



INSTALLATION & PROGRAMMING **MANUAL**

PROGRAMMABLE TIMER
(MODEL LP-2)

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INTRODUCTION

The Lencore Model LP-2 Programmable Timer is a two zone electronic attenuator when attached to the blue and black wires of model LM-6 master sound masking units. Raising of masking levels is simulated only. That is, the highest level of sound masking is the same as if the timer were not attached to the blue and black wires of the masters.

There are three separate areas of attenuation. Each hour of the 24 hours in a day has a programmed attenuation value in the range of 0 dB to -9 dB inclusive. The zone slide controls have an attenuation range of -5 dB to +5 dB inclusive. Finally the acclimation setting has a programmed attenuation range of -1 dB to -9 dB inclusive. If acclimation is turned off or has timed out, attenuation is 0 dB.

The total attenuation that is displayed, and output to each zone, is the sum of the dB setting for the current hour of the day**, plus the zone slide control dB setting, plus the acclimation dB setting. Note that the maximum total attenuation possible is -18 dB even if the programming gives a result beyond this.

*** Please take into account the minutes per dB setting for this particular hour to determine at what minute final attenuation is reached. This applies only if the previous hour setting is different from the current hour.*

The two zones can be programmed independently except the acclimation dB's that are common to both. Each day of the week can be programmed differently also. For example Saturday and Sunday can be programmed different from Friday. From the menu driven screens on the display you can select the zone, the day, the hour and enter the amount of attenuation desired. Often the default attenuation settings are adequate for most office situations and no programming is necessary.

There are approximately 35 different screens or menus that can be displayed. You can follow the flow of these screens in the menu flow chart provided. Once finished you should always return to the main screen, the one that shows the date, time and zone dB values.

DISPLAY

The liquid crystal display (LCD) has 4 lines of 20 characters each. In the main screen line 1 shows the date. Line 2 shows the day of week, time of day, the letter A for A.M. or P for P.M.

On line 3, Z1 refers to Zone 1, Z2 refers to Zone 2. The current values in dB's are shown for each zone. These values are referenced to an office masking level of 47 dB. That is, a reading of "Z1=0dB" and "Z2=0dB" on the timer display, means an office masking level of 47 db for both zones. This reading assumes that all the LM-6 master units have been adjusted as per the installation section in this manual. For example, a reading of "Z1=+2dB" and "Z2=-2dB" on the timer display means an office masking level of 49 dB for Zone 1 and 45 dB for Zone 2.

Line 4 usually displays a prompt line. It shows what keys should be pressed to perform a certain task. In the date and time screen, which is the main screen, it will display "Press 0 for Menu". After pressing 0 on the keyboard the display will change and will prompt you with further choices.

KEYBOARD

The keyboard is similar to that used on a touch-tone telephone. The "#" key can often be used to advance without changing a value (i.e., keep the current value). The "*" key when pressed will exit some menus immediately. However, it is not a cancel key. Any changes made before pressing the "*" key will be kept.

INSTALLATION

SET UP

We suggest you hang the timer panel box prior to activating the Programmable Timer.

Mount the timer enclosure securely on a wall at eye level near a 120 volt A.C. socket. Open enclosure door and remove the keys taped to the inside left panel. Use these keys to lock the timer box once all settings have been adjusted.

Now note the locations of Zone 1 output, Zone 2 output, 24-volt AC input and battery fuse holder. The following steps, in the order given, are recommended for a two-zone hookup.

1. Bring the blue and black wires from Zone 1 through the hole in the enclosure. Strip ¼ inch of insulation from both wires. Insert the black wire into P.C. Board terminal marked **Com1**. Insert the blue wire into P.C. Board terminal marked **Zone1**. Tighten the screws on the terminal so the wires are secured.
2. Bring the blue and black wires from Zone 2 through the hole in the enclosure. Strip ¼ inch of insulation from both wires. Insert the black wire into P.C. Board terminal marked **Com2**. Insert the blue wire into P.C. Board terminal marked **Zone2**. Tighten the screws on the terminal so the wires are secured.

Never connect the blue wires from Zone 1 to Zone 2 together. This includes the "home runs".

The two zones must remain separate. If there is only one zone to connect to the timer, leave Zone 2 unconnected. This is very important.

3. a) A 5-foot green wire is provided to attach the Timer Box to an earth ground. Bring this wire through the hole in the enclosure, strip ¼ inch of insulation and attach to a convenient earth ground.
b) Remove the 24-volt wall transformer from the bottom right section of the panel box and feed the cable through the hole located at the top of the panel box. Insert the miniature plug at the end of the cable to the matching power jack marked J101 located at the bottom right of the PC board.
4. Note the fuse holder and cables from the battery. Check that they are properly attached and not touching the enclosure or P.C. Board. A spare fuse is provided with the keys taped to the inside left panel. Plug the wall transformer into a 120-volt AC outlet. You should hear some beeps and the display should come on.
5. Locate the battery switch labeled S1 on the lower left side of the P.C. board. The Timer is shipped from the factory with this switch in the OFF position. Switch it to the ON position. This will connect the battery to the P.C. board and provide a back up in case of a power loss.
6. Enter the correct date and time using the keyboard.

To enter correct date:

Press 0 (for the menu screen)

Press 1

Enter month **(two digits)**

Enter day **(two digits)**

Enter year **(four digits)**

Press 0

To enter correct time:

Press 0 (for the menu screen)

Press 2

Press 1

Enter hour **(two digits)**

Enter minute **(two digits)**

Enter seconds **(two digits)**

Enter 0 for A.M. or 1 for P.M.

Press 0

Press 0

Check if the date and time is correct. If not, repeat the above

steps.

7. Locate the **Test/Normal** switch on the P.C. Board. Put the switch in **Test** position. The display will change showing both a dB level and a voltage level for each zone. This bypasses any programmed attenuation and allows for a total system calibration of the LM-6 master units. Adjust the Zone 1 **slide control** for a stable reading of 0 dB. Do the same for Zone 2.
8. The dB levels present here represent the change in decibels from 47dB. You can either raise or lower the dB level (from this 47dB) here. With the **Test/Normal** switch in **Test** position, adjust all the LM-6 master units for an office sound level reading of 47 dB's. When all the masters have been adjusted and tuned as necessary, put the **Test/Normal** switch in **Normal** position. The display will change to the date and time screen. The dB readings may change as any programmed attenuation is taken into account.
9. Program the timer as per customer specifications. Refer to the programming section of this manual.

PROGRAMMING

The following keyboard key combinations are documented in a way that assumes you are starting from the main screen. There will be situations where it is much quicker to go from one sub-menu to another without returning to and starting from the main screen. You may use these quicker routes at any time. However, for the purpose of documentation, the main screen will be the starting point.

Date

Press 0 (for the menu screen)

Press 1

Enter month (two digits)

Enter day (two digits)

Enter year (four digits)

Press 0

Time

Press 0 (for the menu screen)

Press 2

Press 1

Enter hour (two digits)

Enter minute (two digits)

Enter seconds (two digits)

Enter 0 for A.M. or 1 for P.M.

Press 0

Press 0

Daylight savings

Press 0 (for the menu screen)

Press 2

Press 2

Press 1 to enable, or 2 to disable

Press 0

Press 0

Press 0

To look at masking attenuation levels

Press 0 (for the menu screen)

Press 3

Press 1 for Zone 1, or 2 for Zone 2

Press 1 for Monday, 2 for Tuesday, etc.

Press 1

Press 1

Press # to advance, or * to exit

Press 0

Press 0

Press 0

Press 0

To change masking attenuation levels

Press 0 (for the menu screen)

Press 3

Press 1 for Zone 1, or 2 for Zone 2

Press 1 for Monday, 2 for Tuesday, etc.

Press 2

Press 1

Enter desired attenuation, or # to advance to next hour and keep current value, or * to exit.

Press 0

Press 0

Press 0

Press 0

Look at minutes per dB

Press 0 (for the menu screen)

Press 3

Press 1 for Zone 1, or 2 for Zone 2

Press 1 for Monday, 2 for Tuesday, etc.

Press 1

Press 2

Press # to advance, or * to exit

Press 0
Press 0
Press 0
Press 0

Change minutes per dB

Press 0 (for the menu screen)
Press 3
Press 1 for Zone 1, or 2 for Zone 2
Press 1 for Monday, 2 for Tuesday, etc.
Press 2
Press 2
Enter desired Minutes per dB, or # to advance to next hour and keep current value, or * to exit.
Press 0
Press 0
Press 0
Press 0

Copy day of week to next day.

Press 0 (for the menu screen)
Press 3
Press 1 for Zone 1, or 2 for Zone 2
Press 1 for Monday, or 2 for Tuesday, etc.
Press 3
Press 1 to copy, or 2 to skip to next day
Press 0
Press 0
Press 0
Press 0

Copy Zone 1 to Zone 2 (entire week)

Press 0 (for the menu screen)
Press 3
Press 1
Press 1
Press 3
Press 3
Press 1 to copy Zone 1 to Zone 2, or 2 to copy Zone 2 to Zone 1.
Press 0

Look at acclimate status

Press 0 (for the menu screen)
Press 4
Press 0
Press 0

Turn on acclimate

Press 0 (for the menu screen)
Press 4
Press 1
Press 1
Press 0
Press 0
Press 0

Turn off acclimate

Press 0 (for the menu screen)
Press 4
Press 1
Press 1
Press 0
Press 0
Press 0

Change acclimate dB's / days per dB

Press 0 (for the menu screen)
Press 4
Press 1
If Acclimate is OFF, Press 1
Press 2
Enter Acclimate dB's, or # to keep current value
Enter days per dB, or # to keep current value
Press 0
Press 0
Press 0

Acclimate help screen

Press 0 (for the menu screen)
Press 4
Press 2
Press # to see next three lines, or * to exit
Press 0
Press 0

Help screen text: (reads)

Acclimate dB's specifies the number of dB's to attenuate loudness of sound masking when it is initially installed. **Days per dB** specifies the number of days to elapse before an increase of +1 dB of loudness will occur. This +1 dB increase will occur at 12:00 midnight, except on Saturday and Sundays. The +1 dB increase will continue until the acclimate dB's reaches 0.

Example:

Acclimate dB's = -6. Days per dB = 3 days. This means that an increase of 1 dB will occur

every 3 days, and will last for 18 days (6 x 3 = 18), not counting Saturday and Sunday.

Minutes per dB help screen

Press 0 (for the menu screen)

Press 3

Press 1 or 2

Press 1, 2, 3, 4, 5, 6 or 7

Press 1 or 2

Press 3

Press # to see next three lines, or * to exit

Press 0

Press 0

Press 0

Press 0

Help screen text: (reads)

Minutes per dB specifies the number of minutes it will take to change attenuation by 1 dB.

Example: Assume the following.

Attenuation setting for 5 PM to 8 AM is -6 dB. Attenuation setting for 8 AM to 5 PM is 0 dB.

The **Min / dB** setting for the same time period is 5 minutes. Also assume that the time of day is 8:00 AM. This means that at 8:05 AM, attenuation will change to -5 dB. 8:10 AM, attenuation will change to -4 dB. 8:15 AM, attenuation will change to -3 dB. 8:20 AM, attenuation will change to -2 dB. 8:25 AM, attenuation will change to -1 dB. And finally at 8:30 AM, attenuation will change to 0 dB. Attenuation will remain at 0 dB level until 5:00 PM. 5:05 PM, attenuation will change to -1 dB. 5:10 PM, attenuation will change to -2 dB. 5:15 PM, attenuation will change to -3 dB. 5:20 PM, attenuation will change to -4 dB. 5:25 PM, attenuation will change to -5 dB. And finally at 5:30 PM, attenuation will change to -6 dB. Attenuation will remain at -6 dB level until a difference in dB level setting is encountered the following day.

Leap years

Leap years are preprogrammed and automatically account for February 29 when appropriate.

Daylight savings occurrences

The first Sunday in April at 2:00 A.M., the hour will be advanced to 3:00 A.M. On the last Sunday in October at 2:00 A.M., the hour will be set back to 1:00 A.M.

Reset button

When the reset button is pressed or power is first applied to the timer, all user programming will be lost. The date and time will also be incorrect. You must first re-enter the correct date and time. Attenuation values, minutes per dB values and

other values will be set to their default values. These default values are listed below.

INITIAL DEFAULT VALUES

Default attenuation values after a reset

Zone 1 and 2, Monday through Sunday inclusive.

12:00 AM	-6 dB
1:00 AM	-6 dB
2:00 AM	-6 dB
3:00 AM	-6 dB
4:00 AM	-6 dB
5:00 AM	-6 dB
6:00 AM	-6 dB
7:00 AM	-6 dB
8:00 AM	-6 dB
8:05 AM	-5 dB
8:10 AM	-4 dB
8:15 AM	-3 dB
8:20 AM	-2 dB
8:25 AM	-1 dB
8:30 AM	0 dB
9:00 AM	0 dB
10:00 AM	0 dB
11:00 AM	0 dB
12:00 PM	0 dB
1:00 PM	0 dB
2:00 PM	0 dB
3:00 PM	0 dB
4:00 PM	0 dB
5:00 PM	0 dB
5:05 PM	-1 dB
5:10 PM	-2 dB
5:15 PM	-3 dB
5:20 PM	-4 dB
5:25 PM	-5 dB
5:30 PM	-6 dB
6:00 PM	-6 dB
7:00 PM	-6 dB
8:00 PM	-6 dB
9:00 PM	-6 dB
10:00 PM	-6 dB
11:00 PM	-6 dB

A "0" is actually entered at 8:00 AM.
5 minute interval is dependant on the
minutes per dB setting for 8:00 AM.

A "6" is actually entered at 5:00 PM.
5 minute interval is dependant on the
minutes per dB setting for 5:00 PM.

Default minutes per dB values after a reset

Zone 1 and 2, Monday through Sunday inclusive.

12:00 AM	5 Min/dB
1:00 AM	5 Min/dB
2:00 AM	5 Min/dB
3:00 AM	5 Min/dB
4:00 AM	5 Min/dB
5:00 AM	5 Min/dB
6:00 AM	5 Min/dB
7:00 AM	5 Min/dB
8:00 AM	5 Min/dB
8:05 AM	5 Min/dB
8:10 AM	5 Min/dB
8:15 AM	5 Min/dB
8:20 AM	5 Min/dB
8:25 AM	5 Min/dB
8:30 AM	5 Min/dB
9:00 AM	5 Min/dB
10:00 AM	5 Min/dB
11:00 AM	5 Min/dB
12:00 PM	5 Min/dB
1:00 PM	5 Min/dB
2:00 PM	5 Min/dB
3:00 PM	5 Min/dB
4:00 PM	5 Min/dB
5:00 PM	5 Min/dB
5:05 PM	5 Min/dB
5:10 PM	5 Min/dB
5:15 PM	5 Min/dB
5:20 PM	5 Min/dB
5:25 PM	5 Min/dB
5:30 PM	5 Min/dB
6:00 PM	5 Min/dB
7:00 PM	5 Min/dB
8:00 PM	5 Min/dB
9:00 PM	5 Min/dB
10:00 PM	5 Min/dB
11:00 PM	5 Min/dB

Other default values after a reset

Daylight savings is enabled.

Acclimation is off (i.e., 0 dB). If acclimation is set to on, then the following values are

used by default.

Acclimate dB's = -6

Days per dB = 3

The date and time will need to be reentered after a reset.

SPECIFICATIONS

Power requirements

24 VAC_{RMS}, 60 Hz

Power consumption

26-Watts maximum

Zones

2 independent zones except for acclimate dB's

500 LM-6 Master units per zone

Programming

Programmed attenuation range: 0 to -9 dB

Slide control adjustment range: +5 to -5 dB

Minutes per dB range: 1 to 6 minutes

Acclimate attenuation range: -1 to -9 dB, 0 dB when off

Acclimate days per dB range: 1 to 6 days

Acclimate length: 1 to 54 days not counting Sat. & Sun.

Maximum overall attenuation range: +5 to -18 dB

Programmed events: 24 events per day for each zone

Clock accuracy

±2 seconds per day

Battery

Rechargeable sealed lead-acid, 12 Volt, 2.2 Ah, provides approximately 24 hours backup power

TIMER RECORD SHEET

ZONE 1		Attenuation/Minutes per dB													
HOUR	Mon	Tue	Wed	Thu	Fri	Sat	Sun								
12:00 AM															
1:00 AM															
2:00 AM															
3:00 AM															
4:00 AM															
5:00 AM															
6:00 AM															

7:00 AM														
8:00 AM														
9:00 AM														
10:00 AM														
11:00 AM														
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4:00 PM														
5:00 PM														
6:00 PM														
7:00 PM														
8:00 PM														
9:00 PM														
10:00 PM														
11:00 PM														

Additional Notes:

Acclimation: ON/OFF _____ Acclimate dB's: _____ Days per dB:

TIMER RECORD SHEET

ZONE 2		Attenuation/Minutes per dB												
HOUR	Mon	Tue	Wed	Thu	Fri	Sat	Sun							
12:00 AM														
1:00 AM														
2:00 AM														
3:00 AM														
4:00 AM														
5:00 AM														
6:00 AM														
7:00 AM														

8:00 AM																				
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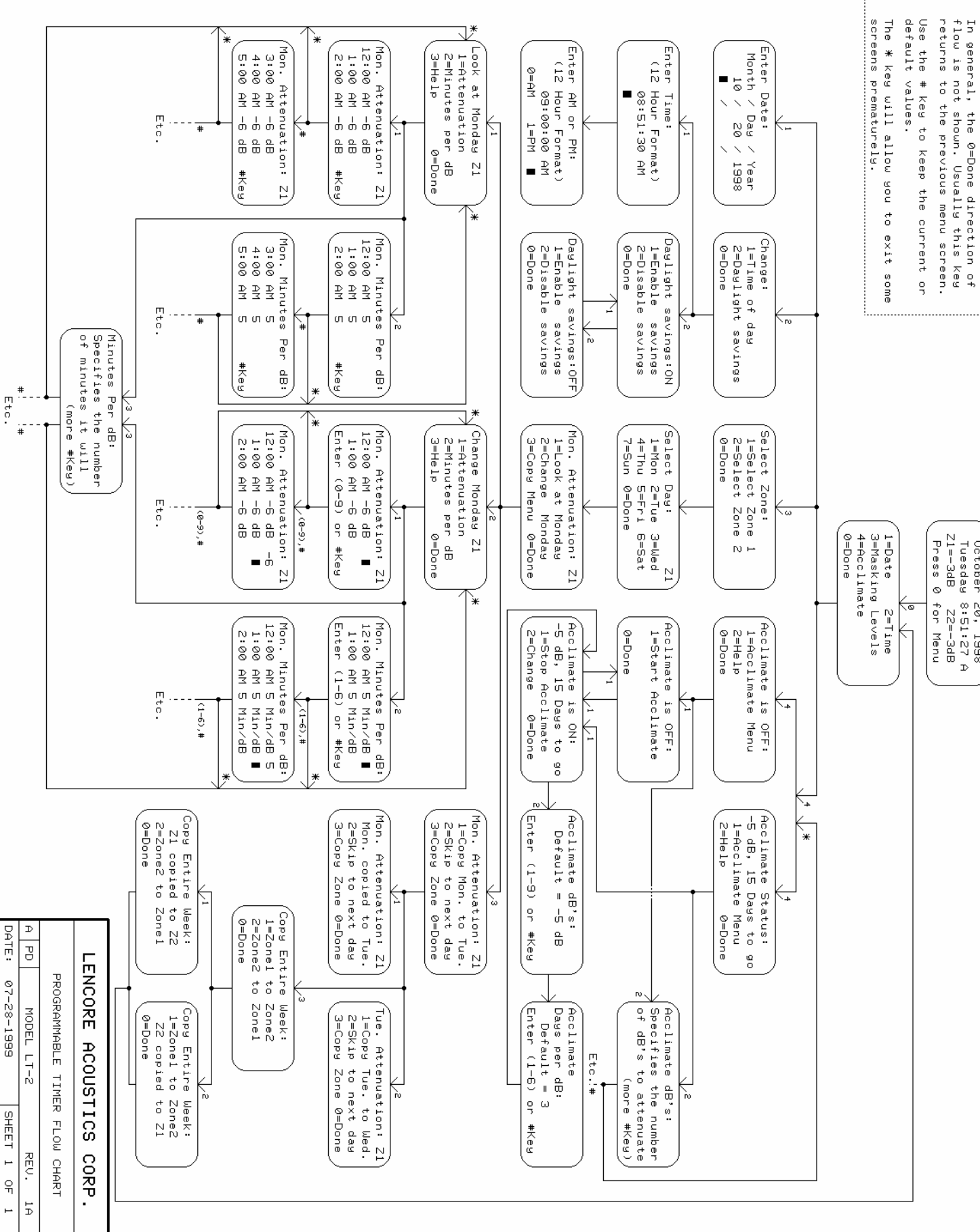
Additional Notes:

Acclimation: ON/OFF _____ Acclimate dB's: _____ Days per dB: _____

NOTES

Notes:

In general, the 0=Done direction of flow is not shown. Usually this key returns to the previous menu screen. The * key will allow you to keep the current or default values.
Use the # key to keep the current or default values.
The * key will allow you to exit some screens prematurely.



LENCORE ACOUSTICS CORP.

PROGRAMMABLE TIMER FLOW CHART

A	PD	MODEL LT-2	REV. 1A
DATE:	07-28-1999	SHEET 1	OF 1

