t.c. electronic
ULTIMATE SOUND MACHINES

REVERB 4000

HIGH DEFINITION REVERB

POWER

t.c. electronic | REVERB 4000
HIGH DEFINITION REVERB

0
-3
-6
-12
-18
-24
-40
L dB R

OVERLOAD
96 kHz
88.2 kHz
48 kHz
44.1 kHz
DIGITAL IN
MIDI
EDITED

068 ⬍Halls Recall
Royal Festival Hall
Two Source Conductor
PREDEL   DECAY   HIDEC
2.6s   220ms   8.0kHz

PAGE

HOME
▲
▼

User's manual

IMPORTANT SAFETY INSTRUCTIONS

The lightning flash with an arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

1 Read these instructions.
2 Keep these instructions.
3 Heed all warnings.
4 Follow all instructions.
5 Do not use this apparatus near water.
6 Clean only with dry cloth.
7 Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8 Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9 Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11 Only use attachments/accessories specified by the manufacturer.
12 Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13 Unplug this apparatus during lightning storms or when unused for long periods of time.
14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Warning!
- To reduce the risk of fire or electrical shock, do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.
- This apparatus must be earthed.
- Use a three wire grounding type line cord like the one supplied with the product.
- Be advised that different operating voltages require the use of different types of line cord and attachment plugs.
- Check the voltage in your area and use the correct type. See table below:

Voltage	Line plug according to standard
110-125V	UL817 and CSA C22.2 no 42.
220-230V	CEE 7 page VII, SR section 107-2-D1/IEC 83 page C4.
240V	BS 1363 of 1984. Specification for 13A fused plugs and switched and unswitched socket outlets.

- This equipment should be installed near the socket outlet and disconnection of the device should be easily accessible.
- To completely disconnect from AC mains, disconnect the power supply cord from the AC receptable.
- The mains plug of the power supply shall remain readily operable.
- Do not install in a confined space.
- Do not open the unit - risk of electric shock inside.

Caution:
You are cautioned that any change or modifications not expressly approved in this manual could void your authority to operate this equipment.

Service
- There are no user-serviceable parts inside.
- All service must be performed by qualified personnel.

IMPORTANT SAFETY INSTRUCTIONS

EMC / EMI.
This equipment has been tested and found to comply with the limits for a Class B Digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

For the customers in Canada:
This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Certificate Of Conformity
TC Electronic A/S, Sindalsvej 34, 8240 Risskov, Denmark, hereby declares on own responsibility that following products:

Reverb 4000 - High Definition Reverb

- that is covered by this certificate and marked with CE-label conforms with following standards:

EN 60065 (IEC 60065)	Safety requirements for mains operated electronic and related apparatus for household and similar general use
EN 55103-1	Product family standard for audio,video, audio-visual and entertainment lighting control apparatus for professional use. Part 1: Emission.
EN 55103-2	Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2: Immunity.

With reference to regulations in following directives:
73/23/EEC, 89/336/EEC

March 2003
Mads Peter Lübeck
Chief Executive Officer

TABLE OF CONTENTS

INTRODUCTION

Congratulations on the purchase of your new Reverb 4000!
The Reverb 4000 is a Single Engine Stereo version of System 6000 - featuring the best reverbs and presets from System 6000 and M5000 plus emulations of immortal classics.

Reverb 4000 is also the first stereo reverb capable of rendering credible space onto two discrete sources, or to truly process a composite stereo source. Utilizing the latest hardware technology and software based upon 30 man-years of development, Reverb 4000 offers the most immense and innovative selection of State-of-the-Art stereo Reverbs. Designed as a single rack space module with an extremely easy to use instant access interface, and with the option of using the ICON Software Editor in DAW environments, the Reverb 4000 is the ultimate choice for live- and studio applications working in stereo.

- In the Studio
Reverb 4000 complements any large scale mixing console, and provides the professional studio with the ultimate Main Reverb featuring an amazing palette of simulated rooms - from natural sounding credible spaces to emulations of vintage reverbs and TC Classics. On top of offering front-edge pristine reverb technology, it features impressive headroom, level handling and analog as well as digital interfacing capabilities.

Reverb 4000 integrates perfectly with DAWs and features 24 bit AD/DA converters as well as 44.1 to 96kHz Sample Rates, hence offering processing power not obtainable inside any workstation available today. Connectable via USB the included ICON Software Editor provides easy access and complete overview for detailed editing purposes, and is a genuine tool in a studio environment.

At the Venue
The Instant Access front panel is a great advantage for live applications. Never before has a Main Reverb provided so many colors to the palette, and been so easy to operate. Switch between Character, Glossy and Vintage Reverb effects with just a single touch of a button. The front panel always keeps important parameters within reach, and thanks to the latest DSP and power supply technology, as well as TC Electronic's heritage of making top-end reverbs, the new Reverb 4000 delivers the best true stereo reverbs imaginable.

Features in Reverb 4000 also include Generic Reverbs providing Polished Sustain, Vintage Reverb emulations, True Stereo Reverbs with several flavors, Favorite presets and algorithms from the past, Mono Reverbs covering arbitrary formats, Credible Environments spanning from claustrophobic to outdoor scenarios, Analog domain converter scaling with wide headroom and AES/EBU, S/PDIF, TOS-Link and ADAT digital I/Os.

About this manual
The manual is divided into three major sections.

• Operation via the Front Panel
• Operation via the TC Icon Software Editor
• Description of the Algorithms

Latest manual version can always be downloaded via www.tcelectronic.com.
If you have questions left unanswered by this manual you may also take a look at our TC Support Interactive site. This site is also accessed via www.tcelectronic.com

FRONT PANEL OVERVIEW
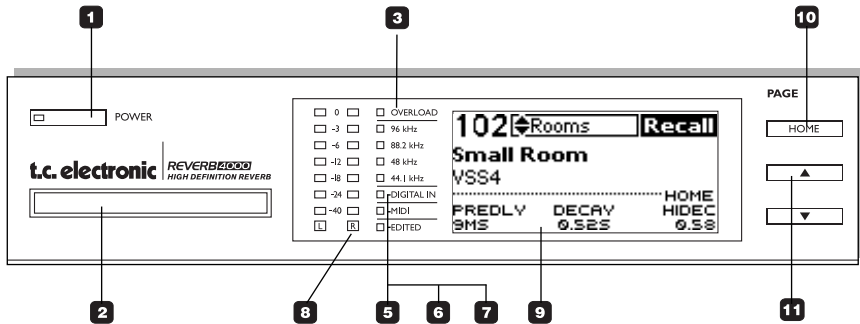
1 POWER On/Off
Switches power On/Off.
To completely disconnect from mains the Rear panel POWER switch must be used.
The Reverb 4000 auto sensing power supply accepts 110 to 240V.

2 PCMCIA slot
For software updates and preset backups.

3 OVERLOAD LED
Indicates internal overload. Decrease Input level to compensate. The LED must never be lit.

4 96/88.2/48/44.1kHz LEDs
Indicates current Sample Rate.

5 DIGITAL IN LED
Indicates that a digital Input is selected.

6 MIDI LED
Indicates incoming MIDI information.

7 EDITED LED
Indicates that the currently recalled preset has been edited but not yet stored.

8 LEVEL METERS
Shows the current Input level.

9 DISPLAY
The display is divided into two sections:
The Upper section is dedicated to essential information/ operation, such as Recall, Store and Wizard functions plus I/O and Utility.

These functions are controlled via the keys in the Program and Control section on the front panel.

The lower section of the display always indicates preset parameters and values. The three Default parameters are Pre Delay, Decay and Hi Decay. Pressing the HOME key will always return to these three parameters.

You scroll down through additional parameters using the UP/DOWN keys and set their values using the three dedicated value wheels F1, F2 and F3.
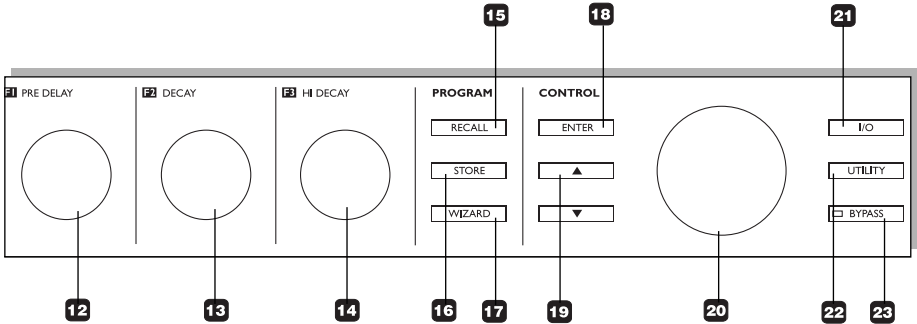
10 HOME- key
Returns to the first line in the parameter list showing the three key parameters:
PreDelay, Decay and Hi Decay.

11 CURSOR UP/DOWN keys
Scroll up and down in effect parameters.

12 F1 - PRE DELAY wheel
Dedicated parameter adjust wheel. Always adjusts the value of the parameter displayed to the left of the lower part of the display. When at "home-page" this is the Pre Delay parameter.

13 F2 - DECAY wheel
Dedicated parameter adjust wheel. Always adjusts the value of the parameter displayed in the middle of the lower part of the display. When at "home-page" this is the Decay parameter.

14 F3 - HI DECAY wheel
Dedicated parameter adjust wheel. Always adjusts the value of the parameter displayed to the right of the lower part of the display. When at "home-page" this is the Hi-Decay parameter.

15 RECALL key
Press to go straight to the Recall page. Select preset using the ADJUST wheel and press ENTER to confirm.

16 STORE key
Press to store the current preset in a user location. User location can be selected using either the CURSOR UP/DOWN keys or the CONTROL ADJUST wheel. Press ENTER to confirm and execute.

17 WIZARD key
Press to enter the Wizard recall mode. Via the Wizard function you can setup various criteria to assist your preset selection.

18 ENTER key
Press to confirm operations such as Recall.

19 CURSOR UP/DOWN key
Scrolls in the Control section menus.

20 CONTROL ADJUST wheel
Adjusts parameter values in the control section.

21 I/O key
Press to enter the I/O menu. This is where you set-up: Input selection, Clock, Levels, Dither and more.

22 UTILITY key
The Utility menu holds settings for:
MIDI, Memory copy and Display Viewing angle for max viewing comfort and various others.

23 BYPASS key
Press to activate bypass.

Two bypass modes can be selected via the I/O menu:

Cut Input
Will cut the signal chain before the Reverb processing. Allows the Reverb to "hang" after Bypass is activated.

Cut Output
Use this mode to immediately cut the generated Reverb.

Power Input 100 - 240V	Balanced Analog Inputs	Balanced Analog Outputs	Optical ADAT &	Sync In	AES/EBU Input/	S/PDIF Input/	MIDI In/Out/	USB
Power Switch	XLR	XLR	S/PDIF		Output	Output	Thru	

Note: The USB connection is for passing control data only.

Cables - wiring

XLR to XLR
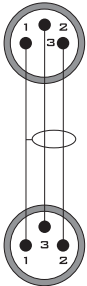
XLR to Jack Stereo
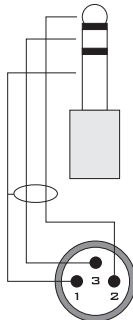
XLR to Jack Mono
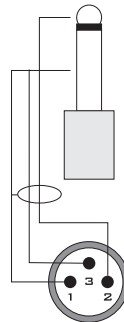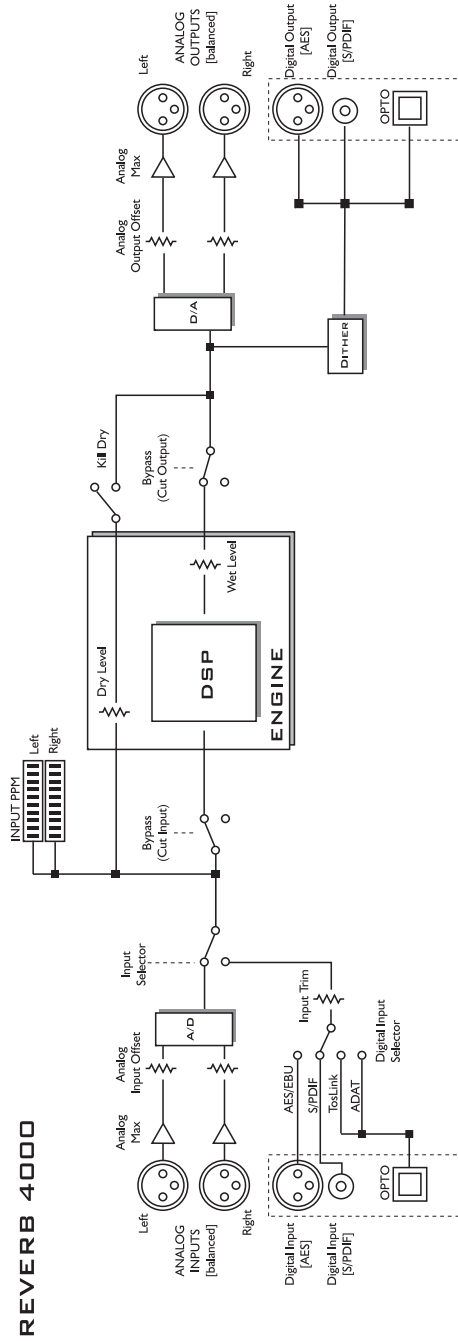
TYPICAL SETUPS

Connecting and Setting up the Reverb 4000

Standard analog setup
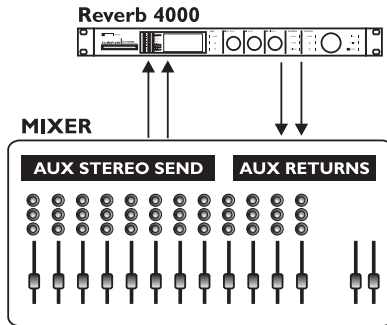
Standard Send/Return Setup

With this setup the Reverb is fed with an analog stereo signal from e.g. a mixer AUX section. Via the Input Ch. parameter found in the I/O menu it is possible to chose which Input channel to be processed. Select between Left, Right and Stereo Input.

- Connect according to illustration.
- Press I/O to setup basic Input/Output options.
- Set the Kill Dry parameter to - "on" (default).
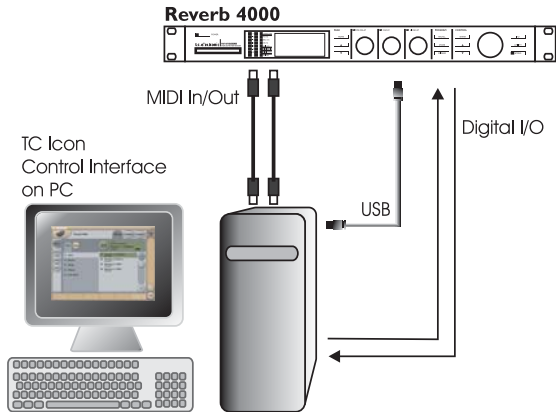
Reverb 4000 Digital Setup

It is assumed that the TC Icon software is correctly installed on you computer. Page 20 describes installation procedure.

Connections
• Connect the Reverb 4000 to a free USB port on your computer using a standard USB cable (supplied).
  This connection ensures communication with the TC Icon Software Editor.
• Open the TC Icon Editor and select appropriate port on the Setup-Devices -Port page.
• Connect MIDI In/Out - if needed
• Connect digital audio to your Workstation using correct cables.

Setting up
• In the I/O menu - setup following:
  - Input Select : Digital
  - Digital In Sel : Digital Input Type
  - Input Channel: Stereo, Left or Right
  - Clock Select : 44.1/88.2 - 48/96
                    Clock mode dependent.
  - Optical In/Out settings if optical I/O is selected.

FRONT PANEL OPERATION

The Display

The Reverb 4000 display is split into two main sections.

- The Upper section changes depending on the selected functionality.
- The Lower section <u>always</u> shows parameter values. These parameters can <u>always</u> instantly be adjusted using the F1, F2 and F3 VALUE wheels.

Category Filter
Function
Preset Number
Upper Section
Lower Section

Adjusted by F1 (Pre Delay)
Adjusted by F2 (Decay)
Adjusted by F3 (Hi Decay)
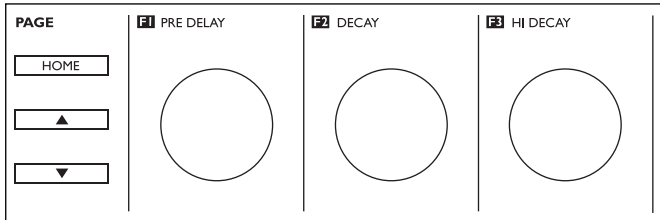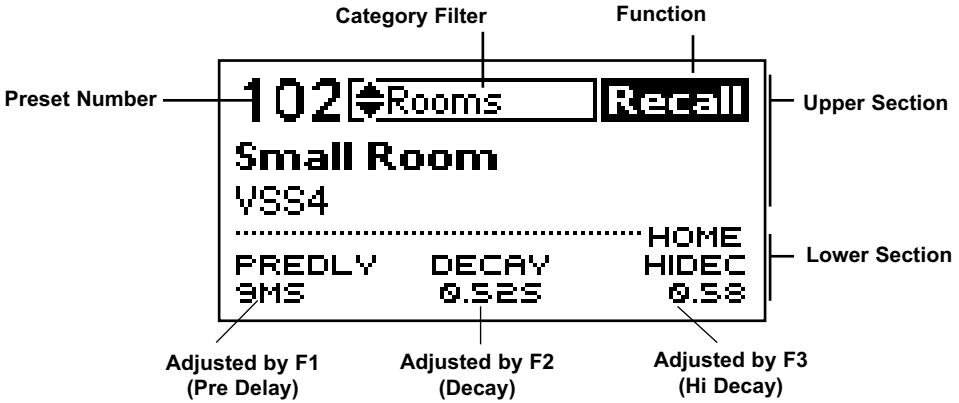
HOME - returns to the top three preset parameters.
CURSOR UP/DOWN keys - scrolls through the preset parameters.
F1 (Pre Delay), F2 (Decay) and F3 (Hi Decay) - adjusts parameter values.

Controls for any action concerning the upper section of the display
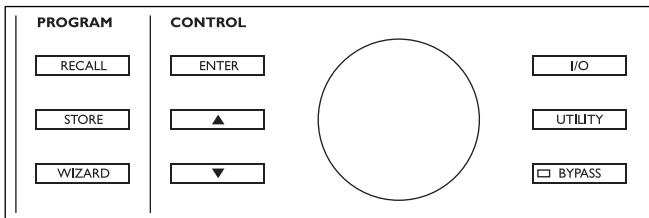
To access the Recall display simply press RECALL.
To make an appropriate preset selection fast and efficiently we have added both a Category Filter for rough selection but also a Recall Wizard functionality that will help you narrow down and pick the appropriate preset for you application.

Category Filter   Function

Preset Number — **102** ⬍Rooms   **Recall**   Upper Section

Preset Name — **Small Room**

Application — **VSS4**

                                        HOME
Parameters & current values — PREDLY   DECAY   HIDEC   Lower Section
                              9MS   0.52S   0.58
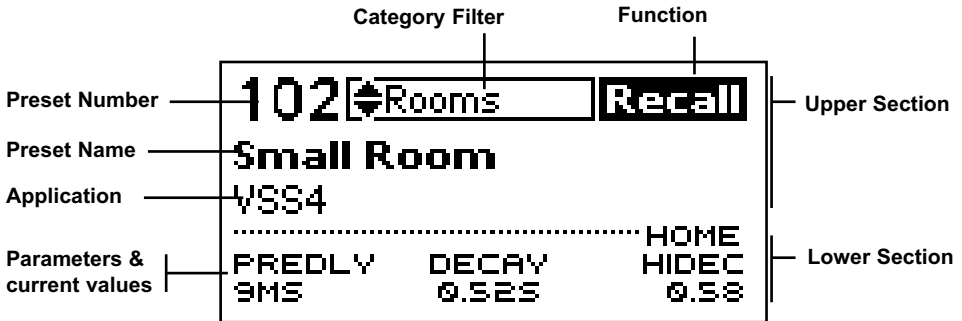
Presets

The Reverb 4000 holds 150 factory presets. These are arranged in various categories such as Halls, Rooms etc - see below.

To make a simple Recall
• Press Recall to ensure you are at the Recall Page.
• Select the preset you wish to recall using the CONTROL wheel.
• Press ENTER.

The Reverb 4000 also has various filter functions to ensure fast and efficient preset search.

Category Filter
Make your primary selection based on Category.

• Use the ARROW UP/DOWN keys in the Control section to scroll between different categories.

The options are:

⬍ Halls
⬍ Rooms
⬍ Plates
⬍ Effects
⬍ Wizard
⬍ User
⬍ Card

• Use the ADJUST wheel to select a specific preset within the selected Category.
• Press ENTER to recall the selected preset.

Recall Wizard
When "Wizard" is selected it is only possible to select between the presets matching the criteria set in the Wizard menu. (See next page for explanation).

The Recall Wizard is a dedicated filter to assist you in making the appropriate preset selection for your application. Enter the Wizard by pressing the WIZARD key.

Category Filter   Function

Origin ──────

Source ──────

Size ──────

```
 Origin    S6000   Wizard
 Source  Vocal Lead    No=
▶Size     Medium        1
·····························HOME
 PREDLY    DECAY      HIDEC
 9MS       0.52S      0.58
```

Parameters & current values
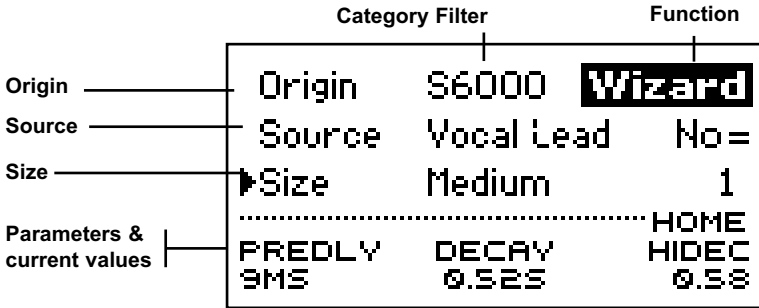
There are three types of selections to make. In any of the three types you can select "ALL" if you do not want to limit the selection.

Basics
Use the UP/DOWN keys to select function and the ADJUST wheel to set values.

• Enter the Wizard bank from the Recall display using the UP/DOWN keys in the Control section.
• Press WIZARD and select Size, Source and Origin (see below).
• Then press WIZARD or RECALL to go back to the RECALL Display.
• Now select preset from the limited list appearing based on the WIZARD selections.

Size
Defining the size of a specific Reverb type is a delicate issue. Altering Decay times considerably on a defined room-size is not equivalent to changing the size of the room. We suggest selecting Size according to application.

Options

```
*ALL
Micro
Small
Medium
Large
X Large
```

Source
In the select list you set for which specific application you are looking for a preset.

Options

```
*ALL
Most Wanted
Vocal Lead
Vocal Back
Snare
Kick
Strings
Keys
Brass
Generic
```

Origin
All of the presets in the Reverb 4000 derive from other top quality Reverb processors by TC Electronic.

Options

```
*ALL
S6000
M5000
M3000
Emulate
```

• Then press RECALL or WIZARD to go to the Wizard Bank.

STORE & DELETE - FRONT PANEL OPERATION

To enter the Reverb 4000 Store mode press STORE

Function

Storing Mode

Storing Location

Name/Rename

Parameters & current values

```
Mode  Overwrite  Store
▶Locat. UC1: <empty>
Name Small Room
.........................HOME
PREDLY    DECAY     HIDEC
9MS       0.52S     0.59
```
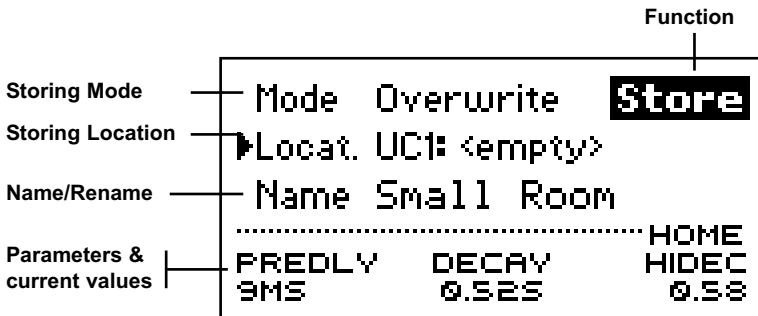
Basics
Use the UP/DOWN keys to select function and the ADJUST wheel to set values

• Select Mode - Overwrite/Delete.
• Select Location - where to store.
• Set/Change name.

Mode
Select between Overwrite and Delete.

Overwrite:
Standard storing method. The preset at the location where you attempt to store will be overwritten.

Delete:
Use this function to delete presets without storing a new one at the same time.
Consider this a "Clean-up" function.

Locat. - Location
Select a user location where you wish to store the preset.
The Reverb 4000 itself has 100 user locations.
With a standard PCMCIA card an additional 100 presets can be stored.
(If used in conjunction with a TC Icon PC Editor an unlimited number of presets can be stored on your computers hard drive).

Name
To enter or alter a preset name during storing procedure:

• Set cursor at the "Name-line".
• Use ADJUST wheel to change letter.
• Use ARROW UP/DOWN to jump between letter positions.
• Press ENTER to store and confirm.

The Utility menu

This is where you setup:
- MIDI Input/Output
- MIDI mapping
- MIDI dump functions
- Bank copy functions to and from PCMCIA cards for backup/restore
- Display Viewing Angle for viewing comfort
- Other various utilities

A few important parameters can be controlled via Standard MIDI Control Change (MIDI CC), but all parameters can be controlled via MIDI Sysex. Complete Sysex documentation can be downloaded via www.tcelectronic.com

Overview of the Utility menu:

Display

Viewing Angle
Adjusts the optimal display viewing angle.

MIDI

Channel
Range: 1-16 or Omni
When "Omni" is selected Reverb 4000 receives MIDI information on all channels.

SysEx ID
Range: 0 to 127
Sets the Reverb 4000 own SysEx ID for identification in larger MIDI setups.

MIDI Input

Program Change
Range: On/Off
Determines whether Reverb 4000 should respond to incoming program changes or not.

Control Change
The Reverb 4000 allows for both extensive and precise control of parameter values via MIDI Sysex. However, a simple mode is also available where a few important parameters can be accessed via standard MIDI CC's.
In the Algorithm chapter all parameters controllable via MIDI CC are marked with corresponding MIDI CC numbers. A complete list is also available in the appendix section.

Following CC modes are available:

Off:
No response to incoming MIDI CC messages.

_On:_
The three Home-page parameters from each algorithm can be controlled by a given set of controllers.
The Reverb 4000 responds to either Single or Double Precision Controllers.

When only Single Precision controllers are received the three Home-page parameters can be controlled using the following MIDI controllers:

Control _MIDI CC_
  F1 - 76 (Pre Delay)
  F2 - 77 (Decay)
  F3 - 78 (Hi Decay)

When Double Precision Controllers are received the three homepage parameters are controlled using a combination of values sent as MSB (Most Significant Byte/Coarse) and LSB (Least Significant Byte/Fine).

By sending values 0-127 on each of these controllers up to 16384 (128*128) steps are available giving highest precision when needed.

Control _MSB/LSB_
  F1 - 22/54 (Pre Delay)
  F2 - 23/55 (Decay)
  F3 - 24/56 (Hi Decay)

Example:
Control Change "On" mode is selected and a preset using the VSS-3 algorithm is recalled. The value of the Decay parameter can be set by sending:
MSB: 23 followed by a value from 0-127 &
LSB: 55 followed by a value from 0-127

SysEx
Range: On/Off
Determines whether the Reverb 4000 should respond to incoming MIDI Sysex.

MIDI Out

Program Change
Range: On/Off
Program changes are sent to MIDI Out when presets are recalled via front panel controls.

Control Change
Off:
No CC messages are sent during front panel operation.

**Single Precision mode**
In this mode Reverb 4000 sends parameter values when adjusting values using the F1, F2 and F3 ADJUST wheels.

Control _MIDI CC_
  F1 - 76 (Pre Delay)
  F2 - 77 (Decay)
  F3 - 78 (Hi Decay)

**Double Precision mode**
If Double Precision mode is selected Reverb 4000 sends MIDI CC values described as a combination of MSB and LSB values.

Control _MSB/LSB_
  F1 - 22/54 (Pre Delay)
  F2 - 23/55 (Decay)
  F3 - 24/56 (Hi Decay)

SysEx
Range: On/Off
Determines whether the Reverb 4000 should send MIDI Sysex.

MIDI DUMP

Dump
System
Includes all parameters in the I/O and Utility menu.

Cur. Preset
Only the current recalled preset is dumped via MIDI when "Execute" dump is performed.

User Bank
If User bank is selected the entire User bank is dumped to MIDI when "Execute Dump" is performed (see next page).

Execute Dump
Press ENTER to MIDI Dump.

MIDI Mapping

It is possible to map any incoming program
changes to recall any preset in the Factory,
User or Card bank.

Mapping

Normal:
In Normal mode all banks can be accessed for
program changes. Bank selection is done via
Ctrl 0 (MSB) and Ctrl 32 (LSB):

• Controller 0 must be set to 0 in all cases.
• Controller 32 value must match the bank
  number you wish to address according to the
  table below.

Ctrl 32 value 0   - Halls
Ctrl 32 value 1   - Rooms
Ctrl 32 value 2   - Plates
Ctrl 32 value 3   - Effects

Ctrl 32 value 32   - User bank
Ctrl 32 value 64   - Card bank

Following mapping modes are also available:
• *Into Factory*
• *Into User*
• *Into Card*
• *Into Map*

When "Into Map" is selected the Reverb 4000
maps incoming program changes according to
the MIDI Mapping described below.

Map From - Map To

Select which incoming program change to map,
and which preset to map to.

Example:
You wish to send program change 1 to the
Reverb 4000 and recall preset 30 in Bank 1
(Rooms). Use the following setting:

Map From   1
Map To   1-30

Card Copy

The **Copy Function** can be used to load or
backup the User bank to or from a standard
PCMCIA card.

Copy

Select between:
"Card to User" or
"User to Card"

Warning !

The "Copy From" function handles the
entire bank. Therefore backing up or
retrieving banks will destroy and overwrite
the presets in the target bank.

Execute Copy

Press ENTER to copy according to your
selection above.

Misc.

Auto Info

Range: On/Off
When Auto Info is set to on, information on
Algorithm and Decay time of the current preset
is saved as a text and will be displayed on the
Recall page.

Format Card

Press ENTER to format the PCMCIA card
present in the slot.

Signal Processing Flow
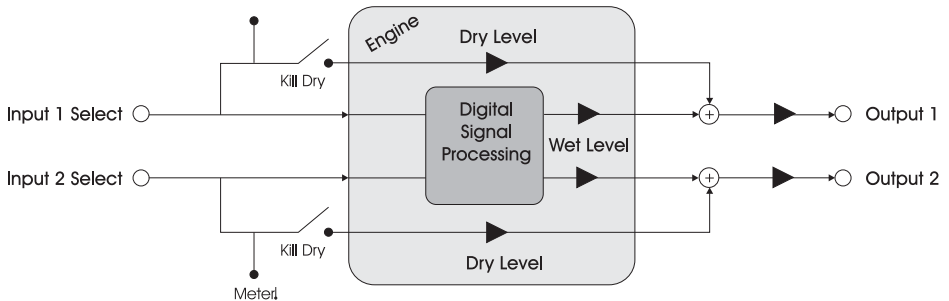
Reverb 4000 Internal architecture

The internal signalpath of Reverb 4000 uses double precision (48 bit) processing to take full advantage of the machine's digital Inputs and Outputs. In a mastering situation you can even feed the dry signal through the 4000 with no degradation. The Dry Level and Digital Input Trim controls are 24 bit transparent when set at 0.0dB, while they are bit pattern preserving when set at -6, -12, -18, and -24dB.

I/O

Input Select
Range: Analog, Digital
Select between analog and digital Inputs.

Input Channel
Stereo:
Stereo processing on Stereo Input signal.

Left:
Mono signal present on Left Input channel is linked to right Input and processed to Stereo Out.

Right:
Mono signal present on Right Input channel is linked to left Input and processed to Stereo Out.

Level

Kill dry
On/Off - Default is "On"
Removes all Dry signal from the Output regardless of preset Mix setting.

Analog Max
Range: -11 to 21dBU (1dB steps)
To achieve best signal to noise ratio the Analog Max level must be correctly set to match the device to which the Reverb 4000 is connected.

Example:
If the mixer's Analog Max level is 18dBu, the Reverb 4000 Analog Max Level parameter should likewise be set to that value.

Clock

Clock Mode & Clock Select
Clock mode can be set to Normal or Double.

Normal:
If Clock Mode is set to "Normal" the following options are available:
44.1, 48, Di In, Wordclock.

Double:
If Clock Mode is set to "Double" the following options are available:
88.2, 96, Di In, WordClock.

Bypass

Bypass mode
Two modes are available:

Cut Input
Will cut the signal chain before the Reverb processing. Allows the Reverb to "hang" after Bypass is activated.

Cut Output
Use this mode to immediately cut the generated Reverb.

Analog Offset

Input Offset
Range:The range is relative to the set Analog Max parameter.
The Analog Max parameter sets ideal interface level to the surrounding environment and adjust both the Analog Input and Output Max level. The Analog Input offset parameter is used to optimize the Input level while keeping the Analog Max setting.

Output Offset
Range: -20 to +20dB
The range is relative to the set Analog Max level parameter.
The Analog Output Offset parameter is typically used if the downstream device has an operating level that differs from the set Analog Max setting.

Digital Input

Input Select
Range: AES/EBU, ADAT, Optical.
Selects digital Input type. Digital Input must be selected.

Digital Input Trim
Range: -24 dB to 0 dB (Step 0.2 dB)
Trim parameter on the digital Input.
Signal is bit transparent at -6, -12, -18 and -24dB.

Optical

Optical In
Options: Tos-Link, ADAT 1-2, ADAT 3-4, ADAT 5-6, ADAT 7-8
Select appropriate Optical Input type according to your setup.

Optical Out
Options: Tos-Link, ADAT 1-2, ADAT 3-4, ADAT 5-6, ADAT 7-8
Select appropriate Optical Output type according to your setup.

Digital Output

Dither
Range: 8, 16, 20, 24, Off
Determines to what bit truncation should be made. Dither should be applied at the final stage only and according to the next downstream device in the signal chain.

Status Bit
Range: S/PDIF, AES/EBU
Determines which Status Bit should be sent out with the digital signal.

Introduction

The TC Icon Software Editor is a generic Software Editor that currently controls the following products by TC Electronic: System 6000, DB-8, P2 and Reverb 4000.
In this section only subjects relevant for usage with the Reverb 4000 will be discussed.

Requirements for running the TC Icon Software Editor
• A Pentium PC with any of the following operating systems: Windows 2000, or Windows XP.

The included Reverb 4000 CD-ROM holds:
• A folder called: "TC Icon Software Editor".
• The manual in PDF format.
• A USB driver called "**rev4000**".

Installing - TC Icon Editor

• Exit all programs on your computer and open the CD contents.
• Open the folder called: TC Icon Software Editor.
• Copy the file called TC Icon x.xx.msi to a location on your computer - e.g. your desktop.
• Double-click on the .msi file and follow the instructions.

A TC Icon shortcut will appear both on the desktop and in the Start menu.

Connecting

• Connect the Reverb 4000 to free USB port on your computer using the supplied cable. The cable is a standard USB cable.
• Power on the Reverb 4000.
• Your computer now detects the Reverb 4000 and a standard Windows hardware Wizard opens. This Wizard guides you through installation of the USB driver located on the CD ROM accompanying the Reverb 4000.

• Press **Next**

• The option "Search for a suitable driver for my device" is automatically pre-selected.
• Press **Next**

• Insert the Reverb 4000 CD ROM and mark the option CD-ROM drives as above.

Continued ->

• Now specify at which location the Wizard
  should look for the appropriate driver.

• The Wizard now finds the correct driver on
  the CD ROM.
• Press "NEXT"

• Press "Finish". The Driver is now installed
  and you are all set to go.

Basics

Navigating the TC Icon Software Editor is easy as soon as a few basic elements are explained.

Generally:
- Press the top-tabs to do primary selections.
- Press the side-tabs or elements to do secondary selections.
- Press parameter value fields to instantly assign parameters to Fader 6.
- Adjust values using Faders 1-6.
- The TC Icon symbol key in the upper left corner switched between two main modes:
  - <u>Setup/Select</u> pages for main system operations and
  - <u>Operation pages</u> that are specific for the connected units.

(also see the LINK explanation on next page)

Unpacked and ready

- Connect according to illustrations on pages 10/11.
- Install software according to explanation on the previous page of this manual.
- Power up the Reverb 4000 and start the TC Icon software on your computer.
- Go to the Setup/Devices/Select page.

- Press the DETECT key. The TC Icon Editor will scan the system and find the connected units.
- When the connected Reverb 4000 is detected, assign the unit to one of the eight shortcut keys in the right side of the display, by pressing one of the eight keys (see above). Any key will do. When several units are connected this page serves as a convenient organizer for the entire system.
- Go to the Select page (top-tab), and you will see a screen similar to the one below

depending on number of connected units and in which locations these are assigned.

- Press the large Reverb 4000 key.
- TC Icon now retrieves data from the Reverb 4000.
- When ready you will see the Main operating display.
- GO

Basic Operation

The **Icon Link** key in the upper left corner allows you to navigate between two main pages/modes.

Setup/Select pages

Via the Select & Setup pages you access overall settings and choices like:
• Selection of which connected unit to operate.
• TC Icon settings such as display and Fader-appearance.

On the Select page illustrated above all connected units will appear. Press one of the units indicated on that page to access the unit.

Auto page
This page is for time-code operations and redundant when operating a Reverb 4000.

Operating pages

ICON key

LINK key

Press the **ICON** key in the upper left corner to select these pages or press the unit on the Select pages.
These pages are relevant to one specific unit.

Operating Pages
• Library pages handle operations such as preset Recall, Store, Delete and bank handling for backup

• System pages handle overall Clock Settings, I/O settings and network settings.

• Engine pages are where you control all algorithm specific processing parameters.

Renaming presets
All user presets can easily be renamed.
Click on the CURRENT ENGINE NAME key on the Store page and a keyboard display will open.

NOTE The preset is not stored by entering the name and pressing ENTER.
To actually store a preset the STORE key must be pressed on the Store page.

Link

The LINK key allows you to assign any algorithm parameter to any of the 6 Faders. Thereby you are not limited to operate only the parameters visible on the current page.

To assign a parameter
• Press the LINK key.
• Select the Fader you wish to link a parameter to, by pressing the field just above the fader.
• Press the parameter you wish to link to the selected fader.

Library Pages

These are the pages from where all preset handling is controlled when using the TC Icon Editor.

Recall

The Reverb 4000 holds:
- 150 Factory presets.
- 100 User locations for customized presets.
- 100 User locations on a PCMCIA Card.
- Unlimited User locations on a Hard disk.

Presets can be selected either directly or with assistance from a Search function that will help you narrowing down your choices and find the presets best suited for your application fast.

To recall a preset directly:
• Select Bank and then a catagory such as Halls, Rooms etc.
• Then select the desired preset by touching the preset name in the list
• Then press RECALL
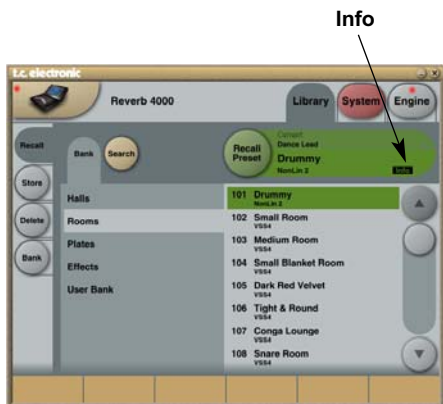
Info

Info
Presets marked with the small Info tag have additional description attached. Press the Info tag to see the information.
When storing presets you can edit the Info text by entering this in the Info field. (see next page).

Search - Expanded Wizard

There are three selections to make when using the Search function. In any of these selections you can chose "ALL" if you do not want to limit the selection by that specific parameter.

Basics
• Select Source
• Set Size
• Select Origin
• Decide if User presets should be included
• Select preset based on the selections made
• Press Recall

Source
In the source list you select for which specific application you need to use the preset.
Options

Size
Defining the size of a specific Reverb type is a delicate issue. Altering Decay times considerably on a defined room-size is not equivalent to changing the size of the room. Select Size according to application.

Options

Origin
All of the presets in the Reverb 4000 derive from other top quality reverb processors by TC Electronic.

Options
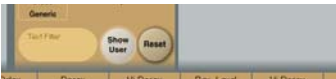
It is further more possible to search by a simple text string via the Text Filter function.
E.g. enter "Hall" in the Text filter box and all presets that include the word "Hall" and meet the criteria defined by the Source, Size and Origin settings are now available for recall.

Reset
Resets all Search settings.

Store - Delete

To store a preset:
- Select the Store page by pressing the STORE side tab.
- Select a preset location.
- Press STORE.
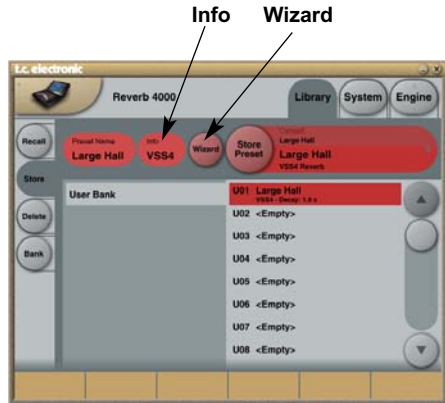
Info
To each preset a short Info-text of max. 64 characters can be entered. Press INFO and enter any text you wish. The text can be viewed on the Recall page by pressing the Info tag there.

Wizard
- Press **Wizard** if you wish to add Wizard tags to the preset you are storing.

- Press **Enable Wizard** and select the tags you associate with the preset you are storing.
These tags are the same tag that you can use to search the preset by later, in a Recall situation.

To delete a preset
- Select the Delete page by pressing the DELETE side tab.
- Select the preset you wish to delete. Press DELETE.
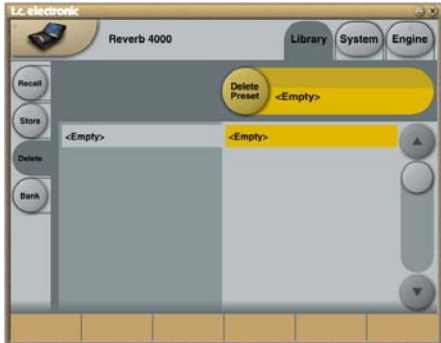
Bank Handling

Via the Library Bank page it is possible to backup and retrieve the User bank either to your hard disk or to a PCMCIA card.
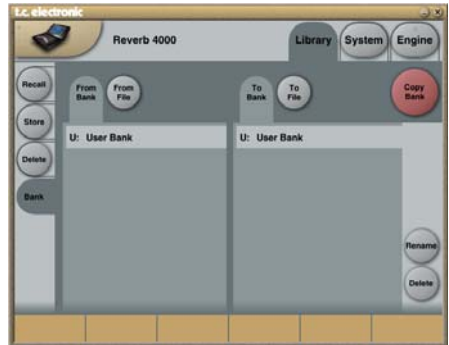
From Bank
In this area you select which bank on the Reverb 4000 you wish to copy from.

From File
If you have already stored banks on your computer this is where these files will appear.

To Bank
Select to which Reverb 4000 bank you wish to copy the selected bank to.

To File
Select **"To File"** if you wish to back-up the selected bank to your hard disk.

The TC Icon saves the bank files in a specific location. The location varies slightly between the different operation systems.

As an example Windows 2000 saves backup files in: Application Data\TC Electronic\TC Icon\Reverb 4000 Presets\xxxxx
Do not move the files from this location or the TC Icon will not display the presets in the "**From File**" screen.

Rename
Press to rename the selected bank.

Delete
Press to delete the selected bank.
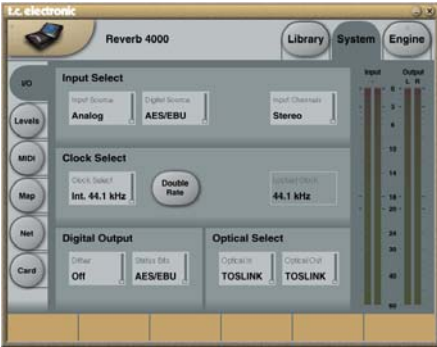
Input Select

Input Source
Select between Analog and Digital.

Digital Source
When Input Source is set to Digital you can select between:

- AES/EBU
- S/PDIF
- Optical

Select according to the connected Digital Input source.

Input Channels
Stereo:
Stereo signal is processed.

Left:
Only the Signal present on the Left Input is processed.

Right:
Only the signal present on the Right Input is processed.

Clock Select

Clock select
Range: Internal 44.1kHz (88.2@Double Rate)
                Internal 48kHz (96@Double Rate)
                Digital In
                Word Clock

Locked Clock
Indicates whether the Reverb 4000 is locked to the clock present on Digital Inputs.

Digital Output
Dither
Range: 8, 12, 14, 16, 18, 20, 22, 24, off
Reverb 4000 processes internally at 24 bit resolution. Dither must be set to match downstream devices.

Status Bits
Select whether the Reverb 4000 should send out AES/EBU or S/PDIF status bit information.

Optical Select
Optical In
Range: Tos-link, ADAT 1/2, ADAT 3/4, ADAT 5/6 or ADAT 7/8.
When Input is set to Digital, and Digital Source is set to Optical, the Optical In parameter selects which optical Input should be processed.

Optical Out
Range: Tos-link, ADAT 1/2, ADAT 3/4, ADAT 5/6 or ADAT 7/8.
Selects optical Output format.

Bypass

Bypass Mode
Cut Input
Will cut the signal chain before the Reverb processing. Allows the Reverb to "hang" after Bypass is activated.

Cut Output
Use this mode to immediately cut the generated Reverb.

Bypass
Activates/deactivates bypass according to the set bypass mode - see above.

Kill dry
Range: On/Off
Removes all Dry signal from the Output regardless of Mix setting.

Digital Level

Input Trim
Range: -24 dB to 0 dB (Step 0.2 dB)
Trim parameter on the digital Input.
Signal is bit transparent at -6, -12, -18 and -24dB.

Analog Levels

Max I/O Level
0 to 22dBU (1dB steps)
To achieve best "signal to noise ratio" the Max I/O level must be correctly set to match the device to which the Reverb 4000 is connected.

Example:
If the Mixers Max I/O level is 18dBu, the Max I/O Level parameter should be set to that value.

In Offset
Range: The range is relative to the set Max I/O Level.
The Max I/O Level parameter sets ideal interface level to the surrounding environment and adjust both the Analog Input and Output Max level. The Analog Input offset is used to optimize the Input level while keeping the Max I/O level setting.

Out Offset
Range: -20 to x dB (Step 1 dB) (x is relative to the selected Max I/O Level.)
The Analog Output offset parameter is typically used if the downstream device has an operating level that differs from the set Max I/O value, based on the device feeding the Reverb 4000.

Reference: See Signal Flow diagram on page 9
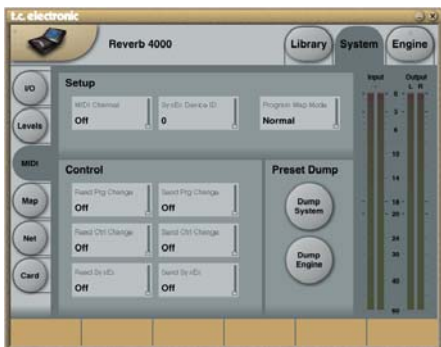
Setup

MIDI Channel
Range: 1-16 or Omni
When Omni is selected Reverb 4000 receives
MIDI information on all channels.

SysEx Device ID
Range: 0 to 127
Sets the Reverb 4000 own SysEx ID for
identification in larger MIDI setups.

Program Map mode
Normal
In Normal mode all banks can be accessed for
program changes. Bank selection is done via
Ctrl 0 (MSB) and Ctrl 32 (LSB):

• Controller 0 must be set to 0 in all cases.
• Controller 32 value must match the bank
  number you wish to address according to the
  table below.

Ctrl 32 value 0   - Halls
Ctrl 32 value 1   - Rooms
Ctrl 32 value 2   - Plates
Ctrl 32 value 3   - Effects

Ctrl 32 value 32   - User bank
Ctrl 32 value 64   - Card bank

Factory Bank
Incoming Program Changes are mapped to
recall presets from the Factory banks.

User Bank
Incoming Program Changes are mapped to
recall presets from the User bank.

Card Bank
Incoming Program Changes are mapped to
recall presets from the Card bank. This requires
that a Reverb 4000 formatted PCMCIA card is
inserted in the Card slot.

Custom Map
Maps incoming program changes according to
the Custom map settings. These settings are
set via the Map page.

Control
Read Program Change
Select On/Off

Send Program Change
Select On/Off

Read Control Change
Select On/Off

Send Control Change
These settings relate to the 6 faders on the TC
Icon Software Editor.

Off
No CC messages are sent when Faders are
moved.

Single Controller
When Faders are moved - CC values are sent
to MIDI out according to the table below:

FADER 1   - MIDI CC value   70
FADER 2   - MIDI CC value   71
FADER 3   - MIDI CC value   72
FADER 4   - MIDI CC value   73
FADER 5   - MIDI CC value   74
FADER 6   - MIDI CC value   75

Double Controller
In Double mode both MSB and LSB are sent
when moving Faders 1-6 according to the table
below:

	MSB	LSB
FADER 1	16	48
FADER 2	17	49
FADER 3	18	50
FADER 4	19	51
FADER 5	20	52
FADER 6	21	53

Read Sys Ex
Select On/Off

Send Sys Ex
Select On/Off

Preset Dump
 Dump System
Complete Bulk Dump to MIDI Out that includes
all settings.

Dump Engine
Partial MIDI Bulk dump to MIDI Out that only
dumps currently loaded Engine preset.

MIDI MAP page

This is a "MIDI Custom Program Map page",
where you can customize how the Reverb 4000
should map incoming program changes.

First of all the general MIDI settings must be
set up at the MIDI page. (see previous page)

Setting up the Custom Map:
• Use the slider to select which incoming
  program change to MAP.
• Select which bank to map to using the BANK
  SELECT arrows.
• Use the PRESET SELECT arrows to select
  which preset in the selected bank to map to.

Fill From Current
This is a convenient function you may choose
to use when creating a "map to" list.

Example:
001 mapped to 001
002 mapped to 002
003 mapped to 003

----
025 mapped to 201

• Press **Fill From Current**

- Then:

026 mapped to 202
027 mapped to 203
028 mapped to 204

etc.

Reset All
Resets all MIDI mappings.
When Reset - incoming MIDI prg. ch. 01 will
map to preset 1 in Bank 1 (Halls) and MIDI prg
ch. 02 will map to preset 2 in Bank 1 etc.

Net page
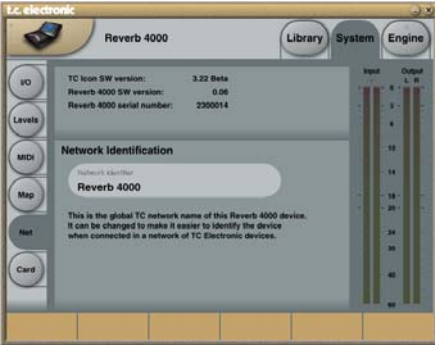
On this page following information can be found:

- **TC Icon Software number**
  Current TC Icon version.

- **Reverb 4000 SW Number**
  Current loaded software in the Reverb 4000.

- **Reverb 4000 Serial Number**
  Serial Number of the Reverb 4000 currently operated.

Network Identification
The Network identifier merely serves as a name for easy recognition. It is especially useful when several units are connected and controlled via the TC Icon Software Editor. Press to change the name via the keyboard display.

Card page
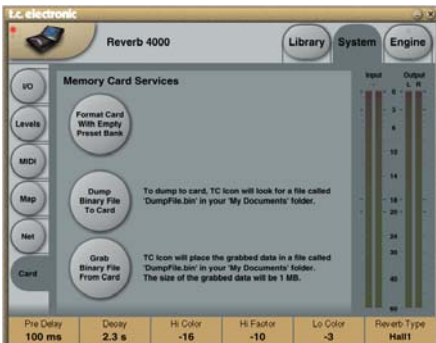
A 1 or 2 MB PCMCIA card can be used for preset back-up. The card must be properly formatted with empty preset banks.

Format card with Empty preset banks
Press to format card. The card is then formatted and ready to use for Reverb 4000, either as preset backup media or as an additional preset bank.

Dump Binary File To Card
It is also possible to dump a binary file to a PCMCIA card inserted in the Reverb 4000. This function is especially useful when updating software.

NOTE Be aware that Dumping a Binary File to a PCMCIA card will erase all data previously stored on the card

In this case the card does not need to be Reverb 4000-formatted as described above.

- Download the software from www.tcelectronic.com
- Rename the file to "dumpfile.bin"
- Place the file in the folder: "My Documents"
- Then press the "Dump Binary File To Card" key

To load the Software to a Reverb 4000 from the PCMCIA card:
- Power off the Reverb 4000
- Power on while holding the I/O key pressed.
- Select "LOAD PCMCIA" and press ENTER
- Select "START" and press ENTER

Grab Binary File From Card
This function is used to grab a binary file from an inserted PCMCIA card. The file will be placed in your My Documents folder.

NOTE Be aware that in case the file you are grabbing has the same name as a .bin file already placed in the "My Documents" folder the previous file will be deleted.

UI - Icon Views

On the Icon Setup page two sub-pages are available for controlling the TC Icon appearance.

Fader appearance
Three options are available. Changes will take place next time you open the TC Icon.

Faders at bottom

Fader at right side
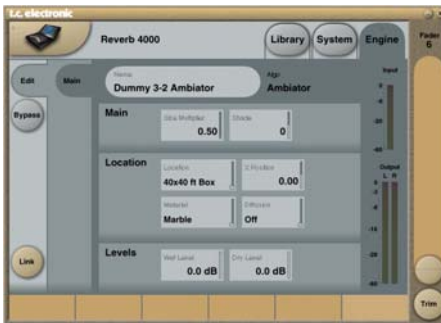
No faders
No faders visual on the screen.

Trim

Press the **value field** to activate the Trim function. With the Trim function a higher value resolution is available on most parameters for fine adjustments.
To release the Trim function simply press the value field again.

Color Page

Depending on the light in the environment in which you are working, different Color schemes may be optimal. Select a color scheme to your liking or make your own. - Enjoy

GENERIC REVERB INTRODUCTION

The TC Reverb Palette

Until 10 years ago, digital reverb was mostly used as a Generic effect applied to many sources of a mix. Nowadays, where more aux send and returns are at disposal, new approaches have emerged. Elements of the mix are being treated individually, adding room character, flavor and depth in more creative and complex ways.

At TC, we call this a Source based approach, and we have put more than 30 man-years of development time into design and refinement of Source based room simulation.

When Generic digital reverbs were invented, they stretched the DSP power and memory bandwidth capabilities of their time; and Source specific processing was completely out of the question. Even though we may now consider Generic types to be less than ideal, they still have applications for which they may be chosen instead of their Source based cousins. The large reverb and room simulation palette of High end reverbs by TC Electronic allows the user to choose whatever principle suits a present need. Below you will find a suggestion of when to use what.

Generic Reverb

Generic reverb is primarily a flattering sustain effect which can be added to many sources of a mix, or a complete stereo or multichannel stem. It adds little character but also does no harm, because the effect is blurred or washed out.

If Early Reflections are offered, there are only few of them and they play a rudimentary role. Therefore, a strong localization is not imposed on the signal, which is what you want when one reverb is used on many sources.

For a graphical artist, the equivalent tool to Generic reverb would be a paint brush.

Generic Reverb Pros
- 1st choice for composite, mixed material and stems
- 1st choice when used with multichannel joystick on console or DAW
- 1st choice for adding to classical main microphone pick-up
- Works well on moving sources
- Prettier than life
- Quick and easy to use

Generic Reverb Cons
- Blurring takes away character from individual sources
- Pitch modulation may be a problem with some material
- Mono compatibility often compromised to obtain extra width
- Imaging inferior to Source based reverb

Source Reverb

When elements of a mix are picked up individually, a chance exists to define exactly how each of them is to be heard. There is no reason to apply one Generic reverb to several single sources, unless they are supposed to present an identical position to the final listener, or you have run out of aux sends.

When it is desirable to distinguish between single elements sharing more or less the same panning position, source based reverb should be a first choice. Subtle discrimination between reflection patterns of individual sources can make all the difference in the world when it comes to obtaining depth, expression and natural imaging.

Source Reverbs are able to generate multiple, complex Early Reflection patterns. For best results, if some reflections are already picked up by a microphone, they should be excluded from the simulated pattern by using the appropriate reflection decrease control.

Instruments or sources can alternatively share the same reverb input in groups, e.g. stage left, center and right, for a more complex and desirable result than a Generic, one-send reverb approach.

For a graphical artist, the equivalent tool to Source reverb would be a 3D rendering system or Virtual Studio.

Source Reverb Pros
- 1st choice when input sources can be separated
- 1st choice with spot microphones
- More depth and distinction obtainable in a mix
- Adds character and definition to a source

Source Reverb Cons
• Require more sends or direct feeds than Generic Reverb types
• No advantage on composite signals
• Not ideal for moving sources

Sampling Reverb

Sampling reverbs present a variation of the Source theme: An impulse response is taken from an actual room based on a specific source and pick-up position. This "canned room" with frozen source, pick-up and speaker positioning, can later be applied to any signal.

From experiments we have found it difficult to translate a room feeling to speakers, due to compromises by nature built into the emission and pick-up process when capturing a room response. This is especially true with multichannel formats such as 5.1 and 6.1, where DSP in simulators can be used to optimize a virtual room for a specific speaker configuration.

Currently, no sampling reverbs are available in TC Reverbs.

Sampling Reverb Pros
• "Organic" or natural feeling
• Some properties of a natural room may be captured
• Different flavor to simulations

Sampling Reverb Cons
• Little editing possible. Editing often doesn't sound right
• Difficult to capture sense of space as well as it may be simulated
• Only one fixed source position per Engine
• Long recall times
• Lower dynamic range and bandwidth than VSS algorithms

VSS-4

This following section of this manual describes the Reverb 4000 algorithms. The descriptions are organized and illustrated via the TC Icon views.
At the end of each algorithm section a table illustrates how the parameters are organized in the Reverb 4000 as stand alone unit.

Multipliers - General
Multipliers are typically used to specify a given Decay time in relation to a Master Decay.

Multiplier example: When a Decay multiplier is set to 1.25 and the Master Decay is 2.0 seconds the resulting decay time will be: 1.25 X 2.00 = 2.5 seconds.

Introduction to VSS-4

VSS™4 is a True Stereo Reverb - or two Source Input to Stereo Output reverb - and radically departs from being an additive sustain diffuse field added to a 2-channel signal. Based on source related Reflections from multiple angles, the precision of VSS™4 is comparable to real-world mono or stereo sources positioned in an authentic or virtual space.
The two Input sources can be used for either a final stereo-mix, or for positioning of two individual mono-sources in the same virtual space.
Because VSS™4 is a true stereo rendering of a real room, you will experience that even with only one source Input, you get a stereo Output including the Early Reflections and Stereo diffused fields.
Used for mastering purposes, VSS™4 maintains full bit transparency when bypassed and with the two Sources placed in +/- 30 degrees position.

Main page
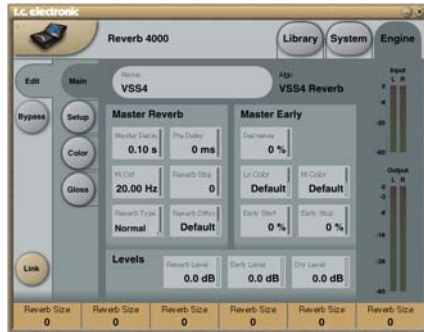
Master Reverb
Master Decay
Range: 0.1 to 20 sec
Adjusts the Master Reverb Decay time. Decay time can be further adjusted using the multiplier for the following bands: Lo, LoMid, HiMid and Hi.

Pre Delay
Range: 0 to 300ms
Pre Delay on the complete wet signal including Early Reflections.

HiCut
Range: 20Hz to 20kHz
Determines the Hi Cut frequency for the Diffuse Field part of the Reverb.

Reverb Size
Range: 0 to 15
Adjusts the overall perceived size of the Diffuse Field part of the algorithm. Generally you would attempt to define the perceived room size by altering the Decay time. However, with the Size parameter you can achieve a perceived alteration of the room size thus keeping the Decay time. The default value is meant as the size that the specific Location Type is intended to have.

Reverb Type
Range: Normal or Colored
When a Location Type is selected a Reverb type is automatically set. With the Reverb Type parameter it is possible to select between the most natural sounding Diffuse field (Normal) and a more colored "vintage" Diffuse field setting.

Reverb Diffuse

Range: -25 to 25

This parameter gives you more or less diffusion than the algorithm designer intended for the given Decay time. For optimum performance the diffusion is automatically adjusted behind the scenes whenever you change Decay times. This parameter gives you the added control to vary the diffusion around this automatic setting.

Master Early

Decrease - Restriction in Order

Range: 0 to 100%

Reflection patterns are rendered to a high order. 1st order reflections have hit one surface before arriving at the listener, 2nd order reflections two surfaces etc. High order reflections are often more diffuse than low order ones. In Reverb 4000 this effect is emulated by assigning individual diffusion characteristics to each reflection.

During perceptual experiments, we have found that reducing particular orders of reflections can be useful for optimizing the room response to a given microphone placement. The 0% setting will enable the full response while 100% is full reduction.

Lo Color

Range: -50 to 50

Lo Color adjustment of the Early Reflections

Hi Color

Range: -50 to 50

Hi Color adjustment of the Early Reflections

Early Start

Range: 0 to 100%

Adjusting the Start time is an efficient way of getting rid of the first reflections that normally color the source the most. By adjusting the Start time, the first reflections are discarded but the timing of the later reflections remain unchanged. Therefore this adjustment is typically more acoustically precise and useful than a normal Predelay control.

> **NOTE** The parameter range limit will be less than 100% if the Early Stop parameter is set to anything other than 0%.

Early Stop

Range: 0 to 100%

The Early Stop parameter can reduce the later reflections in the Early Reflections pattern. When using large location types this can be a useful parameter to smooth the overall perception of the room.

> **NOTE** The parameter range limit will be less than 100% if the Early Start parameter is set to anything other than 0%.

Levels

Reverb Level

Range: Off to 0dB

Adjusts the level of the Diffuse Field reflections.

Early Level

Range: Off to 0dB

Adjusts the level of the Early Reflections from the two sources.

Dry Level

Range: Off to 0dB

Attenuates the Dry signal level on the Output side thus leaving the Reverb and Early Level unaffected. Off equals a "kill-dry" setting.

Setup page

Location Type

Select between different Locations. Both the Early Reflection- and Diffuse Field-types are changed when switching Location to give the optimal starting point for further adjustments.

Positions
Range:
R 30º, R 15º, R 7º, C 0º, L 7º, L 15º, L 30º
Sets the location of the two Input sources.
Depending on the Location Type the number of
positions can vary. Typically a small room has
less positions than a large location. Source 1 is
Left Input and Source 2 is Right Input

Note - in 96kHz position B is eliminated.

Color page
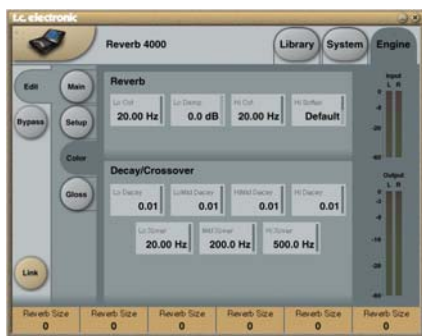
Reverb
Lo Cut
Range: 20Hz to 200Hz
Determines the Lo Cut frequency.
Attenuation amount is controlled via the Lo
Damp parameter.

Lo Damp
Range: 0 to -18dB
Attenuation of the frequencies below the
selected frequency via the Lo Cut parameter.

Hi Soften
Hi Soften is a special filter used to "soften" the
high frequencies of Reverb diffuse field. This is
not a simple Hi Cut filter but a complex set of
filters working together to remove the
frequencies that give a "brittle" or "harsh"
sounding Reverb. Hi Soften is scaled/linked to
the Hi Cut and Hi Decay parameters.

Hi Cut
Range: 20 to 20kHz
Attenuates the high-end frequencies.

Decay Crossover
Lo Decay
Range: 0.01 to 2.5
Decay multiplier in relation to the Master Decay,
for the frequencies below the Lo Xover setting.

LoMid Decay
Decay multiplier in relation to the Master Decay,
for the frequencies above the Lo Xover and
below the Mid Xover settings.

HiMid Decay
Decay multiplier in relation to the Master Decay,
for the frequencies above the Mid Xover and
below the Hi Xover settings.

Hi Decay
Decay multiplier in relation to the Master Decay,
for the frequencies above the Hi Xover setting.

Lo Xover
Sets the Cross-over frequency between the Lo
and LoMid Decay.

Mid Xover
Sets the Cross-over frequency between the
LoMid and HiMid Decay.

Hi Xover
Sets the Cross-over frequency between the
HiMid and Hi Decay.

Gloss page

In the Reverb 4000 user interface the parameters of this algorithm are organized as follows:

Home		
PREDEL	DECAY	HIDEC
MIDI CC:	*MIDI CC:*	*MIDI CC:*
22/54 (DP)	23/55 (DP)	24/56 (DP)
76 (SP)	77 (SP)	78 (SP)
Levels		
EARLY	REVERB	DRY
Reverb		
LOCUT	LODAMP	HICUT
REVSIZE	REVTYPE	DIFFUSE
Early		
TYPE	POS A	POS B
LOCOL		HICOL
START	STOP	DECRS
Decay		
LO	LOMID	HIMID
		HISOFT
Xover		
LO	MID	HI
Modulation		
TYPE	RATE	DEPTH

(SP) : Single Precision
(DP) : Double Precision

Reverb Modulation

The algorithm designers have adjusted the diffuse field part of the reverb to be as smooth and natural sounding as possible. However, to integrate with the source material or to get a different sound, it's sometimes needed to add in modulation to the late part of the reverb.

Modulation Type
Select between different types of modulation on the five Reverb diffuse fields.

Modulation Rate
Range: +/-50
Adjusts the Rate of the selected modulation.

Modulation Depth
Range: 0 - 200%
Adjusts the Depth of the selected modulation.

Introduction

The VSS-3 algorithm is a multipurpose algorithm, that with the comprehensive amount of parameters in both the Early Reflection section, the Reverb diffuse field and modulation section opens for numerous flavors.

Use the VSS-3 as a high quality Source reverb.

Main page
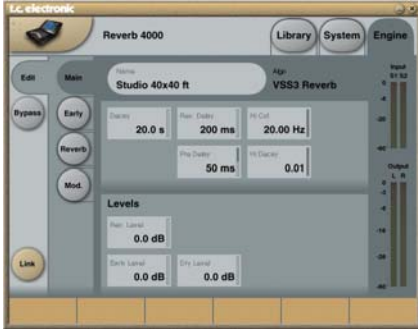
Decay

Range: 0.01 to 20s

The Decay time of the Reverb. Usually associated with the time it takes the Reverb Diffuse Field to decay 60dB. This is the overall Master Decay for the four band Decay parameters (found in the REVERB section below), which are multiples of this base Reverb time.

Rev. Delay

Range: 0 - 200ms

A Delay to the diffuse field part of the Reverb. Adds additional time between the Early Reflections and the onset of the "diffuse field" of the Reverb.

Hi Cut

Range: 20Hz to 20kHz

Rolls off the top end of the signal as it enters the Reverb. Used in conjunction with Hi Soften and Hi Decay to "darken" a room.

Pre Delay

Range: 0 to 100ms

A Delay placed at the Input of the algorithm. This sets how long after the dry sound the Early Reflections and the diffuse field will begin.

Hi Decay

Range: 0.01 to 2.5

Multiplier for the frequencies above the Hi Xover frequency.

Levels

Rev. Level

Range: -100dB to 0dB

The Output level of the diffuse field part of the algorithm. When Rev Level is set to off, the effect will consist entirely of Early Reflections.

Early Level

Range: -100dB to 0dB

The Output level of the Early Reflections. When Early Lev is set to off the Reverb effect will consist entirely of the Reverb Diffuse Field.

Dry Level

Attenuates the Dry signal level on the Output side thus leaving the Reverb and Early Level unaffected. Off equals a "kill-dry" setting.

Early page

Early Reflections

Early Type

Range:
Concert Hall
Theater
Church
Venue
Studio
Softhall
Near
Hard
Spread
Build
Random
Slap

Car
Phonebooth
Bathroom
Smallroom
Carpark
Swim Stadium
Airport
Street
Alley
Piazza
Forest

Pick the type that best compliments your material or best represents the effect you are going for.

Early Size
Range/Type: Small, Medium or Large
Changes the size of the Early Type parameter.

Some of the Early Types are one size.

Early Color
Range: -40/+40
Adjusts the spectral balance in the high end frequencies. This is actually a simple way of adjusting a complex selection of frequencies.

Early Lo Cut
Range: Off to 400Hz
Sets the Lo Cut frequency for the Early Reflections.

Early Position
Here you can select between a Close and a Distant setting. This enables you to change the distance between the listening position and the source in the same Early Reflection pattern.

Please note that some of the Early Types only have one position available.

Early Balance
Range: -100dB R, Center, -100dB L
The left/right balance of the Early Reflections. Allows you to offset the Early Reflections from the normal center position.

Reverb page
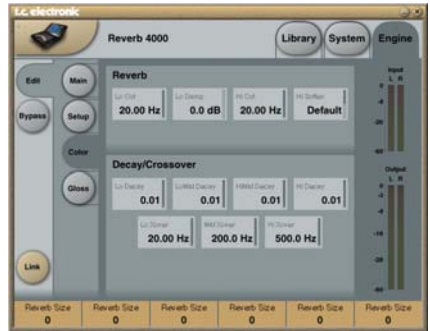
Reverb

Reverb Type
Range: Smooth, Natural, Alive, Fast, Fast Wd, Alive Wd
Adjust this parameter with the Early Level turned all the way off and the Rev Level all the way up. Change the type to get a feel of what each one sound like.

Reverb Width
Range: Wide, Stereo, Center or Mono
With this parameter you can change the width of the diffuse field. The Mono setting is where the left and right Reverb Diffuse Fields are completely identical, the Center setting opens slightly in the middle, Stereo is the normal stereo image width and Wide covers the outside of the stereo image.

The RevTypes: Fast Wd and Alive Wd only have one width (extremely wide).

Lo Cut
Range: 20Hz to 200Hz
Adjustable filter that allows you to remove low frequencies from the Reverb. The Lo Cut frequency can be perceived as a Threshold frequency. The cut will be performed according to the Lo Damp parameter.

Lo Damp
Range: -18dB to 0dB
Sets the amount of cut in dBs.
(See Lo Cut description above).

Hi Cut
Range: 20 to 20kHz
Filter that allows you to remove high frequencies from the Reverb.

Hi Soften
Range: -50 to +50
Hi Soften is a special filter used to "soften" the high frequencies of Reverb. This is not a simple Hi Cut filter but a complex set of filters working together to remove those frequencies that make a Reverb sound "brittle" or harsh. Hi Soften is scaled/linked to the Hi Cut and Hi Decay.

Reverb Balance
Range: -100dB R, center, -100dB L
The left/right balance of the Reverb. Allows you to offset the diffuse field from the normal center position.

Diffuse
Range: -50 to +50
This parameter gives you more or less diffusion than the algorithm designer intended for the given Decay time. For optimal performance the diffusion is automatically adjusted behind the scenes whenever you change Decay times. This parameter gives you the added control to vary the diffusion around this automatic setting.

Decay/Crossover
Lo Decay
Range: 0.01 to 2.5
Multiplier for the frequencies below the Lo Xover frequency.

LoMid Decay
Range: 0.01 to 2.5
The Ratio control multiplier for the low-mid frequencies.

HiMid Decay
Range: 0.01 - 2.5
The Ratio control multiplier for the mid frequencies. This parameter is normally set to 1.0, as it is the main parameter adjusted by the main Decay parameter. This mid-range decay control would normally be omitted, however, TC Engineers felt you could use this parameter as a fine adjustment tool to "tweak" a preset to sound just right without having to adjust the master Decay parameter.

Hi Decay
Sets the Decay time for the High-end frequencies of the Reverb diffuse field.

Lo Crossover
Range: 20Hz to 500Hz
Sets the frequency at which the transition from the low to the low-mid frequencies takes place.

Mid Crossover
Range: 200Hz to 2kHz
Sets the frequency at which the transition from the low-mid to the mid frequencies takes place.

Hi Crossover
Range: 500Hz to 20kHz
Sets the frequency at which the transition from the mid frequencies to the high frequencies takes place.

Mod page

Reverb Modulation
Rev. Mod. Type
Range: Off, Smooth 1, Smooth 2, Perc, Wow, Vintage, Wild
Selects the type of modulation.

Rev. Mod. Rate
Range: -100, default, +100
Allows you to offset the speed of the LFO from the factory default assigned to each Type.

Rev Mod Width
Range: 0% to 200%
Sets the Width of the modulation.

Space Modulation

Space Mod. Type
(Off, Normal, Fast, Slow, MidFreq, Sync)
Selects the type of Space Modulation.

Space Mod. Rate
Range: -100, default, +100
Allows you to offset the speed of the LFO from the factory default assigned to each type.

Space Mod. Width
Range: 0 to 100%
Sets the width of the modulation.

Space Mod Depth
Range: -50, default, +50
Allow you to offset the amount of space modulation from the factory default.

In the Reverb 4000 user interface the parameters of this algorithm are organized as follows:

Home		
PREDEL	DECAY	HIDEC
MIDI CC:	*MIDI CC:*	*MIDI CC:*
22/54 (DP)	23/55 (DP)	24/56 (DP)
76 (SP)	77 (SP)	78 (SP)

Levels		
EARLY	REVERB	DRY

Reverb		
LOCUT	LODAMP	HICUT
WIDTH	TYPE	DIFFUSE
BALANCE	DELAY	

Early		
TYPE	SIZE	POSITION
HICOLOR	LOCUT	BALANCE

Decay		
LO	LOMID	HIMID
	HISOFT	HIDEC

Xover		
LO	MID	HI

Modulation		
TYPE	RATE	DEPTH

Space Modulation		
Type	Rate	Width
Depth		

(SP) : Single Precision
(DP) : Double Precision

Introduction

NonLin is an Effect Reverb with controllable Envelope, Attack, Hold and Release. It is capable of generating compact Vocal Ambience, dramatic eighties drum and percussion sounds, Reverse Reverb or completely new and twisted effects. Nonlin also does classic Gated Reverb, but because it doesn't need to be triggered, it can be used on all sorts of program material.

The eighties with a Twist
Compared to effect Reverbs from the past, Nonlin features longer and more diffused response with a higher resolution, but classic, low density processing is also available. However, there is more to updating a classic than free Envelope, selectable response and higher resolution.

NonLin also features a Twist parameter, which radically alters the sound, sometimes in weird ways. Adding Twist may not always be pretty, but the parameter truly is a new spice included to spark imagination and storytelling, and which can be used to add character to any source of a mix.

Main page

Envelope
Pre Delay
Range: 0 - 500ms
Pre Delay offsets the Output and timing of the Envelope Generator. It is typically used to obtain depth and definition in a mix, or align the effect with a musical beat. Delays in the 10-40 ms range can be considered for percussive sounds, while dense vocal slap effects could use 70-150 ms of Pre Delay.

Attack
Range: 0 - 500ms
Sets the Attack time (= build up) of the Reverb Envelope.

> NOTE: Max. range for this parameter depends on the Hold and Release settings.

Hold
Range: 0 - 500ms
Sets the Hold time (= fully open time) of the Reverb Envelope. For a typical eighties style response, Hold should be set at 60-120 ms.

> NOTE: Max. range for this parameter depends on the Attack and Release settings.

Release
Range: 0 - 500ms
Sets the Release time (= Decay) of the Reverb Envelope.
For a typical eighties style response, Release should be set at 0-100 ms. The most gated and unnatural effect is obtained at short Release settings.

> NOTE: Max. range for this parameter depends on the Attack and Hold settings.

Reverb
Style
Selects the basic Reverb Style subjected to the Envelope and Twist modifications. The Style parameter should be seen as an algorithm selection inside the algorithm.
Different Styles have different features with regards to density, diffusion type, spectral response, stereo image etc. Choose one that suits your program material.

> NOTE: Differences are more pronounced with low Diffuse settings and Twist Ratios.

Diffuse
Range: 0 - 100%
Sets the amount of diffusion applied to the Reverb Style selected.

> NOTE: For high Diffuse ratios, the Attack and Decay times of the reverb Envelope may be slightly affected.

NONLIN-2

Twist

Type
Selects which type of funky effect treatment to be used on the reverb. Twist Type should be regarded as a spice capable of sparking imagination in the mix process. Try the effect on all sorts of different sources to add character or make them stand out. If spectral shaping using the Twist parameters gets out of control, the Lo and Hi cuts can be used to stay within limits.

> **NOTE** When the Twist Ratio is set at 0%, Twist Type has no effect.

Ratio
Range: 0 - 100%
Applies the selected amount of "Twist" to the Reverb.

> **NOTE** When the Twist Ratio is set at 0%, Twist Type has no effect.

Width

Width
Range: 0 - 100%
Adjusts the Output Stereo Width. 0% denotes mono, while 100% is max width.

> **NOTE** The Reverb Style and Diffuse parameters also affect the perceived width of the effect. Width difference between Styles is most obvious at low Diffuse Ratios.

Level Page

Levels

Dry Level
Range: Off - 0dB
Adjusts the dry signal level passed through the Engine. For a typical send/return configuration, leave Dry level off.

Wet Level
Range: Off - 0dB
Adjusts the wet Output level.

Filter

LoCut
Range: 20Hz to 20kHz
Lo Cut on the Reverb Input.

Hi Cut
Range: 20Hz to 20kHz
Hi cut on the Reverb Input.

In the Reverb 4000 user interface the parameters of this algorithm are organized as follows.

Home		
ATTACK	HOLD	RELEASE
MIDI CC:	*MIDI CC:*	*MIDI CC:*
22/54 (DP)	23/55 (DP)	24/56 (DP)
76 (SP)	77 (SP)	78 (SP)
Levels		
	WET	DRY
Reverb		
LOCUT		HICUT
WIDTH	STYLE	DIFFUSE
PREDEL		
Twist		
TYPE	RATIO	

(SP) : Single Precision
(DP) : Double Precision

Introduction

DVR-2 offers a pristine Generic Reverb with true vintage flavor. Generic Reverb is complementary to Source Reverb, and both types are at disposal in the Reverb 4000.

You can read more about Generic Reverb elsewhere in Reverb introduction but the term is used to describe a flattering sustain effect, which can be added to many sources of a mix. It produces little character but also does no harm, because the effect is blurred or washed out. Instead, it adds a good sense of spaciousness and more or less pronounced modulation.

Recreation of a Classic

The development of DVR-2 has been a process extending several years, with the goal of recreating the most shining Generic Reverb of all times, the EMT250. A particularly well sounding machine was refurbished, and in the making of DVR-2 many design disciplines were involved...

Hardware technical: What was the precision of converters and how where they implemented in the eighties with emphasis, block scaling, linearity, filters etc? How much processing and RAM was available, what was the sample rate etc?

Software technical: Which kind of processing was done in discrete circuitry, what type of truncation and noisefloor artifacts would result, how could the low sample rate be mimicked precisely, and how could all of this be transferred to a modern DSP platform.

Perceptual: Making sure the qualities of the original processor was preserved. Sweet modulation, spectral characteristics, spaciousness, distortion, saturation etc. Hundreds of hours spent listening and measuring.

User: The four basic parameters of the EMT250 were carefully laid out, offering a remarkably simple user interface with complex, yet optimized interactions under the hood. DVR-2 is a resemblance of that including range and coarseness of parameters. Also the original I/O structure is kept with Mono in to Stereo and Quad out.

Better than the Classic?

While DVR-2 in Normal mode is very close to the sound of a perfectly aligned 250, having used much DSP power to mimic artifacts of old hardware, the algorithm can also be put in a High Resolution mode. Using this function, the noisefloor is much lower, but use your own ears to determine if this is actually a plus for a specific situation.

Please note: Many of the constraints and criteria listed above produce non-linear audio behavior, making it impossible to obtain more than a static and crude result if trying to sample an original processor. A minute emulation does more justice to the original from an audio point of view, and can also still be adjusted.

Main page
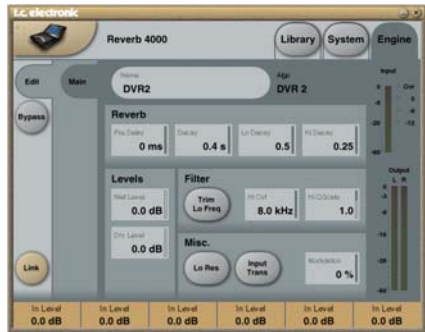
Reverb

Pre Delay
Range: 0, 20, 40 and 60ms
Pre delay is the amount of time from an input is received until reverb starts building up at the output.

Decay
Range: 0.2 - 4.5s
Adjusts the Master Decay time.

Lo Decay
Range: 0.5 to 2.0
Decay multiplier for low frequencies. For a x1.0 setting, low frequency decay will equal the Decay setting.

Hi Decay
Range: 0.5 to Max.
Decay multiplier for hi frequencies. For a x1.0 setting, high frequency decay will equal the Decay setting.

Levels

Wet Level
Range: Off - 0dB
Adjusts the reverb level of the output channels.

Dry Level
Range: Off - 0dB
Adjusts the dry signal level of the output channels.

Filter

Hi Cut
This is DVR-2´s HiCut and can be used to limit or extend the overall frequency spectrum.

Hi Q Scale
Corresponds the small potmeters inside older reverbs used to equalize sound differences caused by electric component-tolerances. Use the Q-scale in combination with the set with HiCut Frequency to shape the treble to your personal flavor.

Trim Lo Freq
A subtle damping of selected frequencies in the lower end.

Misc.

Lo Res
Switches the DVR-2 to a lower bit-resolution. This adds an older and more grainy sound and also noise giving a simulation of various vintage reverbs.

Input Trans
Emulates the sound of Input transformers typically used in vintage Reverbs. Use it to create a warm vintage like sound. Especially good for short Decay times.

Modulation
Sets the Depth of the modulation. Normal set to 100%. Increase if you like a more liquid, chorus like sound.

In the Reverb 4000 user interface the parameters of this algorithm are organized as follows:

Home		
PREDEL	DECAY	HIDEC
MIDI CC:	*MIDI CC:*	*MIDI CC:*
22/54 (DP)	23/55 (DP)	24/56 (DP)
76 (SP)	77 (SP)	78 (SP)
Levels		
	WET	DRY
Reverb		
TRIMLO	QSCALE	HICUT
Decay		
LO	RATIO	HIDEC
Misc.		
MODDPTH	LORES	INTRANS

(SP) : Single Precision
(DP) : Double Precision

Main page
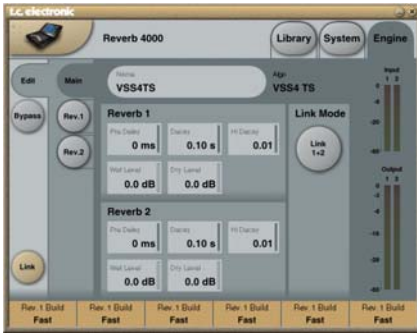
Rev1/Rev2 page
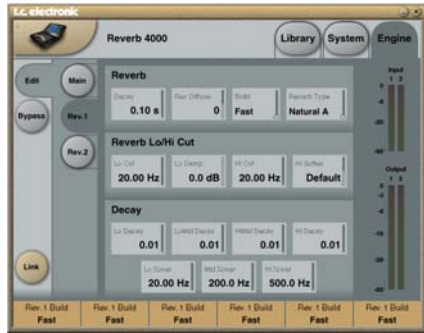
Reverb 1 - Reverb 2

Link
The Link mode is used to link parameters between the Reverbs 1 and 2. E.g. if "Link 1+2" is selected the Master Decay of both Reverb 1 and Reverb 2 is controlled by a single handle.

Pre Delay
Range: 0 - 300ms
Adjusts the Pre Delay

Decay
Adjusts the Master Decay time.

Hi Decay
Decay multiplier for Reverb A hi-end frequencies. For a x1.0 setting, high frequency decay will equal the Decay setting.

Wet Level
Range: Off to 0dB
Input level adjust.
If the input signal is close to full scale and/or long decay times are used, it may be necessary to attenuate the input to avoid overload.

Dry Level
Range: Off to 0dB
Dry Level control.
In send/return configurations, the parameter should be set to Off.

Reverb

Decay
Master Decay parameter. This parameter is also found on the Main page.

Rev. Diffuse
Range: -50 to +50
This parameter offsets the diffusion away from what is considered optimum for a given Decay time.

Build
Range: Fast, Slow
Selects the speed of the build-up (i.e. attack) of the reverb.

Reverb Type
By selecting different types or different version (A, B, C, D), de-correlated responses are ensured.

Reverb Lo/Hi Cut

Lo Cut
Range: 20Hz to 200Hz
Determines the Lo Cut frequency. Attenuation amount is controlled via the Lo Damp parameter.

Lo Damp
Range: 0 to -18dB
Attenuation amount of frequencies below the Lo Cut setting.

Hi Cut
Range: 20Hz to 20kHz
Determines the Hi Cut frequency.

Hi Soften
Smoothen the High End frequencies.

Decay

Lo Decay
Range: 0.01 to 2.5
Decay multiplier related to Master Decay, for frequencies below the Lo Xover setting.

LoMid Decay
Range: 0.01 to 2.5
Decay multiplier related to Master Decay, for frequencies above the Lo Xover setting.

HiMid Decay
Range: 0.01 to 2.5
Decay multiplier related to Master Decay, for frequencies above the Mid Xover setting.

Hi Decay
Range: 0.01 to 2.5
Decay multiplier related to Master Decay, for frequencies above the Mid Xover setting.

Lo Xover
Sets the Cross-over frequency between the Lo and LoMid Decay.

Mid Xover
Sets the Cross-over frequency between the LoMid and HiMid Decay.

Hi Xover
Sets the Cross-over frequency between the HiMid and Hi Decay.

In the Reverb 4000 user interface the parameters of this algorithm are organized as follows:

Home		
PREDEL	DECAY	HIDEC
MIDI CC:	*MIDI CC:*	*MIDI CC:*
22/54 (DP)	23/55 (DP)	24/56 (DP)
76 (SP)	77 (SP)	78 (SP)
Home B		
PREDELB	DECAYB	HIDECB
Levels		
	WET A	DRY A
	WET B	DRY B
Reverb A		
LOCUT	LODAMP	HICUT
DECAY	TYPE	DIFFUSE
BUILD		
Reverb B		
LOCUT	LODAMP	HICUT
DECAY	TYPE	DIFFUSE
BUILD		
Decay A		
LO	LOMID	HIMID
	HISOFT	HIDEC
Xover A		
LO	MID	HI
DECAY B		
LO	LOMID	HIMID
	HISOFT	HIDEC
Xover B		
LO	MID	HI
Link		
LINK		

(SP) : Single Precision
(DP) : Double Precision

AMBIATOR

Introduction

Ambiator is a new small-space modeller with integrated panning af a source. Try it when you grow tired of power panning or just need to add that subtle sense of ambience bringing life and character to certain elements of a mix.

Main page
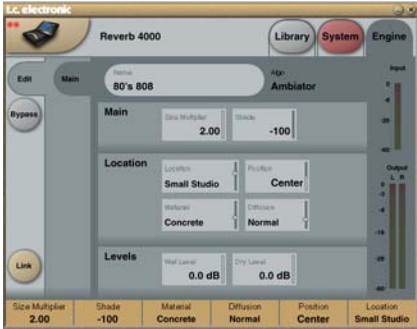
Main

Size
Range: 0.5 to 2
Multiplier. "1" is default and the size intended by the designer.

Shade
Range: -100 to 100
The Shade parameter is an "amount control" of both the Material/Diffuse type parameters. Where the Material and Diffuse Type parameters define the "sound" or "color" of ambience, the Shade parameter adds or subtracts the amount of definition.

Locations

Location Type
Range: 40x40 ft box, Big Studio, Box Car, Mid Studio, Small Corridor, Small Studio, Medium Room, Corner Close and Corner Far.
Simply defines the basis location type emulated.

Position
Range: -100(Left) to 100(Right) - 0 is Center.
Position panner for the generated reflections.

Material
Range: Marble, Plaster, Concrete, Brickwall, Mineral Wool and Wood.
The Material parameter is an integrated part of the Shade parameters and defines overall sound.

Diffusion
Range: Off, Normal, Metal and Smooth
Selects between different diffuse/boundary types or turns diffusion off. The diffuse amount is an integrated part of the Shade parameters.

Levels

Wet Level
Range: Off to 0dB
Adjusts the Wet level of the algorithm.

Dry Level
Range: Off to 0dB
Sets the amount of Dry signal.

In the Reverb 4000 user interface the parameters of this algorithm are organized as follows:

Home		
	SIZE	SHADE
	MIDI CC:	*MIDI CC:*
	23/55 (DP)	24/56 (DP)
	77 (SP)	78 (SP)
Levels		
	WET	DRY
Location		
TYPE	MATERIA	POSITION
		DIFFTYPE

(SP) : Single Precision
(DP) : Double Precision

Introduction

Reverb 4 is a new Stereo In, Stereo Out algorithm making its debut in Reverb 4000. This is a 2003 version of a Generic Reverb, suited for composite material and main microphone processing. It adds spaciousness rather than localization to the audio image.

Important for mastering purposes, Reverb 4 features full 24 bit transparency, and the wet Output is de-correlated the same way a good recording of a natural room would be. Therefore, the Wet/Dry balance is not upset when listening in mono.

Main page
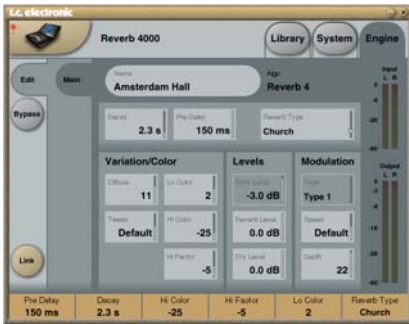
Decay
Range: Variable depending on Rev Type
Master Decay for Reverb A

Pre Delay
Range: 0 - 300ms
Pre Delay for setting for the entire Reverb.

Rev Type
Select between various Reverb types.

Variation/Color

Diffuse
Range: -50 to +50
Sets the amount of Diffuse

Tweak
Range: -25 to +25
The Default setting is 0 and the setting intended by the designer. However, exiting resonance variations can be found by twisting the tweak parameter that detunes the algorithms delay settings and disadjusts the algorithm structure.

Lo Color & Hi Color
Color adjust parameters on the entire Reverb.

Hi Fact
Range: -25 to +25
Scales Hi Cuts

Levels

Early Level
Range: -100 to 0dB
Level parameter for the Early Reflection part of the algorithm. Increase to emphasize the definition of the Room. Decrease to set focus on the Diffuse part of the algorithm.

Reverb Level
Range: -100dB to 0dB
The Output level of the diffuse field part of the algorithm. When Rev Level is set to off, the effect will consist entirely of Early Reflections.

Dry Level
Range: -100 to 0dB
Attenuates the Dry signal level on the Output side thus leaving the Reverb and Early Level unaffected. Off equals a "kill-dry" setting.

Wet
Range: Off to 0dB
Adjusts the Wet level of the algorithm.

REVERB-4

Modulation

Type
Range: dependent on Rev Type
Variations of modulations over the Reverb
Types.

Rate
Range: -25 to +25
Allows you to offset the speed of the LFO from
the factory default assigned to each Type.

Depth
Range: -25 to +25
Allows you to offset the amount of space
modulation from the factory default.

**In the Reverb 4000 user interface the
parameters of this algorithm are organized
as follows:**

Home		
PREDEL	DECAY	HIFACT
MIDI CC:	*MIDI CC:*	*MIDI CC:*
22/54 (DP)	23/55 (DP)	24/56 (DP)
76 (SP)	77 (SP)	78 (SP)
Levels		
EARLY	REVERB	DRY
Reverb		
LOCOLOR	HICOLOR	HIFACT
REVTYPE	TWEAK	DIFFUSE
Modulation		
TYPE	RATE	DEPTH

(SP) : Single Precision
(DP) : Double Precision

REVERB 4000 - HIGH DEFINITION REVERB

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1	1	
	Changed	1-16	OMNI-1-16	
Mode	Default			
	Messages	X	X	
	Altered			
Note Number		X	X	
	True Voice	X	X	
Velocity	Note ON	X	X	
	Note OFF	X	X	
After Touch	Key's	X	X	
	Channel	X	X	
Pitch Bend		X	X	
Control Change		O	O	
Prog Change		O	O	
SysEx		O	O	
Common	Song Pos	X	X	
	Song Sel	X	X	
	Tune			
System real time	Clock	X	X	
	Commands	X	X	
Aux Messages	Local ON/OFF	X	X	
	All Notes OFF	X	X	
	Active Sense	X	X	
	Reset	X	X	

O:YES   **Mode 1: OMNI ON, POLY**   **Mode 2: OMNI ON, MONO**
X:NO   **Mode 3: OMNI OFF, POLY**   **Mode 4: OMNI OFF, MONO**

Digital Inputs and Outputs

Connectors:	XLR (AES/EBU)
	RCA Phono (S/PDIF)
	Optical (Tos-link, ADAT)
Formats:	AES/EBU (24 bit),
	S/PDIF (24 bit), EIAJ CP-340, IEC 958,
	EIAJ Optical (Tos-link),
	ADAT Lite pipe (24 bit)
Output Dither:	HPF/TPDF dither 8-20 bit, independent dithered output
Word Clock Input:	RCA Phono, 75 ohm, 0.6 to 10 Vpp
Sample Rates:	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz
Processing Delay:	0.2 ms @ 48 kHz
Frequency Response DIO:	DC to 23.9 kHz ± 0.01 dB @ 48 kHz
	DC to 47.9 kHz ± 0.01 dB @ 96 kHz

Analog Inputs

Connectors:	XLR balanced (pin 2 hot)
Impedance:	20 Kohm
Max. Input Level:	+22 dBu (balanced)
Min. Input Level (for 0 dBFS):	-10 dBu
Sensitivity:	@ 12 dB headroom: -22 dBu to +10 dBu
A to D Conversion:	24 bit (6.144 MHz delta sigma @ 48/96 kHz)
A to D Delay:	0.8 ms @ 48 kHz, 0.4 ms @ 96 kHz.
Dynamic Range:	>103 dB (unweighted, BW = 22 kHz), >106 dB(A)
THD:	-95 dB (0,0018 %) @ 1 kHz, -6 dBFS (FS @ +16 dBu)
Frequency Response:	10 Hz to 20 kHz : +0/-0.2 dB @ 48 kHz
	10 Hz to 45 kHz : +0/-1 dB @ 96 kHz
Crosstalk:	<-80 dB, 10 Hz to 20 kHz
	typical –100 dB @ 1 kHz

Analog Outputs

Connectors:	XLR balanced (pin 2 hot)
Impedance:	100 ohm (active transformer)
Max. Output Level:	+22 dBu (balanced)
Full Scale Output Range:	-10 dBu to +22 dBu
D to A Conversion:	24 bit (6.144 MHz delta sigma @ 48/96 kHz)
D to A Delay:	0.57 ms @ 48 kHz, 0.28 ms @ 96 kHz
Dynamic Range:	>+100 dB (unweighted, BW = 22KHz), >+104 dB(A)
THD:	-82 dB (0.008 %) @ 1 kHz, -6 dBFS (FS @ +16 dBu)
Frequency Response:	10 Hz to 20 kHz : +0/-0.5 dB @ 48 kHz
	10 Hz to 45 kHz : +0/-3 dB @ 96 kHz
Crosstalk:	<-60 dB, 10 Hz to 20 kHz
	typical –90 dB @ 1 kHz

EMC

Complies with:	EN 55103-1 and EN 55103-2
	FCC part 15, Class B
	CISPR 22, Class B

Safety

Certified to:	IEC 60065, EN 60065, UL 6500 and
	CSA E65, CSA File#LR108093

Due to continuous development these specifications are subject to change without notice.

Environment
Operating Temperature: 32° F to 122° F (0° C to 50° C)
Storage Temperature: -22° F to 167° F (-30° C to 70° C)
Humidity: Max. 90 %   non-condensing

PCMCIA Interface
Connector: PC Card, 68 pin type 1 cards
Standards: PCMCIA 2.0, JEIDA 4.0
Card Format: Supports up to 2 MB SRAM

Control Interface
MIDI: In/Out/Thru: 5 Pin DIN

General
Finish: Anodized aluminum front
                            Plated and painted steel chassis

Display: 56 x 128 dot graphic LCD
Dimensions: 19" x 1.75" x 8.2" (483 x 44 x 208 mm)
Weight: 5.2 lb. (2.35 kg)
Mains Voltage: 100 to 240 VAC, 50 to 60 Hz
                            (auto-select)

Power Consumption: <20 W
Backup Battery Life: >10 years

Warranty
Parts and labor: 1 year

PRESET LIST - HALLS

No	Name	Preset Derrives from	Algorithm
1	Large Hall	S-6000	VSS-4
2	Crystal Hall		DVR
3	Soft Hall	S-6000	Rev-4
4	Back There	M-3000	VSS-3
5	Studio 40x40 ft	M-3000	VSS-3
6	Rich Hall		VSS4
7	Wooden Chamber		VSS4
8	Wiener Halle		VSS4
9	Concert Gebouw		VSS4
10	DTuned Hall		VSS4
11	Cincinnati Music Hall	S-6000	VSS-4
12	VSS4 Chamber	S-6000	VSS-4
13	Vocal Bright	M-3000	VSS-3
14	Medium Hall	S-6000	VSS-4
15	Joy Hall	S-6000	VSS-4
16	Europe Orch Hall	S-6000	VSS-4
17	Show Hall	S-6000	VSS-4
18	Back Wall Hall	S-6000	VSS-4
19	Natural Hall	S-6000	VSS-4
20	Big Orch Hall	S-6000	VSS-4
21	New Age Hall	S-6000	VSS-4
22	Warm Slap Hall	S-6000	VSS-4
23	Bright Slap Hall	S-6000	VSS-4
24	Erase"Verb"	S-6000	VSS-4
25	Alone In The Dark	S-6000	VSS-4
26	Shortstop Hall	S-6000	VSS-4
27	Big Jazz Scene	S-6000	VSS-4
28	Large Clear Hall	S-6000	VSS-3
29	Warm Cathedral	M-3000	VSS-3
30	Ambient Hall	M-3000	VSS-3
31	Bright Theatre	M-3000	VSS-3
32	Church	M-3000	VSS-3
33	Vocal Hall 1	M-3000	VSS-3
34	Vocal Deep	M-3000	VSS-3
35	Boston Garden Hall	M-3000	VSS-3
36	Amsterdam Hall	S-6000	Rev-4
37	Showtime	S-6000	Rev-4
38	Cool Pop Ballad		VSS-4
39	Live Pop Ballad		VSS-4
40	GM Hall <M5>		
41	Church1 <M5>		
42	Church2 <M5>		
43	480 Hall <M5>		
44	SlapHall <M5>		
45	WoodHall <M5>		
46	5000Hall <M5>		
47	Live VoxHall		VSS-4

NOTE: Presets marked with <M5>
are emulations of M5000 presets of the same name

PRESET LIST - ROOMS

No	Name	Preset Derrives from
101	Small Blanket Room	S-6000
102	Church Coffee House	S-6000
103	Dirty Room	S-6000
104	Puk Drum Ambience	M-3000
105	80X80 feet Box	S-6000
106	DrewRoom <M5k>	
107	HomeRoom <M5k>	
108	Library	
109	Spanking Room	
110	DTuned Ambience	
111	Cozy Corner	S-6000
112	Live 2	S-6000
113	Small Studio	S-6000
114	Small Wood Room	M-3000
115	Studio Live Room	S-6000
116	Small Room	S-6000
117	Medium Room	S-6000
118	Dark Red Velvet	S-6000
119	Tight & Round	S-6000
120	Conga Lounge	S-6000
121	Snare Room	S-6000
122	Kick Room	S-6000
123	Small Hall	S-6000
124	Generic Live Club	S-6000
125	Flat Rap Club	S-6000
126	Overhead Mics	M-3000
127	In The Room	M-3000
128	Tight & Natural	M-3000
129	Store Room	M-3000
130	Furnished Room 2	M-3000
131	A Small Room	M-3000
132	Stretched Room	S-6000
133	Slaugterhouse	S-6000
134	Medium Basement	S-6000
135	Box 40x40 ft	S-6000
136	Subtle Studio	S-6000
137	Box Car	S-6000
138	Subtle Room	S-6000
139	Small Corridor	S-6000
140	Subtle Wood	S-6000
141	Close to the Corner	S-6000
142	Far from the Corner	S-6000
143	Subtle Big	S-6000
144	Rock Vocal Room	
145	Short Rock Snare	
146	VocalDry <M5>	
147	VocalWet <M5>	
148	Locker <M5>	
149	Shorcut <M5>	
150	Ugly1 <M5>	
151	Ugly2 <M5>	
152	WoodFlr <M5>	
153	StoneWall <M5>	
154	Ambience <M5>	

NOTE: Presets marked with <M5>
are emulations of M5000 presets of the same name

PRESET LIST - PLATES

No	Name	Preset Derrives from	Algorithm
201	EMT 250	S-6000	DVR-2
202	Long Vocal	S-6000	DVR-2
203	EMT 140	S-6000	Rev-4
204	SteelPlate <M5>		VSS3
205	GoldPlate <M5>		VSS3
206	Pure Plate		Rev4
207	Vocal Plate+Delay		DVR2
208	Mellow Plate		VSS3
209	Chorused Plate		DVR2
210	DTuned Plate		Rev4
211	Dark Room	S-6000	DVR-2
212	Bright Chamber	S-6000	Rev-4
213	Dance Lead	S-6000	VSS-3
214	Dirty Plate	S-6000	Rev-4
215	Long Perc	S-6000	DVR-2
216	EMT 140 Short	S-6000	Rev-4
217	EMT 140 Long	S-6000	Rev-4
218	St. Joseph Church	S-6000	Rev-4
219	Dome Chapel	S-6000	Rev-4
220	Museum	S-6000	Rev-4
221	Indoor Arena	S-6000	Rev-4
222	Vocal Plate	S-6000	Rev-4
223	Wood Diffuse	S-6000	Rev-4
224	Jazz Plate	S-6000	Rev-4
225	Medium String Hall	S-6000	VSS-4
226	Eternal Piano	S-6000	VSS-4
227	Bright Plate	M-3000	VSS-3
228	Dual Plate	S-6000	VSS-4TS
229	2 Rooms	S-6000	VSS-4TS
230	2 Halls 4 You	S-6000	VSS-4TS
231	Dual Backyard	S-6000	VSS-4TS
232	Super Strings	S-6000	DVR-2
233	Nice Vocal	S-6000	DVR-2
234	Ballad Vocal	S-6000	DVR-2
235	Church	S-6000	DVR-2
236	String Hall	S-6000	DVR-2
237	Nice 4 Perc	S-6000	DVR-2
238	Scoring Stage	S-6000	DVR-2
239	Snare Plate		Rev-4

NOTE: Presets marked with <M5>
are emulations of M5000 presets of the same name

PRESET LIST - EFFECTS

No	Name	Preset Derrives from	Algorithm
301	Tight NonLin	S-6000	NONLIN-2
302	AMS NonLin A	S-6000	NONLIN-2
303	Garage Gate	S-6000	NONLIN-2
304	Cheap Spring	S-6000	Rev-4
305	Light Starburst	S-6000	NONLIN-2
306	TajMahal <M5>		VSS3
307	AutoPan Gate		Nonlin2
308	Xplode Gate		Nonlin2
309	Reverse Ramp		Nonlin2
310	Dixie Chicken		Nonlin2
311	AMS NonLin B	S-6000	NONLIN-2
312	Whisper	S-6000	NONLIN-2
313	KitPig1	S-6000	NONLIN-2
314	KitPig2	S-6000	NONLIN-2
315	Drummy	S-6000	NONLIN-2
316	Electronic Megaphone	S-6000	NONLIN-2
317	Spacedome PA	S-6000	NONLIN-2
318	NonLin Bright	S-6000	NONLIN-2
319	Muffled Pipe Vocal	S-6000	NONLIN-2
320	Breathing 130BPM	S-6000	NONLIN-2
321	Kick Thundergate	S-6000	NONLIN-2
322	Snare Boinkygate	S-6000	NONLIN-2
323	Thick Slapback	S-6000	NONLIN-2
324	Tight Stereo Slap	S-6000	NONLIN-2
325	Dense Dark Room	S-6000	NONLIN-2
326	Dense Arena	S-6000	NONLIN-2
327	NonLin Slap	S-6000	NONLIN-2
328	Ricochet Verb	S-6000	VSS-4
329	Tight & Smooth		VSS-3
330	80´s 808	S-6000	Ambiator
331	Studio Spring		Rev-4
332	Nonlin Vocal		Nonlin-2
333	RichVerb <M5>		VSS-3