

## NHRC-DAD Installation / Operating Instructions

The NHRC DAD Digital Audio Delay is based on the MX-COM MX609 CVSD CODEC and offers superior all digital performance over older analog bucket brigade designs. The NHRC DAD is designed for use with NHRC repeater controllers to completely mute all touch tones and eliminate squelch bursts that occur when users un-key their radios.

The DAD is capable of producing a maximum input to output delay of 2.048 sec. Delay time is set by jumpers D0-D7. The longest delay (2.048 sec.) is achieved by installing all of the jumpers. Reducing delay time is done by removing jumpers starting at D0 and working to D7.

### Time Table:

ALL JUMPERS IN = 2.048 sec.

D0 REMOVED = 1.024 sec.

D0, D1 REMOVED = 0.512 sec.

D0, D1, D2 REMOVED = 0.256 sec.

D0, D1, D2, D3 REMOVED = 0.128 sec. \*\*\* RECOMENDED SETTING \*\*\*

D0, D1, D2, D3, D4 REMOVED = 0.064 sec.

D0, D1, D2, D3, D4, D5 REMOVED = 0.032 sec.

D0, D1, D2, D3, D4, D5, D6 REMOVED = 0.016 sec.

ALL JUMPERS REMOVED = 0.008 sec.

Jumpers must be removed as specified in the above table. Improper jumper configurations will result in choppy sounding audio.

Audio input impedance is approx. 100K ohms and may be DC biased. Audio output impedance is approx. 70 ohms and is user selectable DC biased or AC coupled output. DC biased output is used on all NHRC-3 and NHRC-4 models. AC coupled output is provided for use with controllers of other manufacturers.

NHRC recommends 0.128 sec. delay time. The software in all NHRC-3 controllers running V5.0 or later and NHRC-4 controllers running V1.0 or later are optimized to provide the best muting performance at this setting. Longer delay times are not recommended and may cause squelch tails to appear upon keyup due to the large amount of audio in the delay pipeline at the time of keyup.

### J1 Pinout:

1 = +12V IN

2 = AUDIO IN

3 = DELAYED AUDIO OUT AC COUPLED

4 = DELAYED AUDIO OUT DC BIASED

5 = GROUND

### NHRC LLC Limited Warranty

NHRC LLC warrants that its assembled and tested products will be free from defects in materials and workmanship for a period of NINETY DAYS from the date of shipment. During this period, NHRC LLC will repair or replace, at our option, any of our products that fail as a result of defects in materials or workmanship. NHRC LLC's liability will be limited to parts, labor, and return shipping for this period.

NHRC LLC warrants that its kit products will contain components that are free from defects in materials and workmanship for a period of THIRTY DAYS from the date of shipment. During this period, NHRC will replace any of the components in a kit ONCE. Subsequent replacement of any component any subsequent times is completely at the discretion of NHRC LLC, and may require the complete return of the kit.

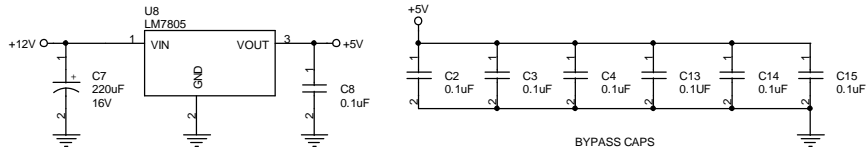
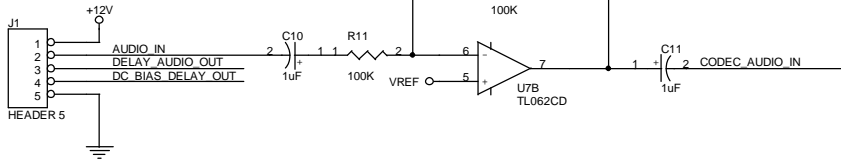
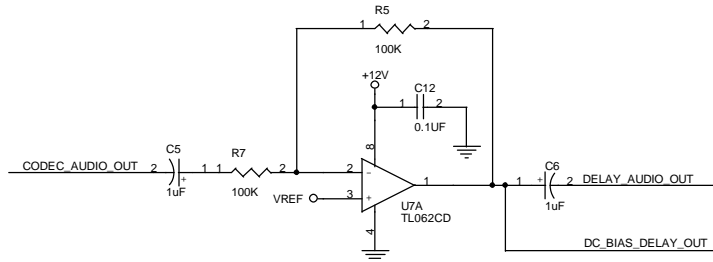
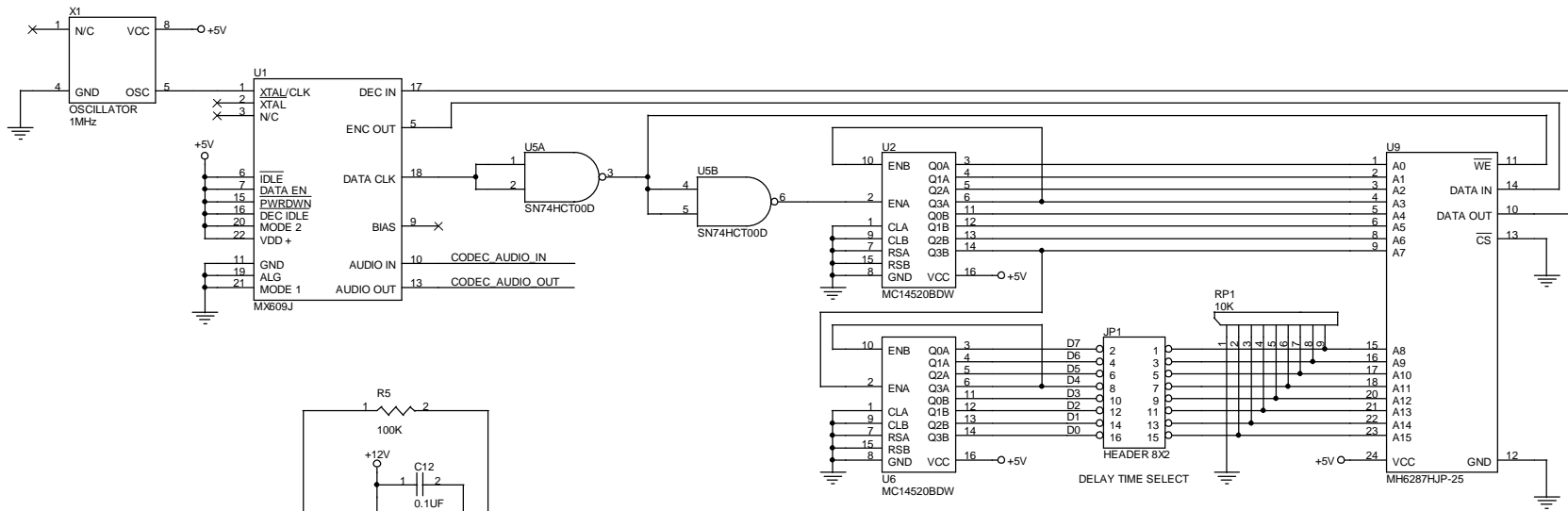
In no case will NHRC LLC be liable for products damaged by improper wiring (including, but not limited to, overvoltage or application of reverse polarity), physical damage resulting from misuse and/or abuse of the product, neglect, or acts of God (lightning, floods, etc.).

Unauthorized modification of an NHRC product will void the warranty on the modified product.

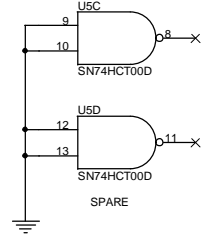
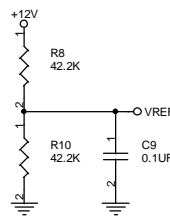
In no case will NHRC LLC be liable for any direct, consequential, or incidental loss or damage resulting from the use or inability to use any of its products.

Some states or countries do not allow the limitation of incidental or consequential damages, so the paragraph above may not apply to you.

This warranty applies only to the original purchaser of the product; proof of purchase must be presented to receive warranty service.



NOTES:  
 1. ALL RESISTORS ARE 1/4W 5% TOL. UNLESS OTHERWISE STATED.  
 2. ALL CAPACITORS ARE 16V ELECTROLYTIC / 50V CERAMIC UNLESS OTHERWISE STATED.



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### NHRC Repeater Controllers

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Title: NHRC-DAD Digital Audio Delay

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Date: Monday, December 21, 1998 Sheet 1 of 2