to a grounded outlet.
- (E) Select the "ON" position of the rear panel POWER SWITCH (the triangle LED should now be lit). Re-set your amplifier's input level to its typical setting.
- (F) Engage the EFFECT IN pushbutton. The D1280 is now ready for operation.

Note that the HEADROOM LED Meter monitors all signals entering the delay line. The REGENERATION LEVEL control may effect the headroom and therefore the readings seen here. While performing, always remember to monitor the HEADROOM LED Meter for possible overloads.



3.1 INPUT/OUTPUT ADJUSTMENT

- (A) The 4-step HEADROOM LED Meter provides accurate monitoring of the input signal level relative to the clipping level. To properly set the input level: find the strongest signal or musical passage that you will put into the D1280, and set the INPUT LEVEL control to just barely light the red "0db" HEADROOM LED. The LED should flicker only on the strongest signals or notes. Never set the INPUT LEVEL control so the "0dB" LED is constantly on.
- (B) The OUTPUT MIX control mixes the processed signal with any blend of the dry input signal. For instrument use, the control will most often be in its center range. For studio applications where the D1280 is in an effects loop, the MIX control is most useful in the full clockwise, "EFFECT", position. The processed signal level (and thus the dry/effect mix) is now controlled at the console.
- (C) The OUTPUT LEVEL control sets the level of the EFFECT OUTPUT whether in bypass or effect "IN" mode. In general, guitar level signals will have the control in its mid-scale or higher, line level signals will generally require positioning the control in a counterclockwise position. Remember, proper setting of the INPUT/OUTPUT LEVEL controls is necessary to achieve maximum performance with the least amount of noise and distortion.

3.2 REMOTE FUNCTIONS

EFFECTS BYPASS and REPEAT HOLD are remotely controllable via the rear panel jack labeled REMOTE. The REMOTE jack accepts a standard 1/4" stereo plug (tip-ring-sleeve). The stereo plug connects with two momentary footswitches. In the EFFECT BYPASS mode, the input signal source is routed to the EFFECT OUTPUT. BYPASS is actuated by a momentary closure which grounds the tip to the sleeve.

The REPEAT HOLD function allows non-deteriorating repeat of any source stored in the delay memory. REPEAT HOLD is actuated by a momentary closure which grounds the ring to the sleeve.

Note that the front panel switches may also be used while the dual footswitch is connected.

3.3 REGENERATION SECTION

As the REGENERATION LEVEL control is turned clockwise, more of the delayed audio signal is sent back to the input of the D1280. When using short delay settings, from 0.256 to 30ms, the REGENERATION LEVEL control will add emphasis or resonance to flanging and chorusing. At longer time delays, from 80 to 1280ms, the REGENERATION LEVEL control will add repeat echos extending to 30 seconds or more.

Room ambience or naturally reflected sounds are quite different from the original signal because reflective surfaces of the room absorb high frequency content. The D1280 can simulate room acoustics by rolling-off the higher frequencies with the continuously variable REGENERATION HI-CUT control. At minimum cut (15kHz), the delayed signal is unprocessed for full bandwidth special effects and stereo processing of mono signals. In the maximum cut position (1.0kHz), all regenerated signal content above the mid-range frequencies is attenuated to simulate natural room acoustics. The frequency spectrum of the sound source gradually decays as it would in a natural environment.



3.4 REPEAT HOLD

When engaged, the REPEAT HOLD pushbutton will capture and repeat the signal stored in the delay memory indefinitely without any loss of audio quality. Up to 1280ms of a musical passage may be repeated as a counterpoint or a background rhythm. When the D1280 is powered up, an internal protection circuit switches the REPEAT HOLD function out to prevent "howling."

3.5 PHASE

The delayed signals phase is inverted when the PHASE pushbutton is engaged. "Inverted phase" may correct phasing problems in mixing consoles, or alter the tonal characteristics of short delay effects such as resonant flanging and doppler chorusing.

3.6 DELAY SECTION

The DELAY MULTIPLIER control allows continuous .20x to 1.0x adjustment of the delay time selected from any one of the six interlocking DELAY range pushbuttons. The ranges of each of the DELAY pushbuttons are as follows:

**FIGURE 3-2
DELAY TIME RANGES**

L TO R PUSHBUTTON	DELAY TIME (in ms)		EFFECT
	MIN	MAX	
#1	.256	1.25	Hi Flange
#2	1	5	Mid Flange
#3	4	20	Lo Flange/ Chorus
#4	16	80	Chorus/ Double
#5	51.2	320	Echo
#6	256	1280	Long Echo

The LED RATE indicator is a simple but effective real-time method of displaying the delay time. The RATE indicator flashes at a rate exactly equal to the delay time interval. As the delay time is increased, the "blink" rate slows. In PA use, the soundman can quickly and accurately set the repeat echo rate by matching the "blink" rate to the rhythmic pulse of the music.

3.7 MODULATION

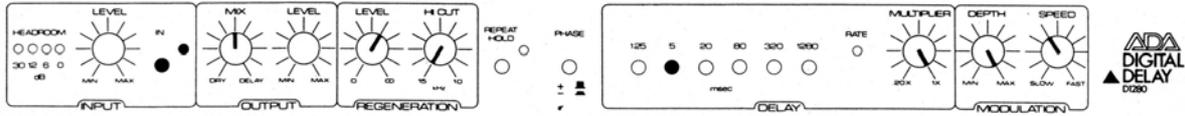
The MODULATION DEPTH control allows you to fade between the static setting of the DELAY MULTIPLIER control and the sweeping voltage of the internal low frequency oscillator. When the DEPTH control is set at "0". the delayed signal is not swept and the delay time remains stationary. As the DEPTH control is turned clockwise, a wider range of the selected time delay is swept. With the DEPTH control set at "10", the full 5:1 range is swept and the MULTIPLIER control is disabled. At settings less than "10", the MULTIPLIER sets the center of the sweep range.

The MODULATION SPEED control adjusts the low frequency oscillator from 0.1 sec to 25sec. Extremely slow sweeps are useful for chorusing, flanging and subtle effects. Faster sweeps can produce vibrato, fast flanging and rotating speaker simulation.



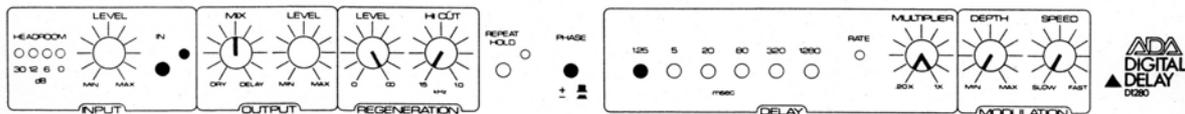
4.0 PATCH DIAGRAMS

FIGURE 4-1 / CLASSIC FLANGE

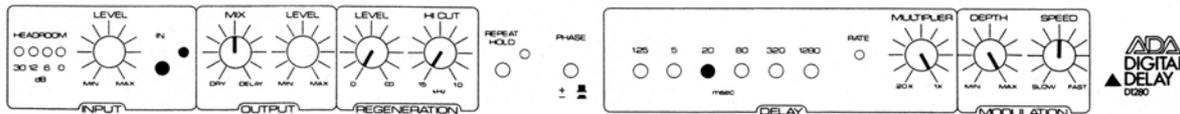


This demonstrates the full 5:1 sweep range of the D1280. Turning the REGENERATION LEVEL control clockwise produces more resonant or more dramatic flanging effects.

FIGURE 4-2 / EVEN/ODD HARMONICS

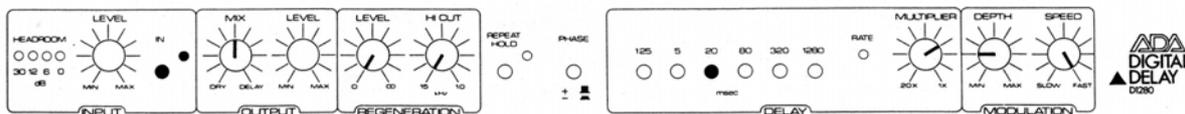


At minimum MULTIPLIER control settings, switch between in-phase and out-of-phase settings with the PHASE switch. Inverted signals will cancel lower-frequencies thereby apparently emphasizing treble content.



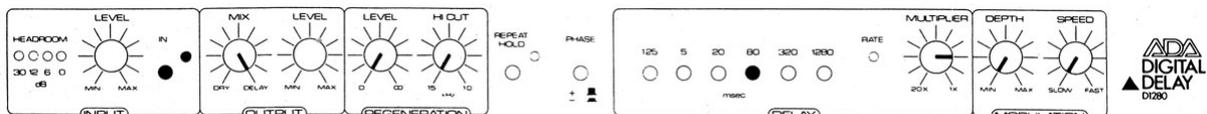
This is a dramatic, very deep chorus. Adjust the SPEED control for the desired effect.

FIGURE 4-4 / BATHTUB REVERB



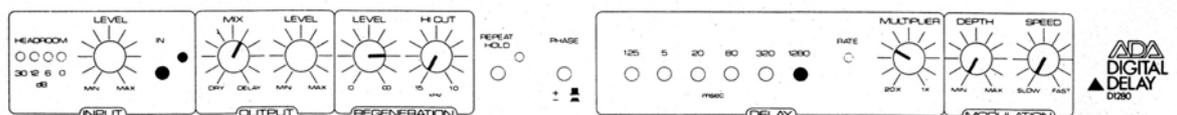
This simulates the popular rotating speaker effect.

FIGURE 4-5 / STEREO DOUBLING



The OUTPUT MIX control is set at full delay (10) for double tracking when using the DIRECT OUTPUT and the EFFECT OUTPUT in a stereo PA or recording system. In mono systems, set the OUTPUT MIX control in its center position (5). A single short repeat of the note or chord is produced for added thickness.

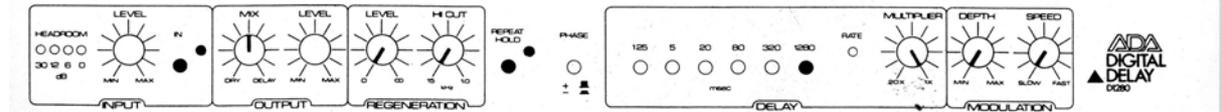
FIGURE 4-6 / REPEAT ECHO



By carefully adjusting the REGENERATION LEVEL control, you can select from one repeat to multiple repeats lasting 30 seconds or more. Vary the HI-CUT control to further modify the repeat echo by taking the "edge" off of percussive signals.

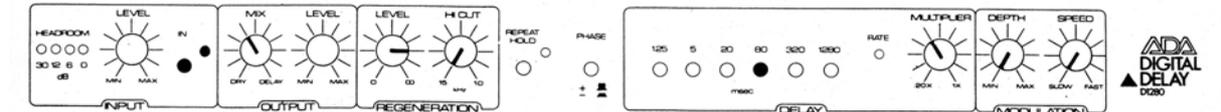


FIGURE 4-7 REPEAT HOLD



This captures and repeats 1280ms of sound without degradation. The pitch and repeat rate may be modified by using the DELAY MULTIPLIER control. Many useful special effects can be produced by varying the MODULATION DEPTH and SPEED controls.

FIGURE 4-8 BATHTUB REVERB



Mixing a higher percentage of dry signal will position the bathtub reverb further into the background.

5.0 SPECIFICATIONS

DYNAMIC RANGE	90dB
BANDWIDTH, DRY	10Hz to 20kHz
DELAY	20Hz to 15kHz
DISTORTION (THD)	
@ 1KHZ	dry, 0dBV, 0.5% max.
	wet, 0dBV, 1.0% max.
	dry, +4dBV, 0.65% max.
	wet, +4dBV, 1.2% max.
DELAY RANGE	0.256 to 1280ms
MODULATION DEPTH	0(none) to 5:1
SWEEP SPEED	0.1 sec to 25sec
INPUT	1 megohm, single ended, ¼ " phone jack, handles instrument and single ended line level signals
OUTPUT(S)	Single ended, ¼ " phone jacks, drives 600 ohms
MAX. INPUT LEVEL	+20dBV (ref. .775VRMS)
MAX. OUTPUT	+20dBM(ref. 775VRMS)
REMOTE SWITCH LOGIC	Grounding terminal engages
POWER CONSUMPTION	20 watts
POWER	120 VAC, 50/60Hz
DIMENSIONS	L-10.5"xW-19"xH-1.75" (269x483 x 44mm)
WEIGHT	6.5lbs (14.33kg); 10lbs (22kg) shipping
OPTION	D1280/A 220-240 VAC 50/60Hz
ACCESSORY	FS-2 dual footswitch (with ¼ " stereo cord)

