

# DIGITAL AUDIO DELAY MODULE (DADM)

## INSTRUCTIONS

*Thank you* for purchasing the ICS Digital Audio Delay Module!

### PRODUCT DESCRIPTION

The Digital Audio Delay Module (DADM) is an enhanced replacement for the original S-COM ADM/K, ADM/U, and competitive audio delay units. It has the same dimensions, mounting hole locations, and connector as the original design, and offers improved frequency response and signal-to-noise ratio. In addition, the DADM has an on-board audio gate, which allows it to become a stand-alone squelch tail eliminator.

### SPECIFICATIONS

- Delay:** Dipswitch-selectable from 12 to 197 milliseconds (approx.) in 16 steps.
- Audio Input:** 2 V peak-to-peak (0.7 Vrms) nominal,  
4 V peak-to-peak (1.4 Vrms) maximum.  
100K ohms input impedance, AC coupled.  
Source impedance should be less than 5K ohms.
- Audio Output:** Output Level is the same as input level (gain = 1).  
100 ohms (approx.) output impedance.  
A push-on jumper selects either DC coupling (for ICS and S-COM controllers), or AC coupling (for other controllers).
- Frequency Response:** 30 to 5000 Hz  $\pm$  1 dB (guaranteed); 30 to 5000 Hz  $\pm$  0.5 dB (typ.);  
valid over the entire delay range.
- Distortion:** Less than 2% (-34 dB) THD (guaranteed);  
less than 1% (-40 dB) THD (typical).
- Signal/Noise Ratio:** Greater than 60 dB referenced to a 2 V p-p input signal.
- Audio Gate Control:** Dipswitch-selectable high-active or low-active gate control signal.
- Power Required:** Voltage: Minimum, +9.0 VDC; maximum, +12.0 VDC.  
Current: Approx. 25 mA.
- Dimensions:** 2.1 x 2.7 inches; tallest component is 0.5 inches above the PC board.  
Four holes are provided for #6-32 mounting hardware.

## P1 (I/O CONNECTOR)

The DADM uses P1 (a male, 0.1"-spaced four-pin header connector) and a four-conductor ribbon cable to connect to the ICS Linker IIa, Linker III, Single M, S-COM 5K, 6K, and 7K Repeater Controllers. (The 5K has a header connector for one DADM, while the 6K and 7K have two.) The ribbon cable has a socket connector on each end. P1's four pins are **Audio Input (1)**, **Audio Output (2)**, **Ground (G)**, and **Power (+)**.

Next to P1 is a solder hole for a **fifth** connection, used for the **Audio Gate Control Line (5)**. This feature is useful in some custom installations.

(The first production run of DADMs had a solder hole for a **sixth** connection, used for an **AC-Coupled Audio Output (6)**. Pin 6 doesn't exist in later units. See the explanation in "P2 Jumper" below.)

If the silkscreen characters become unreadable, pin 1 can be identified by its square pad on the solder side of the board.

In the schematic, P1 is drawn with all six connections for reference purposes.

## P2 (OUTPUT COUPLING JUMPER)

A push-on jumper, P2, was added in an early revision to eliminate the need for a separate AC-coupled output connection (formerly, pin 6 of P1). With the jumper installed, the output blocking capacitor is shunted, and the output is DC coupled. (There is a DC component of  $0.45 \times V_{\text{supply}}$  present at the output.) This configuration is compatible with the ICS Linker IIa, Linker III, Single M, S-COM 5K, 6K, and 7K controllers. With the jumper removed, the output blocking capacitor is in series with the audio output, making the output AC coupled. AC coupling is compatible with other types of controllers.

## AUDIO GATE (SWITCHES 5 & 6)

To use the on-board audio gate, connect your receiver's COR (Carrier-Operated Relay) or COS (Carrier-Operated Switch) output to pin 5 (near P1). Your COR signal must be under 1 VDC when low, and above 3 VDC when high. Using the table below, set dipswitches 5 and 6 to the correct positions for your particular COR sense (low-active or high-active). Note: If you are not using the audio gate, you must turn switch 5 ON and switch 6 OFF.

**AUDIO GATE CONTROL TABLE**

COR Sense	Switch 5	Switch 6
No COR used (audio gate ON)	ON	OFF
High Active	ON	OFF
Low Active	OFF	ON

## AUDIO DELAY (SWITCHES 1 – 4)

Using the table below, set dipswitches 1 through 4 to select the amount of delay desired. To eliminate DTMF bursts, try at least 50 mS as a starting point. Eliminating a squelch tail might require 75 to 150 mS.

**DELAY SELECT TABLE**

<b>Approx. Delay</b>	<b>Switch 1</b>	<b>Switch 2</b>	<b>Switch 3</b>	<b>Switch 4</b>
12 milliseconds	ON	ON	ON	ON
25	ON	ON	ON	OFF
37	ON	ON	OFF	ON
50	ON	ON	OFF	OFF
61	ON	OFF	ON	ON
74	ON	OFF	ON	OFF
86	ON	OFF	OFF	ON
98	ON	OFF	OFF	OFF
111	OFF	ON	ON	ON
123	OFF	ON	ON	OFF
135	OFF	ON	OFF	ON
147	OFF	ON	OFF	OFF
160	OFF	OFF	ON	ON
172	OFF	OFF	ON	OFF
184	OFF	OFF	OFF	ON
197	OFF	OFF	OFF	OFF

## CONTACT US

For assistance or to order additional units, please contact ICS at the address and phone number below, or visit us on the web at [www.ics-ctrl.com](http://www.ics-ctrl.com).

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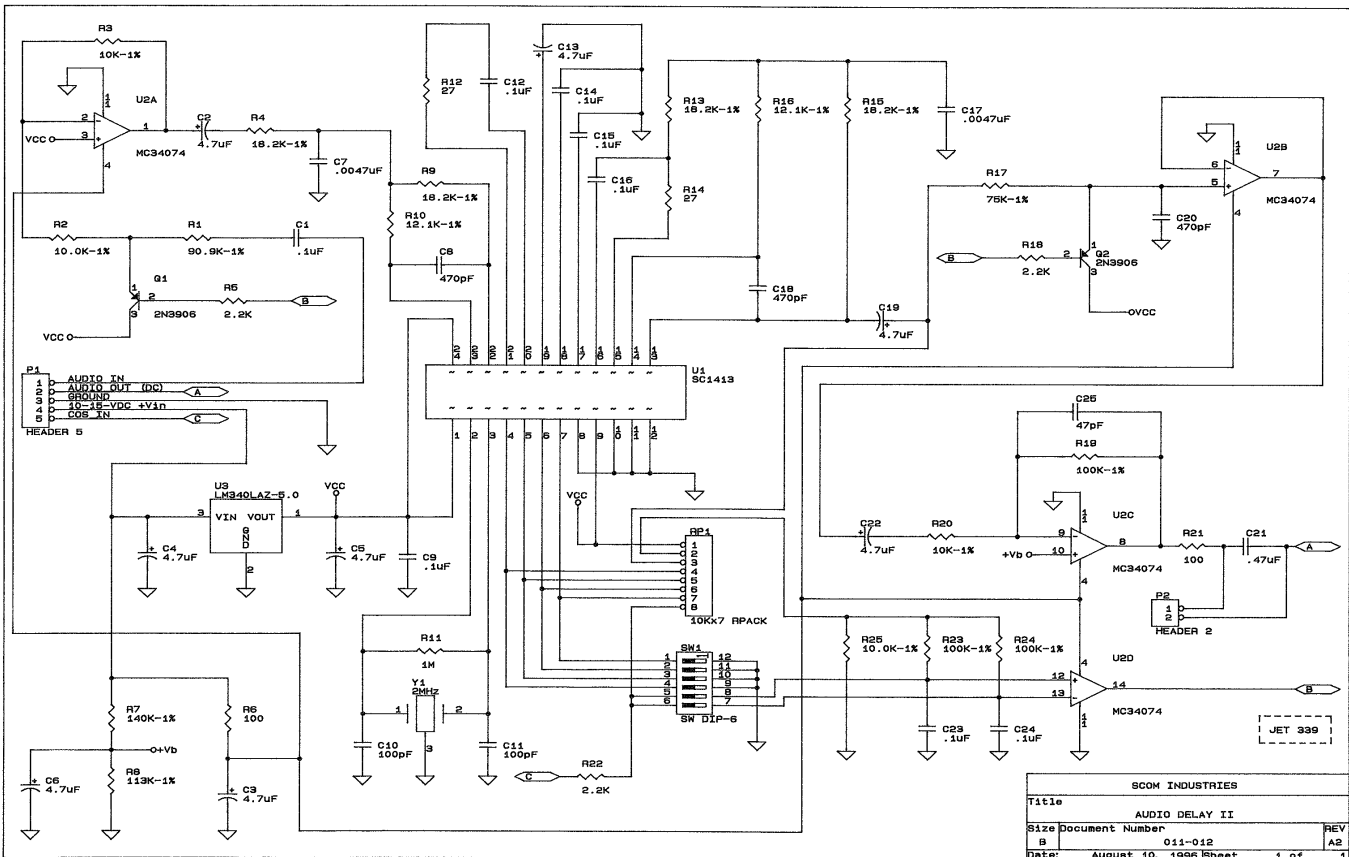
**1613 Bonnie Av**

**Dixon, IL 61021**

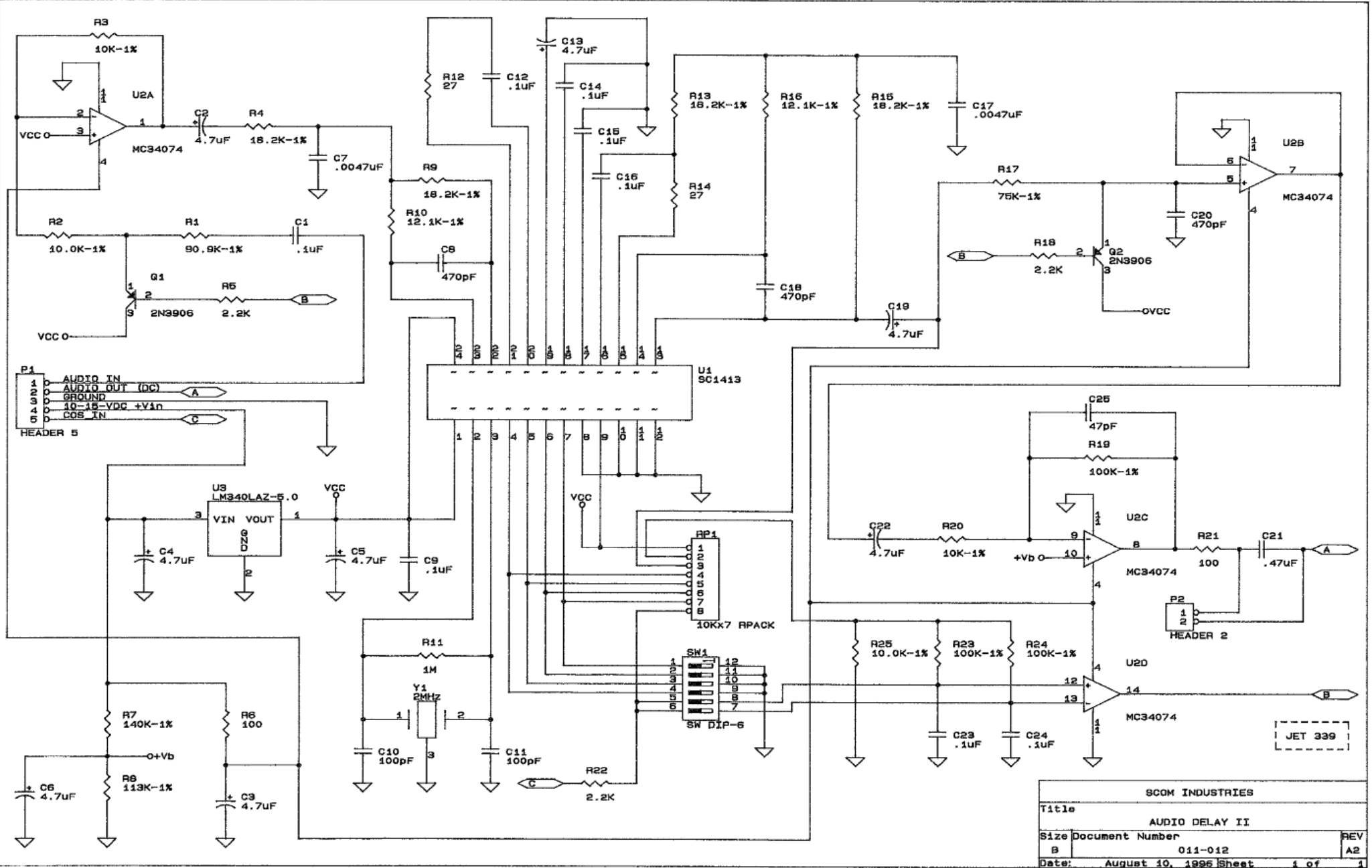
**815-284-6963 Voice**

**815-288-0718 Fax**

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