VoicePrism

VOCAL FORMANT PITCH PROCESSOR

USER'S MANUAL

TC·HELICON
VOCAL TECHNOLOGIES
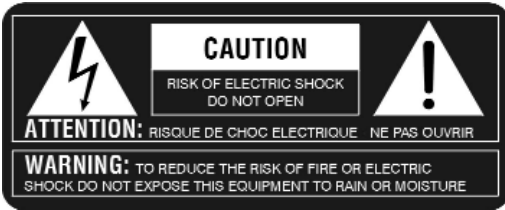
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3. THIS PRODUCT SHOULD BE USED ONLY WITH A CART OR STAND THAT IS RECOMMENDED BY THE MANUFACTURER.
4. THIS PRODUCT, EITHER ALONE OR IN COMBINATION WITH AN AMPLIFIER AND HEADPHONES OR SPEAKERS, MAY BE CAPABLE OF PRODUCING SOUND LEVELS THAT COULD CAUSE PERMANENT HEARING LOSS. DO NOT OPERATE FOR LONG PERIOD OF TIME AT HIGH VOLUME OR AT AN UNCOMFORTABLE LEVEL. IF YOU EXPERIENCE ANY HEARING LOSS OR RINGING IN THE EARS, CONSULT AN AUDIOLOGIST.
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    B. OBJECTS HAVE FALLEN, OR LIQUIDS HAS BEEN SPILLED INTO THE PRODUCT; OR
    C. THE PRODUCT HAS BEEN EXPOSED TO RAIN; OR
    D. THE PRODUCT DOES NOT APPEAR TO BE OPERATE NORMALLY OR EXHIBITS A MARKED CHANGE IN PERFORMANCE; OR
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IMPORTANT:

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THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:
    BLUE: NEUTRAL
    BROWN: LIVE
AS THE COLOURS OF THE WIRES IN THE MAINS LEAD OF THIS APPARATUS MAY NOT CORRESPOND WITH THE COLOURED MARKINGS IDENTIFYING THE TERMINALS IN YOUR PLUG, PROCEED AS FOLLOWS. THE WIRE WHICH IS COLOURED BLUE MUST BE CONNECTED TO THE TERMINAL WHICH IS MARKED WITH THE LETTER N OR COLOURED BLACK. THE WIRE WHICH IS COLOURED BROWN MUST BE CONNECTED TO THE TERMINAL WHICH IS MARKED WITH THE LETTER L OR COLOURED RED. UNDER NO CIRCUMSTANCES MUST EITHER OF THE ABOVE WIRES BE CONNECTED TO THE EARTH TERMINAL OF THE THREE PIN PLUG.

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• INCREASE THE SEPARATION BETWEEN THE EQUIPMENT AND THE RECEIVER.

• CONNECT THE EQUIPMENT INTO AN OUTLET ON A CIRCUIT DIFFERENT FROM THAT TO WHICH THE RECEIVER IS CONNECTED.

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THE USER MAY FIND THE FOLLOWING BOOKLET, PREPARED BY THE FEDERAL COMMUNICATIONS COMMISSION, HELPFUL: *"HOW TO IDENTIFY AND RESOLVE RADIO/TV INTERFERENCE PROBLEMS."*

THIS BOOKLET IS AVAILABLE FROM THE US GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20402, USA. STOCK NO. 004-000-0034-4.

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VOICEPRISM VOCAL FORMANT| PITCH PROCESSOR

THAT IS COVERED BY THIS DECLARATION AND MARKED CE-LABEL CONFORMS WITH THE FOLLOWING STANDARDS AS AMENDED BY CE MARKING DIRECTIVE 93/68/EEC:

LOW VOLTAGE DIRECTIVE, 73/23/EEC

• EN 60065 SAFETY REQUIREMENTS FOR MAINS OPERATED ELECTRONIC AND RELATED
  APPARATUS FOR HOUSEHOLD AND SIMILAR GENERAL USE
• UL 6500: SECOND EDITION: STANDARD FOR AUDIO/VIDEO AND MUSICAL INSTRUMENT
  APPARATUS FOR HOUSEHOLD, COMMERCIAL, AND SIMILAR USE
• CAN/CSA E60065-00: AUDIO, VIDEO AND SIMILAR ELECTRONIC APPARATUS - SAFETY
  REQUIREMENTS

EMC DIRECTIVE, 89/336/EEC

• EN 55103 1/2: PRODUCT FAMILY STANDARD FOR AUDIO, VIDEO, AUDIO-VISUAL AND
  ENTERTAINMENT LIGHTNING.
• EN 55022: CLASS B RADIATED AND CONDUCTED EMISSIONS
• EN61000-4-3 RADIATED IMMUNITY
• EN61000-4-6 CONDUCTED IMMUNITY
• EN61000-4-4 EFT/BURST IMMUNITY
• EN61000-4-2 ESD IMMUNITY
• EN61000-4-11 VOLTAGE DIPS/INTERRUPTIONS
• EN61000-4-5 SURGE IMMUNITY

ISSUED IN VICTORIA, SEPTEMBER 15, 2000 BY FRED SPECKEEN, CHIEF EXECUTIVE OFFICER.

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IVL PART NUMBER: SUP0065R1.4

INTRODUCTION

Thank you for choosing VoicePrism! This complete voice channel system has a great selection of the traditional voice processing tools plus some new features our gurus dreamed up, such as:

- •configurable compression and EQ effects block.
- •four voice harmony which lets you tweak the human characteristics of each individual voice.
- •lead voice doubling over and above the four voice harmony.
- •two separate blocks of effects, including Flanger, Reverb, Chorus, and Delays.

You can view, edit and save these to a preset using our intuitive user interface, with relevant information and user controls helpfully displayed on the large LCD screen. We have also pre-programmed 128 presets to help get you started and show the range of what VoicePrism can do.

We have tried to organize this manual for quick reference, based on VoicePrism's user interface. The table of contents will help you decide where to start reading, the index provides a listing of key words, and there is a glossary to explain the more technical terms for the neophytes.

Text conventions are simple:
Bold, all capitals: **FRONT PANEL BUTTON AND KNOB CONTROL NAMES**.
Underlines, all capitals: <u>MENUS (ACCESSED BY PRESSING THE FRONT PANEL BUTTONS)</u>.
Italic, all capitals: *CONFIGURABLE PARAMETERS (ASSIGNED TO THE SOFTKNOBS)*.
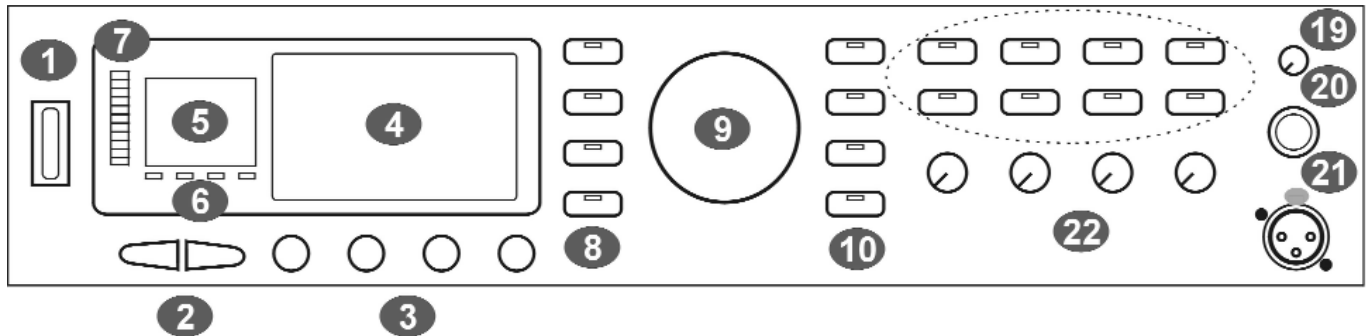Underline, small capitals: <u>PARAMETER SETTINGS (TWIST SOFTKNOBS TO MODIFY)</u>.

TABLE OF CONTENTS

USER INTERFACE

FRONT PANEL

1 Power Switch: this turns VoicePrism On/Off as indicated by front panel illumination. When turned Off, the VoicePrism is not completely disconnected from the mains. VoicePrism starts up with your last settings and preset.

2 Tab Arrows: these scroll forward or back one menu page or preset. You'll find them especially useful for navigating the multi-page menus.

3 Softknobs: the softknob names and current settings are displayed on the LCD; they will change depending on your menu. Turning the softknobs will modify their settings. Pushing the softknob until it clicks will access the softknob submenu (if available). In the softknob submenu, twisting the associated softknob will scroll you through the list of parameters -- clicking again selects the highlighted parameter and kicks you out of the submenu. In the top level preset window, clicking the softknobs brings up a shortcut menu of factory preset configurations.

4 LCD Display: the most informative part of VoicePrism, at the highest level this shows preset information in addition to the softknob libraries and controls. Elsewhere, the LCD provides menus where you can view your editable features, particularly the softknob menus (by clicking the softknobs) and the softknob settings.

5 Numeric Display: displays the current preset number. A "delta dot" in the bottom right corner shows that the preset or step sequence has been changed but not saved.

6 Input Indicators: these light up for the following input types.

> **LOCK**: illuminates to indicate pitch tracking.

> **MIDI**: lights up when MIDI messages are received.

> **44.1**: digital input received at 44.1kHz, for use with the upgrade card.

> **48**: digital input received at 48kHz for use with the upgrade card.

7 Input Level LED Bar: the LED's illuminate to indicate the input volume level, from -30dB to 0dB. The red Ovf LED illuminates to indicate the level is too high and is being digitally clipped.

8 Edit Buttons: these 5 buttons jump you directly to your multi-page edit menus. Each button has its own section later in the manual that describes its menu screens and adjustable parameters, thus only a very brief description is given here.

> **VOCALS**: accesses the editing screens for vocals.

> **EFFECTS**: accesses the editing screens for the two separate post effects blocks.

COMP/EQ: accesses the compressor, EQ and gate editing screens.

MIX: accesses the editing screens to set mix levels within that particular preset. The **LEVEL** knobs located on the front panel are for altering the levels globally (for all presets).

STEP: allows you to create an ordered group of presets that you can step through either manually or by footswitch.

9 Data Wheel: at the highest level this scrolls through the available presets.

10 Browser Buttons: these allow you to view presets of a single harmony type. This is a great feature if you know you want a particular type of preset, but don't know exactly which one.

SHIFT: fixed interval, pitch-shifting presets.

SCALE: presets using intelligent key and scale-based shifting.

MANUAL: requires a MIDI keyboard to create harmony.

CHORDS: also requires a keyboard, has intelligence that interprets chords and follows your lead voice.

EFFECTS: presets without harmony voices.

11 **BYPASS**: while this button is illuminated all VoicePrism processing is bypassed.

12 **HARMONY**: this button turns all harmonies On/Off without affecting the rest of your mix.

13 **UTILITY**: accesses screens to edit MIDI parameters, audio preferences, footswitch configuration, and other useful features.

14 **HELP**: accesses a context sensitive help-screen on the LCD. Use the data wheel to scroll through the entire help message, the tab arrows to change topics. Pressing **HELP** again makes the message go away.

15 **48V**: turns phantom power On/Off.

16 **MIC ON**: switches the active input from the back panel **LINE IN** to the front panel **MIC** input.

17 **PREVIEW:** can be set in **UTILITY** to initiate a demonstration of VoicePrism using an internal audio file, or to provide a cue note based on current preset information.

18 **STORE:** accesses a menu that lets you rename, modify and store presets. No preset editing will be saved unless you go through the storing process.

19 Headphone Level Knob: controls headphone audio level.

20 Headphone Jack: plug your stereo headphones in here. The amplifier will work with a wide variety of headphones.

21 MIC: plug your balanced microphone in here. If you need phantom power, press the 48V button.

22 **LEVEL KNOBS**: The **LEVEL** knobs set global adjustments of **LEAD**, **HARMONY**, **EFFECTS** and **INPUT**, as opposed to the **MIX** button which allow you to save unique mix settings within each preset.
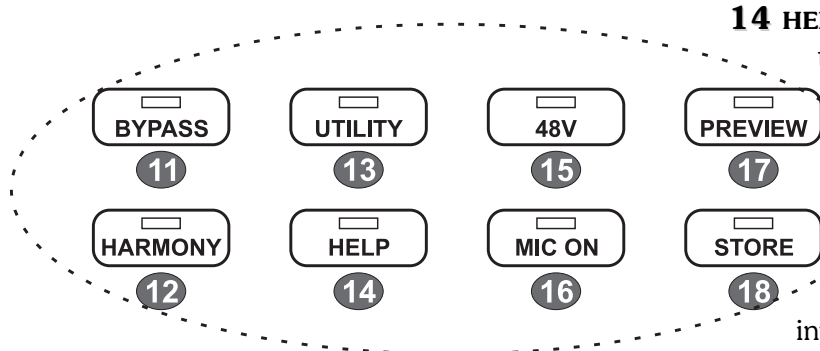
BACK PANEL
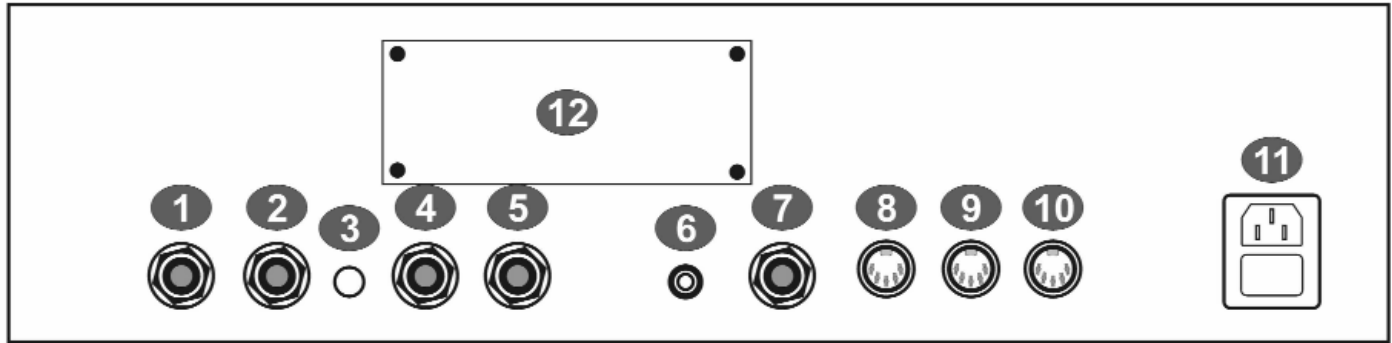
1 Line Input: TRS balanced audio input connects your line level audio input to VoicePrism through a 1/4" jack. Line Input is the default audio input; the front panel microphone is the audio input when the **MIC ON** button is illuminated.

2 Aux In: a TRS balanced auxiliary input for audio signals passing through VoicePrism's effects processors. This is not used to create harmonies and does not have an input level adjustment or input level metering, but is dependent on the In Gain switch setting of +4dBu or -10dBV

3 In Gain: configures VoicePrism's line audio and aux input sensitivity, +4dBu in the out position or -10dBV when pressed in.

4 Left Out: TRS balanced audio output. Use this for mono output.

5 Right Out: TRS balanced audio output.

6 Digital Output: S/PDIF format digital output, 44.1kHz standard.
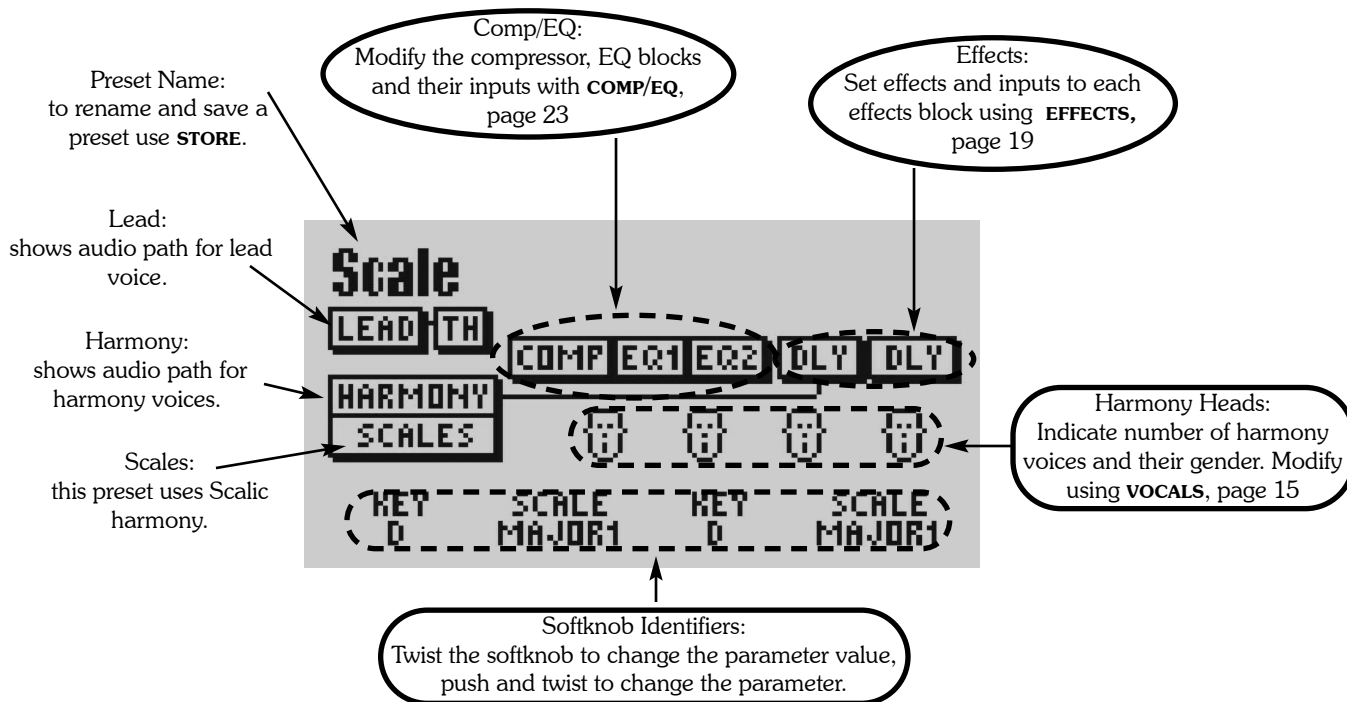
7 Footswitch: VoicePrism can be configured to use a 1 or 3 button footswitch. You can set the number of buttons and assign button functions in the FOOTSWITCH menu, accessed by pushing the **UTILITY** button.

8 MIDI In: connect the MIDI Out of your keyboard or sequencer here to send MIDI to VoicePrism. VoicePrism defaults to receiving on MIDI channel one. For details regarding MIDI parameters please read the **UTILITY** section of this manual.

9 MIDI Thru: transmits a copy of any information received by MIDI In for convenience in daisy-chaining your MIDI devices.

10 MIDI Out: used to transmit user selected MIDI dumps. Refer to **UTILITY**, MIDI menus for further information

11 Power Entry: use the standard IEC connector power cord supplied with your unit and plug in.

12 TC/Helicon VoicePrism Plus Expansion Card: this little piece of real estate is reserved for an upgrade card and provides a brief description of some of its cool features just to whet your appetite.

PRESET SCREEN

This is the top level display, showing important information about the current preset.

Preset Name:
to rename and save a preset use **STORE**.

Comp/EQ:
Modify the compressor, EQ blocks and their inputs with **COMP/EQ**, page 23

Effects:
Set effects and inputs to each effects block using **EFFECTS,** page 19

Lead:
shows audio path for lead voice.

Harmony:
shows audio path for harmony voices.

Scales:
this preset uses Scalic harmony.

Harmony Heads:
Indicate number of harmony voices and their gender. Modify using **VOCALS**, page 15

Softknob Identifiers:
Twist the softknob to change the parameter value, push and twist to change the parameter.

Key Point:
softknob parameter assignments can be matched to what you change in that preset.

Editing is made quicker and easier because you can access factory libraries of configurations for pre-effects, harmonies and post-effects with the softknobs. Detailed editing is possible, of course, and is described under the manual sections for each edit button.

You can reassign the softknobs to different parameters too! Push to click the softknob in order to view the submenu, twist to scroll through your choices and click again to make your selection. The LCD will show the updated softknob parameter, twisting the softknob will modify the setting.

Consider the left-hand screenshot as an illustrative example. The third softknob is set to control the *GENDER* parameter and the current setting is MALE. MALE is a particular library configuration of the harmony voices, in this case, four big guys. If you go into the editable parameters and change the settings the *GENDER* parameter will read CUSTOM, to warn you that you are no longer using a factory library setting.

You can use these libraries to jump from a flange effect to a chorus effect, a mid range boost to a low band cut and waffle between different scoops, genders, vibratos and more with the mere push-click and twist of a softknob.

Your potential softknob parameters are:

NONE: renders your softknob useless to stop anyone from accidentally changing parameters. The LCD is blank where the softknob name would be.

KEY/ROOT: modifies the preset key in Scale harmony mode or the root in Chordal mode.

SCALE/CHORD: changes the preset scale in Scalic harmony mode or the chord in Chordal mode.

PORTA: alters the Portamento setting.

THICKEN: controls Thickening loudness (the level of the doubled lead voice).

The following are parameter libraries, each containing factory standard settings:

GENDER	*DETUNE*	*VIBRATO*	*SCOOP*	*TIMING*
FX1 LIB	*FX2 LIB*	*EQ1 LIB*	*EQ2 LIB*	*COMP/NG*

VOCALS BUTTON

This is the heart of VoicePrism, where you can fatten up your voice and create gorgeous harmonies without having to placate a backup group or multitrack your voice. We have already programmed a sizable quantity of presets, available at the spin of the data wheel. You can use these as they are, or edit them to suit yourself. You access the following menus by pressing **VOCALS** and paging left and right with the tab arrows.

LEAD

Twisting the softknobs will change the settings for the lead voice. No submenus are available, so pressing the softknobs does nothing.
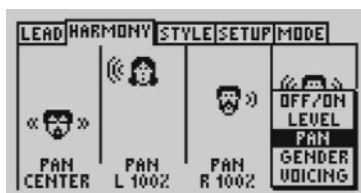
THICKEN DEPTH (0 - ± 50cents): modifies the lead voice to make it sound fuller.
THICKEN LEVEL: (OFF - 0dB): sets the loudness of the detuned lead voice.
LEAD PAN (100%Left - 100%Right): sets the lead voice pan.
LEAD LEVEL (OFF - 0dB): sets the level of the lead voice. This is reflected in the settings of the MAIN MIX menu accessed by the **MIX** button (page 26).

HARMONY

Here is where you configure the harmony settings for each harmony voice. The softknob under each harmony head tweaks the selected parameter for that harmony voice. Press any of the softknobs to view the submenu of harmony voice parameters, as shown in the graphic to the left. Twisting the same softknob scrolls up and down the list, click again to select.

ON/OFF: twisting the softknob will turn its affiliated harmony voice on or off .
LEVEL (Off - 0dB): sets the loudness of the associated harmony voice. This is reflected in the settings of the menus accessed by the **MIX** button (page 24).
PAN (100% left - 100% right): shifts the location of the voice in relation to the left and right speakers.
GENDER (-50 Male - +50 Female): changes the gender of the associated harmony voice, with the current setting indicated by the head icon shown above the softknob. Scroll through the range and watch the heads change -- it's fun!
VOICING (-2 Octaves - +2 Octaves, or -24 - +24 for Shift presets): spin the softknob and watch the voice head move vertically to indicate its pitch relative to the lead voice. Voicing only applies to certain harmony modes, and is different in each mode.The exact harmony setting is shown on the LCD just above the softknobs.

STYLE

The STYLE menu lets you tweak the "humanizing" characteristics of your harmony voices to give them individuality. Pressing any of the softknobs accesses the *STYLE* parameter lists, where you can select the parameter you want to alter.

TIMING DELAY (1 - 40ms): turn the softknobs to change the delay timing for each harmony voice. This allows you to stagger when the harmony voices join the lead voice, the same way real voices are not perfectly synchronized.

TIMING RANDOM (On/Off): assigns random delay values to each of the four voices each time a new note is sung. The delay amount will be between 0ms and the *TIMING DELAY* you have selected.

DETUNE AMOUNT (+50, -50cents): use the softknobs to set the detune (variance) of each harmony voice. This gives a more realistic sound, as actual voices are never perfectly on pitch.

DETUNE RANDOM (On/Off): assigns a random detune value to each of the four voices each time a new note is sung. The detune amount will be between 0cents and the *DETUNE AMOUNT* you have selected.

SCOOP DEPTH (0 - 900cents): singers often start a note below the final pitch, then rise into it. The softknobs assign the scoop depth for each harmony voice, or the starting offset (in cents) of the harmony voice from the correct pitch.

SCOOP RANDOM (0 - 100%): sets how often notes will have scooping applied

SCOOP RATE (Slow (0) - Fast (10)): sets how quickly the harmony voice corrects pitch from its initial pitch offset.

VIBRATO DEPTH (0, ±100cents): the softknobs set the vibrato depth for the harmony voices in cents.

VIBRATO DELAY (0 - 2.5sec): determines when vibrato is applied from the beginning of a new note.

VIBRATO RATE (None (0Hz), 12.7Hz): allows you to set the vibrato rate for each voice in 0.1Hz increments.

SETUP

The SETUP menu allows you to set the musical attributes of the current preset, giving you different adjustable parameters depending on the harmony mode you have set. The exception is *PORTAMENTO*, which is available in every harmony mode.

The display shows you the harmony notes that are assigned to the input pitch displayed. You can edit these harmony notes (see below). The ±1 and ±2 above the harmony pitch notes show if the note is offset one or two octaves. No changes will be saved unless you go through the **STORE** process. The MODE section gives further details on the adjustable parameters.

SHIFT: in a SHIFT preset the only variable parameter is **PORTAMENTO**.

SCALE: in SCALE presets you can choose from several scales or define the exact harmony notes for each note you sing with the **EDIT SCALE** softknob to create custom harmony. Click **EDIT SCALE** to toggle through the pitch notes, twist to change the highlighted note.

MANUAL: for harmonies pitched to incoming MIDI, you can modify the *ATTACK TIME* and *RELEASE TIME* and toggle *VELOCITY* sensitivity On/Off.

CHORDS: in chordal harmony presets you can alter the key (e.g. "A") and chord type (e.g. "major").

MODE

The MODE Menu tab allows you to change the harmony modes in a particular preset. Harmony and harmony modes are described in greater and more educational detail in Appendix A: Harmony. In this menu you can scroll through your possible harmony modes by turning any of the softknobs or the data wheel. Your harmony mode selections are:

No Vocals

Just what it says. **COMP/EQ**, **MIX** and **FX** controls are valid, but you have no harmony voices.

Smooth Shift
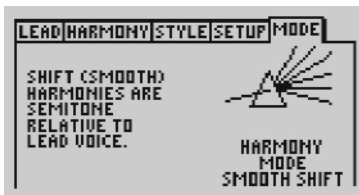
Shifts chromatic harmonies in semitones relative to the lead voice. This mode doesn't make use of VoicePrism's intelligent harmony features. Presets using Shift harmony contain unison and fixed semitone interval harmonies: they do not require key or scale information. SMOOTH SHIFT is so named because it allows harmony notes to follow the lead voice smoothly between semitones.
Great for thickening up a vocal (live, recorded, group or solo) by adding slightly detuned unison for a richer lead and octave above and below for stronger octave doubling.

Stepped Shift

Identical to SMOOTH SHIFT, except that the harmony notes snap to the next semitone instead of smoothly graduating between semitones. Thus your harmonies will be in pitch, even when your lead voice is not.
Provides pitch corrected shifted (fixed interval) harmonies.

Chordal

Chordal harmonies follow your voice to stay in tune with the chord currently being played on your keyboard. To create harmonies you must input your song's chords as they occur via a MIDI keyboard or other controller. Each chord consists of a chord root and type; for example an A major 7th chord has "A" as the root and "major 7th" as the type. CHORDAL mode is handy when you want to play a keyboard and sing without worrying too much about which harmony note goes where, as VoicePrism does all of the theoretical work for you.
Furnishes continuous harmony support on the input chord and intelligently shifts the harmony intervals to stay within range of the lead voice melody.

Smooth Scale

Scalic harmonies require key and scale information to be input at the beginning of the song in order to create harmonies. Western songs are usually crafted around a single scale, which is completely described by its key ("A") and the scale ("minor"). You can customize your scale to create different harmony notes for each input note using the SETUP menu. SMOOTH SCALE is so named because it allows harmony notes to follow "in between" bends through semitones, creating a natural, Blues-style delivery.
This is the harmony mode where VoicePrism will make you shine, but a bit of effort is required to pick out the correct key and scale.

Key Point:
if you don't find that the scales we have created fit your needs, you can create your own custom scales on the vocal setup page.

Step Scale

The harmonies are based on key and scale, same as SMOOTH SCALE, but are pitch corrected. Instead of gliding gradually from note to note, as in SMOOTH SCALE, the harmony voices will move to the next correct note based on the pitch of the lead voice. This means your harmony voices will always be on pitch, even when your lead voice is between semitones.
Provides pitch-corrected scalic harmonies.

Notes/Manual

Harmony pitches are determined by incoming MIDI notes. You can sing or talk, and as long as a MIDI note is held down, your vocal will be mimicked, pitched at those notes. NOTES mode allows you to be very creative at producing harmonies. Harmony voices can change pitches while you sing a held note or vice versa. You can also sing an ascending arpeggio with harmonies descending. You can make the harmony voices sound more natural by adjusting *ATTACK*, *RELEASE* and *VELOCITY* in the SETUP menu. For details on how to set up MIDI channels, do MIDI dumps and so on, read the **UTILITY** section or press the **UTILITY** button and toggle to the MIDI menu tabs. MIDI CC's are listed in Appendix B: MIDI.
Creates harmonies based on a single MIDI channel.

Notes/Manual 4CH

Each harmony voice is controlled by a single note on a single MIDI channel. A variation of NOTES mode, NOTES 4CH overcomes the automatic voice allocation that causes panned voices to jump back and forth in the stereo field when playing chords. When you want ultimate control of your harmonies to weave melodies and countermelodies around your lead voice, this is the harmony mode of choice. For 4 channel mode, VoicePrism uses your selected input MIDI channel (**UTILITY** button, MIDI menu) and the next 3 consecutive channels, wrapping at 16. For example, if your selected channel is 15, then in 4 channel mode it will use channels 15, 16, 1, 2. Be cautious; dedicated MIDI channels, like channel 10 for drums, can be inadvertently assigned as a harmony voice channel if you select 7, 8, 9 or 10 as your MIDI input channel.
Gives each harmony voice a separate channel for MIDI control.

EFFECTS BUTTON

As with the **VOCALS** button, the **EFFECTS** button allows you to modify two post-effects blocks (FX for short). You can select effects and adjust their parameters in the menu tabs for FX1 and FX2. The input menu tabs allow you to set lead, harmony or auxiliary inputs to different effects or send FX1 as an input to FX2. The effects path and effects are displayed on the LCD as part of the preset information.

FX1/ FX2

These menu tabs let you select an effect from a list of possible effects and modify its parameters. Click any of the softknobs to display the effects list, or scroll through the effects using the data wheel. Effects and their adjustable parameters are listed below, note that Reverbs are only available through the FX2 menu.

Chorus

The Chorus effect is created by a short delay that modulates the input audio to produce variations in pitch. These pitch changes are blended back into the original sound to make a single instrument sound like there are actually several identical instruments being played simultaneously.
Applications range from instrumental to vocal - usually to obtain a thickened, more textured sound.

DEPTH (0ms - 10ms): adjusts modulation depth in milliseconds. Also known as intensity.
RATE (0.05Hz - 5Hz): modifies the modulation speed of the Chorus.

Flanger

The flanger effect is produced by creating a short delay which is modulated to produce variations in pitch - the difference between chorus and flanging is the feedback of the flanger and the duration of the modulated delay.
Flanging has that characteristic "whooshing" sound, similar to a jet plane flying overhead.

DEPTH (0ms - 10ms): adjusts the modulation depth or intensity of the flanger.
RATE (0.05Hz - 5Hz): the modulation speed of the flanger.
REGEN (0% - 99%): short for "regeneration", controls the feedback amount of the flanger.

Mono Delay

An effect that delays the signal for a specific time.
Mono Delay is used to produce various echo-like effects.

DELAY (0ms - 399ms): sets the delay time.
REGEN (0 - 99%): sets the number of echoes heard after the original sound. At 99% you will hear a continuous loop that will build to bizarre levels.

Key Point:
FX tend to sound "wetter" through headphones.

Key Point:
be careful using flange heavily in live performances -- it can cause feedback.

Key Point:
try to pick vocal effects that are complimentary to those of the instruments.

Stereo Delay

The stereo delay effect creates two separate delays; one in the left channel and one in the right.
Stereo delay allows for greater delay control in each channel of the stereo mix.

LEFT DELAY (0 - 199ms): sets the delay time of the left channel.
LEFT REGEN (0 - 99%): adjusts the feedback of the left channel.
RIGHT DELAY (0 - 199ms): sets the delay time of the right channel.
RIGHT REGEN (0 - 99%): adjusts the feedback of the right channel.

Key Point:
Be careful of your relative level settings when adding FX. It's a good practice to listen to the modified sound on its own AND within the mix.

Ping Pong Delay

As the name implies, ping-pong delay produces an echo which bounces between the left and right channels of a stereo signal.
Ping pong delay is used as a particular "back and forth" effect on instruments & vocals.

LEFT DELAY (0 - 199ms): sets the left delay time.
RIGHT OFFSET (0 - 199ms): sets the right delay time.
REGEN (0 - 99%): sets the regeneration amount from left to right.

Mono Tape Delay

Before digital audio technology, time delay was achieved by feeding the signal from the playback head of a tape recorder to its own record head.
Tape delay is used to re-create this particular style of effect on instruments or vocals.

DELAY (0ms - 799ms): sets the delay time.
REGEN (0 - 99%): sets the regeneration amount.

Stereo Tape Delay

This variant of the classic tape delay produces this effect through both stereo channels, with separate time and feedback for each channel.
Stereo tape delay allows broader control of the effect to attain more complex delay variations.

LEFT DELAY (0 - 399ms): sets the delay time of the left channel.
LEFT REGEN (0 - 99%): adjusts the feedback of the left channel.
RIGHT DELAY (0 - 399ms): sets the delay time of the right channel.
RIGHT REGEN (0 - 99%): adjusts the feedback of the right channel.

Ping Pong Tape Delay

An effect produced when the sound produced by tape delay reverberating alternately between left & right channels of the stereo field.
Like Ping Pong Delay - but with longer delay times and rolled off high end to mimic the classic tape delay sound.

LEFT DELAY (0 - 399ms): sets the delay time of the left channel.
RIGHT OFFSET (0 - 399ms): sets the delay time of the right channel.
REGEN (0 - 99%): sets the amount of regeneration.

Studio Reverb

Gives your sound the feel of a small, bright room where the higher frequencies are highlighted, useful for increasing clarity in live spaces where those high frequencies get lost.
Small, bright room, best used with a short delay.

PRE-DELAY (0 - 199ms): sets the length of time before the reverb begins.
DECAY TIME (0.1 - 1sec): sets the decay (audible echo) duration.
HIGH DAMP (0 - 9): attenuates undesirable high frequencies.
ROLLOFF (500Hz - flat): helps get rid of booming, mid-range tones.

Chamber Reverb

A larger version of the studio, this reverb works well for medium tempo songs.
Larger bright room for medium tempo songs.

PRE-DELAY (0 - 199ms): sets the length of time before the reverb begins.
DECAY TIME (0.2 - 2sec): sets the decay (audible echo) duration.
HIGH DAMP (0 - 9): attenuates undesirable high frequencies.
ROLLOFF (500Hz - flat): helps get rid of booming, mid-range tones.

Club Reverb

Sounds like the acoustics you would get in a club, without the cover charge.
Imitates the reverb you'd get playing live at a club.

PRE-DELAY (0 - 199ms): sets the length of time before the reverb begins.
DECAY TIME (0.5 - 3sec): sets the decay (audible echo) duration.
HIGH DAMP (0 - 9): attenuates undesirable high frequencies.
ROLLOFF (500Hz - flat): helps get rid of booming, mid-range tones.

Hall Reverb

Provides the natural reverberations you would get in a performance hall, good for slower songs and a long delay time setting.
Provides concert hall acoustics.

PRE-DELAY (0 - 199ms): sets the length of time before the reverb begins.
DECAY TIME (1.5 - 4sec): sets the decay (audible echo) duration.
HIGH DAMP (0 - 9): attenuates undesirable high frequencies.
ROLLOFF (500Hz - flat): helps get rid of booming, mid-range tones.

Arena Reverb

Provides large, canyon-type reverberations for a "spacey" texture.
Gives your audio that big-arena feel.

PRE-DELAY (0 - 199ms): sets the length of time before the reverb begins.
DECAY TIME (2 - 20sec): sets the decay (audible echo) time.
HIGH DAMP (0 - 9): attenuates undesirable high frequencies.
ROLLOFF (500Hz - flat): helps get rid of booming, mid-range tones.

Key Point: reverb effects are only available in FX2.

Key Point: check your reverb levels by listening and then abruptly shutting the reverb off. This gives you a better idea of how much effect you're adding

FX1 AND FX2 INPUTS

This menu allows you to choose which input is routed to each of the two FX blocks. Use the tab keys to go back and forth between the two menus and the softknobs to set the input voices and levels to FX1 and FX2. The FX2 INPUTS menu has an additional level which allows you to set the output of FX1 as an input to FX2. When the level is set to anything other than off, the audio path sketch on the preset will show a line from that voice to that effect. If you have an auxiliary source you can set its relative wet levels in these menu tabs as well.

The level setting range is the same for all input sources: Off, -30dB to 0db.

Please note that output levels can be adjusted in the pages under the **MIX** button.

Key Point:
to get any effect sounds, the input levels must be configured properly.

COMPRESSOR/EQ BUTTON

Key Point:
when working with both EQ's in series use complimentary settings to avoid boosting a frequency you're cutting somewhere else.

The **COMP/EQ** button accesses the menus related to the compressor/gate, equalizers, and the input assignments thereof. These dynamics processors help clean up your audio signal by smoothing volume levels, cutting unwanted frequencies and removing background noise.

ASSIGN

The lead and harmony voices and auxiliary input can be assigned to combinations of the one compressor/gate and the two EQ's, reflected in the displayed audio path. Twisting the softknobs allows you to assign either the lead voice, the harmony voice or none of the voices to the dynamics. *COMP/NG* can take one or both voices, or no voices; the EQ's can take one voice each. The voice assignment changes are reflected in the audio path diagram shown on the LCD.
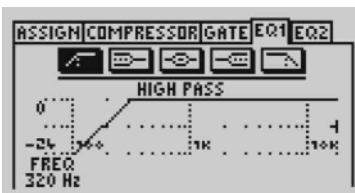
EQ1/EQ2

Key Point:
infinitesimal increases in EQ and compressor levels can produce dramatic results.

These menus set the filter type and parameters for each of the EQ's. Turning the data wheel or clicking the softknobs will scroll you through the different types of filters, twisting the softknobs will alter the parameters shown on the LCD screen.

High Pass
Also called a low-cut filter, this removes frequencies below a selected cutoff point.
Useful for eliminating rumble.

FREQUENCY (80Hz - 16.3kHz): sets the cutoff frequency of the high pass filter
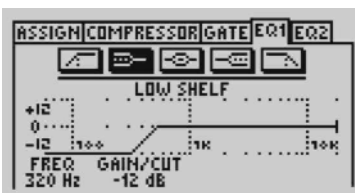
Low Shelf
The EQ response rises or falls from the cutoff frequency until reaching the shelf frequency, after which the curve remains flat.
Good for applying bass boost.

FREQUENCY (80Hz - 16.3kHz): sets the cutoff frequency of the low shelf filter
GAIN/CUT (-12dB - 12dB): sets the gain or the cut of the shelf
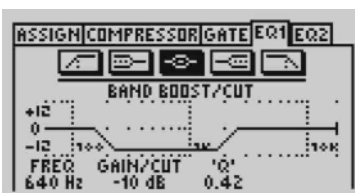
Band Boost/Cut
Isolates a band of frequencies without altering upper or lower frequencies, enabling you to boost or cut the selected range.
Useful for "notching out" problem frequencies.

FREQUENCY (80Hz - 16.3kHz): sets the cutoff frequency
GAIN/CUT (-12dB - 12dB): sets the gain or attenuation of the selected frequencies
"Q" (.1 - 10): sets the width (range) around the selected frequency to make a band

High Shelf

Opposite to low shelf, the EQ response begins to rise or fall from the cutoff frequency until reaching the shelf frequency, at which point the curve becomes flat. *Nice for adding that high frequency "sheen".*

FREQUENCY (80Hz - 16.3kHz): sets the cutoff frequency
GAIN/CUT (-12dB - 12dB): sets the gain or the cut of the shelf

Low Pass

Also known as high-cut, this filter kills everything above your selected frequency. *Removes unwanted high end from voice/instruments.*
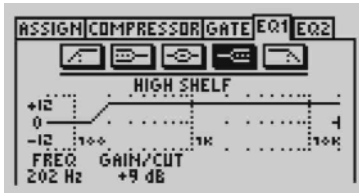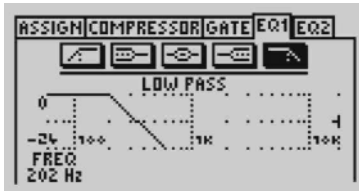
FREQUENCY (80Hz - 16.3kHz): sets the cutoff frequency of the high pass filter

COMPRESSOR

Compression helps keep your vocals "in the pocket" of your mix, attenuating the louder parts so they don't drown out the quieter portions: sort of like a sonic shock absorber that smooths out the bumps in your sound. This can be a useful studio tool for leveling out small volume changes while recording tracks, such as when the singer is moving relative to the microphone. Once recorded, compression can be used as a mixing tool to balance multiple tracks or adjust the dynamic range of a single track.

Key Point:
you'll need to reduce your levels in the mix screen once you've applied compression, as the compressor increases your volume.

Compressors attenuate the loudness of your signal over a specific threshold level by a desired ratio. For example, if you set your threshold to -20dB and the ratio to 2:1, an input signal of -16dB (4dB over the threshold) would be reduced to a -18dB output(2 dB over the threshold). Higher ratios (10:1, 20:1) put a hard limit on your signal, keeping the level very close to your threshold.

Attack and release control the compressor's response in terms of the time it takes for the compressor to ramp up to full activation or ramp down to deactivate. A longer response time helps promote a smooth, flowing sound, while a shorter duration will shift faster to accommodate quick level changes. The attack time is usually shorter than the release time.

The LCD displays the voices assigned to the compressor (lead, harmony, both or none) as well as the softknob controls.

THRESHOLD (-60dB - 0dB): sets the level at which the compressor will start compressing.
RATIO (1:1 - 20:1): controls attenuation ratio for the compressor. (1:1 = no attenuation)
ATTACK RATE (1ms - 40ms): sets the duration to ramp up to full activation.
RELEASE RATE (1ms - 3000ms): sets the duration to ramp down to deactivation.

NOISE GATE

The noise gate works by cutting any sound below your set threshold level, an example would be the removal of hiss from high compressor settings. Like the compressor, this effect is not instantaneous and the duration needed to ramp up or ramp down is set using the attack and release controls. The *ATTACK* is the time needed to restore the signal once the level is above the threshold: *RELEASE* is the time required for the removal of a a sound below the threshold.

The LCD displays the voices assigned to the gate (lead, harmony, none or both) and the softknob controls.

THRESHOLD (-70dB - 0dB): controls the level below which all sounds are removed.

ATTACK (1ms - 40ms): sets how long it takes for the sound to fall silent.

RELEASE (10ms - 3000ms): sets how long it takes for the sound to reappear.

MIX BUTTON

The menus under the mix button set the mix levels for the current preset. So if there is a particular preset where you want to have the lead voice up close while the harmonies sing in the background, you can set it here and save it in that preset. This is a great way to set your levels if you intend to use the preset in **STEP** mode. Like every other change, your modifications will be lost unless you go through the **STORE** function to save the altered preset.

MAIN MIX

This menu allows you to set the levels for the lead voice, the combined harmony voices and the output from the effect blocks.

LEAD LEVEL (Off, -30dB - 0db):sets the level of your lead voice.
HARMONY LEVEL (Off, -30dB - 0dB): sets the level of your combined harmony voices.
EFFECT 1 LEVEL (Off, -30dB - 0dB): sets level for effect block 1.
EFFECT 2 LEVEL (Off, -30dB - 0dB): sets level for effect block 2.

VOICE MIX

This is where you can set levels for your individual harmony voices with the softknobs. Click the softknob to set the voice On/Off. If the *VOICE* is on, twisting the softknob sets the *LEVEL*, ranging from OFF to 0dB. Be aware that *VOICE* ON/OFF is different from *LEVEL* ON/OFF, as a harmony voice set to OFF can still have a *LEVEL* assigned to it. The little faces above each knob give a visual indicator of the voice's gender characteristics while the curved lines show relative loudness and panning.

STEP BUTTON

AMAZING GRACE
SONG 1   PRESET: AMEN CHOIR

STEP	PRESET	ROOT	CHORD
1	32	G	MAJ
2	32	C	MAJ
3	32	G	MAJ
4	32	D	MAJ

Key Point:
configure your footswitch buttons in the menu under the utility button.

Key Point:
a delta dot appears in the bottom right corner of the numerical display to indicate if you've modified but not saved the step sequence.

The step feature allows you to control your VoicePrism with a footswitch. This is helpful if you do not use a MIDI sequencer during performances. You can pre-program a sequence of events and step forwards and backwards through them as needed.

This feature also allows you to remain in one preset throughout a sequence of footswitch steps while changing only the musical information, i.e. chord root and type in chordal presets and key and scale in scalic presets.

Step mode is best used with a three button footswitch. This will allow you to step forward and back in the sequence as well as muting the harmonies or bypassing when necessary.

To create a sequence of steps, first load a blank song using the data wheel. You add new steps by pressing any softknob and selecting Insert. This creates a new line on which you can set a preset to load at that step.

Turning the softknob below the Preset parameter selects presets. Notice that additional softknob parameters become visible in certain presets; this is because the VoicePrism recognizes the type of preset and allows you to change the musical information required for your song. Adjust the musical information softknobs to create a number of chords to step through in a Chordal preset or to introduce key changes in a Scale preset.

Once you have created a number of steps you can use the Step softknob to locate and edit individual steps that require further editing or deletion. Make sure to press Store periodically during the process to save the sequence you've created.

BROWSER BUTTONS

The browser buttons allow you to isolate only those presets that fall within one harmony mode. This is very useful when you require only a scale preset, for example, and you don't want to select all the intermediate manual, chordal, shift and effects presets during your search. The browser is activated when one of the harmony style LED's in the browser row is lit. When you turn the data wheel, the numbers in the numeric preset display will not increment sequentially, but rather will jump, skipping those presets which aren't applicable.

SHIFT: fixed interval, pitch shifting presets.

SCALE: presets using intelligent key and scale-based shifting.

MANUAL (Notes): presets that require a MIDI keyboard or controller to create harmony.

CHORDS: for presets that intelligently interpret chord information from a MIDI keyboard or controller to create harmonies that follow your lead voice.

EFFECTS: for presets without harmony voices.

OTHER BUTTONS

These buttons are located on the front panel of the VoicePrism: **BYPASS, HARMONY, UTILITY, HELP, 48V, MIC ON, PREVIEW** and **STORE**.

BYPASS BUTTON

Pressing **BYPASS** bypasses the unit so that your input signal goes around all VoicePrism's processing stages to the outputs.

HARMONY BUTTON

This turns the harmonies Off/On without altering the lead voice or any dynamics (like pitch, compressor, equalizer and effects blocks).

UTILITY BUTTON

The **UTILITY** button gives you access to menus relating to the different VoicePrism utilities. This is where you set your MIDI channels, configure your footswitch, adjust your LCD contrast, modify your audio parameters and much more.

MIDI CONFIGURATION
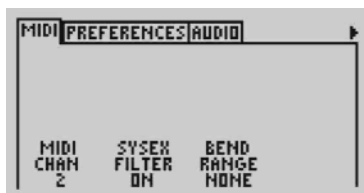
This menu tab is where you can set your basic MIDI preferences with the softknobs.

MIDI CHAN (1-16): set the MIDI In channel VoicePrism will "listen" to for keyboard and preset input. Initially defaults to MIDI channel 1.

SYSEX FILTER (Off/On): activates the SysEx filter. Turning the SysEx filter ᴏɴ will cause VoicePrism to ignore any incoming MIDI SysEx messages.

BEND RANGE (None - ±12 semitones): Sets how high or low your voice will be shifted when moving the pitch bend wheel on your keyboard.

PREFERENCES
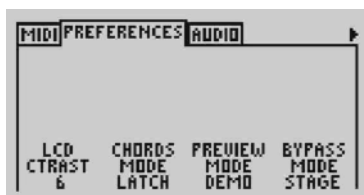
Here is where you can configure your VoicePrism to your own personal taste.

LCD CONTRAST (1-8): Increasing the setting with the softknob increases the level of contrast.

CHORDS MODE (Latch/Moment): For presets using the chordal harmony mode, if you want harmony notes only when MIDI notes are being received, select moment (momentary). Selecting latch allows harmonies to continue after MIDI notes end.

PREVIEW MODE (Cue/Demo): Select ᴅᴇᴍᴏ if you want to put VoicePrism through its paces with a stored audio file when you press the **PREVIEW** button. We created this function so you can hear VoicePrism do its thing without having to sing in front of an entire storeful of people. Selecting ᴄᴜᴇ will cause VoicePrism to give you a cue note for the selected preset when you press the **PREVIEW** button.

BYPASS MODE (Stage/Studio): Chose ꜱᴛᴀɢᴇ, and your dry input will be at the same volume level as your wet (processed) sound (when the **LEVEL KNOBS** are at unity gain). When VoicePrism is bypassed with the ꜱᴛᴜᴅɪᴏ setting you will get the best quality dry output possible. CAUTION: There is a significant volume increase between ꜱᴛᴜᴅɪᴏ and ꜱᴛᴀɢᴇ settings.
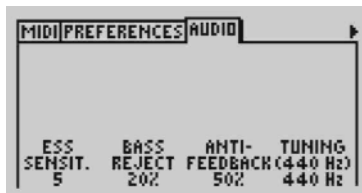
AUDIO

The AUDIO menu allows you to set the following overall audio processing parameters:

ESS SENSITIVITY (Min, 1-9, Max): this raises and lowers the frequency threshold at which an "ess" sound is passed dry or harmonized. At high settings, "ess" sounds will be pitch shifted, potentially causing a grainy "ess" sound but also yielding superior pitch tracking. At low settings, your "ess'es" will sound natural, but at the risk of tracking errors on some voices. *ESS SENSITIVITY* is best left at 5 (default) unless you have experience tracking errors.

ANTI-FEEDBACK (0 - 100%): tweak this setting to silence unwanted sibilants, especially from vocals. It works by lowering the level of the high frequencies that initially create the "sss" sound.

BASS REJECT (0% - 100%): reduces the effect of low frequency leakage into the microphone. Tweak this if your bass player is a little to loud and causing weird triggering effects.

TUNING (440Hz) (-64c - +63c): sets the offset from the tuning frequency of 440Hz, or the "A" note just above middle "C" ("C", for those of you wondering, is 261.63Hz). Use this to change VoicePrism's 440Hz reference to match a piano that has shifted pitch but is still in tune relative to itself. This feature is also helpful when working with tracks recorded using guitars tuned by ear, rather than by machine, allowing you to match the guitar's more liberal interpretation of the reference A note.

FOOTSWITCH

You can configure the buttons for a one or three button footswitch by twisting the softknob under the button description. VoicePrism is factory configured for a one button footswitch, the Right button which is initially set to MUT MO and the Left and Middle buttons are set to NONE. If you change from a single button footswitch to a three button footswitch, you can set useful functions to the Left and Middle buttons; if you go back to a one button footswitch, remember to set the Left and Middle buttons back to NONE. Warning: if the Left and Middle buttons are not set to NONE with a one button footswitch, pressing the footswitch button will cause VoicePrism to behave unpredictably.

A more detailed description of each setting is shown on the LCD. Configuration choices are:

NONE: pressing the footswitch button does nothing. For a one button footswitch the Middle and Left buttons must be set to NONE.

MUTE MO : Harmony Mute (Momentary) - activates the harmony voices only while the button is pressed.

MUTE LC : Harmony Mute (Latched) - mutes the harmonies until the button is pressed again.

BYP MO : Bypass (Momentary) - bypasses VoicePrism while the button is pressed.

BYP LC: Bypassed (Latched) - bypasses VoicePrism until the button is pressed again.

SONG + : Next Song Step - increments to the next preset defined within a song.

SONG - : Previous Song Step - decrements to the previous preset defined within a song

PRESET + : Next Preset - increments numerically to the next preset (Preset 25 to Preset 26)

PRESET - : Previous Preset - decrements numerically to the previous preset (Preset 26 to Preset 25)

GLOBAL

GLOBAL mode allows you to retain a single set of dynamics, EQ and effect types while you load different vocal harmony presets. This is useful when you are satisfied with the effect processing in the current preset but you want to change harmony modes or humanizing styles that are saved with different presets. When GLOBAL mode is turned ON the FX lock icon will appear in the upper right hand corner of all presets to show that the dynamics, EQ and effect types of the preset are overridden by the effects of the *GLOBAL PRESET*. Choosing a *GLOBAL PRESET* applies only the above mentioned features (dynamics, Eq and effects) of that preset to all presets.

MIDI DUMP

Use the softknobs to set MIDI dump parameters. You can also send dumped information back to the unit in order to restore previously dumped presets or songs.

DUMP PRESET: twist the softknob to select individual or all presets for dumping.
DUMP SONG: turn the softknob to select individual or all songs to be dumped.
Clicking the softknob brings up a menu allowing you to either CANCEL or EXECUTE the MIDI dump. Twist the softknob to highlight your choice and click to select.

RESTORE/ERASE

Use the softknobs to select presets and songs to be restored to factory settings. This is also where you can delete step mode sequences.
Clicking the softknob brings up a menu allowing you to either CANCEL or EXECUTE the MIDI dump. Twist the softknob to highlight an individual selection or choose all and click to confirm.

VERSION
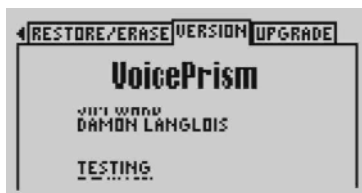
Displays the current version of the software including details regarding its creators and contributors.

UPGRADE

This gives the controls needed to input the three digit code that will upgrade your software in the future. Full instructions will be supplied with any software upgrade.

HELP BUTTON
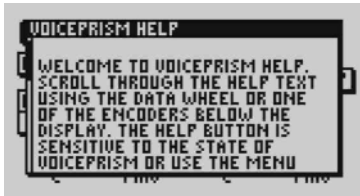
Pressing this button displays context sensitive help on the LCD. Use the data wheel to scroll the text. Pressing **HELP** again will remove the help window. Pressing the left and right tab arrows will move you between help topics.

48V BUTTON

Turns 48V, phantom power, On/Off. Phantom power provides electrical power to your condenser microphones through a standard microphone audio cable. There is a brief (two second) delay when phantom power is engaged. Most condenser microphones are designed to take +48VDC phantom power, but be sure to confirm the requirements for your device before using it with VoicePrism.

Phantom power is usually safe to use with dynamic microphones but unbalanced microphones and other electronic equipment can short out and get damaged, so please check the manufacturer's specifications.

MIC ON BUTTON

When this button is lit the microphone input is your lead voice audio source, otherwise the line input from the 1/4" jacks on the back is the default audio source. Push **MIC ON** when your microphone is turned on and everything should be working but for some reason you just aren't getting an audio input.

PREVIEW BUTTON

PREVIEW has two completely separate functions, depending on what mode you've selected under *PREVIEW MODE* in the PREFERENCES menu tab, which you access by pressing the **UTILITY** button. If demo is selected, pressing the preview button will play a short vocal demonstration that shows off VoicePrism's features. The LCD shows the preset name, a short description of the preset and a sound clip. These audio samples are provided so you can hear and tour VoicePrism without having to sing into it yourself.

Selecting CUE and pressing **PREVIEW** will provide a starting note that is sensitive to the key or root chord of the current preset.

UTILITY button -- PREFERENCES menu tab -- *PREVIEW MODE* softknob -- select CUE/DEMO.

Key Point:
your cue note can come on at full volume, depending on your Level and Input knob settings.

STORE BUTTON

🔑 **Key Point:**
press the Store To softknob
to store the preset.

Pressing the **STORE** button gives you two menu tabs, STORE and PARAMETERS COPY.

STORE

```
STORE COPY PARAMETERS
AMEN CHOIR
   STORE TO AMEN CHOIR

      --------NAME--------
STORE TO CURSOR LETTER   EDIT
   32    < >      A     INSERT
```

This menu provides the controls needed to rename, select the storage location and to store presets, or songs if you're in step mode.
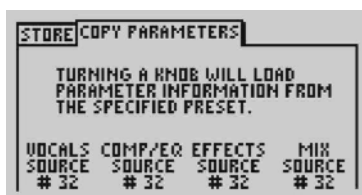
STORE TO: Click the softknob to store the preset, which automatically defaults to the current preset. Twisting this softknob or the data wheel alters the storage preset number while the preset name is displayed on the LCD.
CURSOR: Twisting the softknob moves the cursor through the letters of the name.
LETTER: Turn the softknob to change the currently highlighted letter, clicking the softknob moves the cursor to the next letter.
EDIT: Toggles between INSERT and DELETE. INSERT puts a blank space into the highlighted location, which you can modify using the *LETTER* softknob, DELETE removes the highlighted letter or space.

COPY PARAMETERS

```
STORE COPY PARAMETERS
   TURNING A KNOB WILL LOAD
   PARAMETER INFORMATION FROM
   THE SPECIFIED PRESET.

VOCALS COMP/EQ EFFECTS   MIX
SOURCE SOURCE SOURCE   SOURCE
 # 32   # 32   # 32     # 32
```

COPY PARAMETERS is a useful, time saving feature when you want to copy customized EQ, dynamics, vocal, effect or mix settings from another preset to the current preset. Use the softknobs to change the preset parameter from its default (the current preset) to the preset whose settings you want to copy. This menu is live; any alterations will be instantaneously implemented and the audio will change accordingly, but no change is permanent unless saved.

VOCALS SOURCE: Takes all the **VOCALS** information, meaning all those settings you access by pushing the **VOCALS** button, from the preset shown and configures the current preset **VOCALS** identically.
DYNAMICS SOURCE: Takes information involving **COMP/EQ** from the preset shown and applies it to the current preset.
EFFECTS SOURCE: Takes all information regarding **EFFECTS** from the listed preset and copies it to the current preset.
MIX SOURCE: Takes the **MIX** settings from the listed preset and applies them to the current preset.

WRAP-UP

Thank you for purchasing VoicePrism, and we hope that this manual has been a useful tool in helping you get the most from our product. Our goal is to continue to provide you with revolutionary voice processing products.

The TC-Helicon VoicePrism Plus Expansion Card will soon be available for assembly into your VoicePrism unit. It will feature:
• IVL VocalModeling|Lead Voice Processing
• TC Electronic | Comp/EQ and Effects
• 24bit AES/EBU | S/PDIF Digital I/O

Bookmark our website at www.tchelicon.com and check it often to learn more about the VoicePrism Expansion Card and other upcoming products. You will also find a growing number of audio clips, FAQ's and a host of other helpful information.

Get free stuff! Send us an audio file or recording of your interesting and unique VoicePrism output. Every month we select our favourites, and send t-shirts or other TC-Helicon merchandise to those creative individuals as well as putting anything particularly good up on our website for all to enjoy. We are always looking for beta testers and other advisors, so please feel free to introduce yourself and make comments.

TC-Helicon Vocal Technologies
www.tc-helicon.com
info@tc-helicon.com

APPENDIX A: HARMONY

Here's where we can go into a little more depth about harmonies, for those of you who would like to pick up a few extra tips on how to sound better or just impress people at cocktail parties. We've tried to keep it practical, with a bit more of a description of VoicePrism's harmony types.

VoicePrism has eight different harmony modes, which simplify into five unique methods of creating harmony. Once we get into describing the more complex harmony modes, we'll be showing you examples based on the C major scale. If you are unfamiliar with this scale we've shown C major here.

"NONE"

No harmony voices, just compressor, EQ and effects. Not really harmony but we've mentioned it for the sake of completeness.

"NOTES" (MANUAL) HARMONY MODES

You provide VoicePrism with MIDI note information to determine the pitch of the harmony voices. A copy of the input audio is then shifted to that pitch. VoicePrism has two "Manual/Notes" harmony modes, single and 4 channel (NOTES4CH). NOTES4CH allows you to send 4 channels of MIDI information, one for each individual harmony voice. This is the most direct and flexible way of creating harmonies, allowing you to weave complex melodies and counter harmonies irrespective of your lead vocal.

"SHIFT" HARMONY MODES

Also known as "Fixed Interval", this takes the pitch of your lead voice and creates harmonies a set number of semitones away, based on that pitch. The method of creating harmonies, using a fixed number of semitones relative to an input note or pitch, is called chromatic harmony, the theory of which we'll go into later. We consider shifting to be non-intelligent harmony because VoicePrism is not set to any particular key or scale. These are pure, parallel harmonies. The most common shift harmony voices are the 5th (7 semitones) and octave (12 semitones), ranging from two octaves below the input to two octaves above the input pitch.

Black = lead
Gray = harmony
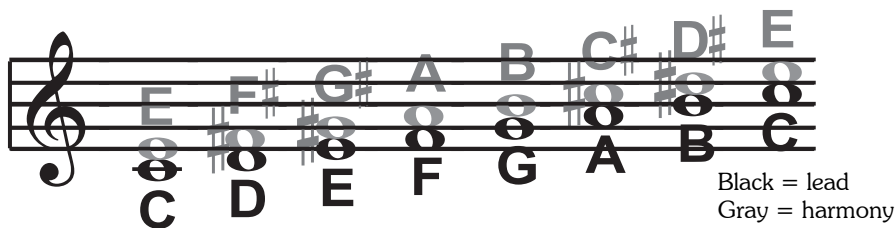
The C Major scale, showing third above chromatic scale harmony, as used in VoicePrism's SMOOTH SHIFT and STEPPED SHIFT harmony modes.

VoicePrism has two harmony modes based on this type of harmony, STEPPED SHIFT and SMOOTH SHIFT. SMOOTH SHIFT allows the harmony voices to follow your input pitch, errors and all, whereas STEPPED SHIFT jumps to the next appropriate semitone, kind of like pitch correction on the shifted voice.

"CHORDAL" (CHORD) HARMONY MODE

Chordal harmonies take your chord information to create intelligent, diatonic harmonies based on your voice. To make "Chordal" harmonies, VoicePrism requires you to input different chord information via MIDI for *every* chord in the song. Chord information consists of the chord root, which determines the octave setting, and the chord type, which sets the 3rd, 5th and sometimes 7th above voices (or the 4th, 6th and sometimes 8th below voices). Chordal harmonies are "intelligent" because they decipher the chord you're playing and the note you're singing to produce musically pleasing harmony.

The subsequent illustration shows the harmony notes for the C major scale with a voicing selection of a C major chord and a single "third above" harmony voice.
Root: C 3rd: E 5th: G

Black = lead
Gray = harmony

The C Major scale, showing third above diatonic chordal harmony, as used in VoicePrism's CHORDS harmony mode.

You might have noticed that the harmony notes cover more than one input note, or that each input note didn't have a unique harmony note. For instance, C and D both have E as the 3rd above, E and F share G, and so on. This gives a more stepped sound to the harmony as the changes are both greater in magnitude and less frequent than the previously discussed shift type harmonies, for instance.

The following lists the chords for an input note of "C":

Maj	C	E	G	
Maj6	C	E	G	A
Maj7	C	E	G	B
Maj7sus4	C	F	G	B
Min	C	Eb	G	
Min6	C	Eb	G	A
Min7	C	Eb	G	Bb
Min7b5	C	Eb	Gb	Bb
Dim	C	Eb	Gb	
Dim7	C	Eb	Gb	Bbb (equivalent to A)
Dom7,	C	E	G	Bb
Dom7b5,	C	E	Gb	Bb
Aug	C	E	G#	
Aug7	C	E	G#	Bb
Sus	C	F	G	
Sus2	C	D	G	
Sus7	C	F	G	Bb

"SCALIC" (SCALE) HARMONY MODES

"Scalic" harmonies use key and scale information to create musically correct, diatonic harmonies. Most popular music uses a single scale, so you only have to input the information at the beginning of your song. "Scalic" harmonies are more dynamic than the chordal harmonies because there are unique harmony notes for each input note. The subsequent illustration shows the harmony notes for the C major scale with a voicing selection of a C major scale and a single "third above" harmony voice.

Black = lead
Gray = harmony

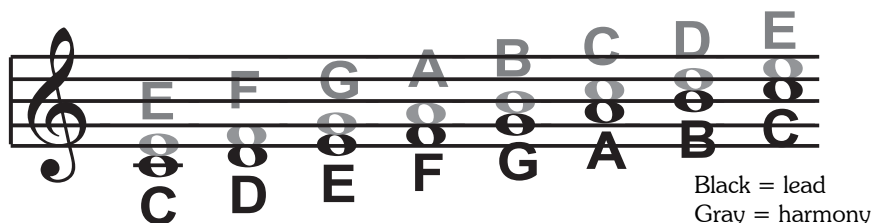The C Major scale, showing third above diatonic scalic harmony, as used in VoicePrism's STEPPED SCALE and SMOOTH SCALE harmony modes.

You can see that the "Scalic" harmonies are intelligent and closely follow your lead voice for a tighter sound.

VoicePrism has two harmony modes based on this type of harmony, STEPPED SCALE and SMOOTH SCALE. SMOOTH SCALE allows the harmony voices to follow your input pitch, errors and all, whereas STEPPED SCALE jumps to the next scalic harmony note, kind of like pitch correction on the harmony voice.

VoicePrism has five preprogrammed scales: three major, three minor and one custom. Use the following process if you truly want to create a custom scale, to view the harmony notes for each and every input and harmony note for your custom harmony scale:

1.   Select a scalic preset.
2.   Press **VOCALS**
3.   Tab over to the SETUP menu
4.   Click the EDIT SCALE softknob until you have selected the input note.
5.   Twist the EDIT SCALE softknob to scroll through the different input notes.

You'll see the harmony notes change as the input note changes. This is also where you can modify the scale for any incorrect harmony voices, provided you know the input note. In the beginning it might be better to try all the scales to see if one of the other factory scales might work.

It is also tricky to pick out the key in some songs. An example is "Sweet Home Alabama". Listening, you might think this song is in the key of "D", as that's the first chord, but the harmonies actually work best in the key of "G" -- try running the song through VoicePrism to hear for yourself.

Setting the scale can also take a bit of practice: for songs centered around the third or root of the scale it might not sound like there's any noticeable differences between the three major or three minor scales. This is because your song doesn't hit any of the scale's altered notes. A melody centered around the fifth of the scale, (such as B in the key of E), highlights the differences between the scales. Try the "Sha Lala Lala ...La Tee Daa" chorus of Van Morrison's "Brown Eyed Girl" (key: E, scale: major, 3rd above voicing) with each major scale to hear the audible difference between them. For the minor scales, Santana's "Evil Ways" (key: G, scale: minor, 3rd above voicing) highlights the differences between the three minor scales.

The following table illustrates the third and fifth above for a given input note to illustrate the differences between the six different scales. "nc" means no change, in that the harmony voice will simply keep on its previous pitch until the lead voice pitch changes to a non "nc" note. For complete voicing information see our website at www.tc-helicon.com

|	Lead Voice	C	C#	D	Eb	E	F	F#	G	G#	A	Bb	B
MAJ1	3rd Above	E	nc	F	nc	G	A	nc	B	nc	C	D	D
	5th Above	G	nc	A	nc	B	C	nc	D	nc	E	F	F
MAJ2	3rd above	E	nc	F	nc	G	A	nc	C	nc	C	D	D
	5th above	G	nc	A	nc	C	C	nc	E	nc	E	F	F
MAJ3	3rd above	E	nc	F	nc	G	A	nc	Bb	nc	C	D	D
	5th above	G	nc	A	nc	Bb	C	nc	D	nc	E	F	F
MIN1	3rd above	Eb	nc	F	G	nc	Ab	nc	Bb	C	nc	D	nc
	5th above	G	nc	Ab	Bb	nc	C	nc	D	Eb	nc	F	nc
MIN2	3rd above	Eb	nc	F	G	nc	A	nc	Bb	C	C	D	nc
	5th above	G	nc	A	Bb	nc	C	nc	D	Eb	Eb	F	nc
MIN3	3rd above	Eb	nc	F	G	nc	Ab	nc	B	C	C	D	D
	5th above	G	nc	Ab	B	nc	C	nc	D	Eb	Eb	F	F

DIATONIC AND CHROMATIC: EXPLAINED
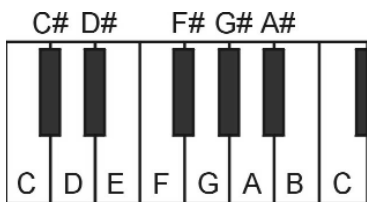
We've described scalic and chordal harmonies as diatonic, and shift harmonies as chromatic; but what do those words mean?

Look at a piano keyboard. Between middle "C" and the next "C" there are twelve keys - 7 white keys and 5 black keys. Each of those keys are pitched one semitone apart for a total of, you guessed it, 12 semitones. The chromatic scale uses all twelve semitone notes opposed to the diatonic scales. Thus there is only one chromatic scale, but 12 each of the major, minor, etc. diatonic scales (C major, C# major, D major, etc). Most of us have grown up hearing the traditional "doh ray me fah so la tee doh" diatonic scale, so that harmonies based on the diatonic scale sound correct. What does this mean, harmony-wise?

Diatonic scale harmonies can only use notes within specified scale or chord, so a "third above" harmony voice actually varies between 3 and four semitones above the lead note where the chromatic harmony would stay exactly 4 semitones (a major 3rd) above each note.

To recap: we have three different harmony modes that use chromatic or diatonic scales.
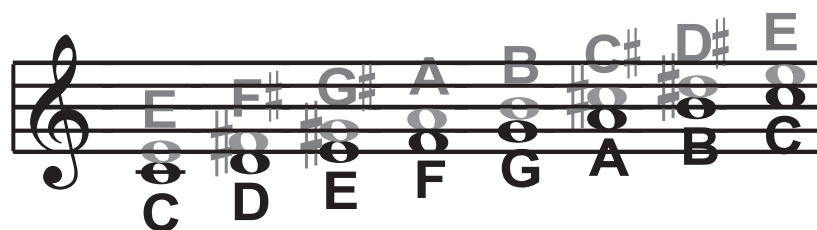
Shifting, which uses the chromatic, 12 semitone scale, changes the input pitch by a fixed number of semitones.
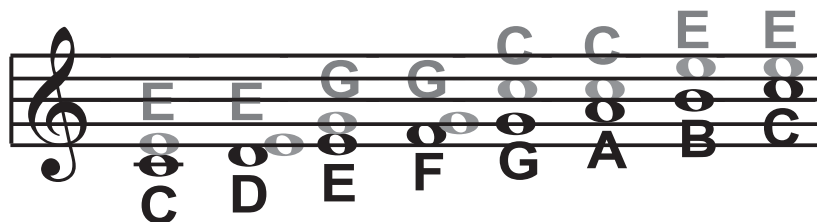
Chordal, which uses the root, third, fifth and sometimes seventh of the many diatonic scales, pitches the harmony voice to the closest note contained within the chord.
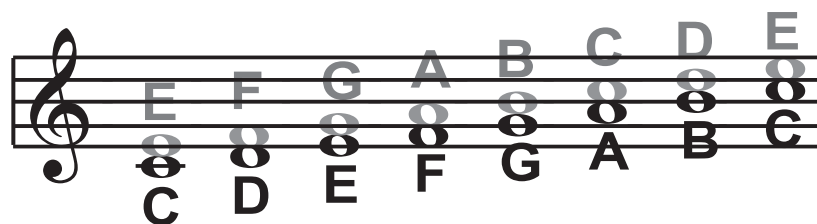
Scalic, which uses one of many diatonic scales, pitches the harmony voice to the nearest note contained within the scale.

Theory aside, the best way to get great sound is to experiment with all of VoicePrism's possible harmony modes. Not only will you develop a intuitive sonic sense of what works best where, but by investigating different permutations and combinations you could discover some delightful sounds you might otherwise have missed.

Go forth. Create harmony. Have fun.

APPENDIX B: MIDI

VOICEPRISM MIDI SPECIFICATIONS

Name	Default Value	MIDI Message(Default*)	Range of Values
Vibrato Depth	parameter setting	CC# 1	0-127 Scaling factor which is applied to the current Vibrato Depth value. A value of 0 corresponds to a scale factor of 0%, while a value of 127 corresponds to a scale factor of 100%.
Detune	parameter setting	CC# 3	0-127 Scaling factor which is applied to the current Detune Amount value.
Harmony Voice Level	parameter setting	CC# 12	0-127 Mapped to modifier
Lead Voice Level	parameter setting	CC# 13	0-127 Override same as harmony level
Effect 1 Level	parameter setting	CC# 14	0-127 Override as per other levels
Effect 2 Level	parameter setting	CC# 15	0-127 Override as per other levels
Scale Select	parameter setting	CC# 16	0-6 Selects library scale (0-5) or Custom scale (6).
Song Step Forward	none	CC# 17	0-63=off; 64-127 Forward 1 step
Song Step Backward	none	CC# 18	0-63=off; 64-127 Backward 1 step
Thickener Depth	parameter setting	CC# 19	0-50 Overrides Thickener intensity until program change is received.
Vibrato Rate	parameter setting	CC# 20	0-127 Overrides Vibrato Rate until program change is received.
Scale Mode Set Key On/Off	off	CC# 21	0-63=off; 64-127=on - Enables chord recognition for Scale type and key: A major or minor chord played in octave 1, 2, or 3 sets scale to Major or Minor 1,2 and 3. A major or minor scale in any other octave sets the scale to Custom.
Song Select		CC# 22	0-49 = selects song number (if in song mode).
Damper Pedal	off	CC# 64	Harmony Hold. Damper message will sustain last chord in before note off message.
Harmony Key / Scale select / Notes	none	Note Numbers	Chords mode - notes would trigger chord recognition. Scalic mode - if Scale Mode Set key is on the notes would trigger chord recognition for scale type and keyNotes - trigger appropriate voices.
Pitch Bend	0	Pitch Bender	User must be able to select range in MIDI Utilities Window from +/- 0 to +/- 12 this is a Global control
Program Change		Program Change	0-127
MIDI Channel	parameter setting	none	1-16 Global MIDI channel for all presets, CC's and note information
Dump Program	none	none	MIDI Utility Function
Dump Song	none	none	MIDI Utility Function
Dump All	none	none	MIDI Utility Function
Load Program	none	none	Loads program into selected preset but does not write it in until the user saves the preset.
Load Song	none	none	Loads song into selected song but does not write it until the user saves the song.
Load All	none	none	MIDI Utility Function
Load OS	none	none	MIDI Utility Function

MIDI IMPLEMENTATION

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1	1	memorized
	Changed	1-16	1-16	memorized
Mode	Default	X	Mode 3	
	Messages	X	X	
	Altered	********		
Note Number	true Voice	X	0-127	Chord Root and type, Key and Scale
			24-96	Notes mode
Velocity	Note ON	X	O	
	Note Off	X	X	
After Touch	Polyphonic (Key's)	X	X	
	Monophonic(Channel)	X	X	
Pitch Bender		X	O	Up to +/- 12 semitones (configurable)
Control Change	1	X	O	Vibrato Depth
	3	X	O	Detune
	12	X	O	Harmony Level
	13	X	O	Lead Level
	14	X	O	Effect 1 Level
	15	X	O	Effect 2 Level
	16	X	O	Key & Harmony Select
	17	X	O	Song Step Forward
	18	X	O	Song Step Backward
	19	X	O	Thickener Depth
	20	X	O	Vibrato Rate
	21	X	O	Scale mode Set Key
	22	X	O	Song Select
	64	X	O	Harmony Hold (Damper)
Program Change		X	0-127	Presets
System Exclusive	Parameter Edit	X	O	All parameters accessible
	Group Edit	O	O	All or part of a preset
	Preset Save	O	O	All or part of a preset
	Song Save	O	O	All or part of a preset
System Common	Song Position	X	X	
	Song Select	X	X	
	Tune Request	X	X	
System Real Time	Clock	X	X	
	Commands	X	X	
Aux Messages	Local On/Off	X	X	
	All notes Off	O	O	
	Active Sensing	X	X	
	System Reset	X	X	

Notes:	Manufacturer Identifier for TC-Helicon: 00h 01h 38h	Device Identifier for VoicePrism: 01h

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

APPENDIX C: INDEX

APPENDIX D: GLOSSARY

Attenuate:	to decrease the loudness of a signal, or parts of a signal
Cents:	one one-hundredth (1/100) of a semitone
Chromatic:	a scale that uses all 12 semitones
Compressor:	an audio utility that attenuates any sound over a specified threshold level
Condenser Mic.:	a type of microphone that requires electrical power. If using a condenser microphone, activate the 48V front panel button to provide phantom power
Decibel (dB):	the unit for a ratio of two amounts of power using a logarithmic scale
dBu:	decibels referenced to 0.775 VRMS
dBV:	decibels referenced to 1 VRMS - to convert dBV to dBu, add 2.2dB
Decrement:	to decrease by one (see "Increment")
Detune:	to make slightly out of tune, usually measured in "cents" or one-hundredth of a semitone
Diatonic:	an octave-spanning, eight-note scale
Dry:	unaffected sound (audio signal has not been changed)
Dynamic Mic.:	performance quality microphones that do not require external power
Effects (FX):	anything that changes the audio signal from one sound to another (alters the signal from "dry" to wet)
Ess:	See "sibilant"
EQ:	equalization: an audio utility that uses filters to change the frequency response of the unit
Flange:	an effect that creates a short, modulated delay that makes a characteristic "whooshing" sound, similar to a jet airplane passing overhead.
Formant:	group of harmonics that define the characteristics inherent to a note. (to fabricate an insect)
Frequency:	The pitch of an audio signal. 440Hz is the pitch for "A"
Gate:	noise gate: an audio utility that removes sounds below a specified threshold.
Harmony:	notes pitched above or below the melody in a musically pleasing fashion
Increment:	to increase by one. (see "Decrement")
Latch:	a toggle switch which stays on until it is toggled off, opposite of "Momentary"
LCD:	Liquid Crystal Display
Melody:	a rhythmic succession of single tones organized as an aesthetic whole
MIDI:	Musical Instrument Digital Interface
Modulate:	to change the frequency or pitch

Momentary:	a toggle switch which is only on while pressed
Ovf (Overflow):	a condition that introduces distortion into an audio signal
Pan:	relative loudness in stereo left and right channels that provides the spatial location of the sound. (Also: a Greek god of pastures, flocks, and shepherds usually represented as having the legs, horns, and ears of a goat)
Parameter:	can be adjusted to different settings to affect your sound
Phantom Power:	toggled On/Off by the 48V button, this provides power for your condenser microphone
Ping Pong:	describes a sound that "bounces" between the left and right channel of a stereo mix.
Pitch:	see "Frequency"
Pitch Recognition:	an algorithm that recognizes the absolute musical pitch of an audio input
Portamento:	carrying on the tone from note to note without gaps.
Preset:	a stored collection of parameters
Regeneration:	feedback, repetition of sound
Reverb:	echo
Scoop:	bending up to the correct pitch from a pitch below
Semitone:	the smallest difference between each whole note (e.g. from C to C#)
Sibilant:	the non-voiced portion of speech i.e. "sssst" sounds
SysEx:	System Exclusive: a method of communicating with MIDI devices, unique to each manufacturer
Thicken:	creates a double-tracking effect, usually accomplished by doubling with a slight pitch offset
Timing:	rhythm, meter, beat -- whatever you stamp your feet to (also: leaving just before the check comes, arriving just after your buddies return from the liquor store).
TRS:	acronym -- tip/ring/sleeve, a balanced, 1/4" connector
Vibrato:	fluctuation of pitch: tremolo
Wet:	affected sound (usually referring to the amount of Reverb)

APPENDIX E: TECHNICAL SPECIFICATIONS

Digital Output
Connector: RCA Phono (S/PDIF)
Format: 24 bit
Sample Rates: 44.1kHz
Frequency Response @ Digital Out: 20Hz - 20kHz

Analog Inputs
Connectors: XLR Balanced (pin 2 hot), TRS 1/4"
Impedance (Bal/Unbalanced - Line):   28 kOhms
Max. Input Level Line: +21dBu
A to D Conversion: 24 bits, 100dB dynamic range (A-weighted), 44.1kHz sampling rate.
Dynamic Range: -100dB (A-weighted)
THD: 0.0026% @ 1kHz (A-weighted)
Frequency Response: 10Hz - 12kHz ±0.8dB, -2dB @ 20kHz
Crosstalk: -105dB @ 1kHz

Analog Outputs
Connectors: TRS 1/4"
Impedance: 60 Ohms
Max. Output Level: +21 dBu
D to A Conversion: 24 bits, 100dB dynamic range (A-weighted), 44.1kHz sampling rate

Analog Through
Dynamic Range: -100dB (A-weighted)
THD: 0.007% @ 1kHz
Frequency Response: 10Hz - 12kHz ±0.8dB, -2dB @ 20kHz
Crosstalk: -105dB @ 1kHz

EMC   Complies with: EN 55103 1/2, ENS 5022 Class B, EN61000-4-2/3/4/5/6/11
Safety   Certified to: EN 60065, CAN/CSA E60065-00, UL 6500
Environment   Max. Operating Temperature: 50 degree Celsius (122 degrees Fahrenheit)
                                                     Min. Storage Temperature: -25 degrees Celsius (-13 degrees Fahrenheit)
Control Interface   MIDI: In/Out/Thru: 5 Pin DIN
                                                     GPI, Pedal: 1/4" Stereo Jack

Power
Mains Voltage: 100 to 240 VAC, 50 to 60 Hz
Power Consumption: 40W
Fuses: 250V 500mA Slow Blow (North America and Japan)
                                                     250V 500mA Time Lag (Europe and United Kingdom)

General
Finish: Powdercoat Electro Galvanized Steel, ABS Plastic Bezel, Knobs and Buttons.
Display: 128 x 64 Graphics LCD
Dimensions: 19" x 3.5" x 8.2" (483mm x 89mm x 208mm)
Weight: 7.8 lb (3.54kg)
Warranty Parts and Labour: 1 year

www.TC-Helicon.com