

## Chapter 5 Using the Digital Mixer

This chapter explains general information and applications about the Digital Mixer in the VS-1680. For detailed information about the individual settings in each Mixer channel, see Chapter xx "Mixer Channel Settings".

The built-in digital mixer in the VS-1680 provides many advantages.

- Keep everything in the digital domain. No loss of fidelity when bouncing or mixing tracks.
- Digital mixers with automation, snap shots, and scenes give you more control over your mix.
- Dedicated digital faders and knobs make mixing faster and easier.
- Built-in digital mixer provides portability to the VS-1680.
- Compare different mixer settings instantly
- Restore all effect and mixer settings when you re-load a song
- Craft intricate mixes
- Recall the levels and effects for bounced tracks to re-mix them
- Even automate your mix

The VS-1680 features a 26 channel digital mixer. The mixer is divided into three main sections, the 10 channel **Input Mixer**, which in the signal path, is situated before the recorder, the 16 channel **Track Mixer**, which is placed after the recorder, and the **Master Block**, which is used for determining which signal appears at each of the output jacks and connectors.

When recording new tracks, all sources go through the entire Input mixer before arriving at the record bus. Thus, settings and fader levels of the Input Mixer determine actual recording levels.

During a mixdown session, the Input Mixer and the Track Mixer can work side by side, for a total of 26 channels of automated digital mixing. You can use the input mixer to bring additional sources into the master mix, such as tracks from a MIDI sound module or another multi-track recorder. The 10 channel Input Mixer and the 16 Channel Track Mixer used together provides 26 channels of mixing.

To view the settings for any channel of the mixer, press the SELECT button for the channel you want to view or adjust. The top row of SELECT buttons allow you to view any of the Input Mixer channels 1 - 8, the DIGITAL inputs, or any of the EFFECT Returns. The second row of SELECT buttons allow you to view any of the settings for the Track Mixer.

*\* For detailed information about the mixer signal flow, refer to the "Mixer Section Block Diagram" (Appendices p. 60).*

### I. Signal Flow (Busses)

In the VS-1680, audio signals flow through busses. Busses are shared lines through which multiple signals can be routed to multiple tracks or channels. It may be easier to understand this if we use the analogy of water flow through a house. Water supplied by the water company to your house is branched to a variety of locations within the house (kitchen, bathroom, etc.). The water used at each of these locations is then collected into the sewer and carried away.

Graphic p 23 center

If we think of the VS-1680 as the house, the water being supplied from the water company corresponds to inputs such as mic or guitar. Some of these inputs are sent directly to recording tracks and are recorded. Other inputs may be sent to the effects processor, where reverb or chorus is applied before they are output. The basic principle of the VS-1680 is that by specifying **from where** and **to where** the common lines run, you can determine which input signals will be recorded on each track, or which input signals are sent to which effect, and where they will be output.

## II. Signal Busses in the VS-1680

### **A. RECORDING Bus**

Signals assigned to the RECORDING bus are routed to the recorder section to be recorded. There are eight channels which can be assigned to the output of the input mixer, track mixer and effects (Return). Signals assigned to the RECORDING bus cannot be routed to the MIX bus.

### **B. MIX Bus**

Signals assigned to the MIX bus are sent to the MASTER jacks for monitoring. The MIX bus has two channels (Left and Right) and can take signals which are routed directly from the Input Mixer, the Track Mixer, and the Effects Return section. Signals assigned to the MIX bus cannot be routed to the RECORDING bus.

### **C. EFFECT Bus**

Signals assigned to the EFFECT bus are sent to the VS8F-2 to have effects applied to them. The EFFECT bus has four channels (EFX1 L/R, EFX2 L/R) and can process signals from both the Input Mixer and the Track Mixer. Signals assigned to the RECORDING bus as well as the MIX bus can also be routed to the EFFECT bus. When two VS8F-2 Effect boards are installed in the VS-1680, the EFFECT bus has a total of eight channels (EFX1 L/R, EFX2 L/R, EFX3 L/R, and EFX4 L/R).

### **D. AUX Bus**

Signals assigned to the AUX bus are routed to the AUX jacks to allow additional mixes for monitoring (such as headphone mixes). This bus features six channels (AUX 1 L/R, AUX 2 L/R and AUX 3 L/R) and can take signals from the Input Mixer and the Track Mixer. Signals assigned to the RECORDING bus as well as the MIX bus can also be routed to the AUX bus. This is convenient when you want to connect an external effects device, or when you want an additional output which is independent from the MASTER Out jacks.

When two VS8F-2 Effect boards are installed in the VS-1680, the AUX bus is reduced to two channels (AUX L/R). The other four channels of the AUX bus are re assigned to be used to enhance the EFFECT bus (EFX3 L/R and EFX4 L/R).

## III. Input Mixer

All signals which are to be recorded first are sent through the 10 channel Input Mixer. The Input Mixer appears before the recorder, and corresponds to the external input sources (INPUT 1 - 8, DIGITAL IN L/R)

graphic p 25

The output of each channel of the Input Mixer can be assigned to tracks to be recorded. Channels not being recorded can be assigned to the MIX bus for output from the MASTER jacks. When an input is assigned to a track for recording, it can also be monitored from the MASTER jacks, when the track's STATUS button is orange.

Signals are assigned to the channel faders of the Input Mixer as follows:

<b>Channels 1 - 8:</b>	INPUT jacks 1 - 8
<b>DIGITAL:</b>	DIGITAL IN connector L/R
<b>ST IN:</b>	Whatever source is assigned to STEREO IN (p. xx)
<b>EFFECT 1:</b>	EFX1 Return level or EFX3 Return level
<b>EFFECT 2:</b>	EFX2 Return level or EFX4 Return level

Press the SELECT button for the channel of the Input Mixer you wish to make adjustments on. Use [←], [→], [↑], and [↓] to move the cursor to the parameter you want to set. Or, you can press the function button. Use the TIME / VALUE dial to change the value.

Graphic TBA: screen shot of Input Mixer Screen

## IV. Track Mixer

After recordings are made, all playback signals are sent through the 16 channel Track Mixer. The Track Mixer appears just after the recorder, and corresponds directly to tracks (1 - 16).

Graphic p 26 top

Tracks are normally output from the MASTER jacks. Tracks can also be routed back to the RECORDING bus for track bouncing or re-recording.

Press the SELECT button for the channel of the Track Mixer you wish to make adjustments on. Use [←], [→], [↑], and [↓] to move the cursor to the parameter you want to set. Or, you can press the function button. Use the TIME / VALUE dial to change the value.

Graphic TBA: screen shot of Track Mixer Screen

## V. FADER / MUTE Button

There are two different ways to control the fader levels of the Input and Track Mixers.

### **A. Method One: FADER / MUTE Button**

The physical faders on the VS-1680 can be used to control either the 10 channel Input Mixer, or the 16 channel Track Mixer. Press [FADER/MUTE] to assign the physical faders to the mixer you want to control.

Graphic p 26 bottom

When "TR" is lit, the physical faders are used to control the Track Mixer channels 1 - 16. When "IN" is lit, the faders are used to control the Input Mixer (8 analog inputs, 2 digital inputs), the Stereo Input, plus the Effects 1/3 Return and Effects 2/4 Return.

When you want to use the physical faders to adjust Input levels, make sure IN is lit. (Faders 9, 11, 13 and 15 will control the Digital Input, Stereo Input, Effect 1 Return and Effect 2 Return respectively, if IN is lit).

When you want to use the physical faders to adjust Track levels, make sure TR is lit.

If you decide to use this method, pay close attention to the FADER/MUTE setting.

### **B. Method Two: INPUT MIXER SCREEN**

Another way to use the mixer while recording is to leave the FADER/MUTE button on TR. (It defaults to this setting when you create a new song.) If you need to change the fader level for an Input, press [SELECT] for the input you wish to adjust, and then move the cursor to

the FADER setting. Move the cursor onto the Fader value number (default level 100) and use the TIME / VALUE dial to adjust the level. With this method, the physical faders are only controlling Track playback levels, and have no affect on record levels, as long as "TR" remains lit.

When you create a new song, the fader positions of the Input mixer default to 100, which is equivalent to 0 dB. After creating a new song, press any Input SELECT and you'll see this in the display. Simply use the Input Sensitivity knob to adjust input recording levels. If you have a very low level signal, the Input Sensitivity knob is turned all the way up, and you still can't seem to get a loud enough signal, you can move the cursor over to the "Fader" control in the Input Mixer screen and use the dial to bring the fader value up higher, up to as high as 127.

### C. SUGGESTION

The only reason to ever switch the FADER/MUTE button between TR and IN is if you need to mix more than 16 tracks of audio. During mixdown of 16 tracks plus additional sources (i.e. outputs from MIDI sound modules) toggling [FADER/MUTE] between TR and IN allows you to quickly assign the faders to Tracks and then to Inputs, as necessary for real time mixing. During recording, leave [FADER/MUTE] on TR.

## VI. Master Block

The Master Block serves as the output "patch bay". The Master Block sections allows you to determine which signal appears at each of the physical output connectors.

Graphic p 27 top

Press [EDIT/SOLO] to enter settings for the Master Block. Use [←], [→], [↑], and [↓] to move the cursor to the parameter you want to set. Or, you can press the function button. Use the TIME / VALUE dial to change the value.

Graphic TBA: screen shot of Master Block screen

## VII. Determining Output

The VS-1680 features eight analog output jacks and two stereo digital outputs. Each 12 of these outputs can have various signals assigned to it. Determine the signal for each output jack or connector using the following procedure.

### A. Monitor Output Connectors

1. Press [EDIT/SOLO]. The Master Block is displayed.
2. Use [←], [→], [↑], and [↓] to move the cursor to "OUTPUT (MON)". Use the TIME / VALUE dial to adjust the setting.

Graphic p 172 right column middle

#### Mon (Monitor)

This selects what signal is assigned to the MONITOR jacks.

**MST:** The signal at the MASTER jacks (MIX bus).

**EFX1:** The signal at the EFFECT 1 bus.

**EFX2:** The signal at the EFFECT 2 bus.

**AUX1/EFX3:** The signal at the AUX1 bus. Or, when a second VS8F-2 Effect card is installed in the VS-1680, the EFFECT 3 bus.

**AUX2/EFX4:** The signal at the AUX2 bus. Or, when a second VS8F-2 Effect card is installed in the VS-1680, the EFFECT 4 bus.

**AUX3/AUX:** The signal at the AUX3 bus. Or, when a second VS8F-2 Effect card is installed in the VS-1680, the AUX bus.  
**REC:** The signal at the RECORDING bus.  
**ST IN:** The signal assigned to the STEREO IN.

3. Press [F2(Mon)]. If "Mon" does not appear above [F2], press [PAGE] until "Mon" appears above [F2], and then press [F2(Mon)].

Graphic 173 left top

#### **Level**

This adjusts the volume level (0-127) for the MONITOR jack. This is normally adjusted using the MONITOR knob on the top panel.

#### **Balance**

This adjusts the left-right balance (L63 - R63) for the MONITOR jacks.

4. Press [PLAY(DISPLAY)] to return to the Playlist display.

### **B. AUX Connectors**

1. Press [EDIT/SOLO]. The Master Block is displayed.
2. Press [F3(AUX.A)]. If "AUX.A" does not appear above [F3], press [PAGE] until "AUX.A" appears above [F3], and then press [F3(AUX.A)].
3. Determine what signal is assigned to the AUX jacks by rotating the TIME / VALUE dial.

Graphic p 173 left column bottom

#### **AUX A**

This selects what signal is assigned to the AUX A jacks.

**EFX1:** The signal at the EFFECT 1 bus.  
**EFX2:** The signal at the EFFECT 2 bus.  
**AUX1/EFX3:** The signal at the AUX1 bus. Or, when a second VS8F-2 Effect card is installed in the VS-1680, the EFFECT 3 bus.  
**AUX2/EFX4:** The signal at the AUX2 bus. Or, when a second VS8F-2 Effect card is installed in the VS-1680, the EFFECT 4 bus.  
**AUX3/AUX:** The signal at the AUX3 bus. Or, when a second VS8F-2 Effect card is installed in the VS-1680, the AUX bus.

4. Press [PLAY(DISPLAY)] to return to the Playlist display.

\* The AUX B jacks are set the same way. Press [F4(AUX.B)] at Step 2.

### **C. DIGITAL OUT Connectors**

1. Press [EDIT/SOLO]. The Master Block is displayed.
2. Press [F5(DOUT1)]. If "DOUT1" does not appear above [F5], press [PAGE] until "DOUT1" appears above [F5], and then press [F5(DOUT1)].
3. Determine what signal is assigned to the DIGITAL OUT 1 connector by rotating the TIME / VALUE dial.

Graphic 173 right

#### **DOUT1 (DIGITAL OUT 1)**

This selects what signal is assigned to the DIGITAL OUT 1 (coaxial) connector.

**MST:** The signal at the MASTER jacks (MIX bus).  
**MON:** The signal at the MONITOR jacks.  
**EFX1:** The signal at the EFFECT 1 bus.

- EFX2:** The signal at the EFFECT 2 bus.
- AUX1/EFX3:** The signal at the AUX1 bus. Or, when a second VS8F-2 Effect card is installed in the VS-1680, the EFFECT 3 bus.
- AUX2/EFX4:** The signal at the AUX2 bus. Or, when a second VS8F-2 Effect card is installed in the VS-1680, the EFFECT 4 bus.
- AUX3/AUX:** The signal at the AUX3 bus. Or, when a second VS8F-2 Effect card is installed in the VS-1680, the AUX bus.

4. Press [PLAY(DISPLAY)] to return to the Playlist display.

*\* The DIGITAL OUT 2 (optical) jacks are set the same way. Press [F6(DOUT2)] at Step 2.*

#### **D. DIRECT OUT**

The signal from each track of the recorder can be assigned directly to each of the eight analog output jacks. This is convenient for transferring tracks from the VS-1680 to another multi-track recorder.

1. Press [EDIT/SOLO]. The Master Block is displayed.
2. Press [F5(DIR)]. If "DIR" does not appear above [F5], press [PAGE] until "DIR" appears above [F5], and then press [F5(DIR)].

Graphic 174 left middle "DOUT1"

3. Use the TIME / VALUE dial to make settings for DIRECT OUT.

#### **DIR OUT (DIRECT OUT)**

Select Tracks to be assigned as Direct Out.

**Off:** Direct out is not used.

**1 - 8:** Tracks 1 - 8 are output from the analog output jacks 1 - 8. When DIRECT OUT is used, the MASTER, MONITOR and AUX jacks are used for the direct track outputs. The signals at each of the DIGITAL OUT connectors can be set as usual.

Graphic 174 left bottom

Track 1:	MASTER jack (L)
Track 2:	MASTER jack (R)
Track 3:	AUX A jack (L)
Track 4:	AUX A jack (R)
Track 5:	AUX B jack (L)
Track 6:	AUX B jack (R)
Track 7:	MONITOR jack (L)
Track 8:	MONITOR jack (R)

**9 - 16:** Tracks 9 - 16 are output from the analog output jacks 1 - 8. When DIRECT OUT is used, the MASTER, MONITOR and AUX jacks are used for the direct track outputs. The signals at each of the DIGITAL OUT connectors can be set as usual.

Graphic 174 right

Track 9:	MASTER jack (L)
Track 10:	MASTER jack (R)
Track 11:	AUX A jack (L)
Track 12:	AUX A jack (R)
Track 13:	AUX B jack (L)

Track 14:	AUX B jack (R)
Track 15:	MONITOR jack (L)
Track 16:	MONITOR jack (R)

4. Press [PLAY(DISPLAY)] to return to the Playlist display.

## VII. Mixer Routing

### **Sources Assigned to Tracks**

In a newly created song, Inputs are assigned to Tracks as shown below. This is the default mixer routing.

Graphic p 61 bottom

Using the STATUS and SELECT buttons, it is possible to set up almost any variation of routing possibilities. To determine the source(s) assigned to a track for recording, use the following procedure.

1. Press and hold the STATUS button for the track to be recorded. The SELECT button for the default input routed to that track blinks. The Input Assign screen appears in the display for as long as the STATUS button is held.
2. Press the input SELECT button for the input you want assigned to the track.

graphic p 61 middle

You can assign more than one Input to a Track.

You can assign a Track to a Track.

You can assign more than one Track to a Track.

You can assign the Effect Returns to a Track.

You can assign any combination of Inputs, Effect Returns and Tracks to a Track.

When you are done, the SELECT button for each source routed to the track will be blinking.

To clear the mixer routing, press and hold any STATUS button, and press [CLEAR].

## VIII. Input Mixer Default Assignment

You may have noticed after making a new recording, you can still hear your live microphones or other sources which are still plugged in. Or, you may hear sources which are connected to inputs, even though you haven't recorded a track. The reason for this is each channel of the Input mixer is automatically bussed to the stereo master mix. This is the default settings when a new song is created. Any source connected to an input jack in to the VS-1680 is always routed to the main stereo output. To change this setting, follow the procedure below.

1. Press the Input SELECT button for each input being used.
2. Use [←], [→], [↑], and [↓] to move the cursor to the Pan section in the screen. Or, press [F1(Pan)]. If "Fader" does not appear above [F1], press [PAGE] until you see "Pan" above [F1], and then press [F1(Pan)].
3. Use the TIME / VALUE dial to change the Mix Assign Switch (located above the pan knob in the display) to "Off".

### **Mix Assign Switch**

When this is set to "On", the source at each Input channel is assigned directly to the MIX bus. Set this to "on" when you simply want to mix an input without actually recording it.

4. Press [PLAY(DISPLAY)] to return to the Playlist display.

## IX. Stereo Link

When recording or playing back a stereo source, traditional mixer operations require you to control the left and right channels separately, which can make it inconvenient to adjust EQ, effects and other settings. For stereo sources, it is possible to link adjacent pairs of mixer channels, so to make adjustments to both channels simultaneously. This is called **Stereo Link**. When Stereo Link is on, adjacent odd and even numbered channels are paired as shown below. The settings of each odd numbered channel will be the same as the settings of the corresponding even-numbered channel. When the settings of one channel is modified, the setting of the paired channel will change the same way.

Graphic p 161 left column

In the VS-1680's Track Mixer, channels 9/10, 11/12, 13/14, and 15/16 default as Stereo Channels. These channels are useful for recording stereo sources, such as pianos recorded using two microphones, or drum overhead mics. These stereo channels can be unlinked, and can function as totally independent mono tracks:

- They can be recorded independently.
- They can be routed to effects independently.
- They can be edited independently.
- Once these stereo channels are unlinked, the only thing they share is one Fader, one SELECT button, and one STATUS button.

### **A. Unlink Stereo Mixer Channels**

1. Press Track 9/10 SELECT.
2. Move the cursor to LINK use the TIME / VALUE dial to change the setting to "off". The display shows Track Mixer 9.
4. Press Track 9/10 SELECT once more. The display shows Track Mixer 10.
5. Use [SHIFT] to make settings to even numbered, unlinked mixer channels. Without pressing [SHIFT], the channel fader controls the level of Track 9.
6. Hold [SHIFT] and move the fader to control the level of Track 10.
7. The [STATUS] button changes the status of Track 9.
8. Hold [SHIFT] and press the [STATUS] button to change the status of Track 10.

The mixer channels for Tracks 11/12, 13/14 and 15/16 work the same way when those channels are unlinked.

### **B. Link Adjacent Mixer Channels**

It is possible to link adjacent channels on either the Input Mixer or the Track Mixer. Use this when recording a stereo input to a stereo track.

1. Press the SELECT button for the Input or Track channel you want to have linked.
2. Press [F1(Link)]. If "Link" does not appear above [F1], press [PAGE] until you see "Link" above [F1], and then press [F1(Link)].
3. Use the TIME / VALUE dial to select "On".

#### **Link (Stereo Link)**

This turns the Stereo Link function on and off.

4. Press [PLAY(DISPLAY)] to return to the Playlist display.

### **C. Adjust Levels of Stereo Linked Channels**

When Stereo Link is on, the balance of both channels is preserved, and the total volume level is controlled with the odd-numbered fader. If you want to independently adjust the fader levels of each channel, use the following procedure.



1. Press the SELECT button for the Input or Track channel which is linked.
2. Press [F5(Fader)]. If "Fader" does not appear above [F5], press [PAGE] until you see "Fader" above [F5], and then press [F5(Fader)].
3. Press [F6(PRM.V)]. The values of each fader appears in the display.
4. Use [←], [→], [↑], and [↓] to move the cursor. Use the TIME / VALUE dial to adjust each setting.

Graphic p 161 right column center

#### **Total Level**

This adjusts the total volume level (0 - 127). Use the fader for the odd-numbered channel to change this setting.

#### **Odd-Numbered Channel Level**

This adjusts the total volume level (0 - 127) of the odd-numbered (left) channel.

#### **Even-Numbered Channel Level**

This adjusts the total volume level (0 - 127) of the even-numbered (right) channel.

5. Press [PLAY(DISPLAY)] to return to the Playlist display.

### **D. Adjusting the Panning of Stereo Linked Channels**

When Stereo Link is on, it is possible to adjust the balance while preserving the pan positions for both channels. If you want to adjust the pan for each channel independently, use the following procedure.

1. Press the SELECT button for the Input or Track channel which is linked.
2. Press [F1(Pan)]. If "Fader" does not appear above [F1], press [PAGE] until you see "Pan" above [F1], and then press [F1(Pan)].
3. Press [F6(PRM.V)]. Each of the pan positions appears in the display.
4. Use [←], [→], [↑], and [↓] to move the cursor. Use the TIME / VALUE dial to adjust each setting.

Graphic p 162 left column center

#### **Mix Assign Switch**

When this is set to "On", the source at each Input channel is assigned directly to the MIX bus. Set this to "on" when you simply want to mix an input without actually recording it.

#### **Total Balance**

With the balance between both channels preserved, this adjusts the total left-right balance (L63 - R63).

#### **Odd-Numbered Channel Pan**

This adjusts the balance (L63 - R63) of the odd-numbered (left) channel.

#### **Even Numbered Channel Pan**

This adjusts the balance (L63 - R63) of the even-numbered (right) channel.

5. Press [PLAY(DISPLAY)] to return to the Playlist display.

### **Selecting Virtual Tracks**

The VS-1680 features 16 recordable tracks per channel. These are called **Virtual Tracks**, or “V-tracks” for short. By using the V-tracks, you can record up to 256 tracks per song. To change V-tracks, use the procedure below.

1. Press the SELECT button for the track whose V-track you wish to change. The button indicator lights. The Track Mixer screen appears in the display.
2. Use [←], [→], [↑], and [↓] to move the cursor to “V. Trk” in the Track Mixer display. Or, press [F5(V.Trk)]. If “V.Trk” does not appear above [F5], press [PAGE] until it appears, and then press [F5(V.Trk)].
3. Use the TIME / VALUE dial to choose the V-track you want to use. Note, you cannot change the V-track while the song is playing. If the song is playing, press [STOP], and then use the TIME / VALUE dial to choose the V-track.

Graphic p 69 left column top

4. Press [PLAY(DISPLAY)] to return to the Playlist display.

## Using the Equalizer (EQ)

Each channel of both the Input Mixer and the Track Mixer has a user-definable EQ. You can choose either a two-band (Low, High), or three-band (Low, Mid, High) parametric EQ on a channel by channel basis. To use the EQ, first make EQ settings separately for each channel. Then, while listening to the entire mix, make final adjustments for EQ, pan, and level for each channel.

*\* While adjusting the EQ when the track is playing, you may hear short clicks, especially if you change the EQ value very rapidly. This is not a malfunction. To avoid any noise, change EQ settings slowly.*

1. Press the SELECT button for the track you want to make EQ settings on. The track SELECT button lights, and the Track Mixer screen appears in the display.
2. Use [←], [→], [↑], and [↓] to move the cursor to the EQ section of the display. Or, press [F2(Low)]. If “Low” does not appear in the display above [F2], press [PAGE] until “Low” appears above [F2], then press [F2(Low)].
3. Press [YES]. The EQ curve display appears.
4. Use [←], [→], [↑], and [↓] to move the cursor. Use the TIME / VALUE dial to change values.

Graphic p 76 left column top

### **Sw (Equalizer Switch)**

Turns the EQ on and off.

### **(Equalizer Select)**

This setting selects how many bands of EQ are available.

2 Band EQ: Low and High bands are available.

3 Band EQ: Low, Mid, and High bands are available.

### **Low**

This adjusts the gain (-12 dB to +12 dB) and the shelving frequency (40 Hz - 1.5 kHz) of the low band EQ.

Graphic p 76 left column bottom

### **Mid**

This adjusts the gain (-12 dB to +12 dB), the center frequency (200 Hz - 8 kHz), and the **Q** (0.5 - 16) of the mid band EQ. The Mid band is not available when the 2 Band EQ is selected.

Graphic p 76 right column top  
Graphic p 76 right column middle

### High

This adjusts the gain (-12 dB to +12 dB) and the shelving frequency (500 Hz - 18 kHz) of the high band EQ.

Graphic p 76 right column bottom

5. Repeat steps 1-4 to make EQ adjustments to other channels.
6. Press [PLAY(DISPLAY)] to return to the Playlist display.

### ATTENUATION

You can adjust the overall volume of each channel of the Input Mixer and the Track Mixer without using the channel faders. You can increase the overall volume of tracks that were recorded at too low a level, or lower the volume of a track that is much louder than the others. This makes adjusting mix levels easier.

1. Press the SELECT button for the track or input you want to attenuate or boost. The track SELECT button lights, and the Track Mixer screen appears in the display.
2. Use [←], [→], [↑], and [↓] to move the cursor "ATT". Or, press [F2(ATT)]. If "ATT" does not appear in the display above [F2], press [PAGE] until "ATT" appears above [F2], then press [F2(ATT)].
4. Use the TIME / VALUE dial to change the setting.

Graphic p 171 right column top

### ATT (Attenuation)

Lowens or boosts the volume level (-42 dB to +6 dB) of the channel.

5. Press [PLAY(DISPLAY)] to return to the Playlist display.

### PHASE

The VS-1680 features balanced (TRS) INPUT jacks. The pin assignment of each input is configured as follows:

Graphic p 171 right column bottom

Some audio devices have the opposite HOT (TIP) and COLD (RING) configuration. Using such equipment as is may result in poor sound placement, loss of correct left-right balance, and loss of separation between left and right channels when using stereo inputs. In such cases, you need to switch the phase of each channel.

1. Press the SELECT button for the input or track whose phase you want to switch. The track SELECT button lights, and the Track Mixer screen appears in the display.
2. Use [←], [→], [↑], and [↓] to move the cursor to "Phase". Or, press [F3(Phase)]. If "Phase" does not appear in the display above [F3], press [PAGE] until "Phase" appears above [F3], then press [F3(Phase)].
3. Use the TIME / VALUE dial to change the Phase setting.

### Phase

This selects the Phase (NRM, INV) for each channel. Usually "NRM" is selected.

**NRM:** Normal phase (same phase as input). Default setting.

**INV:** Inverted (opposite) phase.

4. Press [PLAY(DISPLAY)] to return to the Playlist display.

### When Phase Mismatch is a Problem

Audio equipment connected as shown below will result in audio being out of phase. In such cases, select "INV". It is recommended that you check the HOT and COLD leads for all your audio equipment.

Graphic p 172 left column top

#### **When Phase Mismatch is Not a Problem**

Audio equipment connected as shown below will not result in audio being out of phase. In such cases, select "NRM".

Graphic p 172 left column bottom

## X. Mixer Scenes

There are two functions to quickly store and recall mixer settings. One is referred to as **Scenes**, and the other is referred to as **EZ Routing**. Use the method which is appropriate for your situation.

#### **Scene:**

A Scene stores all the current mixer settings, including routing, fader positions, pan positions, effects, V-track selection, and Master level. You can store eight different mixer Scenes per song. Scenes are retained as part of the song data when the song is saved. Scenes are useful for trying several different mixes of a song, using a different combination of V-tracks, Effects and levels. When you copy a song to a removable drive, such as a Zip drive, and then copy it into a different VS-1680, the Scene settings are restored.

#### **EZ Routing:**

Similar to Scenes, EZ Routing also stores all settings related to mixer routing, V-track selection, Effects, etc. However, unlike Scenes, EZ Routing settings are global - that is they stay the same regardless of the song. EZ Routing templates are not saved as part of a song. They can be saved within the VS-1680. EZ Routing is useful for storing settings for frequently used actions, such as "Recording a Drum Kit", or "Bouncing Rhythm Section Tracks". Use EZ Routing to store mixer settings you might want to use on several different songs. For detailed information on using EZ Routing, see Chapter xx "EZ Routing".

#### **A. Storing a Mixer Scene**

1. Before storing a Scene, make and check all mixer settings, including levels, panning, EQ, effects, V-track, etc.
2. Press [SCENE]. The button indicator lights.
3. Whenever [SCENE] is blinking, the LOCATOR buttons are used to store or recall a Scene. Any LOCATOR which already has a Scene stored will be blinking. LOCATOR buttons which are available to store a Scene will be unlit.
4. Press any LOCATOR which is not lit. For example, if you want to store the current mixer settings as Scene 7, then press [7].
5. After you store a Scene, the screen returns to the Playlist display. The [SCENE] indicator goes off.

#### **B. Recalling a Mixer Scene**

1. If the song is playing, press [STOP].  
*\* You cannot recall a Scene during recording or playback.*
2. Press [SCENE]. The button indicator lights.
3. Whenever [SCENE] is blinking, the LOCATOR buttons are used to recall a Scene. Any LOCATOR which already has a Scene stored will be blinking.
4. Press any lit LOCATOR. For example, if you want to recall Scene 3, then press [3].

5. After a Scene is recalled, the screen returns to the Playlist display. The [SCENE] indicator goes off.

**C. Deleting a Mixer Scene**

1. If the song is playing, press [STOP]. \* *You cannot delete a Scene during recording or playback.*
2. Press [SCENE]. The button indicator lights.
3. Whenever [SCENE] is blinking, the LOCATOR buttons are used to recall a Scene. Any LOCATOR which already has a Scene stored will be blinking.
4. Hold [CLEAR], and press the LOCATOR for the Scene you want to delete. For example, if you want to delete Scene 3, hold [CLEAR] and then press [3].
5. After a Scene is deleted, the screen returns to the Playlist display. The [SCENE] indicator goes off.

**D. Updating a Mixer Scene**

To make subtle changes in a Scene, you must recall the scene, then delete it, make the desired mixer setting changes, and then re-store the scene. Follow the procedure described below.

1. If the song is playing, press [STOP]. \* *You cannot update a Scene during recording or playback*
2. Press [SCENE]. The button indicator lights.
3. Press the LOCATOR for the Scene you want to update. For example, if you want to update Scene 3, then press [3].
4. After a Scene is recalled, the screen returns to the Playlist display. The [SCENE] indicator goes off.
2. Press [SCENE]. The button indicator lights.
4. Hold [CLEAR], and press the LOCATOR for the Scene you want to update. For example, if you want to clear Scene 3, hold [CLEAR] and then press [3].
5. After the Scene is deleted, the screen returns to the Playlist display. The [SCENE] indicator goes off.
6. Make the desired changes to the mixer. It is not necessary to re-configure the entire mixer. You only need to adjust the value which you want updated from the previous Scene setting. For example, just adjust the V-track for one playback track.
7. Once you've made the necessary mixer updates, press [SCENE] and then press the LOCATOR button to store the Scene again.

## **XI. Creating a Stereo Master Tape (Mixdown)**

When you finish recording a song, adjusting the mixer settings of each track (EQ, panning, and level), the next step is to record a two-channel stereo master mix. This is stereo cassette, DAT, MiniDisc, or other media. This process is called **mixdown**.

**A. Prepare for Mixdown**

1. Hold [STOP] and press the STATUS buttons for all tracks you want in the stereo mix. The STATUS buttons light green.
2. Press [FADER/MUTE] so "TR" is lit.
3. Use the channel faders to adjust the volume of each track. First, determine the volume of the song's main tracks (usually the vocals or perhaps a guitar melody). Then, set levels for the other tracks. It is a good idea to create a balance in which the volume of the other tracks is lower than the main tracks. Afterwards, make final adjustments to the pan and EQ settings for each track as you listen to the overall mix.

**B. To Record to a Cassette Tape**

1. Connect the VS-1680's MASTER jacks to the input jacks of your cassette recorder.

2. Adjust the recording levels for the cassette recorder. Adjust the output volume with the VS-1680's master fader, setting it as high as possible without causing any input overload on the recorder. Set the recording levels on the cassette recorder as high as possible before causing distortion.
3. Press [ZERO] on the VS-1680.
4. Put the cassette recorder into record mode.
5. Press [PLAY] on the VS-1680 to begin playback of the song. If you want to fade in or out, use the VS-1680's master fader.
6. When you have finished recording, stop the cassette recorder.
7. Press [STOP] on the VS-1680.
8. Listen to the recorded result. Rewind the tape and play back the recording.

### **C. To Record to a DAT or MD Recorder**

The VS-1680 features two types of digital out connectors, DIGITAL OUT1 (coaxial) and DIGITAL OUT2 (optical), either of which is ready to use. At the factory, these connectors are set to output the same sound as the MASTER jacks.

1. Connect the VS-1680's DIGITAL OUT connector to the digital input connector of your digital recorder.
2. Set your digital recorder to enable it to record digital signals. Make sure you set the recorder's sample rate to match the sample rate of the song in the VS-1680. (Typically 44.1 kHz). Many digital recorders can determine the sample rate automatically. Match the rates manually only when special settings are necessary.

*\* There are some DAT recorders that cannot record digital signals at 44.1 kHz. If such is the case, change to an analog connection and set the recorder to enable it to record analog signals.*

*\* MD recorders can only record at 44.1 kHz.*

3. Press [ZERO] on the VS-1680.
4. Put the digital recorder into record mode.
5. Press [PLAY] on the VS-1680 to begin playback of the song. If you want to fade in or out, use the VS-1680's master fader.
6. When you have finished recording, stop the digital recorder.
7. Press [STOP] on the VS-1680.
8. Listen to the recorded result. Rewind the digital recorder and play back the recording.

### **D. To Prohibit Digital Copying**

When mixing down from the VS-1680 to a DAT recorder or similar recorder via a digital connection, you can prevent digital copying of the tape on which the mixdown has been recorded. Many DAT recorders implement "SCMS" - Serial Copy Management System. With a DAT recorder which uses SCMS, you are allowed to make only one digital copy of a regular audio CD onto a DAT tape. Once the digital copy exists on the DAT tape, you cannot make additional digital copies using the DAT tape as the source. This function makes DAT tapes recorded digitally from the VS-1680 function as those recorded digitally from a CD. With the following procedure, you can prevent your digitally mixed master tapes from being later copied digitally onto DAT tapes or other similar digital media.

### **? SCMS (Appendices p. 64)**

1. Hold [SHIFT] and press [F5(SYSTEM)]. The System menu icon appears in the display. If the System menu icon does not appear, press [F6(EXIT)].
2. Press [F1(SYSPM)]. If "SYSPM" does not appear in the display above [F1], press [PAGE] until "SYSPM" appears, and then press [F1(SYSPM)].

3. Use [⇐], [⇒], [↑], and [↓] to move the cursor to “Digital Copy Protect”.

**Digital Copy Protect**

This setting determines whether or not a DAT master created from the Digital Output jacks of the VS-1680 can be later copied digitally.

**Off:** Digital copying of the DAT tape is allowed.

**On:** Digital copying of the DAT tape is prohibited.

4. If you want to prohibit the digital copying of a master DAT created from the VS-1680, use the TIME / VALUE dial set Digital Copy Protect to “On”.
5. Press [PLAY(DISPLAY)] to return to the Playlist display.

*\* Some DAT recorders do not conform to SCMS standards and cannot record digital signals directly from CD players. If you are using such a DAT recorder, set the Digital Copy Protect to “Off”. If you set Digital Copy Protect to “On”, the digital output of the VS-1680 cannot be copied to the DAT recorder.*