

# **Dial-Up Audio Interface Model DAI-1**

## **— Software Instruction Book — (concise edition)**

**This instruction book contains documentation for the model DAI-1  
Dial-Up Audio Interface, Software Version 1.14 and later.**

**This version of the product documentation has been edited for  
length. It contains only the sections that concern programming and  
operation of the product to allow for quicker electronic distribution.**

**SINE SYSTEMS**  
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## Section 10 — Operation and Programming

### 10.1 OPERATION

#### 10.1.1 Establishing Connection

Since the DAI-1 is controlled by DTMF tones, operating the unit always begins with a call to the number where it is located. The DAI-1 must be connected through a telephone line, even when bench testing, because the unit does not normally provide the necessary operating voltage to the telephone. No special phone line or equipment is necessary but the controlling telephone must be able to produce DTMF tones. These are the tones generated by the buttons on a TouchTone® telephone. If a rotary (pulse) type phone is used to connect with the DAI-1, some external means of producing DTMF tones is required.

The DAI-1 will answer the line after two rings (under factory programming) and signal that it has seized the line with one long tone. Enter the main security code using the telephone keypad. The main security code is factory programmed to "12345678." After the security code is correctly entered the DAI-1 responds with two short tones. If the security code is entered incorrectly, the unit will drop the line immediately.

#### 10.1.2 Terminating Connection

To end a session with the DAI-1 simply hang up the telephone at any time. The DAI-1 should hang up automatically. To force the DAI-1 to hang up, press \* followed by 9 9 (two nines). The unit will respond with a series of ten short tones and, at the end of these tones, it will drop the line. Pressing a key while the unit is sending the alert tones will terminate the hang up sequence and place the unit back in operating mode.

#### 10.1.3 Alternate Connections

There are other methods of establishing a connection to the DAI-1. Three of these are described below. Since these methods bypass the security codes, they can be particularly valuable in the event that it is changed from the factory setting and then forgotten or misplaced.

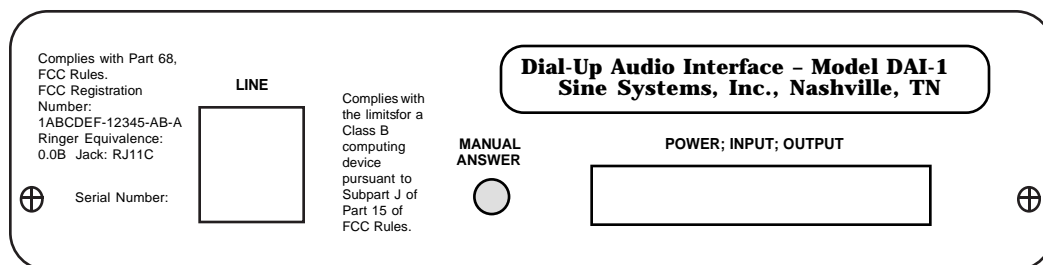
The connection methods described below utilize the Manual Answer button located on the front panel of the DAI-1 control unit. This button has two modes of operation. If the button is pressed briefly and released, the DAI-1 will connect to the telephone line and wait for a non-alterable "security code" of \*\_\*\_\*\_. After the code is given, the unit will enter the operating mode and remain there until a hang up occurs.

The second mode is triggered by pressing and *holding* the button. The unit will wait for the non-alterable security code and enter the operating mode as above. The DAI-1 will remain in the operating mode as long as the Manual Answer button is pressed. The connection will be broken when the button has been released for three seconds.

If the DAI-1 is on-line with a telephone call, the Manual Answer button is disabled for the duration of the call. When the call is complete, the button will be reactivated.

**10.1.3.1 Manual Answer Button (with telephone lines).** The first method involves no extra hardware but requires that you have two telephone lines and the DAI-1 unit on the workbench. Designate one telephone line as the originating line and the other as the receiving line. Connect the DAI-1 to the receiving line and call it from the originating line. (See the Installation section of the Hardware Instruction Book if you need details on connecting to the telephone line.) When the receiving line rings, gently press the "Manual Answer" button that is recessed behind the front panel of the DAI-1. Figure 10.1.3.a shows the location of the button. Pressing it causes the DAI-1 to seize the line and places it in the operating mode as if the security codes were successfully entered. Two seconds later, the DAI-1 will respond with two short tones to signal that it is waiting for commands.

Operate the unit as you would normally, making any changes you need to the system programming. When you are finished, hang up the originating telephone. The DAI-1 will hang up automatically.

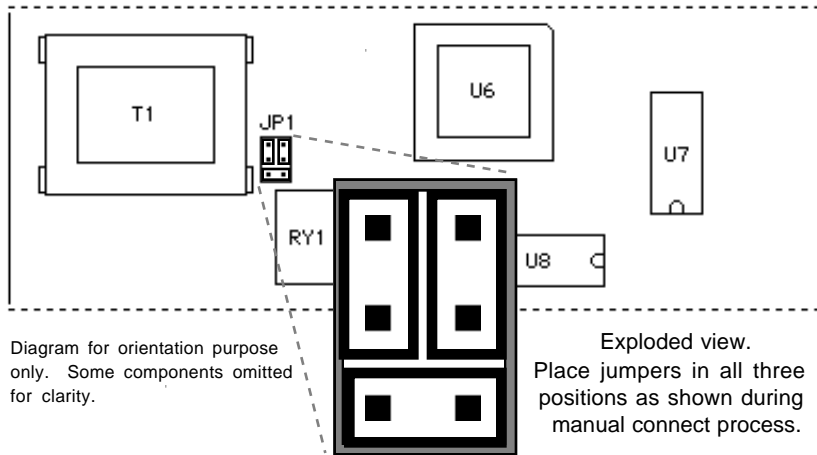


**Figure 10.1.3.a Location of Manual Answer Button**

**10.1.3.2 Manual Answer Button (without telephone lines).** **WARNING!** This method requires that the cover of the DAI-1 be removed. While the voltages inside the unit should not exceed about 12 VDC, low voltages can be potentially lethal under certain conditions. **This procedure should only be performed by qualified technical personnel.**

This method is similar to the one described above except that it does not require any telephone lines. The only required hardware is a telephone with a standard RJ11 "modular" type jack and two shorting jumpers or clip leads. Unplug the supply transformer from the wall outlet and disconnect the telephone line and ribbon cable connectors from the unit if you have not already done so.

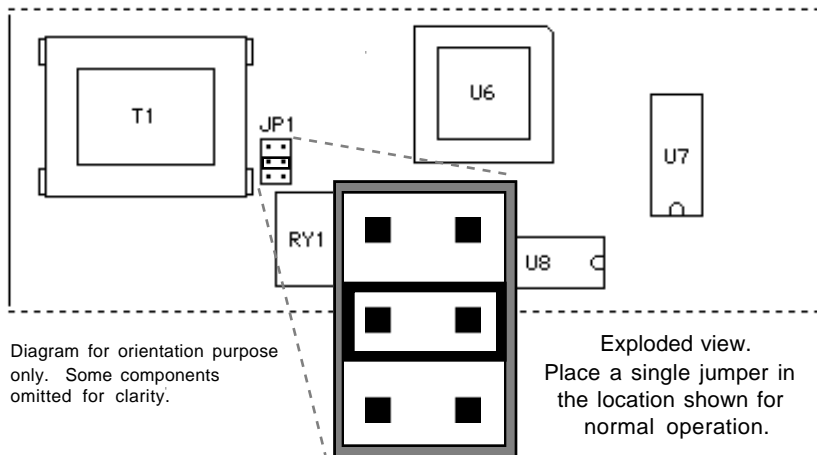
Remove either end of the DAI-1 case by removing the two securing screws. The circuit board inside contains CMOS type components that are sensitive to static electricity. Use proper precautions when handling this circuit board and handle by the edges only. Carefully slide the circuit board out of the case and place it, component side up, on a non-metallic surface. Arrange three jumpers as shown in Figure 10.1.3.b. If you do not have extra jumpers, clip leads may be used if you make sure that they do not short any extra pins or components. **Failure to install the jumpers properly may cause damage to the DAI-1 unit.**



**Figure 10.1.3.b Jumper Positions for Manual Connection**

Temporarily slide the circuit board back in the case making sure that it is aligned properly between the securing rails. Connect the telephone to the telephone line jack and attach the ribbon cable so that the unit has power. Take the telephone off hook and gently press and release the recessed "Manual Answer" button. Doing so causes the DAI-1 to connect to the line. Press \* \* \* \* on the telephone keypad to enter the operating mode as if the both security codes were successfully entered. You now have 10 seconds to enter the programming mode. If the unit is still in the operating mode at the end of this time, it will assume that this is an ordinary control session and engage the programming security code. Change the programming as necessary. Refer to Section 10.2 for programming details.

The next step is extremely important. When programming is complete, disconnect the ribbon and telephone cables. Slide the circuit board from the case and replace the jumper to its original position as shown in Figure 10.1.3.c. **Failure to install the jumper properly may cause damage to the DAI-1 unit.** Slide the circuit board back into the case as before and secure the cover to the end with the two screws removed in step one.



**Figure 10.1.3.c Jumper Position for Normal Connection**

**10.1.3.3 Transfer from a "Dial-up" Remote Control.** The third method does not require the DAI-1 to be on the workbench but it must have been installed with the hardware "Remote Transfer" connected to a "dial-up" remote control such as the Sine Systems RFC-1/B. (See the Installation section of the Hardware Instruction Book if you need details on wiring the remote transfer connections.)

To use this method, establish a normal connection to your remote control and issue the commands necessary to transfer control from the remote control to the DAI-1. The command sequence must include two steps: one that connects the Remote Transfer terminal to be ground, and one that causes the remote control to release the telephone line.

Shorting the Remote Transfer terminal to ground is the same as pressing the Manual Answer button. The two "modes" of button operation described above also apply to remote transfers. The unit connects to the line and waits for the manual connect "security code". Press \*\_\*\*\_ on the telephone keypad to enter the operating mode as if the both security codes were successfully entered.

A variation of this connection method can be used to connect the DAI-1 to the output of an RPU instead of, or in addition to, a dial-up line. The squelch relay can be used to provide the necessary control signal for switching when the RPU keys on. The squelch relay contact will hold the DAI-1 in the operating mode as long as it is engaged. When the squelch relay releases, the DAI-1 will disconnect. See the Installation section of the Hardware Instruction Book for wiring information.

#### **10.1.4 Issuing Commands**

The DAI-1 is controlled using one and two digit commands from the keypad of a telephone. The digit keys 0-9 and the "#" key cause the unit to perform actions as programmed in user programming with the press of a single key. The "\*" key acts as a shift key which, in conjunction with a second key, causes the unit to perform the corresponding programmed action. Some of these keys are factory programmed to perform special tasks. The factory programmed actions are listed below.

##### **10.1.4.1 Pre-programmed Shift Key Commands**

<u>Enter:</u>	<u>DAI-1 Function:</u>
*7	Enter programming read mode.
*8	Enter programming write mode.
*99	Hang up.
*0	Read software version.
**	Shift key/Shift release toggle.
*#	Reserved for future use.
*1	Reserved for future use.
*2	Reserved for future use.
*3	Reserved for future use.
*4	Reserved for future use.
*5	Reserved for future use.
*6	Reserved for future use.

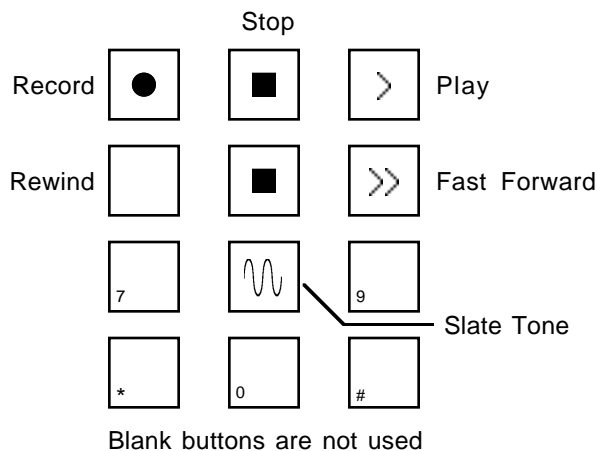
### **10.1.5 Command Sets**

The DAI-1 stores four sets of commands in its non-volatile memory. A *command set* defines how the unit will respond both when telephone keys are pressed (i.e. when the unit receives DTMF tones) and when conditions change on the logic level inputs. Three of these command sets are permanently defined for specific duties and the fourth is fully user programmable. While four command sets are stored in memory only one command set can be active at a time. A different command set can be selected by changing the Active Command Set programming in system profile at address 358.

### 10.1.5.1 Command Set 1 -- Soundbite Recorder

Command Set 1 is factory defined to control an open reel or cart recorder as a Soundbite Recorder. Make hardware connections as shown in the Installation section of the DAI-1 Hardware Book to use the DAI-1 with this command set.

Establish a connection to the DAI-1 from a remote telephone and enter the security code. Once in the operating mode, the keys will function as follows:



**Figure 10.1.5.a Key Functions for Soundbite Recorder**

<u>Press:</u>	<u>DAI-1 Response:</u>
1	Record button--record telephone audio to tape
2	Stop button--stop tape movement and mute all audio
3	Play button--monitor tape audio
4	Rewind button--rewind tape with audio monitor
5	Stop button--same as [2]
6	Fast Forward--forward tape with audio monitor
8	Slate tone--send 300 Hz tone burst for audible spot breaks
7,9,0,*,#	Unused
LL1	Logic Level 1--clears activity alert lamp
LL2-4	Unused

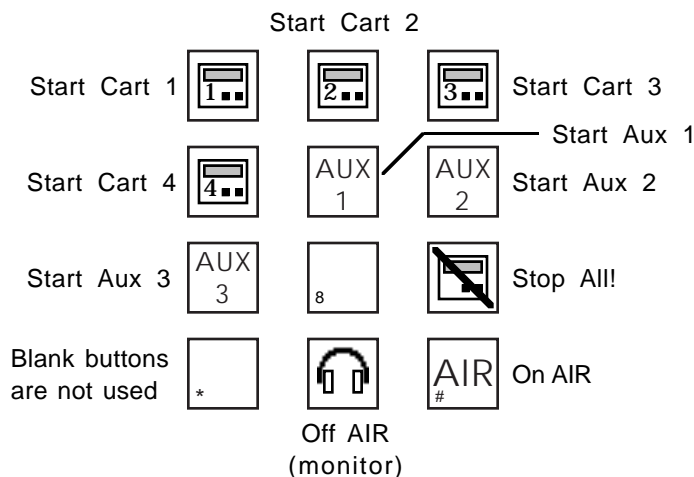
All functions are triggered by a single key press with the exception of recording. To begin recording, first press play [3]. The play relay will lock down for two seconds allowing record [1] to be pressed. The keys must be pressed in this order or the audio will not be switched to the proper mode for recording. Most machines will recognize clear leader as end of tape. Use it at both the head and tail of the tape to prevent it from winding off the reel.

When the record button [1] is pressed, a constant contact closure is provided that will not clear until LL1 is tripped. This can be used to activate an alert lamp in the studio that lights when something has been recorded. A momentary push button connected from LL1 to ground at the studio will clear the activity lamp.

### 10.1.5.2 Command Set 2 -- Remote Broadcaster

Command Set 2 is factory defined as a control unit for remote broadcasts. In this configuration the DAI-1 is used to start cart machines and switch audio while the air personality is at a remote site. Make hardware connections as shown in the Installation section of the DAI-1 Hardware Book to use the DAI-1 with this command set.

Establish a connection to the DAI-1 from a remote telephone and enter the security code. Once in the operating mode, the keys will function as follows:



**Figure 10.1.5.b Key Functions for Remote Broadcaster**

<u>Press:</u>	<u>DAI-1 Response:</u>
1	Start Cart Machine 1
2	Start Cart Machine 2
3	Start Cart Machine 3
4	Start Cart Machine 4
5	Start Auxiliary Device 1
6	Start Auxiliary Device 2
7	Start Auxiliary Device 3
9	Stop All!--reset cart machines to idle condition
0	OFF AIR--monitor air signal
#	ON AIR--send telephone audio on air
8,*	Unused
LL1	ON AIR--send telephone audio on air
LL2	Start Auxiliary Device 1
LL3	Start Auxiliary Device 2
LL4	Start Auxiliary Device 3

All start buttons switch audio into monitor mode. The STOP key resets all start buttons but leaves audio in the current mode. The OFF-AIR key resets all start buttons and switches audio to the monitor mode. ON-AIR is the only key that makes the telephone audio live.

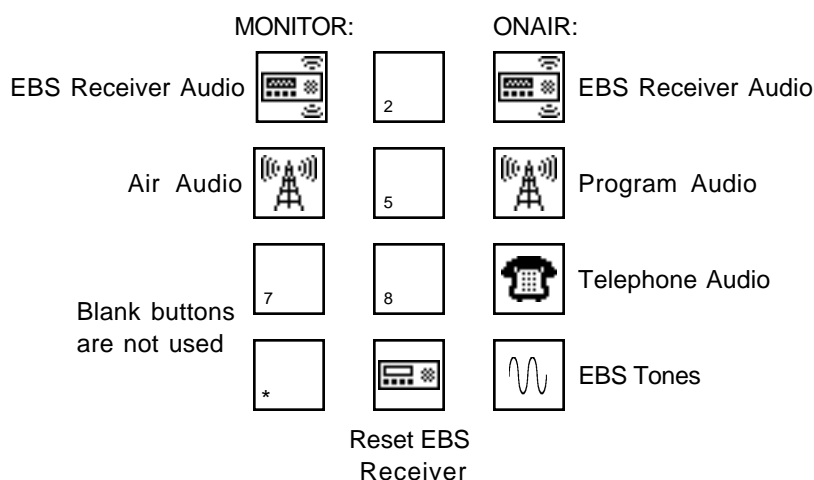


### 10.1.5.3 Command Set 3 -- EBS Operation

The following text describes one way of using the DAI-1 to help meet EBS obligations. It is not meant to suggest that this is the way to install the DAI-1 to be "FCC legal". There are many ways to install the DAI-1 as part of an effective EBS system. We suggest that you discuss your proposed system with the FCC before installing the DAI-1. Personnel using the DAI-1 must have adequate knowledge of station EBS procedures to use this tool effectively.

In this configuration the DAI-1 is used to switch audio and control an EBS receiver from a remote location. Make hardware connections as shown in the Installation section of the DAI-1 Hardware Book to use the DAI-1 with this command set.

Establish a connection to the DAI-1 from a remote telephone and enter the security code. Once in the operating mode, the keys will function as follows:



**Figure 10.1.5.b Key Functions for EBS Operation**

<u>Press:</u>	<u>DAI-1 Response:</u>
1	Monitor EBS receiver audio--program audio stays on air
3	Send EBS receiver audio--replace program audio with EBS receiver audio
4	Monitor air audio--selected source stays on air
6	Send program audio--replace EBS receiver audio with program audio
9	Send telephone audio--replace program audio with audio from telephone
0	Reset EBS receiver--to standby after receiving attention tones
#	Send EBS tones--activate EBS attention signal tones
2,5,7,8,*	Unused
LL1	Trigger alarm system--call studios to notify of EBS condition
LL2	Send EBS tones--same as [#]
LL3-4	Unused

The "MONITOR" keys will send audio from the selected source to the telephone while leaving the air audio source alone. If the telephone is the air audio source it will be muted when the monitor source changes. The "ON AIR" keys change the source of the air audio and automatically switch the monitor to air audio.

#### 10.1.5.4 Command Set 4 -- User Defined

Command Set 4 is entirely user programmable. The factory setting is the same as Command Set 3 for EBS operation. Programming instructions are in the next section. This section is only concerned with the operational aspects of defining a command set.

DAI-1 command sets are instructions that tell the DAI-1 how to respond when a key is pressed, a logic level input is detected, or the system is reset. Each key and logic level input can set different conditions except the "\*" key which is not programmable. Response conditions can include: setting, resetting, or momentarily setting the open collector outputs (usually used to drive relays); directing audio either into or out of the DAI-1; generating an audible slate tone for cuing, triggering a series of telephone calls to warn of an alarm condition; and checking the status of two of the logic level inputs.

We can use the factory programming to illustrate how this system works. The data for the "#" Key looks like this in the Command Matrix:

# Key	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
	1	1	1	1	0	3	0	0	2	0	0	0	0	0	0	0

The relay commands occupy the first eight columns from left to right. This example shows that when the "#" Key is pressed it will turn relays 1-4 on. Relays 5, 7 and 8 will be turned off and relay 6 will be turned on for half a second. The audio command is in the ninth column and it will set the DAI-1 so that the telephone monitors the audio input. Following that are the slate command and the alarm command both of which are off. Columns twelve and thirteen are the commands for reading the condition of the devices attached to logic level inputs 1 and 2 respectively. Both of these are also turned off in this example. The final three columns are reserved for future use. A complete listing of available commands is given in the programming section that follows in this section.

The Command Matrix is set up so that all possible inputs are listed down the left edge of the table. These include the eleven programmable keys and the four logic level inputs. The final row of the matrix defines "Power up" conditions. This determines the state of hardware when the DAI-1 is not in use--when it is first powered up or after a control session ends.

Because a table is used to simplify programming, some conditions appear in the Command Matrix that do not make sense. For instance, a set of alarm calls should not be triggered in the Power up condition unless you want the unit to call every time a control session ends. Likewise, triggering an alarm with one of the programmable keys will cause the unit to begin a dialing sequence every time that key is pressed.

Plan your settings carefully before you begin the process of programming. Watch for cases where two key presses will have conflicting results on a relay. Remember that audio and relays can be left alone on certain key presses by programming "No change" conditions.

### 10.1.6 "Quick Card"

To save time and avoid the pressure of trying to remember the control codes in an emergency, a "Quick Card" can be prepared and carried by key operating personnel. Such a card could be plastic laminated for durability. Here are examples of what could be included on the card:

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Dial: (615) 228-7387  
Response: [one long beep]  
Enter: 12345678 (Main Security Code)  
Response: [two short beeps]  
Controls: 1--Monitor EBS receiver  
3--Put EBS receiver audio on air  
4--Monitor air audio  
6--Put program audio on air  
9--Put telephone audio on air  
0--Reset EBS receiver  
#--Trip EBS tones and put on air  
Other: \* 7--Enter Programming Read Mode  
\* 8--Enter Programming Write Mode  
\* 99--End call--hang up

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Dial: (615) 228-7387  
Response: [one long beep]  
Enter: 12345678 (Main Security Code)  
Response: [two short beeps]  
Controls: 1--Record (press play first)  
2--Stop  
3--Play  
4--Rewind  
5--Stop  
6--Fast Forward  
8--Slate Tone  
Other: \* 7--Enter Programming Read Mode  
\* 8--Enter Programming Write Mode  
\* 99--End call--hang up

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Dial: (615) 228-7387  
Response: [one long beep]  
Enter: 12345678 (Main Security Code)  
Response: [two short beeps]  
Controls: 1--Start cart 1  
2--Start cart 2  
3--Start cart 3  
4--Start cart 4  
9--All stop (emergency)  
0--OFF air (monitor)  
#--ON air  
Other: \* 7--Enter Programming Read Mode  
\* 8--Enter Programming Write Mode  
\* 99--End call--hang up

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## 10.2 PROGRAMMING

The function of most keystroke commands can be reset through user programming. Improper programming can lead to unpredictable results when controlling the DAI-1 from a remote telephone, therefore, we strongly recommend that you read thoroughly and understand both the programming method and related information before attempting to program the DAI-1. Additionally, only personnel who need to program the unit should be given the programming security code.

If you have done any advanced programming on a Sine Systems RFC-1 Remote Control System, the programming method of the DAI-1 Dial-up Audio Interface will seem somewhat familiar. In any case, keep in mind that user programming is not difficult as long as you pay attention to what you are doing. It will take much longer to clear up the damage of a rushed programming job than to take the time to do it correctly the first time. There are programming suggestions at the end of Section 10.

### 10.2.1 The Command Matrix

To simplify the setup process, the DAI-1 command settings are programmed in the Command Matrix. The Command Matrix is a table with user actions down the left side and machine events across the top. The user actions cause the DAI-1 to respond with certain machine events. The numbers in the matrix are used to turn machine responses on and off and, in some cases, the numbers determine not only if an event will occur but how it will occur.

On This Action \ Set to This State	Relay 1															Read Status 2				
	000	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015				
0 Key	1	1	0	0	3	1	2	0	2	0	1	1	0	0	0	0				
1 Key																				

The user actions are independent of one another as far as programming is concerned. That is, each user action causes the machine to respond as programmed regardless of any other user action. However, since the hardware is common to all actions, they are not entirely independent. Suppose key 1 is programmed to turn a relay on for two seconds and key 2 is programmed to turn that same relay off. No matter when key 2 is pressed it will turn the relay off--even if key 1 was pressed less than two seconds ago. Key 2 can be programmed to leave that relay alone and still control other relays to remove this interaction.

Any key (or logic level input) can activate any or all relays. Key 1 and relay 1 are only logically connected if programming connects them. Key 1 can control relay 1, or relay 2, or relay 7, or all eight relays if necessary. The same is true for all other keys and logic level inputs.

In addition to the keys and logic level inputs, the Command Matrix includes an action

called "Power up". Power up determines how the relays, etc., will be set when the unit is powered on or when a call ends and the DAI-1 hangs up. Settings that should not change when a call ends can be programmed accordingly in Power up.

An empty Command Matrix and a list of available commands are included at the end of this section. Complete the table with the actions you wish to enter before attempting to program the DAI-1.

### **10.2.2 Programming Mode**

Defining the user command sets and certain other operating conditions of the DAI-1 is accomplished in the programming mode. This mode is functionally divided into two parts. One function reads data and is used to verify memory programming. The other writes data and is used to change memory contents. Both of these modes are described in detail in the following sections.

A security code must be entered before access to the programming mode is allowed. This code, as well as most of the operating parameters of the DAI-1, can be changed in the programming mode. The programming security code is factory programmed as "1266".

To exit the programming mode at any time, just press \* twice.

When programming, one long tone is usually a prompt for you to respond. Two beeps typically signals an "okay" from the DAI-1. And a lower pitched tone signals an error.

### **10.2.3 Reading from Memory**

The read function of the programming mode is used to verify the Command Matrix and System Profile data without making changes. Enter this mode by pressing \* then 7. The DAI-1 will respond with one long tone to indicate that the programming security code must be given. (If the programming security code has already been correctly entered during this call, the DAI-1 will not prompt you for it again.) Enter the programming security code. (If you have not changed the factory setting, the code is "1266".) After the programming security code is correctly entered the DAI-1 will respond with two short beeps. It is now in the programming read mode. Keystrokes on the telephone keypad do not activate the external relays and audio functions while in the programming mode.

The DAI-1 now needs to know the address at which to begin reading. The address is the way it identifies what specific data should be retrieved. To find the address, locate the description of the data you wish to change in either the Command Matrix or the System Profile in this manual. Each box in the Command Matrix has a three digit number printed along its edge. In the System Profile list, each description has a three digit number to its left. These numbers are the address corresponding to that data item. Leading zeros are significant when programming so all three digits of the address must be entered. The DAI-1 will send two short beeps to acknowledge that it has received a valid address.

Now press # to tell the DAI-1 to read the data at this address. The DAI-1 will respond with a series of short tones equal to the value stored at this address. For instance, if the stored value is 2, reading it will produce a series of two short tones. Reading 3 would produce three tones, and so on. The only exception to this is the value zero which will produce one long tone. Pressing a key while the DAI-1 is beeping will silence it whether it is finished or not.

One of three things can now be done:

- (1) Press # to read the value at the next consecutive address , or
- (2) Press aaa# to jump to the address represented by the three digit number *aaa* and read the value stored there, or
- (3) Press \* twice to exit the programming mode back to the normal operating mode.

#### **10.2.4 Writing to Memory**

The write function of the programming mode is used to change the contents of the Command Matrix and the System Profile. Press \* then 8 to enter this mode. The DAI-1 will respond with one long tone to indicate that the programming security code must be given. If the programming security code has already been correctly entered during this call, the DAI-1 will not prompt you for it again. Enter the programming security code. (If you have not changed the factory setting, the code is "1266".) After the programming security code is correctly entered the DAI-1 will respond with two short beeps. It is now in the programming write mode. Keystrokes on the telephone keypad do not activate the external relays and audio functions while in the programming mode.

The DAI-1 now needs to know what data to change. Data items are identified by their address. To find the address, locate the description of the data you wish to change in either the Command Matrix or the System Profile in this manual. Each box in the Command Matrix has a three digit number printed along its edge. In the System Profile list, each description has a three digit number to its left. These numbers are the address corresponding to that item of data. Leading zeros are significant when programming so all three digits of the address must be entered. The DAI-1 will send two short beeps to acknowledge that it has received a valid address.

Now press n# to program the value *n* at the current address. The DAI-1 will write the value *n*, read the value back, and respond with a series of short tones equal to the value stored . For instance, if the value written is 2, reading it will produce a series of two short tones. However, writing 2 and reading 3 would indicate that an error occurred. Writing the value zero will produce one long tone when read. Pressing a key while the DAI-1 is beeping will silence it whether it is finished or not.

One of three things can now be done:

- (1) Press n# where *n* is the value you wish to program at the next consecutive memory address, or
- (2) Press aaa to jump to the address represented by the three digit number *aaa*, or
- (3) Press \* twice to exit the programming mode.

### 10.2.4.1 Programming Telephone Numbers

Programming data typically consists of the digits 0 through 9. There are cases, such as telephone numbers and security codes, where a blank space may be necessary. The "\*" key is used as an empty place holder in those instances. A "\*" will be read back as ten short beeps. Finally, telephone numbers may also include a pause character. This can be programmed using the "#" key as a data key. The "#" key will be read back as eleven short beeps.

As an example, suppose you wish to program the first telephone number in the DAI-1. Look in the System Profile for the description "A Telephone Number" and find that it is programmed at address 256. Press \* then 8 and the programming security code "1266" (if you are prompted for it) to enter the programming mode. After the two short beeps enter "256"--the starting address of A Telephone Number. Two more short tones indicate that the address was entered. To program the telephone number 228-3500, press 2# 2# 8# 3# 5# 0# 0# \*# \*# \*# \*# \*# \*# \*# \*#. The stars after the final zero are unused digits in the telephone number. The number can be up to 15 digits long but unused digits should be filled with a "." Finally, press \* twice to leave the programming mode and return to the normal operate mode.

Now, suppose you need the DAI-1 to dial number through a telephone system that requires a prefix of 9 to reach an outside line. The procedure is the same as above to enter the programming mode but a pause is used in the telephone number. At the two beep prompt after the address, press 9# ## 2# 2# 8# 3# 5# 0# 0# \*# \*# \*# \*# \*#. The "#" after the initial 9 causes a two second pause when dialing to give the system time to connect to an outside line.

### 10.2.5 Programming Command Summary

#### Programming read mode:

<u>Enter:</u>	<u>DAI-1 Response:</u>
* 7	One long tone--prompt to enter programming security code.
1266	Two short beeps--security code correct. Enter desired address.
aaa	Two short beeps--address valid. Give read command.
#	<i>n</i> beeps where <i>n</i> is the number stored at the address <i>aaa</i> .
**	One long tone--alert that DAI-1 is back in operating mode.

#### Programming write mode:

<u>Enter:</u>	<u>DAI-1 Response:</u>
* 8	One long tone--prompt to enter programming security code.
1266	Two short beeps--security code correct. Enter desired address.
aaa	Two short beeps--address valid. Give read command.
<i>n#</i>	<i>n</i> beeps where <i>n</i> is the number stored at the address <i>aaa</i> .
**	One long tone--alert that DAI-1 is back in operating mode.

## 10.2.6 Matrix Programming Commands

User programming consists of placing numbers that represent actions at specific locations in the memory of the DAI-1. It is best represented as a matrix with the possible commands listed down the side and the actions performed across the top. The following list defines the sets of numbers and the actions they represent. Use these to program the Command Matrix.

<u>Value</u>	<u>Relay Action</u>
0	Turn relay off
1	Turn relay on
2	No change
3	Turn relay on for 1/2 second
4	Turn relay on for 1 second
5	Turn relay on for 1 1/2 seconds
6	Turn relay on for 2 seconds
7	Turn relay for 2 1/2 seconds
+	Values over 7 default to 2

<u>Value</u>	<u>Audio Action</u>
0	Off--mute audio in and out
1	No change
2	Monitor audio from inputs / ALC active
3	Send audio to outputs / ALC active--telephone sends audio
4	Send audio to outputs/ ALC frozen--telephone sends audio
5	Send audio to outputs / ALC inactive--programmable fixed gain
+	Values over 5 default to 1

<u>Value</u>	<u>Slate Action</u>
0	Off--no tone
1	Shortest tone
...	(factory setting 4)
8	Longer tone
9	Longest tone

<u>Value</u>	<u>Alarm Action</u>
0	Off--do not trip alarm
1	On--trip alarm
+	Values over 1 default to 0

<u>Value</u>	<u>Read Status Action</u>
0	Off--do not report status of input
1	On--report state of input
+	Values of 2 or more default to 1



## 10.2.7 System Profile Commands

The following commands are used in the System Profile listing at the end of this section.

**10.2.7.1** A *command set* defines how the DAI-1 will respond to DTMF tones during operation. The DAI-1 stores four command sets in memory, but only one is active at a time. The active command set is programmed at address 358.

<u>Value</u>	<u>Active Command Set</u>
0	User Programmable Command Set
1	Pre-programmed Set 1--Soundbite Recorder
2	Pre-programmed Set 2--Remote Broadcast
3	Pre-programmed Set 3--EBS Operation (factory setting)
+	Values of 4 or more default to 3

**10.2.7.2** The DAI-1 has a *safeguard timer* to keep the DAI-1 from staying on-line at a remote location indefinitely. If the unit is on-line and has not received a key or logic level command for the programmed length of time, it will hang up the line and reset to power up conditions. The timer can be disabled by programming a value of 10. The safeguard timer is programmed at address 357.

<u>Value</u>	<u>Time Out Length</u>
0	5 minutes
1	8 minutes
2	17 minutes
3	32 minutes
4	53 minutes
5	1 hour, 20 minutes (factory setting)
6	1 hour, 53 minutes
7	2 hours, 32 minutes
8	3 hours, 17 minutes
9	4 hours, 8 minutes
10	Disabled

**10.2.7.3** There are two programmable *security codes* in the DAI-1. Each can be up to eight digits in length. Unused digits should be programmed to 10 using the "\*" key to program a 10. The Main Security Code is used to gain access to the system and is requested any time the unit answers the phone. It is factory programmed as "12345678" at address 316 through 323. The Programming Security Code is requested when there is an attempt to enter the programming mode of the DAI-1. It is factory programmed to "1266"--the final four digits are 10's so they are ignored--at addresses 324 through 331. While this is not generally recommended, a security code can be entirely disabled by programming all digits to 10.

<u>Value</u>	<u>Security Code</u>
0-9	Required digit in security code
10	Unused digit in security code

When the DAI-1 asks for a security code, a *security code timer* starts running. If this timer runs out before the code is given (correctly), the DAI-1 terminates the call. The time set here applies to all security code requests. The length of time that the user is allowed to give the code is programmable at address 359.

<u>Value</u>	<u>Security Code Timer</u>
0	10 seconds
1	20 seconds--(factory setting)
...	[(2 to 7) +1] x 10 seconds
8	90 seconds
9	100 seconds

The DAI-1 allows 20 seconds for a response when it requests a security code. If the code is not given or given incorrectly, the unit drops the phone line and, as an added measure of security, does not answer another call for an adjustable length of time. This time is programmed at address 350.

<u>Value</u>	<u>Incorrect Security Code Lockout Time</u>
0	10 seconds
1	20 seconds
...	[(2 to 7) +1] x 10 seconds--(factory setting 3)
8	90 seconds
9	100 seconds

**10.2.7.4** The DAI-1 has four independent *logic level inputs* to monitor the state of external devices. For each logic level input used, two items must be programmed. First, the input terminal must be enabled so that the monitoring system will acknowledge it. And second, the length that the input condition must be present before the system responds must be set. These are programmed in pairs from address 332 through 339.

<u>Value</u>	<u>Logic Level Input</u>
0	Input Disabled
1	Input Enabled (factory setting)
+	Values of 2 or more default to 1

<u>Value</u>	<u>Input Hold Length</u>
0	0.1 seconds (factory setting)
1	0.2 seconds
2	0.9 seconds
3	2.8 seconds
4	6.5 seconds
5	12.6 seconds
6	21.7 seconds
7	34.4 seconds
8	51.3 seconds
9	73.0 seconds

**10.2.7.5** The DAI-1 is capable of dialing up to four *telephone numbers* of 15 digits each when an alarm condition is detected. These numbers are programmed from address 256 through 315. The DAI-1 will dial the numbers, in rotation, up to four times each or until the alarm condition is cleared by user input. It sends the identification tones as its alarm message during the call. The DAI-1 then pauses between calls in case station personnel are trying to call it. The length of a call and the length of a pause between calls are programmed at address 340 and 341 respectively. The number of call attempts is programmed at address 342. The alarm system may be enabled or disabled at any time through programming at address 355.

Value            Telephone Call Length and Pause Length

0	10 seconds
1	20 seconds
...	[(2 to 7) + 1] x 10 seconds--(factory setting 6)
8	90 seconds
9	100 seconds

Value            Telephone Call Attempts

0-1	1 Attempt per Telephone Number
2	2 Attempts per Telephone Number
3	3 Attempts per Telephone Number (factory setting)
4	4 Attempts per Telephone Number
+	Values of 5 or more default to 4

Value            Alarm System

0	Off--disabled (factory setting)
1	On--enabled
+	Values of 2 or more default to 1

**10.2.7.6** The DAI-1 does limited audio processing through an internal *Automatic Level Control* (ALC). The ALC is always active when the DAI-1 is feeding audio to the telephone line to keep audio within legal tolerances. When audio comes from the telephone line to the DAI-1, the ALC can be frozen at a specific gain setting or disabled through programming in the Command Matrix. The ALC characteristics are user programmable starting at address 343.

Value            ALC Input and Output Release Speed

0	Fastest release
1	Faster release
...	(factory setting 4)
8	Slower release
9	Slowest release

Value            ALC Output Level and Fixed Gain

0	Lowest level
1	Lower level
...	(factory setting 5)
8	Higher level
9	Highest level

**10.2.7.7** In cases where the DAI-1 shares a telephone line with other equipment it may be necessary to delay answering the line for a certain number of rings. Program the *ring number* to answer at address 347.

Value            Ring Number to Answer

0-1	Answer on first ring
2	Answer on second ring (factory setting)
...	Answer (3-8) rings
9	Answer on ninth ring
10	Answer on tenth ring

The DAI-1 may need higher *ring sensitivity* if it is used with a UHF radio telephone (sometimes called a "ranch phone"), a cellular-to-RJ11 adapter, or another device which generates a square wave ring signal. However, in installations where there is a significant amount of "hum" on the telephone line, the ring sensitivity may need to be lowered. This prevents the DAI-1 from interpreting the hum as a continuous ring. Ring sensitivity is programmed at address 348.

**When ring sensitivity is 0 the DAI-1 does not answer the telephone.**

Value            Ring Sensitivity

0	Does not answer
1	Least sensitive
2	Less sensitive
...	(factory setting 5)
8	More sensitive
9	Most sensitive
+	Values above 9 default to 9

The DAI-1 normally detects when a telephone connection is cut off prematurely--before the hang-up command has been given. This may occur if the telephone line "goes dead" or the operator hangs up the calling phone by accident. While the *pulse hang-up detection* can be disabled by programming at address 360, it is recommended that you carefully consider the possible consequences before changing this programming.

Value            Pulse hang-up detection

0	Enabled--system will drop line automatically
1	Disabled--system will remain on-line if connection is dropped
+	Values above 1 default to 1

**10.2.7.8** The DAI-1 is controlled by the DTMF tones produced by a TouchTone® type telephone. It is normal for audio passing through the system to occasionally contain sound at the same frequencies as these tones. To reduce the chance of reacting to these false tones, the DAI-1 is programmed to ignore any tone until it has been present for a set length of time. *DTMF hold time* is programmed at address 349.

<u>Value</u>	<u>Minimum DTMF hold time</u>
0	60 ms
1	70 ms
2	120 ms--about 1/10 second (factory setting)
3	150 ms
4	220 ms--about 1/4 second
5	310 ms
6	420 ms
7	550 ms--about 1/2 second
8	700 ms--about 3/4 second
9	870 ms

**10.2.7.9** When the DAI-1 places a telephone call to signal an alarm condition, it sends a series of short tones to identify itself. It will repeat these tones until the alarm is cleared or the programmed call length is reached. It may be necessary in cases where more than one DAI-1 is used to distinguish between the units when they call. Simply program a different value at address 351 to send a different number of *identification tones*.

<u>Value</u>	<u>Tones Generated</u>
0-1	1 tone
2	2 tones
...	(3-7) tones (factory setting 3)
8	8 tones
9	9 tones
+	Values above 9 default to 9

The DAI-1 responds to user input through a series of short tones representing numbers. The speed of these tones can be increased or decreased to suit different users. The *tone speed* is programmed at address 352.

<u>Value</u>	<u>Tone Speed</u>
0	Fastest
1	Faster
...	(factory setting 4)
8	Slower
9	Slowest

**10.2.7.10** The DAI-1 can produce an audible *slate tone* that can be used to signal a break between spots when using the Soundbite Recorder. To use the slate tone, it must be programmed onto one of the keys in the command matrix. (In the case of the Soundbite Recorder it is pre-programmed in the matrix to key 8.) This tone is adjustable in length by programming at address 353.

<u>Value</u>	<u>Slate Action</u>
0	Shortest tone
1	Shorter tone
...	(factory setting 4)
8	Longer tone
9	Longest tone

A *cue tone* can be generated by the DAI-1 when it is being used to send audio. If the cue tone is enabled, the DAI-1 will send a single tone to indicate that the audio mode has switched and the telephone is sending audio. This will occur any time the audio mode is set to 3 or above. The tone can be used as an "ON AIR" or "RECORDING" cue. It is automatically muted from the DAI-1 audio output. The cue tone enable is programmed at address 354.

<u>Value</u>	<u>Cue Tone</u>
0	Off--disabled (factory setting)
1	On--enabled
+	Values of 2 or more default to 1

**10.2.7.11** The DAI-1 can be used with an optional *delay unit* called the the DB-1. This delay unit is used to mute the 40 ms of DTMF tone that pass through the unit each time a key is pressed. When the DB-1 is installed, the DAI-1 should be programmed to recognize it. However, this programming can be used to bypass the Delay Board without removing the hardware. The Delay Board enable is programmed at address 356.

<u>Value</u>	<u>Delay Board</u>
0	Not installed--disabled
1	Installed--enabled (factory setting)
+	Values of 2 or more default to 1

### 10.2.8 Command Matrix/Address

On This Action \ Set to This State	Relay 1	Relay 2	Relay 3	Relay 4	Relay 5	Relay 6	Relay 7	Relay 8	Audio	Slate tone	Alarm call	Read Status <sub>1</sub>	Read Status <sub>2</sub>	Reserved	Reserved	Reserved
0 Key	000	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015
1 Key	016	017	018	019	020	021	022	023	024	025	026	027	028	029	030	031
2 Key	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047
3 Key	048	049	050	051	052	053	054	055	056	057	058	059	060	061	062	063
4 Key	064	065	066	067	068	069	070	071	072	073	074	075	076	077	078	079
5 Key	080	081	082	083	084	085	086	087	088	089	090	091	092	093	094	095
6 Key	096	097	098	099	100	101	102	103	104	105	106	107	108	109	110	111
7 Key	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8 Key	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9 Key	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
# Key	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Logic Level 1	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Logic Level 2	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Logic Level 3	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Logic Level 4	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Power up	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

(Available commands start on page 10.15)

### 10.2.8 Command Set 1 -- Soundbite

On This Action \ Set to This State	Relay 1	Relay 2	Relay 3	Relay 4	Relay 5	Relay 6	Relay 7	Relay 8	Audio	Slate tone	Alarm call	Read Status <sub>1</sub>	Read Status <sub>2</sub>	Reserved	Reserved	Reserved
0 Key	000 2	001 2	002 2	003 2	004 2	005 2	006 2	007 2	008 1	009 0	010 0	011 0	012 0	013 0	014 0	015 0
1 Key	016 3	017 0	018 2	019 0	020 0	021 1	022 0	023 0	024 3	025 0	026 0	027 0	028 0	029 0	030 0	031 0
2 Key	032 0	033 3	034 0	035 0	036 0	037 2	038 0	039 0	040 0	041 0	042 0	043 0	044 0	045 0	046 0	047 0
3 Key	048 2	049 0	050 6	051 0	052 0	053 2	054 0	055 0	056 2	057 0	058 0	059 0	060 0	061 0	062 0	063 0
4 Key	064 0	065 0	066 0	067 3	068 0	069 2	070 0	071 0	072 2	073 0	074 0	075 0	076 0	077 0	078 0	079 0
5 Key	080 0	081 3	082 0	083 0	084 0	085 2	086 0	087 0	088 0	089 0	090 0	091 0	092 0	093 0	094 0	095 0
6 Key	096 0	097 0	098 0	099 0	100 3	101 2	102 0	103 0	104 2	105 0	106 0	107 0	108 0	109 0	110 0	111 0
7 Key	112 2	113 2	114 2	115 2	116 2	117 2	118 2	119 2	120 1	121 0	122 0	123 0	124 0	125 0	126 0	127 0
8 Key	128 2	129 2	130 2	131 2	132 2	133 2	134 2	135 2	136 1	137 1	138 0	139 0	140 0	141 0	142 0	143 0
9 Key	144 2	145 2	146 2	147 2	148 2	149 2	150 2	151 2	152 1	153 0	154 0	155 0	156 0	157 0	158 0	159 0
# Key	160 2	161 2	162 2	163 2	164 2	165 2	166 2	167 2	168 1	169 0	170 0	171 0	172 0	173 0	174 0	175 0
Logic Level 1	176 2	177 2	178 2	179 2	180 2	181 0	182 2	183 2	184 1	185 0	186 0	187 0	188 0	189 0	190 0	191 0
Logic Level 2	192 2	193 2	194 2	195 2	196 2	197 2	198 2	199 2	200 1	201 0	202 0	203 0	204 0	205 0	206 0	207 0
Logic Level 3	208 2	209 2	210 2	211 2	212 2	213 2	214 2	215 2	216 1	217 0	218 0	219 0	220 0	221 0	222 0	223 0
Logic Level 4	224 2	225 2	226 2	227 2	228 2	229 2	230 2	231 2	232 1	233 0	234 0	235 0	236 0	237 0	238 0	239 0
Power up	240 0	241 3	242 0	243 0	244 0	245 0	246 0	247 0	248 0	249 0	250 0	251 0	252 0	253 0	254 0	255 0

(Available commands start on page 10.14)



### 10.2.8 Command Set 2 -- Remote

On This Action \ Set to This State	Relay 1	Relay 2	Relay 3	Relay 4	Relay 5	Relay 6	Relay 7	Relay 8	Audio	Slate tone	Alarm call	Read Status <sub>1</sub>	Read Status <sub>2</sub>	Reserved	Reserved	Reserved
0 Key	000 0	001 0	002 0	003 0	004 0	005 0	006 0	007 0	008 2	009 0	010 0	011 0	012 0	013 0	014 0	015 0
1 Key	016 3	017 0	018 0	019 0	020 0	021 0	022 0	023 0	024 2	025 0	026 0	027 0	028 0	029 0	030 0	031 0
2 Key	032 0	033 3	034 0	035 0	036 0	037 0	038 0	039 0	040 2	041 0	042 0	043 0	044 0	045 0	046 0	047 0
3 Key	048 0	049 0	050 3	051 0	052 0	053 0	054 0	055 0	056 2	057 0	058 0	059 0	060 0	061 0	062 0	063 0
4 Key	064 0	065 0	066 0	067 3	068 0	069 0	070 0	071 0	072 2	073 0	074 0	075 0	076 0	077 0	078 0	079 0
5 Key	080 0	081 0	082 0	083 0	084 3	085 0	086 0	087 0	088 2	089 0	090 0	091 0	092 0	093 0	094 0	095 0
6 Key	096 0	097 0	098 0	099 0	100 0	101 3	102 0	103 0	104 2	105 0	106 0	107 0	108 0	109 0	110 0	111 0
7 Key	112 0	113 0	114 0	115 0	116 0	117 0	118 3	119 0	120 2	121 0	122 0	123 0	124 0	125 0	126 0	127 0
8 Key	128 2	129 2	130 2	131 2	132 2	133 2	134 2	135 2	136 1	137 0	138 0	139 0	140 0	141 0	142 0	143 0
9 Key	144 0	145 0	146 0	147 0	148 0	149 0	150 0	151 0	152 1	153 0	154 0	155 0	156 0	157 0	158 0	159 0
# Key	160 0	161 0	162 0	163 0	164 0	165 0	166 0	167 1	168 3	169 0	170 0	171 0	172 0	173 0	174 0	175 0
Logic Level 1	176 0	177 0	178 0	179 0	180 0	181 0	182 0	183 1	184 3	185 0	186 0	187 0	188 0	189 0	190 0	191 0
Logic Level 2	192 0	193 0	194 0	195 0	196 3	197 0	198 0	199 0	200 2	201 0	202 0	203 0	204 0	205 0	206 0	207 0
Logic Level 3	208 0	209 0	210 0	211 0	212 0	213 3	214 0	215 0	216 2	217 0	218 0	219 0	220 0	221 0	222 0	223 0
Logic Level 4	224 0	225 0	226 0	227 0	228 0	229 0	230 3	231 0	232 2	233 0	234 0	235 0	236 0	237 0	238 0	239 0
Power up	240 0	241 0	242 0	243 0	244 0	245 0	246 0	247 0	248 1	249 0	250 0	251 0	252 0	253 0	254 0	255 0

(Available commands start on page 10.14)

### 10.2.8 Command Set 3 -- EBS Controller

On This Action \ Set to This State	Relay 1	Relay 2	Relay 3	Relay 4	Relay 5	Relay 6	Relay 7	Relay 8	Audio	Slate tone	Alarm call	Read Status <sub>1</sub>	Read Status <sub>2</sub>	Reserved	Reserved	Reserved
0 Key	000	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015
1 Key	016	017	018	019	020	021	022	023	024	025	026	027	028	029	030	031
2 Key	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047
3 Key	048	049	050	051	052	053	054	055	056	057	058	059	060	061	062	063
4 Key	064	065	066	067	068	069	070	071	072	073	074	075	076	077	078	079
5 Key	080	081	082	083	084	085	086	087	088	089	090	091	092	093	094	095
6 Key	096	097	098	099	100	101	102	103	104	105	106	107	108	109	110	111
7 Key	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8 Key	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9 Key	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
# Key	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
Logic Level 1	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
Logic Level 2	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
Logic Level 3	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
Logic Level 4	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
Power up	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

(Available commands start on page 10.14)

### 10.2.9 Command Matrix Factory Settings

The DAI-1 comes factory programmed to use the command set for EBS operation. There are many ways for the DAI-1 to perform the tasks necessary for EBS operation and even more variations in associated equipment. Therefore, the command set for EBS operation is very likely to need alterations for specific stations. With this in mind, the User Defined command set is factory programmed with the same settings as the EBS command set to give the programmer a starting point. The Command Matrix contains these values:

Address	Description	Factory Prog:	Current Prog:
	(Factory Programming--Reset EBS Receiver)		
000	0 Key, Relay 1	0	-----
001	0 Key, Relay 2	0	-----
002	0 Key, Relay 3	0	-----
003	0 Key, Relay 4	0	-----
004	0 Key, Relay 5	3	-----
005	0 Key, Relay 6	0	-----
006	0 Key, Relay 7	0	-----
007	0 Key, Relay 8	0	-----
008	0 Key, Audio	2	-----
009	0 Key, Slate tone	0	-----
010	0 Key, Alarm call	0	-----
011	0 Key, Read Status 1	0	-----
012	0 Key, Read Status 2	0	-----
013	0 Key, Reserved	0	-----
014	0 Key, Reserved	0	-----
015	0 Key, Reserved	0	-----
	(Factory Programming--Monitor EBS Receiver Audio)		
016	1 Key, Relay 1	2	-----
017	1 Key, Relay 2	2	-----
018	1 Key, Relay 3	2	-----
019	1 Key, Relay 4	1	-----
020	1 Key, Relay 5	0	-----
021	1 Key, Relay 6	0	-----
022	1 Key, Relay 7	0	-----
023	1 Key, Relay 8	0	-----
024	1 Key, Audio	2	-----
025	1 Key, Slate tone	0	-----
026	1 Key, Alarm call	0	-----
027	1 Key, Read Status 1	0	-----
028	1 Key, Read Status 2	0	-----
029	1 Key, Reserved	0	-----
030	1 Key, Reserved	0	-----
031	1 Key, Reserved	0	-----

	(Factory Programming--Unused key)		
032	2 Key, Relay 1	2	-----
033	2 Key, Relay 2	2	-----
034	2 Key, Relay 3	2	-----
035	2 Key, Relay 4	2	-----
036	2 Key, Relay 5	2	-----
037	2 Key, Relay 6	2	-----
038	2 Key, Relay 7	2	-----
039	2 Key, Relay 8	2	-----
040	2 Key, Audio	1	-----
041	2 Key, Slate tone	0	-----
042	2 Key, Alarm call	0	-----
043	2 Key, Read Status 1	0	-----
044	2 Key, Read Status 2	0	-----
045	2 Key, Reserved	0	-----
046	2 Key, Reserved	0	-----
047	2 Key, Reserved	0	-----

	(Factory Programming--EBS Receiver Audio on Air)		
048	3 Key, Relay 1	1	-----
049	3 Key, Relay 2	1	-----
050	3 Key, Relay 3	0	-----
051	3 Key, Relay 4	0	-----
052	3 Key, Relay 5	0	-----
053	3 Key, Relay 6	0	-----
054	3 Key, Relay 7	0	-----
055	3 Key, Relay 8	0	-----
056	3 Key, Audio	2	-----
057	3 Key, Slate tone	0	-----
058	3 Key, Alarm call	0	-----
059	3 Key, Read Status 1	0	-----
060	3 Key, Read Status 2	0	-----
061	3 Key, Reserved	0	-----
062	3 Key, Reserved	0	-----
063	3 Key, Reserved	0	-----

	(Factory Programming--Monitor Air Audio)		
064	4 Key, Relay 1	2	-----
065	4 Key, Relay 2	2	-----
066	4 Key, Relay 3	2	-----
067	4 Key, Relay 4	0	-----
068	4 Key, Relay 5	0	-----
069	4 Key, Relay 6	0	-----
070	4 Key, Relay 7	0	-----
071	4 Key, Relay 8	0	-----
072	4 Key, Audio	2	-----
073	4 Key, Slate tone	0	-----
074	4 Key, Alarm call	0	-----
075	4 Key, Read Status 1	0	-----
076	4 Key, Read Status 2	0	-----
077	4 Key, Reserved	0	-----
078	4 Key, Reserved	0	-----
079	4 Key, Reserved	0	-----

	(Factory Programming--Unused key)		
080	5 Key, Relay 1	2	_____
081	5 Key, Relay 2	2	_____
082	5 Key, Relay 3	2	_____
083	5 Key, Relay 4	2	_____
084	5 Key, Relay 5	2	_____
085	5 Key, Relay 6	2	_____
086	5 Key, Relay 7	2	_____
087	5 Key, Relay 8	2	_____
088	5 Key, Audio	1	_____
089	5 Key, Slate tone	0	_____
090	5 Key, Alarm call	0	_____
091	5 Key, Read Status 1	0	_____
092	5 Key, Read Status 2	0	_____
093	5 Key, Reserved	0	_____
094	5 Key, Reserved	0	_____
095	5 Key, Reserved	0	_____

	(Factory Programming--Program Audio on Air)		
096	6 Key, Relay 1	0	_____
097	6 Key, Relay 2	0	_____
098	6 Key, Relay 3	0	_____
099	6 Key, Relay 4	0	_____
100	6 Key, Relay 5	0	_____
101	6 Key, Relay 6	0	_____
102	6 Key, Relay 7	0	_____
103	6 Key, Relay 8	0	_____
104	6 Key, Audio	2	_____
105	6 Key, Slate tone	0	_____
106	6 Key, Alarm call	0	_____
107	6 Key, Read Status 1	0	_____
108	6 Key, Read Status 2	0	_____
109	6 Key, Reserved	0	_____
110	6 Key, Reserved	0	_____
111	6 Key, Reserved	0	_____

	(Factory Programming--Unused key)		
112	7 Key, Relay 1	2	_____
113	7 Key, Relay 2	2	_____
114	7 Key, Relay 3	2	_____
115	7 Key, Relay 4	2	_____
116	7 Key, Relay 5	2	_____
117	7 Key, Relay 6	2	_____
118	7 Key, Relay 7	2	_____
119	7 Key, Relay 8	2	_____
120	7 Key, Audio	1	_____
121	7 Key, Slate tone	0	_____
122	7 Key, Alarm call	0	_____
123	7 Key, Read Status 1	0	_____
124	7 Key, Read Status 2	0	_____
125	7 Key, Reserved	0	_____
126	7 Key, Reserved	0	_____
127	7 Key, Reserved	0	_____

	(Factory Programming--Unused key)		
128	8 Key, Relay 1	2	-----
129	8 Key, Relay 2	2	-----
130	8 Key, Relay 3	2	-----
131	8 Key, Relay 4	2	-----
132	8 Key, Relay 5	2	-----
133	8 Key, Relay 6	2	-----
134	8 Key, Relay 7	2	-----
135	8 Key, Relay 8	2	-----
136	8 Key, Audio	1	-----
137	8 Key, Slate tone	0	-----
138	8 Key, Alarm call	0	-----
139	8 Key, Read Status 1	0	-----
140	8 Key, Read Status 2	0	-----
141	8 Key, Reserved	0	-----
142	8 Key, Reserved	0	-----
143	8 Key, Reserved	0	-----

	(Factory Programming--Telephone Audio on Air)		
144	9 Key, Relay 1	1	-----
145	9 Key, Relay 2	0	-----
146	9 Key, Relay 3	0	-----
147	9 Key, Relay 4	0	-----
148	9 Key, Relay 5	0	-----
149	9 Key, Relay 6	0	-----
150	9 Key, Relay 7	0	-----
151	9 Key, Relay 8	0	-----
152	9 Key, Audio	3	-----
153	9 Key, Slate tone	0	-----
154	9 Key, Alarm call	0	-----
155	9 Key, Read Status 1	0	-----
156	9 Key, Read Status 2	0	-----
157	9 Key, Reserved	0	-----
158	9 Key, Reserved	0	-----
159	9 Key, Reserved	0	-----

	(Factory Programming--EBS Tones on Air)		
160	# Key, Relay 1	1	-----
161	# Key, Relay 2	1	-----
162	# Key, Relay 3	1	-----
163	# Key, Relay 4	0	-----
164	# Key, Relay 5	0	-----
165	# Key, Relay 6	3	-----
166	# Key, Relay 7	0	-----
167	# Key, Relay 8	0	-----
168	# Key, Audio	2	-----
169	# Key, Slate tone	0	-----
170	# Key, Alarm call	0	-----
171	# Key, Read Status 1	0	-----
172	# Key, Read Status 2	0	-----
173	# Key, Reserved	0	-----
174	# Key, Reserved	0	-----
175	# Key, Reserved	0	-----

(Factory Programming--Trigger Alarm System)			
176	Logic Level In 1, Relay 1	2	-----
177	Logic Level In 1, Relay 2	2	-----
178	Logic Level In 1, Relay 3	1	-----
179	Logic Level In 1, Relay 4	0	-----
180	Logic Level In 1, Relay 5	0	-----
181	Logic Level In 1, Relay 6	0	-----
182	Logic Level In 1, Relay 7	0	-----
183	Logic Level In 1, Relay 8	0	-----
184	Logic Level In 1, Audio	2	-----
185	Logic Level In 1, Slate tone	0	-----
186	Logic Level In 1, Alarm call	1	-----
187	Logic Level In 1, Read Status 1	0	-----
188	Logic Level In 1, Read Status 2	0	-----
189	Logic Level In 1, Reserved	0	-----
190	Logic Level In 1, Reserved	0	-----
191	Logic Level In 1, Reserved	0	-----

(Factory Programming--EBS Tones on Air)			
192	Logic Level In 2, Relay 1	1	-----
193	Logic Level In 2, Relay 2	1	-----
194	Logic Level In 2, Relay 3	0	-----
195	Logic Level In 2, Relay 4	0	-----
196	Logic Level In 2, Relay 5	0	-----
197	Logic Level In 2, Relay 6	0	-----
198	Logic Level In 2, Relay 7	0	-----
199	Logic Level In 2, Relay 8	0	-----
200	Logic Level In 2, Audio	2	-----
201	Logic Level In 2, Slate tone	0	-----
202	Logic Level In 2, Alarm call	0	-----
203	Logic Level In 2, Read Status 1	0	-----
204	Logic Level In 2, Read Status 2	0	-----
205	Logic Level In 2, Reserved	0	-----
206	Logic Level In 2, Reserved	0	-----
207	Logic Level In 2, Reserved	0	-----

(Factory Programming--Unused key)			
208	Logic Level In 3, Relay 1	2	-----
209	Logic Level In 3, Relay 2	2	-----
210	Logic Level In 3, Relay 3	2	-----
211	Logic Level In 3, Relay 4	2	-----
212	Logic Level In 3, Relay 5	2	-----
213	Logic Level In 3, Relay 6	2	-----
214	Logic Level In 3, Relay 7	2	-----
215	Logic Level In 3, Relay 8	2	-----
216	Logic Level In 3, Audio	1	-----
217	Logic Level In 3, Slate tone	0	-----
218	Logic Level In 3, Alarm call	0	-----
219	Logic Level In 3, Read Status 1	0	-----
220	Logic Level In 3, Read Status 2	0	-----
221	Logic Level In 3, Reserved	0	-----
222	Logic Level In 3, Reserved	0	-----
223	Logic Level In 3, Reserved	0	-----

	(Factory Programming--Unused key)		
224	Logic Level In 4, Relay 1	2	-----
225	Logic Level In 4, Relay 2	2	-----
226	Logic Level In 4, Relay 3	2	-----
227	Logic Level In 4, Relay 4	2	-----
228	Logic Level In 4, Relay 5	2	-----
229	Logic Level In 4, Relay 6	2	-----
230	Logic Level In 4, Relay 7	2	-----
231	Logic Level In 4, Relay 8	2	-----
232	Logic Level In 4, Audio	1	-----
233	Logic Level In 4, Slate tone	0	-----
234	Logic Level In 4, Alarm call	0	-----
235	Logic Level In 4, Read Status 1	0	-----
236	Logic Level In 4, Read Status 2	0	-----
237	Logic Level In 4, Reserved	0	-----
238	Logic Level In 4, Reserved	0	-----
239	Logic Level In 4, Reserved	0	-----
	(Factory Programming--Program Audio on Air)		
240	Power Up, Relay 1	0	-----
241	Power Up, Relay 2	0	-----
242	Power Up, Relay 3	0	-----
243	Power Up, Relay 4	0	-----
244	Power Up, Relay 5	0	-----
245	Power Up, Relay 6	0	-----
246	Power Up, Relay 7	0	-----
247	Power Up, Relay 8	0	-----
248	Power Up, Audio	2	-----
249	Power Up, Slate tone	0	-----
250	Power Up, Alarm call	0	-----
251	Power Up, Read Status 1	0	-----
252	Power Up, Read Status 2	0	-----
253	Power Up, Reserved	0	-----
254	Power Up, Reserved	0	-----
255	Power Up, Reserved	0	-----



### 10.2.10 System Profile Address List

Address	Description	Paragraph:	Factory Prog:	Current Prog:
256	A Telephone Number; Digit 1	5	10	_____
257	A Telephone Number; Digit 2	5	10	_____
258	A Telephone Number; Digit 3	5	10	_____
259	A Telephone Number; Digit 4	5	10	_____
260	A Telephone Number; Digit 5	5	10	_____
261	A Telephone Number; Digit 6	5	10	_____
262	A Telephone Number; Digit 7	5	10	_____
263	A Telephone Number; Digit 8	5	10	_____
264	A Telephone Number; Digit 9	5	10	_____
265	A Telephone Number; Digit 10	5	10	_____
266	A Telephone Number; Digit 11	5	10	_____
267	A Telephone Number; Digit 12	5	10	_____
268	A Telephone Number; Digit 13	5	10	_____
269	A Telephone Number; Digit 14	5	10	_____
270	A Telephone Number; Digit 15	5	10	_____
271	B Telephone Number; Digit 1	5	10	_____
272	B Telephone Number; Digit 2	5	10	_____
273	B Telephone Number; Digit 3	5	10	_____
274	B Telephone Number; Digit 4	5	10	_____
275	B Telephone Number; Digit 5	5	10	_____
276	B Telephone Number; Digit 6	5	10	_____
277	B Telephone Number; Digit 7	5	10	_____
278	B Telephone Number; Digit 8	5	10	_____
279	B Telephone Number; Digit 9	5	10	_____
280	B Telephone Number; Digit 10	5	10	_____
281	B Telephone Number; Digit 11	5	10	_____
282	B Telephone Number; Digit 12	5	10	_____
283	B Telephone Number; Digit 13	5	10	_____
284	B Telephone Number; Digit 14	5	10	_____
285	B Telephone Number; Digit 15	5	10	_____
286	C Telephone Number; Digit 1	5	10	_____
287	C Telephone Number; Digit 2	5	10	_____
288	C Telephone Number; Digit 3	5	10	_____
289	C Telephone Number; Digit 4	5	10	_____
290	C Telephone Number; Digit 5	5	10	_____
291	C Telephone Number; Digit 6	5	10	_____
292	C Telephone Number; Digit 7	5	10	_____
293	C Telephone Number; Digit 8	5	10	_____
294	C Telephone Number; Digit 9	5	10	_____
295	C Telephone Number; Digit 10	5	10	_____
296	C Telephone Number; Digit 11	5	10	_____
297	C Telephone Number; Digit 12	5	10	_____
298	C Telephone Number; Digit 13	5	10	_____
299	C Telephone Number; Digit 14	5	10	_____
300	C Telephone Number; Digit 15	5	10	_____

Address	Description	Paragraph:	Factory Prog:	Current Prog:
301	D Telephone Number; Digit 1	5	10	_____
302	D Telephone Number; Digit 2	5	10	_____
303	D Telephone Number; Digit 3	5	10	_____
304	D Telephone Number; Digit 4	5	10	_____
305	D Telephone Number; Digit 5	5	10	_____
306	D Telephone Number; Digit 6	5	10	_____
307	D Telephone Number; Digit 7	5	10	_____
308	D Telephone Number; Digit 8	5	10	_____
309	D Telephone Number; Digit 9	5	10	_____
310	D Telephone Number; Digit 10	5	10	_____
311	D Telephone Number; Digit 11	5	10	_____
312	D Telephone Number; Digit 12	5	10	_____
313	D Telephone Number; Digit 13	5	10	_____
314	D Telephone Number; Digit 14	5	10	_____
315	D Telephone Number; Digit 15	5	10	_____
316	Main Security Code; Digit 1	3	1	_____
317	Main Security Code; Digit 2	3	2	_____
318	Main Security Code; Digit 3	3	3	_____
319	Main Security Code; Digit 4	3	4	_____
320	Main Security Code; Digit 5	3	5	_____
321	Main Security Code; Digit 6	3	6	_____
322	Main Security Code; Digit 7	3	7	_____
323	Main Security Code; Digit 8	3	8	_____
324	Programming Security Code; Digit 1	3	1	_____
325	Programming Security Code; Digit 2	3	2	_____
326	Programming Security Code; Digit 3	3	6	_____
327	Programming Security Code; Digit 4	3	6	_____
328	Programming Security Code; Digit 5	3	10	_____
329	Programming Security Code; Digit 6	3	10	_____
330	Programming Security Code; Digit 7	3	10	_____
331	Programming Security Code; Digit 8	3	10	_____
332	Logic Level Input 1; Enable	4	1	_____
333	Logic Level Input 1; Length	4	0	_____
334	Logic Level Input 2; Enable	4	1	_____
335	Logic Level Input 2; Length	4	0	_____
336	Logic Level Input 3; Enable	4	1	_____
337	Logic Level Input 3; Length	4	0	_____
338	Logic Level Input 4; Enable	4	1	_____
339	Logic Level Input 4; Length	4	0	_____
340	Telephone Call Length	5	3	_____
341	Telephone Pause Length	5	3	_____
342	Telephone Call Attempts	5	3	_____
343	ALC Output Level	6	8	_____
344	ALC Fixed Output Gain	6	4	_____
345	ALC Output Release Speed	6	5	_____
346	ALC Input Release Speed	6	2	_____

Address	Description	Paragraph:	Factory Prog:	Current Prog:
347	Ring Number (to answer)	7	2	_____
348	Ring Sensitivity	7	5	_____
349	Minimum DTMF Length	8	2	_____
350	Incorrect Security Code Lockout Time	3	3	_____
351	Identification Tones	9	3	_____
352	Tone Speed	9	3	_____
353	Slate Tone Length	10	4	_____
354	Cue Tone Enable	10	1	_____
355	Alarm Enable	5	0	_____
356	Delay Enable	11	1	_____
357	Safeguard Timer	2	5	_____
358	Active Command Set	1	3	_____
359	Security Code Timer	3	1	_____
360	Pulse Hangup Inhibit	7	0	_____
361	Leased Line Mode		0	_____

**Note:** The column entitled "Paragraph" in the System Profile List above refers to the paragraph that describes this feature in Section 10.2.7.

## **10.3 Alarm System Setup and Programming Suggestions**

Because the DAI-1 can be used for such a wide variety of applications, there is no single correct way to set up the system. In fact, there are several ways to program the system for any given task. This section contains a few suggestions for setting up your DAI-1 system.

### **10.3.1 Alarm System Setup**

The DAI-1 alarm system monitors the status of the logic-level inputs. When a user-defined alarm condition occurs, the DAI-1 will call the telephone numbers stored in its memory to report that the condition exists. The telephone numbers will be dialed in rotation starting with the A Telephone Number, then B, C, D, A, B, etc. until the alarm is cleared or the programmed number of attempts has been reached. Program only as many numbers as needed, blank numbers will be skipped during dialing.

When it places a call, the DAI-1 will send its identification tones repeatedly as an alert message. This is factory set to three tones. The tones will be sent for the duration of the call unless a user interrupts. Press the "\*" key to clear the alarm. The DAI-1 will respond with one long tone as a prompt to enter the security code. Enter the security code to go on-line with the DAI-1. Perform whatever actions are necessary as a response to the alarm and hang up when the actions are complete.

There are two mandatory steps to setting up the DAI-1 alarm system:

- program the telephone numbers (up to 4) that the DAI-1 will need to call to report an alarm starting with the A Telephone Number at address 256,
- enable the alarm system by programming a "1" at address 355.

Since the alarm condition must be signaled by one of the logic level inputs, at least one of the inputs must be enabled.

- enable a logic level input by programming a "1" at its control address--these start at address 332.

These parameters can be changed to the DAI-1 alarm system:

- the length that the logic level condition must be present before the alarm is triggered--starting at address 333,
- the length of the alarm call and the pause between calls at address 340 and 341,
- the number of call attempts per telephone number at address 342,
- the site identification tones at address 351 and the tone speed at address 352.

### **10.3.2 Programming Suggestions**

To exit the programming mode at any time, press **\*** twice. This command is active at all times--even in the middle of an address entry.

Any unused actions in the Command Matrix should be programmed so that they do not cause false relay sets or change the audio mode, etc. These "empty" actions should have all relays programmed with the value 2 for no change. The audio function should be programmed with value 1 for no change. The alarm system should be left alone by programming the value 0.

The alarm system can only be triggered by logic level inputs. The matrix has spaces for keys and power up to trip alarms but this is a side effect of matrix-style programming and these conditions are not valid.

False relay changes might also occur when program audio is feeding through the DAI-1. Occasionally the audio will seem like a DTMF tone to the detector. If this is a problem, try increasing the minimum DTMF length at address 349. Keep in mind that the keys on the telephone must also be held longer as the DTMF recognition time increases.

Hang-up pulses are not recognized when the DAI-1 is waiting for a security code. When transferring control from a dial-up remote control, it may be necessary to set the security code timer length longer than its factory setting. If the remote control hang-up is causing the DAI-1 to hang-up as well, set the timer longer than the time it takes for the remote control to hang-up. During a transfer, do not enter the manual answer security code (**\*\_\*\_\*\_\***) until after the remote control disconnects from the line. The DAI-1 will enter the operating mode and hang-up pulses will be detected.