

# Appendices

# Appendix A

## Service

### Warranty Service

Details concerning Warranty Service are spelled out on the Warranty Card included with your console (if the card is missing, let us know and we'll rush one to you).

If you think your console has a problem, please do everything you can to confirm it before calling for service, including reading through the Troubleshooting section of this owner's manual. Doing so might save you from deprivation of your console and the associated suffering.

Of all Mackie products returned for service (which is hardly any at all), roughly 50% are coded "CND" — Could Not Duplicate, which usually means the problem lay somewhere else in the system.

### Repair

Service for the U.S. versions of our digital consoles is available only from our factory, located in sunny Woodinville, Washington. (Service for products living outside the United States can be obtained through local dealers or distributors.) If your console needs service, follow these instructions:

1. Review the troubleshooting suggestions in your owner's manual (see next section). Please.
2. Call Tech Support at 1-800-258-6883, 7am to 5pm PST, to explain the problem and request an RA (Return Authorization) number. Have your Digital 8•Bus (or Remote CPU) serial number(s) ready. You must have an RA number before you can obtain service at the factory.
3. Set aside the power cord, owner's manual, or anything else that you'll ever want to see again. We are responsible only for the return of the product being repaired.
4. Pack the product in its original package, including the foam end caps and the upper tray. This is VERY IMPORTANT. When you call for the RA number, please let Tech Support know if you need new packaging. Mackie is not responsible for any damage that occurs due to non-factory packaging.
5. Include a legible note stating your name, shipping address (no P.O. boxes), daytime phone number, RA number, and a detailed description of the problem, including how we can duplicate it.
6. Write the RA number in **BIG PRINT** on top of the box. It must appear on the outside of the box.

7. Ship the product to us. We recommend United Parcel Service (UPS). We suggest insurance for all forms of cartage. Ship to this address (unless told differently by your friendly Tech Support person):

Mackie Designs  
SERVICE DEPT.  
16140 Wood-Red Rd. NE, Ste. 5  
Woodinville, WA 98072

8. We'll try to fix the product in three to five business days. Ask Tech Support for current turnaround times when you call for your RA number. We normally send everything back prepaid using UPS Orange (three-day air). However, if you rush your product to us by air shipment, we'll treat it in kind by placing on the 'priority' shelf. Once it is repaired, we'll ship it back the same way in which it was received. This paragraph does not necessarily apply to non-warranty service.

### Troubleshooting Guide

#### Three Things to Keep in Mind

As you become familiar with the Digital 8•Bus, you'll find it helpful to keep these three questions in mind at all times:

1. *What Fader Bank is selected?*
2. *What channel is selected?*
3. *What is the V-Pot assignment?*

In 90% of the cases, if something isn't working as you expect it should, it's because one of these three settings isn't where you intend it to be.

#### No power!

- Our favorite question: Is it plugged in? Make sure the power cord is securely seated in the IEC socket and plugged all the way into the AC outlet.
- Our next favorite question: Is the POWER switch on? If not, try turning it on.
- Is the Fat Channel Display working? If not, make sure the AC outlet is live (check with a tester or lamp). If so, refer to "No Sound" below.
- Make sure the DC power cable is securely connected at the rear panel of the console.

**No Sound!**

- Is the signal source working correctly, and properly connected to an input on the console?
- Is the TRIM control (channels 1–12) or the Digital Trim control (channels 1–48) turned all the way down?
- Is the MIC/LINE switch set to the correct position?
- Is the channel fader control turned up?
- Has the channel been assigned to an output bus in the Bus Assignment Section?
- Is the master level control for the selected output bus turned all the way down?
- Try soloing a channel and listen to the Control Room Outputs, or use headphones connected to the Phones Out (with Control Room selected in the Phones/Cue Mix Section). Make sure the Solo Level is turned up in the Studio/Solo Section, and the Control Room Level is turned up in the Control Room Section.

**Bad Sound**

- Is the input connector plugged completely into the jack?
- Is it loud and distorted? Turn down the output level on the console.
- Are any of the meters hitting the “OL” mark? Try turning down the TRIM control (channels 1–12) or the Digital Trim control (channels 1–48). Or try turning down the signal source volume control.
- Solo the signal source and listen to it in the Control Room Output, or with headphones in the Phones output. Select PFL SOLO in the Studio/Solo Section. Make sure the SOLO LEVEL control is turned up in the Studio/Solo Section, and the Control Room LEVEL control is turned up in the Control Room Section. If the signal sounds bad with PFL SOLO selected, the problem lies somewhere before the channel fader, with the source itself or the input settings on the console. If the signal sounds okay, the problem lies somewhere after the channel fader, with the output settings or the amplifier/speaker combination after the console.

**Noise/Hum**

- Check the signal cable between the console and the power amplifier. Make sure all connections are secure.
- Make sure signal cables are not routed near AC cables, power transformers (wall warts), or other EMI sources.
- Is there a light dimmer or other triac-based (SCR) device on the same AC circuit as the console? Use an AC line filter or plug the console (along with all other audio equipment) into a different AC circuit.
- If you’re connecting an unbalanced source to the balanced input using an XLR or TRS connector, try disconnecting the unbalanced ground from pin 1 (XLR) or sleeve (TRS).

# Appendix B

## IVL Vocal Studio

### About the IVL Vocal Studio

The IVL Vocal Studio is a truly unique tool that offers natural sounding harmonies, wild vocal effects, and vocal utilities. You will hear that Vocal Studio can help you to quickly create killer vocal tracks. In order to get you excited—and for your general information—here is what's packed into IVL Vocal Studio:

- Formant-Preserving Pitch Shifting
- Intelligent Vocal Harmony (with four operating modes)
- Pitch Corrector
- Vocal Special Effects
- Integral Reverb Effect

### Technologies Used

**Formant-Preserving Pitch Shifting:** No chipmunks or Darth Vader here! With IVL's patented formant-preserving pitch shifting algorithm, the Vocal Studio uses precise analyzation techniques on the input voice to naturally shift it higher or lower.

**Pitch recognition:** IVL does more than just take a note and shift its pitch. The pitch shifting algorithm detects the exact pitch of the note in order to provide the most natural shifted sound.

**Intelligent Harmony:** The Vocal Studio has musical knowledge. It took lessons from some amazing musicians. By using different control modes, you can choose how much of this intelligence the Vocal Studio will use when creating your harmonies. By selecting the key and scale that the vocal passage is in, and with IVL Vocal Studio's pitch recognition, an intelligent harmony can be created with 1 to 4 voices.

**Voice Muting:** These buttons allow you to mute individual voices. When Voice Muting is ON, the audio signal passes through Vocal Studio's processing. When MUTE is selected, the audio signal is muted for that voice. The small number to the left of each button corresponds to the Harmony Ensemble voice that it affects.

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**Note:** The Digital 8•Bus ships with one MFX (Mackie Effects) card installed. You can load it with either the Mackie Effects plug-in or the IVL Vocal Studio plug-in. The IVL Vocal Studio software will run in demonstration mode, where it times out after about 10 minutes of use. You must then download the plug-in to the card once again to activate it for another 10 minute session.

To authorize the IVL software plug-in, simply purchase and install a second MFX card into your Digital 8•Bus. Then you can download the Mackie Effects plug-in to one card, and the IVL Vocal Studio plug-in to the other card and use them both for as long as you like.

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## The Interface



### Menu

Click this button to save and load your own presets, save changes made to an existing preset, rename a preset, copy current settings to the clipboard, and paste settings from the clipboard to any other Vocal Studio preset.

### On/Off

This button turns the IVL Vocal Studio on or off.

### Processing Mode

Use this button to select either Harmony or Pitch Correct mode.

**Harmony:** This button puts the IVL Vocal Studio into harmony mode, allowing 4 voices of harmony or doubled voices to be added to a mix.

**Pitch Correct:** This button puts the IVL Vocal Studio into pitch correct mode, allowing a vocal line to be nudged to the note your ear wants to hear.

### Output Mode



**Stereo:** This button selects two independent mono in/stereo out effects blocks. One effects block is used for pitch shifting, harmony, and doubling. The second effects block, assigned to a second aux send, is used for reverb. The input to the reverb effects block comes from a mix of its assigned aux send and

the output of the harmony effects block. Each effects block then returns its processed signal to an individual stereo return.



**Quad:** Selects mono in/quad out. Input from one auxiliary send is routed to the harmony processor. Four harmony voices are given discrete outputs to two stereo returns.

### Control Mode



**Manual:** Any notes played on a MIDI keyboard become the harmony parts. These parts will stay on the note assigned by the keyboard even when your voice shifts to a new pitch. Using pitch bend and/or a modulation wheel, realistic expression is introduced.

**SmartChord:** Chords played from a MIDI keyboard are interpreted by the Vocal Studio to create natural harmony parts that move in tandem with your voice.

**SmartKey:** Enter the key and scale once, at the beginning of a song, and the Vocal Studio automatically creates natural harmonies in real time. This mode produces the most common type of harmony in popular music.

**Pitch Shift:** Use this button to set a chromatic interval between the lead vocal and pitch-shifted voices to create true parallel melody lines. This is useful more for special effects than harmonies because our ear is tuned to the “moving third” interval that parallel (chromatic) harmonies don’t provide.

### Edit—Harmony Ensemble



**Interval:** In SmartChord, SmartKey and Pitch Shift control modes, “Interval” determines how much higher or lower the harmony note is than the lead note. In SmartChord and Smart Key modes, the intervals are intelligent; that is, they will sharpen or flatten automatically to make the harmonies sound musically correct.

For Pitch Shift, the interval chosen is always in parallel with the lead, regardless of the key and scale.

**Gender:** The gender of each harmony voice can be changed to create mixed vocal ensembles without needing to see that special doctor in Sweden.

**Detune:** Who sings a perfect third? No one, really. “Detune” adjusts a harmony note’s pitch to be slightly above or below the exact note it is creating.

**Volume:** Controls the level for each harmony voice.

**Pan:** Controls the stereo placement of each harmony voice.

**Styles:** Styles are preset modifiers you can use to add realism to the harmony voices.

**Timing:** This allows you to control the entries of the harmony parts, from 10 millisecond to random delays.

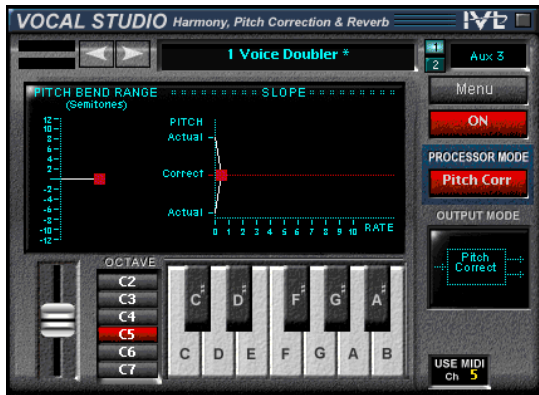
**Scoop:** This controls how a harmony part slides into each note. Do they bend up to it? How much do they bend?

**Vibrato:** This controls the amount of vibrato in your harmony parts.

**Envelope:** This control is used with the “Manual” control mode. When in “Manual” control mode, a MIDI keyboard is used to trigger harmony notes. The “Envelope” control adjusts the attack and release timing of the harmony MIDI notes. This can add bite or smooth out the manual harmony sound.

**Key/Scale:** When the SmartKey control mode is used, the key and type of scale of the song must be selected for the intelligent harmony to choose musically correct harmonies.

## Pitch Correct Mode



**Pitch Bender:** Use the bender to manually raise or lower the pitch of the shifted voices. This works just like a spring-loaded keyboard pitch bender.

**Pitch Bend Range:** The range parameter lets you set the maximum amount of pitch bend that can be applied to the vocal.

**Pitch Controller:** Use the keyboard to force the vocal to an exact pitch.

**Keyboard Octave Select:** Selects the octave that the keyboard represents.

**Slope:** Use this lovely window to set the transition rate between the original vocal sound and the pitch-corrected sound.

## Operation—Harmony

Harmony mode is used to create everything from harmonies to doubled voices. To make sure you are in Harmony mode, make sure it is selected.

### The Editing Parameters

The editing parameters are the tools that allow you to put some spice into your harmonies or doubled voices. Some of the editing parameters are used in all control modes, and others are specific to one control mode.

Parameter	Manual	SmartChord	SmartKey	PitchShift
Interval		yes	yes	yes
Gender	yes	yes	yes	yes
Detune	yes	yes	yes	yes
Volume	yes	yes	yes	yes
Pan	yes	yes	yes	yes
Styles	yes	yes	yes	yes
Envelope	yes			
Key/Scale			yes	

## Interval



Using the interval sliders, you can adjust the interval of each of the four harmony voices. Basically, “Interval” controls the voicing of the harmonies relative to your lead note. When in the SmartChord and SmartKey control modes, the interval settings are divided into seven coarse steps. Each step directs the voice in a different way. The following table describes the individual intervals in musical and nonmusical terms. Note that, although the descriptions for the SmartChord and SmartKey intervals are similar, SmartChord intervals follow the lead voice “loosely” and SmartKey intervals follow the lead voice’s every pitch movement.

Step	SmartChord non-musical description	SmartChord musical description	SmartKey non-musical description	SmartKey musical description
Bass	lowest	root of chord, octave down	lowest	octave below lead
Baritone	low	3rd of chord, in the octave down	low	3rd of chord, in the octave below
Tenor	just underneath lead	5th of chord, in the octave below	just underneath lead	5th of chord, in the octave below
Unison	same as lead	unison	the same note as the lead	unison
Alto	just above lead	3rd of chord	just above the lead	intelligent 3rd
Mezzo	high	5th of chord	high	5th above lead
Soprano	highest	an octave above the root	highest	octave above lead

When using the Pitch Shift control mode, Interval works in a different, but simple way. Pitch Shift interval is set from -24 to +24 for each voice. Each digit corresponds to one semitone above or below the lead pitch. For example, -24 would be two octaves below the lead, +12 would be an octave above the lead. The intervals for Pitch Shift are represented with numbers as they are not “intelligent” intervals. Pitch Shift intervals are always a parallel distance away from the lead note no matter what the key and scale of the music.

## Gender



Using these sliders, you can adjust the gender of each of the four harmony voices. So, what is this gender thing?

gender (jen'der) m. **1.** The condition or quality of being of the male or female sex.

In IVL Vocal Studio, “Gender” will give your harmony voices distinct character. When the gender amount is set at 0 (in the middle) there is no gender effect applied to the harmony voice. As you lower the gender amount, more male qualities are introduced into the voice. As you raise the gender amount, more female qualities are introduced into the voice. This is the control that gets you that deep bottom end you have been undoubtedly waiting for.

## Detune



The detune sliders can be adjusted independently for each harmony voice. Detune is like a fine-tune adjustment on a keyboard. The detune amount ranges from -50 cents to +50 cents (50 cents is equal to 1 semitone). There is also a “normal” or “random” button located in the top-right corner of the detune window. When “normal” is selected, the detune amounts are fixed at their settings. With “random” selected, the detune amounts are randomly generated from 0 detune to the setting for each harmony voice. Detune is very useful for two different applications:

1. **Harmonies:** Detuning each harmony voice can create natural-sounding harmonies. In real life nobody sings perfectly in tune, so why should the IVL Vocal Studio have to?
2. **Doubling:** Detuning unison harmony voices can create the fattest of phat vocal sounds without singing a vocal line four times.

## Volume



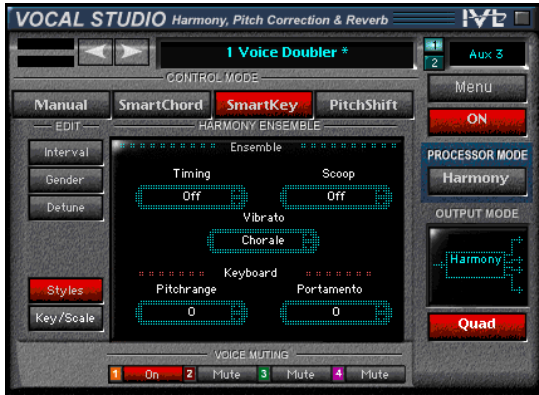
These sliders provide individual level control over your voices. If you are in QUAD output mode, VOLUME edit will not be available; volume will be controlled via the four assigned aux return faders. If you are using the Vocal Studio in Stereo output mode you will want to mix your voices using the Vocal Studio volume controls.

## Pan



Now the sliders are going the other way! The pan controls are used to place your harmony voices in a stereo field. Just as with the volume controls, you will want to set your pan controls differently depending on which output mode you are using. When in QUAD output mode, PAN is not available to edit. Instead, you control the pan on their dedicated aux returns.

## Styles



In “Styles,” you can create that extra amount of personality and realism for your harmony voices. Each style is controlled by a spin dial. Spin the dial up or down to change the parameter; all of the Style parameters are adjusted globally for each harmony voice.

**Timing** adjusts the entrances of the harmony voices. With “Timing” turned off, the harmony voices enter at the same time as the lead voice. Each timing parameter delays the harmony voices from the lead vocal. Just like tuning, no group of singers sings the notes at exactly the same time. The timing presets have been created using individual delays for each voice. Additionally, some time delay presets use randomization. Randomization randomly creates delay time for each voice from 0 delay to the delay time specified. The timing presets are listed below.

Number	Name	Delay	Randomization
0	Off	none	
1	Tight Mix	between 5 and 12ms	none
2	Medium Mix	between 10 and 32ms	none
3	Loose Mix	between 20 and 36ms	none
4	5ms + Rand.	Max. Delay of 5ms	per voice
5	10ms +Rand.	Max. Delay of 10ms	per voice
6	20ms +Rand.	Max. Delay of 20ms	per voice
7	30ms +Rand.	Max. Delay of 30ms	per voice
8	40ms +Rand.	Max. Delay of 40ms	per voice
9	50ms +Rand.	Max. Delay of 50ms	per voice
10	80ms +Rand.	Max. Delay of 80ms	per voice

**Scoop** adjusts how a voice attacks a note. Even professional singers never hit a note right on pitch. They hit their note slightly lower than the pitch they are aiming for and then “scoop” up to the correct note. The scoop presets are created using the amount of scoop (how far below the note) and how long it takes for the harmony voice to scoop to the actual note.

Number	Name	Description
0	Off	no scooping
1	The Pros#1	low amount, fast rate scooping
2	The Pros#2	high amount, medium-fast rate scooping
3	Semi Pro#1	low amount, medium-slow rate scooping
4	Semi Pro#2	high amount, slow rate scooping
5	Swoopy	low amount, very slow rate scooping

**Vibrato** adds another level of human quality to the harmony voices. The majority of singers use some amount of vibrato. Basically, Vibrato is like the modulation wheel on a keyboard, which modulates a harmony voice’s pitch by a small amount. The Vibrato presets are based on the amount of modulation, the rate of the modulation, and when the modulation starts.

Number	Name	Description
0	off	no vibrato
1	Light	low depth, medium rate with onset delay
2	Medium	medium depth, medium rate with onset delay
3	Heavy	high depth, medium rate with onset delay
4	Light & Fast	low depth, fast rate with onset delay
5	Med & Fast	medium depth, fast rate with onset delay
6	Heavy & Fast	heavy depth, fast rate with onset delay
7	Light & Slow	low depth, slow rate with onset delay
8	Med & Slow	medium depth, slow rate with onset delay
9	Heavy & Slow	high depth, slow rate with onset delay
10	Chorale	low depth, very slow rate with no onset delay

**Portamento** is used to limit the hard stepping between moving harmony notes. Portamento can add realism to the movement of harmonies. With Portamento, each harmony note slides into the next at a selected rate. The rates are selected with the Portamento spin dial from 0 (fastest) to 10 (slowest).

**PitchBend Range** sets the pitch bend range that can be applied to the harmony voices using a MIDI device. The pitch bend range can be set from 0 to 12 semitones.

**Key/Scale** is an edit mode used only in “SmartKey” mode. The use of Key/Scale is described farther on under the “SmartKey” section.

**Envelope** is used only in the “Manual” control mode. The use of “Envelope” is described in the “Manual” section on page E-6.

## The Harmony Control Modes

Harmony Control Modes determine the way in which harmonies are created. IVL Vocal Studio has four control modes. Each of these modes is tailored toward a different application. They can be categorized by two items:

1. Requires MIDI input: Using the D8B’s MIDI input, a keyboard or sequencer sends note information to the IVL Vocal Studio to create harmonies.
2. Intelligent Harmonies: IVL Vocal Studio uses intelligence to help create natural harmonies.

Action	Manual	Smart Chord	Smart Key	Pitch Shift
Requires MIDI Input	yes	yes	no	no
Use intelligent harmonies	no	yes	yes	no

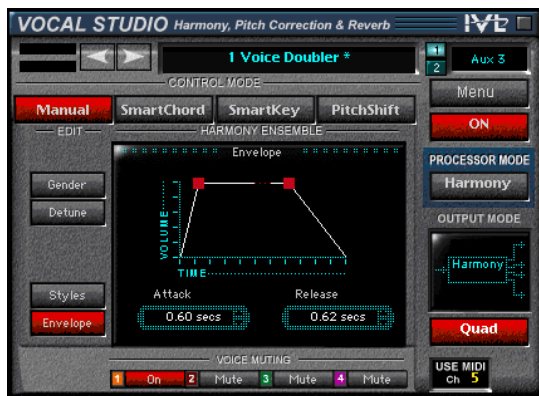
## Manual

Because you can choose exactly which harmony notes you want, Manual mode is excellent for creating unusual harmony treatments. Where the SmartKey and SmartChord control modes follow the ascending and descending direction of your voice, Manual mode allows you to play a descending harmony line over an ascending melody line, for example. You can combine this aspect with the ability to play dense chord voicings with lots of sixths, sevenths, and ninth color notes to create harmony parts that are truly unique.

When using Manual or SmartChord modes (the keyboard control modes), you can save time by using a MIDI sequencer to play any or all of the instrumental parts in your composition. As there are often pad chords on a synth or piano track, these can also be used to trigger harmonies.

When you choose Manual mode in this situation, the harmony parts won't follow the melody lines you sing; they'll stay on the notes played on the instrument track. Because you'll probably want to add notes here and there to your control track, it's often a good idea to copy the instrument track to another open track in your sequencer and use the copy as your starting point.

In manual mode there is an editing parameter called "Envelope." You can use "Envelope" to shape the entrances and exits of harmony notes triggered through MIDI.



The graph in the Envelope window represents volume against time. Adjusting the Attack time with the spin dial will vary the slope on the leading edge of the graph. A shallow slope will fade-in the harmony notes after Vocal Studio is triggered through MIDI. Adjusting the release time will vary the slope on the trailing edge of the graph. A shallow slope will fade the harmony notes out after the MIDI trigger is released. Steep slopes will make instantaneous attacks and releases.

## SmartChord

SmartChord uses the intelligent harmonies of the Vocal Studio in conjunction with a MIDI keyboard hooked up to the D8B. On the keyboard, you would play the chords of a song in real time with the lead vocal. IVL Vocal Studio recognizes the chords and creates correct harmonies. SmartChord mode will follow the melody of your voice while staying musically related to the chords on the MIDI control track.

To get harmonies in SmartChord mode you first need to select intervals for one to four of the harmony voices. You can select the intervals from the "Interval" edit window. See the previous section on Intervals.

SmartChord mode, on the other hand, will follow the melody of your voice while staying musically related to the chords on the MIDI control track.

## SmartKey

With the right combination of input vocal melody and underlying chord structure, the SmartKey mode can produce harmonies that sound unbelievably real. When you have a song that has a simple chord structure like those found in country and blues, you can dial up SmartKey mode and be on your way to a killer harmony line in mere moments.

The "key" to making SmartKey work properly is to set the key and scale correctly. While it sounds like you'd need some music theory background to do this, don't despair—if you can lean over and tell a fellow musician what key you're going to play the next song in, you can set up SmartKey mode effectively.

Let's break it down into the two components of key and scale. Determining the key is easy; it's often the first chord in a song. However, some songs are in a different key than the first chord (such as "Sweet Home Alabama," which is in G but starts with a D chord). Scale can be either major or minor, and depends on the notes that make up the scale.



To select Key and Scale, you want to be in the Key/Scale Edit mode, shown above. Once in this editing window, Key is selected by clicking on a note on the piano. Select the scale using the spin dial above the piano keys.

### The Difference

**SmartKey** harmony usually requires you to enter the one key that works for a whole song. SmartKey harmonies will sound correct in many songs but not all, and this is why you have a choice between it and SmartChord. SmartKey harmonies are also more active in harmony motion.

**SmartChord** harmony requires you to input a different chord change for every chord in a song. They can be applied to almost any song you can play. This is the only practical difference between the two harmony types.

### Pitch Shift

This mode doesn't have the "smarts" that the other control modes do, so you're best to stay away from harmonies and use this for special effects and doubling (unless you actually want your harmonies to sound like Gregorian chants). You can produce some interesting spoken-word effects by muting your input voice and pitch-shifting a single effect voice down a few tones or even an octave. Combine this with a little male gender and you can get pretty close to a newscast voiceover. Subtle pitch shifts are better, though, for changing male to female and vice versa.

Pitch Shift mode is also handy for unison or octave-doubling effects. Turn on all four voices and place the interval settings in the middle. If you add detuning and a bit of scoop style, this will thicken up your vocal as if you had quadruple-tracked your voice. You can also take one or two of the effect voices and put them in octave positions for interesting effects, too.

### Reverb

When any of the harmony modes are being used, you can also add a reverb harmony effect. However, to engage the reverb harmony effect you must be in Stereo Output mode. This sends your harmonies to one set of stereo returns on your D8B, and your reverb to another set of stereo returns. Reverb can be very useful in placing your harmonies deeper in your mix.

## Operation—Pitch Correction Mode

To make sure you are in Pitch Correction mode select "Pitch Correct" from the Vocal Studio screen.

### What is Pitch Corrector Mode?

Everyone mixing vocals has experienced out-of-tune vocal tracks. Typically, there hasn't been much at your finger tips to fix those nasty notes. Some lucky folks have been able to invest thousands of dollars in computer editing suites to do pitch correction. IVL Vocal Studio gives a simple yet effective pitch corrector to doctor your vocal tracks with your D8B. Vocal Studio's pitch corrector is operated manually. Therefore, you have control over pitch fixing at all times. Generally, the less you correct the note, the more natural the result. However, the pitch corrector can force a vocal note anywhere.

### What are the Controls?

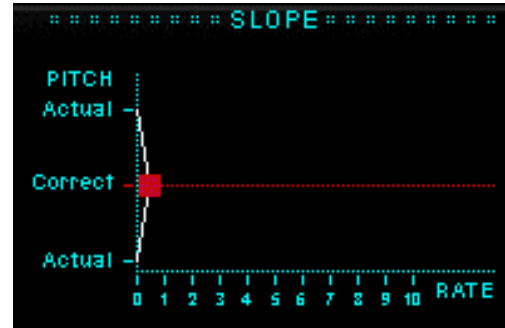
The Pitch Corrector screen is separated into four control areas:



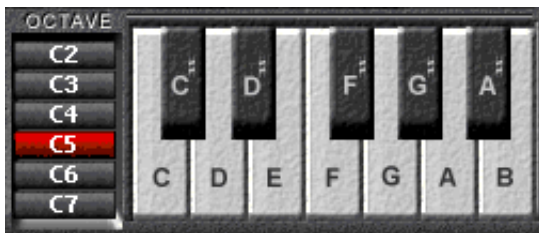
**Pitch Bender** is used to bend out-of-tune vocal notes to the desired pitch. The pitch bender works just as a spring-loaded pitch bender would work on a keyboard. Use the mouse to drag the pitch bender up to raise the pitch. Drag the pitch bender down to lower the pitch. When you release your mouse button, the pitch bender will spring back to the center position, where the pitch will be unaffected. You can also use an external pitch bender from a MIDI keyboard with the same results.



**Pitch Bend Range** sets a maximum amount the pitch can be corrected using the Pitch Bender. The pitch bend range is set by grabbing the red circle (located in the Pitch Bend Range window) with your mouse. When the range is set to maximum, the pitch can be corrected by  $\pm 12$  semitones (1 octave) with the Pitch Bender. When the pitch bend range is set to its minimum the pitch can be corrected by  $\pm 50$  cents (1 semitone). Set the range for the maximum amount of pitch correction needed. If the vocal track travels a full semitone out of tune, set the range to 1 or 2 semitones.



**Slope** controls the switching rate between the pitch corrected sound and the original sound when using the Vocal Studio's keyboard control graphic. Use the red circle in the Slope window to adjust the slope. When the Slope is pulled all the way to the left, the switch between original and pitch-corrected sound is instantaneous. The more you pull the slope to the right, the more gradual the fade between original and pitch-corrected sound becomes. This parameter can be set to make pitch correction more natural.



**Pitch Controller** is used to force the vocal line to an exact pitch. Use the Octave buttons to set the octave you want the vocal line to be forced. Once you have set the octave, trigger the note you want using the Pitch Controller keyboard. As long as you are holding/triggering the note with the mouse or MIDI keyboard, the vocal line will sing the corrected pitch indefinitely. Only when you release the note will the vocal line return to the original pitch. An external MIDI keyboard can also be used to give immediate access to multiple octaves.

# Appendix C

## Plug-in Configuration and Routing

### Configuring the Plug-in

After installing your UFX or MFX card, all you need to do is assign a plug-in to the card.

#### Assigning the Plug-in to a UFX or MFX card



1. Click the **Plugins** menu and select **Plugins**, (or use the keyboard shortcut Ctrl+P).



2. In the Plugin Configuration window, locate the card slot that contains the UFX or MFX card to which you wish to assign a plug-in.
3. In the **MODE** column, click the **MONO/STEREO** toggle button and set it to mono or stereo (depending on the plug-in and the card).



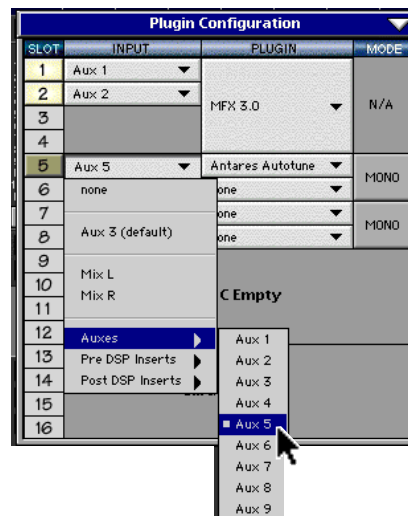
4. In the Plugin column, select a plug-in from the pull-down menu. It should look something like this:



**Note:** A plug-in can also be loaded from the Setup section on the console.

#### Assigning an Input Source to the Plug-in

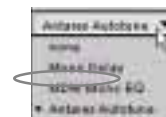
- Click the plug-in's **INPUT** button to select an input source. In the following example, we have chosen the Aux 5 Bus as the input to the plug-in installed in slot 5.



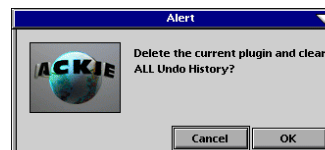
- When a plug-in is fed from an aux bus, its output appears on the FX Return channels (faders in the EFFECTS bank). The return channel is determined by the slot number and whether the effect output is mono or stereo. For example, a reverb with a mono input and stereo output that is installed in Slot 5 has its outputs on FX 5 and FX 6. **Note:** The default state for all FX channels is MUTE. You won't hear the effect until you unmute its FX return channel(s).
- A plug-in can also receive its input from a channel pre- or post-DSP insert or the main stereo left and right bus. When a plug-in is inserted in this manner, its output is routed directly back into the channel.

#### Deactivating the Plug-in

1. Select **none** from the associated plug-in drop-down assignment menu.



2. Click **OK** in the Alert dialog box.



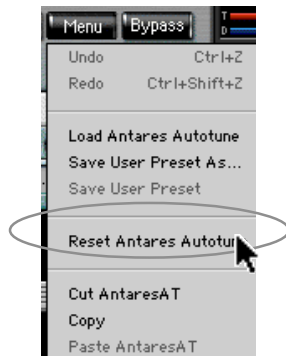
**Warning:** Deactivating a plug-in erases all automation data for the plug-in.

Plug-in settings can be saved and recalled from the hard drive. You can save and load files to either Memory A or Memory B.

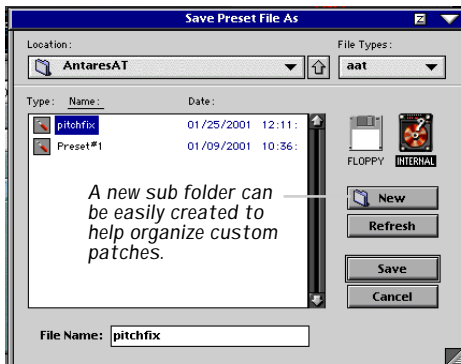


**To Save a Preset:**

1. Click and hold the **Menu** button.
2. Select **Save User Preset** to overwrite the file currently opened.
3. Select **Save User Preset As** to save to a new file name. The Save Preset File As dialog box appears.



4. A default name for the preset is automatically displayed, such as Preset#1. If you want to rename it, simply type in the name you want, using up to 20 characters.



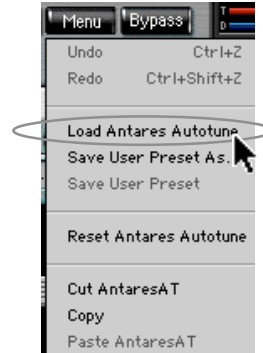
5. Select **INTERNAL** (default hard drive) or **FLOPPY**.
6. Click Save to complete the operation.

**To Load a Preset:**

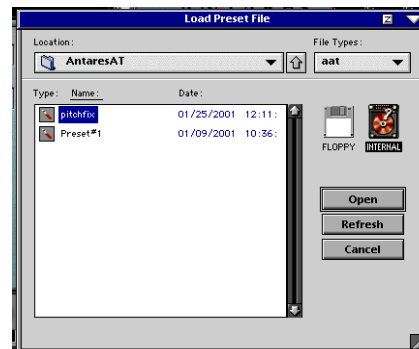
1. Click **Mem A** or **Mem B** to choose the memory location from which to load the file.



2. Click and hold the **Menu** button.



3. Select **Load (Plug-in)** to open a file. The Load Preset File dialog box appears.



4. Click **INTERNAL** if the file is on the internal drive, or click **FLOPPY** if the file is on a floppy disk.
5. Select the preset you want to load.
6. Click **Open** to load the selected preset.

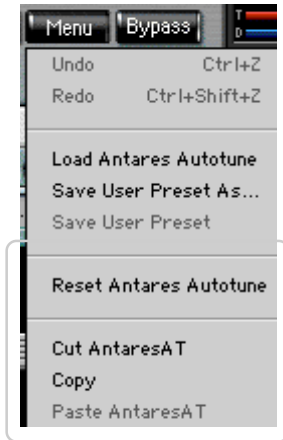


Click in the Preset Display to load from the pull-down menu or scroll through presets using the Up/Down buttons.

### To Reset the Plug-in:

Reset will reload the previous patch.

1. Click and hold the **Menu** button.
2. Select **Reset (Plug-in)**.



### To Cut Preset Settings:

1. Click and hold the **Menu** button.
2. Select **Cut (Plug-in)**.

The current settings are temporarily stored in the clipboard memory in case you want to paste them to a new preset. The plug-in also reverts to its default state (it is reset).

### To Copy Preset Settings:

1. Click and hold the **Menu** button.
2. Select **Copy**.

The current settings are temporarily stored in the clipboard memory in case you want to paste them to a new patch.

### To Paste Preset Settings:

1. Click and hold the **Menu** button.
2. Select **Paste (Plug-in)**.

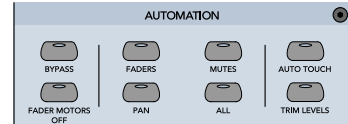
The current settings are replaced with the setting in the clipboard memory.

## Automation and Snapshot Control

### Dynamic Real Time

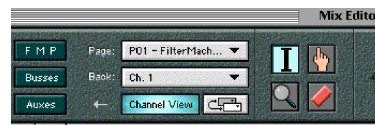
#### To write automation on a loaded plug-in:

1. Engage AUTO TOUCH.



2. Engage ALL, disengage BYPASS, and send timecode to the console –the POSITION readout will change to show time code is being received.
3. Move a parameter or recall a patch (user or factory preset).

Subsequent edits to any recorded automation moves may be performed in the Mix Editor. Enable the channel view by clicking on the Channel View button, then choose the plug-in you wish to view from the page drop-down menu. This displays a list of available channel and plug-in parameters.



**Note:** Parameters can be controlled from either the GUI plug-in graphic parameters (using a mouse to modify the parameters) or via the VFD V-Pots and SELECT buttons (with the plug-in parameters called up on the VFD readout).

### Dynamic Off-line

#### To write a snapshot on a loaded plug-in:

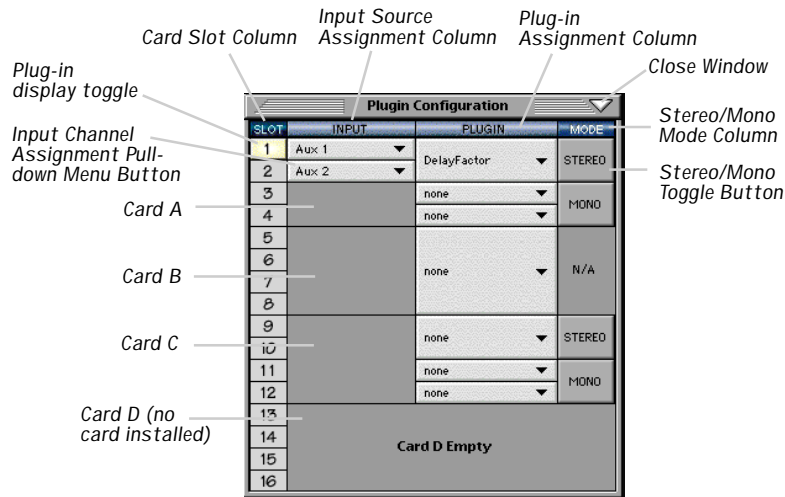
- Use the Event Automation Track, available under the Windows Menu as 'Event Track', to load plug-in user (previously stored) or factory preset patches, at a specific time during automation playback.



**General Note:** Plug-in settings are recalled as part of a console Snapshot, but may also be recalled as Presets (patches). If you are recalling snapshots and presets, be aware that one may override the other.

# FX Routing

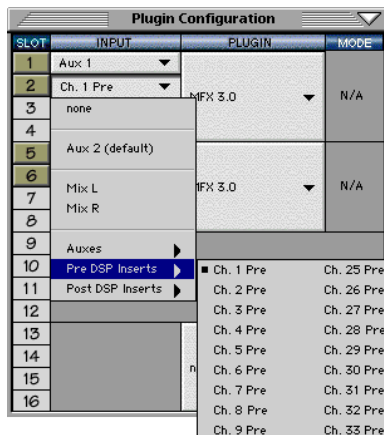
## The Plug-in Configuration Window



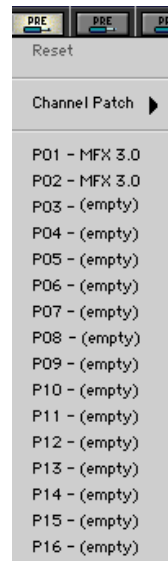
### Inserting a Plug-in into a Channel

A pre- or post-DSP channel insert can also be used as the input source for a plug-in. When a channel insert point is selected, the plug-in output returns to the channel. The FX return path is disconnected, although the plug-in output is still displayed on the FX return channel meter.

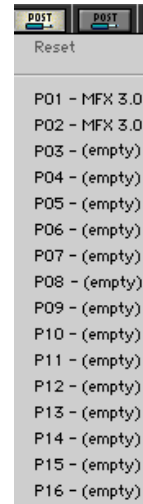
A plug-in channel insert assignment can be made from the Plug-in Configuration window, or from a pull-down menu from the mixer screen.



Plug-in Configuration Window



Pre-DSP Pull-down

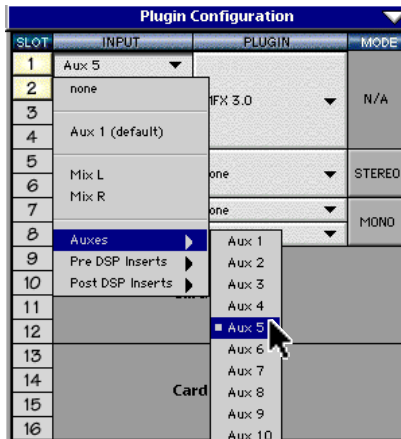


Post-DSP Pull-down

This assignment can also be made from the control surface and VFD by holding the desired channel's SELECT button for two seconds, then paging over to Plug Pre or Plug Post, selecting the input source, then selecting the desired plug-in slot from the follow-on menu.

### Using an Aux Send with a Plug-in

- Click the associated **INPUT** menu button and select an Aux input source. In the example below, we have chosen the Aux 5 Bus.

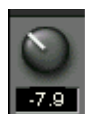


### Send the Input Signal to the Aux Bus

- Send a signal to a D8B mixer input channel (MIC/LINE or TAPE IN).
- Assign the input channel V-Pot/GUI Control Pot to an aux send. We have chosen AUX 5 according to the example above.



- Use the AUX 5 control to adjust the input level to the plug-in.



GUI Control Pot Assigned to AUX 5



**Remember to select an aux send before using the V-pot or GUI Control Pot on the mixer input channel (MIC/LINE or TAPE IN).**

You will see the plug-in's input meter become active as you raise the mixer input channel's aux send.

Set the plug-in input/output signal levels as you would with any effect, so the meter reaches its upper-most range every so often (always trust your ears first). This can be accomplished from the console or GUI.

### Pre-Fader and Post-Fader Auxiliary Sends

Normally, effect sends are post-fader, so the signal sent to the effect follows the program level in the mix. Occasionally you may wish to feed an effect from a pre-fader source so that the signal level from the aux control is independent of the channel fader position. Aux sends are selectable pre- or post-fader globally (all Aux 1's for instance) from the Mix Options screen in the Setup window, or individually on a channel-by-channel basis either from the channel strip or the Fat Channel.

In the channel strip, Alt-click the Aux Send level indicator to toggle between pre- and post-fader operation. Post-fader is indicated by a red bar, pre-fader is indicated by a yellow bar.



In the Fat Channel, clicking on the small indicators below the Aux knobs toggles between pre- and post-fader operation. Yellow indicates pre-fader, otherwise the aux is post-fader.



## The FX Return Channel

- Switch the D8B Bank Select to **EFFECTS** (49-72) and bring up faders one and two (channels 49 and 50). You will also see meter activity associated with these channels.

**EFFECTS**



FX Channels 1&2  
(channels 49&50)

Stereo Plug-in

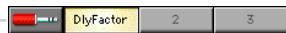


The Plug button toggles between Windows menu buttons and FX buttons (lower left on the D8B mixer screen).

Plugins button opens the Patch Configuration window (or **Ctrl+P** on the keyboard).



Plugins



Here the Delay Factor plug-in is selected for display.

# Appendix D

## Shortcuts

<b>Feature</b>	<b>Surface</b>	<b>Keyboard</b>	<b>Mouse (click or pull down)</b>
New Session	[New]	Ctrl+N	File > New Session
Open Session	[Load]	Ctrl+O	File > File Manager
Save Session	[Save Session]	Ctrl+S	File > Save Session
Save Session As	[Save Session As]		File > Save Session As
Save As Template			File > Save As Template
Toggle Desktop		Ctrl+D	File > Desktop (or Click Desktop in bottom menu bar)
Shutdown		Ctrl+Q	File > Shutdown
Preferences	[General]	Ctrl+I	Setup
Undo	[Undo]	Ctrl+Z	Edit > Undo (channels or moves)
Redo		Ctrl+Shift+Z	Edit > Redo (channels or move)
Cut Channels	[Cut]	Ctrl+X	Edit > Cut Channels
Copy Channels	[Copy]	Ctrl+C	Edit > Copy Channel(s)
Paste Channels	[Paste]	Ctrl+V	Edit > Paste Channels
Delete Events		DEL	Edit > Delete Events
Set Default Levels			Edit > Set Default Levels
Modify Levels		Alt+M	Edit > Modify Levels
Insert Time			Edit > Insert Time
Delete Time			Edit > Delete Time
Insert Global Time			Edit > Insert Global Time
Delete Global Time			Edit > Delete Global Time
Clear Automation			Edit > Clear Automation
Clear Edit History			Edit > Clear Edit History
Select All		Ctrl+A	Edit > Select All
Select Fader Bank		Alt+A	Channel > Select Fader Bank
Select All Faders		Alt+Shift+A	Channel > Select All Faders
Time Code Counter	[set time, #'s, enter]	[tab], #'s, [enter]	click on counter, #'s, [enter]
Sort by column title in ...window (New, Open, Save, Snap, Locate – any listing window)		[tab] highlight column, [enter]	click on title in window

### Window views: [Ctrl] + [number or letter] both opens and closes these windows:

<b>Feature</b>	<b>Surface</b>	<b>Keyboard</b>	<b>Mouse (click or pull down)</b>
View Setup		Ctrl+I	Windows > Setup
View Snapshots		Ctrl+2	Windows > Snapshot
View Surround		Ctrl+3	Windows > Surround
View Locator		Ctrl+4	Windows > Locator
View Mix Editor		Ctrl+5	Windows > Mix Editor
View Fat Channel		Ctrl+6	Windows > Fat Channel
View Panning		Ctrl+7	Windows > Panning
View Faders		Ctrl+8	Windows > Faders
View Event Track		Ctrl+9	Windows > Event Track
View History List		Ctrl+H	Windows > History List
View MIDI Map		Ctrl+-	Windows > MIDI Map
View Ch 1–24	[Mic/Line]	F1	[Mic/Line]
View Ch 25–48	[Tape]	F2	[Tape]
View Ch 49–64	[Effects]	F3	[Effects]
View Masters	[Masters]	F4	[Master]
Close Window		Ctrl+W (or ESC)	File> Close Window
Close All		Ctrl+\	Window> Close All
View Plugin Configuration		Ctrl+P	[Plugins] in bottom menu bar (or Plugins > Plugins)
View Plug-in Windows (slots 1–9)		Alt+1 through Alt+9	
View Plug-in Windows (slots 10–16)		Alt+Shift+0 through Alt+Shift+6	

## Functions on SELECT(ed) Channel

Example: Select channels 1–5 and type the letter [M] and these channels will mute. To unmute these same selected channels, type either a comma [, ] or hold down the shift key and type the letter [M].

<b>Feature</b>	<b>Surface</b>	<b>Keyboard</b>	<b>Mouse (click or pull down)</b>
Channel List		Ctrl+B	Channel > Channel List
Open Channel			Channel > Open Channel
Save Channel As			Channel > Save Channel As
Track Selection	[Select]	L/R arrow	Click on Channel [Select]
Multiple Track Selection	[Shift]+[Select]	[Shift]+L/R arrow	[Shift] Swipe across channel [Select]s or Right mouse button/swipe across channel [Select]s
Move Channel Selection		L/R arrows	
Single Event Selection			Left-click
Multiple Event Selection		[Shift]	[Shift-click]
Unselect All Faders	Double-press any [Select]	Left or right arrow	Double-click on any [Select]
Group	[Group][Select]	Ctrl+G	Channel > Group
Ungroup	[Group][Select]		Channel > Ungroup
Faders to Unity		Ctrl+]	Channel > Faders to Unity
Faders to Off		Ctrl+[	Channel > Faders to Off
Nudge Selected Faders		Alt+up/down arrows	
Channel Link	Hold adjacent [Select]s	Ctrl+L	Channel > Channel Link
Unlink	Hold adjacent [Select]s	Ctrl+U	Channel > Unlink
Adjust Channel Delay			Channel > Adjust Channel Delay
Reset Channel Delay			Channel > Reset Channel Delay
Reset Channel Layout			Channel > Reset Channel Layout
Write toggle	[Write]	[W] (enable) [E] or [Shift] [W] (disable)	[Write]
Solo toggle	[Solo]	[S] (enable) [D] or [Shift] [S] (disable)	[Solo]
Solo Isolate toggle	Alt+[Solo]		Channel > Channel List (or Alt+click on Solo)
Mute toggle	[Mute]	[M] (enable) [, ] or [Shift] [M] (disable)	[Mute]

## Transport Functions

<b>Feature</b>	<b>Surface</b>	<b>Keyboard</b>	<b>Mouse (click or pull down)</b>
Play/Stop	[Play][Stop]	[Space]	[PLAY][STOP] in Locator window
Play	[Play]	[Space]	[PLAY][STOP] in Locator window
Play from Selection		Ctrl+Space	Edit > Play From Selection
Set Selection Start		[	
Set Selection End		]	
Stop	[Stop]	[Space]	[PLAY][STOP]
Record Mode	[Record]		[RECORD]
Location 00-99	in locate mode: 00-99 numeric entry, followed by [Enter]		Locator window, double-click line
Store Locate	in locate mode: 00-99 numeric entry, followed by [Store]		Locator window, click [New]
Next/Previous Cue	Ctrl+Enter/Alt+Enter	+/-	Double-click Cue
New Cue		Ctrl+M	[New]
Return to Zero (RTZ)	empty locate, [enter]		
Rewind	[<<]	Shift+<	[REW]
Fast Forward	[>>]	Shift+>	[FFWD]

## ODDS 'N' ENDS

<b>Feature</b>	<b>Surface</b>	<b>Keyboard</b>	<b>Mouse (click or pull down)</b>
Channel strip name		Click on name field, enter [text], [tab] (right) or [shift] [tab] (left)	
Equal aux/trim levels	(see clipboard ops)	(See clipboard ops)	Click bar, right mouse button, swipe either direction
Bus assigns	[Bus #], swipe [Assign]s		Click bus, any mouse button, swipe either direction
DSP function On/off toggles (Phase, EQ, Gate, Compressor)			Click button, any mouse button, swipe either direction
Bypass Automation	Bypass Automation		Bypass Automation in Locator window
Motor Faders off	Motor Faders off button		
Toggle checkbox / edit field			Mouse Click
<b>Mix Editor Shortcuts</b>			
Highlight from Selection		Click and drag over area	Use Highlighter (I-Beam) tool
Scroll Mix Editor		Alt+arrow(s)	
Zoom Mix Editor		Ctrl+arrow(s)	
Dive Zoom Mix Editor		Z	
Drag Mix Editor Screen		D	

# Appendix E

## MIDI Implementation Guide

Product: Mackie Digital 8•Bus  
MIDI Implementation Chart

Date: 3/01  
Version: 3.0

Function		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	00, MIDI Off (note 1) 00-0F	00, MIDI off (note 1) 00-0F	See 1) under notes 2) per channel strip
Mode	Default Messages Altered	Poly	Poly	Exception: program changes are Omni
Note Number	True voice	00-0F	00-0F	Reassignable – applies to mute & pan messaging
Velocity	Note ON Note OFF	Mute on = 40 Mute off = 01	Mute on = 40 Mute off = 01	Mute only
Aftertouch	Keys Channel	00-7F	00-7F	Pan control: range 127L to 127R
Pitch Bend		X	X	
Control Change		00-7F	00-7F	Fader level Tx & Rx, assignable per D8B channel strip via the Channel List
Program Change	True number	00-7F	00-7F	Rcv: Omni
System Exclusive		note 3)	X	See note 3)
System Common	Song Pos Song Sel Tune Req	X X X	X X X	
System Real-time	Clock Commands	X X	MTC X	
Aux Messages	Local On/Off All Notes Off Active Sensing System Reset	X X X X	X X X X	
Notes		1) System real time always active, MIDI On/Off defaults to OFF and MIDI channel 00. 2) Either Tx or Rx. 3) MMC open loop commands: STOP, PLAY, FF, REW, TRACK REC/RDY, SHUTTLE, STEP. 4) All values listed in hexadecimal.		

O: Yes  
X: No

# Appendix F

## Compatible Cables

### Analog and Digital Multitrack Cables

The following companies supply analog and digital multitrack cables for use with the HDR24/96 I/O cards:

#### Horizon Music, Inc.

P.O. Box 1988, Cape Girardeau MO 63702-1988  
Tel: (800) 255-9822; Fax: (800) 455-3460  
<http://www.horizonmusic.com>

##### **AIO•8 Analog Interface Cables**

**HD4 Series** DB25 to [specify connector]  
Connector options: 8 male XLR, 8 female XLR, or 8 1/4" TRS  
Standard lengths: 5, 10, 15, 20, 25 feet

##### **DIO•8 TDIF Interface Cables**

**TDIF Series** DB25 to DB25  
Standard lengths: 5, 10, 15 feet

##### **PDI•8 AES/EBU Interface Cables**

**HD44 Series** DB25 to [specify connector]  
Connector options: 4 male + 4 female XLR, or DB25  
Standard lengths: 5, 10, 15, 20, 25 feet

#### Hosa Technology, Inc.

6920 Hermosa Circle, Buena Park CA 90620  
Tel: (714) 736-9270; Fax (714) 522-4540  
<http://www.hosatech.com>

##### **AIO•8 Analog Interface Cables**

**DTP Series** DB25 to 8 1/4" TRS  
**DTF Series** DB25 to 8 female XLR's  
**DTM Series** DB25 to 8 male XLR's  
Standard lengths: 3, 4, 5, 7 meters

##### **DIO•8 TDIF Interface Cables**

**DBK Series** DB25 to DB25  
Standard lengths: 3, 15 feet

##### **OPT•8 / DIO•8 ADAT Optical Interface Cables**

**OPT Series** Standard ADAT Optical cables  
**OPM Series** Jacketed ADAT Optical cables w/ metal headshell  
OPT lengths: 2, 3, 6, 10, 13, 17, 30, 50 feet  
OPM lengths: 3, 5, 10, 15, 20, 30, 50 feet

##### **PDI•8 AES/EBU Interface Cables**

**DBK Series** DB25 to 4 male, 4 female XLR's  
Standard length: 8 meters only

## Marshall Electronics

PO Box 2027, Culver City, CA 90231  
Tel: (800) 800-6608; Fax: (310) 391-8926  
<http://www.mars-cam.com/cable.html>

### **AIO•8 Analog Interface Cables**

**DC-DAXM Series** DB25 to 8 male XLR's  
**DC-DAXF Series** DB25 to 8 female XLR's  
**DC-DAS Series** DB25 to 8 1/4" TRS  
Standard lengths: 3, 5, 10, 15, 20,  
and 25 feet

### **DIO•8 TDIF Interface Cables**

**DCD-88D Series** DB25 to DB25.  
Standard lengths: 1, 3, 6, 12, 15, 20, 25,  
and 33 feet.

### **PDI•8 AES/EBU Interface Cables**

**DC-SYX Series** DB25 to 4 male,  
4 female XLR's  
**DC-DUB Series** DB25 to DB25  
Standard lengths: 3, 5, 10, 15, 20, 25 feet

## Pro Co Sound, Inc.

135 E. Kalamazoo Ave., Kalamazoo, MI 49007  
Tel: (800) 253-7360; Fax: (616) 388-9681  
<http://www.procosound.com>

### **AIO•8 Analog Interface Cables**

**DA-88 XM Series** DB25 to 8 male XLR's  
**DA-88 XF Series** DB25 to 8 female XLR's  
**DA-88 BQ Series** DB25 to 8 1/4" TRS connectors  
Standard lengths: 5, 10, 15, 20 feet

## Other Cables

In addition to the companies listed above, the following companies supply individual 110Ω AES/EBU and/or 75Ω word clock and video cables:

### **Apogee Electronics Corporation**

3145 Donald Douglas Loop South  
Santa Monica, CA 90405-3210  
Tel: (310) 915-1000; Fax: (310) 391-6262  
<http://www.apogeedigital.com>

### **Canare**

531 5th Street, Unit A, San Fernando, CA 91340  
Tel: (818) 365-2446; Fax: (818) 365-0479  
<http://www.canare.com>

### **Whirlwind**

99 Ling Rd., Rochester, NY 14612  
Tel: (888) 733-4396; Fax: (716) 865-8930  
<http://www.whirlwindusa.com>

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## Colophon

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