Introduction

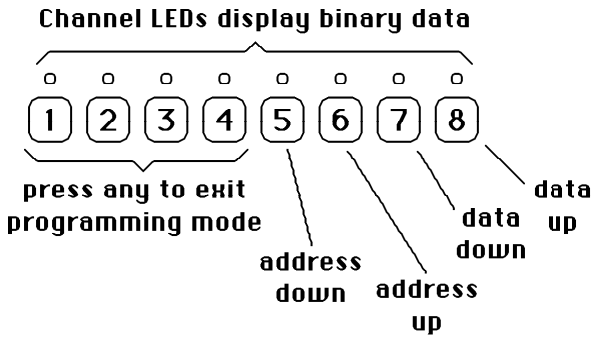
The switches that are normally used for channel selection can be used to change some operating parameters of the ACU-1 that may not be accessible through third party software. It is impossible to predict if third party software will react properly if unsupported adjustments are made in hardware. If you make changes to the system using the information contained in this document, you are accepting the responsiblity for making alterations to the system that may not be supported by your software vendor or by Sine Systesm, Inc.

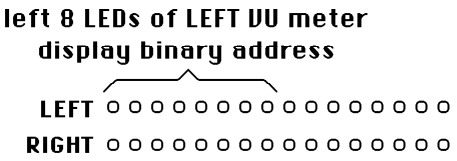
Set EEROM to Factory Default

This is the same as command 3B (hex) and is executed by pressing buttons 1 and 8 simultaneously for at least one second.

Program User Settings from the Front Panel
(firmware version 6 and later)

All user programming in the ACU-1 can be read and altered from the front panel. To enter the front panel programming mode, press buttons 1 and 3 simultaneously for at least one second. The POWER/SYNC LED will begin flashing to indicate that the programming mode has been entered. The front panel will display a memory address in binary using the left 8 LEDs of the left VU meter. The data at that address is displayed in binary on the channel LEDs:





The starting address will be 27 (binary 00011011) which programs the "Box Address." The memory address may be changed using buttons 5 or 6. To change the data at that address, push buttons 7 or 8. If data is changed, the new data will be stored in EEROM and will unaffected by a power failure.

The following table shows the locations that can be programmed:

Name	*Address (decimal)*	*Address (binary)*	*Default Data (binary)*
Channel 1 Up Rate	1	00000001	00000000
Channel 2 Up Rate	2	00000010	00000000
Channel 3 Up Rate	3	00000011	00000000
Channel 4 Up Rate	4	00000100	00000000
Channel 5 Up Rate	5	00000101	00000000
Channel 6 Up Rate	6	00000110	00000000
Channel 7 Up Rate	7	00000111	00000000
Channel 8 Up Rate	8	00001000	00000000
Channel 1 Down Rate	9	00001001	00000000
Channel 2 Down Rate	10	00001010	00000000
Channel 3 Down Rate	11	00001011	00000000
Channel 4 Down Rate	12	00001100	00000000
Channel 5 Down Rate	13	00001101	00000000
Channel 6 Down Rate	14	00001110	00000000
Channel 7 Down Rate	15	00001111	00000000
Channel 8 Down Rate	16	00010000	00000000
Temperature Calibrate	17	00010001	00001000
Baud Rate	18	00010010	00000111
Momentary Relay Time	19	00010011	00110010
Left Silence Threshold	20	00010100	00000001
Right Silence Threshold	21	00010101	00000001
Left Silence Alarm Time	22	00010110	00011110
Right Silence Alarm Time	23	00010111	00011110
Silence Alarm Link	24	00011000	00000001
Parallel Input Hold Time	25	00011001	01100100
ALC Release Speed	26	00011010	00000101
Box Address	27	00011011	00000001
CONFIG1	28	00011100	10000000
CONFIG2	29	00011101	00000000

When finished reading or programming user EEROM, push any of the first four buttons to exit the programming mode.

Read Firmware Version

Firmware version and be read by simultaneously pressing buttons 1 and 2. The firmware version is read on the channel status LEDs in binary for as long as the buttons are held. For example, if LEDs 1 through 6 are off and 7 and 8 are on, this represents binary 00000011 or firmware version "3."

Note: If buttons 1 and 2 are pushed carefully at the same time, it will not disturb the currently selected audio channel.

ACU-1 Commands

FadeUp
Function: Turn one or more audio channels on.
Format: AAhex/boxnode/31hex/byte4

Set bits in byte4 to turn channel(s) on. Bit 0 is channel 1.

FadeDown
Function: Turn one or more audio channels off.
Format: AAhex/boxnode/32hex/byte4

Set bits in byte4 to turn channel(s) off. Bit 0 is channel 1.

SetLevel
Function: Sets fader level.
Format: AAhex/boxnode/33hex/byte4/byte5

Set bits in byte4 to designate channel(s). Bit 0 is channel 1. Byte5 sets level from 0 to 255 where 255 is full on.

SetUp
Function: Sets fade up rate.
Format: AAhex/boxnode/34hex/byte4/byte5

Byte4 determines the channel(s) which are to be set (bit 0 being channel 1). byte5 sets the fade up rate. 0 to 25.0 seconds = 0 to 250.

SetDown
Function: Sets fade down rate.
Format: AAhex/boxnode/35hex/byte4/byte5

Byte4 determines the channel(s) which are to be set (bit 0 being channel 1). byte5 sets the fade down rate. 0 to 25.0 seconds = 0 to 250.

SetSilence
Function: Sets silence sense threshold.
Format: AAhex/boxnode/36hex/byte4/byte5

Byte4:	Active channels:
1	left channel
2	right channel
3	both channels

Byte5:	Detection threshold:
0	silence detection off (both channels)
1	-42 dB
2	-39 dB
3	-36 dB

4	-33 dB
5	-30 dB
6	-27 dB
7	-24 dB
8	-21 dB
9	-18 dB
10	-15 dB
11	-12 dB
12	-9 dB
13	-6 dB
14	-3 dB
15	0 dB
16	+3 dB

SetStime

Function: Sets silence sense activation time.
Format: AAhex/boxnode/37hex/byte4/byte5

Byte4: Channel(s) set:

1	left channel
2	right channel
3	both channels

Byte5 sets time. 1 to 250 sets 1 to 250 seconds.

SetPo

Function: Sets parallel output.
Format: AAhex/boxnode/38hex/byte4

Bits set in byte4 turn relays on. Bit 0 is relay 1.

ReadPi

Function: Reads the 16 parallel inputs.
Format: AAhex/boxnode/39hex —replybyte1/replybyte2

Bit0 in replybyte1 corresponds to parallel input 1.

ReadAud

Function: Reads the instantaneous audio level.
Format: AAhex/boxnode/3Ahex/byte4 —replybyte1

Byte4:

1	read left
2	read right

Replybyte1:

0	<-42 dB
1	-42 dB
2	-39 dB

3	-36 dB
4	-33 dB
5	-30 dB
6	-27 dB
7	-24 dB
8	-21 dB
9	-18 dB
10	-15 dB
11	-12 dB
12	-9 dB
13	-6 dB
14	-3 dB
15	0 dB
16	+3 dB

Default
Function: Returns box to default settings.
Format: AAhex/boxnode/3Bhex/C4hex

Default settings:

Node Address: 1

Baud Rate:	57.6K
Sources:	All off
Fade Up Time (all):	0 seconds
Fade Down Time (all):	0 seconds
Silence Level Left:	-42 dB
Silence Level Right:	-42 dB
Silence Time Left:	30 seconds
Silence Time Right:	30 seconds

Silence Link: 1 (L and R separate)

Automatic Level Control:	On, 5 sec/dB increase speed, gating at -20 dBVU
Parallel Input Hold Time:	1.0 seconds
Momentary Relay Time:	0.5 seconds
Temperature Calibration:	8
Config1	10000010
Config2	00000000

ReadXP
Function: Reads the status of input sources.
Format: AAhex/boxnode/3Chex —replybyte1

Bit 0 is channel 1.

ReadSil
Function: Reads silence detector.
Format: AAhex/boxnode /3Dhex —replybyte1

Replybyte1:

Bit0	Silence Alarm Left Channel is active
Bit1	Silence Alarm Right Channel is active
Bit2	Silence Detect Left Channel is active
Bit3	Silence Detect Right Channel is active

ReadPo

Function: Reads the current relay settings.
Format: AAhex/boxnode/3Ehex —replybyte1

Bits set in replybyte1 correspond to relays on. Bit 0 is relay 1.

SetLink

Function: Sets linking for silence sense.
Format: AAhex/boxnode/3Fhex/byte4

Byte4:

0	silence detect off
1	left and right separate
2	left or right linked
3	left and right linked

FadeUpDown

Function: Turn one or more audio channels on and off.
Format: AAhex/boxnode/51hex/byte4/byte5

Set bits in byte4 to turn channel(s) on. Set bits in byte5 to turn channel(s) off. Bit 0 is channel 1. If common bits are set in byte4 and byte5, the byte5 (fade down) bits override.

PoMomen

Function: Operate relays momentarily
Format: AAhex/boxnode/52hex/byte4

Bits set in byte4 will cause momentary relay operation. Bit0 corresponds to relay 1. Any combination of relays may be operated momentarily at the same time. Relays that were previously turned on and are operated momentarily will turn off after the delay period (delay period defined in SetPoTime).

SetNode

Function: Set/read node address.
Format: AAhex/boxnode/53hex/byte4

byte4:

0	read only
1-10	set node address
11-255	read only

SetBaud

Function: Set baud rate.
Format: AAhex/boxnode/54hex/byte4

byte4:	Baud Rate:	
0	2400	
1	4800	
2	9600	
3	14.4K	
4	19.2K	
5	28.8K	
6	38.4K	
7*	57.6K	default value
8	115.2K	

SetClock
Function: Set clock
Format: AAhex/boxnode/55hex/byte4/byte5/byte6/byte7

Byte4, byte5 and byte6 are hours, minutes and seconds

Byte7:

0	24 hour time
1	AM (12 hour time)
2	PM (12 hour time)

ReadClock
Function: Read clock
Format: AAhex/boxnode/56hex —replybyte1/replybyte2/replybyte3/replybyte4

Replybyte1, replybyte2 and replybytebyte3 are hours, minutes and seconds

Replybyte4:

0	24 hour time
1	AM (12 hour time)
2	PM (12 hour time)
3	clock not set

SetCalendar
Function: Set calender
Format: AAhex/boxnode/57hex/byte4/byte5/byte6

Byte4, byte5 and byte6 are month, day and year

ReadCalender
Function: Read calender
Format: AAhex/boxnode/58hex —replybyte1/replybyte2/replybyte3

Replybyte1, replybyte2 and replybytebyte3 are month, day and year

SetTCal
Function: Calibrate temperature sensor
Format: AAhex/boxnode/59hex/byte4

If byte4 is 0, this is a read only function. Replybyte1 is the current calibration value.
If byte4 is 1 to 15, the value of byte4 is programmed as the calibration value (center range =8).

ReadTemp
Function: Read temperature
Format: AAhex/boxnode/5Ahex —replybyte1/replybyte2

Replybyte is temperature plus 100 degrees.
If replybyte1=0, sensor is defective or not installed.
Replybyte2 =Temp scale, 0 for Fahrenheit and 1 for Celsius

SetALC
Function: Set/read ALC (automatic level control) mode and speed
Format: AAhex/boxnode/5Bhex/byte4

Byte4:

0	read ALC mode (value returned in replybyte1)
1	set ALC off
2-255	set ALC on, 2 to 255 seconds per 1 dB gain increase

SetPiHold
Function: Set/read parallel input hold time
Format: AAhex/boxnode/5Chex/byte4

Byte4:

0	read only
6-255	0.06 to 2.55 seconds

SetPoTime
Function: Set/read relay momentary on time
Format: AAhex/boxnode/5Dhex/byte4

Byte4:

0	read only
6-255	0.06 to 2.55 seconds

SetConfig1
Function: Set Config1 byte.
Format: AAhex/boxnode/5Ehex/byte4

Byte4:

b0	panel switches	0/1=interlocked/alternate
b1	multiplex output	0/1=always/solo only
b2	autodaylight adjust	0/1=off/on
b3	temperature scale	0/1=Fahrenheit/Celsius
b4	VU mode	0/1=bar/dot
b5	-20/+1 VU markers	0/1=off/on

b6	VU backlight	0/1=off/on
b7	alarm LED blink	0/1=off/on

ReadConfig1
Function: Read Config1 byte.
Format: AAhex/boxnode/5Fhex —replybyte1

SetConfig2
Function: Set Config2 byte.
Format: AAhex/boxnode/61hex byte4

Byte4:

b0	data mode	0/1=8E1/8N1
b1	ALC attack speed	0/1=normal/slow (firmware version 6 and later)
b2	unused	
b3	unused	
b4	unused	
b5	unused	
b6	unused	
b7	unused	

ReadConfig2
Function: Read Config2 byte.
Format: AAhex/boxnode/62hex —replybyte1

ReadFirm
Function: Read Firmware Version
Format: AAhex/boxnode/63hex —replybyte1

Note: Firmware version can also be read with the front panel switches and LEDs as described elsewhere in this document.

Errata

Setting baud rate from front panel; Firmware Version 6.
The following table shows the required data value at address 18 to set various baud rates for Firmware Version 6 only.

Baud Rate	*Address (decimal)*	*Address (binary)*	*Data (binary)*
115.2K	18	00010010	00000000
57.6K	18	00010010	00000001
38.4K	18	00010010	00010000
28.8K	18	00010010	00000010
19.2K	18	00010010	00010001
14.4K	18	00010010	00000011
9600	18	00010010	00010010
4800	18	00010010	00010011
2400	18	00010010	00010100

For later firmware versions, use the table listed under SetBaud in the ACU Commands.