to bypass unit, send control patch 127

MULTIVERB LTX
REFERENCE MANUAL

TABLE of CONTENTS

INTRODUCTION

Thank you and congratulations on your new ART purchase. The MULTIVERB LTX is one of the many dazzling results from ART's digital technology. Offering a level of processing resolution and the sound quality of processors that can cost thousands of dollars, the LTX boasts 16 bit architecture and one of the simplest user interfaces available today.

FEATURES:

* 250 Studio effect presets
* Up to three studio effects combinations per preset
* Stereo inputs and outputs
* Power supply contained in unit
* One touch control...no programming necessary
* Remappable MIDI program table
* Remote footswitch jack
* Plate, Room, and Hall reverb
* Forward and Reverse Gated reverb
* Stereo Chorus and Flanging
* Stereo Delays and Imaging
* Slapback and Tapped Delay
* Stereo Echoes
* Designed and manufactured in the United States of America

The MULTIVERB LTX has the capability of providing you with over 250 of the finest studio multiple effects combinations. With the power to process up to three simultaneous effects at once, you may choose rich combinations of Chorus, Delay, Reverb, Flanging, Tapped Delays, Gated Reverbs, Reverse Reverb, Panning, and much more. ART designed a combination of powerful processing and ease of use into the MULTIVERB LTX. We strongly suggest you read and refer to this manual while getting used to your new processor.

Record for your reference:

DATE OF PURCHASE_____

PURCHASED FROM_____

SERIAL NUMBER 42/F-001956

SOFTWARE VERSION_____

421-5004-100

GETTING STARTED

We have included this section for those of you who can't wait to experience the sounds of your new Multiverb LTX. Follow the hookup directions for the setup you use and then start playing. After the initial thrill wears off (if that's possible!), and you want to get to know your Multiverb LTX better, refer to the rest of this manual for details, hints, and examples. Till later.....

> Additional application information can be found in Appendix A.
>
> MIDI programming examples can be found in Appendix B.
>
> Hookup diagrams can be found on page 13.

For all hookup combinations center the slider control. Most all presets were configured with the slider centered providing a fifty/fifty mix.

INSTRUMENT & GUITAR AMP
Set the internal jumpers of the LTX to the instrument position.

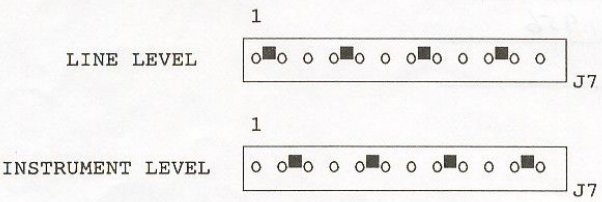
Plug your instrument into the Left Input jack located on the rear panel. Connect a cable from your amp input to the Line Out Left Main Output jack. Turn the Multiverb LTX on first and then turn on your guitar amp. TURN DOWN THE LEVEL OF YOUR AMP before you play! Adjust your amplifier levels accordingly.

INSTRUMENT & LTX in the EFFECTS LOOP of an AMP
Set the internal jumpers of the LTX to the line position.

Plug your instrument into your amp as normal. Connect a cable from the LTX's Left Input to the amplifiers effect send. Now connect another cable from the effects return of your amp to the Left Output of the LTX. Turn the LTX on first then turn on your power amp. Adjust your playing level while the effects loop is out of the chain. Engage the effects loop and set the input level to the LTX with the effect send control of the amp so the signal LED is lit all the time (with signal present of course).

SETTING the INTERNAL INSTRUMENT/LINE LEVEL

Position the jumpers as shown below for the operating level of the LTX
The Multiverb LTX is shipped from the factory in the "LINE" Level position.



INSTALLATION

The Multiverb LTX may be used in a variety of setups including: mixing consoles with reverb send and return facilities, and in the effects loop of an amplifier. Self contained in an all steel single high 19" rack mount case, the Multiverb LTX is designed for continuous professional use. For touring rack applications, care should be taken to support the units rear if the rack might be subjected to mechanical shock such as dropping. NOTE: The front panel may bend if no rear support is provided. Mounting location is not critical, but for greater reliability we recommend that you not place the unit on top of power amps, tube equipment, or other sources of heat.

POWER

This device is AC powered via a standard 3 conductor grounded power cable. Plug into any standard AC receptacle. We recommend the use of a surge protector to decrease the chance of equipment damage due to voltage surges or spikes on the line. For your own safety as well as the safety of others, do not remove the ground pin of the cable. Refer to the rear panel or the specifications for proper operating voltages.

CONNECTIONS

All audio connections to the Multiverb LTX are made at the rear of the unit via professional 1/4" phone jacks. The MIDI connection is accomplished via a five pin "DIN" jack on the rear panel.

INPUT

The Left and Right inputs are single ended (unbalanced) with an impedance of 47K ohms. True stereo processing is accomplished by using both inputs in a left/right application. If only one input is used, the signal is automatically routed to both channels.

OUTPUT

The Left and Right outputs are single ended (unbalanced) with a source impedance of 1.5K ohms, and can provide a stereo or mono output. When a true stereo signal is applied to the inputs, the resulting output is true stereo (dry signal only). If both outputs are used with a mono input signal, a stereo image is produced. Using one output with a mono or stereo source provides a mono signal combining the reverberant information from both outputs. If you do not want both output signals combined (such as only one delay time required), plug a dummy plug into the unused output.

NOTE: The effect output is a processed combination of both the left and right input signals (the inputs are summed).

A variety of input/output combinations may be used with the Multiverb LTX. One in one out (mono), one in two out (stereo image), two in one out (summed mono), and two in two out (true stereo) may be achieved. NOTE: When using the Multiverb LTX in the true stereo mode, only the dry signal will remain totally left and right orientated at the outputs. The processed signal will be a mix of the inputs with its own individual stereo image imposed by the algorithm used. This imitates the occurrence of natural reverberation in a normal room.

MIDI IN

This jack receives the MIDI signal containing the MIDI program change messages. It enables you to "talk" to the Multiverb LTX from an external source such as an X-11, a computer equipped with MIDI ports and associated software or a sequencer.

REMOTE JACK

The Remote jack may be programmed to either bypass the Multiverb LTX or access the Increment Preset Mode. A footswitch and any two conductor cable is intended to be used with this jack. A momentary (normally open) switch should be used. If the jack is programmed for the bypass feature, each time the footswitch is activated, (hot connected to ground) the Bypass function is accessed. The default setting for the Remote Jack is Bypass Mode.

This jack may also be programmed to increment up through a user selected set of presets. The maximum number of presets you may select for this function is one hundred twenty-eight.

Example four and five show how to program the REMOTE jack for BYPASS or INCREMENT PRESET.

CONTROLS AND OPERATION

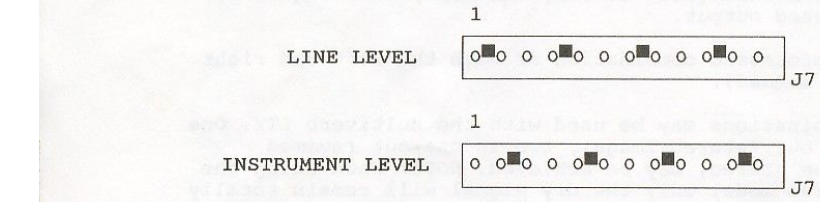
OPERATING LEVEL

The operating level of the Multiverb LTX may be set internally to accept either LINE or INSTRUMENT levels. **The Multiverb LTX is shipped from the factory set to the LINE position.** Changing the operating level is easy, four user-changeable jumpers set the operating level.

When using mixing boards, tape decks, or high output level musical instruments such as keyboards or active electronic guitars, make sure the jumpers are set for Line level. Line level is approximately (-)10dBV. For normal guitars or other low output devices, the jumpers should be in the Instrument positions (INST). This position provides for operating levels of less than (-)10dBV. The proper setting of the jumpers will assure you of the best signal to noise ratio and performance for your particular application.

Changing the operating level

To change the operating level, first remove the top (lid) of the Multiverb LTX (remove the two screws from each side of the unit). With the front panel facing you, locate the LINE/INSTRUMENT header section (J7). (Look towards the rear right of the circuit board near the input jacks, between U1 and U71). Move all the jumpers over one position (either left or right) to change to a different operating level. All of the pins should be "capped" the same by the jumpers. Replace the top cover.



NOTES:
1) It is not recommended to plug a microphone directly into the input of the Multiverb LTX. A microphone preamp should be used between the microphone and Multiverb LTX to provide optimum input signal level.
2) If the LTX seems to be noisy, make sure it is set up for the proper operating level.

TELLTALES

SEVEN SEGMENT DISPLAY

The Seven Segment Display keeps you constantly informed of your Preset or MIDI program number. Preset numbers are displayed from 01 to 99 and then, for presets over 99 a letter and number (Y0). Refer to the preset list at rear of this manual for preset "numbers". Bypass is indicated by two horizontal bars.

INPUT LEVEL INDICATORS

Front panel LED indicators show the status of the input signal level as it enters the digital processor. The Signal LED indicates the presence of audio signal. If the CLIP LED is lit, it indicates you are clipping the digital processor. For maximum dynamic range the Signal LED should be on most of the time with the CLIP LED briefly flashing on transients only.

CONTROL BUTTONS

PRESET ▲ ▼

The Up and Down buttons (▲, ▼), shown as purple triangles facing up and down on the front panel are used to select the Presets. Holding either button in will step you through all the Presets at a moderate rate. You can step at a much quicker rate by first pressing and holding in the button indicating the direction you want to go, simultaneously press the other button. As long as both are pressed the presets will increment by tens rather than one at a time.

BYPASS

Pressing the BYPASS button kills the effects signal in the mix. The display will show [- -] in the preset window. Pressing BYPASS again returns the preset to active status.

NOTE: If the mix control is fully right (effect only), there will be no audio signal at the output when the LTX is bypassed.

Another way to bypass the unit is to program the REMOTE jack on the rear panel for BYPASS mode and use any footswitch and guitar cable.

MIDI

Pressing the MIDI button allows you to change two things. One, the MIDI channel the LTX receives information on and two, access to the MIDI Program Table.

You can set the LTX to receive MIDI information on one of 16 or all channels. The default setting is to receive info on all 16 channels. This is known as Omni Mode and is displayed as [Al.] in the MIDI Display window. To change the channel, refer to the example in Appendix B.

Presets may be accessed at the front panel or remotely via MIDI. When the Multiverb LTX receives a MIDI PROGRAM number, it recalls a PRESET. If the Multiverb LTX was in BYPASS, it will become active. The PRESET recalled is determined by a table that equates MIDI PROGRAM numbers to PRESET numbers. This table is called the MIDI PROGRAM TABLE (MPT). Multiverb LTX's are shipped from the factory so that the MIDI PROGRAM numbers equal the PRESET numbers (MIDI program 0 = Preset 00). You can reassign any Preset number to any MIDI Program number. When you first power up your LTX, the first 128 presets are the default MIDI presets. You cannot access all the presets in the LTX at one time with MIDI. It's not our fault, MIDI only allows for a maximum number of 128 presets.

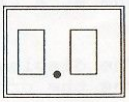
So, to access the presets above location 128, some simple programming of your Multiverb LTX is required. The ability to reassign Preset numbers makes it much more practical when using MIDI in both simple and complex setups. To change the MPT, read the next section and refer to the examples in Appendix B. We will refer to the MIDI PROGRAM number as the MIDI number. Any changes made to the MPT will be retained during power down by battery backup.

MPT EDIT MODE

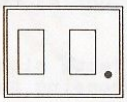
The MPT may be edited from the front panel either alone or with a keyboard or MIDI controller that sends MIDI program change numbers.

To enter MPT edit mode, momentarily press the MIDI and BYPASS buttons simultaneously (Pressing MIDI first then BYPASS will have no effect on the current BYPASS state, pressing BYPASS first toggles the current BYPASS state). Press MIDI and BYPASS again to stop editing the MPT and return to normal front panel operation.

When MPT edit mode is entered, the LEFT decimal point will be blinking indicating that the display is showing a MIDI number. If BYPASS is then pressed, the RIGHT decimal point will blink and the display will be showing a PRESET. If MIDI is pressed the left decimal point will blink again indicating the return to the MIDI number in the display. Use the UP/DOWN buttons to change the numbers in the display. When a MIDI number message is received, the corresponding PRESET number in the table will be recalled.



MIDI
NUMBER
ZERO



PRESET
NUMBER
ZERO

NOTES:
1) Multiple MIDI numbers may have the same PRESET number assigned to them.
2) When you pass [9.9] a letter and a number appear. [A.0] is equal to 100, [b.0] is equal to 110, [C.0] is equal to 120. [C.7] is the last "number" and is equal to 127.

MIX CONTROL

The MIX slider controls the amount of dry and processed signal mixed together. When the control is fully towards the left (0%), only the dry signal is heard at the output(s). As the slider is moved to the right, processed signal is mixed in. At the center detent position a fifty/fifty mix is achieved. When the slider is full right (100%), only processed signal is heard at the output(s).

MISCELLANEOUS

PRESETS

Up to three different effects may be found in each of the Multiverb LTX's presets. The presets reflect various combinations of effects as well as singular effects.

Presets are arranged in specific application groups to make it a little easier for you to find the right sound. These include reverb, chorusing, flanging and delay groups. Presets devoted to natural reverberation, cover a wide range from extremely short 0.2 second to 23 second decays. Predelay, high frequency damping, position, reverb density and reverb level are set for the most optimum sound in each preset.

Within each section of reverb are a variety of related effects, not just bigger or smaller versions of the same. Some of these effects would normally require multiple pieces of equipment to create.A variety of algorithms each with its own unique characteristics are used to simulate a wide range of environments. Within the other presets are Gated Reverb effects, Reverse Reverb effects, Gated effects with regenerated delays, Flanging effects, Panning, Chorus effects, straight Echo effects, Delay based effects such as chorusing and flanging are combined with reverb and delay to create special effects reverb sounds. A list of all the presets can be found in the back of this manual.

BATTERY BACKUP

When power is terminated to the Multiverb LTX, the edited MPT is retained via battery backed up memory. This as well as the last Preset used and the MIDI Channel will be active when the unit is next powered up. Memory retention is expected to last four years. If you encounter memory loss, contact our customer service department.

BYPASS PRESET

PRESET Y9 is a non-sound preset. It is used as a MIDI bypass preset. Use Y9 when you don't want any effect to be in the signal chain for a particular keyboard preset. The MIDI Program Number assigned to Y9 is (127) or [C.7] as it appears in the display.

SOFTWARE LEVEL

On power up, the Multiverb LTX momentarily indicates its operating software level in the display. The software controls the Multiverb LTX's functions as well as its sounds. V 1.00

USER REGISTRATION

Be sure to fill out the User Registration Card in this manual and send it in to our Customer Service Department. This will ensure you of being notified of information regarding the Multiverb LTX. Please don't forget to write in your serial number.

FACTORY RESET

Resetting the MPT

It is very unlikely you would want to reset the Multiverb LTX's MPT. Normally you should just re-edit the MPT for new values. Should you wish to set all the values back to their initial state, power down the unit. Hold in the Up/Down buttons (▲,▼) and while holding them in, power up the LTX.

Customer Service

You may contact ART's Customer Service Department between the hours of 9:00 AM and 4:00 PM Eastern Time Monday through Friday. The Customer Service Department will answer technical questions about ART products and provide information concerning service.

APPENDIX A

MISCELLANEOUS NOTES

The presets found in the Multiverb LTX cover a wide range of diversified reverb sounds and special effects. The following notes provide a starting point for you to use these presets to add that special if not essential sound to your own individual sound.

Though it is not mandatory it is strongly suggested you utilize the stereo capabilities of the Multiverb LTX. Many of the reverb patches and delay effects rely heavily on stereo image or right left characteristics to achieve the brilliance and realism found in today's and yesterday's sound!

The most important application of all is to EXPERIMENT! Remember, there are over 250 effect combinations at your fingertips. What may be used for normal desirable effects can also be applied to create entirely new and different sounds. Your own ideas and expressions may be realized with just a few pushes of a button. Go ahead, have some FUN!

The reverb presets come in a variety of ways, shapes and sounds. Emphasis is placed on different room types, image, position of the perceived sound and the brightness or dullness of the sound.

The presets reflect a range of reverb effects with different combinations of these characteristics. Don't be afraid to cycle through a number of presets with the mix control fully wet so you can hear the actual image position or character of the preset. Above all don't be afraid to experiment.

APPENDIX B

EXAMPLES

EXAMPLE 1:
Editing the MPT with the Multiverb LTX front panel controls.

In this example, we will edit the MPT so when MIDI numbers 0 and 1 are received, presets 64 and A1 will be recalled. It is assumed the Multiverb LTX's MPT has not been edited.

Press and hold the MIDI then BYPASS buttons, release both.

The display will show [0.0] with the decimal point blinking indicating that you are in MPT edit mode, this left decimal point means that the MIDI PROGRAM number is in the display.

*-Press and release BYPASS. The display shows [00.] indicating that MIDI number 0 recalls PRESET 0.
*-Press and hold UP until [64.] appears in the display. Now MIDI number 0 will recall PRESET 64.
*-Press and release MIDI. The display shows [0.0]
*-Press and release UP. The display shows [0.1]
*-Press and release BYPASS. The display shows [01.] indicating that MIDI number 1 recalls PRESET 2.1
*-Press and hold UP until [A1.] appears in the display. Now MIDI number 1 will recall PRESET A1.
*-Press MIDI and BYPASS to exit MPT edit mode. The display shows [A1] indicating the last PRESET referenced is the current PRESET selected.

During the above example, anytime a MIDI number is changed or PRESET number is changed, the Multiverb LTX recalls the corresponding PRESET. This allows you to listen to the PRESETs while the MPT is being edited.

EXAMPLE 2:
Editing the MPT with a keyboard or external controller.

When used with a keyboard or other device such as the ART X-11 or X-15 ULTRAFOOT capable of sending MIDI PROGRAM CHANGE messages, MPT editing is simplified. We will edit the MPT so when MIDI numbers 2 and 3, are received, presets 55 and Y4 will be recalled. It is assumed that the Multiverb LTX has not had its MPT edited.

The keyboard or MIDI controller MIDI OUT must be connected to the Multiverb LTX MIDI IN jack. The MIDI on the Multiverb LTX must be set to the same channel the keyboard will be sending messages on, or the Multiverb LTX MIDI must be set to [AL.] for OMNI mode.

Press and hold MIDI , then press BYPASS. The display will show [0.0] with the decimal point blinking indicating that you are in MPT edit mode, this left decimal point means that the MIDI PROGRAM number being displayed.

Select a patch on the keyboard so [0.2] appears in the display. This may not be sound 2 or patch 2 on the keyboard. Different companies number their presets in a variety of ways. The patch causing [0.2] to appear in the display is usually the first or second patch of the lowest numbered bank if the keyboard or controller has banks of patches.
*-Press and release BYPASS. The display shows [02.] to indicating MIDI number 2 recalls PRESET 2.
*-Press and hold UP until [55.] appears in the display. Now MIDI number 2 will recall PRESET 55.
-To program the rest of the entries, you do not need to switch back to the MIDI number. You can let the unit remain showing the PRESET number. (When you select your keyboard or foot controller preset, you automatically recall the existing Multiverb LTX preset.)
*-Select the next patch on the keyboard. The display will show [03.] to indicate that it recalls PRESET 4.
*-Press and hold the UP button until [Y4.] appears in the display. Now the last patch number activated will recall PRESET Y4.

By using this method of editing, you select the desired patch on the keyboard or controller, and then select the desired PRESET on the Multiverb LTX for that sound. You can do this while you are listening to the Multiverb LTX. Exit MPT mode as in the previous example.

In the previous examples four of the MPT entries were edited, however, you may edit the entire MPT if desired. If you do not have access to a MIDI controller and you wish to change between PRESETs easily, you may want to edit the MPT for incrementing through a sequence of PRESETs. Example three illustrates how this is done.

EXAMPLE 3
Setting up a preset sequence including the BYPASS (Y9) preset.

If you need to change between presets quickly without scanning, this procedure will be to your advantage. As in the other examples, editing the MPT is the key. In this example we will edit the MPT to sequence through ten PRESETS. These PRESETS are in the order: 26,J4,F2,69,E2,U2,69,Y9,82,26. Notice that we repeated some presets and included the BYPASS preset (Y9). Remember, you can assign any preset to a MIDI number including using a preset at multiple locations. Using the BYPASS preset enables you to select no effect without having to bypass the unit from the front panel and then continuing on with an effect preset next in the chain.

*-Enter the MPT edit mode.
*-With the left decimal point blinking, use the up/down buttons to get a display of [1.0].
*-Press the BYPASS button, the decimal point now blinks on the right side.
*-Use the up button to select PRESET 26. The display will be [26.].
*-Press the MIDI button and set the display for [1.1].
*-Press the BYPASS button and set the display for [J4.].
*-Continue this way until all the PRESETs are entered the last being 26.
*-DO NOT LEAVE THE MPT EDIT MODE
*-Press the MIDI button and go to [1.0]. As you increment up, you will recall the sequence of presets just entered.

This way of arranging presets is helpful when you have presets you need to get to quickly. Instead of scanning up and down through multitudes of presets, you need only scan through the ones you use the most. Make a table of the MIDI number and assigned Preset for quick reference since you can only view the MIDI program number.

NOTE: Start your sequence at MIDI program number ten or twenty. This will leave you room for programming presets for the Increment Preset feature.

EXAMPLE 4
Changing the MIDI channel

To select a specific MIDI channel, press the MIDI button and use the up/down buttons to select the desired channel. The right decimal point will be on whenever the display is showing MIDI. The channel number is held in memory when the unit is turned off.

INCREMENT PRESET

Increment Preset Mode (IP) allows you to program the REMOTE jack so you may use a footswitch to increment through a desired set of presets.

Example four describes how to set IP to sequence through five presets. A maximum of one hundred twenty-eight presets may be sequenced. You must always start at MIDI Program number one when using IP for sequencing. Example five shows how to program the REMOTE jack for normal bypass operation.

IP is accessed through the MIDI Program Table. To enter the MPT edit mode, press and hold the MIDI , then BYPASS buttons, release both. The display will show some number with the left decimal point blinking. Increment up (use the RAPID ACCESS mode!) until the display reads [1.P]. This indicates Increment Preset. You are now ready to program. Press the BYPASS button, the decimal point is now blinking on the right. Set this number for the last entry number desired. In this example we'll set the number to [04.] for the sequence of FIVE presets desired. If you set the number to [00.], you will have programmed the jack for use as a bypass jack. Now press the MIDI button and increment down to the desired MIDI Program Number.

Note, when you pass [9.9] a letter and a number appear. [A.0] is equal to 100, [b.0] is equal to 110, [C.0] is equal to 120. [C.7] is the last "number" and is equal to 127.

Program the sequence to be 64, A1, 55, Y4 and H1. If you have gone through Example 1, the first four presets have been set all ready. All you need to do is add the fifth preset.

After programming is completed press and hold the MIDI button then the BYPASS button to exit. Now, each time the footswitch is activated, you will change presets in the selected sequence. The sequence of presets will wrap-around to the beginning, at the end of the sequence.

EXAMPLE 5
Setting up five presets for Increment Preset Mode. Use preset numbers 64, A1, 55, 44 and H1.

*-Enter the MPT edit mode
*-With the left decimal point blinking, increment up (use RAPID ACCESS mode) until the display reads [1.P].
*-Press the BYPASS button
*-Adjust the display to read [04.].
*-Press the MIDI button
*-Increment down (use HYPERSPEED) until the display reads [0.0].
*-Press the BYPASS button and set the display to read [64.].
*-Press the MIDI button and set the display for [0.1].
*-Press the BYPASS button and set the display to read [A1.].
*-Continue this until you reach and program [0.4] to be [H1.].
*-Exit MPT edit mode
You have just programmed the Multiverb LTX to sequence through five PRESETS when the REMOTE jack is activated.

EXAMPLE 6
Programming the REMOTE jack for the BYPASS function.

*-Enter MPT edit mode.
*-Increment up until the display reads [1.P].
*-Press the BYPASS button.
*-Set the display to read [00.].
*-Exit MPT edit mode.
The FOOTSWITCH jack can now be used as an external BYPASS jack.

ART MULTIVERB LTX SPECIFICATIONS

Presets..... 250

Dynamic Range .....>85dB Typical

Equivalent Input Noise.....-107dBv

Operating Level.....0BV max

Input Impedance.....47K ohm

Output Impedance.....1.5K ohm

Mechanical.....1.75"H X 19"W X 10"D, all steel case

Power Requirements.....105-125 Volts AC, 60Hz, Internal Fuse
140ma @ 117VAC, 16.4W
(Export unit configured for destination country.)

MIDI Receive Channel.....1-16, OMNI (all), Off
MIDI Programs.....May be assigned to any Preset #
Connections.....Stereo In/Out 1/4" phone, MIDI IN

ART retains a policy of constant product improvement. Specifications are subject to change without notice.

Designed and manufactured in the United States of America.

Applied Research & Technology, Inc.
215 Tremont Street
Rochester, New York 14608 (716) 436-2720 (716) 436-3942 (FAX)

APPENDIX C
MIDI Implementation Chart

ART MULTIVERB LTX model 421 Date: February 1992
20 BIT MULTIPLE EFFECTS PROCESSOR. Version: 1.00

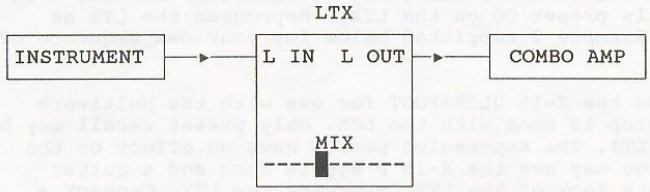
Function	Transmitted	Recognized	Remarks
Basic Default Channel Channel	X X	1-16 1-16	note 1
Default Mode Messages Altered	X X X	Mode 1 X X	note 1
Note Number True Voice	X X	X X	
Velocity Note ON Note OFF	X X	X X	
After Key's Touch Ch's	X X	X X	
Pitch Bender	X	X	
Control Change	X	X	
Prog Change True #	X X	0-127	assignable to any preset
System Exclusive	X	O	See: manual
System :Song Pos :Song Sel Common :tune	X X X	X X X	
System :Clock Real Time:Commands	X X	X X	
Aux :Local ON/OFF Mes- :All Notes Off sages:Active Sense :Reset	X X X X	X X X X	

Notes
1: Factory default is channel 1, OMNI ON. Current setting is maintained in non-volatile RAM and does not change when the MULTIVERB LTX is powered on.

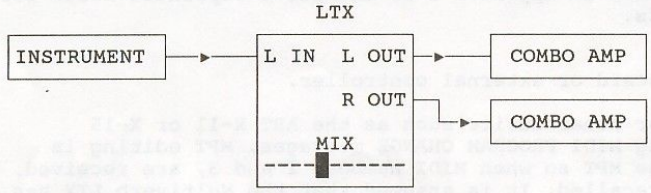
Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO O: Yes
Mode 3: OMNI OFF, POLY Mode 3: OMNI OFF, MONO X: No

APPENDIX D
HOOKUP DIAGRAMS

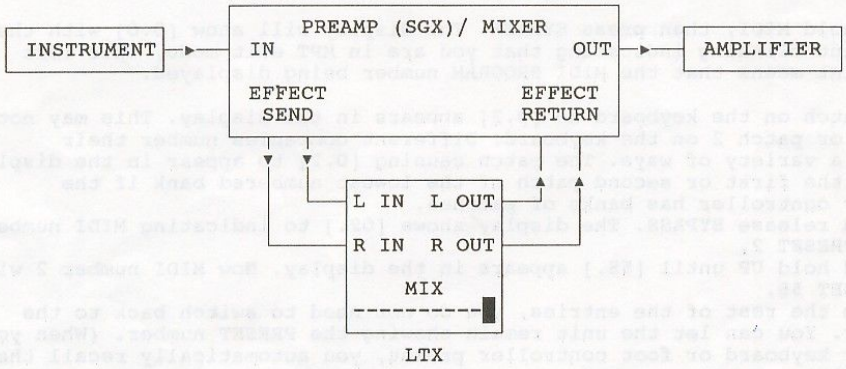
1) INSTRUMENT, MONO SYSTEM (MIX = 40%)
(make sure internal jumpers are installed for "instrument" level)



2) INSTRUMENT, STEREO IMAGE SYSTEM (MIX = 40%)
(make sure internal jumpers are installed for "instrument" level)



3) INSTRUMENT, EFFECT LOOP of PREAMP/MIXER (MIX = 100%)
(if mono, use left in and out, make sure internal jumpers are installed for "instrument" level)



APPENDIX E

USING THE Multiverb LTX WITH AN X-11 Foot Controller or X-15 ULTRAFOOT

Using the ART X-11 with the LTX is very simple. Connect a MIDI cable from the MIDI out of the X-11 to the MIDI in of the LTX. Select a preset on the X-11, the corresponding preset on the LTX will initially be one less than the X-11 (Preset 1 on the X-11 recalls preset 00 on the LTX). Reprogram the LTX as described in Appendix B or Example 2 reprinted below for your own sequence of presets.

You do not need to reprogram the X-15 ULTRAFOOT for use with the Multiverb LTX. All programming and setup is done with the LTX. **Only preset recall may be done with the X-15 and the LTX.** The Expression pedals have no effect on the preset effect parameters. You may use the X-15's Bypass Jack and a guitar cable hooked up to the Remote jack of the LTX to bypass the LTX. Connect a MIDI cable from the MIDI out of the X-11 to the MIDI in of the LTX. Select a preset on the X-15, the corresponding preset on the LTX will initially be one less than the X-15 (Preset 1 on the X-15 recalls preset 00 on the LTX). Reprogram the LTX as described in Appendix B or Example 2 reprinted below for your own sequence of presets.

EXAMPLE 2:
Editing the MPT with a keyboard or external controller.

When used with a keyboard or other device such as the ART X-11 or X-15 ULTRAFOOT capable of sending MIDI PROGRAM CHANGE messages, MPT editing is simplified. We will edit the MPT so when MIDI numbers 2 and 3, are received, presets 55 and Y4 will be recalled. It is assumed that the Multiverb LTX has not had its MPT edited.

The keyboard or MIDI controller MIDI OUT must be connected to the Multiverb LTX MIDI IN jack. The MIDI on the Multiverb LTX must be set to the same channel the keyboard will be sending messages on, or the Multiverb LTX MIDI must be set to [AL.] for OMNI mode.

Press and hold MIDI, then press BYPASS. The display will show [0.0] with the decimal point blinking indicating that you are in MPT edit mode, this left decimal point means that the MIDI PROGRAM number being displayed.

Select a patch on the keyboard so [0.2] appears in the display. This may not be sound 2 or patch 2 on the keyboard. Different companies number their presets in a variety of ways. The patch causing [0.2] to appear in the display is usually the first or second patch of the lowest numbered bank if the keyboard or controller has banks of patches.
*-Press and release BYPASS. The display shows [02.] to indicating MIDI number 2 recalls PRESET 2.
*-Press and hold UP until [55.] appears in the display. Now MIDI number 2 will recall PRESET 55.
-To program the rest of the entries, you do not need to switch back to the MIDI number. You can let the unit remain showing the PRESET number. (When you select your keyboard or foot controller preset, you automatically recall the existing Multiverb LTX preset.)
*-Select the next patch on the keyboard. The display will show [03.] to indicate that it recalls PRESET 4.
*-Press and hold the UP button until [Y4.] appears in the display. Now the last patch number activated will recall PRESET Y4.

WARRANTY & SERVICE INFORMATION

LIMITED WARRANTY

Warranty service for this unit will be provided by Applied Research & Technology, Inc. in accordance with the following warrant statement.

Applied Research & Technology, Inc. warrants to the original purchaser that this product and the components thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase. Applied Research & Technology, Inc. (ART) will, without charge, repair or replace, at its option, defective product or component parts upon prepaid delivery to the factory service department or authorized service center, accompanied by proof of purchase date in the form of a valid sales receipt.

EXCLUSIONS: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. This warranty is void if the serial number is altered, defaced, or removed.

ART reserves the right to make changes in design or make additions to or improvements upon this product without any obligation to install the same on products previously manufactured.

ART shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific rights and you may also have other rights which vary from state to state.

For units purchased outside The United States, service will be provided by an authorized distributor of Applied Research & Technology, Inc.

SERVICE

The following information is provided for the unlikely event your unit requires service.

1) Be sure the unit is the cause of the problem. Check to make sure the unit has power supplied, all cables are connected correctly and the cables themselves are in working condition.
2) If you find the unit to be at fault, write down a description of the problem including how and when the problem occurs.
3) Call the factory for a Return Authorization (RA) number.
4) Pack the unit in it's original carton or a reasonable substitute. The packing box is not recommended for a shipping carton. Put the packaged unit in another box for shipping. Print the RA number clearly under the address.
5) Include with your unit: a return shipping address (We cannot ship to a P.O. Box), a copy of your purchase receipt, a daytime phone number, and the description of the problem.
6) Ship the unit to:
   APPLIED RESEARCH & TECHNOLOGY, INC.
   215 TREMONT STREET
   ROCHESTER, NY 14608
   ATTN: REPAIR DEPARTMENT
   RA # _____
7) Contact our customer service department at (716) 436-2720 for your Return Authorization number or questions regarding repairs. Customer Service hours are 9:00 AM to 4:00 PM Eastern Time, Monday through Friday.

SGX LT PRESET LIST

TOP THIRTY PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION OF PRESET
00	(00)	regen delay 300ms & 600ms 9 repeats
01	(01)	slow flange with reverb
02	(02)	regen delay 250ms & 500 ms 7 repeats
03	(03)	close room, short decay
04	(04)	fast flange with reverb
05	(05)	moderate flange with reverb
06	(06)	fast ping-pong delay
07	(07)	fast chorus with reverb
08	(08)	inverted flanger with regen
09	(09)	short reverb room
10	(10)	reverse reverb
11	(11)	fast flange, short reverb
12	(12)	really big reverb space!
13	(13)	moderate flange with short reverb
14	(14)	medium flat gate
15	(15)	bright open room
16	(16)	small hall
17	(17)	well-rugged walls
18	(18)	doubler
19	(19)	predelayed flanger
20	(20)	mono flanger (inverted)
21	(21)	short two-tap delay with regen
22	(22)	bottom flanger with regen
23	(23)	thick slow chorus
24	(24)	clean slow chorus
25	(25)	long slow special flanger
26	(26)	medium chorus with reverb
27	(27)	flanger with low regen
28	(28)	lead guitar echo
29	(29)	full flanger

REVERB GROUP PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DECAY TIME	DAMPING (%)	PREDELAY (ms)
30	(30)	.2 sec	2	9
31	(31)	.3	5	13
32	(32)	.3	3	0
33	(33)	.5	3	0
34	(34)	.5	1	10
35	(35)	.6	4	15
36	(36)	.6	3	11
37	(37)	.7	4	0
38	(38)	.8	3	17
39	(39)	.8	1	27
40	(40)	.9	3	27
41	(41)	1.0	7	19
42	(42)	1.0	1	11
43	(43)	1.2	4	0
44	(44)	1.2	1	21
45	(45)	1.1	2	0
46	(46)	1.3	1	11
47	(47)	1.4	9	15
48	(48)	1.5	0	0
49	(49)	1.5	3	0
50	(50)	1.7	4	15
51	(51)	1.8	2	0
52	(52)	1.8	0	0
53	(53)	2.0	2	0
54	(54)	2.1	2	27
55	(55)	2.1	4	0
56	(56)	2.2	3	0
57	(57)	2.3	2	0
58	(58)	2.3	4	0
59	(59)	2.4	6	0
60	(60)	2.5	4	17

REVERB GROUP PROGRAMS con't

PROGRAM NUMBER	PRESET NUMBER	DECAY TIME	DAMPING (%)	PREDELAY (ms)
61	(61)	2.6	2	0
62	(62)	2.6	6	0
63	(63)	2.7	2	0
64	(64)	2.8	5	0
65	(65)	2.9	6	0
66	(66)	3.0	2	27
67	(67)	3.0	3	0
68	(68)	3.1	1	0
69	(69)	3.3	4	0
70	(70)	3.7	5	0
71	(71)	4.0	5	0
72	(72)	5.0	3	0
73	(73)	6.4	5	0
74	(74)	7.4	4	0
75	(75)	9.0	3	0
76	(76)	9.4	9	0
77	(77)	13.0	6	0
78	(78)	18.0	5	17
79	(79)	23.0	5	21

CHORUS and FLANGE with REVERB PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION	DECAY TIME	NOTES
80	(80)	medium chorus	0.6 sec	
81	(81)		1.0	
82	(82)		1.5	
83	(83)		2.5	
84	(84)		3.5	
85	(85)	medium FAST chorus	0.6	
86	(86)		1.0	
87	(87)		1.5	
88	(88)		2.5	
89	(89)		3.5	
90	(90)	tremolo chorus	0.6	
91	(91)		1.0	
92	(92)		1.5	
93	(93)		2.5	
94	(94)		3.5	
95	(95)	WIDE tremolo chorus	0.6	
96	(96)		1.0	
97	(97)		1.5	
98	(98)		2.5	
99	(99)		3.5	
100	(A0)	WIDE chorus	0.6	
101	(A1)		1.0	
102	(A2)		1.5	
103	(A3)		2.5	
104	(A4)		3.5	
105	(A5)	delayed chorus and reverb	1.0	med speed
106	(A6)		1.5	med speed
107	(A7)		1.0	fast, narrow
108	(A8)		2.5	fast, narrow
109	(A9)		2.5	slow, wide
110	(B0)	reverb + flange, fast	0.6	
111	(B1)		1.0	
112	(B2)		1.5	
113	(B3)		2.5	
114	(B4)		3.5	
115	(B5)	reverb + flange, medium fast	0.6	
116	(B6)		1.0	
117	(B7)		1.5	
118	(B8)		2.5	
119	(B9)		3.5	
120	(C0)	reverb + flange, medium	0.6	
121	(C1)		1.0	
122	(C2)		1.5	

CHORUS and FLANGE with REVERB PROGRAMS con't

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION	DECAY TIME	NOTES
123	(C3)		2.5	
124	(C4)		3.5	
125	(C5)	reverb + flange, medium slow	0.6	
126	(C6)		1.0	
127	(C7)		1.5	
128	(C8)		2.5	
129	(C9)		3.5	
130	(D0)	reverb + flange, slow	0.6	
131	(D1)		1.0	
132	(D2)		1.5	
133	(D3)		2.5	
134	(D4)		3.5	

GATED REVERB PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION	DECAY TIME	NOTES
135	(D5)	sloped decay	0.1	hf decay varies
136	(D6)		0.2	
137	(D7)		0.3	
138	(D8)		0.4	
139	(D9)		0.5	
140	(E0)		0.6	
141	(E1)		0.7	
142	(E2)	flat decay	0.1	hf decay varies
143	(E3)		0.2	
144	(E4)		0.3	
145	(E5)		0.4	
146	(E6)		0.5	
147	(E7)		0.6	
148	(E8)		0.7	
149	(E9)	reverse decay	0.1	hf decay varies
150	(F0)		0.2	
151	(F1)		0.3	
152	(F2)		0.4	
153	(F3)		0.5	
154	(F4)		0.6	
155	(F5)	reverse (W/SLAP)	0.1	hf decay varies
156	(F6)		0.2	
157	(F7)		0.3	
158	(F8)		0.4	
159	(F9)		0.5	
160	(G0)		0.6	
161	(G1)	slope w/regen ddl	0.2	
162	(G2)		0.3	
163	(G3)		0.4	
164	(G4)	flat w/regen ddl	0.2	
165	(G5)		0.3	
166	(G6)		0.4	
167	(G7)	reverse w/regen ddl	0.2	
168	(G8)		0.3	
169	(G9)		0.4	

CHORUS and FLANGE PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION
170	(H0)	inverted mono flange
171	(H1)	inverted mono flange no distortion
172	(H2)	longer width flanger
173	(H3)	mono flange with regen
174	(H4)	medium speed flanger
175	(H5)	slow speed flanger
176	(H6)	long, slow, flange with some regen
177	(H7)	long flange with regen
178	(H8)	medium speed
179	(H9)	stereo flanger slow
180	(J0)	stereo flanger slow

CHORUS and FLANGE PROGRAMS con't

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION
181	(J1)	medium speed
182	(J2)	fat flanger medium speed
183	(J3)	medium speed
184	(J4)	slow speed wider width
185	(J5)	stereo, wide width, slow sweep
186	(J6)	short base, wide sweep chorus
187	(J7)	short base, wider sweep
188	(J8)	stereo, wide sweep chorus
189	(J9)	stereo, faster sweep
190	(L0)	long base, wide sweep
191	(L1)	long base medium speed
192	(L2)	lush thick chorus #1
193	(L3)	lush thick chorus #2

TAPPED DELAY GROUP

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION
194	(L4)	3 tap delay, 80ms, 70ms, 90ms, short regen, damped
195	(L5)	3 tap delay, 100ms, 90ms, 110ms, short regen, damped
196	(L6)	3 tap delay, 160ms, 140ms, 180ms, medium regen, damped
197	(L7)	2 tap delay, 160ms, 80ms, short regen
198	(L8)	2 tap delay, 240ms, 120ms, short regen
199	(L9)	2 tap delay, 300ms, 150ms, medium regen
200	(n0)	2 tap delay, 400ms, 200ms, long regen
201	(n1)	2 tap delay, 500ms, 250ms, long regen (ping pong)
202	(n2)	2 tap delay, 600ms, 300ms, long regen (ping pong)

IMAGE PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION
203	(n3)	This one is neutral and sums to mono well.
204	(n4)	Wide left and right
205	(n5)	Stereo spread
206	(n6)	Center
207	(n7)	Left/right
208	(n8)	Wide left/right after-image
209	(n9)	Split left to right
210	(o0)	Bounce split after-image

SLAPBACK DELAY PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DELAY TIME LEFT/RIGHT
211	(o1)	20ms, 30ms
212	(o2)	40ms, 30ms
213	(o3)	40ms, 50ms
214	(o4)	70ms, 60ms
215	(o5)	80ms, 100ms
216	(o6)	120ms, 100ms
217	(o7)	120ms, 140ms
218	(o8)	160ms, 140ms
219	(o9)	160ms, 180ms
220	(P0)	220ms, 200ms

REVERB WITH LONG PREDELAY GROUP PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DECAY TIME	PREDELAY (ms)
221	(P1)	2.0 sec	75ms
222	(P2)	1.6	96
223	(P3)	1.6	150
224	(P4)	1.7	75

PREDELAYED FLANGE GROUP PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION
225	(P5)	short, moderate sweep
226	(P6)	medium, moderate sweep
227	(P7)	long, moderate sweep

THICK CHORUS GROUP PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION
228	(P8)	Thick
229	(P9)	Thickerer!

ECHO GROUP PROGRAMS

PROGRAM NUMBER	PRESET NUMBER	DELAY TIME (left/right)	REGEN (%)
230	(U0)	20ms, 60ms	50%
231	(U1)		25%
232	(U2)		0%
233	(U3)	60ms, 140ms	50%
234	(U4)		25%
235	(U5)		0%
236	(U6)	120ms, 220ms	50%
237	(U7)		25%
238	(U8)		0%
239	(U9)	170ms, 320ms	50%
240	(Y0)		25%
241	(Y1)		0%
242	(Y2)	100ms mono	
243	(Y3)	200ms mono	
244	(Y4)	200ms mono	50%
245	(Y5)	400ms mono	
246	(Y6)	400ms mono	50%
247	(Y7)	600ms mono	
248	(Y8)	600ms mono	50%

BYPASS PROGRAM

PROGRAM NUMBER	PRESET NUMBER	DESCRIPTION
249	(Y9)	BYPASS