VAD-1

Universal Delay Module

CES WIRELESS TECHNOLOGIES CORP.
925-122 South Semoran Blvd.,
Winter Park, FL 32792
Tel: (407) 679-9440
Fax: (407) 679-8110

e-mail: sales@cesusa.com
support@cesusa.com

Ref: MAN84

VAD-1 Universal Delay Module

Installation Instructions

GENERAL DESCRIPTION

The VAD-1 provides a programmable audio delay from 2ms to 1 second. Selection of the delay time is achieved through solder bridges or may occur serially. (The VAD-8 also available from CES provides a delay of up to 8 seconds).

INSTALLATION

Installation and programming of this CES product must be completed by a qualified two-way radio technician or engineer. CES is not responsible for any operational problems caused by system design, outside interference, or improper installation. Observe static prevention techniques.

Before Installing

The VAD-1 may be installed in almost any transmitter/receiver. The module should be programmed prior to performing the actual installation.

Input Level Adjustment

The Input audio level can be adjusted by turning R18 to increase or decrease the input audio level. See Figure 2 for component layout diagram.

Output Level Adjustment

The output audio level can be adjusted by turning R2 to increase or decrease the output audio level. See Figure 2 for component layout diagram.

Time Delay Selection

Following Table 1 place solder bridges on the specified coding pads. X means solder bridge required, blank means leave bridge open. See Figure 2 for the location of the solder bridges on the PCB. To control the delay time serially, short J16. For programmable values not listed in Table 1, please contact CES or your local CES authorized distributor.

Mute Input

A mute input is provided to turn off the audio output. The polarity is programmable using jumper J15. Short J15 for active High. Default is open, active Low. See Figure 2 for component layout diagram.

Wiring Interface

See Table 2 for wiring details.

Mounting Details

Mount the module to a suitable location in the transceiver, preferably away from high RF and sensitive receiving stages, with the provided double-sided tape.

Table 1. Program Jumpers

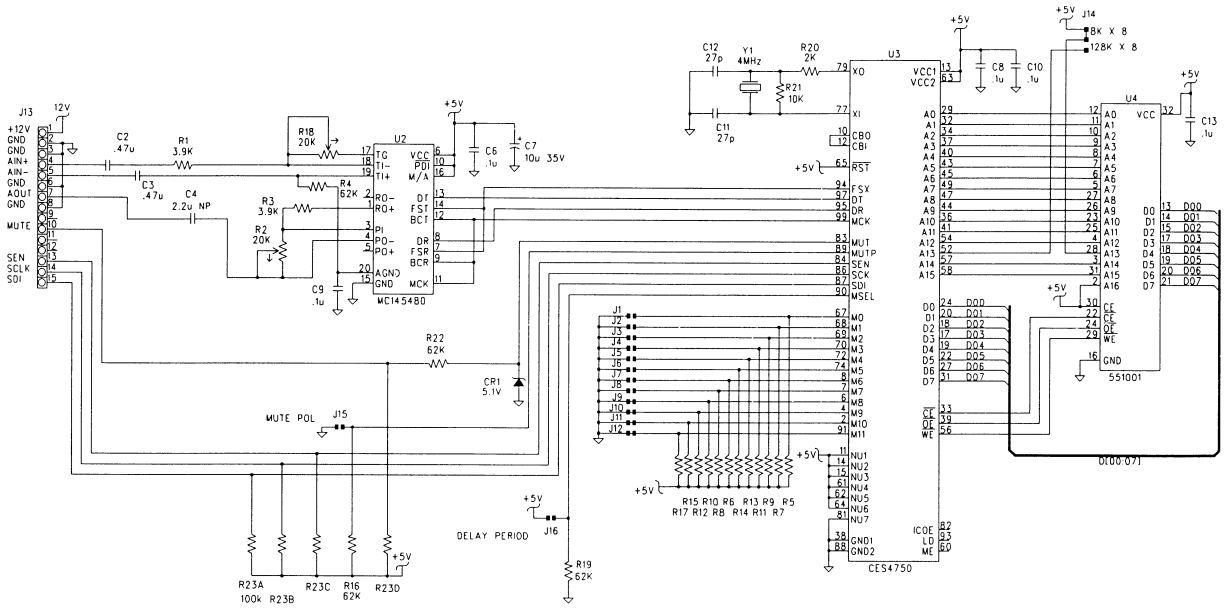
The VAD-1 is programmable in 2mS steps. For programmable sheets with all programmable values please contact CES. **X means bridge jumper**

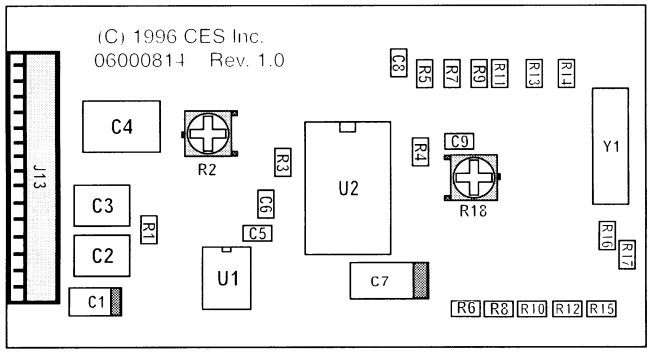
mSec	J12	J11	J10	J9	J8	J7	J6	J5	J4	J3	J2	J1
2	X	X	X	X	X	X	X	X	X	X	X	X
20	X	X	X	X	X	X	X	X		X	X	
30	X	X	X	X	X	X	X	X				X
40	X	X	X	X	X	X	X		X	X		
50	X	X	X	X	X	X	X			X	X	X
60	X	X	X	X	X	X	X				X	
70	X	X	X	X	X	X		X	X	X		X
80	X	X	X	X	X	X		X	X			
90	X	X	X	X	X	X		X			X	X
100	X	X	X	X	X	X			X	X	X	
110	X	X	X	X	X	X			X			X
120	X	X	X	X	X	X				X		
130	X	X	X	X	X		X	X	X	X	X	X
140	X	X	X	X	X		X	X	X		X	
150	X	X	X	X	X		X	X		X		X
160	X	X	X	X	X		X	X				
170	X	X	X	X	X		X		X		X	X
180	X	X	X	X	X		X			X	X	
190	X	X	X	X	X		X					X
200	X	X	X	X	X			X	X	X		
226	X	X	X	X	X				X	X	X	X
250	X	X	X	X	X						X	X
276	X	X	X	X		X	X	X		X	X	
300	X	X	X	X		X	X		X		X	
326	X	X	X	X		X		X	X	X		X
350	X	X	X	X		X		X				X
400	X	X	X	X			X	X	X			
450	X	X	X	X				X	X	X	X	X
500	X	X	X	X						X	X	
550	X	X	X		X	X	X		X	X		X
600	X	X	X		X	X		X		X		
650	X	X	X		X		X	X	X		X	X
700	X	X	X		X		X				X	
750	X	X	X		X				X			X
800	X	X	X			X	X	X				
850	X	X	X			X		X		X	X	X
900	X	X	X				X	X	X	X	X	
950	X	X	X				X			X		X
1000	X	X	X						X	X		
1024	X	X	X									

Specifications

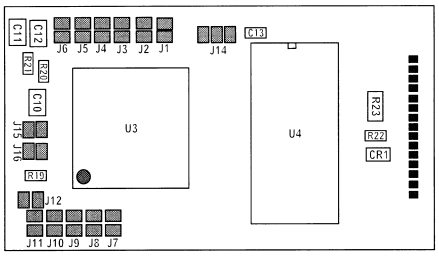
Dimensions:	1.12 x 2.10 x 0.38 inches
Supply Input Voltage:	5.5 to 24 Volts DC
Module Delay Period:	Programmable in 2 millisecond Steps from 2 ms to 1.024
Power Supply Input Current:	7.6 mA Typical @ 12v, no Audio Load
Converter Resolution:	14 Bits with MuLaw Compression
Converter Frequency Response:	200 to 3400 Hz
Converter Gain Variation Over Frequency Response:	0.55dB
Noise Input into “codec” at 0.5VP-P	1.75%
Noise Input into “codec” at 2.5VP-P	4.25%
Module Audio Input:	Pseudo-Differential or Single Ended with Level Control
Module Audio Output:	Single Ended with Level Control
Module Audio Output Drive Impedance:	360 Ohm Typical
Module Audio Output Drive Voltage with 600 Ohm Load:	4.75v P-P

Figure 1. Circuit Diagram VAD-1





VAD-1 COMPONENT LAYOUT
(front view)



VAD-1 COMPONENT LAYOUT
(rear view)

Table 2. Wiring Diagram

J13	Color	Description
Pin 1	Red	**12 V:** Connect to the radio's + ve supply.
Pin 2	Black	**Ground:** Connect to 0V (Ground).
Pin 3	Orange	**Ground:** Connect to 0V (Ground).
Pin 4	Yellow	**Audio In:** Connect to the input Audio source, (audio positive).
Pin 5	Light Green	**Audio In:** Connect to the input Audio ground, (audio negative).
Pin 6	Blue	**Ground:** Connect to 0V (Ground).
Pin 7	Violet	**Audio Output:** Connect to the (transmit) audio stage, after the microphone clipper/limited stages, and before the modulator circuit.
Pin 8	Gray	**Ground:** Connect to 0V (Ground).
Pin 9	White	Not Connected.
Pin 10	Brown	**Mute Input:** This input can be used to turn off the audio output.
Pin 11	Dark Green	Not Connected.
Pin 12	White/Red	Not Connected.
Pin 13	White/ Blue	**Serial Send Enable:** Serial Control of delay time.
Pin 14	Tan	**Serial Clock:** Serial Control of delay time.
Pin 15	White/Green	**Serial Send Data:** Serial Control of delay time.

For technical support call CES at the numbers below:

CES Wireless Technologies
925-122 S. Semoran Blvd.
Winter Park, FL 32792 USA
Phone: lnt. + 407-679-9440
Fax: Int. + 407-679-8110
E-Mail: support@cesusa.com
Web Site: http://www.ceswireless.com

Limited Warranty

CES Wireless Technologies (CES) warrants it's products to be free of defects in material and workmanship and extends this warranty under intended use and normal service conditions to the original owner for a period of two (2) years from the date of purchase.

This warranty does not apply to any product that has been subjected to repairs or alteration not authorized by CES, or for any product that has been damaged due to accident, abuse, neglect, vandalism, loss, unreasonable use, improper installations, lightning, fire, or water damage, or any acts of God.

The obligations of CES are limited to repairing or replacing, at the option of CES, any product or component that is returned to the factory all transportation charges prepaid, accompanied by proof of purchase and which examination reveals to have been defective within the warranty period stated above. CES does not assume, nor is any person authorized to assume for it, any obligation other than that stated herein.

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