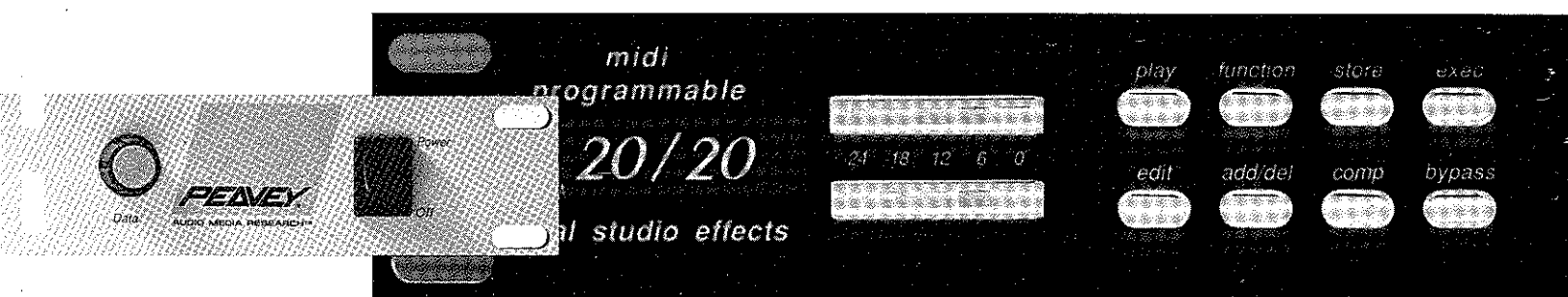
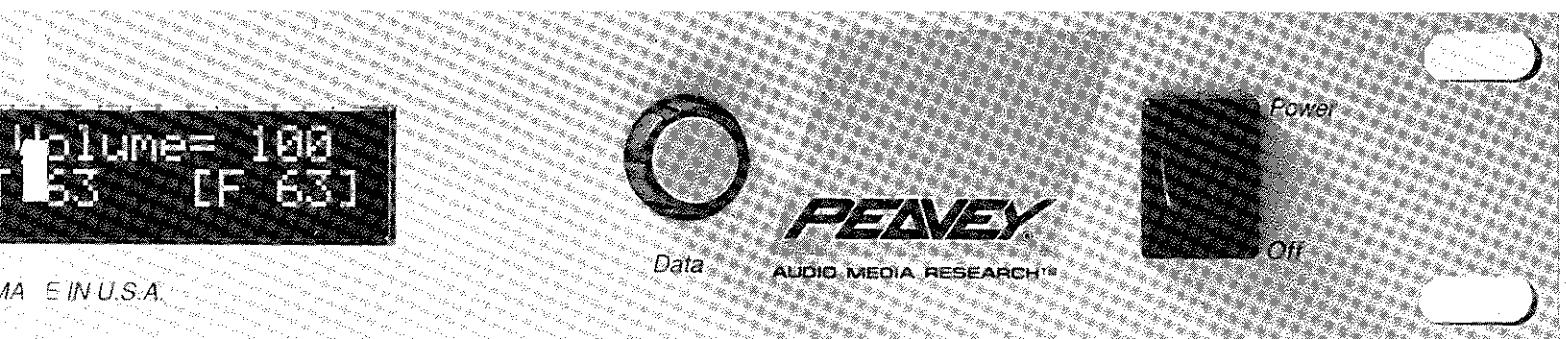
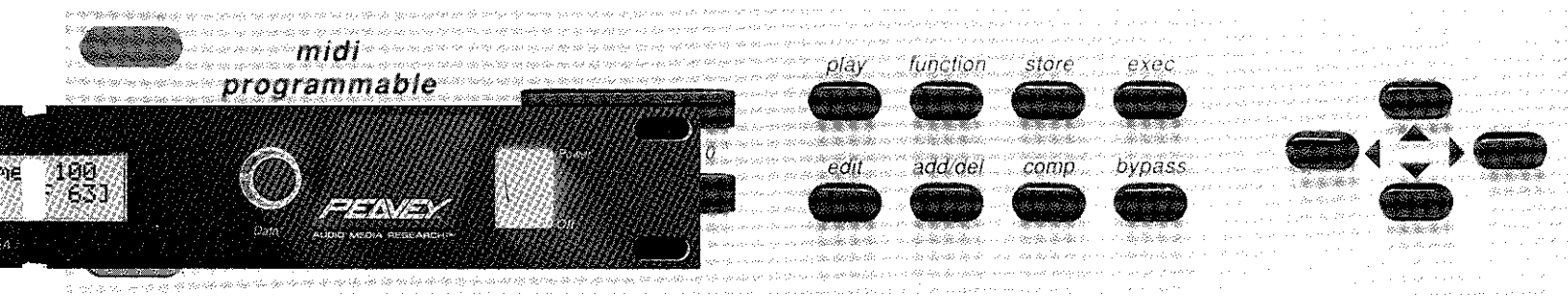
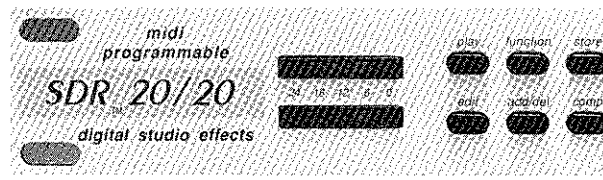
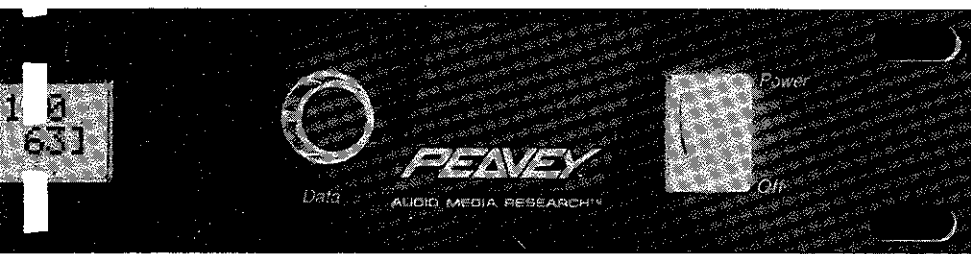
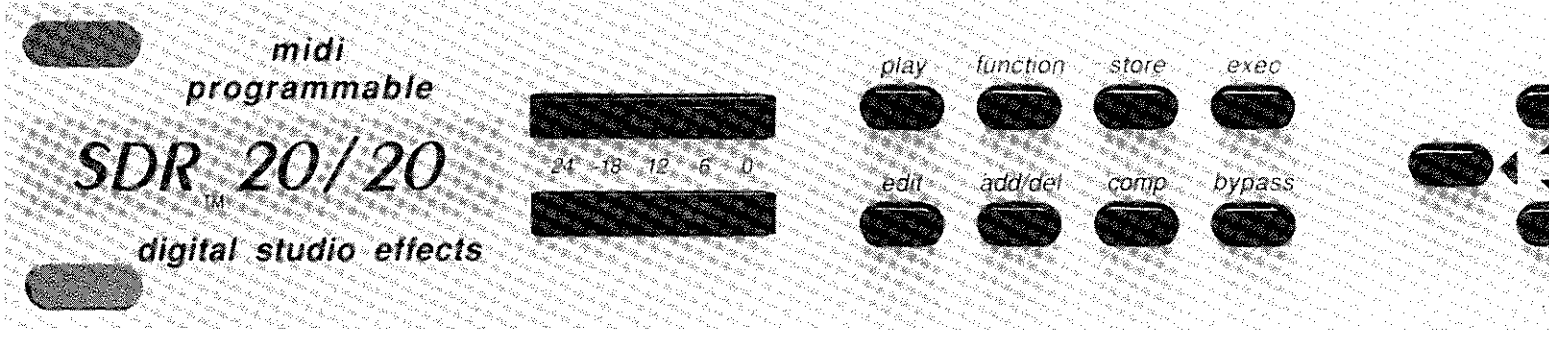


# SDR™ 20/20

# operating guide



## • WARNING •

*To prevent electrical shock or fire hazard, do not expose this appliance to rain or moisture. Before using this appliance, read the operating guide for further warnings.*

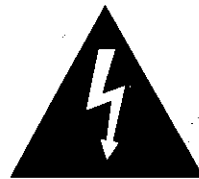
## • CAUTION •

*Risk of electrical shock - Do Not Open.*

*To reduce the risk of electrical shock, do not remove cover.  
No user serviceable parts inside.  
Refer servicing to qualified personnel.*



*This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.*



*This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock.*

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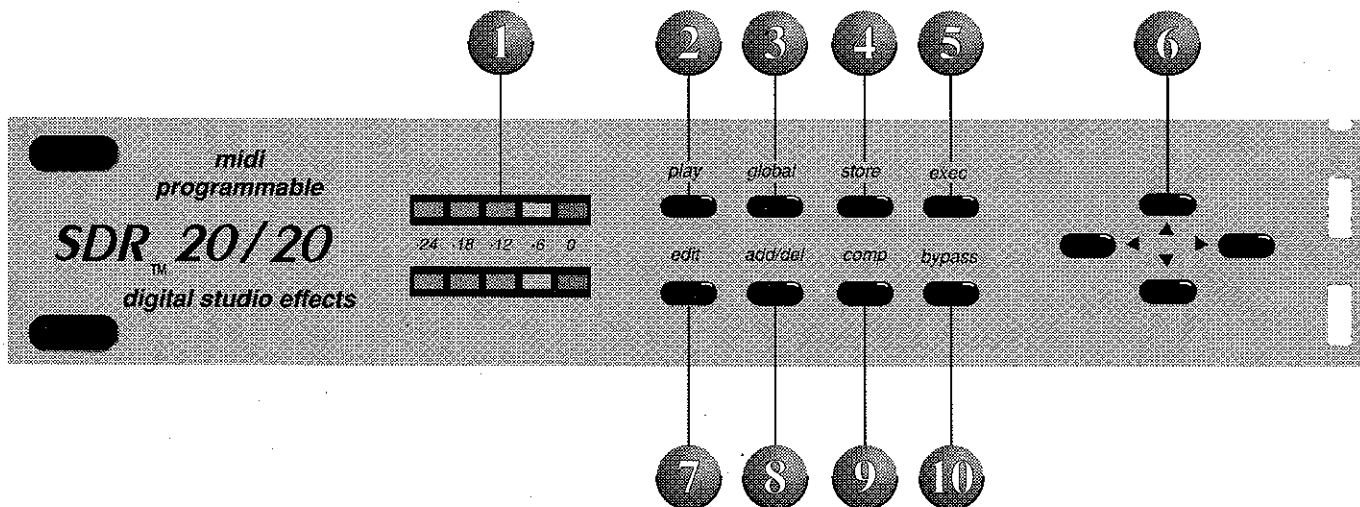
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## **Introduction:**

Thank you and congratulations on purchasing the SDR™ 20/20. Your new SDR 20/20 is the result of advanced digital technology and acoustical research designed to provide a wide range of superb effects for both the performing and recording environment. The SDR 20/20 includes four of the most preferred forms of equalization including 5-band graphic, 4-band full parametric, 3-band conventional with a sweepable mid range, and a conventional guitar EQ. The SDR 20/20 uses a 64x oversampling 16-bit input, 24-bit multi-effects processing, and 18-bit digital to analog conversion on the output. The effects blocks, such as Reverb, Chorus, Delay, Distortion, etc., are totally independent of each other and may be combined in any order. Each effect may be independently mixed and its level is separately adjustable, with the final mix assignable to the preset of your choice.

## **Features:**

- Digital stereo multi-effects processor
- Multi-effects formed from individual effects
- Independent mix and level control where applicable
- Dynamic effect parameter control via MIDI
- 20 x 2 LCD
- Two 5-segment input LED arrays
- 16-bit A/D conversion with 64x oversampling, 24-bit multi-effect processing, and 18-bit D/A conversion
- Remote programming capabilities via MIDI



## 1. Front Panel Layout

### 1. LED Meter for Signal Input

Illumination of the red LED indicates that the input signal is within 6 dB of clipping. Adjust the source signal to allow the red LED to illuminate on program peaks. Some programs with high gain (such as Compression, Distortion, and Reverb) may clip when the red LED illuminates. Care should be taken when adjusting internal levels of these effects.

### 2. Play Button

This button is used to access the preset selections, program mapping, and program volume.

### 3. Global Button

This button is used to access the view angle adjustment, gain adjustment, MIDI settings, and continuous controller assignments.

### 4. Store Button

This button is used to store changes to preset memory.

### 5. Exec Button

This button is used to initiate system exclusive functions or store functions.

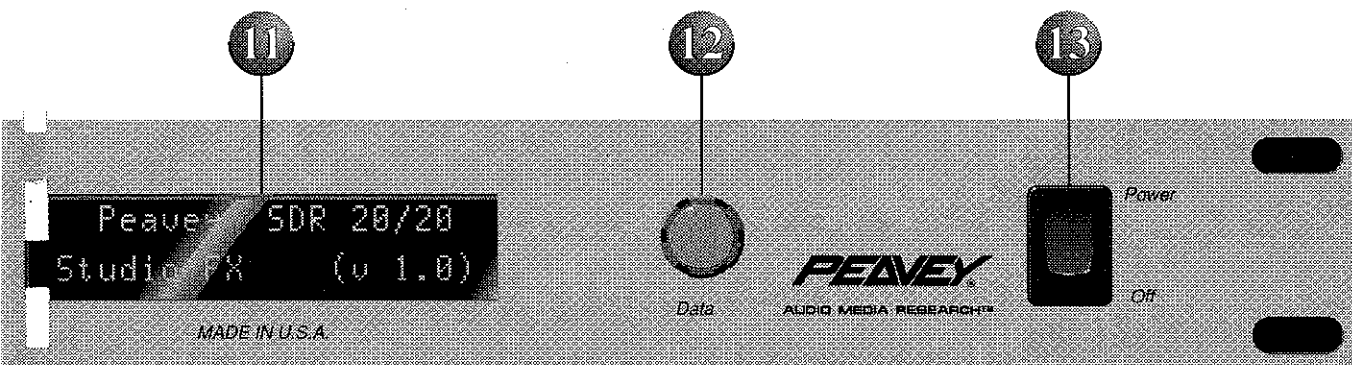
### 6. Arrow (Direction) Buttons

Use these buttons to navigate through the menus on the display: *Left*, *Right*, *Up*, or *Down*, and to increment or decrement selected values.

### 7. Edit Button

Use this button to access the editing functions for either constructing new presets or editing an existing one.

**Note:** Pressing the *edit* button allows you to select the effect or multi-effect to be edited, once the effect is chosen, place the cursor under the effect and press the *edit* button again. This allows you to access the parameters that make up the effect.



**8. Add/Del Button**

Use this button to “add” or “delete” effects from an effect chain.

**9. Comp Button**

Use this button to compare any stored preset with the effect currently being edited.

**10. Bypass Button**

Use this to place the SDR 20/20 into a “bypass” state. Bypass has two selectable modes: Direct or Mute.

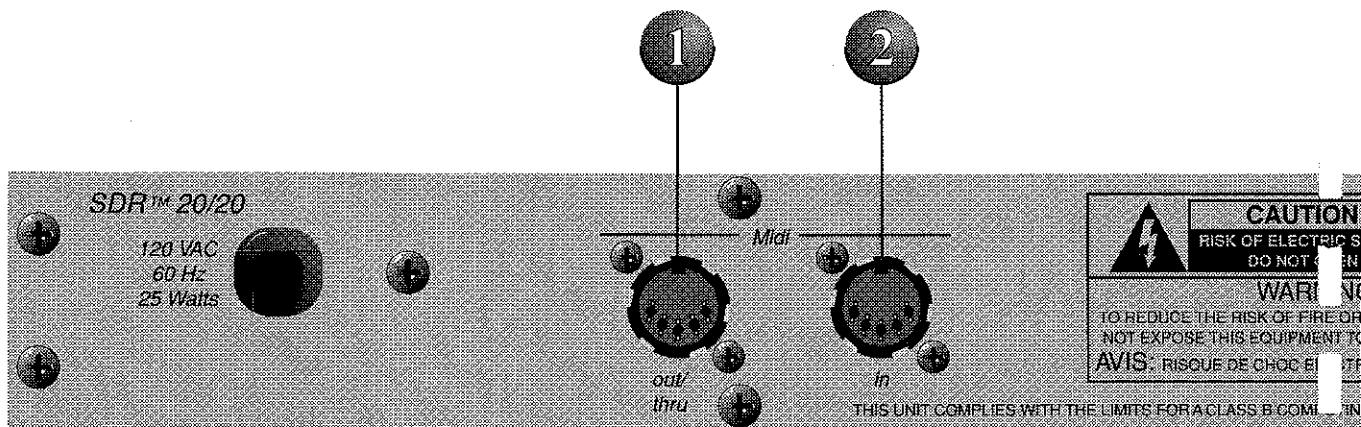
**11. Display Window**

20 character x 2 character Liquid Crystal Display (LCD) with variable view angle adjustment for easy visibility.

**12. Data Knob**

This is used to change effect parameters or to rapidly increase/decrease the value.

**13. Power Switch**



## 2. Back Panel Descriptions

### 1. MIDI Out/Thru Jack

This is used to transmit program changes and system exclusive information to an external MIDI device. This also provides the chaining of MIDI compatible devices. All data received at the MIDI In jack is echoed, unaltered, to this jack except valid System Exclusive commands that the unit responds to.

**Note:** Since valid Program Change or Continuous Controller commands the unit receives will be transmitted out of the MIDI Out, care should be taken to avoid looping the output back to the input.

### 2. MIDI In Jack

This is used to receive MIDI commands and system exclusive information from an external MIDI device.

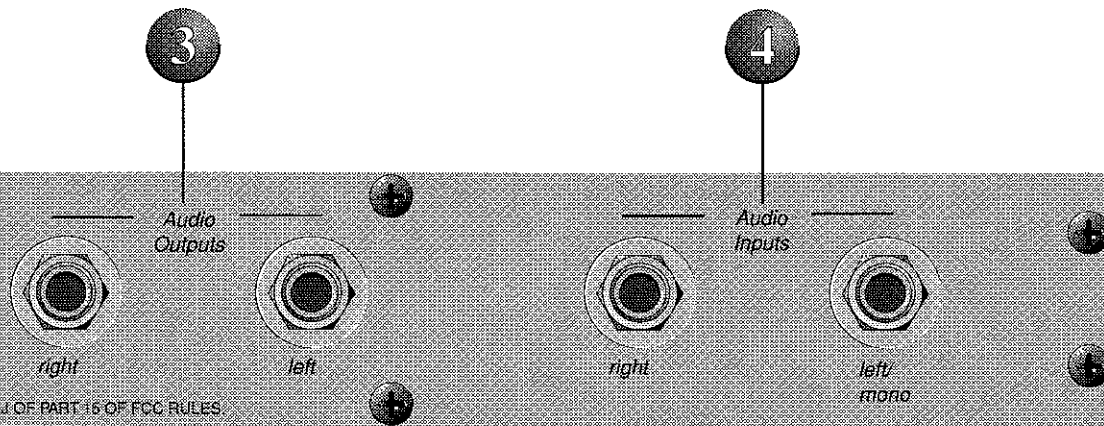
### 3. Right and Left Signal Outputs

Right and left outputs are provided for true stereo effects. For mono output operation, either output may be utilized.

### 4. Right and Left/Mono Signal Inputs

Right and left inputs are provided for true stereo. For mono input use the jack labeled *left/mono*.





### 3. Connection Diagrams

#### Input and Output Connections

The inputs and outputs on the SDR 20/20 are a “transformer-like” electronically balanced circuit. The SDR 20/20 accepts inputs on 1/4" ring-tip-sleeve (stereo) plugs or single-ended inputs on tip-sleeve (mono) plugs. The outputs work in a similar fashion.

**Note:** There are some mixing boards which use a tip-sleeve type 1/4" input. Be sure you are using a mono type cable with this type input to avoid signal loss.

#### 1. Direct Connection to a Mixing Console

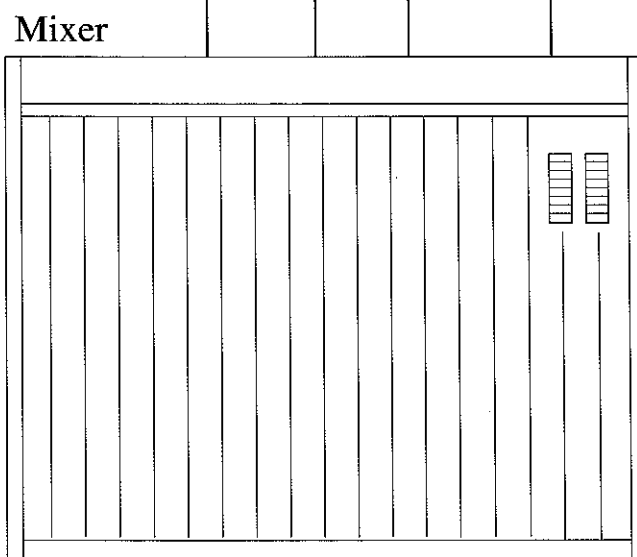
The SDR 20/20 may be connected directly into the channels or effects loops of a mixing console.

*SDR 20/20 (Back)*



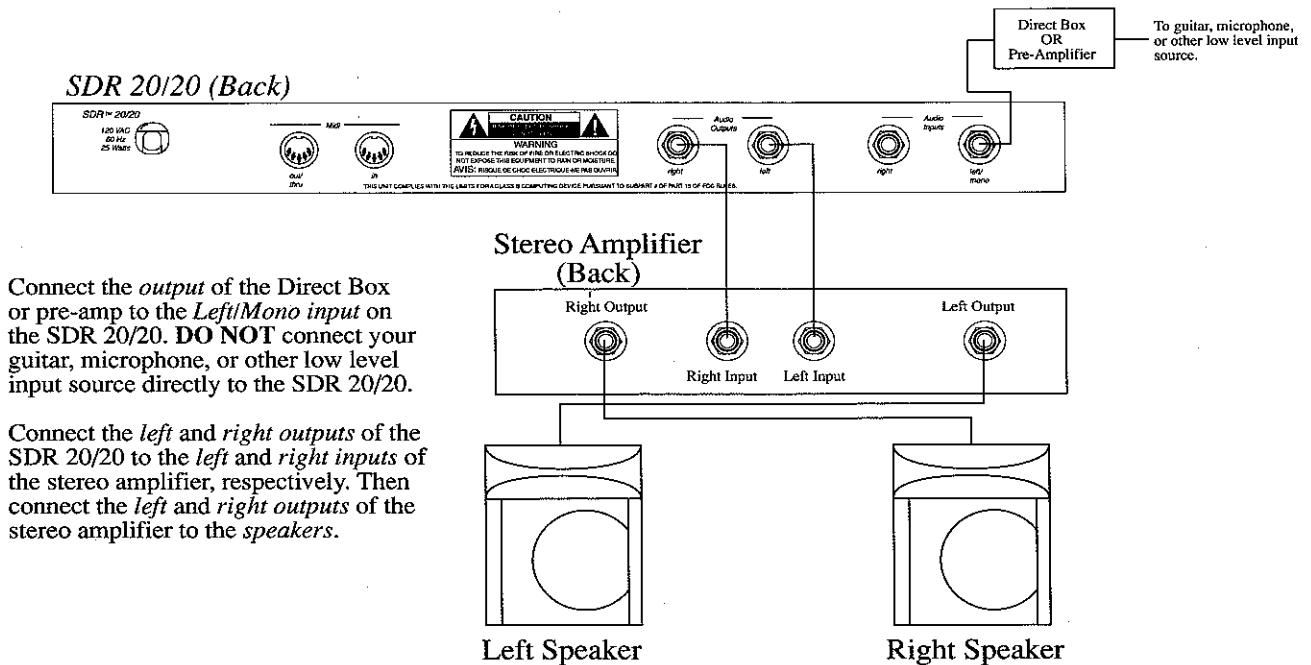
Connect the *left* and *right outputs* of the SDR 20/20 to the *left* and *right inputs* of the mixer, respectively.

Next, connect the *left* and *right output* s of the mixer to the *left* and *right inputs* of the SDR 20/20, respectively.

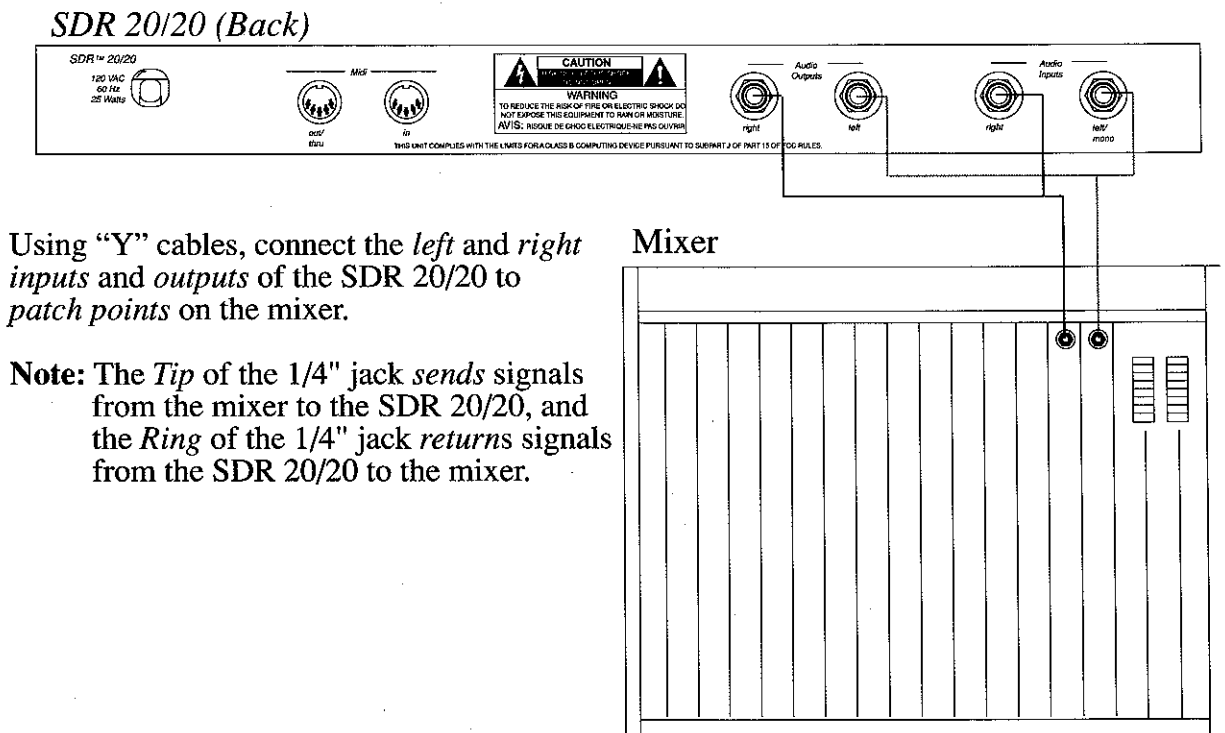


## 2. Using a Separate Amplifier and Speakers

In this diagram the SDR 20/20 is used in a system composed of a separate pre-amplifier, amplifier, and speaker cabinets.



## 3. Connection to Patch Points of a Mixing Console



## 4. Operating Levels and Input and Output Levels

The unit can be set up for **-10 or +4 dBU** operating levels. These settings are *Global* (one setting for all presets) and are made in the *Utility* menu under the *Global* button. (-10 setting is recommended whenever possible since it will produce the lowest noise floor.)

Global input and output gain controls are also available in the *Utility* menu under the *Global* button. These will allow trimming in .5 dB steps of up to +/-12 dB about the operating level.

A *Volume* control is available on a program by program basis in the *Play* menu. This control acts as an attenuator on the DSP output. The setting (0-100) relates to the percentage of the signal passed out of the DSP. This feature allows separate Programs to call the same Preset with separate volume levels.

## 5. Definitions and Abbreviations

### 5a. Definitions

*Preset:* A *Preset* is a storage location in memory that holds a complete effects chain. The *Preset* consists of a preset name, the effect chain, and all the user adjustable parameters and continuous controller settings. There are 256 preset locations within the SDR 20/20. When new, or reinitialized, the SDR 20/20 contains 128 factory presets. Any of the factory presets can be edited to create a custom preset.

*Program:* A *Program* consists of a *Preset* and a program volume setting, both selectable by the user. There are 256 program locations in the SDR 20/20.

### 5b. Abbreviations

<i>Ba, Bal</i>	-	<i>Balance</i>
<i>BP</i>	-	<i>Band Pass</i>
<i>BW</i>	-	<i>Bandwidth</i>
<i>C#</i>	-	<i>Control number</i>
<i>Ch</i>	-	<i>Channel</i>
<i>Env</i>	-	<i>Envelope</i>
<i>EXEC</i>	-	<i>Execute</i>
<i>Fb, Fdbk</i>	-	<i>Feedback</i>
<i>Flt</i>	-	<i>Filter</i>
<i>Fq, Freq</i>	-	<i>Frequency</i>
<i>Fst</i>	-	<i>Fast</i>
<i>L</i>	-	<i>Left</i>
<i>LP</i>	-	<i>Low Pass</i>
<i>Lvl</i>	-	<i>Level</i>
<i>NgT</i>	-	<i>Noise Gate Threshold</i>
<i>PD, Pdly</i>	-	<i>PreDelay</i>
<i>Pram</i>	-	<i>Parameter</i>
<i>R</i>	-	<i>Right</i>
<i>Recv</i>	-	<i>Receive</i>

*Re, Reson* - *Resonance*  
*Sh, Shft* - *Shift*  
*Sim* - *Simulator*  
*Slo* - *Slow*  
*Sn, Sens* - *Sensitivity*  
*Spkr* - *Speaker*  
*Xmit* - *Transmit*  
*Thr* - *Threshold*  
*TS* - *Tape Simulator*

## 6. The Play Button

The Play button on the SDR 20/20 is where you will select the program number, preset number, and program volume for each program to be played.

### 6a. Setting up the Programs

#### *Manually*

The programs in the SDR 20/20 are arranged into two banks: bank A and bank B. Any preset may be assigned to any program bank location.

To select a program from the front panel, place the cursor under the Program Number (this will be either **A**, for bank A, followed by a number or **B**, for bank B, followed by a number). Using either the *Data Knob* or the *Up or Down Arrow* buttons select the Program Number you want.

#### *Via MIDI (Program Change and Bank Select)*

To select a program via MIDI, the following table shows the correlation between MIDI program numbers and the SDR 20/20 program numbers.

MIDI Program Change #	SDR 20/20 Program #
0	0
1	1
...	...
127	127

The SDR 20/20 responds to MIDI PROGRAM CHANGE COMMANDS and BANK SELECT commands. Programs are arranged in two banks: bank A and bank B. A MIDI program change command will switch the unit to another program in the bank previously selected from either the front panel or via MIDI BANK SELECT message. If a MIDI BANK SELECT is sent to the unit, the next MIDI PROGRAM CHANGE will switch the unit to a program in the selected bank UNLESS a new program was selected via the front panel between reception of the BANK SELECT and the PROGRAM CHANGE commands.

MIDI BANK SELECT has no effect on front panel operation.

The format of the MIDI BANK SELECT message is:

B0 00 00 20 00/01  
(all numbers in hexadecimal)

where:

B0 00 = MIDI continuous controller 0 (bank select)  
00 = bank high byte (always 0)  
20 = MIDI 2 byte data indicator  
00/01 : 00 selects bank A, 01 selects bank B

### 6b. Assigning Presets to Programs

Any of the presets in the SDR 20/20 can be mapped to a particular program location. For example, if you are using presets 7, 24, and 30 in one song, you may map them to program numbers 1, 2, and 3 if you so desire.

*Example:* Mapping Preset 4 to program location number 1. Press the *Play* button and the display will show:

```
A1      Volume= 100  
[ PRESET 1  [U 1]
```

Press the *Right or Left Arrow* button until the cursor is under the preset name. Then use either the *Data Knob* or the *Up or Down Arrow* buttons to select preset number 4.

```
A1      Volume= 100  
[ PRESET 4  [U 4]
```

Volume levels are stored as part of the PROGRAM and not the PRESET, so large changes of volume may occur as you change the preset number without adjusting the volume.

Changes to preset map and volume are automatically stored as you modify them.

### 6c. Setting the Program Volume

To set the Program volume, place the cursor under the volume number and set using either the *Data Knob* or the *Up or Down Arrow* buttons.

### 6d. User and Factory Presets

There are two sets of 128 presets available in the SDR 20/20: 128 user presets and 128 factory presets. Any Program in either Bank A or Bank B can point to any of the factory or user presets.

When new, and after factory re-initialization, the user presets are identical to the factory presets. Program Bank A points to the 128 user presets and Program Bank B points to the 128 factory presets.