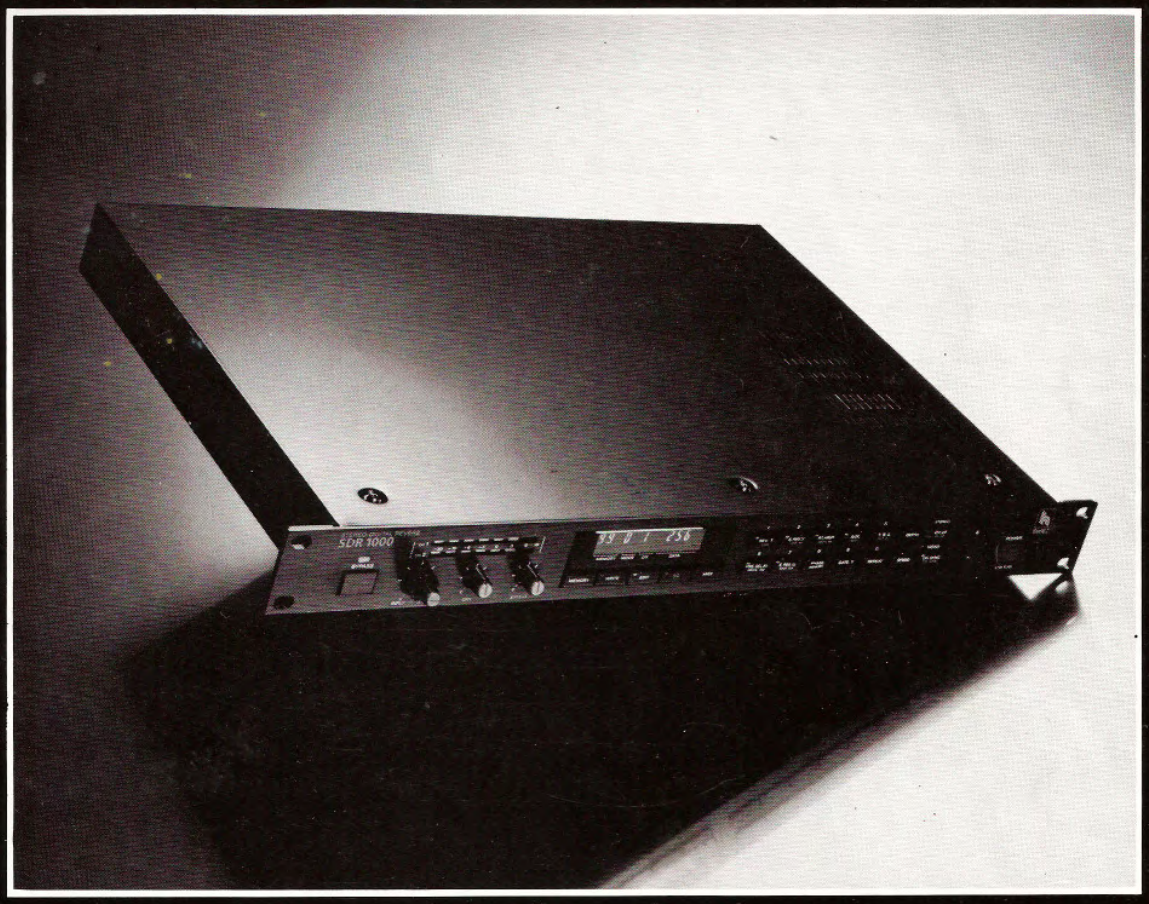
STEREO DIGITAL REVERB
SDR1000

Owner's Manual



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1 INTRODUCTION

Welcome to a whole new realm of digital signal processing! The Ibanez SDR1000 Stereo Digital Reverb redefines digitally-simulated reverberation with true stereo operation, 16-bit digital processing for crystal-clear reverberation, and factory presets programs developed by professional studio engineers, especially for the SDR1000. The results are room, hall and plate simulations of unusual naturalness and clarity. The SDR 1000 also provides "gated" and "reverse" reverb effects, as well as dual multi-tap delay (echo) processing. The SDR1000 is truly a digital processor for everyone.

Your SDR1000 has been carefully designed, assembled, tested, packed and shipped to assure years of reliable service. In order to take full advantage of the SDR1000's capabilities, please read this manual carefully. You'll then be ready to explore the unique spaces programmed into the SDR1000, and to create your own.

2 FEATURES

The Ibanez SDR1000 incorporates many design break throughs, in both hardware and software, that combine to make it the unique processor that it is. The following list highlights the major features that you should be aware of.

- The SDR1000 provides, for the first time, TWO independently programmable channels. You can now set up two totally different reverb sounds (in the "Dual Reverb" Mode 7) or two arrays of delay taps (in the "Dual Delay" Mode 5), and use them simultaneously!
- True stereo reverberation is possible with advanced, high-speed parallel digital processing. The two channels of the SDR1000 may be easily programmed for identical processing characteristics.
- The custom-design DSP (Digital Signal Processor) is a high-speed, full 16-bit LSI (Large Scale Integration) chip. This provides professional-sounding reverb effects with very low distortion and low quantization (digital-error) noise.
- The SDR1000 provides a powerful, user-oriented programming capability. Eight "modes" create eight distinct "sound fields", including hall, room, plate, gated and reverse reverb effects, and dual, multi-tap delay effects.
- The SDR1000 comes factory-programmed with 30 preset sounds. These sounds have been created by some of the hottest recording producers in the industry, so they represent the most popular reverb and delay sounds available.
- Each mode has user-programmable parameters (including programmable four-band EQ!) for an unusually wide range of possible reverb and delay sounds. Seventy user-programmable preset locations give you plenty of space to be creative!
- Advanced user-friendly software makes program copying and editing a snap. You can also compare your new sound with the sound in memory, with the touch of a single key!
- Extensive MIDI flexibility lets you program the SDR1000 to fit into any MIDI system. Select any program within the SDR1000 with your MIDI controller.
- The SDR1000 also lets you select programs with the front panel keypad, or remotely with momentary footswitches or with the Ibanez IFC60 Intelligent Foot Controller. Select your programs in live situations from any stage location.
- The SDR1000 provides an eight-digit flourescent display and LED-keys that prompt you for easy preset programming and recall.
- Phone jack and RCA-type pin jack inputs and outputs make the SDR1000 easy to use in any live, studio or home recording application. Versatile input level ranging and output signal mixing make it easy to "optimize" the SDR1000's performance in any application.

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3 PRECAUTIONS

The SDR1000 has been designed for safe, easy operation in a wide variety of applications. In order to keep your SDR1000 running smoothly, it is helpful to keep a few points in mind.

- Avoid using the SDR1000 in places that will cause the unit to get extremely hot (or cold), such as:
  - > Direct sunlight.
  - > In a confined rack with heat sources (such as amplifiers).
  - > Other unusually hot or cold places.

Also, if the unit has been in a car for a while, allow about 5 minutes for the unit to come to room temperature before using.

- Avoid exposing the unit to sand, and to excessive amounts of water, dust and dirt. If you wish to clean the unit, use a clean, soft rag. If necessary, use a slightly dampened cloth and a mild detergent. Never use strong detergents or solvents. Use a second cloth to dry the unit completely.

- Avoid exposing the unit to excessive vibrations or mechanical shocks. For example, putting the unit on top of a guitar amplifier will expose the unit to the amp's vibrations and to the possibility of falling off the amp (it happens!). It is strongly recommended that you mount the unit in a rack or road case for safe transport and use.

- Avoid using the unit in the vicinity of radios, televisions, or wireless transmitters and receivers. The SDR1000 may pickup interference from these units, or cause the units to pickup interference.

- Never use excessive force when operating the unit's switches, keys and knobs.

A word about power connections: The SDR1000 comes with a 2-prong, ungrounded power cord, except in countries where a grounded cord is required. This helps prevent system ground loops, since the unit's chassis is connected to system ground via the signal connections. To avoid excessive system hum from system ground loops and ungrounded units, be sure to follow standard grounding procedures. This information is available from your music dealer, service technician or the local library.

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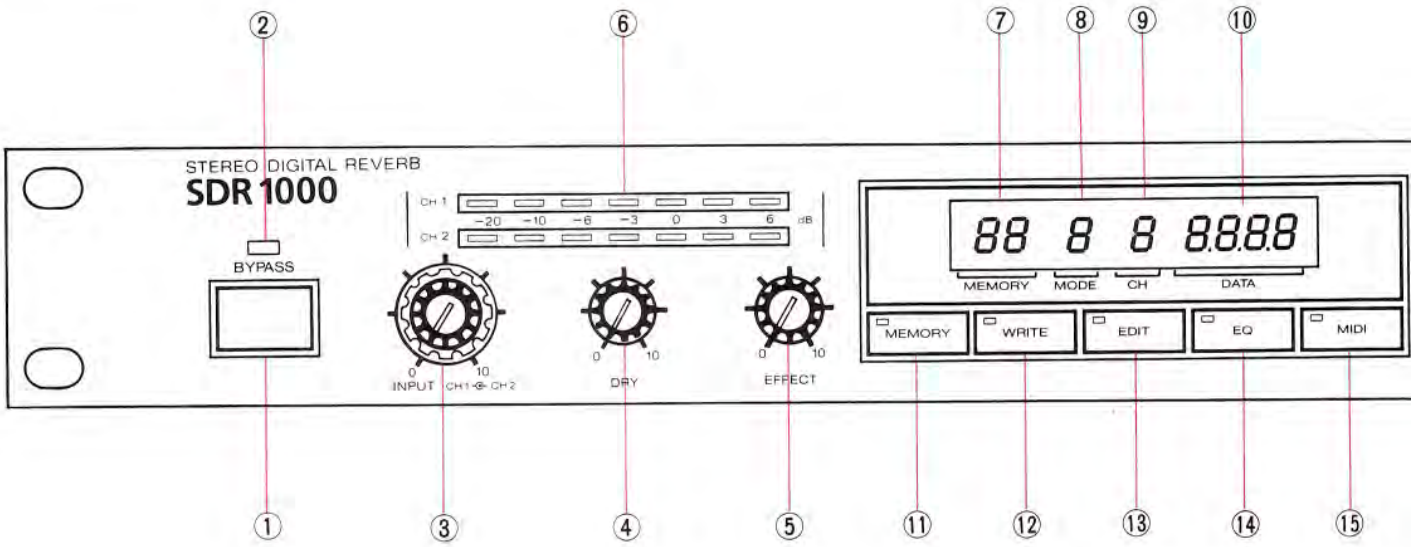
a) Front Panel



① BYPASS SWITCH

This switch is used to turn the reverb effect on and off.

② BYPASS LED

This LED lights when the unit is in bypass (reverb effect off).

③ INPUT LEVEL

This controls the level of input signal going into the unit. It is a "concentric" control. That is, the knob is "split" into separate "outer" and "inner" sections. The outer knob controls the input level of Channel 1, and the inner knob controls the input level of Channel 2. For both knobs, clockwise rotations increase the input level. If you wish to adjust both channels at the same levels, match the markers on both knobs.

④ DRY LEVEL

This controls the amount of "dry", or unprocessed signal that appears in the output signal, when the reverb effect is on. Clockwise rotations increase the amount of dry signal. When the reverb effect is off, it has no effect on the output level. DRY LEVEL is used along with 5) EFFECT LEVEL to control the mix of dry and effect signals in the output signal.

⑤ EFFECT LEVEL

This controls the amount of "effect", or processed signal that appears in the output signal, when the reverb effect is on. Clockwise rotations increase the amount of effect signal. When the reverb effect is off, it has no effect on the output level. EFFECT LEVEL is used along with 4) DRY LEVEL to control the mix of dry and effect signals in the output signal.

⑥ INPUT LEVEL LEDS

These LEDs are used along with 3) INPUT LEVEL to adjust the optimum input level. The LEDs are labelled in "dB" levels, with "0 dB" representing the optimum input level. The procedure for setting the optimum input level is discussed in section 9. a. 3) of this manual.

⑦ MEMORY DISPLAY

These two digits indicate the SDR1000 memory location that has been recalled for playback, copying or editing. The 30 factory preset programs reside in locations "00" through "29". Note that these programs cannot be erased. The 70 user-preset programs reside in locations "30" through "99". These locations can be edited, copied and erased.

⑧ MODE DISPLAY

This single digit indicates which of the SDR1000's modes (reverb and delay effects) is being used in a particular memory location. The eight modes are numbered from "0" to "7". For more information about the eight modes of the SDR1000 refer to section 7. of this manual.

⑨ CHANNEL DISPLAY

This single digit indicates the SDR1000 channel that is being edited in the "Parameter Edit" and "EQ Edit" functions. It also identifies multi-channel patches when they are recalled.

⑩ DATA DISPLAY

These four digits indicate various data depending on what operation the user is performing. When recalling and using various memory locations, these digits will indicate the "Reverb Time" set in that location. The other data displayed by these digits are discussed throughout section 9. of this manual.

⑪ MEMORY KEY

This key is used to call up a particular memory location for playback, copying or editing. The procedure for calling up memory locations is discussed in section 9. b. of this manual. When this key is used, or when an operation concerning this key is occurring, the key's LED will light.

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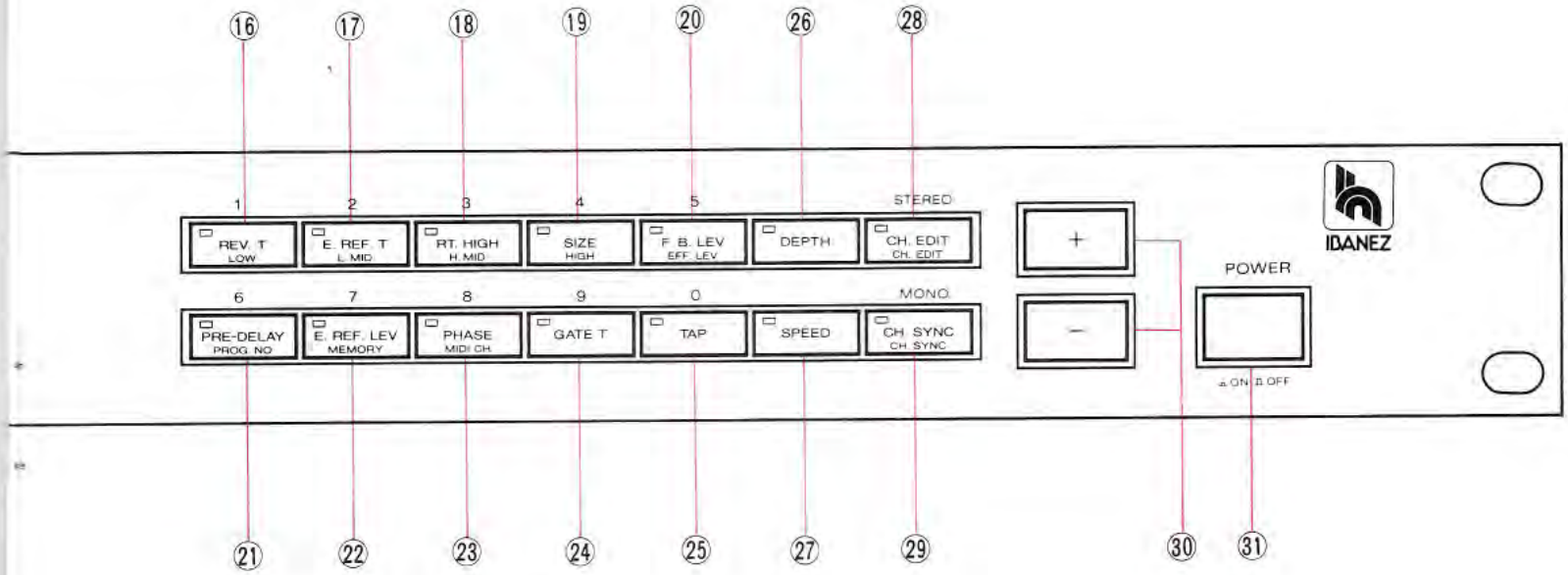

⑫ WRITE KEY

This key is used to enter an edited program into memory, or to copy a program into another location. The "Program Copy" function are discussed in sections 9. c. and 9. d. of this manual. When this key is used, or when an operation concerning this key is occurring, the key's LED will light.

⑬ EDIT KEY

This key is used when it is desired to edit a parameter(s) in a program (in any memory location). The "Parameter Edit" function is discussed in section 9. c. of this manual. When this key is used (when the "Parameter Edit" function is used), the key's LED will light.

⑭ EQ KEY

This key is used when it is desired to edit the EQ (equalizer) settings of a particular program (in any memory location). The "EQ Edit" function is described in section 9. c. 4) of this manual. When this key is used (when the "EQ Edit" function is used), the key's LED will light.

⑮ MIDI KEY

This key is used when it is desired to enter or change the unit's MIDI channel or MIDI receiving mode. It is also used when a memory location is to be assigned to a MIDI patch number. For a discussion of the SDR1000's MIDI operation refer to section 9. e. of this manual. When this key is used (when the "MIDI Edit" function is used) the key's LED will light.

⑯ REVERB TIME KEY

This key serves three purposes. It serves as the number "1" key for the "Memory Select" and "Program Copy" functions. In the "Parameter Edit" function this key calls up the "Reverb Time" parameter for editing. In the "EQ Edit" function this key calls up the "Low" band (100 Hz center frequency) EQ filter for editing.

⑰ EARLY REFLECTION TIME KEY

This key serves three purposes. It serves as the number "2" key for the "Memory Select" and "Program Copy" functions. In the "Parameter Edit" function this key calls up the "Early Reflection Time" parameter for editing. In the "EQ Edit" function this key calls up the "Low-Mid" band (400 Hz center frequency) EQ filter for editing.

⑱ REVERB TIME HIGH FREQUENCY KEY

This key serves three purposes. It serves as the number "3" key for the "Memory Select" and "Program Copy" functions. In the "Parameter Edit" function this key calls up the "Reverb Time High Frequency (attack time of the reverb high-frequency roll-off) parameter for editing. In the "EQ Edit" function this key calls up the "High-Mid" band (1.6 kHz center frequency) EQ filter for editing.

⑲ SIZE KEY

This key serves three purposes. It serves as the number "4" key for the "Memory Select" and "Program Copy" functions. In the "Parameter Edit" function this key calls up the "Size" (simulated hall/room/plate size) parameter for editing. In the "EQ EDIT" function this key calls up the "High" band (6.4 kHz center frequency) EQ filter for editing.

⑳ FEEDBACK LEVEL KEY

This key serves three purposes. It serves as the number "5" key for the "Memory Select" and "Program Copy" functions. In the "Parameter Edit" function this key calls up the "Feedback Level" parameter for editing. In the "EQ Edit" function this key calls up the "EQ Output Level" parameter for editing.

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㉑ PRE-DELAY KEY

This key serves three purposes. It serves as the number "6" key for the "Memory Select" and "Program Copy" functions. In the "Parameter Edit" function this key calls up the "Pre-Delay Time" parameter for editing. In the "MIDI Edit" function this key is used to enter the MIDI patch number selection.

㉒ EARLY REFLECTION LEVEL KEY

This key serves three purposes. It serves as the number "7" key for the "Memory Select" and "Program Copy" functions. In the "Parameter Edit" function this key calls up the "Early Reflection Level" parameter for editing. For MIDI functions this key is used to assign a particular memory location to a particular MIDI patch number (for program selection by MIDI).

㉓ PHASE KEY

This key serves three purposes. It serves as the number "8" key for the "Memory Select" and "Program Copy" functions. In the "Parameter Edit" function this key inverts the phase of the "Early Reflection" and "Feedback" sound components. In the "MIDI Edit" function this key is used to assign the SDR1000 to a particular MIDI channel.

㉔ GATE TIME KEY

This key serves two purposes. It serves as the number "9" for the "Memory Select" and "Program Copy" functions. In the "Parameter Edit" function this key calls up the "Gate Time" parameter for editing.

㉕ TAP KEY

This key serves two purposes. It serves as the number "0" for the "Memory Select" and "Program Copy" functions. In the "Parameter Edit" function this key is used to select the number of taps (repeats) in the "Dual Delay" Mode only.

㉖ DEPTH KEY

In the "Parameter Edit" function this key calls up the "Auto-Pan Depth" parameter for editing in the "Auto-Pan" Mode only.

㉗ SPEED KEY

In the "Parameter Edit" function this key calls up the "Auto-Pan Speed" parameter for editing in the "Auto-Pan" Mode only.

㉘ CHANNEL EDIT KEY

This key serves two purposes. In the "Memory Select" function it is used to select "stereo" operation. In the "Parameter Edit" and "EQ Edit" functions this key is used to alternate editing between Channel 1 and Channel 2 (when each channel is to have different parameter settings). When both channels are to be set to identical parameter settings, this key is not used.

㉙ CHANNEL SYNC KEY

This key serves two purposes. In the "Memory Select" function it is used to select "mono" operation. In the "Parameter Edit" and "EQ Edit" functions this key is used to determine whether each channel will have different parameter settings or identical parameter settings.

㉚ INCREMENT/DECREMENT KEYS

These keys serve two basic purposes. For "Memory Select" and "Program Copy" functions these keys are used to select the memory location number. In the "Parameter Edit", "EQ Edit" and "MIDI Edit" functions these keys are used to increase and decrease data settings. Pressing these keys once will cause the data to go up or down by one increment. Pressing and holding these keys will cause the data to increase or decrease more rapidly.

㉛ POWER SWITCH

This switch powers the unit up and down. When the unit is powered up the flourescent display will light up indicating that power has been applied to the unit.

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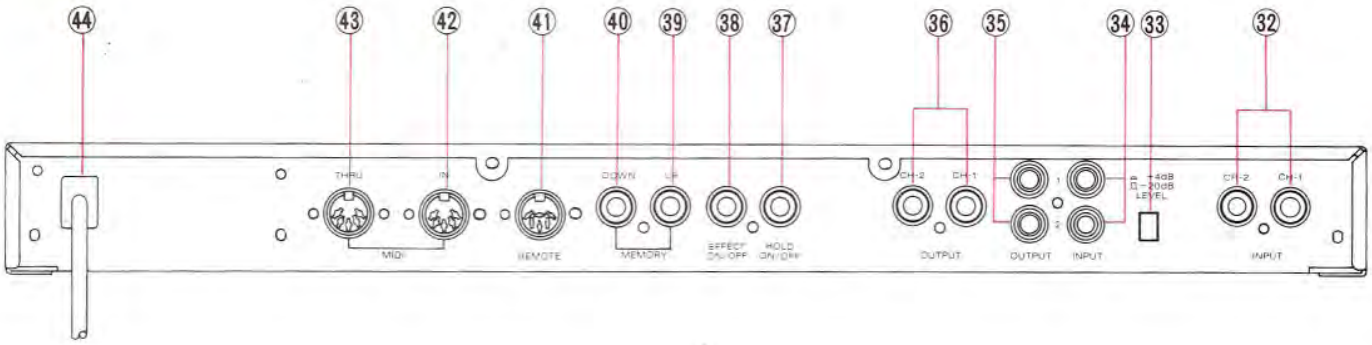
b) Rear Panel



㉜ PHONE INPUT JACKS

These jacks accept input via standard 1/4" mono phone plugs, such as those found on standard "guitar cords". These inputs accept unbalanced line-level or instrument-level signals. The rightmost jack accepts input for Channel 1, while the next jack to the left accepts input for Channel 2. When the SDR1000 is set for "mono" (single-channel) operation, the Channel 1 input should be used. Also, when these jacks are used, the inputs to 34) PIN INPUT JACKS are disconnected.

㉝ INPUT/OUTPUT LEVEL SWITCH

This switch selects between line-level input (averaging +4 dBv) operation and instrument-level input (averaging −20 dBv) operation. This switch should be set for the correct input level range before 3) INPUT LEVEL is adjusted. For more information about setting the optimum input level refer to section 9. a. 3) of this manual.

㉞ PIN INPUT JACKS

These jacks accept input via standard RCA-type pin plugs, such as those found on "stereo system" cables. These inputs basically duplicate the function of 32) PHONE INPUT JACKS. The upper jack accepts input for Channel 1, while the lower jack accepts input for Channel 2. When the SDR1000 is set for "mono" operation, Channel 1 input should be used. When 32) PHONE INPUT JACKS are used, these inputs are disconnected.

㉟ PIN OUTPUT JACKS

These jacks accept standard RCA-type pin plugs, such as those found on "stereo system" cables. These outputs provide a mix of the "dry" and "effect" signals. When the SDR1000 is set for "stereo" operation, the upper jack provides the output from Channel 1 and the lower jack provides the output from Channel 2. When the SDR1000 is set for "mono" operation, Channel 1's output is used.

㊱ PHONE OUTPUT JACKS

These jacks accept standard 1/4" phone plugs, such as those found on standard "guitar cords". These outputs basically duplicate the function of 35) PIN OUTPUT JACKS. When the SDR1000 is set for "stereo" operation, the right jack provides the output from Channel 1 and the left jack provides the output from Channel 2. When the SDR1000 is set for "mono" operation, Channel 1's output is used.

㊲ HOLD JACK

This jack accepts input for remote control of the "Hold" feature, via standard 1/4" mono phone plugs. When this input is used with a footswitch or other controller, "Hold" is turned on or off. Use a momentary-type footswitch, such as the Ibanez FS1M. For information regarding the "Hold" feature, refer to section 9. g. of this manual.

㊳ EFFECT JACK

This jack accepts input for remote control of EFFECT ON/OFF, via standard 1/4" mono phone plugs. Operation of this jack duplicates the function of 1) ON/OFF SWITCH. When this input is used with a footswitch or other controller, the unit is taken in or out of EFFECT. Use a momentary-type footswitch, such as the Ibanez FS1M. For more information, refer to section 9. g. of this manual.

㊴ MEMORY UP JACK

This jack accepts input for remote incrementing (increasing by steps) of the memory location, via standard 1/4" mono phone plugs. When this input is used with a footswitch or other controller, the memory location is increased by one. When the footswitch is held down, the memory location increases more rapidly. Use a momentary-type footswitch, such as the Ibanez FS1M. For more information on this feature, refer to section 9. g. of this manual.

㊵ MEMORY DOWN JACK

This jack accepts input for remote decrementing (decreasing by steps) of the memory location, via standard 1/4" mono phone plugs. When this input is used with a footswitch or other controller, the memory location is decreased by one. When the footswitch is held down, the memory location decreases more rapidly. Use a momentary-type footswitch, such as the Ibanez FS1M.

㊶ REMOTE CONTROLLER JACK

This jack accepts input from the Ibanez IFC60 Intelligent Foot Controller, for remote selection of memory locations. This jack accepts standard 6-pin DIN plugs, as found on the cable supplied with the IFC60. For information about using the IFC60 with the SDR1000 refer to section 9. f. of this manual.

㊷ MIDI IN JACK

This jack accepts input from any MIDI controller, for MIDI-controlled selection of memory locations. This jack accepts standard 5-pin DIN plugs, as found on standard "MIDI" cables. For information about using MIDI for selection of program locations refer to section 9. e. of this manual.

㊸ MIDI THRU JACK

This jack transmits the MIDI information received at 42) MIDI IN JACK for MIDI control of other devices. This jack accepts standard 5-pin DIN plugs, as found on standard "MIDI" cables.

㊹ AC POWER CORD

This cord connects the unit to a 120V (220–240V) AC outlet.

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5 TYPICAL SET-UPS

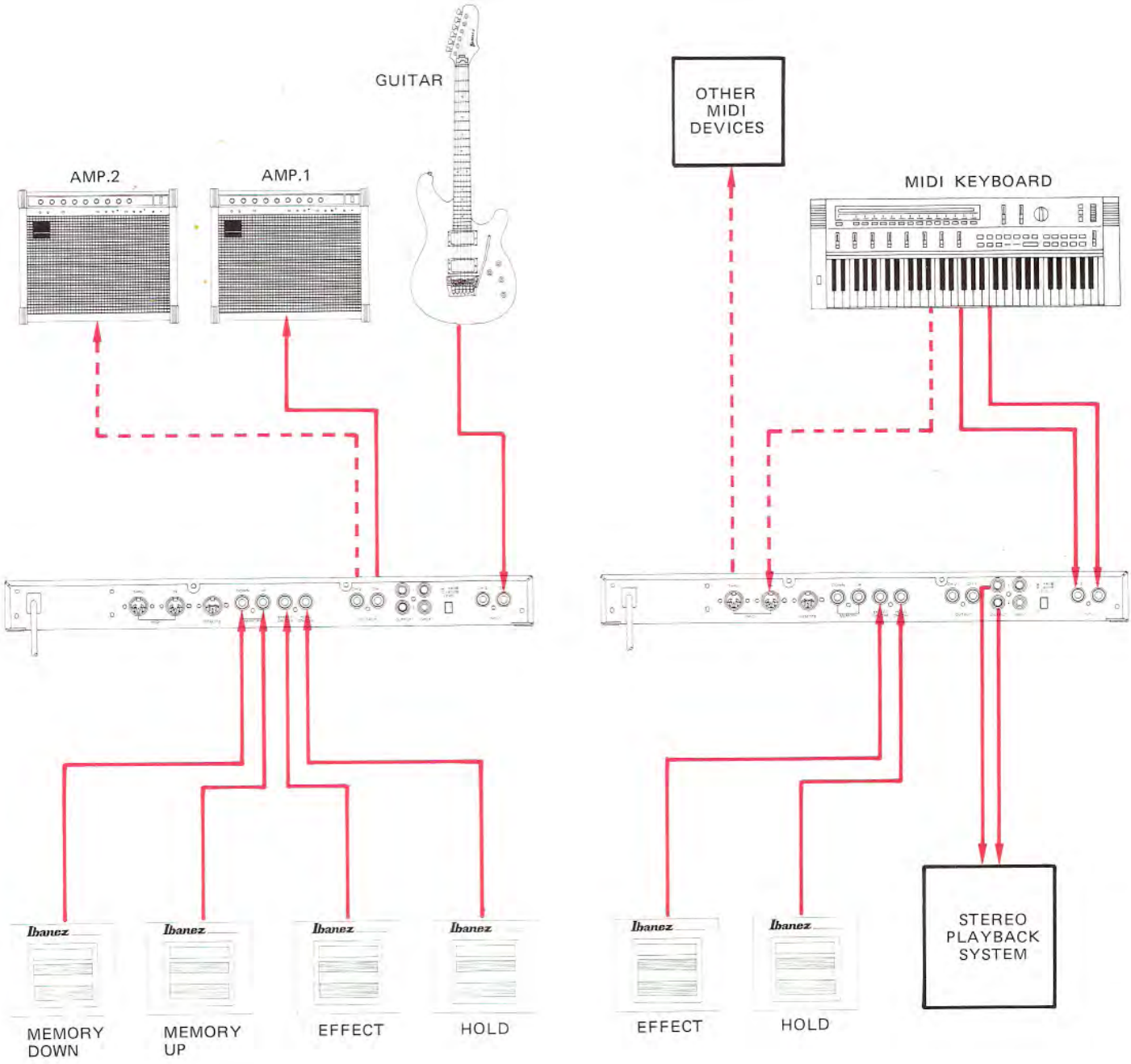
The SDR1000 may be hooked up in many different ways. The following examples represent some of the more common methods of using this type of processor.

a. Mono Instrument Hookup:

This example shows a "monophonic" guitar going into Channel 1. Program selection is done here with two footswitches going to 39) MEMORY UP JACK and 40) MEMORY DOWN JACK. Two other footswitches control the "Hold" and "Bypass" functions, via 37) HOLD JACK and 38) EFFECT JACK, respectively. The dotted lines show an optional "pseudo-stereo" hookup (mono-in, stereo-out) using two amplifiers. With the SDR1000 in "stereo" operation you have the capability of creating two different reverb effects, sending one to each amp. In "mono" operation, use Channel 1 inputs and outputs only.

b. Stereo Instrument Hookup:

This example shows a two-channel MIDI synthesizer going into the SDR1000. Program selection is under MIDI control, using the synth as the controller feeding MIDI control information into 42) MIDI IN JACK. The 43) MIDI THRU JACK is used to transmit the controller information to other MIDI devices. As in the example above, two footswitches control the "Hold" and "Bypass" functions. The SDR1000 is set for "stereo" operation, with some programs set for "matched" effects in each channel, and others set for different effects.
Here, the dotted lines indicate MIDI Lines.



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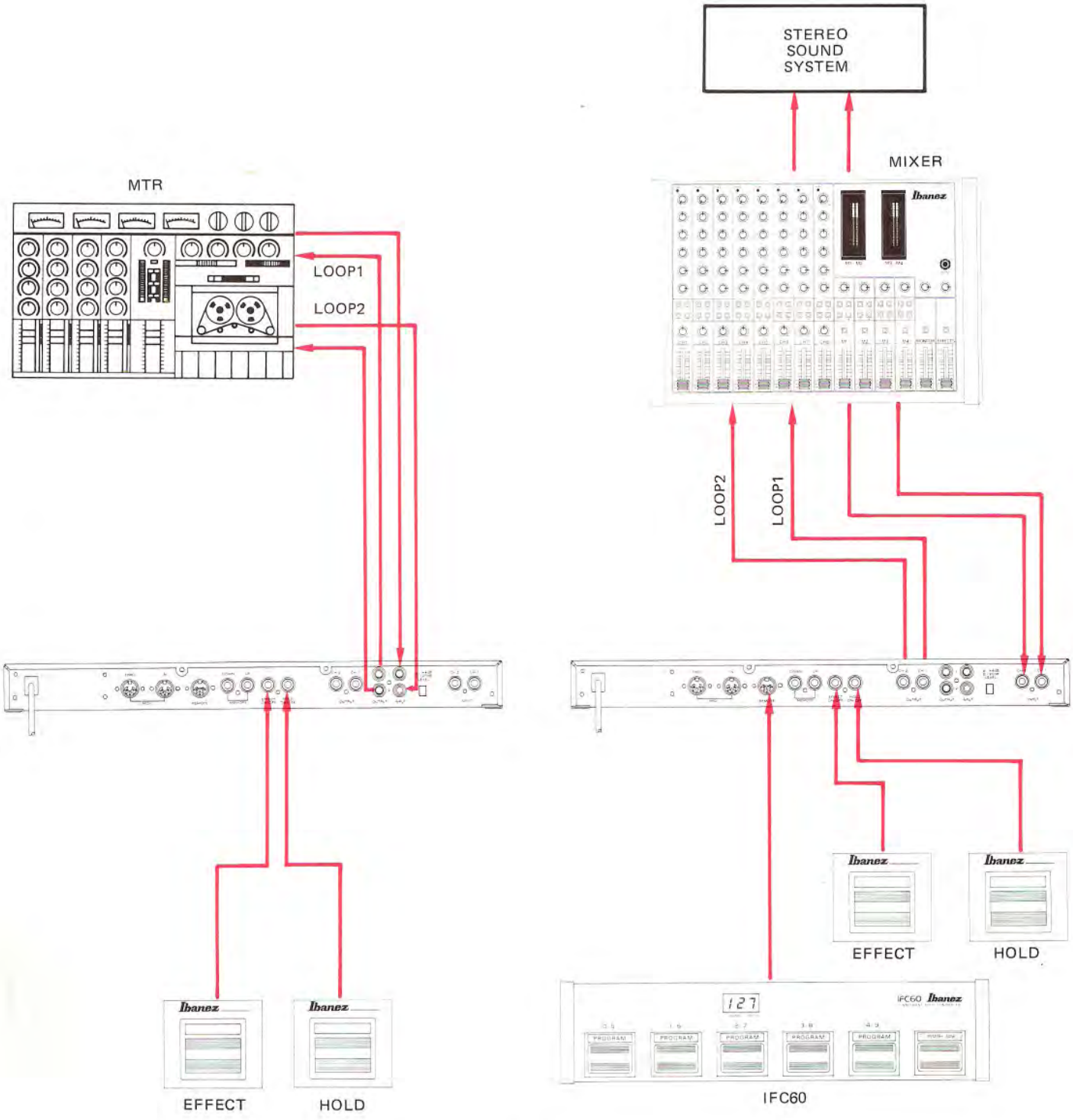
c. Home Multi-Track Recording Hookup:

This example interfaces the SDR1000 with the mixer section of a multi-track recording system. Here the mixer effect loop sends (outputs) go to the 34) PIN INPUT JACKS and the 35) PIN OUTPUT JACKS go to the mixer effect loop receives (inputs). If your mixer does not provide effect loops, you may place the SDR1000 between the mixer and recorder. Program selection is done from the front panel of the SDR 1000, but any of the remote selection methods may be preferred, especially if you're stuck behind a miked guitar. As with the other examples, footswitches control the "Hold" and "Bypass" functions. The SDR1000 may be set for "mono" or "stereo" operation, depending on the application.

d. Sound Reinforcement (PA) Hookup:

This example is similar to the multi-track example, in that the SDR1000 is placed in the effect loops of the mixer. Here, the 32) PHONE INPUT and 36) PHONE OUTPUT JACKS are used Program selection is controlled by the IFC60 Intelligent Foot Controller plugged into the 41) REMOTE JACK. Again, "Hold" and "Bypass" functions are controlled by two footswitches. The SDR1000 may be set for "mono" or "stereo" operation, depending on the application.



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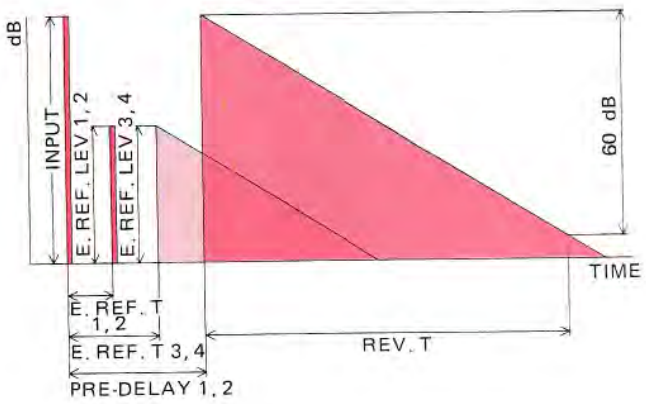
6 BASIC FACTS ABOUT NATURAL AND SIMULATED REVERBERATION

a) Elements of Natural Reverberation

Reverberation started life as a naturally occurring acoustic phenomenon. Any place that has surfaces capable of reflecting a sound from source to listener, is a place that creates reverberation. We are most familiar with the reverberation created in large halls, gymnasiums and in smaller rooms (such as bathrooms). Reverberation is the "sound residue" that one hears after the original sound stops. This sound residue is a "wash" of sound that decays away quickly in small spaces and decays more slowly in larger spaces. The reverberation sound definitely has some characteristics of the original sound. However, as you listen to other sound sources in the same acoustic space, you notice that there is a "sameness" about the reverberation sound. This is the component of the reverberation sound that the space itself contributes.

Reverberation consists of a large number of sound "reflections" that come together at the point of the listener. The pattern of reflections is rather complex, but it can be broken down into several distinct parts:



In the diagram above the vertical line represents signal level, while the horizontal line represents time. For purposes of this discussion the original sound will have a very short time duration, so it may be shown as a vertical line whose length represents the loudness of the sound. This is the first sound you hear—it is the direct sound, not reflected. Everything else you hear will be sounds reflected off of the reflective surfaces and boundaries of the listening space.

In certain types of spaces, distinct early (primary) reflections can be heard (this also depends on the placement of the sound source and listener within the space). Early reflections take the shortest reflection paths and therefore they reach the listener first. These paths are typically smooth floors, walls or ceilings.

The actual reverberation sound begins with the reception of reflections that cannot be distinctly heard. They come to the listener in a "wash" of sound—one on top of another. This sound decays away as the sound continues to reflect off of the various surfaces and boundaries. The decay time depends on the size of the listening space, and the "reflectivity" (ability to reflect sound) of the surfaces and boundaries.

While the original sound has its own characteristics, the reverberation sound takes on characteristics of the space as the sound continues to bounce around. This is because most reflective surfaces do not reflect all frequencies equally. In most typical listening spaces, high frequencies are absorbed more rapidly than lower frequencies, and therefore, decay more rapidly. Curtains, rugs, padded seats and people all contribute to this effect. This makes the reverberation sound "darker" as it decays away.

b) Simulation Parameters Used By The SDR1000

Recent advances in digital technology make it possible to simulate the basic elements of natural reverberation for many types of listening spaces. It also becomes possible to create reverberation effects that do not occur naturally. What follows are a description of the basic elements, or "parameters", that the SDR1000 uses to create various reverberation simulations. While reading through the parameter descriptions it will be helpful to refer back to the Reverb Reflections Diagram just discussed.

• EARLY REFLECTION TIME (1, 2) & (3, 4)

This is the time between the original (input) sound and the early reflection sound. The SDR1000 provides one or two early reflection components. Early Reflection (1, 2) is the single, distinct repeat component that appears as a straight line on the diagram. The (1, 2) designation refers to Channels 1 and 2 of the SDR1000. This component is available for all "modes" of the SDR1000. Early Reflection (3, 4) is a "Sub-Reverb" component that decays much like the main reverb sound. The (3, 4) designation refers to Channels 3 and 4 of the SDR1000. These channels do not really exist. They are only used to identify the "Sub-Reverb" components during parameter editing. The "Sub-Reverb" components appear in Outputs 1 & 2, and are available in modes 2, 3, 4 and 7. The ranges of Early Reflection Time vary for each mode.

• EARLY REFLECTION LEVEL (1, 2) & (3, 4)

This is the level of the early reflection signal with respect to the input signal level, expressed as a ratio. The SDR1000's Early Reflection Level range is from .000 to ±.992 (or 0% to 99.2% of input level). When the "minus sign" does not appear in front of the level display, the early reflection component is "in phase" with the input. If it does appear, the component is "out of phase". Again, designations (1, 2) and (3, 4) refer to the two early reflection components (see description above).

• REVERB TIME

This is the time it takes for the reverb sound to decay 60 dB (to one one-thousandth of the initial level). For "Hall Reverb" and "Plate Reverb" (modes 0 & 2), the range of Reverb Time goes from 0.30 to 99.0 seconds. For "Room Reverb", the range goes from 0.07 to 24.75 seconds.

• PRE-DELAY TIME

This is the time between the input signal and the start of the reverb sound. The SDR1000 provides a pre-delay time range from 1 to 572 milliseconds.

• REVERB TIME HIGH FREQUENCY

This parameter simulates the more rapid absorption of the high-frequency components (above 6 kHz) in the reverb sound. A low-pass filter (LPF), initially out of the circuit, removes high frequency components from the reverb sound at an ever-increasing rate. The "Reverb Time" refers to the time it takes the LPF to reduce the high-frequency components by 60 dB. The LPF attack time range is from "0.01" (the quickest attack time, with the most effect) to "0.99" (the slowest attack time).

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• PHASE

This parameter inverts the phase of the early reflection signal with respect to the rest of the reverb sound. This has the effect of changing the shortest reflection path between sound source and listener. Compare the reverb sound with the early reflection signal in "normal" and "inverted" phases to find the one you prefer.

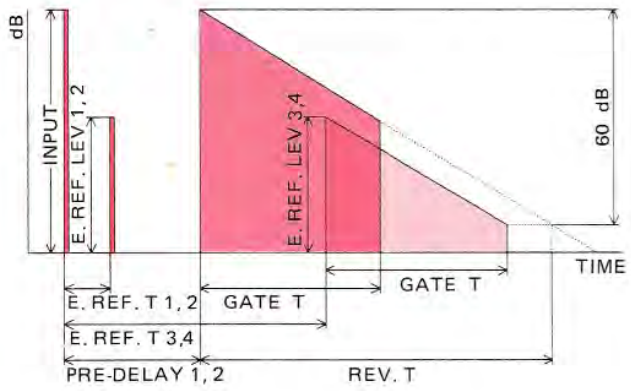
• SIZE

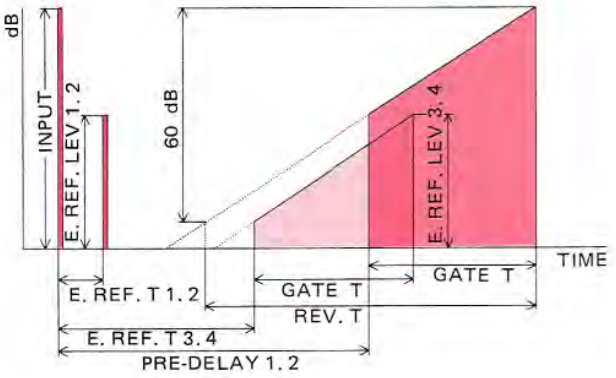
This parameter controls the apparent "size" of the listening space. The SDR1000 provides 16 sounds "sizes" for mode (0, 1, 2, 7), ranging from 1 (the smallest size) to 16 (the largest size).

The SDR1000 also provides a number of parameters for control of "unnatural" reverb effects, and delay and stereo panning effects:

• GATE TIME

This parameter is used for "Gate Reverb" and "Reverse Reverb" (modes 3 & 4). When the "gate" is activated, the reverb sound is cut-off before it is allowed to decay naturally. In the case of "Reverse Reverb", the gate cuts off the "softer" part of the reverb sound. The action of the gate is shown in the diagrams:





The gate time, then, is the time between the input signal and end of the gate action. The SDR1000 provides a range of gate times from 1 to 300 milliseconds.

• FEEDBACK LEVEL

This parameter is used in two of the SDR1000's modes, and it serves a different purpose in each mode. In "Dual Delay" (mode 5) this parameter controls the amount of delayed signal that is mixed with the input signal for re-processing. As a result, many more distinct echo "repeats" can be heard. In "Auto-Panning" (mode 6) this parameter controls the output levels of Channels 1 and 2. The feedback level range (for both modes) is expressed as a ratio of the feedback level to the input level from .000 to ±.992 ("±" means normal and inverted phase).

• TAP

This parameter is used in "Dual Delay" (mode 5) only. It controls the number of "taps" (distinct echo repeats) that are assigned to each channel. A total of 28 taps may be assigned.

• AUTO-PAN DEPTH

This parameter is used in "Auto-Panning" (mode 6) only. It controls the "depth" of panning between the channels. Auto-Pan Depth spans a range from .000 to 1.000, with 1.000 yielding the maximum panning depth (panning fully between the channels).

• AUTO-PAN SPEED

This parameter is used in "Auto-Panning" (mode 6) only. It controls the "speed" of panning between the channels. Auto-Pan Speed is expressed as a frequency, ranging from 0.1 Hz (one pan cycle every 10 seconds) to 20 Hz (20 pan cycles each second).

Finally, the SDR1000 provides a programable 4-band equalizer that allows custom equalization of each user-programed location. Each band provides up to 12 dB of boost or cut, in one dB increments. This allows each listening space to take on special subtle qualities such as curtains closed or open, more or less people in a room, and other frequency-selective reflective/absorptive room phenomenon. The four frequency bands and their center frequencies are listed below:

• "LOW" BAND

100 Hz center frequency. (±12dB)

• "LOW-MID" BAND

400 Hz center frequency. (±12dB)

• "HIGH-MID" BAND

1.6 kHz center frequency. (±12dB)

• "HIGH" BAND

6.4 kHz center frequency. (±12dB)

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7 THE EIGHT "MODES" OF THE SDR1000

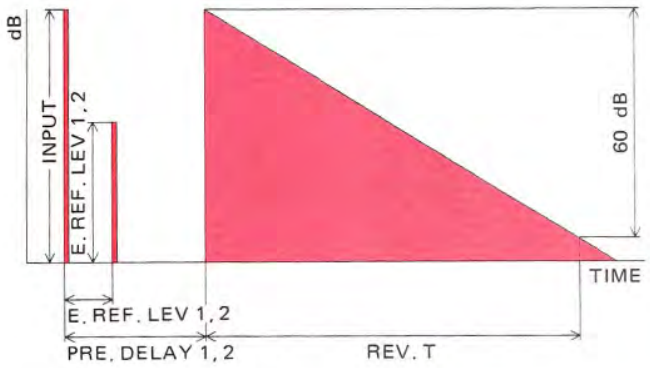
The SDR1000 provides eight different "listening spaces", including natural reverb simulations, "unnatural" reverb effects, and delay line and stereo panning effects. From these basic spaces the SDR1000 provides 30 "factory preset" programs (program locations 00 through 29), and 70 "user-programable" programs (program locations 30 through 99). Each program, either factory-set or user-set, starts with one of the eight basic "modes", and alters the basic sound with the parameters discussed in the previous section of this manual. In this way, many different, interesting reverb sound variations are possible.

This section describes each of the eight modes of the SDR-1000, and lists the parameters that affect each mode.

a. Mode "0" (Hall Reverb)

This simulation creates the large, expansive reverberation found in concert halls and large, outdoor amphitheaters. A wide variety of hall "sizes" may be created using the "Reverb Time" and "Size" parameters. This very popular form of reverberation may be used for vocal and instrument enhancement, for live and recording applications. The adjustable parameters for this mode are:

Reverb Time	0.30 to 99.0 seconds.
Early Reflection Time	1 to 572 milliseconds.
Early Reflection Level	.000 to ± .992 (0% to 99.2% of input level), in phase (+) or out of phase (—).
Pre-Delay Time	1 to 572 milliseconds.
Reverb Time High Frequency	0.01 (fast filter attack) to 0.99 (slow filter attack).
Size	1 (small) to 16 (large).
Equalizer Parameters	± 12 dB, 4 bands.



b. Mode "1" (Room Reverb)

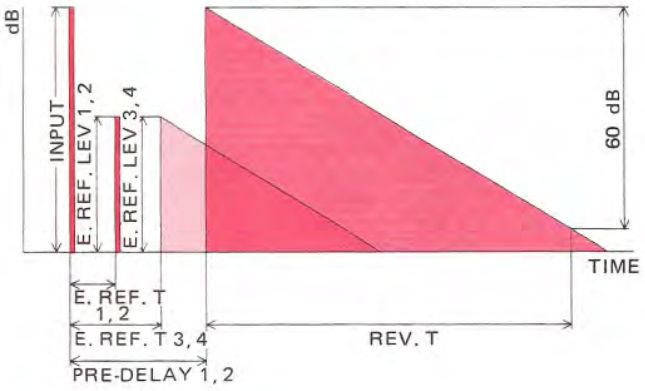
This mode simulates the reverberation of small to medium-sized rooms. The same diagram used for Mode 0 may be used here. Room "liveliness" and reverb coloration may be varied over a wide range. This mode is also very useful for vocals and instruments in live and recording applications. The adjustable parameters for this mode are:

Reverb Time	0.07 to 24.75 seconds.
Early Reflection Time	1 to 572 milliseconds.
Early Reflection Level	.000 to ± .992 (0% to 99.2% of input level), in phase (+) or out of phase (—).
Pre-Delay Time	1 to 572 milliseconds.
Reverb Time High Frequency	0.01 (fast filter attack) to 0.99 (slow filter attack).
Size	1 (small) to 16 (large).
Equalizer Parameters	± 12 dB, 4 bands.

c. Mode "2" (Plate Reverb)

Plate reverberation is actually a simulation technique that pre-dates digital simulation. Found primarily in the studio due to its physical size, plate reverbs became known for "cool, tight-sounding" reverberation. Again, many applications. The adjustable parameters for this mode are:

Reverb Time	0.30 to 99.0 seconds.
Early Reflection Time (1, 2)	1 to 572 milliseconds.
Early Reflection Time (3, 4)	1 to 572 milliseconds.
Early Reflection Level (1, 2) & (3, 4)	.000 to ± .992 (0% to 99.2% of input level), in phase (+) or out of phase (—).
Pre-Delay Time	1 to 572 milliseconds.
Reverb Time High Frequency	0.01 (fast filter attack) to 0.99 (slow filter attack).
Size	1 (small) to 16 (large).
Equalizer Parameters	± 12 dB, 4 bands.



d. Mode "3" (Gated Reverb)

This mode creates the "gated" reverb effect discussed in the previous section. The reverb sound may be "cut short" at any point that you select. Also you may add the secondary early reflections (3, 4) to simulate the room response to a gated reverb effect. Gated reverb is extremely popular for use with percussive sounds, giving them an interesting accent while maintaining the abrupt nature of the sound. The adjustable parameters for this mode are:

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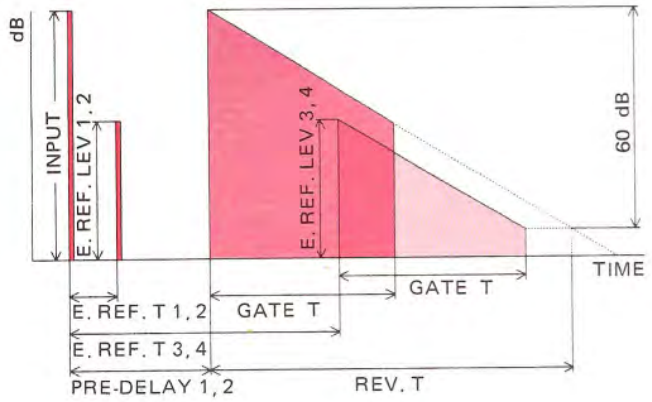
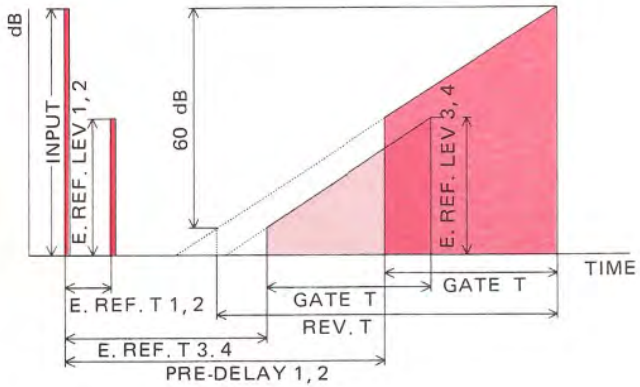
Reverb Time	0.10 to 99.0 seconds.
Early Reflection Time (1, 2)	1 to 850 milliseconds.
Early Reflection Time (3, 4)	1 to 850 milliseconds.
Early Reflection Level (1, 2) & (3, 4)	.000 to ± .992 (0% to 99.2% of input level), in phase (+) or out of phase (–).
Pre-Delay Time	1 to 850 milliseconds.
Gate Time	1 to 300 milliseconds.
Equalizer Parameters	± 12 dB, 4 bands.



e. Mode "4" (Reverse Reverb)

This is a dramatic effect for a wide range of applications, including percussive sounds and staccato lead-lines. As seen in the diagram, the reverb sound is played out in "reverse", so that the reverb sound starts at a low level and rapidly rises in level. The "gate" effect may also be used here, along with the secondary early reflection (3, 4). The adjustable parameters for this mode are:

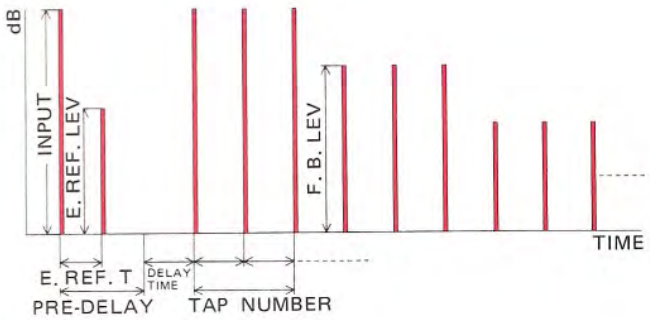
Reverb Time	0.10 to 99.0 seconds.
Early Reflection Time (1, 2)	1 to 850 milliseconds.
Early Reflection Time (3, 4)	1 to 850 milliseconds.
Early Reflection Level (1, 2) & (3, 4)	.000 to ± .992 (0% to 99.2% of input level), in phase (+) or out of phase (–).
Pre-Delay Time	1 to 850 milliseconds.
Gate Time	1 to 300 milliseconds.
Equalizer Parameters	± 12 dB, 4 bands.



f. Mode "5" (Dual Delay)

This mode provides two independent channels of delay, whether the input is monophonic or stereo. Also, multiple tap (echo) assignments may be made, each equally dividing the delay time setting. Up to 23 individual taps are available in each channel. Countless delay effects are possible in this mode, for instruments and vocals. The adjustable parameters for this mode are:

Delay Time (Set by Reverb Time)	1 to 1001 milliseconds.
Early Reflection Time	1 to 256 milliseconds.
Early Reflection Level	.000 to ± .992 (0% to 99.2% of input level), in phase (+) or out of phase (–).
Pre-Delay Time	0 to 255 milliseconds.
Tap Assignments	1 to 23 (MAX) echo repeats.
Reverb Time High Frequency	0.01 (fast filter attack) to 0.99 (slow filter attack).
Feedback Level	.000 to ± .992 (0% to 99.2% of delay level), in phase (+) or out of phase (–).
Equalizer Parameters	± 12 dB, 4 bands.



g. Mode "6" (Auto-Panning)

This is a special effect that automatically "pans" the stereo outputs between Channel 1 and Channel 2. Stereo outputs "cross" each other for mild or extreme movement effects. This mode may be used with monophonic or stereo inputs. The adjustable parameters for this mode are:

Pre-Delay Time	0 to 255 milliseconds.
Panning Speed	0.10 to 20.0 Hz (pan cycles per second).
Panning Depth	.000 to 1.000 (0% to 100% of full panning).
Equalizer Parameters	± 12 dB, 4 bands.

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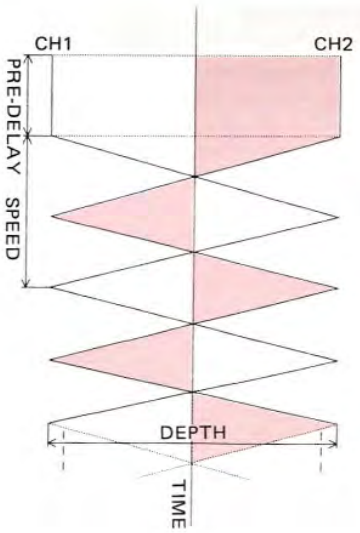
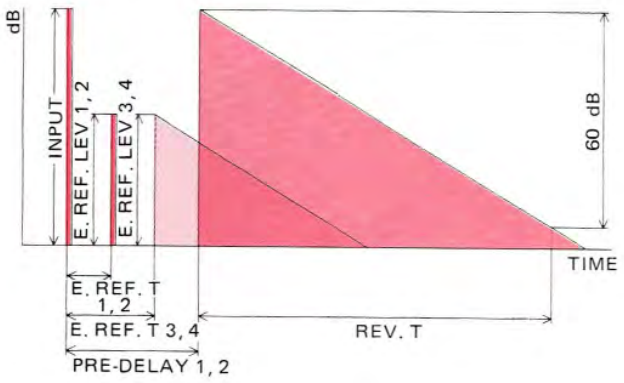


h. Mode "7" (Dual Reverb)

This mode lets both channels of the SDR1000 operate as totally independent reverb units. The "Plate Reverb" simulation of mode 2 is used here. You may use stereo or dual-mono inputs. The adjustable parameters for this mode are:

Reverb Time	0.90 to 9.90 seconds.
Early Reflection Time (1, 2) & (3, 4)	1 to 572 milliseconds.
Early Reflection Level (1, 2) & (3, 4)	.000 to ± .992 (0% to 99.2% of input level), in phase (+) or out of phase (–).
Pre-Delay Time	1 to 572 milliseconds.
Reverb Time High Frequency	0.01 (fast filter attack) to 0.99 (slow filter attack).
Size	1 (small) to 16 (large).
Equalizer Parameters	±12dB, 4 bands



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8 THE MODE/PARAMETER SUMMARY CHART

The SDR1000 mode and parameter information discussed in sections 6. b. and 7. of this manual are summarized in the chart below. For each SDR1000 mode, the user-adjustable parameters are listed, along with the parameter adjustment range. The chart uses three symbols to identify channel assignment options for each parameter in each mode. The symbols indicate the following:

○
The setting of this parameter will be identical for Channels 1 and 2, and no channel number will be displayed by 9) CHANNEL DISPLAY when this parameter is edited.

◎
The setting of this parameter can differ in Channels 1 and 2, if desired. When this parameter is edited, 9) CHANNEL DISPLAY will indicate in which channel this parameter is being edited. You may also set identical channel settings for this parameter, if you wish. For more information on editing, refer to section 9. c. 2).

●
This parameter has two independent components, designated in channel pairs: (1, 2) for the first component, and (3, 4) for the second component. When this parameter is edited in Channels 1 and 2, the first component is being edited. In "Channels" 3 and 4, the second component is being edited. Parameter component settings can differ within the channel pairs, if desired. You may also set identical channel settings for each parameter component, if you wish. For more information on editing, refer to section 9. c. 2).

Note:
"Channels" 3 and 4 do not exist; this designation is used to identify the second component of this parameter. The "outputs" of "Channels" 3 and 4 actually appear in the outputs of Channels 1 and 2, respectively.

KEY:
○; CH1·CH2 – SYNCED
◎; CH1·CH2 – SYNCED OR INDEPENDENT
●; CH1·CH2 – EARLY REFLECTION COMPONENTS
CH3·CH4 – EARLY REFLECTION COMPONENTS

MODE / PAREMETER	NAME / No.	HALL 0	ROOM 1	PLATE 2	GATE 3	RE-VERSE 4	DUAL DELAY 5	PAN-NING 6	DUAL REVERB 7	PARAMETER RANGE	STEP
REV. T		○	/	○	/	/	/	/	/	0.30~99.0 s	0.1/1.0
		/	○	/	/	/	/	/	/	0.07~24.75 s	0.02/0.03/0.25
		/	/	/	○	○	/	/	/	0.10~99.0 s	0.1/1.0
		/	/	/	/	/	/	/	◎	0.90~9.90 s	0.12
		/	/	/	/	/	◎	/	/	1~1001 ms	1
PRE-DELAY		◎	◎	◎	/	/	/	/	◎	1~572 ms	1
		/	/	/	/	/	◎	◎	/	0~255 ms	1
		/	/	/	◎	◎	/	/	/	1~850 ms	1
E. REF. T		◎	◎	●	/	/	/	/	●	1~572 ms	1
		/	/	/	/	/	◎	/	/	1~256 ms	1
		/	/	/	●	●	/	/	/	1~850 ms	1
E. REF. LEV		◎	◎	●	●	●	◎	/	●	000~±.992	0.007/0.008
RT. HIGH		○	○	○	/	/	◎	/	◎	0.01~0.99	0.01
SIZE		○	○	○	/	/	/	/	◎	1~16	1
GATE. T		/	/	/	○	○	/	/	/	1~300 ms	1
F. B. LEV		/	/	/	/	/	◎	/	/	000~±.992	0.007/0.008
TAP		/	/	/	/	/	◎	/	/	1~23	1
DEPTH		/	/	/	/	/	/	○	/	.000~1.000	0.007/0.008
SPEED		/	/	/	/	/	/	○	/	0.10~20.00 Hz	0.02 (0.1~3.0) 0.05 (3.0~5.0) 0.1 (5.0~10) 0.5 (10~20)
EQ	LOW	◎	◎	◎	◎	◎	◎	◎	◎	–12~+12	2
	L. MID	◎	◎	◎	◎	◎	◎	◎	◎	–12~+12	2
	H. MID	◎	◎	◎	◎	◎	◎	◎	◎	–12~+12	2
	HIGH	◎	◎	◎	◎	◎	◎	◎	◎	–12~+12	2
EFF. LEV		◎	◎	◎	◎	◎	◎	◎	◎	.000~1.000	0.007/0.008

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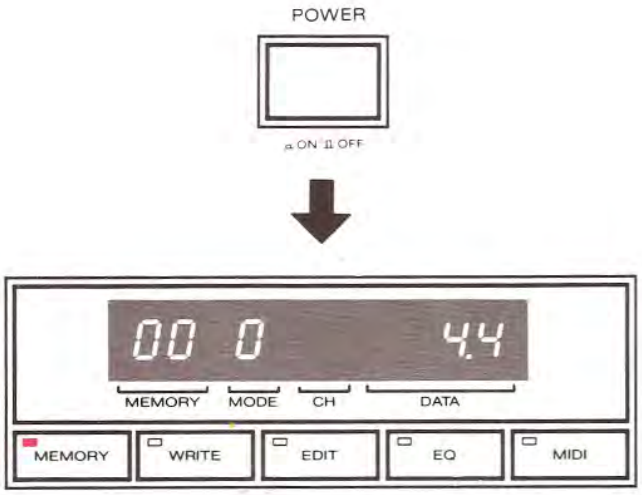
a) Initial Set-up

If you are using the SDR1000 for the first time and you just want to "see what it can do", you can start with a relatively simple set-up. If, however, you intend to create and program your own sounds, we recommend that you use the system set-up with which the SDR1000 will be most often used. Refer to section 5. of this manual for system set-up examples.

1) Unit Power-up:



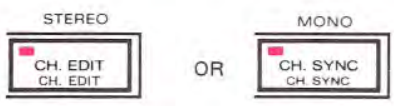
When the SDR1000 is first powered up, it automatically activates the function last activated. Activate the "Memory Select" function to start out. In this function you may:

- Recall any memory location for program playback.
- Select "Mono" or "Stereo" operation.
- Activate the parameter or MIDI editing functions.

To power up the SDR1000 press 31) POWER SWITCH. This causes the LED in the 11) MEMORY KEY to light, and the 7) MEMORY DISPLAY to indicate a 2-digit memory location. This location is the last location accessed. Also, 10) DATA DISPLAY will indicate the Reverb Time of the program in this location.

If the SDR1000 is not in "MEMORY SELECT" when powered up, follow the procedure in section 9. b.

2) Selecting "Mono" or "Stereo" Operation.



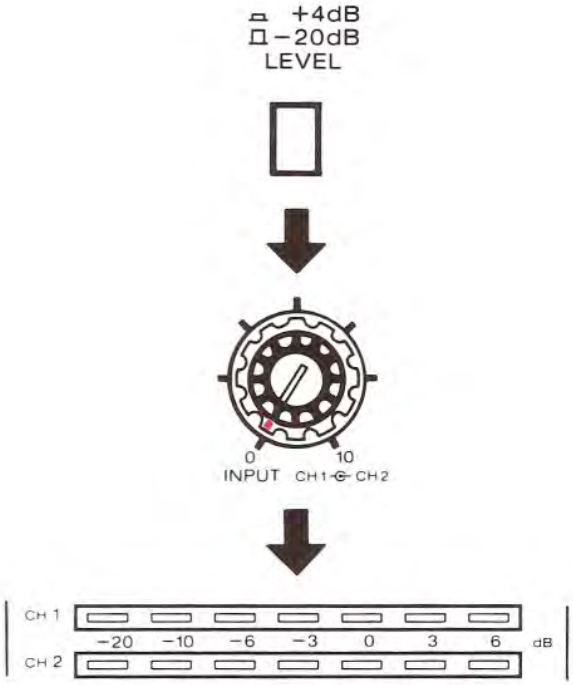
When setting up your system around the SDR1000, you have to decide whether you will operate the SDR1000 in "Mono" or "Stereo". In "Mono" operation the SDR1000 becomes a single-channel unit with inputs and outputs connected to Channel 1. In "Stereo" operation the SDR1000 becomes a versatile two-channel processor, accomodating both mono and stereo inputs.

Before selecting "Mono" or "Stereo" operation, the "Memory Select" function must be activated. If the unit is in one of the editing functions, simply press the 11) MEMORY KEY to activate "Memory Select". This will cause the 7) MEMORY DISPLAY to display the memory location last accessed, with the right ("units") digit flashing. This indicates that the SDR 1000 is awaiting a memory location selection. However, you may proceed to select "Mono" or "Stereo" operation without making a memory location selection.

To select "Mono" operation press the 29) CHANNEL SYNC KEY. The LED within this key will light. To select "Stereo" operation press the 28) CHANNEL EDIT KEY. The LED within this key will light.

You may change your selection at any time by following this procedure. Just make sure that the "Memory Select" function has been activated before you change your selection.

3) Setting the Input and Output Signal Levels:



In order to assure optimum performance from your SDR1000, it is essential that you set the proper input signal level. If, for example, the input signal level is too low, a hissing "noise" may be heard with the reverb signal. On the other hand, if the input signal level is too high, a harsh "distortion" may be heard with the reverb signal.

We will start by using the 33) INPUT LEVEL SWITCH to select the appropriate signal level range. Two ranges may be selected with this switch:

- **+4 dB (Line-level) Range**

Select this range for mid-to-high level input signals such as: tape recorder, drum machine outputs, audio mixer loop-sends and outputs, keyboard and synthesizer outputs, etc.

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- **–20 dB (Instrument-level) Range**

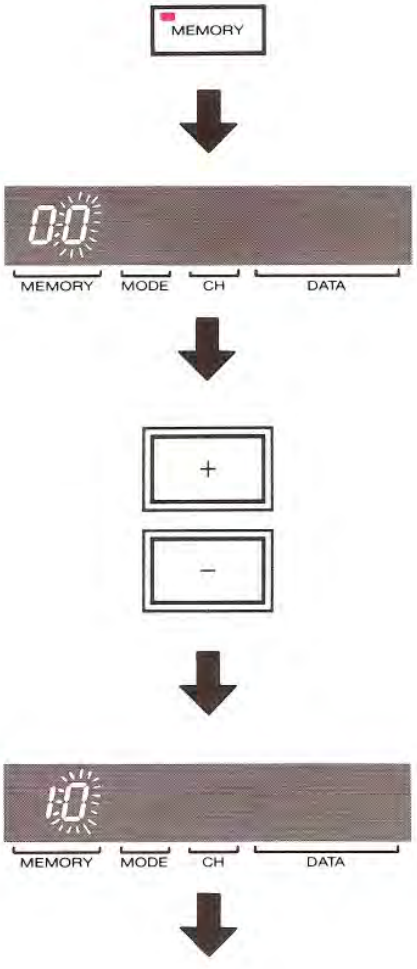
Select this range for low-to-mid level input signals such as: electric guitar outputs, instrument-level (pedal) effects outputs, or other low-level outputs.

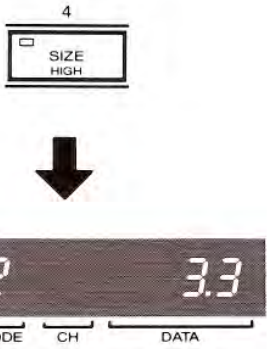
If you are unsure which range is right for your application, start by selecting the "+4 dB" range and proceed to the next procedure. If the input signal is too low to complete the procedure, try again using the "–20 dB" range.

Next, we will use the 3) INPUT LEVEL control to set the proper input level. Play the average input signal level into the SDR1000 and watch the 6) INPUT LEVEL LEDS. Adjust the 3) INPUT LEVEL control so that the "0 dB" LED (leftmost red LED) lights consistantly with signal peaks. Turning 3) INPUT LEVEL clockwise increases signal level into the SDR 1000. Now play the loudest signals that the SDR1000 will have to handle. If the "+6 dB" LED (rightmost red LED) lights brightly and stays on throughout the signal peak, the signal level is too high. Adjust 3) INPUT LEVEL counter-clockwise so that these peaks light the "+6 dB" LED only dimly, or not at all.

Your SDR1000 should now be properly set for your application. Listen carefully to the reverb sound. If there is any distortion sound created by the SDR1000, or if there is large amounts of hiss accompanying the reverb sound, the input signal level must be re-adjusted. Use the procedure just described.

b) Recalling Preset Programs





Recalling preset programs serves two basic purposes:

- it accesses preset sounds for playback, and
- it accesses preset sounds for editing (creating) and storing new sounds.

In the SDR1000 preset programs are stored in "memory locations". There are a total of 100 locations available, running from location "00" to location "99". The locations are divided up as follows:

Locations 00 to 29	Factory Preset Programs
Locations 30 to 99	User-Programmable Programs

Any location, "Factory Preset" or "User-Programmable" may be accessed for playback and editing. However, the program information in the recalled location will remain unchanged, even after editing. The edited information is put into temporary storage, and, to be saved, must to be "copied" into another location. For more information regarding program editing and storage, refer to sections 9. c. and 9. d. of this manual.

To recall a preset program, first activate the "Memory Select" function. If the editing or copying functions are activated, the "Memory Select" must be re-activated. Press 11) MEMORY KEY. The LED within this key will light, indicating that the "Memory Select" function has been activated. Also, the 7) MEMORY DISPLAY will display the memory location that was last recalled. The rightmost ("units") digit will flash indicating that the SDR1000 is awaiting a memory location selection.

Using the 30) INCREMENT/DECREMENT KEYS select the left ("tens") digit of the desired memory location. The rightmost digit will continue to flash indicating that the memory selection procedure is not yet completed. Next, select the right ("units") digit of the desired memory location. Use the 16)–25) NUMBER KEYS (the front panel keys with the numbers "1" through "0" above them) to select this digit. The selected memory location will stop flashing, the 8) MODE DISPLAY will indicate which mode the program is using, the 9) MIDI DISPLAY will indicate the MIDI channel being used, and the 10) DATA DISPLAY will indicate the Reverb Time (or the Delay Time in Mode 5) that the program is using. And, most importantly, the program residing that the selected memory location will be activated.

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- **–20 dB (Instrument-level) Range**

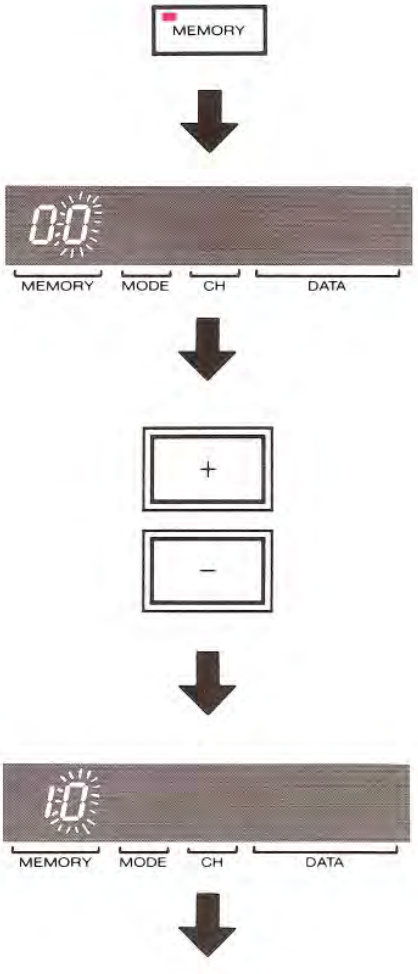
Select this range for low-to-mid level input signals such as: electric guitar outputs, instrument-level (pedal) effects outputs, or other low-level outputs.

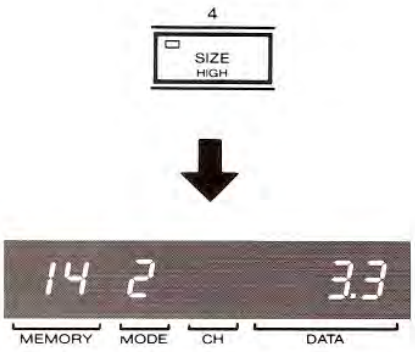
If you are unsure which range is right for your application, start by selecting the "+4 dB" range and proceed to the next procedure. If the input signal is too low to complete the procedure, try again using the "–20 dB" range.

Next, we will use the 3) INPUT LEVEL control to set the proper input level. Play the average input signal level into the SDR1000 and watch the 6) INPUT LEVEL LEDS. Adjust the 3) INPUT LEVEL control so that the "0 dB" LED (leftmost red LED) lights consistantly with signal peaks. Turning 3) INPUT LEVEL clockwise increases signal level into the SDR 1000. Now play the loudest signals that the SDR1000 will have to handle. If the "+6 dB" LED (rightmost red LED) lights brightly and stays on throughout the signal peak, the signal level is too high. Adjust 3) INPUT LEVEL counter-clockwise so that these peaks light the "+6 dB" LED only dimly, or not at all.

Your SDR1000 should now be properly set for your application. Listen carefully to the reverb sound. If there is any distortion sound created by the SDR1000, or if there is large amounts of hiss accompanying the reverb sound, the input signal level must be re-adjusted. Use the procedure just described.

b) Recalling Preset Programs





Recalling preset programs serves two basic purposes:

- it accesses preset sounds for playback, and
- it accesses preset sounds for editing (creating) and storing new sounds.

In the SDR1000 preset programs are stored in "memory locations". There are a total of 100 locations available, running from location "00" to location "99". The locations are divided up as follows:

Locations 00 to 29	Factory Preset Programs
Locations 30 to 99	User-Programmable Programs

Any location, "Factory Preset" or "User-Programmable" may be accessed for playback and editing. However, the program information in the recalled location will remain unchanged, even after editing. The edited information is put into temporary storage, and, to be saved, must to be "copied" into another location. For more information regarding program editing and storage, refer to sections 9. c. and 9. d. of this manual.

To recall a preset program, first activate the "Memory Select" function. If the editing or copying functions are activated, the "Memory Select" must be re-activated. Press 11) MEMORY KEY. The LED within this key will light, indicating that the "Memory Select" function has been activated. Also, the 7) MEMORY DISPLAY will display the memory location that was last recalled. The rightmost ("units") digit will flash indicating that the SDR1000 is awaiting a memory location selection.

Using the 30) INCREMENT/DECREMENT KEYS select the left ("tens") digit of the desired memory location. The rightmost digit will continue to flash indicating that the memory selection procedure is not yet completed. Next, select the right ("units") digit of the desired memory location. Use the 16)–25) NUMBER KEYS (the front panel keys with the numbers "1" through "0" above them) to select this digit. The selected memory location will stop flashing, the 8) MODE DISPLAY will indicate which mode the program is using, the 9) MIDI DISPLAY will indicate the MIDI channel being used, and the 10) DATA DISPLAY will indicate the Reverb Time (or the Delay Time in Mode 5) that the program is using. And, most importantly, the program residing that the selected memory location will be activated.

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c) Editing A Preset Program (Creating A New Program)

Editing a program is the process that allows you to create your own sounds on the SDR1000. Creating sounds on the SDR 1000 is a two-step process:

- Selecting the "Mode" (effect) that most closely resembles the effect you wish to create.
- Changing the Mode's "parameters" (effect components) to achieve your sound.

Creating your own sounds on the SDR1000 is really quite easy. It is essential, however, that you fully understand the eight Modes of the SDR1000 and the parameters that you may adjust in each Mode. If you just skimmed over sections 6. and 7. of this manual, please read them more carefully before you begin your creation.

One more thing to keep in mind: once a program has been edited, it must be "copied" into another memory location if it is to be "saved". If the edited program is not copied, all edits will be "dumped" when a new location is recalled. The procedure for copying programs is described in section 9. d. of this manual.

1) Selecting A Preset Program (Mode Selection):

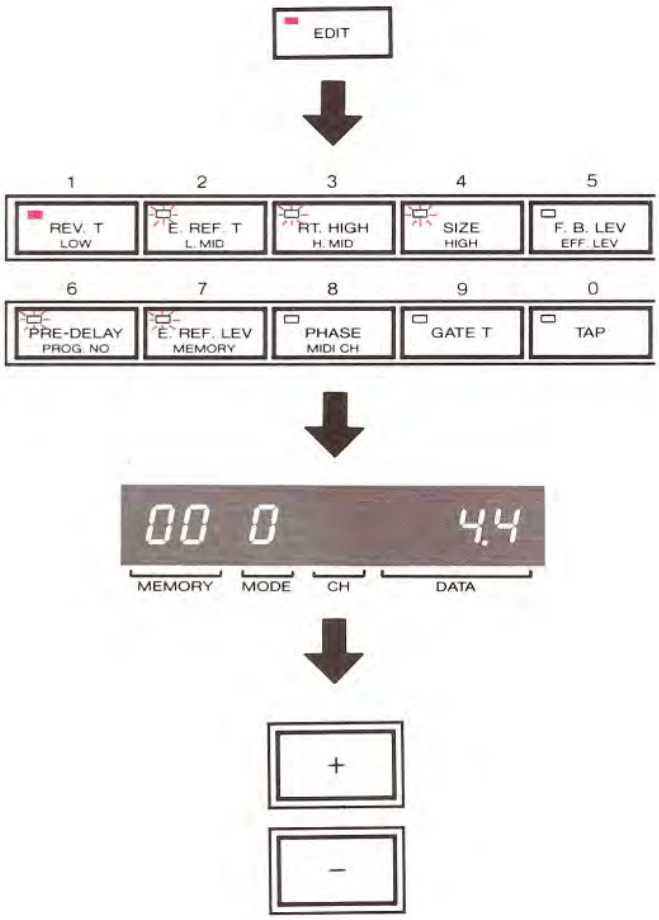
The first step in sound creation with the SDR1000 is to select the "Mode" that is most closely resembles the sound you have in mind. The choices are:

Mode "0" (Hall Reverb)	For "large" reverb sounds.
Mode "1" (Room Reverb) & Mode "2" (Plate Reverb)	For smaller, less extreme reverb sounds.
Mode "3" (Gated Reverb) & Mode "4" (Reverse Reverb)	For gated, reverse and gated reverse reverb effects.
Mode "5" (Dual Delay)	For two-channel time delay effects, including multi-tap (multiple repeat) echo effects.
Mode "6" (Auto-Panning)	For two-channel panning effects (signal moving from one channel to the other), and for single channel "volume swelling" effects.
Mode "7" (Dual Reverb)	For two different single-channel reverb effects.

Once you have selected the "Mode", recall any program that uses that "Mode". For a listing of factory programs (and their "Modes"), refer to section 10. of this manual. To recall the program, follow the procedure described in section 9. b. of this manual.

It is helpful, but not necessary, to recall the program that most closely resembles the sound you have in mind. Parameter editing will be easier since the parameters are already set close to where they need to be to create your sound.

2) Editing The Mode Parameters:



Once you have recalled the program you wish to edit, you are ready to begin editing. Press the 13) EDIT KEY to activate the "edit" function. The LED within this key will light, and some of the 16)–27) PARAMETER KEYS will flash. The flashing keys indicate which parameters may be edited in the "Mode" you selected.

You may now begin the editing process. Press the flashing key that corresponds to the parameter you wish to edit. This key's LED will remain lit while the other flashing keys will continue to flash. The 10) DATA DISPLAY will indicate where the parameter is presently set. Using the 30) INCREMENT/DECREMENT KEYS you may change the parameter setting to any setting within the parameter's range. As the parameter is changed, you can hear its effect on the program.

Once you have finished adjusting a parameter you may call up another parameter for editing. Simply press another PARAMETER KEY. This key's LED will remain lit while the other flashing keys will continue to flash. Edit this parameter as you did before, using the 30) INCREMENT/DECREMENT KEYS. Continue this cycle of parameter "call-up" and "editing" until you have arrived at the sound you desire. You may call up the parameters in any order you wish, and as often as necessary.

As you edit the "Early Reflection Level" and "Feedback Level" parameters, you may "invert the phase" of these components, if you wish. Simply press the 23) PHASE KEY while editing these parameters. The 10) DATA DISPLAY will display a "minus sign" in front of the setting data. If there was a minus sign there to begin with, pressing the PHASE KEY will remove the sign.

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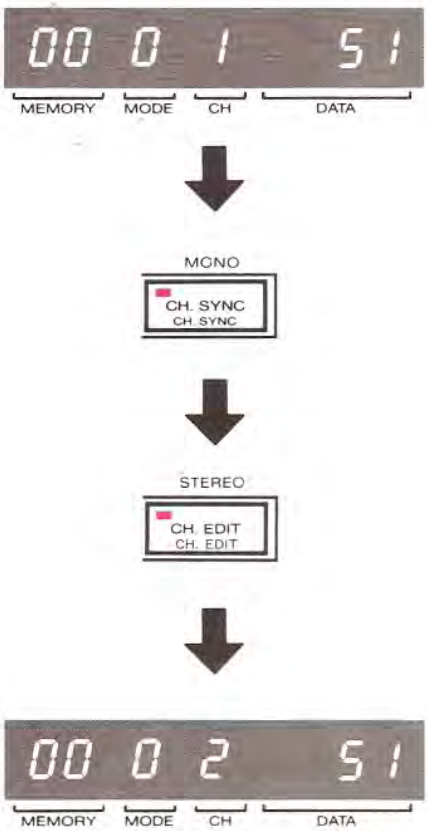
As you are editing the program, you may find it useful to refer to the Mode/Parameter Summary Chart (section 8. of this manual). The chart lists the adjustable parameters in each "Mode" of the SDR1000. Also listed are the adjustment ranges for each parameter.

Another extremely useful editing feature of the SDR1000 is the "Edit Audition" feature. If, during the editing process, you wish to compare the sound of the edited program with the original (unedited) program sound, simply press 13) EDIT KEY. This key's LED will go from solid-on to flashing, indicating that the original stored sound has been recalled, and that the "Parameter Edit" function has been de-activated. Pressing EDIT KEY again will recall the edited program and re-activate the "Parameter Edit" function. Also, this key's LED will return to solid-on.

A final word about editing the "Mode" parameters. During the entire edit/audition process, the original program information is in NO danger of being "lost" or "dumped". This is true whether you are editing a factory preset program or a user-preset program. To save the newly edited program, you must "copy" the program to a new memory location. Refer to section 9. d. of this manual for a description of this procedure. However, your newly edited program is safe as long as you remain in same memory location.

3) Editing And "Syncing" Multiple Channels:

- **Editing Multiple Channels:**



While editing a program you will notice that, for some parameters, the 9) CHANNEL DISPLAY will display a digit. This indicates that, for this parameter, different parameter settings can be made for Channels 1 and 2 of the SDR1000. This allows you to edit the program differently for each channel. The Mode/Parameter Chart in section 8. of this manual tells you which parameters (in each "Mode") can be edited in this way.

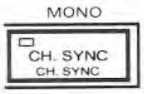
First, activate the "Parameter Edit" function as described in the previous section, and call up a "multi-channel" parameter for editing. As indicated in the diagram above, the CHANNEL DISPLAY will indicate "Channel 1". This means that you are currently editing this parameter for the sound in Channel 1.

If you wish to edit this parameter differently for Channel 2, look at the LED in the 29) CHANNEL SYNC KEY. If this LED is lit, press the 29) CHANNEL SYNC KEY once, to turn the LED off. If the LED is already off, do not press this key. Next, press the 28) CHANNEL EDIT KEY. The CHANNEL DISPLAY will indicate that the parameter may now be separately edited for Channel 2. Proceed to edit this parameter as you normally would. Continued pressing of the 28) CHANNEL EDIT KEY will cause the "Parameter Edit" function to "toggle" between Channels 1 and 2.

The Mode/Parameter Chart in section 8. indicates that four "Modes" (Modes "2", "3", "4" and "7") have some "four-channel" parameters (Early Reflection Time, and Early Reflection Level). Channels "3" and "4" do not exist as channels, they actually represent a second, independently adjustable component of these parameters. The components labelled "Channel 3" and "Channel 4" actually appear in Channels "1" and "2", respectively. For more information regarding these parameters, refer to sections 6. b. and 7. of this manual.

You can edit a "four-channel" parameter in the same way a "two-channel" parameter is edited. This time, as you continue pressing the CHANNEL EDIT KEY, the "Parameter Edit" function will "step-through" Channels 1 through 4.

- **"Syncing" Multiple Channels:**



In many applications it is desirable to set up the SDR1000 with identical sounds in both channels. The SDR1000 lets you edit one channel and "sync" the parameters of the other channel to match.

Start by setting up the SDR1000 for "stereo" operation (see section 9. a. 2). Activate the "Parameter Edit" function and edit a program (as described in section 9. c. 2). When the editing is finished, press the 29) CHANNEL SYNC KEY, lighting this key's LED. This LED indicates that identical parameter settings are set for both channels. If this LED is already lit, then the channels are already "synced".

The "four-channel" parameters (see previous discussion) may be "synced" in pairs: Channel 1 to Channel 2, and "Channel 3" to "Channel 4". To "sync" Channel 1 to Channel 2, press the CHANNEL SYNC KEY after editing either channel. To "sync" "Channel 3" to "Channel 4", press the CHANNEL SYNC KEY after editing either channel. If, after editing, the CHANNEL SYNC KEY's LED is lit, then the channels are already "synced".

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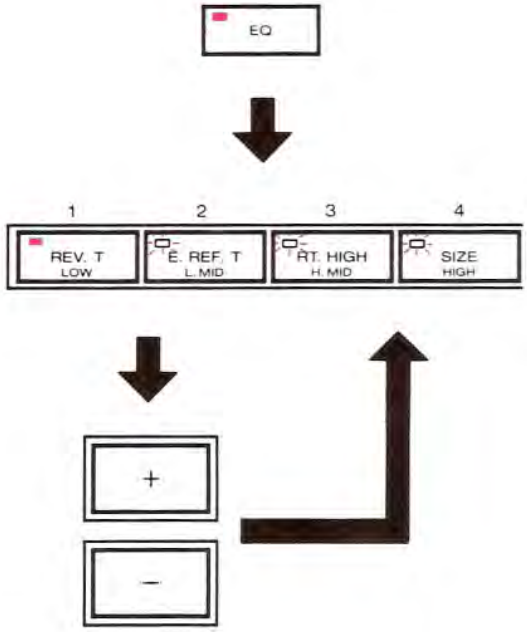
4) Setting The Equalization Parameters:



When creating sounds on the SDR1000 it is often desirable to change the "tone", or equalization of the sound. The SDR 1000 provides a 4-band graphic equalizer (EQ) that may be programmed differently for each preset program. This allows you to better simulate the sounds of certain reverberation spaces, or to create your own sound colors.

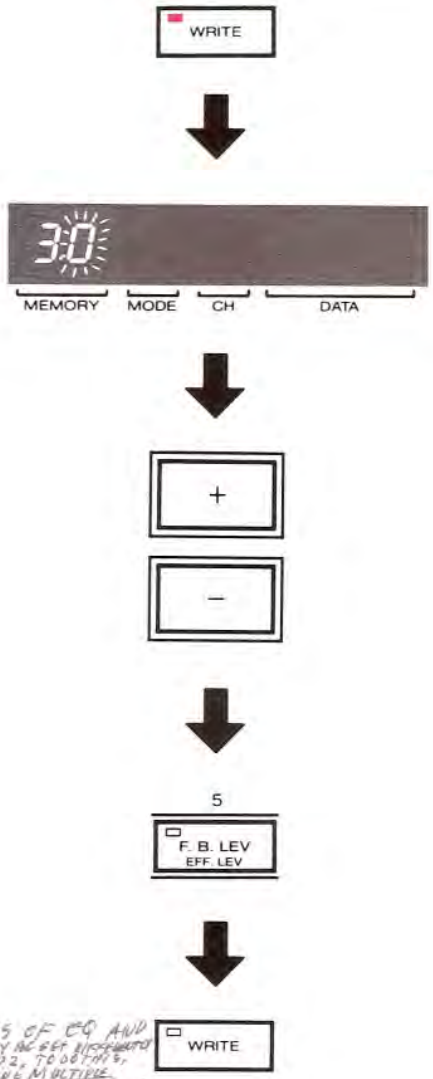
The four bands of the programmable EQ are four-octaves wide, with their centers occurring at 100 Hz ("Low"), 400 Hz ("Low Mid"), 1.6 kHz ("High Mid"), and 6.4 kHz ("High"). Each band provides up to 12 dB (or four times) of signal boost or signal cut, in 2 dB steps. The overall signal level ("Output Level") is also adjustable over the ±12 dB range.

First, recall a program that you wish to "equalize". Press the 14) EQ KEY to activate the "EQ Edit" function. This will cause the EQ KEY's LED to light, and the 16)–20) EQ EDIT KEYS to flash. Notice that these keys have blue legends to help identify them. Press one of the EQ EDIT KEYS. This key's LED will light while the others continue flashing. The 10) DATA DISPLAY will indicate the amount of boost or cut previously programmed for this band. Use the 30) INCREMENT/DECREMENT KEYS to achieve the desired amount of boost or cut. Amounts of cut will have a "minus sign" in front of the amount. When you have the desired amount of boost or cut, press another EQ EDIT KEY and repeat the procedure.

As with the "Parameter Edit" function, you may compare your new EQ settings with the original settings. While the "EQ Edit" function is still active, press the 13) EQ KEY. This key's LED will flash indicating that the original stored EQ settings have been recalled for playback, and that the "EQ Edit" function has been de-activated. Pressing EQ EDIT again will recall the new EQ settings and re-activate the "EQ Edit" function.

As with the "Parameter Edit" function, all stored information is perfectly safe while using the "EQ Edit" function. To save the new EQ settings, you must "copy" the program into a new memory location. Refer to section 9. d. of this manual for a description of this procedure. However, your new EQ settings are safe as long as you remain in the same memory location.

d) Copying (Saving) A Preset (Edited) Program:



THE 4 BANDS OF EQ AND EFFECT LEVEL MAY BE SET DIFFERENTLY FOR CHANNELS 1 AND 2. TO DO THIS, USE THE "EDITING MULTIPLE CHANNELS" PROCEDURE OUTLINED IN SECTION 9C-3 OF THE MANUAL.

Once you have finished creating your new sound, you are ready to "copy" or "save" your new program. You may also copy a program when you wish to assign an existing program to another memory location. The SDR1000 provides 70 memory locations that you can copy programs into; from location "30" to location "99". Locations "00" to "29" are factory preset programs that cannot be erased.

After your program has been edited, press the 12) WRITE KEY. This key's LED lights indicating that the "Program Copy" function has been activated. Also, the 7) MEMORY DISPLAY indicates the first available copy location. The left ("tens") digit will be solidly lit, while the right ("units") digit will flash. Select the desired copy location by first using the 30) INCREMENT/DECREMENT KEYS to select the left digit, and then the 16)–25) NUMBER KEYS to select the right digit. Pressing the WRITE KEY again will copy your new sound into the chosen memory location. Your new sound is now stored in the memory of the SDR1000. The SDR1000 will automatically re-activate the "Memory Select" function.

Your new sound will stay in its new memory location until you copy another program into the same location. That is why it is a good practice to recall the proposed new location before you activate the "Program Copy" function. This way, you are sure that you will not copy over a program that you want to keep.

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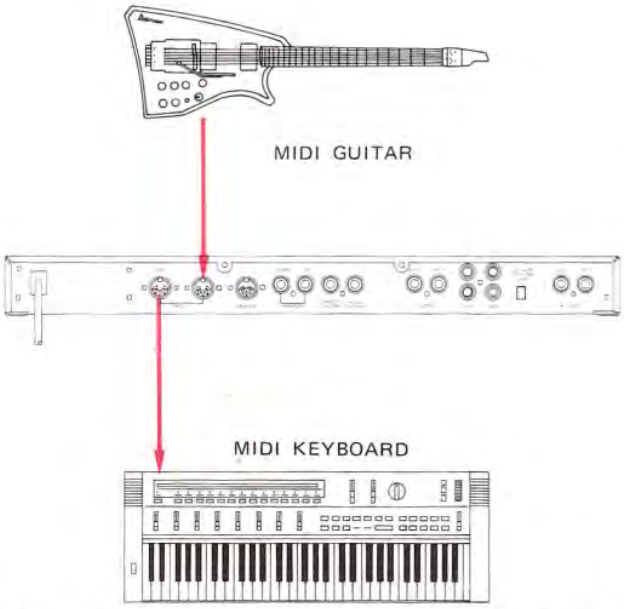
e) MIDI Operation:

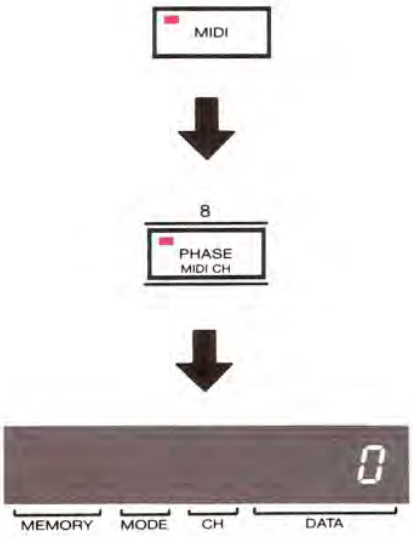
The MIDI capabilities of the SDR1000 allow you to recall any of the memory locations using a standard MIDI controller. Standard MIDI controllers use 128 program numbers (0 to 127) to call up synthesizer patches (sounds), and preset effects in units such as the SDR1000.

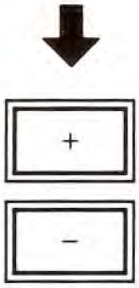
As shown in the diagram below, the MIDI hook-up is quite simple. Using a standard MIDI cable, connect the MIDI OUT JACK of the controller to the 42) MIDI IN JACK of the SDR1000. If you wish to control other MIDI equipment as well, use the 43) MIDI THRU JACK to pass along the controller's information to these units.



Once the MIDI connections have been made, there are two procedures you must perform before your SDR1000 is "MIDI-ready". You must first assign the SDR1000 to the MIDI channel that it will "listen to", then you must assign the SDR 1000's memory locations to specific MIDI program numbers.

- **Assigning The SDR1000's MIDI Channel:**





The MIDI standard provides 16 data channels over a single MIDI line. In "Omni-On Mode" MIDI controllers transmit MIDI information over all 16 channels, and MIDI-controlled devices receive information over any of the 16 channels. In "Omni-Off Mode" MIDI controllers transmit specific information over each channel, and MIDI-controlled devices are assigned to specific MIDI channels. In this MIDI mode, you may control various devices individually, rather than using one MIDI command to change everything at once.

The SDR1000 can accomodate both MIDI channel modes, and can be assigned to any of the 16 MIDI channels. All you have to do is to select a MIDI channel. Selecting any MIDI channel (1 to 16) will automatically set the SDR1000 to receive information on that MIDI channel in the "Omni-Off Mode". To select "Omni-On" operation, select channel "0". Please note that channel "0" is not a standard MIDI channel. It is merely a display convenience to indicate that the "Omni-On Mode" has been selected.

Start by pressing the 15) MIDI KEY. This activates the "MIDI Edit" function of the SDR1000. This key's LED will light and the 21)–23) MIDI EDIT KEYS will flash. Notice that these keys have yellow legends to help identify them. Next, press the 23) MIDI CHANNEL (PHASE) KEY. This key's LED will light and the other MIDI EDIT KEYS will continue flashing. Also, the 10) DATA DISPLAY will indicate the MIDI channel that the SDR1000 is currently assigned to. Use the 30) INCREMENT/DECREMENT KEYS to select the MIDI channel you desire (channels 1–16 for "Omni-Off Mode", channel "0" for "Omni-On Mode"). To enter the channel selection into memory press the 11) MEMORY KEY. This also deactivates the "MIDI Edit" function by re-activating the "Memory Selection" function.

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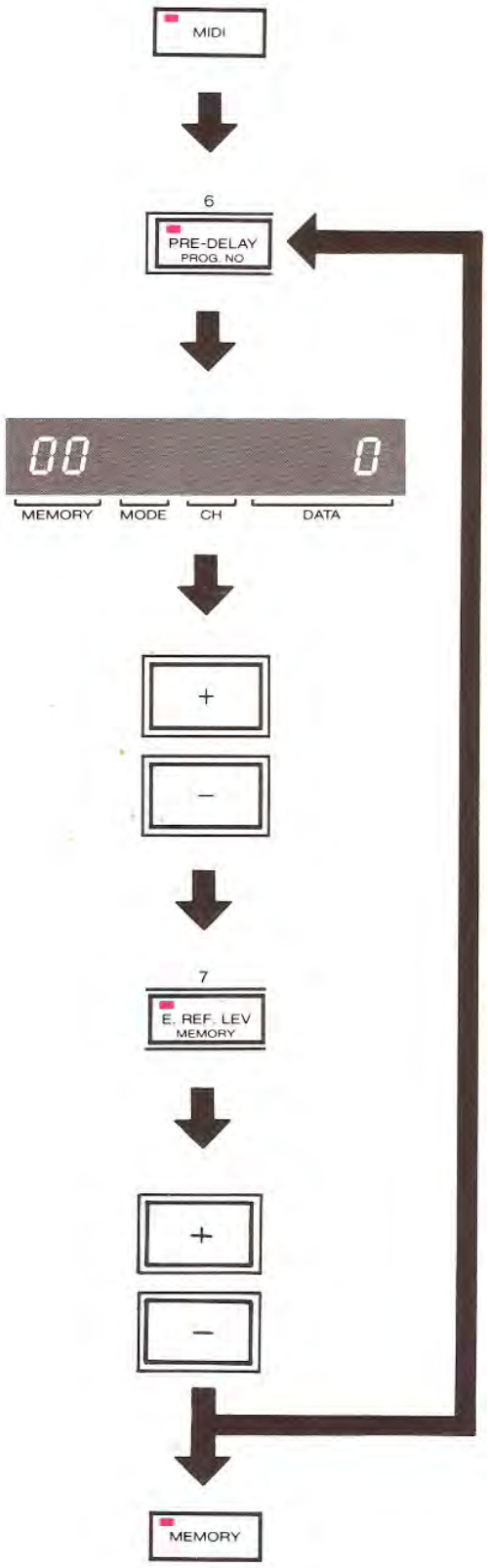
■ Assigning Memory Locations To MIDI Program Numbers:



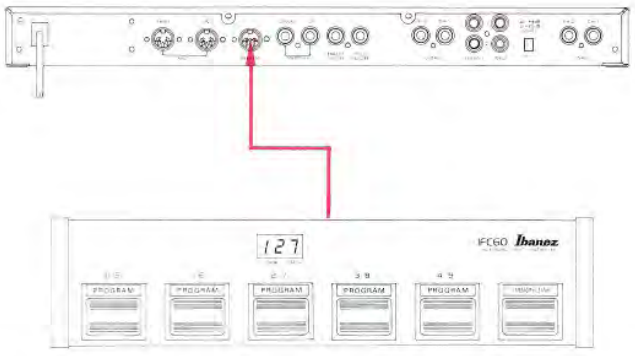
As stated above, each of the 100 memory locations of the SDR1000 (from 00 to 99) may be assigned to a MIDI program number (from 0 to 127). While only one memory location (effect preset) may be assigned to each MIDI program number, each memory location may be assigned to more than one MIDI program number.

Start by pressing the 15) MIDI KEY to activate the "MIDI Edit" function. This key's LED will light, and the 21)–23) MIDI EDIT KEYS will flash. Next, press the 21) PROGRAM NUMBER (PRE-DELAY) KEY. This key's LED will light while the other MIDI EDIT KEYS will continue flashing. Also, the 7) MEMORY DISPLAY will indicate the last location to be recalled, and the 10) DATA DISPLAY will indicate the MIDI program number to which this location is assigned. Use the 30) INCREMENT/DECREMENT KEYS to step through the MIDI program numbers. This will let you review the memory location assignments and bring you to the MIDI program number that you wish to assign. Once you have arrived at the desired program number, press the 23) MIDI MEMORY (EARLY REFLECTION LEVEL) KEY. This key's LED will light while the other MIDI EDIT KEYS will continue flashing. Now you may use the 30) INCREMENT/DECREMENT KEYS to change the memory location to be assigned to this MIDI program number.

Once you have arrived at the desired memory location for this MIDI program number you may: enter your data into memory and exit the "MIDI Edit" function by pressing the 11) MEMORY KEY, or you may assign another memory location to another MIDI program number. Press the 21) PROGRAM NUMBER (PRE-DELAY) KEY and repeat the process from that point. When you eventually finish making all of the memory location/program number assignments, press the 11) MEMORY KEY. This enters all of your assignment data into memory and re-activates the "Memory Select" function. You may now select SDR1000 memory locations with the front panel keys, or by use of your MIDI controller.

f) Using The IFC60 Intelligent Foot Controller

The Ibanez IFC60 Intelligent Foot Controller may be used to select the SDR1000 memory location, much in the way that a MIDI controller would. The IFC60 lets you use remote footswitching to call up the 128 MIDI program numbers (from 0 to 127). When this feature is used, the SDR1000 will not respond to MIDI commands.



Connect the IFC60 to the 41) REMOTE JACK using the cable supplied with the IFC60. When the IFC60 is first powered up (by connection to the SDR1000) its display will first flash the IFC60's MIDI channel number three times, then automatically call up a preset MIDI program number (factory set to 127). If you wish to change either the IFC60's MIDI channel or the preset MIDI program number, refer to the IFC60's owners manual.

Before you start using the IFC60 to select MIDI program numbers, you must make the SDR1000 "MIDI-ready". Refer to the previous section of this manual and follow the procedures "Assigning The SDR1000's MIDI Channel" and "Assigning Memory Locations To MIDI Program Numbers". You will then be ready to use the IFC60.

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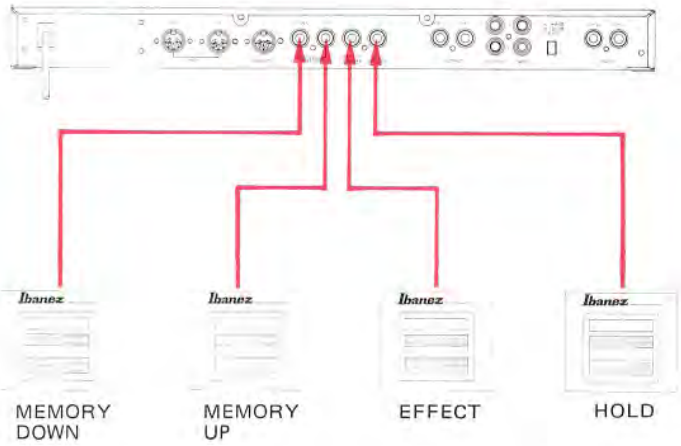
The IFC60 divides the 128 MIDI program numbers into 13 "banks" (from 00 to 12), with each bank having up to 10 "patches" (from 0 to 9). The 3-digit display of the IFC60 display the selected program number, with the left two digits being the selected "bank", and the rightmost digit being the "patch". For example, a display of "068" indicates bank "06", patch "8". MIDI program numbers "128" and "129" do not exist, so calling these numbers on the IFC60 calls up numbers "126" and "127", respectively.

To select a MIDI program number with the IFC60, press the 11) MEMORY KEY to activate the "Memory Select" function on the SDR1000. Select the desired "bank" with the rightmost switch of the IFC60. Pressing this switch once causes the bank to advance once. Pressing and holding this switch will cause the IFC60 to step slowly through the banks. Once the desired bank is selected, selected the "patch" with one of the remaining patch switches of the IFC60. Each of these switches have two patch numbers associated with them. Pressing and holding one of these switches causes the IFC60 to slowly "toggle" between the two patch numbers of that switch. Once the desired patch number is reached, release the switch. The selected MIDI program number will then call up the SDR 1000's memory location assigned to that program number.

g) Using The Remote Footswitch Features

The SDR1000 also provides facility for controlling certain functions by common remote footswitches. Memory location increment/decrement, unit active/bypass and reverb "Hold" features may be controlled in this way. Use a momentary-type footswitch, such as the Ibanez FS1M.



If you wish, you may also control these features with an external electronic controller. To do this, make sure that the controller takes the remote jack input to system ground ("zero-volt" potential) for about 100 milliseconds to activate the feature.

- **"Hold" Feature:**

This feature is available in modes "0", "1", "2" and "7" only, and is NOT similar to repeat hold features in typical digital delay lines. When this feature is activated the reverb signal is "held" at a constant level. When it is de-activated, the reverb sound decays as it normally would. This feature allows you to play "on top" of the "held" signal with the dry (unprocessed) input.

To activate the "Hold" feature, simply step on the footswitch plugged into the 37) HOLD JACK. "Hold" will be active until the footswitch is despressed again.

To use "repeat hold" effectively, remember to depress the footswitch BEFORE the reverb signal decays away completely. A little experimentation will yield a wealth of new sound possibilities.

- **Active/EFFECT ON/OFF Feature:**

When the footswitch connected to the 38) EFFECT JACK is repeatedly depressed and released, the unit will "toggle" between the active and EFFECT OFF states.

- **MEMORY Up/MEMORY Down:**

This feature allows you to step the SDR1000's memory location up and down, one step at a time. Two footswitches are needed to use this feature: the "program up" switch connected to the 39) MEMORY UP JACK and the "program down" switch connected to the 40) MEMORY DOWN JACK.

To operate this feature, the "Memory Select" function of the SDR1000 must be activated. Then you merely step on a switch and release. The memory location will go up or down by one location.

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10 LISTING OF FACTORY PRESET PROGRAMS

MEMORY No.	MODE No.	PROGRAM	PARAMETER							
			REV.T (s)	PRE-DELAY (ms)	E.REF.T (ms)	E.REF.LEV	RT.HIGH	SIZE	EQ (dB)	EFF.LEV
00	0	LARGE HALL	4.4	100	51	0.101	0.46	12	4	0.445
									4	
				100	51	0.101			0	
									2	
01	0	STRINGS HALL	2.6	125	43	0.156	0.6	9	−2	0.500
									0	
				150	43	0.156			2	
									4	
02	0	PIANO HALL	1.9	50	35	0.273	0.62	9	0	0.500
									0	
				50	1	0.273			0	
									0	
03	1	SMALL CLUB 1	0.80	19	8	0.500	0.5	3	12	0.445
									0	
				19	8	0.500			0	
									0	
04	1	SMALL CLUB 2	0.67	65	8	0.500	0.5	3	4	0.750
									−12	
				71	8	0.500			2	
									−6	
05	1	DRUM ROOM	0.70	19	8	0.500	0.5	4	0	0.500
									0	
				19	8	0.500			0	
									0	
06	1	LOCKER ROOM	0.75	15	110	0.843	0.5	2	−2	0.500
									2	
				15	110	0.843			−2	
									2	
07	2	PERCUSSION PLATE	3.5	34	23	0.500	0.5	11	0	0.500
					23	0.500			0	
				34	23	0.250			8	
					23	0.250			8	
08	2	LEAD VOCAL PLATE	3.0	34	25	0.500	0.5	15	0	0.500
					29	0.500			0	
				34	245	0.296			4	
					256	0.296			2	
09	2	BACK UP VOCAL	2.2	116	1	0.992	0.8	16	−2	0.500
					1	0.992			−2	
				116	68	0.500			2	
					68	0.500			4	
10	2	CHURCH CHOIR	3.5	69	76	0.757	0.61	13	6	0.500
					87	0.757			4	
				69	113	0.250			0	
					174	0.250			4	
11	2	ACOUSTIC GUITAR	2.2	20	1	0	0.54	8	0	0.804
					1	0			2	
				20	30	0.210			4	
					40	0.210			−2	
12	2	ELECTRIC PIANO	1.1	116	1	0.992	0.8	16	−2	0.554
					1	0.992			−2	
				116	68	0.500			2	
					68	0.500			2	
13	2	COMPACT PLATE	0.8	1	90	0.468	0.73	10	0	1.000
					90	0.468			−4	
				1	23	0.250			4	
					23	0.250			0	
14	2	ROCK VOCAL	3.3	256	70	0.953	0.15	16	−4	0.500
					70	0.953			4	
				256	256	0.289			12	
					256	0.414			6	
15	2	AIRPLANE HANGER	2.2	34	280	0.726	0.82	12	2	0.500
					421	0.789			0	
				34	260	0.500			2	
					260	0.500			0	

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MEMORY	MODE	NAME	REV.T (s)	PRE-DELAY (ms)	E.REF.T (ms)	E.REF.LEV	GATE T (ms)	EQ(dB)	EFF.LEV
16	3	TOM/KICK GATE	10	30	1	0	163	6	0.445
					1	0		4	
				30	1	0		8	
					1	0		0	
17	3	SNARE GATE	99	1	75	0.992	75	0	0.500
					75	0.992		2	
				1	38	0.460		−2	
					38	0.460		4	
18	3	DOUBLE GATE	2.2	24	45	0.992	123	0	0.500
					45	0.992		4	
				24	171	0.406		4	
					171	0.406		−2	
19	3	LONG GATE	99	43	202	0.460	159	0	0.500
					202	0.460		0	
				43	201	0.171		0	
					201	0.171		0	
20	4	REVERSE SLAP	0.3	165	22	0.515	28	0	0.898
					22	0.515		0	
				165	1	0		0	
					1	0		0	
21	4	REVERSE GATE	1.5	119	1	0	77	4	0.500
					1	0		0	
				119	80	0.101		4	
					80	0.101		6	
22	4	HEAVY REVERSE	1.8	40	245	0.968	172	4	0.445
					245	0.968		0	
				40	1	0		4	
					1	0		6	

MEMORY	MODE	NAME	REV.T (ms)	PRE-DELAY (ms)	E.REF.T (ms)	E.REF.LEV	RT.HIGH	F.B.LEV	TAP	EQ(dB)	EFF.LEV
23	5	BONANZA ECHO	200	100	1	0	0.99	0	2	0	0.656
										0	
			200	0	1	0	0.99	0	1	0	
										0	
24	5	STEREO TAP DELAY	510	0	255	0	0.99	0.406	1	0	0.500
										0	
			510	255	255	0.750	0.99	0.406	1	0	
										0	
25	5	APACHE ECHO	162	0	1	0	0.99	−0.25	6	0	0.500
										0	
			166	0	1	0	0.99	−0.25	6	0	
										0	

MEMORY	MODE	NAME	SPEED (HZ)	PRE-DELAY (ms)	DEPTH	EQ(dB)	EFF.LEV
26	6	PANNING DOUBLER	4.35	67	1.0	0	0.500
						0	
				67		0	
						0	
27	6	SPEED PANNER	1.34	91	0.5	0	0.500
						0	
				91		0	
						0	

MEMORY	MODE	NAME	REV.T (s)	PRE-DELAY (ms)	E.REF.T (ms)	E.REF.LEV	RT.HIGH	SIZE	EQ(dB)	EFF.LEV
28	7	MATCHED DUAL PLATE	3.54	83	10	0.500	0.5	16	0	0.750
					10	0.500			0	
			3.54	83	43	0.500	0.5		0	
					43	0.500			0	
29	7	DUAL PERCUSSION PLATE	3.54	120	10	0.500	0.84	16	0	0.609
					10	0.500			0	
			3.54	180	43	0.500	0.84		0	0.750
					43	0.500			0	

*EQ: Both Channel Synced

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11 GETTING STARTED WITH YOUR OWN CREATIONS

There are many ways to get started creating your own sounds on the SDR1000. The SDR1000 is set up to get you started using one of the existing programs in memory. However, there will be times when you wish to start "from scratch", just using one of the SDR1000's basic "Modes" (sound algorithms).

In getting started in this way, it is helpful to know as much about the mode you're using, for example:

which parameters are available in the mode you're using,

which parameters have the most profound effect, and which have a more subtle effect,

how many ways can each parameter (sound component) be used.

The best way to get this information is to get your "hands wet" with each mode. To further this end, we will talk about each mode in terms of parameter manipulation. Keep in mind that none of the following suggestions are "fixed". They are just starting points for your own explorations. Also, as you go, refer to section 7. for the mode diagrams and to the Mode/Parameter Summary Chart in section 8.

• Modes 0 & 1: (Hall and Room Reverberation)

Two parameters that most influence the sounds of these modes are "Reverb Time" and "Early Reflection Time & Level". We'll start with no early reflection to get a feel for the basic reverb sounds. Try these suggestions in both modes:

Size	11
Early Reflection Level	.000
Pre-Delay Time	40 ms, both channels
Reverb Time High Frequency	0.01

Find a "Reverb Time" setting that you like. Now see how the reverb sound changes as you change "Size". For natural-sounding reverb, use a "Size" setting between "8" and "14". "Size" settings below "8" are also interesting. For longer reverb times, set "Reverb Time High Frequency" lower. Notice how the decaying reverb sound grows darker. Now set:

Early Reflection Level	0.5

For natural-sounding reverb set the "Early Reflection Time" to be shorter than the "Pre-Delay Time" setting. However, since "Early Reflection Time" and "Pre-Delay Time" may have different settings for Channels 1 and 2, you can be creative. For example, try using the early reflection components as delay "taps", separate from the reverb sound. Set them in time to your music, or just move them around in time and level for all types of effects.

• Mode 2: (Plate Reverberation)

This mode contains a few more sound components than the "Hall" and "Room" modes. In addition to the main reverb sound, mode 2 provides a Sub-Reverb component, designated "Early Reflection Time & Level (3, 4)". This component is rougher, and not as dense as the main reverb sound. Also, it is more "stereo-centered" than the main reverb sound. So, by setting this component to occur before the main reverb component, you can get a reverb sound whose "stereo-image" increases as it decays.

Start with the following settings:

Size	11
Early Reflection Level	.000
Pre-Delay Time	40 ms

Again, listen to the main reverb sound without early reflection components. Set a good-sounding "Reverb Time" and again vary the "Size" setting. Also, move the "Pre-Delay Time" setting around. Next, bring in the early reflection components:

Early Reflection Level (1, 2) & (3, 4)	0.5

Experiment with the timing of the Sub-Reverb component, before and after the main reverb sound. Again, the early reflection components (1, 2) may be used as delay taps, if you wish. Also, interesting musical-timing effects are possible by "syncing" these "taps" and the two reverb sound leading-edges to the tempo of your music. Remember that the early reflection components may be set differently for Channels 1 and 2.

• Modes 3 & 4: (Gated and Reverse Reverb)

These modes create "specialty" reverb sounds, for accenting staccato sounds such as percussion. Using these effects usually requires a lot of "space" in the music: cluttered music will tend to lose these effects. The gated reverb sound may be set close to the original sound (with small "Pre-Delay Time" settings) to become a part of the original sound, or it may be set for distinct gated reverb sounds (with longer "Pre-Delay Time" settings). For a particularly "stark" reverb effect, use Mode 4 with a long pre-delay.

Start with the following suggestions:

Pre-Delay Time	15 ms
Early Reflection Level	.000
Reverb Time	10 seconds
Gate Time	100 ms

Here is the gated or reverse-gated reverb sound without early reflection components. "Reverb Time" settings will affect the reverb decay during the gate time. All of the settings listed here will change quite a bit, depending on the type of input signal. Now add:

Early Reflection Level (1, 2) & (3, 4)	0.5

Again, try various time settings for the early reflection components. For example, the Sub-Reverb component can be used as a "tail" for the main gated or reverse gated component, giving the gated effect a "natural room" component.

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• Mode 5: (Dual Multi-tap Delay)

This mode offers delay-line effects, in ~~two~~ channels, with multiple-tap (repeat) capability. Set the following parameters to get a single-repeat echo effect:

Tap	1
Early Reflection Level	.000
Pre-Delay Time	0 ms
Feedback Level	~~.992~~ .000

Set the total "Delay Time" by using the 16) REVERB TIME KEY. As you add more taps, the SDR1000 divides the delay time by the number of taps, making the taps equally spaced within the delay time period. Reduce "Feedback Level" to get the repeats to decay away. Add "Pre-Delay Time" to move the "train" of taps anywhere you wish them to start. Now add:

Early Reflection Level	.992

This can serve as a "floating tap" whose timing is independent to that of the taps. Again, the early reflection component may be separately set in Channels 1 and 2.

• Mode 6: (Auto-Panning)

This mode provides a stereo panning effect, with the addition of a panning pre-delay. Start with the following settings:

Pre-Delay Time	0 ms
Speed	2 seconds
Depth	1.000

This will give you full-depth panning, with the channels swapping signals every second. Add pre-delay to delay the panning signal.

Remember that any signal component that appears in both Channels 1 and 2 will not "pan". Signals to be panned should be exclusively in one channel.

• Mode 7: (Dual Reverb)

This mode provides a dual-monophonic plate reverb effect. Each parameter may be individually set for each channel. The "Size" is normally set to "16" for dual-mono use.

For setting examples refer to mode 2 in this section.

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MEMORY No.	MODE No.	NAME OF PROGRAM	PARAMETER														REMARKS
			REV. (s)	PRE-DELAY(ms)	E. REF. T(ms)	E.REF.LEV	RT.HIGH	SIZE	GATE T(ms)	F.B.LEV	TAP	DEPTH	SPEED(Hz)	EQ (dB)	EFF.LEV		

13 IN CASE OF DIFFICULTY

When a problem arises with the SDR1000 the problem can, in many cases, be quickly solved by covering the following points:

- Is the unit plugged into a live AC outlet and turned on? The display will light up indicating that the power is on.
- Are all inputs and outputs solidly connected to their respective jacks on the rear panel? Are all cables and connectors in good operating condition?
- If your MIDI controller or IFC60 Intelligent Foot Controller is not controlling your SDR1000, is the SDR1000 "tuned" to the same MIDI channel as your controller or footswitch? Have you assigned the SDR1000's memory locations to MIDI program numbers? Refer to section 9. e. of this manual for more information.
- Is your SDR1000 "forgetting" your custom sounds, or "dumping" your stored sounds? If so, you may be performing operations in the wrong order, or you may be copying over your previously stored programs. If you have any doubts, review sections 9. b. through 9. d. of this manual.
- When you make certain parameter changes do they seem to make no difference in the sound? If so, refer to the Mode/Parameter Chart (section 8.) to see if the parameter is available for the "Mode" you are using. If so, refer to the Listing Of Factory Preset Programs (section 10.) to see if there is any amount of this parameter used for this preset.
- Are you familiar with all of the features and functions of the SDR1000? If not, please take the time to read this manual carefully.

Every effort has been made to insure trouble-free operation of your SDR1000. If problems persist, contact your authorized Ibanez dealer for assistance.

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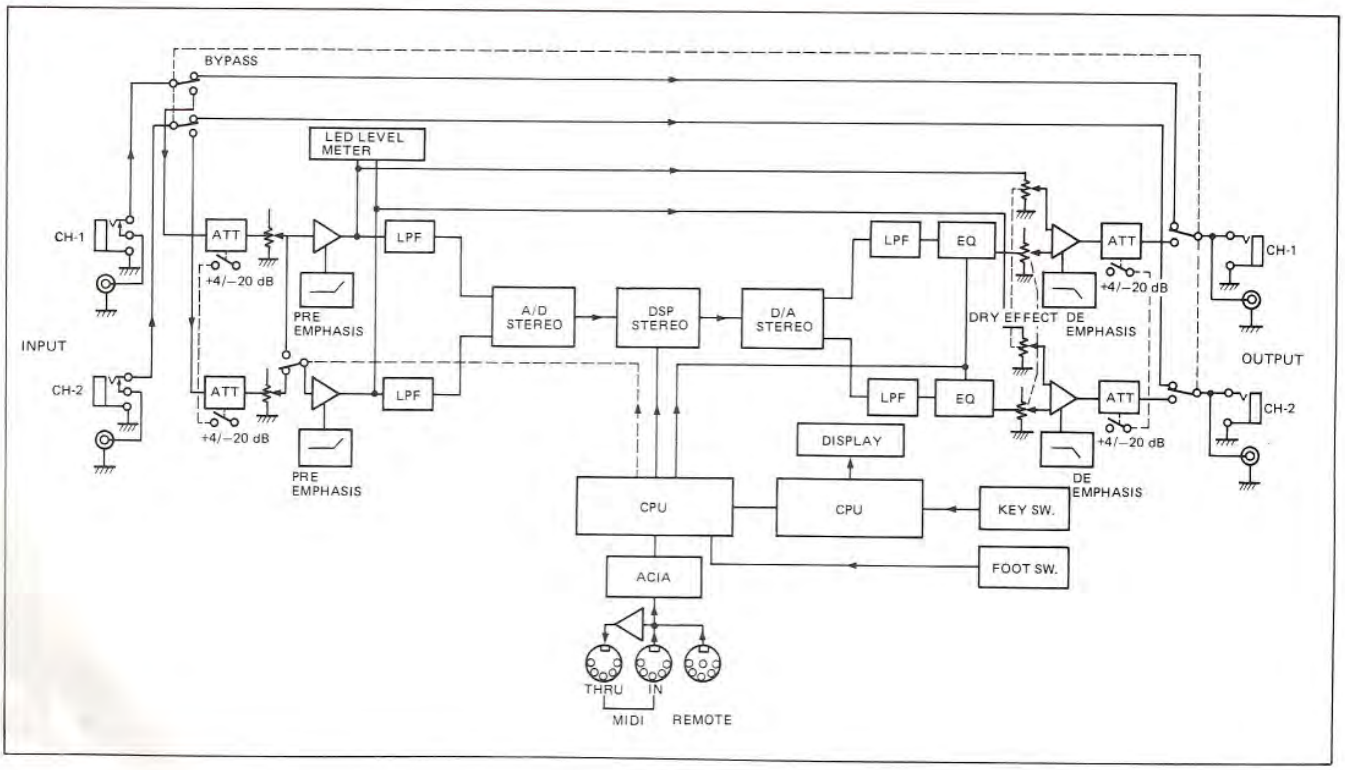
14 SPECIFICATIONS

■ Factory Program	(ROM) 30
■ User Program	(RAM) 70
■ Parameters	REV. T/PRE-DELAY/E. REF. T/E. REF. LEV/RT. HIGH/ SIZE/GATE T/F. B. LEV/TAP/DEPTH/SPEED/EFF. LEV
EQ	LOW/L. MID/H. MID/HIGH
MIDI	PROG. NO/MEMORY/MIDI CH
■ Remote Control	
Memory Up	Phone Jack (FS1M)
Memory Down	Phone Jack (FS1M)
Effect ON/OFF	Phone Jack (FS1M)
Hold ON/OFF	Phone Jack (FS1M)
Remote	DIN 6P (IFC 60)
MIDI IN	DIN 5P
■ MIDI Remote Control	Program change OMNI ON/OFF
■ Displays	
FL	8 digit, 8 segment
LED	Input level indicator/Stereo 7 segment/Channel
LED	5 FUNCTION KEYS, 14 PARAMETER KEYS, and BYPASS
■ Level Control	Input level control/Stereo
Dry	Direct signal output level control
Effect	Processed signal output level control
■ BYPASS	ON/OFF (Power OFF: BYPASS ON)
■ Frequency Response	
Direct	20 – 20 kHz
Effect	20 – 10 kHz
■ Dynamic Range	More than 90 dB
■ Total Harmonic Distortion	Less than 0.03%
■ Digital Cording	16 bit linear PCM
■ Sampling Rate	26 kHz
■ Equalizer	
Low	100 Hz −12 ~ +12 dB
L. Mid	400 Hz −12 ~ +12 dB
H. Mid	1.6 kHz −12 ~ +12 dB
High	6.4 kHz −12 ~ +12 dB
■ Audio Input	Phone Jack x 2, RCA Pin Jack x 2
■ Input Level	−20, +4 dBv
■ Input Impedance	47 kohms
■ Audio Output	Phone Jack x 2, RCA Pin Jack x 2
■ Output Level	−20, +4 dBv
■ Output Impedance	600 ohms
■ Power	60 Hz 120 V AC 50, 60 Hz 220 V AC
■ Power Consumption	30 W
■ Dimension	482 (W) x 44 (H) x 320 (D) mm
■ Weight	5.5 kg

15 BLOCK DIAGRAM



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