

QuadraVerb GT Service Manual

Revision 1.00

10/17/95

PREFACE

This document is intended to assist the service technician in the operation, maintenance and repair of the QuadraVerb GT guitar effects processor. This unit represents one of the building blocks of the complete ADAT system. Together with the QuadraVerb GT Reference Manual, this document provides a complete description of the functionality and serviceability of the QuadraVerb GT. Any comments or suggestions you may have pertaining to the document are welcome and encouraged.

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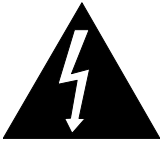
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WARNINGS

TO REDUCE THE RISK OF ELECTRIC SHOCK OR FIRE, DO NOT EXPOSE THIS PRODUCT TO WATER OR MOISTURE.



The arrowhead symbol on a lightning flash inside a triangle is intended to alert the user to the presence of un-insulated "dangerous voltage" within the enclosed product which may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point inside a triangle is intended to alert the user to the presence of important operating, maintenance and servicing instructions in the literature which accompanies the product.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same type or equivalent type recommended by the equipment manufacturer.

Battery Manufacturer: Tadiran

Type: TL-5101

Rating 3.6V

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SAFETY SUGGESTIONS

Carefully read the applicable items of the operating instructions and these safety suggestions before using this product. Use extra care to follow the warnings written on the product itself and in the operating instructions. Keep the operating instructions and safety suggestions for reference in the future.

1. Power Source. The product should only be connected to a power supply which is described either in the operating instructions or in markings on the product.
2. Power Cord Protection. AC power supply cords should be placed such that no one is likely to step on the cords and such that nothing will be placed on or against them.
3. Grounding the Plug. This product has a 3-wire grounding type of plug (a plug with a grounding pin) for safety purposes. This plug can only be used in a grounding power outlet. If the plug does not insert into the outlet you are using, the outlet probably is not a grounding type of power outlet. Contact your electrician to replace the obsolete outlet with a grounding type of outlet instead of defeating the safety feature of the grounding type of plug.
4. Periods of Non-use. If the product is not used for any significant period of time, the product's AC power supply cord should be unplugged from the AC outlet.
5. Foreign Objects and Liquids. Take care not to allow liquids to spill or objects to fall into any openings of the product.
6. Water or Moisture. The product should not be used near any water or in moisture.
7. Heat. Do not place the product near heat sources such as stoves, heat registers, radiators or other heat producing equipment.
8. Ventilation. When installing the product, make sure that the product has adequate ventilation. Improperly ventilating the product may cause overheating, which may damage the product.
9. Mounting. The product should only be used with a rack which the manufacturer recommends. The combination of the product and rack should be moved carefully. Quick movements, excessive force or uneven surfaces may overturn the combination which may damage the product and rack combination.
10. Cleaning. The product should only be cleaned as the manufacturer recommends.
11. Service. The user should only attempt the limited service or upkeep specifically described in the operating instructions for the user. For any other service required, the product should be taken to an authorized service center as described in the operating instructions.
12. Damage to the Product. Qualified service personnel should service the unit in certain situations including without limitation when:
 - a. Liquid has spilled or objects have fallen into the product,
 - b. The product is exposed to water or excessive moisture,
 - c. The AC power supply plug or cord is damaged,
 - d. The product shows an inappropriate change in performance or does not operate normally, or
 - e. The enclosure of the product has been damaged.

General Troubleshooting

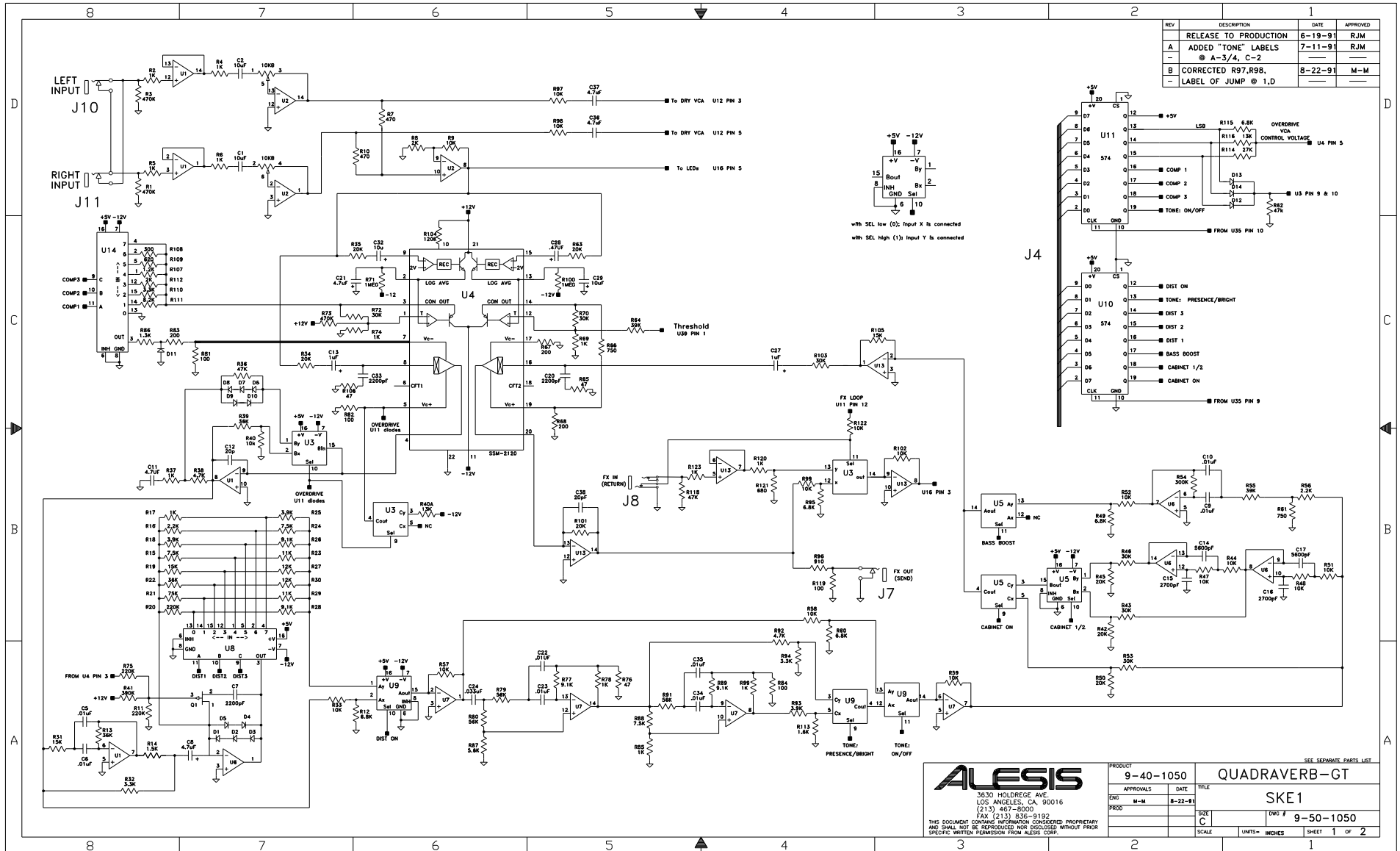
While this manual assumes that the reader has a fundamental understanding of electronics and basic troubleshooting techniques, a review of some of the techniques used by our staff may help.

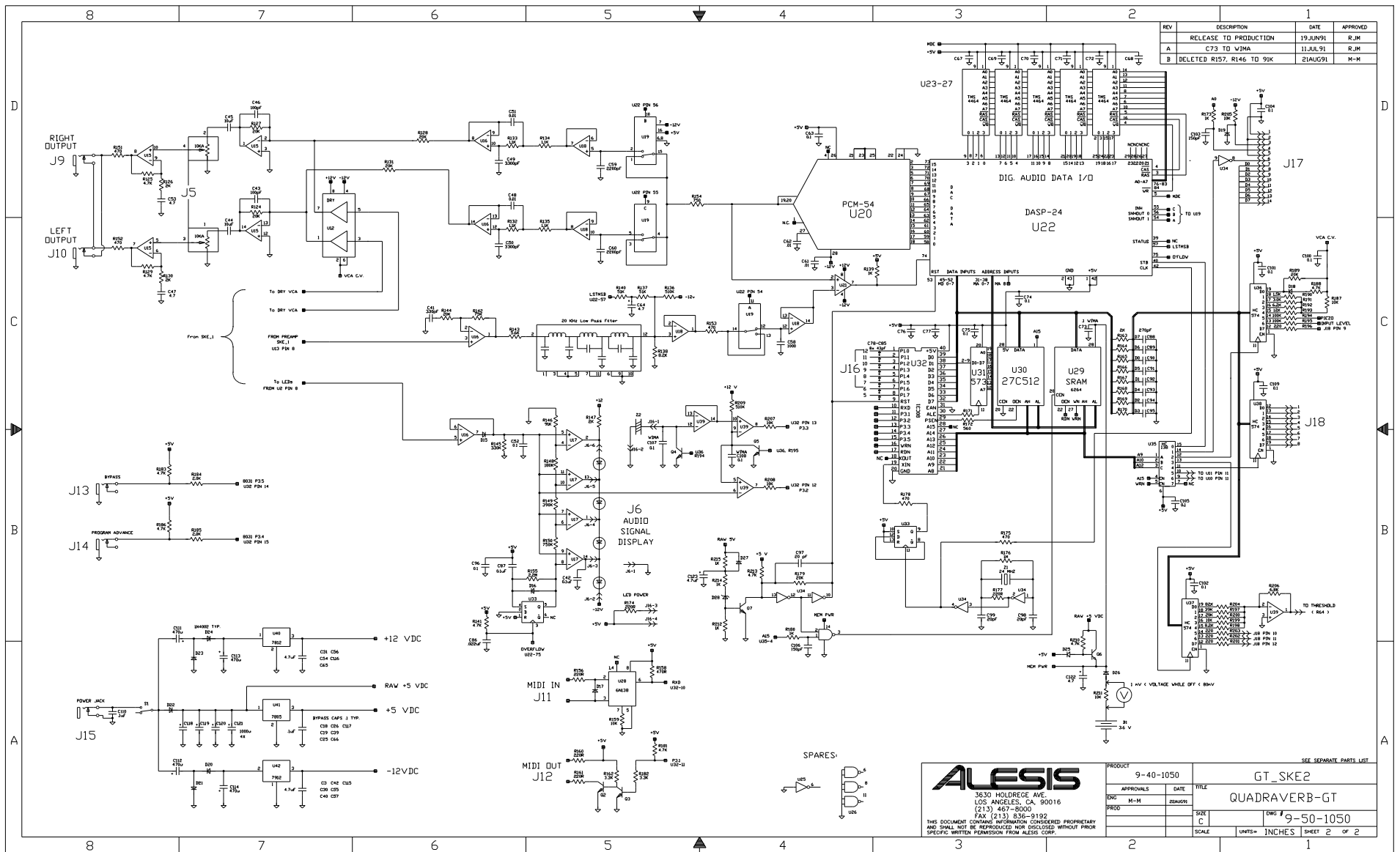
1. Visual Inspection - A short visual inspection of the unit under test will often yield results without the need of complex signal analysis (burnt, or loose components are a dead giveaway).
2. Self Test - Alesis products that utilize microprocessor control contain built in test software which exercises many of the units' primary circuit functions. Self test should always be done following any repair to ensure basic functionality.
3. Environmental Testing - Applying heat and cold (heat gun/freeze spray) will often reveal thermally intermittent components (Clock crystals, I.C.s, and capacitors are particularly prone to this type of failure).
4. Burn in Testing - Leaving a unit running overnight often reveals intermittent failures such as capacitors that begin to leak excess current after a significant amount of time.
5. Cable Checks - Wiggling cables can reveal intermittent failures such as loose cables or poorly soldered headers. Remember to check power supply cables as well.
6. Flexing the PC Board - Poor solder joints and broken traces can often be found by pressing the PC Board in various places.
7. Tapping Components - Sometimes tapping on a component (particularly crystals) will cause it to fail.
8. Power Down/up - Turning the unit off and back on rapidly several times may reveal odd reset and/or power supply failures.
9. Reset Threshold - A Variac (variable transformer) can be used to check reset threshold levels. This can be particularly useful in helping customers with low line problems.
10. Compressors - Using a compressor/limiter is often helpful when attempting to solve low level noise problems, as well as assisting with DAC adjustments.
11. Sweep Tests - Sweep generators are very useful in checking the frequency response envelopes of anti-aliasing filters.
12. Piggybacking - Piggybacking I.C.s is particularly useful when troubleshooting large sections of logic. This is especially true when working with older units.

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1.0 Schematics





2.0 Software History

| <u>Date</u> | <u>Version</u> | <u>Comments</u> |
|-------------|----------------|--|
| 07\08\91 | 1.00 | First production release. |
| 05\22\92 | 1.01 | 1) Adds global cabinet simulator controls. 2) Fixes erroneous setting of preamp parameters when a program using the sampling configuration is recalled. 3) Fixes distorted audio when a program using the reverb configuration has its reverb chorus speed, or depth modulated via MIDI. |
| | 1.02 | Never released. |
| 10\28\92 | 1.03 | New set of factory programs. |

3.0 GT MIDI Implementation

System Exclusive Format

The QuadraVerb-GT MIDI System Exclusive message format is as follows:

| | |
|----------|-------------------------|
| F0 | System exclusive status |
| 00 00 0E | Alesis manufacturer id# |
| 07 | QuadraVerb-GT id# |
| cc | Opcode |
| dd | Data |
| : | : |
| : | : |
| F7 | End-Of-Exclusive |

OPCODES:

01 - MIDI Editing

F0 00 00 0E 07 01<function#><page#>< value1>< value2>< value3>F7

<function#> = 1=reverb,2=delay,3=pitch,4=eq,7=config, 8=mix, 9=name/mod, 10=preamp

<page#> = 0..n where n is the maximum page # for the selected function

<value1-3> = new parameter value in the following format:

Data: B7 B6 B5 B4 B3 B2 B1 B0 (MSB)
A7 A6 A5 A4 A3 A2 A1 A0 (LSB)

Sent: 0 A7 A6 A5 A4 A3 A2 A1 <value1>
0 A0 B7 B6 B5 B4 B3 B2 <value2>
0 B1 B0 0 0 0 0 0 <value3>

All parameters to be edited must be sent in this format (12 MIDI bytes), regardless of the number of bits required to transmit the value of the parameter. When the QuadraVerb-GT receives this message, it will edit the specified parameter to the new value and display it. If the function and page selected does not exist in the current configuration, the command will be ignored. If the value received is out of range for the parameter selected, the range will be limited to a legal value. The function and page numbers for each parameter are shown in the next section.

02 - MIDI Data Dump F0 00 00 0E 07 02 <program#> <data> F7

<program#> = 0..99 selects individual programs
= 100 selects the edit buffer
= > 100 selects all 100 programs

<data> is in a packed format in order to optimize data transfer. Eight MIDI bytes are used to transmit each block of 7 QuadraVerb-GT data bytes. If the 7 data bytes are looked at as one 56-bit word, the format for transmission is eight 7-bit words beginning with the most significant bit of the first byte, as follows:

SEVEN QUADRAVERB-GT BYTES:

0: A7 A6 A5 A4 A3 A2 A1 A0
1: B7 B6 B5 B4 B3 B2 B1 B0
2: C7 C6 C5 C4 C3 C2 C1 C0
3: D7 D6 D5 D4 D3 D2 D1 D0
4: E7 E6 E5 E4 E3 E2 E1 E0
5: F7 F6 F5 F4 F3 F2 F1 F0
6: G7 G6 G5 G4 G3 G2 G1 G0

TRANSMITTED AS:

0: 0 A7 A6 A5 A4 A3 A2 A1
1: 0 A0 B7 B6 B5 B4 B3 B2
2: 0 B1 B0 C7 C6 C5 C4 C3
3: 0 C2 C1 C0 D7 D6 D5 D4
4: 0 D3 D2 D1 D0 E7 E6 E5
5: 0 E4 E3 E2 E1 E0 F7 F6
6: 0 F5 F4 F3 F2 F1 F0 G7
7: 0 G6 G5 G4 G3 G2 G1 G0

There are 147 bytes sent for a single data dump, which corresponds to 128 bytes of program data. There are 14,629 bytes sent for a 100 program dump, which corresponds to 12,800 bytes of program data. The location of each parameter within a program is shown in the next section.

When the QuadraVerb-GT receives a data dump message, the display reads:

LOADING
MIDI DATA ...

Should the 's MIDI input buffer overflow, the display will read:

MIDI INPUT
BUFFER OVERFLOW

This message will remain on the display until any button is pressed.

03 - MIDI Dump Request

F0 00 00 0E 07 03 <program#> F7

<program#> = 0..99 selects individual programs
= 100 selects the edit buffer
= > 100 selects all 100 programs

When this message is received, a MIDI data dump will be initiated, and the display will read:

MIDI DATA DUMP
IN PROGRESS

Upon completion of the dump, the display will return to its previously displayed page.

INDIVIDUAL PARAMETER LOCATION FUNCTION AND PAGE VALUES

The following lists give the parameter locations and ranges for each of the effects in each of the configurations. The parameter associated with a particular function and page may be dependent on both the current configuration, and the current mode of the effect (e.g., chorus, phase, etc.). In conditions where a page relates to different parameters depending on the mode of the effect, the parameters are listed in tables under each mode. All parameters are offset binary values. This means that a signed parameter with a range of -99 to +99 in the display is actually stored as 0 for -99, 99 for 0, and 198 for +99.

REVERB (FUNCTION 1)

CONFIGURATION 0 (EQ-PCH-DL-REVERB):

| page | CONFIGURATION 0 (EQ-PCH-DL-REVERB): | | | | |
|----------|-------------------------------------|-----------------|-----------------|-----------------|-----------------|
| 0 (type) | 0 (PLATE 1) | 1 (ROOM 1) | 2 (CHAMBER 1) | 3 (HALL 1) | 4 (REVERSE 1) |
| 1 | 0-3 (INPUT 1) | 0-3 (INPUT 1) | 0-3 (INPUT 1) | 0-3 (INPUT 1) | 0-3 (INPUT 1) |
| 2 | 0-1 (INPUT 2) | 0-1 (INPUT 2) | 0-1 (INPUT 2) | 0-1 (INPUT 2) | 0-1 (INPUT 2) |
| 3 | 0-198 (IN MIX) | 0-198 (IN MIX) | 0-198 (IN MIX) | 0-198 (IN MIX) | 0-198 (IN MIX) |
| 4 | 1-140 (PREDLY) | 1-140 (PREDLY) | 1-140 (PREDLY) | 1-140 (PREDLY) | 1-140 (PREDLY) |
| 5 | 1-198 (PRE MIX) | 1-198 (PRE MIX) | 1-198 (PRE MIX) | 1-198 (PRE MIX) | 1-198 (PRE MIX) |
| 6 | 0-99 (DECAY) | 0-99 (DECAY) | 0-99 (DECAY) | 0-99 (DECAY) | 0-99 (REV TIME) |
| 7 | 0-8 (DIFFUSION) | 0-8 (DIFFUSION) | 0-8 (DIFFUSION) | 0-8 (DIFFUSION) | 0-8 (DIFFUSION) |
| 8 | 0-8 (DENSITY) | 0-8 (DENSITY) | 0-8 (DENSITY) | 0-60 (LOW DEC) | 0-8 (DENSITY) |
| 9 | 0-60 (LOW DEC) | 0-60 (LOW DEC) | 0-60 (LOW DEC) | 0-60 (HIGH DEC) | 0-60 (LOW DEC) |
| 10 | 0-60 (HIGH DEC) | 0-60 (HIGH DEC) | 0-60 (HIGH DEC) | 0-1 (GATE ON) | 0-60 (HIGH DEC) |
| 11 | 0-1 (GATE ON) | 0-1 (GATE ON) | 0-1 (GATE ON) | 0-99 (GATE HLD) | |
| 12 | 0-99 (GATE HLD) | 0-99 (GATE HLD) | 0-99 (GATE HLD) | 0-99 (GATE REL) | |
| 13 | 0-99 (GATE REL) | 0-99 (GATE REL) | 0-99 (GATE REL) | 0-99 (GATE LEV) | |
| 14 | 0-99 (GATE LEV) | 0-99 (GATE LEV) | 0-99 (GATE LEV) | | |

CONFIGURATION 1 (LEZLIE-DL-REVERB), 5 (RING-DL-REVERB), 6 (RESONATOR-DL-REV):

| page | CONFIGURATION 1 (LEZLIE-DL-REVERB), 5 (RING-DL-REVERB), 6 (RESONATOR-DL-REV): | | | | |
|----------|---|---------------|---------------|---------------|---------------|
| 0 (type) | 0 (PLATE 1) | 1 (ROOM 1) | 2 (CHAMBER 1) | 3 (HALL 1) | 4 (REVERSE 1) |
| 1 | 0-2 (INPUT 1) | 0-2 (INPUT 1) | 0-2 (INPUT 1) | 0-2 (INPUT 1) | 0-2 (INPUT 1) |
| 2-14 | same as configuration 0 | | | | |

CONFIGURATION 2 (GRAPHIC EQ-DELAY), 3 (5BAND EQ-PCH-DLY), 7 (SAMPLING):

Not used

CONFIGURATION 4 (3 BAND EQ-REVERB):

| page | CONFIGURATION 4 (3 BAND EQ-REVERB): | | | | |
|----------|-------------------------------------|-----------------|-----------------|-----------------|-----------------|
| 0 (type) | 0 (PLATE 2) | 1 (ROOM 2) | 2 (CHAMBER 2) | 3 (HALL 2) | 4 (REVERSE 2) |
| 1 | 0-1 (INPUT) | 0-1 (INPUT) | 0-1 (INPUT) | 0-1 (INPUT) | 0-1 (INPUT) |
| 2 | 1-140 (PREDLY) | 1-140 (PREDLY) | 1-140 (PREDLY) | 1-140 (PREDLY) | 1-140 (PREDLY) |
| 3 | 1-198 (PRE MIX) | 1-198 (PRE MIX) | 1-198 (PRE MIX) | 1-198 (PRE MIX) | 1-198 (PRE MIX) |
| 4 | 0-99 (DECAY) | 0-99 (DECAY) | 0-99 (DECAY) | 0-99 (DECAY) | 0-99 (REV TIME) |
| 5 | 0-8 (DIFFUSION) | 0-8 (DIFFUSION) | 0-8 (DIFFUSION) | 0-8 (DIFFUSION) | 0-8 (DIFFUSION) |
| 6 | 0-8 (DENSITY) | 0-8 (DENSITY) | 0-8 (DENSITY) | 0-60 (LOW DEC) | 0-8 (DENSITY) |
| 7 | 0-60 (LOW DEC) | 0-60 (LOW DEC) | 0-60 (LOW DEC) | 0-60 (HIGH DEC) | 0-60 (LOW DEC) |
| 8 | 0-60 (HIGH DEC) | 0-60 (HIGH DEC) | 0-60 (HIGH DEC) | 0-1 (GATE ON) | 0-60 (HIGH DEC) |
| 9 | 0-1 (GATE ON) | 0-1 (GATE ON) | 0-1 (GATE ON) | 0-99 (GATE HLD) | |
| 10 | 0-99 (GATE HLD) | 0-99 (GATE HLD) | 0-99 (GATE HLD) | 0-99 (GATE REL) | |
| 11 | 0-99 (GATE REL) | 0-99 (GATE REL) | 0-99 (GATE REL) | 0-99 (GATE LEV) | |
| 12 | 0-99 (GATE LEV) | 0-99 (GATE LEV) | 0-99 (GATE LEV) | | |

DELAY (FUNCTION 2)

CONFIGURATION 0 (EQ-PCH-DL-REVERB):

page

| 0 (type) | 0 (MONO) | 1 (STEREO) | 2 (PING-PONG) |
|----------|----------------|-----------------|----------------|
| 1 | 0-1 (INPUT 1) | 0-1 (INPUT 1) | 0-1 (INPUT 1) |
| 2 | 0-198 (IN MIX) | 0-198 (IN MIX) | 0-198 (IN MIX) |
| 3 | 1-775 (DELAY) | 1-375 (L DELAY) | 1-375 (DELAY) |
| 4 | 0-99 (FEEDB) | 0-99 (L FEEDB) | 0-99 (FEEDB) |
| 5 | | 1-375 (R DELAY) | |
| 6 | | 0-99 (R FEEDB) | |

CONFIGURATION 1 (LEZLIE-DL-REVERB):

page

| 0 (type) | 0 (MONO) | 1 (STEREO) | 2 (PING-PONG) |
|----------|----------------|-----------------|----------------|
| 1 | 0-198 (IN MIX) | 0-198 (IN MIX) | 0-198 (IN MIX) |
| 2 | 1-800 (DELAY) | 1-400 (L DELAY) | 1-400 (DELAY) |
| 3 | 0-99 (FEEDB) | 0-99 (L FEEDB) | 0-99 (FEEDB) |
| 4 | | 1-400 (R DELAY) | |
| 5 | | 0-99 (R FEEDB) | |

CONFIGURATION 2 (GRAPHIC EQ-DELAY):

page

| 0 (type) | 0 (MONO) | 1 (STEREO) | 2 (PING-PONG) |
|----------|----------------|-----------------|---------------|
| 1 | 0-1 (INPUT) | 0-1 (INPUT) | 0-1 (INPUT) |
| 2 | 1-1500 (DELAY) | 1-750 (L DELAY) | 1-750 (DELAY) |
| 3 | 0-99 (FEEDB) | 0-99 (L FEEDB) | 0-99 (FEEDB) |
| 4 | | 1-750 (R DELAY) | |
| 5 | | 0-99 (R FEEDB) | |

CONFIGURATION 3 (5BAND EQ-PCH-DLY):

page

| 0 (type) | 0 (MONO) | 1 (STEREO) | 2 (PING-PONG) | 3 (MULTI TAP) |
|----------|----------------|-----------------|----------------|------------------------|
| 1 | 0-1 (INPUT) | 0-1 (INPUT) | 0-1 (INPUT) | 0-1 (INPUT) |
| 2 | 0-198 (IN MIX) | 0-198 (IN MIX) | 0-198 (IN MIX) | 0-198 (IN MIX) |
| 3 | 1-1470 (DELAY) | 1-705 (L DELAY) | 1-705 (DELAY) | 1-8 (TAP NUMBER) |
| 4 | 0-99 (FEEDB) | 0-99 (L FEEDB) | 0-99 (FEEDB) | 1-Z* (TAP x** DELAY) |
| 5 | | 1-705 (R DELAY) | | 0-99 (TAP x** VOLUME) |
| 6 | | 0-99 (R FEEDB) | | 0-198 (TAP x PANNING) |
| 7 | | | | 0-99 (TAP x FEEDBACK) |
| 8 | | | | 0-99 (MASTER FEEDBACK) |

* Sum off Z for all 8 taps less or equal to 1470

** x = Number of currently selected tap

CONFIGURATION 4 (3 BAND EQ-REVERB):

Not used

CONFIGURATION 5 (RING-DL-REVERB):

page

| 0 (type) | 0 (MONO) | 1 (STEREO) | 2 (PING-PONG) |
|----------|----------------|-----------------|----------------|
| 1 | 0-198 (IN MIX) | 0-198 (IN MIX) | 0-198 (IN MIX) |
| 2 | 1-800 (DELAY) | 1-400 (L DELAY) | 1-400 (DELAY) |
| 3 | 0-99 (FEEDB) | 0-99 (L FEEDB) | 0-99 (FEEDB) |
| 4 | | 1-400 (R DELAY) | |
| 5 | | 0-99 (R FEEDB) | |

CONFIGURATION 6 (RESONATOR-DL-REV):

page

| 0 (type) | 0 (MONO) | 1 (STEREO) | 2 (PING-PONG) |
|----------|----------------|-----------------|----------------|
| 1 | 0-198 (IN MIX) | 0-198 (IN MIX) | 0-198 (IN MIX) |
| 2 | 1-720 (DELAY) | 1-320 (L DELAY) | 1-320 (DELAY) |
| 3 | 0-99 (FEEDB) | 0-99 (L FEEDB) | 0-99 (FEEDB) |
| 4 | | 1-320 (R DELAY) | |
| 5 | | 0-99 (R FEEDB) | |

CONFIGURATION 7 (SAMPLING):

page

| | |
|---|-------------------------|
| 0 | 0-2 (SAMPLE PLAYBACK) |
| 1 | 0-150 (SAMPLE START) |
| 2 | 5-155 (SAMPLE LENGTH) |
| 3 | 0-1 (AUDIO TRIG) |
| 4 | 0-2 (MIDI TRIG) |
| 5 | 0-127 (MIDI LOW LIMIT) |
| 6 | 0-127 (BASE NOTE) |
| 7 | 0-127 (MIDI HIGH LIMIT) |

PITCH (FUNCTION 3)

CONFIGURATION 0 (EQ-PCH-DL-REVERB) & 3 (5BAND EQ-PCH-DLY):

page

| 0 (type) | 0 (M CHORUS) | 1 (S CHORUS) | 2 (M FLANGE) | 3 (S FLANGE) | 4 (DETUNE) | 5 (PHASER) |
|----------|--------------|--------------|---------------|---------------|--------------|--------------|
| 1 | 0-1 (INPUT) | 0-1 (INPUT) | 0-1 (INPUT) | 0-1 (INPUT) | 0-1 (INPUT) | 0-1 (INPUT) |
| 2 | 0-1 (WAVE) | 0-1 (WAVE) | 0-98 (SPEED) | 0-98 (SPEED) | 0-198 (TUNE) | 0-98 (SPEED) |
| 3 | 0-98 (SPEED) | 0-98 (SPEED) | 0-98 (DEPTH) | 0-98 (DEPTH) | 0-98 (DEPTH) | |
| 4 | 0-98 (DEPTH) | 0-98 (DEPTH) | 0-99 (FBACK) | 0-99 (FBACK) | | |
| 5 | 0-99 (FBACK) | 0-99 (FBACK) | 0-1 (TRIGGER) | 0-1 (TRIGGER) | | |

CONFIGURATION 1 (LEZLIE-DL-REVERB):

page

| | |
|---|-------------------|
| 0 | 0-99 (SEPARATION) |
| 1 | 0-1 (MOTOR) |
| 2 | 0-1 (SPEED) |

CONFIGURATION 2 (GRAPHIC EQ-DELAY):

Not used

CONFIGURATION 4 (3 BAND EQ-REVERB):

page

| 0 (type) | 0 (CHORUS OFF) | 1 (CHORUS ON) |
|----------|----------------|---------------|
| 1 | | 0-1 (WAVE) |
| 2 | | 0-98 (SPEED) |
| 3 | | 0-98 (DEPTH) |

CONFIGURATION 5 (RING-DL-REVERB):

page

- 0 1-300 (SPECTRUM SHIFT)
- 1 0-198 (RING OUT MIX)
- 2 0-198 (DEL/REB MIX INPUT)

CONFIGURATION 6 (RESONATOR-DL-REV), & 7 (SAMPLING):

Not used

EQ (FUNCTION 4)

CONFIGURATION 0 (EQ-PCH-DL-REVERB):

page

| | | |
|----------|-----------------------------|--------------------------|
| 0 | 0-6 (EQ PRESET) * | |
| 1 (type) | 0 (3 BAND EQ) | 1 (RESONATORS+EQ) |
| 2 | 20-999 (LOW FREQUENCY) | 0-60 (RES 1 TUNE) |
| 3 | 0-560 (LOW BOOST/CUT) | 0-99 (RES 1 DCY) |
| 4 | 200-9999 (MID FREQUENCY) | 0-99 (RES 1 AMP) |
| 5 | 20-255 (MID BANDWIDTH) | 0-60 (RES 2 TUNE) |
| 6 | 0-560 (MID BOOST/CUT) | 0-99 (RES 2 DCY) |
| 7 | 2000-18000 (HIGH FREQUENCY) | 0-99 (RES 2 AMP) |
| 8 | 0-560 (HIGH BOOST/CUT) | 200-9999 (MID FREQUENCY) |
| 9 | | 20-255 (MID BANDWIDTH) |
| 10 | | 0-560 (MID BOOST/CUT) |

* Changing preset may change the EQ type to 3 BAND EQ or RESONATOR+EQ

CONFIGURATION 1 (LEZLIE-DL-REVERB):

page

- 0 0-26 (HIGH ROTOR LEVEL)

CONFIGURATION 2 (GRAPHIC EQ-DELAY):

page

- 0 0-6 (EQ PRESET)
- 1 0-28 (16Hz)
- 2 0-28 (32Hz)
- 3 0-28 (62Hz)
- 4 0-28 (126Hz)
- 5 0-28 (250Hz)
- 6 0-28 (500Hz)
- 7 0-28 (1KHz)
- 8 0-28 (2KHz)
- 9 0-28 (4KHz)
- 10 0-28 (8KHz)
- 11 0-28 (16KHz)

CONFIGURATION 3 (5BAND EQ-PCH-DLY):

page

| | | |
|----------|---------------------------------|-----------------------------|
| 0 | 0-6 (EQ PRESET) * | |
| 1 (type) | 0 (5 BAND EQ) | 1 (5 RESONATOR/3 EQ) |
| 2 | 20-999 (LOW FREQUENCY) | 0-4 (RESO NUMBER) |
| 3 | 0-560 (LOW BOOST/CUT) | 0-60 (RES x TUNE) ** |
| 4 | 20-500 (LOW MID FREQUENCY) | 0-99 (RES x DCY) ** |
| 5 | 20-255 (LOW MID BANDWIDTH) | 0-99 (RES x AMP) ** |
| 6 | 0-560 (LOW MID BOOST/CUT) | 20-999 (LOW FREQUENCY) |
| 7 | 200-9999 (MID FREQUENCY) | 0-560 (LOW BOOST/CUT) |
| 8 | 20-255 (MID BANDWIDTH) | 200-9999 (MID FREQUENCY) |
| 9 | 0-560 (MID BOOST/CUT) | 20-255 (MID BANDWIDTH) |
| 10 | 2000-18000 (HIGH MID FREQUENCY) | 0-560 (MID BOOST/CUT) |
| 11 | 20-255 (HIGH MID BANDWIDTH) | 2000-18000 (HIGH FREQUENCY) |
| 12 | 0-560 (HIGH MID BOOST/CUT) | 0-560 (HIGH BOOST/CUT) |
| 13 | 2000-18000 (HIGH FREQUENCY) | |
| 14 | 0-560 (HIGH BOOST/CUT) | |

* Changing preset may change the EQ type to 5 BAND EQ or 5 RESONATOR/3 EQ

** x is the current resonator number

CONFIGURATION 4 (3 BAND EQ-REVERB):

page

| | |
|---|-----------------------------|
| 0 | 0-6 (EQ PRESET) |
| 1 | 20-999 (LOW FREQUENCY) |
| 2 | 0-560 (LOW BOOST/CUT) |
| 3 | 200-9999 (MID FREQUENCY) |
| 4 | 20-255 (MID BANDWIDTH) |
| 5 | 0-560 (MID BOOST/CUT) |
| 6 | 2000-18000 (HIGH FREQUENCY) |
| 7 | 0-560 (HIGH BOOST/CUT) |

CONFIGURATION 6 (RESONATOR-DL-REV):

page

| | |
|---|---------------------------|
| 0 | 0-1 (RESONATOR GATE MODE) |
| 1 | 0-99 (RESONATOR DECAY) |
| 2 | 0-60 (RESONATOR 1 TUNE) |
| 3 | 0-60 (RESONATOR 2 TUNE) |
| 4 | 0-60 (RESONATOR 3 TUNE) |
| 5 | 0-60 (RESONATOR 4 TUNE) |
| 6 | 0-60 (RESONATOR 5 TUNE) |

CONFIGURATION (FUNCTION 7)

page

| | |
|---|---------------------|
| 0 | 0-7 (CONFIGURATION) |
| | 0: EQ>PCH>DL>REVERB |
| | 1: LEZLIE>DL>REVERB |
| | 2: GRAPHIC EQ>DELAY |
| | 3: 5BAND EQ>PCH>DLY |
| | 4: 3 BAND EQ>REVERB |
| | 5: RING>DL>REVERB |
| | 6: RESONATOR>DL>REV |
| | 7: SAMPLING |

MIX (FUNCTION 8)

CONFIGURATION 0 (EQ-PCH-DL-REVERB):

page

| | | |
|----------|------------------------|---------------------|
| 0 | 0-99 (DIRECT LEVEL) | |
| 1 | 0-99 (MASTER FX LEVEL) | |
| 2 (type) | 0 (PRE-EQ) | 1 (POST-EQ) |
| 3 | 0-99 (PREAMP LEVEL) | 0-99 (EQ LEVEL) |
| 4 | 0-99 (PITCH LEVEL) | 0-99 (PITCH LEVEL) |
| 5 | 0-99 (DELAY LEVEL) | 0-99 (DELAY LEVEL) |
| 6 | 0-99 (REVERB LEVEL) | 0-99 (REVERB LEVEL) |
| 7 | 0-1 (MODULATION) | 0-1 (MODULATION) |
| 8 | 0-99 (MOD DEPTH) | 0-99 (MOD DEPTH) |
| 9 | 0-98 (MOD SPEED) | 0-98 (MOD SPEED) |

CONFIGURATION 1 (LEZLIE-DL-REVERB):

page

| | |
|---|------------------------|
| 0 | 0-99 (DIRECT LEVEL) |
| 1 | 0-99 (MASTER FX LEVEL) |
| 2 | 0-99 (LEZLIE LEVEL) |
| 3 | 0-99 (DELAY LEVEL) |
| 4 | 0-99 (REVERB LEVEL) |

CONFIGURATION 2 (GRAPHIC EQ-DELAY):

page

| | |
|---|------------------------|
| 0 | 0-99 (DIRECT LEVEL) |
| 1 | 0-99 (MASTER FX LEVEL) |
| 2 | 0-99 (EQ LEVEL) |
| 3 | 0-99 (DELAY LEVEL) |

CONFIGURATION 3 (5BAND EQ-PCH-DLY):

page

| | | |
|----------|------------------------|--------------------|
| 0 | 0-99 (DIRECT LEVEL) | |
| 1 | 0-99 (MASTER FX LEVEL) | |
| 2 (type) | 0 (PRE-EQ) | 1 (POST-EQ) |
| 3 | 0-99 (PREAMP LEVEL) | 0-99 (EQ LEVEL) |
| 4 | 0-99 (PITCH LEVEL) | 0-99 (PITCH LEVEL) |
| 5 | 0-99 (DELAY LEVEL) | 0-99 (DELAY LEVEL) |
| 6 | 0-1 (MODULATION) | 0-1 (MODULATION) |
| 7 | 0-99 (MOD DEPTH) | 0-99 (MOD DEPTH) |
| 8 | 0-98 (MOD SPEED) | 0-98 (MOD SPEED) |

CONFIGURATION 4 (3 BAND EQ-REVERB):

page

| | | |
|----------|------------------------|---------------------|
| 0 | 0-99 (DIRECT LEVEL) | |
| 1 | 0-99 (MASTER FX LEVEL) | |
| 2 (type) | 0 (PRE-EQ) | 1 (POST-EQ) |
| 3 | 0-99 (PREAMP LEVEL) | 0-99 (EQ LEVEL) |
| 4 | 0-99 (REVERB LEVEL) | 0-99 (REVERB LEVEL) |

CONFIGURATION 5 (RING-DL-REVERB):

page

| | |
|---|------------------------|
| 0 | 0-99 (DIRECT LEVEL) |
| 1 | 0-99 (MASTER FX LEVEL) |
| 2 | 0-99 (PREAMP LEVEL) |
| 3 | 0-99 (RING MOD. LEVEL) |
| 4 | 0-99 (DELAY LEVEL) |
| 5 | 0-99 (REVERB LEVEL) |

CONFIGURATION 6 (RESONATOR-DL-REV):

page

- 0 0-99 (DIRECT LEVEL)
- 1 0-99 (MASTER FX LEVEL)
- 2 0-99 (PREAMP LEVEL)
- 3 0-99 (RESONATOR LEVEL)
- 4 0-99 (DELAY LEVEL)
- 5 0-99 (REVERB LEVEL)

CONFIGURATION 7 (SAMPLING):

page

- 0 0-99 (DIRECT LEVEL)
- 1 0-99 (PREAMP LEVEL)
- 2 0-99 (PLAYBACK LEVEL)

MOD (FUNCTION 9)

CONFIGURATION 0-6:

page

- 0 32-127 (1st DIGIT NAME)
- 1 32-127 (2nd DIGIT NAME)
- 2 32-127 (3rd DIGIT NAME)
- 3 32-127 (4th DIGIT NAME)
- 4 32-127 (5th DIGIT NAME)
- 5 32-127 (6th DIGIT NAME)
- 6 32-127 (7th DIGIT NAME)
- 7 32-127 (8th DIGIT NAME)
- 8 32-127 (9th DIGIT NAME)
- 9 32-127 (10th DIGIT NAME)
- 10 32-127 (11th DIGIT NAME)
- 11 32-127 (12th DIGIT NAME)
- 12 32-127 (13th DIGIT NAME)
- 13 32-127 (14th DIGIT NAME)
- 14 0-126 (MOD 1 SOURCE)
- 15 0-? * (MOD 1 TARGET)
- 16 0-198 (MOD 1 AMPLITUDE)
- 17 0-126 (MOD 2 SOURCE)
- 18 0-? * (MOD 2 TARGET)
- 19 0-198 (MOD 2 AMPLITUDE)
- 20 0-126 (MOD 3 SOURCE)
- 21 0-? * (MOD 3 TARGET)
- 22 0-198 (MOD 3 AMPLITUDE)
- 23 0-126 (MOD 4 SOURCE)
- 24 0-? * (MOD 4 TARGET)
- 25 0-198 (MOD 4 AMPLITUDE)
- 26 0-126 (MOD 5 SOURCE)
- 27 0-? * (MOD 5 TARGET)
- 28 0-198 (MOD 5 AMPLITUDE)
- 29 0-126 (MOD 6 SOURCE)
- 30 0-? * (MOD 6 TARGET)
- 31 0-198 (MOD 6 AMPLITUDE)
- 32 0-126 (MOD 7 SOURCE)
- 33 0-? * (MOD 7 TARGET)
- 34 0-198 (MOD 7 AMPLITUDE)
- 35 0-126 (MOD 8 SOURCE)
- 36 0-? * (MOD 8 TARGET)
- 37 0-198 (MOD 8 AMPLITUDE)

CONFIGURATION 7 (SAMPLING):

page

- 0 32-127 (1st DIGIT NAME)
- 1 32-127 (2nd DIGIT NAME)
- 2 32-127 (3rd DIGIT NAME)
- 3 32-127 (4th DIGIT NAME)
- 4 32-127 (5th DIGIT NAME)
- 5 32-127 (6th DIGIT NAME)
- 6 32-127 (7th DIGIT NAME)
- 7 32-127 (8th DIGIT NAME)
- 8 32-127 (9th DIGIT NAME)
- 9 32-127 (10th DIGIT NAME)
- 10 32-127 (11th DIGIT NAME)
- 11 32-127 (12th DIGIT NAME)
- 12 32-127 (13th DIGIT NAME)
- 13 32-127 (14th DIGIT NAME)

* Modulation target values are dependent on the current configuration and mode of a program. The most significant nibble determines the function being modulated as follows:

- 0XH: REVERB MOD
- 1XH: DELAY MOD
- 2XH: PITCH MOD
- 3XH: EQ MOD
- 4XH: MIX MOD
- 5XH: MULTI-TAP MOD (Configuration 3 only)
- 6XH: " " " " " " " " " "
- 7XH: PREAMP MOD

The possible modulation targets within each of the above is as follows:

REVERB CONFIGURATION 0,1,4,5,6 (nothing in 2, 3, & 7):

| Target | PLATE | ROOM | CHAMBER | HALL | REVERSE |
|--------|-----------|-----------|-----------|-----------|-----------|
| 00H | IN MIX | IN MIX | IN MIX | IN MIX | IN MIX |
| 01H | PREDLY | PREDLY | PREDLY | PREDLY | PREDLY |
| 02H | PRE MIX | PRE MIX | PRE MIX | PRE MIX | PRE MIX |
| 03H | DECAY | DECAY | DECAY | DECAY | REV TIME |
| 04H | DIFFUSION | DIFFUSION | DIFFUSION | DIFFUSION | DIFFUSION |
| 05H | DENSITY | DENSITY | DENSITY | LOW DEC | DENSITY |
| 06H | LOW DEC | LOW DEC | LOW DEC | HIGH DEC | LOW DEC |
| 07H | HIGH DEC | HIGH DEC | HIGH DEC | HIGH DEC | |

DELAY CONFIGURATION 0,1 (nothing in 4 & 7):

| Target | MONO | STEREO | PING-PONG |
|--------|--------|---------|-----------|
| 10H | IN MIX | IN MIX | IN MIX |
| 11H | DELAY | L DELAY | DELAY |
| 12H | FEEDB | L FEEDB | FEEDB |
| 13H | | R DELAY | |
| 14H | | R FEEDB | |

CONFIGURATION 3 (5BAND EQ-PCH-DLY):

| Target | MONO | STEREO | PING-PONG | MULTI-TAP |
|--------|--------|---------|-----------|-----------------|
| 10H | IN MIX | IN MIX | IN MIX | IN MIX |
| 11H | DELAY | L DELAY | DELAY | TAP 1 DELAY |
| 12H | FEEDB | L FEEDB | FEEDB | TAP 2 DELAY |
| 13H | | R DELAY | | TAP 3 DELAY |
| 14H | | R FEEDB | | TAP 4 DELAY |
| 15H | | | | TAP 5 DELAY |
| 16H | | | | TAP 6 DELAY |
| 17H | | | | TAP 7 DELAY |
| 18H | | | | TAP 8 DELAY |
| 50H | | | | TAP 1 VOLUME |
| 51H | | | | TAP 2 VOLUME |
| 52H | | | | TAP 3 VOLUME |
| 53H | | | | TAP 4 VOLUME |
| 54H | | | | TAP 5 VOLUME |
| 55H | | | | TAP 6 VOLUME |
| 56H | | | | TAP 7 VOLUME |
| 57H | | | | TAP 8 VOLUME |
| 58H | | | | TAP 1 PANNING |
| 59H | | | | TAP 2 PANNING |
| 5AH | | | | TAP 3 PANNING |
| 5BH | | | | TAP 4 PANNING |
| 5CH | | | | TAP 5 PANNING |
| 5DH | | | | TAP 6 PANNING |
| 5EH | | | | TAP 7 PANNING |
| 5FH | | | | TAP 8 PANNING |
| 60H | | | | TAP 1 FEEDBACK |
| 61H | | | | TAP 2 FEEDBACK |
| 62H | | | | TAP 3 FEEDBACK |
| 63H | | | | TAP 4 FEEDBACK |
| 64H | | | | TAP 5 FEEDBACK |
| 65H | | | | TAP 6 FEEDBACK |
| 66H | | | | TAP 7 FEEDBACK |
| 67H | | | | TAP 8 FEEDBACK |
| 68H | | | | MASTER FEEDBACK |

CONFIGURATION 2,5,6:

| Target | MONO | STEREO | PING-PONG |
|--------|-------|---------|-----------|
| 10H | DELAY | L DELAY | DELAY |
| 11H | FEEDB | L FEEDB | FEEDB |
| 12H | | R DELAY | |
| 13H | | R FEEDB | |

PITCH CONFIGURATION 0 & 3 (nothing in 2 & 7):

| Target | M CHORUS | S CHORUS | M FLANGE | S FLANGE | DETUNE | PHASER |
|--------|----------|----------|----------|----------|--------|--------|
| 20H | SPEED | SPEED | SPEED | SPEED | DETUNE | SPEED |
| 21H | DEPTH | DEPTH | DEPTH | DEPTH | DEPTH | |
| 22H | FBACK | FBACK | FBACK | FBACK | | |

CONFIGURATION 1 (LEZLIE-DL-REVERB):

| Target | |
|--------|------------|
| 20H | SEPARATION |
| 21H | MOTOR |
| 22H | SPEED |

CONFIGURATION 4 (3 BAND EQ-REVERB):

Target

20H SPEED

21H DEPTH

CONFIGURATION 5 (RING-DL-REVERB):

Target

20H SPECTRUM SHIFT

21H RING OUTPUT MIX

22H DEL/REV IN MIX

CONFIGURATION 6 (RESONATOR-DL-REV):

Target

20H RESONATOR DECAY

EQ CONFIGURATION 0 (EQ-PCH-DL-REVERB):

Target

| (EQ mode) | 3 BAND EQ | RESONATORS+EQ |
|-----------|-------------------|------------------|
| 30H | LOW EQ FREQUENCY | RES 1 DECAY |
| 31H | LOW EQ BOOST/CUT | RES 1 AMP |
| 32H | MID EQ FREQUENCY | RES 2 DECAY |
| 33H | MID EQ BANDWIDTH | RES 2 AMP |
| 34H | MID EQ BOOST/CUT | MID EQ FREQUENCY |
| 35H | HIGH EQ FREQUENCY | MID EQ BANDWIDTH |
| 36H | HIGH EQBOOST/CUT | MID EQ BOOST/CUT |

CONFIGURATION 1 (LEZLIE-DL-REVERB):

Target

30H HIGH ROTOR LEVEL

CONFIGURATION 2 (GRAPHIC EQ-DELAY):

Target

| | |
|-----|-------|
| 30H | 16Hz |
| 31H | 32Hz |
| 32H | 62Hz |
| 33H | 126Hz |
| 34H | 250Hz |
| 35H | 500Hz |
| 36H | 1KHz |
| 37H | 2KHz |
| 38H | 4KHz |
| 39H | 8KHz |
| 3AH | 16KHz |

CONFIGURATION 3 (5BAND EQ-PCH-DLY):

Target

| (EQ mode) | 5 BAND EQ | 5 RESONATOR/3 EQ |
|-----------|-----------------------|-------------------|
| 30H | LOW EQ FREQUENCY | RES 1 DECAY |
| 31H | LOW EQ BOOST/CUT | RES 1 AMP |
| 32H | LOW EQMID FREQUENCY | RES 2 DECAY |
| 33H | LOW EQ MID BANDWIDTH | RES 2 AMP |
| 34H | LOW EQ MID BOOST/CUT | RES 3 DECAY |
| 35H | MID EQ FREQUENCY | RES 3 AMP |
| 36H | MID EQ BANDWIDTH | RES 4 DECAY |
| 37H | MID EQ BOOST/CUT | RES 4 AMP |
| 38H | HIGH MID EQ FREQUENCY | RES 5 DECAY |
| 39H | HIGH MID EQ BANDWIDTH | LOW EQ FREQUENCY |
| 3AH | HIGH MID EQ BOOST/CUT | LOW EQ BOOST/CUT |
| 3BH | HIGH EQ FREQUENCY | MID EQ FREQUENCY |
| 3CH | HIGH EQ BOOST/CUT | MID EQ BANDWIDTH |
| 3DH | | MID EQ BOOST/CUT |
| 3EH | | HIGH EQ FREQUENCY |
| 3FH | | HIGH EQ BOOST/CUT |

CONFIGURATION 4 (3 BAND EQ-REVERB):

Target

| | |
|-----|-------------------|
| 30H | LOW EQ FREQUENCY |
| 31H | LOW EQ BOOST/CUT |
| 32H | MID EQ FREQUENCY |
| 33H | MID EQ BANDWIDTH |
| 34H | MID EQ BOOST/CUT |
| 35H | HIGH EQ FREQUENCY |
| 36H | HIGH EQBOOST/CUT |

CONFIGURATION 6 (RESONATOR-DL-REV):

Not used

CONFIGURATION 5 & 7:

Not used

MIX CONFIGURATION 0 (EQ-PCH-DL-REVERB):

| Target | PRE-EQ | POST-EQ |
|--------|--------------|--------------|
| 40H | DIRECT LEVEL | DIRECT LEVEL |
| 41H | FX LEVEL | FX LEVEL |
| 42H | PREAMP LEVEL | EQ LEVEL |
| 43H | PITCH LEVEL | PITCH LEVEL |
| 44H | DELAY LEVEL | DELAY LEVEL |
| 45H | REVERB LEVEL | REVERB LEVEL |
| 46H | MOD DEPTH | MOD DEPTH |
| 47H | MOD SPEED | MOD SPEED |

CONFIGURATION 1 (LEZLIE-DL-REVERB):

Target

| | |
|-----|--------------|
| 40H | DIRECT LEVEL |
| 41H | FX LEVEL |
| 42H | LEZLIE LEVEL |
| 43H | DELAY LEVEL |
| 44H | REVERB LEVEL |

CONFIGURATION 2 (GRAPHIC EQ-DELAY):

Target

- 40H DIRECT LEVEL
- 41H FX LEVEL
- 42H EQ LEVEL
- 43H DELAY LEVEL

CONFIGURATION 3 (5BAND EQ-PCH-DLY):

| Target | PRE-EQ | POST-EQ |
|--------|--------------|--------------|
| 40H | DIRECT LEVEL | DIRECT LEVEL |
| 41H | FX LEVEL | FX LEVEL |
| 42H | PREAMP LEVEL | EQ LEVEL |
| 43H | PITCH LEVEL | PITCH LEVEL |
| 44H | DELAY LEVEL | DELAY LEVEL |
| 45H | MOD DEPTH | MOD DEPTH |
| 46H | MOD SPEED | MOD SPEED |

CONFIGURATION 4 (3 BAND EQ-REVERB):

| Target | PRE-EQ | POST-EQ |
|--------|--------------|--------------|
| 40H | DIRECT LEVEL | DIRECT LEVEL |
| 41H | FX LEVEL | FX LEVEL |
| 42H | PREAMP LEVEL | EQ LEVEL |
| 43H | REVERB LEVEL | REVERB LEVEL |

CONFIGURATION 5 (RING-DL-REVERB):

Target

- 40H DIRECT LEVEL
- 41H FX LEVEL
- 42H PREAMP LEVEL
- 43H RING LEVEL
- 44H DELAY LEVEL
- 45H REVERB LEVEL

CONFIGURATION 6 (RESONATOR-DL-REV):

Target

- 40H DIRECT LEVEL
- 41H FX LEVEL
- 42H PREAMP LEVEL
- 43H RESONATOR LEVEL
- 44H DELAY LEVEL
- 45H REVERB LEVEL

CONFIGURATION 7 (SAMPLING):

Not used

PREAMP CONFIGURATION 0, 1, 2, 3, 4, 5, 6:

Target

- 70H PREAMP OUT LEVEL

CONFIGURATION 7 (SAMPLING):

Not used

PRE-AMP (FUNCTION 10)

CONFIGURATION 0-6:

page

- 0 0-7 (COMPRESSION)
- 1 0-7 (OVERDRIVE)
- 2 0-8 (DISTORTION)
- 3 0-2 (PREAMP TONE)
- 4 0-1 (BASS BOOST)
- 5 0-2 (CAB SIMULATOR)
- 6 0-1 (EFFECT LOOP)
- 7 0-17 (NOISE GATE)
- 8 0-99 (PREAMP OUTPUT LEVEL)

CONFIGURATION 7 (SAMPLING):

page

- 0 0-7 (COMPRESSION)
- 1 0-7 (OVERDRIVE)
- 2 0-8 (DISTORTION)
- 3 0-2 (PREAMP TONE)
- 4 0-1 (BASS BOOST)
- 5 0-2 (CAB SIMULATOR)
- 6 0-1 (EFFECT LOOP)
- 7 0-17 (NOISE GATE)

PARAMETER ADDRESSES WITHIN PROGRAMS

00 LOW EQ FREQ MSB / RES* 1 TUNE
 01 LOW EQ FREQ LSB / RES* 1 DECAY / 16Hz
 02 LOW EQ AMP MSB / RES* 1 AMP / 32Hz
 03 LOW EQ AMP LSB / RES* 2 TUNE / 62Hz
 04 MID EQ FREQ MSB / 126Hz
 05 MID EQ FREQ LSB / 250Hz
 06 MID EQ BANDWIDTH / 500Hz
 07 MID EQ AMP MSB / 1KHz
 08 MID EQ AMP LSB / 2KHz
 09 HIGH EQ FREQ MSB / RES* 2 DECAY / 4KHz
 0A HIGH EQ FREQ LSB / RES* 2 AMP / 8KHz
 0B HIGH EQ AMP MSB / 16KHz
 0C HIGH EQ AMP LSB
 0D LEZLIE HIGH ROTOR LEVEL / TAP 1 DELAY MSB
 0E LOW MID EQ FREQ MSB / RES** 1 TUNE
 0F LOW MID EQ FREQ LSB / RES** 1 DECAY
 10 LOW MID EQ BANDWIDTH / RES** 2 TUNE
 11 LOW MID EQ AMP MSB / RES** 2 DECAY
 12 LOW MID EQ AMP LSB / RES** 3 TUNE
 13 HIGH MID EQ FREQ MSB / RES** 3 DECAY
 14 HIGH MID EQ FREQ LSB / RES** 4 TUNE
 15 HIGH MID EQ BANDWIDTH / RES** 4 DECAY
 16 HIGH MID EQ AMP MSB / RES** 5 TUNE
 17 HIGH MID EQ AMP LSB / RES** 5 DECAY
 18 SAMPLE START / TAP 1 DELAY LSB
 19 SAMPLE LENGTH / TAP 1 VOLUME
 1A PITCH MODE
 1B PITCH INPUT (0) / RES** 4 AMP (1-7)
 1C LFO WAVEFORM (0) / EQ PRESET NUMBER (1-7)
 1D LFO SPEED
 1E LFO DEPTH / RES*** DECAY
 1F SAMPLE PLAYBACK MODE / TAP 1 PAN
 20 PITCH FEEDBACK
 21 DETUNE AMOUNT / SAMPLE PITCH
 22 LEZLIE SEPARATION / TAP 1 FEEDBACK
 23 LEZLIE MOTOR / SAMPLE REC AUDIO TRIG /
 TAP 2 DELAY MSB
 24 LEZLIE SPEED / SAMPLE MIDI TRIG /
 TAP 2 DELAY LSB
 25 TRIGGER FLANGE / RES*** MIDI GATE
 26 SAMPLE MIDI BASE NOTE / TAP 2 VOLUME
 27 DELAY MODE
 28 DELAY INPUT (0) / RES** 5 AMP (1-7)
 29 DELAY INPUT MIX
 2A DELAY MSB / LEFT DELAY MSB / TAP 2 PAN
 2B DELAY LSB / LEFT DELAY LSB / TAP 2 FEEDBACK
 2C FEEDBACK / LEFT FEEDBACK / TAP 3 DELAY MSB
 2D RIGHT DELAY MSB / TAP 3 DELAY LSB
 2E RIGHT DELAY LSB / TAP 3 VOLUME
 2F RIGHT FEEDBACK / TAP 3 PAN
 30 SAMPLE LOW MIDI NOTE / TAP 3 FEEDBACK
 31 SAMPLE HIGH MIDI NOTE / TAP 4 DELAY MSB
 32 REVERB MODE / TAP 4 DELAY LSB
 33 TAP 4 VOLUME
 34 REVERB INPUT 1 / TAP 4 PAN
 35 REVERB INPUT 2 / TAP 4 FEEDBACK
 36 REVERB INPUT MIX / TAP 5 DELAY MSB
 37 REVERB PREDELAY / TAP 5 DELAY LSB
 38 REVERB PREDELAY MIX / TAP 5 VOLUME
 39 REVERB DECAY / TAP 5 PAN
 3A REVERB DIFFUSION / TAP 5 FEEDBACK
 3B REVERB LOW DECAY / TAP 6 DELAY MSB
 3C REVERB HIGH DECAY / TAP 6 DELAY LSB
 3D REVERB DENSITY / TAP 6 VOLUME
 3E REVERB GATE / TAP 6 PAN
 3F REVERB GATE HOLD / TAP 6 FEEDBACK
 40 REVERB GATE RELEASE / TAP 7 DELAY MSB
 41 REVERB GATED LEVEL / TAP 7 DELAY LSB
 42 RING MOD SHIFT MSB / TAP 7 VOLUME
 43 RING MOD SHIFT LSB / TAP 7 PAN
 44 CONFIGURATION
 45 PRE-POST EQ (0) / DIRECT LEVEL (1-7)
 46 PREAMP LEVEL / EQ LEVEL
 47 MASTER EFFECTS LEVEL
 48 PITCH LEVEL / LEZLIE LEVEL / RING MOD
 LEV
 49 DELAY LEVEL
 4A REVERB LEVEL / RES** 1 AMP
 4B RES*** PITCH 1 / TAP 8 DELAY MSB
 4C RES*** PITCH 2 / TAP 8 DELAY LSB
 4D RES*** PITCH 3 / TAP 8 VOLUME
 4E RES*** PITCH 4 / TAP 8 PAN
 4F RES*** PITCH 5 / TAP 8 FEEDBACK
 50 MOD 1 SOURCE
 51 MOD 1 TARGET
 52 MOD 1 AMPLITUDE
 53 MOD 2 SOURCE
 54 MOD 2 TARGET
 55 MOD 2 AMPLITUDE
 56 MOD 3 SOURCE
 57 MOD 3 TARGET
 58 MOD 3 AMPLITUDE
 59 MOD 4 SOURCE
 5A MOD 4 TARGET
 5B MOD 4 AMPLITUDE
 5C MOD 5 SOURCE
 5D MOD 5 TARGET
 5E MOD 5 AMPLITUDE
 5F MOD 6 SOURCE
 60 MOD 6 TARGET
 61 MOD 6 AMPLITUDE
 62 MOD 7 SOURCE
 63 MOD 7 TARGET
 64 MOD 7 AMPLITUDE
 65 MOD 8 SOURCE
 66 MOD 8 TARGET
 67 MOD 8 AMPLITUDE
 68 MULTITAP MASTER FEEDBACK
 69 MULTITAP NUMBER
 6A 1ST DIGIT NAME
 6B 2ND DIGIT NAME
 6C 3RD DIGIT NAME
 6D 4TH DIGIT NAME
 6E 5TH DIGIT NAME
 6F 6TH DIGIT NAME
 70 7TH DIGIT NAME
 71 8TH DIGIT NAME
 72 9TH DIGIT NAME
 73 10TH DIGIT NAME
 74 11TH DIGIT NAME
 75 12TH DIGIT NAME
 76 13TH DIGIT NAME
 77 14TH DIGIT NAME
 78 RING MOD OUTPUT MIX / RES** 2 AMP
 79 RING MOD DEL/REV MIX / RES** 3 AMP
 7A PAN SPEED
 7B PAN DEPTH
 7C EQ-MODE (7)/COMPRESSION (4-6) / DISTORTION (30)
 7D MIX MODULATION (6-7) / EFFECT LOOP (5) / BASS BOOST (4) / AM
 TONE (3-2) / CAB (1-0)
 7E OVERDRIVE (7-5) / NOISE GATE (4-0)
 7F PREAMP OUTPUT LEVEL

RES* = Resonator parameters in QUAD and 3 BAND EQ-REVERB modes
 RES** = Resonator parameters in 5 BAND EQ-PITCH-DELAY mode
 RES*** = Resonator parameters in RESONATOR-DELAY-REVERB mode

4.0 GT Service Parts List

| GROUP | DESCRIPTION | PART # | QTY | POSITION | PCB | MANUFACTURER | NOTES |
|-------|-------------------------|-----------|-----|---|------|--------------|------------|
| ASS | PCB, GT MAIN ASSY | 8-20-0024 | 1 | MAIN BOARD ASSEMBLY | | | |
| ASS | PCB, GT LED ASSY | 8-20-0025 | 1 | FRONT PANEL (LED) BOARD ASSEMBLY | | | |
| CAB | 14 PIN DIL 14IN (3 CON) | 4-18-1414 | 1 | (3RD CONN 90mm FROM END) | | | |
| CAB | 12 PIN SIL 03IN | 4-19-0312 | 2 | FRONT PANEL - J16,18 | | | |
| CAB | 06 PIN SIL 06IN | 4-19-0606 | 1 | LED PCB - J6 | | | |
| CAB | 12 PIN SIL CUSTOM 3/6IN | 4-19-0612 | 1 | POT PCB - J1,J5 | | | |
| CAP | 0.47 MF ELEC 50V | 1-07-1474 | 1 | C28 | MAIN | | |
| CAP | 10 MF ELEC 25V | 1-09-0100 | 6 | C1,2,29,32,44,45 | MAIN | | |
| CAP | 1.0 MF ELEC 25V | 1-09-0105 | 2 | C13,27 | MAIN | | |
| CAP | 4.7 MF ELEC 25V | 1-09-0475 | 22 | C3,4,8,11,21,30,31,36,37,40,47,53-57,64, 65,115,116,122,123 | MAIN | | |
| CAP | 470 MF ELEC 25V | 1-09-0477 | 4 | C111-114 | MAIN | | |
| CAP | 1000 MF ELEC 25V | 1-09-1000 | 4 | C118-121 | MAIN | | |
| CER | 100 PF CERDISC | 1-02-0101 | 2 | C43,46 | MAIN | | |
| CER | 0.01 MF CERDISC | 1-02-0103 | 1 | C62 | MAIN | | |
| CER | 0.1 MF CERDISC | 1-02-0104 | 30 | C18,19,25,26,39,42,52,61,63,66-72,74-77, 87,96,100-102,104,105,109,110,117 | MAIN | | |
| CER | 150 PF CERDISC | 1-02-0151 | 2 | C103,106 | MAIN | | |
| CER | 180 PF CERDISC | 1-02-0181 | 8 | C88-95 | MAIN | | |
| CER | 20 PF CERDISC | 1-02-0200 | 5 | C12,38,97-99 | MAIN | | |
| CER | 2200 PF CERDISC | 1-02-0222 | 3 | C7,20,33 | MAIN | | |
| CER | 43 PF CERDISC | 1-02-0430 | 8 | C78-85 | MAIN | | |
| FIL | 1000 PF FILM | 1-20-0102 | 1 | C58 | MAIN | WIMA | |
| FIL | 0.01 MF FILM | 1-20-0103 | 10 | C5,6,9,10,22,23,34,35,48,51 | MAIN | WIMA | |
| FIL | 0.1 MF FILM | 1-20-0104 | 3 | C73,107,108 | MAIN | WIMA | |
| FIL | 2200 PF FILM | 1-20-0222 | 2 | C59,60 | MAIN | WIMA | |
| FIL | 0.022 MF FILM | 1-20-0223 | 1 | C86 | MAIN | WIMA | |
| FIL | 2700 PF FILM | 1-20-0272 | 2 | C15,16 | MAIN | WIMA | |
| FIL | 330 PF FILM | 1-20-0331 | 1 | C41 | MAIN | WIMA | |
| FIL | 3300 PF FILM | 1-20-0332 | 2 | C49,50 | MAIN | WIMA | |
| FIL | 0.033 MF FILM | 1-20-0333 | 1 | C24 | MAIN | WIMA | |
| FIL | 5600 PF FILM | 1-20-0562 | 2 | C14,17 | MAIN | WIMA | |
| HDR | 14 PIN DIL 0.1 SPC | 4-14-0014 | 2 | J4,17 | | PT/MN | |
| HDR | 06 PIN SIL 0.1 SPC | 4-15-0006 | 1 | LED PCB | | PT/MN | |
| HDR | 06 PIN SIL SHROUDED | 4-15-0007 | 2 | J1,J5 | MAIN | | 0.1 SHROUD |
| HDR | 12 PIN SIL SHROUDED | 4-15-0012 | 4 | J16,J18,F/P PCB (2) | | KP/MN | 0.1 SHROUD |
| HDR | 12 PIN SIL RA SHROUDED | 4-15-0013 | 1 | POT PCB | POT | | 0.1 SHROUD |
| HDR | 06 PIN SIL RA 0.1 SPC | 4-15-1006 | 1 | J6 | MAIN | | |
| HDW | 6-32x1/4 PP BLK UNC | 5-00-0003 | 18 | TOP (7), BOT (7), R/PANEL (4) | | | |
| HDW | 6-32x1/4 PF BLK UNC | 5-00-0004 | 4 | FRONT PANEL | | | |
| HDW | BEZEL SCREW | 5-00-0012 | 4 | W/BEZEL (4 PER) | | | |
| HDW | 6-32x1/4 PP ZNC UNC | 5-00-0016 | 13 | TOP PCB (7), BOT PCB (6) | | | |
| HDW | #6 INT STAR WASHER | 5-01-0002 | 3 | HEATSINK STANDOFFS | | | |
| HDW | NYLON SPACER 0.095 | 5-01-0007 | 6 | FRONT PCB (4), LED PCB (2) | | | |
| HDW | 7/16 STAR WASHER | 5-01-0008 | 7 | IN (2), OUT (2), ADV, BYP, SND | | | |
| GROUP | DESCRIPTION | PART # | QTY | POSITION | PCB | MANUFACTURER | NOTES |

| | | | | | | | |
|--------------|-----------------------|---------------|------------|---------------------------------|------------|-----------------------|----------------|
| HDW | NYLON WASHER 0.050 | 5-01-0050 | 1 | 3RD STANDOFF ON SINK | | | |
| HDW | 6-32x1/2 STANDOFF | 5-02-0003 | 4 | HEATSINK (3), FRONT PANEL | | | |
| HDW | 6-32x1 STANDOFF | 5-02-0004 | 2 | INDENTED PCB | | | |
| HDW | 6-32 KEP NUT | 5-02-6320 | 11 | PCB, LED PCB (4), FRONT PCB (6) | | | |
| HDW | ANGLE BRACKET F/P | 5-07-0001 | 3 | | MAIN | | |
| HDW | HEAT SINK | 9-03-1022 | 1 | | | | |
| HDW | SOLDER LUG (PCB MNT) | 9-03-1036 | 7 | CLIFF JACKS EXCEPT "RECEIVE" | | | |
| HDW | SWITCH BOOT | 9-11-1013 | 1 | | | | |
| HDW | CABLE BRACKET | 9-13-1012 | 1 | | | | |
| HDW | RUBBER STRIP 5 IN | 9-23-1006 | 2 | LCD TOP/BOT | | | |
| IC | 2N5460 JFET TRANS | 2-05-5460 | 1 | Q1 | MAIN | MOT | |
| IC | 7805 +5 V TO220 | 2-11-7805 | 1 | U42 | MAIN | NAT ONLY | |
| IC | 7812 +12 V TO220 | 2-11-7812 | 1 | U40 | MAIN | NAT ONLY | |
| IC | 7912 -12 V TO220 | 2-11-7912 | 1 | U41 | MAIN | NAT ONLY | |
| IC | 74HC138 DEMUX | 2-14-0138 | 1 | U35 | MAIN | TI/NAT | |
| IC | 74HC573 3-STATE LATCH | 2-14-0573 | 1 | U31 | MAIN | TI/NAT | |
| IC | 74HC574 OCTAL FF | 2-14-0574 | 5 | U10,11,36-38 | MAIN | TI/NAT | |
| IC | 74HC00 QUAD 2-IN NAND | 2-14-7400 | 1 | U43 | MAIN | TI/NAT | |
| IC | 74HCU04 HEX INVERTER | 2-14-7403 | 1 | U34 | MAIN | TI/NAT | |
| IC | 74HC74 DUAL D FF | 2-14-7474 | 1 | U33 | MAIN | TI/NAT | |
| IC | 64Kx4 DRAM 100nS | 2-16-4464 | 5 | U22,23,24,25,26 | MAIN | TI/SAM/FUJI/NEC/HYUND | |
| IC | 32Kx8 SRAM 120nS | 2-17-0257 | 1 | U29 | MAIN | SONY | CXK58257AP-12L |
| IC | 27C512 EPROM 200nS | 2-19-0512 | 1 | U30 (VER 1.00) | MAIN | TI/NAT/SIG | |
| IC | 80C31 MPU | 2-20-8031 | 1 | U32 | MAIN | INTEL/SIG | |
| IC | TLO84 QUAD OP AMP | 2-21-0084 | 9 | U1,2,6,7,13,15,16,18,39 | MAIN | TI | |
| IC | SSM2120 DUAL VCA | 2-21-2120 | 1 | U4 | MAIN | SSM | |
| IC | CEM3381 VCA | 2-21-3381 | 1 | U12 | MAIN | CURTISS | |
| IC | LM311 ANALOG COMP | 2-22-0311 | 1 | U21 | MAIN | NAT/TI | |
| IC | LM339 QUAD COMP | 2-22-0339 | 1 | U17 | MAIN | NAT/TI | |
| IC | 4051 ANALOG SWITCH | 2-23-4051 | 2 | U8,14 | MAIN | ST/HARRIS/RCA/SIG | |
| IC | 4053 ANALOG SWITCH | 2-23-4053 | 4 | U3,5,9,19 | MAIN | ST/HARRIS/RCA/SIG | |
| IC | 6N138 OPTO-ISO | 2-24-0138 | 1 | U28 | MAIN | HP | |
| IC | PCM54 DAC | 2-25-0054 | 1 | U20 | MAIN | BURR-BROWN | |
| IC | ZAK 24 ASIC | 2-27-0005 | 1 | U22 | MAIN | AMI | |
| IC | 20K LOW PASS FILTER | 7-20-0001 | 1 | | MAIN | | |
| JAC | 5 PIN DIN JACK | 4-00-0001 | 2 | J11,12 | MAIN | | |
| JAC | 4 PIN DIN JACK (P4) | 4-00-0004 | 1 | J15 | MAIN | | |
| JAC | 1/4 CLIFF (MONO) | 4-02-0001 | 8 | J2,3,7-10,13,14 | MAIN | | |
| LCD | LCD MODULE | 9-44-1111 | 1 | FRONT PANEL | | | |
| ME | 1N4148 SIGNAL DIODE | 2-00-4148 | 22 | D1-19,25-27 | MAIN | MOT | |
| ME | 1N4003 POWER DIODE | 2-01-4003 | 5 | Q20-24 | MAIN | MOT | |
| ME | 1N5231B ZENER | 2-02-5231 | 1 | Q28 | MAIN | MOT ONLY | |
| ME | 2N4401 NPN TRANS | 2-03-4401 | 6 | Q2-7 | MAIN | MOT/NAT/HARRIS | |
| ME | LED (GRN) T1 | 3-00-0001 | 3 | POT PCB | POT | | |
| ME | LED (RED) T1 | 3-02-0001 | 13 | POT PCB, KEY PCB | PT,KY | | |
| ME | DPDT SWITCH (ALPHA) | 6-02-0001 | 1 | S1 | MAIN | | |
| ME | PIEZO | 7-00-0001 | 1 | | KEY | | |
| GROUP | DESCRIPTION | PART # | QTY | POSITION | PCB | MANUFACTURER | NOTES |
| ME | 24 MHz XTAL | 7-01-0006 | 1 | Z1 | MAIN | | |
| ME | LITHIUM BAT (PANA 3V) | 7-05-0003 | 1 | B1 | MAIN | PANASONIC | |

| | | | | | | | |
|--------------|-----------------------|---------------|------------|---|------------|---------------------|--------------|
| MTL | SIDE PANEL | 9-03-1003 | 2 | | | | |
| MTL | COVER PANEL | 9-03-1005 | 2 | | | | |
| MTL | FRONT PANEL, GT | 9-03-1061 | 1 | | | | |
| MTL | REAR PANEL | 9-03-1062 | 1 | | | | |
| PCB | PCB, QV KEYPAD | 9-40-1020 | 1 | REV B | | | |
| PCB | PCB, MAIN PANEL REV A | 9-40-1053 | 1 | REV A | | | |
| PCB | PCB, LED | 9-40-1064 | 1 | REV A (PART OF 9-40-1053) | | | |
| PCB | PCB, POT | 9-40-1065 | 1 | REV A (PART OF 9-40-1053) | | | |
| PLS | STANDARD KNOB | 9-11-1001 | 2 | | | | |
| PLS | LCD BEZEL (REV B) | 9-11-1015 | 1 | | | | |
| PLS | POWER BUTTON | 9-11-1016 | 1 | | | | |
| PLS | LED BUTTON | 9-11-1017 | 12 | | | | |
| PLS | PLAIN BUTTON | 9-11-1018 | 4 | | | | |
| PLS | SWITCH XTENDER | 9-11-1019 | 1 | | | | |
| POT | 10KA DUAL POT | 0-09-1001 | 1 | | | POT | |
| POT | 10KB DUAL POT | 0-09-1004 | 1 | | | POT | |
| RES | 100 1/8W 5% | 0-00-0101 | 4 | 81,82,84,119 | | MAIN | |
| RES | 1K 1/8W 5% | 0-00-0102 | 19 | R2,4-6,17,37,69,74,78,85,90,120,123,139, 173,180,212,214,215 | | MAIN | |
| RES | 10K 1/8W 5% | 0-00-0103 | 23 | R9,33,40,44,47,48,51,52,57-59,97-99,102, 122,159,187,199,205,207,208,211 | | MAIN | |
| RES | 100K 1/8W 5% | 0-00-0104 | 2 | R194,195 | | MAIN | |
| RES | 1M 1/8W 5% | 0-00-0105 | 3 | R71,100,176 | | MAIN | |
| RES | 1.1K 1/8W 5% | 0-00-0112 | 4 | R132-135 | | MAIN | |
| RES | 11K 1/8W 5% | 0-00-0113 | 2 | R23,29 | | MAIN | |
| RES | 1.2K 1/8W 5% | 0-00-0122 | 1 | R107 | | MAIN | |
| RES | 12K 1/8W 5% | 0-00-0123 | 3 | R27,30,193 | | MAIN | |
| RES | 120K 1/8W 5% | 0-00-0124 | 1 | R104 | | MAIN | |
| RES | 1.3K 1/8W 5% | 0-00-0132 | 1 | R86 | | MAIN | |
| RES | 13K 1/8W 5% | 0-00-0133 | 2 | R116,40A | | MAIN | |
| RES | 1.5K 1/8W 5% | 0-00-0152 | 2 | R14,190 | | MAIN | |
| RES | 15K 1/8W 5% | 0-00-0153 | 3 | R19,31,105 | | MAIN | |
| RES | 1.6K 1/8W 5% | 0-00-0162 | 1 | R113 | | MAIN | |
| RES | 1.8K 1/8W 5% | 0-00-0182 | 8 | R163-170 | | MAIN | |
| RES | 180K 1/8W 5% | 0-00-0184 | 1 | R148 | | MAIN | |
| RES | 200 1/8W 5% | 0-00-0201 | 3 | R67,68,83 | | MAIN | |
| RES | 2K 1/8W 5% | 0-00-0202 | 7 | R8,112,126,130,147,184,185 | | MAIN | |
| RES | 20K 1/8W 5% | 0-00-0203 | 15 | R34,35,42,45,50,63,101,124,127,128,131,144, ,179,189,200 | | MAIN | |
| RES | 220 1/8W 5% | 0-00-0221 | 10 | R156,157,160,161,174,177,196,201-203 | | MAIN | |
| RES | 2.2K 1/8W 5% | 0-00-0222 | 2 | R16,56 | | MAIN | |
| RES | 220K 1/8W 5% | 0-00-0224 | 3 | R11,20,75 | | MAIN | |
| RES | 2.2M 1/8W 5% | 0-00-0225 | 1 | R155 | | MAIN | |
| RES | 27K 1/8W 5% | 0-00-0273 | 1 | R114 | | MAIN | |
| RES | 300 1/8W 5% | 0-00-0301 | 1 | R108 | | MAIN | |
| RES | 3K 1/8W 5% | 0-00-0302 | 1 | R191 | | MAIN | |
| GROUP | DESCRIPTION | PART # | QTY | POSITION | PCB | MANUFACTURER | NOTES |
| RES | 30K 1/8W 5% | 0-00-0303 | 6 | R43,46,53,70,72,103 | MAIN | | |
| RES | 300K 1/8W 5% | 0-00-0304 | 1 | R54 | MAIN | | |
| RES | 3.3K 1/8W 5% | 0-00-0332 | 5 | R32,94,110,162,182 | MAIN | | |

| | | | | | | |
|-----|--------------------|-----------|----|--|------|--|
| RES | 330K 1/8W 5% | 0-00-0334 | 1 | R145 | MAIN | |
| RES | 36K 1/8W 5% | 0-00-0363 | 3 | R13,22,39 | MAIN | |
| RES | 3.9K 1/8W 5% | 0-00-0392 | 3 | R18,25,93 | MAIN | |
| RES | 39K 1/8W 5% | 0-00-0393 | 3 | R55,64,197 | MAIN | |
| RES | 390K 1/8W 5% | 0-00-0394 | 2 | R41,149 | MAIN | |
| RES | 47 1/8W 5% | 0-00-0470 | 3 | R65,76,106 | MAIN | |
| RES | 470 1/8W 5% | 0-00-0471 | 8 | R7,10,151,152,153,158,175,178 | MAIN | |
| RES | 4.7K 1/8W 5% | 0-00-0472 | 11 | R38,92,125,129,141,181,183,186,188, 210,213 | MAIN | |
| RES | 47K 1/8W 5% | 0-00-0473 | 3 | R36,62,118 | MAIN | |
| RES | 470K 1/8W 5% | 0-00-0474 | 3 | R1,3,73 | MAIN | |
| RES | 51K 1/8W 5% | 0-00-0513 | 2 | R137,140 | MAIN | |
| RES | 510K 1/8W 5% | 0-00-0514 | 2 | R136,209 | MAIN | |
| RES | 560 1/8W 5% | 0-00-0561 | 2 | R171,172 | MAIN | |
| RES | 5.6K 1/8W 5% | 0-00-0562 | 2 | R87,143 | MAIN | |
| RES | 56K 1/8W 5% | 0-00-0563 | 3 | R79,80,91 | MAIN | |
| RES | 620 1/8W 5% | 0-00-0621 | 1 | R109 | MAIN | |
| RES | 6.2K 1/8W 5% | 0-00-0623 | 1 | R192 | MAIN | |
| RES | 680 1/8W 5% | 0-00-0681 | 1 | R121 | MAIN | |
| RES | 6.8K 1/8W 5% | 0-00-0682 | 6 | R12,49,60,95,115,206 | MAIN | |
| RES | 750 1/8W 5% | 0-00-0751 | 3 | R61,66,154 | MAIN | |
| RES | 7.5K 1/8W 5% | 0-00-0752 | 3 | R15,24,88 | MAIN | |
| RES | 75K 1/8W 5% | 0-00-0753 | 2 | R21,142 | MAIN | |
| RES | 750K 1/8W 5% | 0-00-0754 | 1 | R150 | MAIN | |
| RES | 8.2K 1/8W 5% | 0-00-0822 | 3 | R111,138,198 | MAIN | |
| RES | 82K 1/8W 5% | 0-00-0823 | 1 | R204 | MAIN | |
| RES | 910 1/8W 5% | 0-00-0911 | 1 | R96 | MAIN | |
| RES | 9.1K 1/8W 5% | 0-00-0912 | 4 | R26,28,77,89 | MAIN | |
| RES | 91K 1/8W 5% | 0-00-0913 | 1 | R146 | MAIN | |
| RUB | KEYPAD | 9-23-1005 | 1 | | | |
| SOC | 18 PIN DIP 0.3 | 4-04-0018 | 5 | U22-26 | MAIN | |
| SOC | 22 PIN DIP 0.3 | 4-04-0022 | 1 | U4 | MAIN | |
| SOC | 28 PIN DIP 0.6 | 4-06-0028 | 3 | U20,29,30 | MAIN | |
| SOC | 40 PIN DIP 0.6 | 4-06-0040 | 1 | U32 | MAIN | |
| SOC | 84 PIN ASIC SOCKET | 4-12-0084 | 1 | U22 | MAIN | |

Service Manual History

| | | |
|----------|-------|----------------|
| 10/17/95 | V1.00 | First release. |
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