VOICEPRO

PROFESSIONAL VOICE PROCESSOR

User's Manual

TC-HELICON
VOCAL TECHNOLOGIES

IMPORTANT SAFETY INSTRUCTIONS

The lightning flash with an arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

1 Read these instructions.
2 Keep these instructions.
3 Heed all warnings.
4 Follow all instructions.
5 Do not use this apparatus near water.
6 Clean only with dry cloth.
7 Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8 Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9 Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11 Only use attachments/accessories specified by the manufacturer.
12 
Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13 Unplug this apparatus during lightning storms or when unused for long periods of time.
14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Warning!
- To reduce the risk of fire or electrical shock, do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.
- This apparatus must be earthed.
- Use a three wire grounding type line cord like the one supplied with the product.
- Be advised that different operating voltages require the use of different types of line cord and attachment plugs.
- Check the voltage in your area and use the correct type. See table below:

Voltage	**Line plug according to standard.**
110-125V	UL817 and CSA C22.2 no 42.
220-230V	CEE 7 page VII, SR section 107-2-D1/IEC 83 page C4.
240V	BS 1363 of 1984. Specification for 13A fused plugs and switched and un-switched socket outlets.

- This equipment should be installed near the socket outlet and disconnection of the device should be easily accessible.
- To completely disconnect from AC mains, disconnect the power supply cord from the AC receptable.
- The mains plug of the power supply shall remain readily operable.
- Do not install in a confined space.
- Do not open the unit - risk of electric shock inside.

Caution:
You are cautioned that any change or modifications not expressly approved in this manual could void your authority to operate this equipment.

Service
- There are no user-serviceable parts inside.
- All service must be performed by qualified personnel.

IMPORTANT SAFETY INSTRUCTIONS

This equipment has been tested and found to comply with the limits for a Class B Digital device, pursuant to part 15 of the FCC rules.
These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution:
You are cautioned that any change or modifications not expressly approved in this manual could void your authority to operate this equipment.

For the customers in Canada:
This Class B Digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations ICES-003.
Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.
This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Certificate Of Conformity
TC Electronic A/S, Sindalsvej 34, 8240 Risskov, Denmark, hereby declares on own responsibility that following products:

TC-Helicon VoicePro

- that are covered by this certificate and marked with CE-label conforms with following standards:

EN 60065 (IEC 60065)	Safety requirements for mains operated electronic and related apparatus for household and similar general use
EN 55103-1	Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1: Emission.
EN 55103-2	Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2: Immunity.

With reference to regulations in following directives:
73/23/EEC, 89/336/EEC

Issued in Risskov, June 2005

Mads Peter Lübeck
Chief Executive Officer

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specifications, interface, and features are subject to change without notice due to continued product improvement

Section 1: Introduction

Welcome to VoicePro

Thank you for selecting VoicePro as a key part of your toolkit for producing the human voice. The years of research, development and sonic verification that went into VoicePro is intended to benefit professionals responsible for bringing out the best in the human voice. TC-Helicon's proprietary voice processing algorithms allow all of the dimensions of the voice to be refined. Appreciating the complexity of producing memorable dialog and hit vocal lines, TC-Helicon surrounded its core technology with voice-optimized versions of all the auxiliary blocks necessary for voice production.

Features:

- Voice-optimized tools & effects
- Pitch: shift the voice using a transparent and versatile Hybrid Shifting™ algorithm with an 8 octave shift range
- Time: creative and humanized control over time shifting using FlexTime™
- Character: manipulate or enhance a voice's character using VoiceModeling™
- Harmony: four voices of natural sounding intelligent harmony
- Transducer: emulate telephones, radios, and megaphones, and introduce distortion
- µMod: dial up an endless amount of the classic micro-shifted sounds including flange, and chorus
- Delay: voice-optimized delay includes ducking and tap tempo
- Reverb: TC Electronic's classic algorithms
- EQ/Dynamics: standard filtering and leveling tools from TC Electronic's arsenal of respected algorithms

Application-based user interface

- 250 user and 250 factory presets created by focused listening to vocals, dialog effects and the masters who created them
- Preset Browser: Select your source and application to browse the best presets as creative starting points
- Matrix: Presets become palettes through four top-level parameters and a dedicated feature visualization assignable to each preset

Professional quality hardware design

- >110 dB (unweighted) dynamic range Analog I/O
- 2 in, 8 out AES/EBU digital I/O

Included with VoicePro

Your VoicePro box should include the following items. If you can not locate an item below, please see the Support section of the Introduction.

- VoicePro
- appropriate power cable
- AES/EBU 2 in, 8 out break-out cable
- user's manual
- registration card

About TC-Helicon

TC-Helicon is a joint-venture company created early in the 21st century that is owned by TC Group (Denmark) and IVL Technologies Ltd (Canada).

TC-Helicon's core value is that the voice is the world's most beautiful instrument. Therefore, everything TC-Helicon does is dedicated to this instrument. TC-Helicon envisions a world where those who work with voice are able to bring out its very best and where the possibilities of vocal craft are endless.

The company's mission was galvanized by a simple question, "Isn't it time that someone finally provided dedicated tools and solutions for voice?"

TC-Helicon is revolutionizing the vocal channel by providing innovative tools and solutions for people who create and work with the speaking and singing voice. Our customers include the most demanding of live performers, producers, broadcasters and recording engineers.

Enjoy!

The TC-Helicon Team

Section 1: Introduction

Registering VoicePro

There are two methods for registering your VoicePro:

- Online: visit www.tc-helicon.com/VoicePro and click Product Registration in the left hand column.
- Mail: complete and return the registration card included with your product

Support

If you run into technical challenges, TC-Helicon will be more than happy to help. There are a number of sources for product support. We've prioritized them below according to the speed at which you will access the help information.

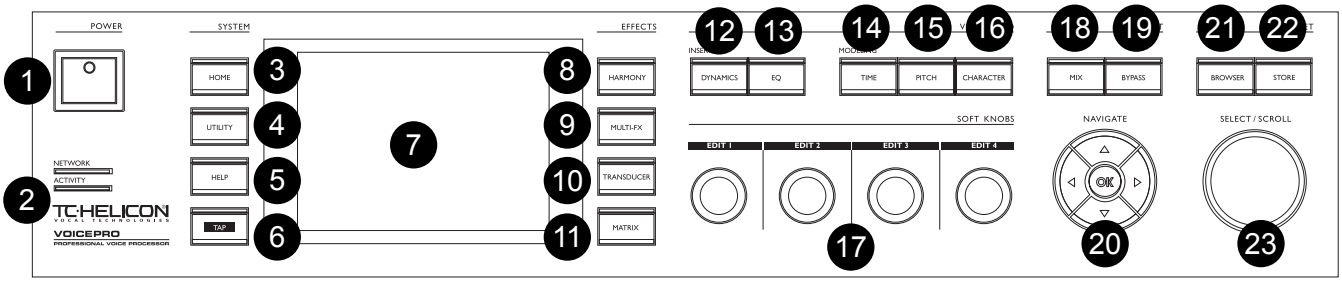
1. Help Button: VoicePro has an integrated context sensitive help system. You can access the help system from any tab in VoicePro by clicking the Help Button. More information about VoicePro Help is covered in Section 2: Getting Started.

2. Manual: The manual for VoicePro is extensive. It's a good source of application information and in depth answers for common questions.

3. On-Line: visit www.tcsupport.tc to search and ask for answers on up to date questions about VoicePro.

4. Phone: International: +45 8742 7000 | USA & Canada: 805 373 1828

Section 2: Getting Started



Front Panel Description

1. Power
Pressing the Power Switch downwards engages power. The boot-up sequence takes approximately 10 seconds.

2. Network and Activity LEDs
These LEDs show network status.

3. Home
This button allows preset information to be viewed, previewed and recalled.

4. Utility
The group of Tabs accessed with the Utility Button configure I/O, System, MIDI and other non-preset parameters.

5. Help
Context-sensitive help can be viewed by pressing the Help Button.

6. Tap
Delay times can be controlled by tapping in a tempo.

7. Display
VoicePro utilizes a 320x240 pixel colour display to represent all feedback and control information.

8. Harmony
Accesses the tabs for controlling the 4 intelligent Hybrid™ Shifting algorithms for creating harmony.

9. Multi-FX
µMod, Delay and Reverb Tabs are accessed using this button.

10. Transducer
Accesses the tabs that reproduce telephone, radio, noise and other transducer effects.

11. Matrix
The Matrix Button allows you to toggle processing blocks on and off as well as assign the preset visualization and top-level editable parameters.

12. Dynamics
This button provides control over the dry and VirtuaLead voice compressor and de-esser.

13. EQ
Access the 4-band parametric EQ and low-cut with this button.

14. Time
The Time Mode and its controls are accessed with this button.

15. Pitch
Correction, Shifting and Freestyle pitch shifting are accessed with this button.

16. Character
The VoiceModeling™ Blocks are accessed with this button.

17. Soft Knobs
The Soft Knobs allow adjustment of four parameters at a time.

18. Mix
The Mix Button allows you to control the levels and routing of VoicePro's inputs and effects. There are two mixer scenes which are accessed by the Left and Right Arrows.

19. Bypass
Pressing this button engages the bypass mode as set in the Utility | System Tab.

20. Navigate group:

OK Button
On the Home or Browser page, OK recalls a previewed preset. On Effect and VirtuaLead pages, OK enables or disables the block. In other pages OK is given various functions described onscreen.

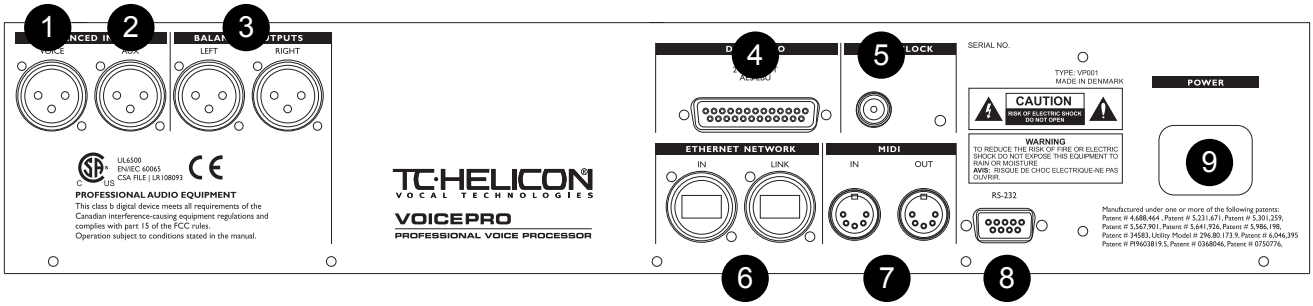
Up, Down, Left and Right Arrow Buttons
The directional arrows are mainly used to navigate through tabs and edit rows.

21. Browser
Use the Browser Button to quickly access presets by searching by source and application.

22. Store
Pressing the Store Button brings up the store menu. After a name and store location have been selected, pressing Store will save the current preset.

23. Select/Scroll
When the Home Button is lit, Select/Scroll allows previewing of presets. The rest of the time Select/Scroll allows selection of edit parameter rows.

Section 2: Getting Started



Back Panel Description

1. Voice Input
This is the main analog input for voice or monophonic instruments. All processing blocks in VoicePro can be used on audio signals received at this input.

2. Auxilliary Input
This input allows analog audio sources of any kind to be routed to the µMod, Delay, Reverb and Transducer effects.

3. Left and Right Outputs
A full analog stereo mix is always provided on these outputs.

4. AES-EBU Digital I/O
Digital input and multi-channel output is provided using a DB-25 connector. Using the supplied break-out cable or standard DB-25 cable, VoicePro can receive separate digital voice and auxilliary input signals. The 8 digital outputs are configurable in the Utlity | I/O Tab. Digital outputs 1 and 2 are fixed to the full stereo mix.

5. Wordclock
Use a standard BNC cable to synchronize VoicePro to external wordclock.

6. Ethernet
Ethernet can be used to facilitate software upgrades and other improvements as they become available.

7. MIDI IN / OUT
By connecting VoicePro to a MIDI-equipped computer, editing, automation, and other control is possible. A MIDI keyboard controller can also be connected here to allow setting of harmony and pitch shifting intervals.

8. RS-232
Currently not supported

9. Power
VoicePro has a auto-sensing power supply allowing use with worldwide power voltages and frequencies.

Section 2: Getting Started

Audio Connections

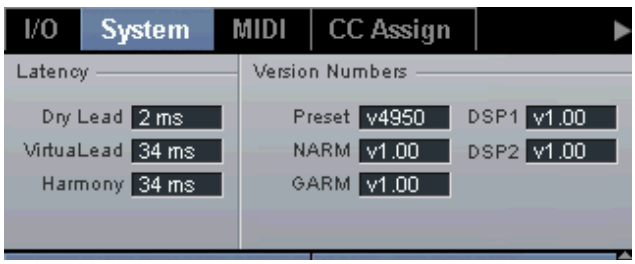
VoicePro allows you to work with analog or digital ins and outs. This section describes how to setup the inputs and outputs. When you've decided between Analog or Digital Setup, read; "Aux Send or Insert" in this section. The section will help you decide how to configure VoicePro within your mixing environment.

The default mode for VoicePro is set for unity Analog I/O. To get going quickly, connect to an analog source and go to "Setting Levels"

Latency

Processing Time, Pitch, and Character for the human voice requires analysis beyond the typical audio product. To preserve audio quality, the analysis and processing requires latency (delay) to be introduced into the system. After you choose your setup, it's wortwhile determining the Latency of VoicePro and compensating your mixing environment. For some applications, like Harmony, VoicePro's latency may be acceptable without compensation.

Finding VoicePro Latency

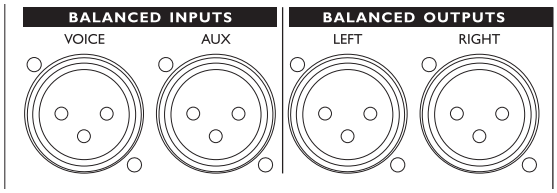


1. Press the Utlity Button and then use the Left / Right Arrow Buttons to navigate to the Utitlity | System Tab
2. Note the Latency in the visualization area.

Compensating for Latency

If you are using a DAW as a mixing environment there is usually a feature to slip or delay tracks. When you've determined VoicePro's latency, delay all tracks except the vocal track by the latency amount. Another method is to slip the vocal track backwards by the latency amount.

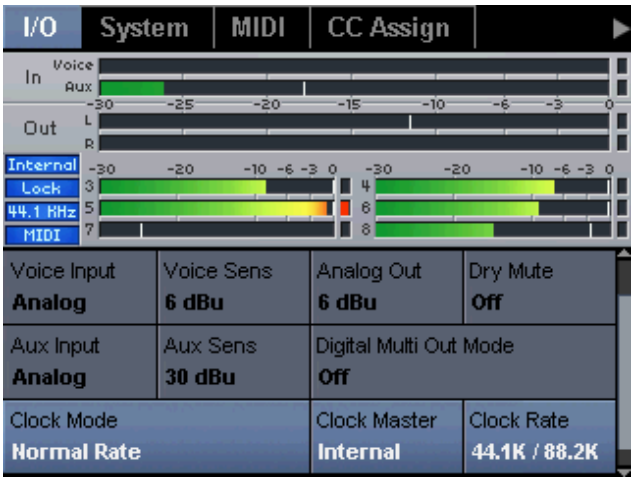
Analog Setup



Making Connections

1. Connect your analog audio source to the Female XLR on the rear panel labeled "Voice Input".
2. Connect the analog outputs of VoicePro to a stereo input.

Utility setup for analog IO.



1. Go to the Utility | I/O Tab and set Voice Input and Aux Input to "Analog"; Clock Mode to "Normal Rate" and Clock Master to "Internal".

Setting levels

1. Send a vocal signal to the input
2. Navigate to the Utility | I/O Tab. Adjust the Voice Sens Parameter until the In Meter displays peaks of around -6 dB.

The Voice Sens value represents the signal level that, when applied to the input, will result in the meters showing 0dB. A signal greater than the Voice Sens Value will result in input clipping.

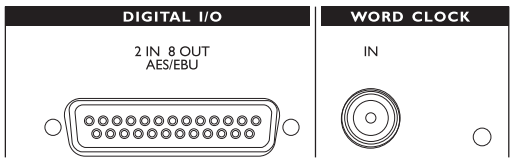
3. Set the Analog Out Paramater to the same value as Voice Sens. This will configure VoicePro to have unity gain. Additional ouput gain is possible with the Analog Out Parameter.

Unity Gain is when VoicePro has an equal signal at the input and output when in Bypass. The Analog Out setting represents the signal level at the output when the Out Meters display 0dB. It is not possible to achieve Unity Gain when Voice Sens is set to 3 dBu since VoicePro does not support this Analog Out level.

Section 2: Getting Started

Digital Setup

This section describes how to make digital audio connections to VoicePro. Using the digital audio interface provides the most flexibility in a studio environment. You can configure the 8 channels of digital output for separation of the voices and effects.

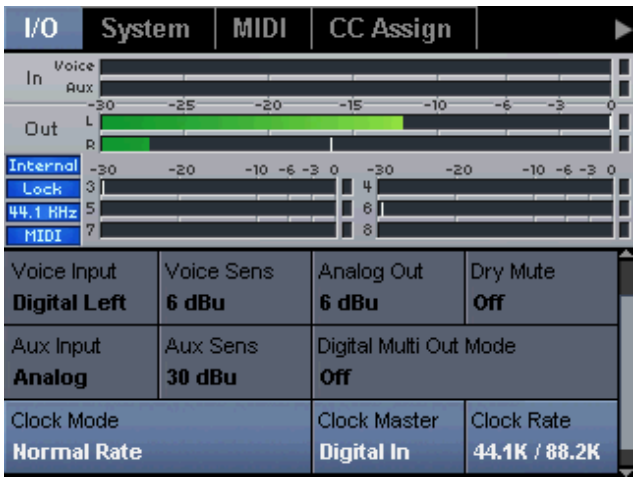


Making Connections

Digital I/O is accessed through the female DB25 on the rear panel along with the included DB25 to XLR AES adapter.

1. Connect the male end of the DB25 connector to the female DB25 connector on VoicePro.
2. Connect the AES/EBU digital output of your audio source to the female XLR on the AES/EBU adapter cable.
3. Connect the male XLR labeled "Channel 1,2" of the DB25 connector to the appropriate AES/EBU input in your mixing environment.

Utility Setup for Digital Inputs with External Clock



1. Go to the Utility | I/O Tab and set the Voice Input to "Digital Left".
2. Set the Clock Rate Parameter to match the sampling rate of your mixing environment. If your mixing environment is running at 88.2 kHz or 96 kHz, set the Rate Mode Parameter to "Double Rate".
3. Set the Clock Master Parameter to "External". This will cause VoicePro to derive its clock from the digital input.

To provide the best possible jitter rejection, VoicePro uses a narrow clock rate detection algorithm. Therefore, to detect the external clock rate, VoicePro's clock rate must be set in the same range.

Some sound cards with digital I/O will only accept digital input if they are set up as the “Slave”, that is, they need to get their clock from their digital input. If this is the case, then you will need to have at least one of the Digital Outputs connected to the sound card, as well as the Digital input, and set the Clock Master to "Internal".

The Left/Right Output meters are for the Analog Out. There may be a minor discrepancy between the actual Digital Out Level and the meters.

Digital Multi Out Mode Parameter

Digital Out channels 1 and 2 always carry the stereo mixed output. There are three modes for configuring digital out channels 3 through 8.

"Off" - In this mode, digital output channels 3 through 8 are disabled.

"Voices: Harm, Dry, Vlead" - Routes Harmony voices 1 through 4 to channels 3 through 6, Dry Lead to channel 7, and VirtuaLead to channel 8.

"Blocks: Harm,FX,Lead" - Routes stereo harmony to channels 3 and 4, stereo mixed Dry Lead and VirtuaLead to channels 5 and 6, and a stereo mix of stereo Multi-FX to channels 7 and 8.

Utility Setup for Multi-Channel Digital Out

1. Navigate to the Utility | I/O Tab.
2. Using the Up and Down Arrows, locate the Digital Out Parameter.
3. Use Edit 3 to select the desired mode.

Outputs 3 through 8 are muted when Bypass is activated regardless of the Multi-Channel Output Mode

Aux Send or Insert

There are two common ways VoicePro can be used as a voice processor: on an Aux Send (parallel routing), or as an Insert (serial routing).

When to use VoicePro on an aux buss

This scheme is useful if you want to layer effects on top of a dry signal routed separately into your mixer. If you are mainly using VoicePro for the purpose of adding harmonies, special effects and doubling for singing voices or classic effects, then an aux send configuration will work well. VoicePro has it’s own dry path that will have to be muted in order to work in this scheme.

How to setup VoicePro with an aux send

1. Press the Utility Button and scroll to the I/O Tab.
2. Set Dry Lead to "off". This will allow VoicePro to operate like a standard aux send processor.
3. From your mixing environment, use a mono aux send to route audio into the Voice or Aux input. Route VoicePro’s outputs to returns or dedicated channels in your mixer.

Section 2: Getting Started

When to use VoicePro as a channel insert
If you are mainly using VoicePro for the purpose of pitch correction, dynamics and EQ, Character voice transformation, or for processing speaking voices, then an insert configuration will work well. This is also the most flexible routing scheme if you plan to use the other features available in VoicePro. In this configuration, there is no dry path routed around VoicePro to your mixer as there is with the aux send scheme; VoicePro handles this internally.

How to setup up VoicePro as a channel insert
1. Press the Utility Button and scroll to the I/O Tab
2. Ensure that the Dry Lead Parameter is set to "on".
3. Because VoicePro is a mono in, stereo, or multi-output device, there are two methods you can use in your mixing environment to setup VoicePro as an insert.

a. VoicePro on a mono aux send which returns to stereo channels. Ensure that your mixer's aux send is set to pre-fader and that the fader level for the channel is set to off or infinity. This is the best method for setting up an insert when using the 8 digital outputs.

b. VoicePro as a stereo insert. Have your lead vocal or dialog track returning to two channels or a stereo channel in your mixing environment. Send a stereo channel output to the Voice and Aux inputs of VoicePro. Connect the outputs of VoicePro as a stereo return to the sending channel's insert return pair, or connect to another stereo channel. The default Aux Input Level Setting in all of VoicePro's Factory presets is "off" in the mixer, but if you make user presets, ensure that this remains "off" when used in the insert configuration.

Understanding DryLead & VirtuaLead

VoicePro contains two lead paths. In your mixing environment you often have a doubled version of your vocal, or you comp two tracks together.

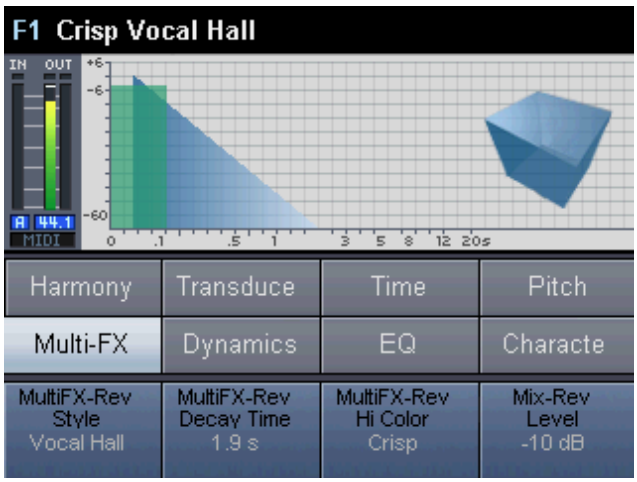
The Dry Lead is affected by the Dynamics and EQ Blocks. Additionally, it can be sent to the Multi-FX Blocks.

The VirtuaLead is the same as Dry Lead except it is also processed by the Time, Pitch and Character Blocks.

For Doubling presets, Dry Lead and VirtuaLead are often mixed together. For Character presets, the Dry Lead is typically turned off. Depending on the type of application, the mix between these paths will be different.

See the Signal Diagram in the Appendix Section for detailed information.

Selecting Presets

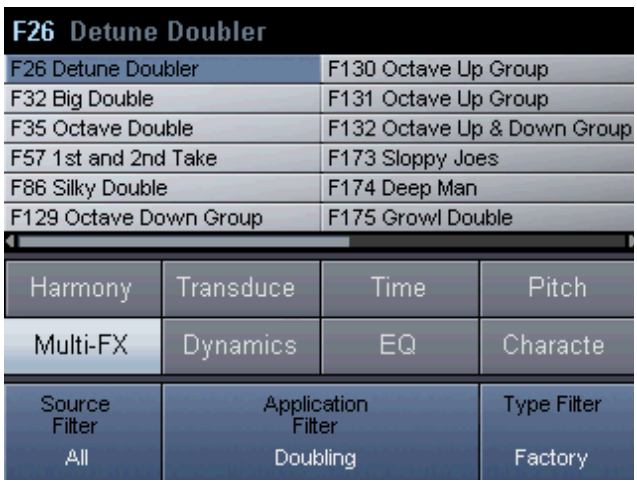


When the Home Button is lit, the Select/Scroll Wheel is used to scroll through all Factory and User presets. The Factory Bank of 250 presets are presented first followed by any User Bank presets.

The Preset Change Parameter in the UTILITY | System Tab determines whether presets are loaded instantly or merely previewed as you decide which one to load.

Upon loading a new preset, you will see the Home Screen and the Home Button lit.

Searching for Presets using the Browser



The Browser allows you to narrow your search for presets based on application filters you can specify. This is very useful when you consider the product has the capability of storing 500 presets.

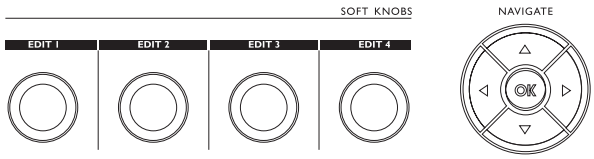
Press the Browser Button from any screen. The top half of the screen shows the presets that match the search criteria displayed on the bottom line of the screen. By using the

Soft Knobs you can specify any or all of the three search filters as follows:

- Source Filter - Here you select whether you want to see presets for music only or dialog only. When this value is set to “All”, the Source Filter is disengaged.
- Application Filter - Here you can choose whether you’d like to see Pitch Correction or Doubling presets, for example.
- Type Filter - The final criteria narrows the search to looking in the Factory Bank only, User Bank only, or both banks in alphabetical, as opposed to numerical, order.

See the Detailed Application Descriptions in the Appendix Section to get an understanding of what an application will do.

Editing Presets Overview



Once a preset is loaded and the Home Screen is displayed, the four Soft Knobs provide access to the most useful parameters unique to each preset. The values of these parameters can be edited and stored as desired.

If you want to edit a preset further, you can press any button in the Effects and VirtuaLead Button groups to access more edit parameters. This will expose the Edit Tabs that you can scroll through with the Left and Right Arrow Buttons. There are over 300 editable paramaters!

Having located an Edit Tab, you then select the edit rows with the Up and Down Arrow Buttons or the scroll wheel. The scroll bar on the lower right indicates if there are more screens below what is visible, and where you are in the list.

The Soft Knobs now allow editing of the four parameters on the selected row.

Adjusting the Mix

To control levels of the various effects blocks, press the Mix Button. You will see the controls for the effects presented in a simulated mixer layout. Additional mixer channels are made available by pressing the Left or Right Arrow Buttons. The controls are arranged in rows of four parameters, to choose one, use the Up and Down Arrows or Scroll Wheel. The Soft Knobs are then used to adjust the desired levels. Below are notes on the unique features of the mixer.

- The Pre/Post Send switch determines whether the audio signals from the three effects sends are scaled by the Level Parameter (Post) or whether the Level Parameter has no effect (Pre).
- The Width Parameter allows the panorama of the stereo channels to be changed. The “minimum” setting blends left and right into a mono signal and the “maximum” setting preserves the original stereo panning.

Enabling / Disabling Blocks

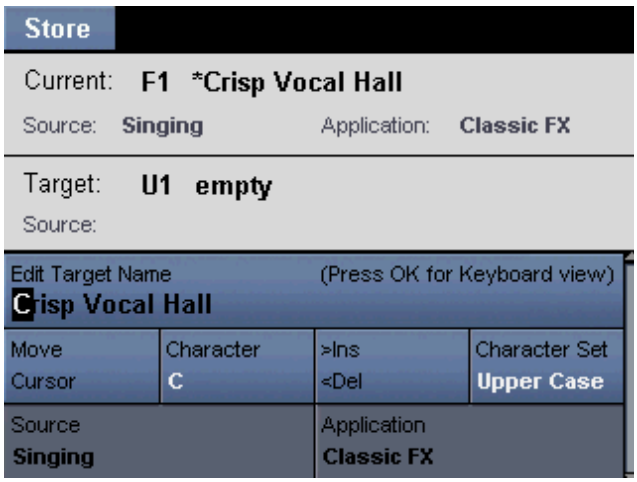
Because any preset can be composed of up to 15 different audio effects, the Matrix\Blocks Tab presents a block overview and simplifies muting or engaging individual effects. Press the Matrix Button and scroll to the Blocks Tab using the Left or Right Arrow Buttons. As with the other edit screens, the controls are laid out in rows of four, and are accessible with the Arrow Buttons. Turning the respective Soft Knob to the left will mute an effect while turning to the right will engage it.

In any editing screen, the current block can be toggled on or off by pressing the OK Button. When the block is disabled you will see a “BLOCK OFF” message overlayed on the Visualization Area.

Engaging a block may not immediately produce sound from the effect because it depends on correct mixer settings. Press the Mix Button to confirm that the Level Parameter for the effect is turned up. In the case of the Multi-FX, also ensure that Send Levels have been set. You may also need to check that the particular effect Edit Tab has a style loaded that is not set to “Off”.

Section 2: Getting Started

Storing Presets

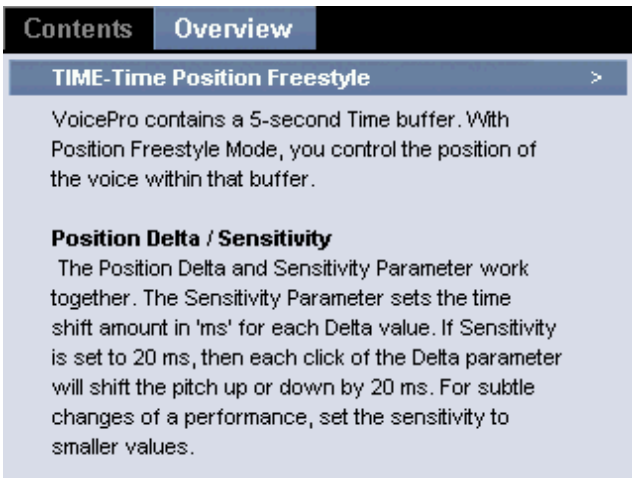


When you would like to store an edited preset in the User Bank, press the Store Button. Within the Store Screen, you have the option to:

- cancel the store operation by pressing any button except Bypass, Help or Tap
- choose the destination preset number with the Scroll Wheel
- rename the preset with the Soft Knobs
- choose the closest source and application criteria (this is highly recommended to simplify browsing later)

Press the Store Button again to save the preset with your attributes.

Using VoicePro's Help System



A unique and helpful feature of VoicePro is the integrated, context-sensitive help system. Accessing the information you need can be done while viewing the Overview Tab or by searching in the Contents Tab.

Every button that lights up on the front panel has a Help text section except the Bypass Button. The quickest way to learn more about any particular Effect Tab or Utility Tab is to press the Help Button while viewing a screen you would like to know more about. To make the Help system even more useful, each Tab has a dedicated section containing descriptions of each parameter on the screen.

Alternatively, you can browse the overall Help system from the table of contents without having to navigate to each particular edit screen.

Help on Help

1. Press the Help Button any time VoicePro is turned on. Information on the current parameter tab will be presented in the Help Screen.
2. To switch between the Contents and Overview Tab, use the Left and Right Arrow keys.
3. To read further down either the Contents or Overview pages, use the Up/Down Arrow keys or the Scroll Wheel

Section 3: Music Applications

Introduction

VoicePro's applications in music vocal production require settings and features that differ from dialogue (speaking) post production. The differences are mainly in the use of musical pitch shifts for harmony; making voices sound thicker through various techniques; and targeting formerly time consuming techniques used by music audio engineers and producers.

This section is more of an introduction to music applications as opposed to a detailed discussion. For an in- depth look at each parameter, read the Detailed Parameter Description section.

In this section we cover:

- Creating harmony
- Adding doubling effects
- Pitch correcting vocals
- Modifying vocal melody
- Modifying vocal phrasing
- Modifying vocal character
- Working with classic effects
- Creating special effects (Cher, Transducer, Dry Off)
- Shaping vocals with EQ, Dynamics and the Spectral block

Section 3: Music Applications

Creating Harmony

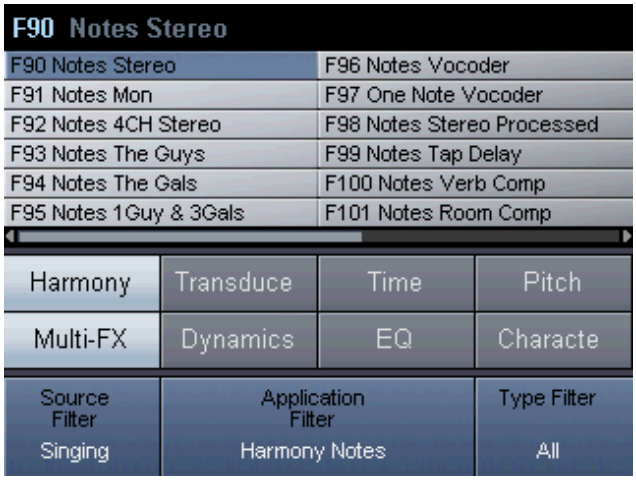
The sound of human voices singing together in harmony adds excitement and intensity to music. VoicePro offers you the ability to instantly experiment with different harmony lines as well as to produce finished recorded vocals.

Each harmony preset in VoicePro is based on one of five different harmony modes you can use to add authentic sounding virtual harmony voices to your mix. Offering more than one Harmony Mode is necessary because, like a human singer who has to hear an accompanying instrument in order to sing in harmony, VoicePro needs musical input. Each harmony mode provides an alternate method for providing this musical input. From the relatively "hands off" Scale Harmony Mode, to the completely "hands on" Notes Mode, you can choose a range of methods to balance the amount of moment-by-moment input, with the resulting harmony sound you desire.

Term	Description
Harmony Mode	Method by which musical input is sent to VoicePro.
Diatonic	Refers to the tone structures in major and minor scales. Knowledge of these scale structures is the "intelligence" VoicePro uses to produce automatic harmony.
Interval	The distance between two pitches
Notes Mode	Fully manual harmony mode where notes and chords performed on a MIDI keyboard are used to select the fixed harmony pitches independent of the pitch of the sung note.
Notes 4Ch Mode	A second Notes Mode where each note is received on a different MIDI channel from a sequencer program, enabling unique pitch bends on each channel.
Chord Mode	An intelligent harmony mode where a sequence of chords played on a MIDI keyboard are interpreted to produce musically correct pitches that move according to the pitch of the sung note.
Scale Mode	An automatic harmony mode where you set only the key and scale of your song. Usually, no on-going musical input from a keyboard is required.
Shift Mode	This is the one non-intelligent harmony mode where a fixed interval is set for each harmony voice that is maintained throughout the song.
Humanization	Various methods by which VoicePro introduces random variations to the sound that mimic human deviations in pitch and timing.

How to create harmony using a Notes Mode preset

1. Connect a MIDI keyboard to VoicePro (see Utility section for MIDI details)



2. Navigate to the browser and set the Source Filter to “Singing” and the Application Filter to “Harmony Notes”, then select a preset using the Scroll Wheel and Ok Button.
3. Perform a keyboard part of up to 4 simultaneous notes while the source audio plays. Pitch Bend and MIDI controllers can be used.

How to create harmony using a Notes 4CH Mode preset

1. Connect the output of a MIDI sequencer to VoicePro (see Utility section for MIDI details)
2. Navigate to the browser and set the Source Filter to “Singing” and the Application Filter to “Harmony Notes 4CH”, then select a preset using the Scroll Wheel and Ok Button.
3. Press “play” on the sequencer while the source audio plays or while you sing in time with the MIDI tracks.

Notes 4 Channel Mode
The best way to benefit from this type of harmony is to use a MIDI+Audio sequencer to send synchronized MIDI and audio tracks to VoicePro. First, record or import a vocal track into the sequencer, then perform up to 4 different harmony parts on separate MIDI channels in synchronization with the vocal.

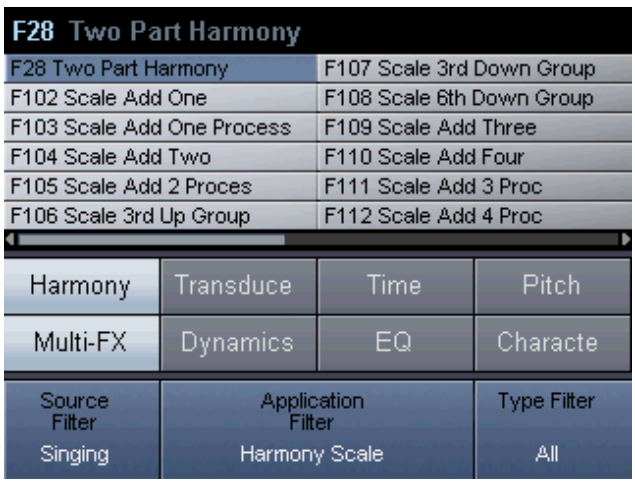
Section 3: Music Applications

How to create harmony using a Chord Mode preset

1. Connect the output of a MIDI keyboard to VoicePro (see Utility section for MIDI details)

2. Navigate to the browser and set the Source Filter to “Singing” and the Application Filter to “Harmony Chord”, then select a preset using the Scroll Wheel and Ok Button.
3. Play keyboard chords of 2 or more simultaneous notes while you sing.

How to create harmony using a Scale mode preset



1. Navigate to the browser and set the Source Filter to “Singing” and the Application Filter to “Harmony Scale”, then select a preset using the Scroll Wheell and Ok Button.
2. Use the Edit Knobs to match the key and scale of the vocal track.

Scale mode tip
Often the key and scale can be set to the first or last chord in a song e.g. G Major. You can try the alternate major and minor scale settings in VoicePro to suit the song. If no key and scale settings seem to work, then a custom scale can be crafted or you can use the other MIDI controlled presets based on Notes and Chord harmony modes.

How to create harmony using a Shift Mode preset

1.Navigate to the browser and set the Source Filter to “Singing” and the Application Filter to “Harmony Shift”, then select a preset using the Scroll Wheel and Ok Button.
2. Adjust the Shift Interval Parameter to your taste using the appropriate soft knob

Troubleshooting

If you are having trouble producing harmony, go through the questions below to make sure the most common items are configured correctly.

1. Are VoicePro’s Harmony MIDI channels set to the same values as your sequencer or keyboard?
2. Is the MIDI indicator showing MIDI input?
3. Do you have the correct input selected i.e. digital or analog, voice or aux?
4. Is the vocal sung to an instrument properly tuned to A=440Hz?

Section 3: Music Applications

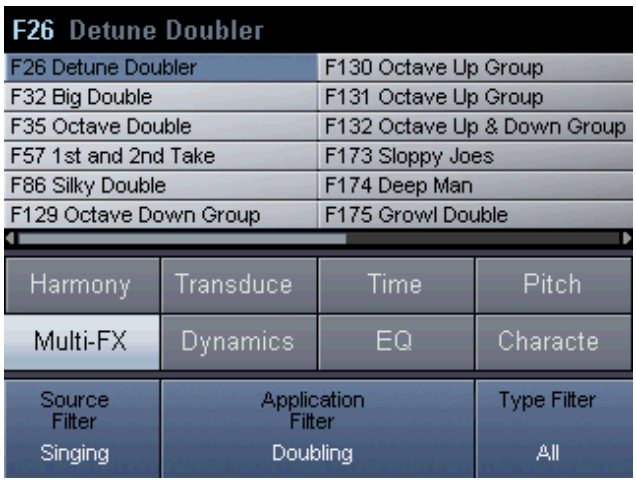
Adding Doubling Effects

A frequently used technique is to have a singer overdub the same line several times to add richness and chorusing. Some audio products try to simulate this effect, and while they can create interesting sounds, they don't recreate the actual sound of overdubbed singers.

VoicePro has presets that accurately recreate the many current doubling methods, sythesized and real. The fastest way to find the doubling effect you require is to use the Browser's Search Function detailed below.

Term	Description
Unison	The same pitch
Micro shift	Refers to an effect where detuned copies of a vocal are played back at the same time. Sometimes there is a time-varying delay.

How to create doubling effects



1. Press the Browser Button.
2. Set the Source Filter to "Singing" and Application Filter to "Doubling" with the appropriate Soft Knobs, to isolate the Doubling presets.
3. Play the track or sing.
4. Scroll through the list using the Select/Scroll Wheel until you find the sound you prefer.
5. Press the Home Button to access and adjust the Assigned Edit Parameters for the preset you have chosen.

Inflection, µMod and Harmony blocks can be used individually or in combination to produce doubling sounds. µMod is generally used to provide the classic micro-pitched/detune doubling sounds. Harmony and Inflection are used for more natural sounds or extreme doubling sounds.

Correcting Vocal Pitch

More and more recorded singers, some great and some still learning, are having their tuning adjusted with pitch correction tools, more than ever before. This is a common technique used to put a high gloss on vocals, and as a result, the music buying public has grown to expect this sound. VoicePro offers the control and transparent shifting quality to allow you to produce the best vocal possible.

Tuning the pitch of a sung vocal track so that it still sounds natural requires a little background information. First of all, the ultimate natural pitch correction is to have a good singer sing the track well! Once the singer has given their best performance, you can apply the combination of subtle automatic and targeted manual retuning with VoicePro.

There are three ways of implementing pitch correction in VoicePro:

- Scale-based automatic mode
- Scale-based automatic mode with temporary MIDI override
- MIDI manual mode

In the Scale-Based mode, a key and scale for the song needs to be set. For many styles of music this will work for the entire song. For periodic sung notes that fall outside the scale you've set, the best option is to use MIDI. Press the notes on a MIDI keyboard that you would like the input note forced to and then remove the notes allowing the automatic mode to resume.

If the same note or notes are always corrected to the wrong note or not being corrected at all, then you can create a new custom scale or edit one of the factory scales.

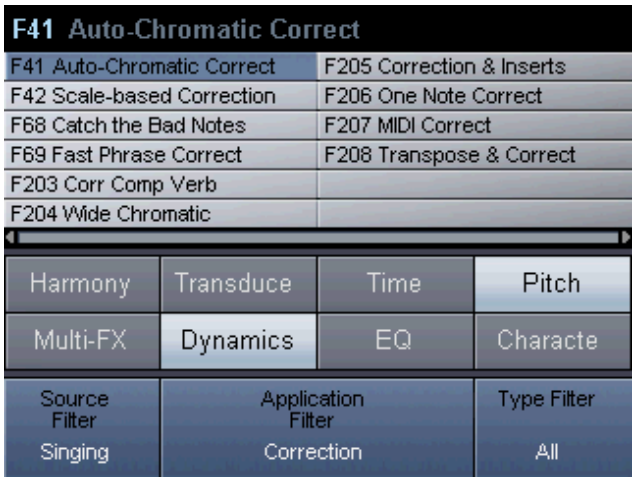
If you want to leave most of the singing unaffected and correct only the odd note, you can disable the automatic scale-based mode and use only a MIDI keyboard to trigger correction where you feel it's required.

Term	Description
Window	The pitch range around a scale tone where correction will occur.
Key	The musical center of the song i.e. key of C
Scale	Major, minor or custom (edited); these are the target notes that the vocal is nudged towards.
Attack Rate	When a singer's pitch falls winthin the Window, the Attack Rate Parameter sets how fast the vocal will be shifted to the Window's center.
Amount	Can be used to reduce the effect of correction if desired.

Section 3: Music Applications

Finding the correct Key and Scale:
Often the key and scale can be set to the first or last chord in a song e.g. G Major. If no key and scale settings seem to work, then a custom scale can be crafted or you can switch to manual MIDI control

How to apply automatic pitch correction to a vocal



1. Navigate to the browser and set the Source Filter to "Singing" and the Application Filter to "Correction", then select a preset using the Scroll Wheel and Ok Button.
2. Enter the key and scale of the song using the appropriate Soft Knobs.
3. Adjust the Attack Rate Parameter with the appropriate Soft Knob to balance the rate of incoming new notes and the speed at which correction happens. A value of "20" is a good place to start.
4. Some songs have a chord structure in which a single key and scale setting may not work. Your options are to:
   • Change key and scale for each song section.
   • Create a custom pitch correction scale.
   • Chose the manual pitch correction mode that allows you to press notes on a MIDI keyboard to provide the target pitches for correction. (see next paragraph)

Using MIDI to correct notes outside the scale

1. Follow the steps outlined previously to set a key, scale and associated parameters that work for most of your song.
2. Connect a MIDI keyboard to VoicePro (see Utility section for MIDI details)
3. Pressing a single note, or cluster of notes will cause VoicePro to apply pitch correction when the input falls within the MIDI Window around any of the pressed notes. Releasing the notes allows the automatic correction to resume. The MIDI correct notes are also affected by the MIDI Rate Parameter.

How to apply manual pitch correction

1. Connect a MIDI keyboard to VoicePro (see Utility section for MIDI details)
2. Navigate to the browser and set the Source Filter to "Singing" and the Application Filter to "Correction", then select a preset using the Scroll Wheel and Ok Button.
3. Press the notes that require retuning on the MIDI keyboard as they are sung.
4. Adjust the Attack Rate Parameter if required using the appropriate Soft Knob.

Section 3: Music Applications

Modifying Vocal Melody

While most producers like to think they have the lead or harmony vocal melody arranged correctly before having the singer sing it, there are times when the pitch of a note or phrase needs to be changed after the singer has left your studio. You can re-schedule the singer and set up the signal path again to duplicate the sound or you can use VoicePro's high quality pitch shifting to make the change.

The technique is much the same as when applying manual pitch correction, only the target pitches are farther from the singer's input note. Also, Soft Knob Parameters and shift techniques for presets differ from those used for pitch correction.

How to modify vocal melody

1. Connect a MIDI keyboard to VoicePro (see Utility section for MIDI details)
2. Select or create a preset with Pitch Shift Mode set for the VirtuaLead path.
3. Select the target notes on the MIDI keyboard to which you want the singer's pitch shifted to as they are sung.
4. Adjust the Smoothing Parameter if required using the appropriate Soft Knob.

Modifying vocal phrasing

A large part of a successful vocal is getting the timing just right. Having a vocalist linger or accelerate through certain words can link the vocal and instrument tracks better for an improved, and cohesive mix. Rather than have a singer record take after take to get phrasing right, you can get them to sing as close as possible and then edit using VoicePro.

In VoicePro, you have the ability to manipulate vocal phrasing in a spontaneous way using the front panel Soft knobs.

Term	Description
Playback Rate	Think of this as the "accelerator" and "brake pedal" for the timing of the incoming audio.
Reset	Returns playback to real time instantly

Accelerating playback is only possible if you set the Reset Position to “Middle” or “Back” and then select “Reset”.

In order to slow time down you’ll have to wait until the recording buffer fills with audio.

How to slow vocal phrasing (no delay)

1. Using the Matrix | Blocks Tab configure a preset with all blocks off except Time. Use Mix to tunr all levels off except VirutaLead
2. Navigate to the Time | Mode Tab and set the Mode to “Rate Freestyle”
2. Turn the Soft Knob controlling Playback Rate to the left to slow playback.
3. Turn the Soft Knob for the Reset Parameter any direction to resume realtime playback.

How to speed up and slow vocal phrasing

1. Follow steps 1-2 above
2. Set the Reset Position to “Middle” and selec the Reset Parameter
3. Turning the Playback Rate Soft Knob to the left slows playback speed and turning to the right increases the speed.
5. Turn the Soft Knob for the Reset Parameter any direction to resume realtime playback.

When the Reset Position is set to “Middle” configure your DAW for 2500 ms of delay compensation to stay synchronized.

Section 3: Music Applications

Modifying Vocal Character

In VoicePro, character is the term used for the over-all effects of a group of blocks found under the Character Button:

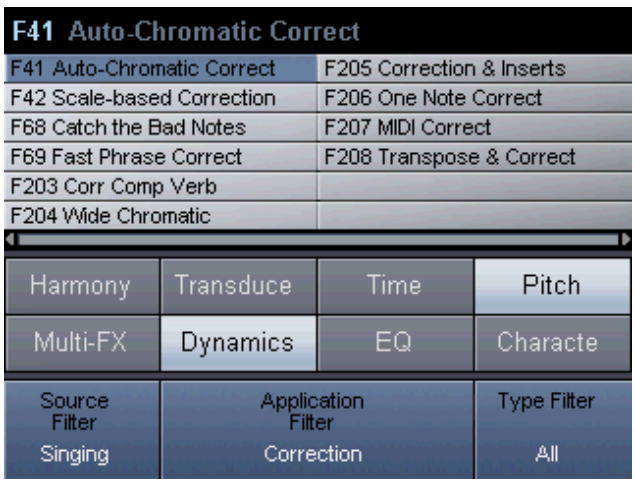
- Resonance
- Spectral
- Inflection
- Vibrato
- Breath
- Growl

As the name suggests a new vocal character can be given to an existing voice which allows you to accomplish a wide range of production goals: You can enhance a thin-sounding vocal performance without EQ, produce convincing character voices for children's songs in animated movies, create interesting choir and duet tracks, and many more effects. Applications are discussed with the individual blocks.

Each character block can be used independently or combined with the others into a preset. The Factory presets have been created containing various groups of these blocks as a starting point. Understanding what each block does will help you to use, edit, and create presets effectively.

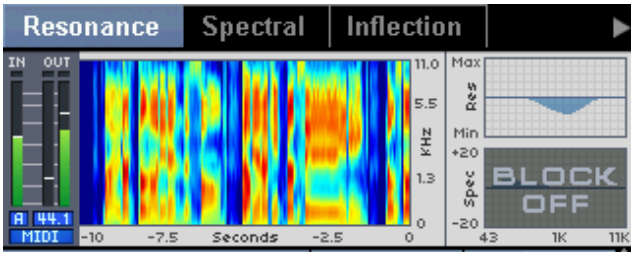
A note about Styles in VoicePro:
Styles are presets-within-presets that allow you to get the sound you want faster. A large number of user and behind-the-scene parameters are required to construct a particular effect, so styles are created that combine the settings. You can edit the styles, and the changes you make will be stored with the preset.

How to load a character preset



1. Navigate to the browser and set the Source Filter to “Singing” and the Application Filter to “Character”, then select a preset using the Scroll Wheel and Ok Button.

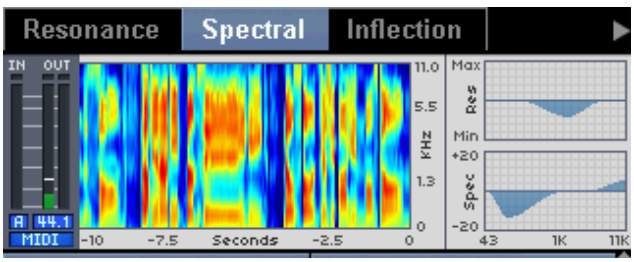
How to use resonance to modify vocal character



1. Follow instruction in “How to load a character preset.”
2. Use the Matrix | Blocks Tab to turn off all blocks except Resonance.

The Resonance block simulates changes in the physiology of the vocal tract. In musical applications, this can be used, for example, to make a singer's voice sound deeper without shifting the pitch, or to make a singer sound younger. Resonance can also disguise a singer's voice as a special effect in the breakdown or hook section of a song. Singers who sing a number of simultaneous ad spots in a single market could use presets based on resonance to simulate another singing voice.

How to use Spectral to shape vocal character

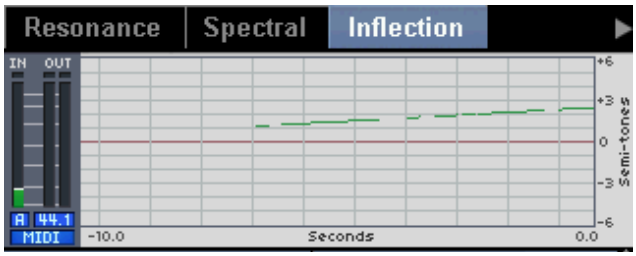


1. Follow instruction in “How to load a character preset.”
2. Use the Matrix | Blocks Tab to turn off all blocks except Spectral.

Spectral is an intelligent EQ that can be used to restore energy in frequencies modified by the Resonance block. The intelligence in Spectral comes from the fact that sibilants (S, T, D sounds etc) are not processed by any EQ adjustments unless you want them processed. This has applications beyond mere compensation; consider that you can now boost highs for a bright, modern sound, without the usual increase in sibilance.

Section 3: Music Applications

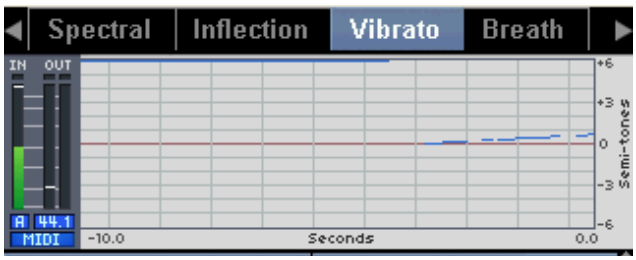
How to use Inflection to add variation to vocal character



1. Follow instruction in “How to load a character preset”.
2. Use the Matrix | Blocks Tab to turn off all blocks except Inflection.

Inflection is the automatic pitch and timing modification block in VoicePro. It can superimpose the pitch warbles, scoops, and natural timing fluctuations of human singing onto any voice. In musical applications, Inflection could produce a "second take" that, when mixed with the dry track, could sound very convincingly like a singer doubling themselves. Inflection could also be used to modify the beginning of notes with small pitch scoops that can introduce quirky personality into a track.

How to use Vibrato to create alternate characters

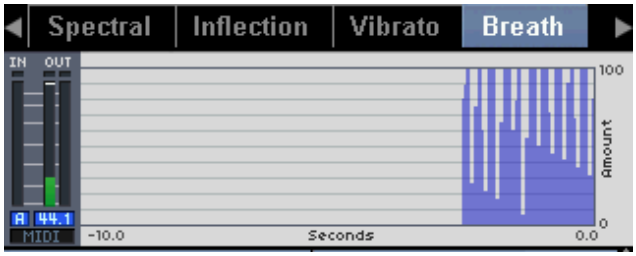


1. Follow instruction in “How to load a character preset”.
2. Use the Matrix | Blocks Tab to turn off all blocks except Vibrato.

Vibrato as a singing technique needs no introduction, yet its implementation in VoicePro should be clarified. The Vibrato block can be used to create an alternate singing persona for singers. A distinctly unique vocal backup group can be made by the same singer overdubbing multiple tracks while singing through the Vibrato block. This is more effective than the singer attempting to sing in an unnatural way for an extended period of time. Strikingly real character modification is possible using the various Vibrato styles because they have been created by detailed examinination of many singers' voices.

When changing Vibrato Styles, the effect won’t change until a onset triggers the new style.

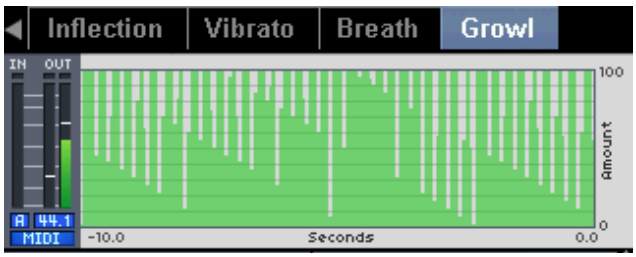
How to use Breath to introduce air



1. Follow instruction in “How to load a character preset”.
2. Use the Matrix | Blocks Tab to turn off all blocks except Breath.

The Breath block can be used to create the intimate sound of a breathy singer or a breathy performance. At extreme settings, the Breath block can turn a track sung in full voice, into a whisper. This and other varied Breath styles are available to closely match the voice of the singer and the requirements of the track.

How to use Growl



1. Follow instruction in “How to load a character preset”.
2. Use the Matrix | Blocks Tab to turn off all blocks except Growl.

Growl adds an effect that evokes the gravelly voices of singers like Louis Armstrong and Bob Seger. While a preset using the Growl effect can easily be dialed up to process a recorded voice, the most effective use is to have the singer hear the effect while they sing. This allows them to modulate the volume of their voice to introduce the effect when desired. There are various Growl styles available to suit the track.

Section 3: Music Applications

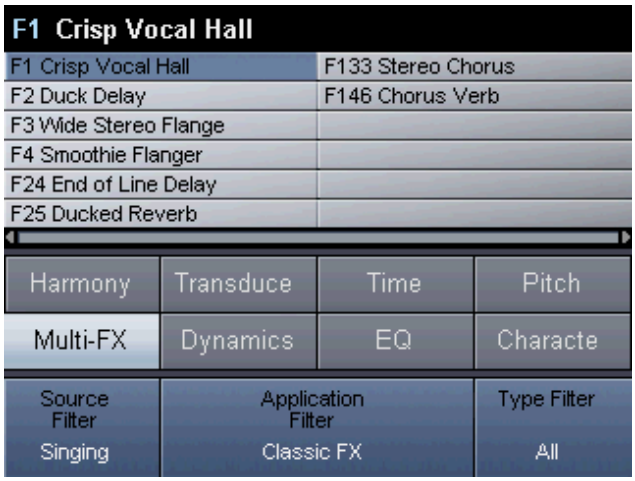
Working with Classic FX

In VoicePro, the effects that are termed "classic" are created using the µMod, Delay and Reverb blocks. The resulting effects include:

- Reverb
- Reverb with ducking
- Delay
- Delay with ducking
- Tap Tempo Delay
- Chorus
- Flange
- Stereo detuning
- Combination sounds (Reverb & Delay, etc.)

The Reverb and Delay effect blocks perform their named functions, and the µMod (micromod) block performs the Chorus, Flange, and Stereo Detuning functions. Each block has a number of pre-programmed styles to allow fast access to a number of interesting and useful effects without parameter editing. Of course, you can edit the styles and store the changes with the preset.

How to load a Classic FX preset



1. Navigate to the browser and set the Source Filter to “Singing” and the Application Filter to “Classic FX”, then select a preset using the Scroll Wheel and Ok Button.

How to enable classic effects in a preset

1. Press the Matrix Button.
2. Press the Up or Down Arrow Buttons to highlight the Multi-FX row.
3. Turn the appropriate Soft Knobs clockwise to enable the effects desired.
4. If you hear no effects even though audio input is present, press the Mix Button.
5. Use the Right or Left Arrow Buttons to scroll the screen so that you can see the effects send levels at the top of the screen. These are usually set at nominal send settings in the Factory presets but you can adjust them if needed using the Arrow Buttons and Soft Knobs.
6. Use the Arrow Buttons to reveal the effects return levels at the bottom of the screen. These are usually set at nominal send settings in the Factory presets but you can adjust them if needed using the Arrow Buttons and Soft Knobs.

How to mute the classic effects in a preset

1. Press the Matrix Button.
2. Press the Up or Down Arrow Buttons to highlight the Multi-FX row.
3. Turn the appropriate Soft Knobs counter-clockwise to mute any effects enabled in the preset.
4. Press Store twice if you want to save the change to the preset.
5. Press the Home Button.

How to edit the classic effects

1. Follow the previous instructions to enable the desired effects block in the Matrix and to confirm signal routing is correct in the mixer.
2. Press the Multi-FX Button to access the effect editing parameters.
3. Press the Right or Left Arrow Buttons to locate the tab containing parameters for the effect you want to edit e.g. Reverb.
4. Use the Up and Down Arrow Buttons to locate the Edit row containing the Style Parameter.
5. Turn the appropriate Soft Knob to change to the desired style.
6. If further editing is required, you can edit all parameters using a combination of the Up and Down Arrow Buttons and the Soft knobs.
7. Press Store twice to save edits with the preset.

Section 3: Music Applications

Shaping Vocals with Equalization and Dynamics

There are two independent but identical sets of high precision EQ and dynamics processors in VoicePro. One set is inserted in the harmony voice path affecting only the harmony voices. The other set is inserted before the input signal is split off to the Dry Lead and VirtuaLead signal paths.

Additionally, the Spectral Block under Character is also an effective tool for shaping vocals.

Regardless of which path you insert these blocks into, the controls are the same:

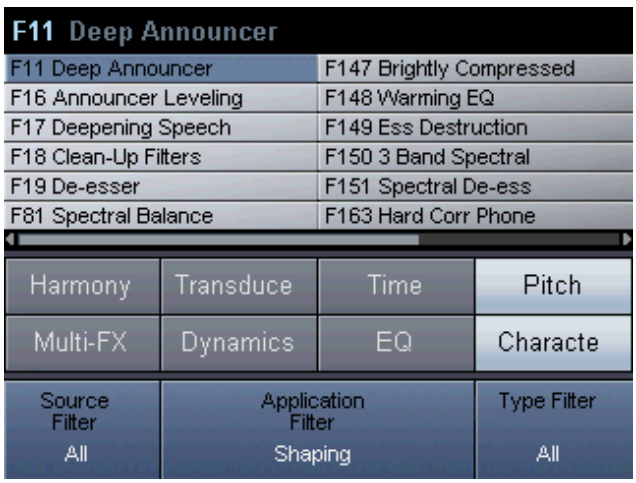
EQ:
- Low cut frequency
- Low shelf gain and frequency
- Mid 1 gain, frequency and bandwidth
- Mid 2 gain, frequency and bandwidth
- High shelf gain and frequency

Dynamics
- Threshold
- Ratio
- Release
- Makeup
- Knee
- Mode

De-Ess
- Amount
- Frequency

While other features of VoicePro can be adequately controlled with the four Assigned Edit Parameters on the Home Screen, full control of the EQ and dynamics blocks is done in their respective tabs.

How to apply dynamics and EQ in VoicePro



1. Navigate to the browser and set the Source Filter to "Singing" and the Application Filter to "Shaping", then select a preset using the Scroll Wheel and Ok Button.
2. If you would like to edit controls not found on the Home Screen, press the Dynamics button which will take you to the tabs for compression, and de-essing where you will find the complete set of controls.
3. Use the Up/Down Arrow Buttons and Soft knobs to locate the desired parameters and to adjust them.
4. Follow the previous instructions to add EQ. The processing blocks can be used simultaneously if required.

How to add Dynamics and EQ to an existing preset

1. After loading the desired preset, press the Matrix Button to enable the processing blocks you require.
2. To access insert parameters on the Dry Lead or VirtuaLead path, press the Dynamics or EQ Buttons.
3. To access insert parameters on the Harmony path, press the Harmony Button, then use the Arrow Buttons to locate the EQ, Compressor and De-Ess tabs.
3. Use the Up/Down Arrow Buttons and Soft Knobs to locate and adjust the required parameters.
4. Press the Store button twice to save.

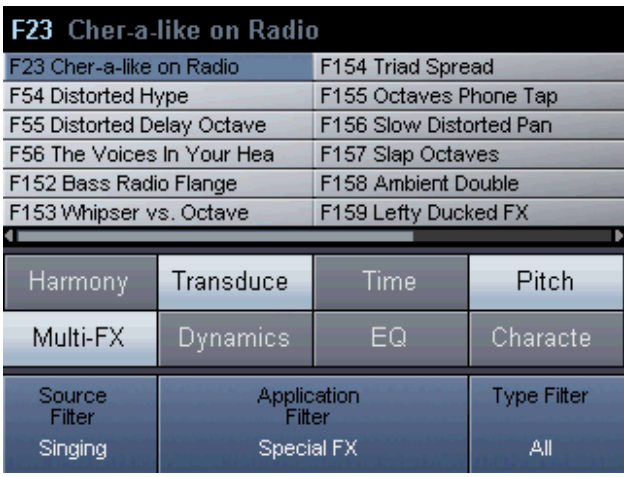
Note that there is plenty of gain available for each of the four EQ bands and compressor makeup to seriously exceed the headroom in VoicePro. If you hear unmusical cracking sounds while adjusting these, reduce the amount of send to the unit or reduce the Voice Sensitivity Parameter in Utility/IO.

Section 3: Music Applications

Creating Special Effects

By combining multiple blocks in VoicePro with different Mix routings, it's possible to create limitless Special FX. These Special FX can be useful in finding a hook for a bridge or chorus of a song. Some Special FX can be low in the mix. Other Special FX are meant to be the same level as the dry voice.

How to load a Special FX preset



1. Navigate to the browser and set the Source Filter to "Singing" and the Application Filter to "Special FX", then select a preset using the Scrol Wheel and Ok Button.

Tips for designing Special FX presets

• Mix: experiment with using "Pre" for FX sends and turning off the Dry, VirtuaLead and Harmony levels.

• FX Routing: try routing an FX send signal itonto µMod. Then route µMod into Delay, and Delay in Reverb.

• Modulated Noise: select a Transducer Noise Style. Set the routing to VirtuaLead. Then set the VirtuaLead µMod send to pre and set the VirtuaLead level to "off".

• Harmony: create a custom scale in "Scale" mode where each note is assigned to the same note. This creates interesting monophonic voices.

Section 4: Dialog and Speech Applications

Introduction

VoicePro has a number of applications for working with the spoken word. With the Time, Pitch and Character algorithms, any dialog performance can be enhanced or transformed after the artist has left the studio. Additionally, allowing the artist to monitor Character, Pitch & Time, and Special FX presets in real-time, provides the opportunity for further creativity.

This section provides step-by-step instructions on how to get quick and creative Dialog/Speaking results with VoicePro.

In this section we cover:

- Changing the Character of a performance
- Re-creating the sound of a phone, radio or other transducer
- Creating a low pitched voice
- Re-phrasing the timing of a performance
- Shaping a voice with EQ, Dynamics and Character
- Special FX with speech

Changing the Character of a Performance

Every human voice has its own signature character. A talented voice-over artist controls their performance to mimic many different voices. Changing the Character of a performance allows you to expand and tweak the sound of any given performance.

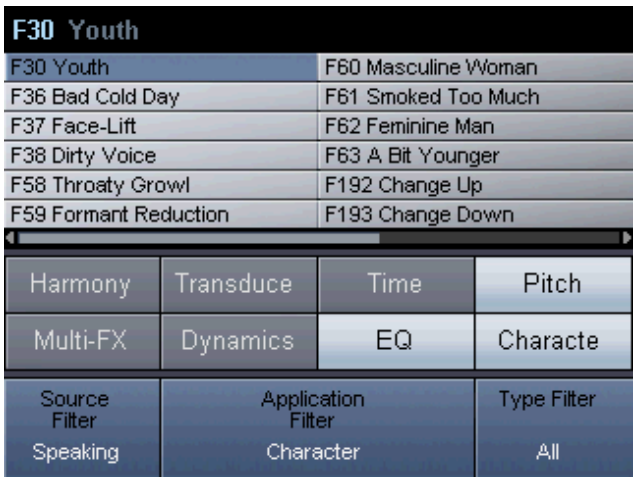
An important question to answer before modifying character is whether you want an enhancement or a transformation.

Enhancements are when you want to preserve the original Character of the voice but bring out certain subtleties. Typically, a good enhancement will use fewer Character effects and/or pitch shifts smaller than 2 semitones. The Amount Parameters for the Character blocks are typically set at "Unity" or less.

Transformations are when you want the processed voice to be dramatically different than the input voice. Transformations will often use multiple Character blocks and pitch shifts great than 2 semitones. The Amount Parameters for the Character blocks are typically set at "Unity" or above.

Transformations can be more realistic when the voice artist can monitor the preset in real-time. In this configuration, the artist will modify their voice to bring out certain aspects of the preset.

How to select a Character preset



1. Enter the Browser Tab by pressing the Browser Button.
2. Use Edit 1 and 2 to configure the Source Filter to "Speaking", and the Application Filter to "Character".
3. Using the Select/Scroll Wheel or the Arrows to preview one of the Character presets.
4. When you've selected a preset, press "Ok" to load the previewed preset.

Section 4: Dialog and Speech Applications

Changing the gender or formants of a voice

1. Start with a Character preset loaded
2. Enter Matrix | Blocks Tab by pressing the Matrix Button and using the Arrow Buttons.
3. Disabled all blocks except "Resonance"
4. Enter the Character | Resonance Tab by pressing the Character Button and using the Arrow Buttons.
5. Use Edit 1 to audition various Resonance Styles. Try raising or lowering the Amount Parameter for an enhancement or transformation effect

If a Resonance Style effect does not seem to be audible on a given voice, try Shifting the Frequency Shift Parameter up or down to tune the Style.

Getting the Spectral Balance right for Character change

Sometimes when a Resonance is applied to a voice, the spectral response needs to be compensated. You'll know this is the case because your immediate thought will be to reach for EQ. For better results, follow the steps below.

1. Start with a Character preset and disable all blocks except Resonance and Spectral.
2. Enter the Character | Spectral Tab by pressing the Character Button and using the Arrow Buttons.
3. Use Edit 1 to audition various Spectral Styles . Use the Frequency Shift Parameter to tune the Style to the input voice. Try raising or lowering the Amount Parameter.

Adding Rasp or Growl to a Voice

If rasp or growl is already apparent in a voice, the Breath or Growl Block are very effective at naturally exaggerating the effect.

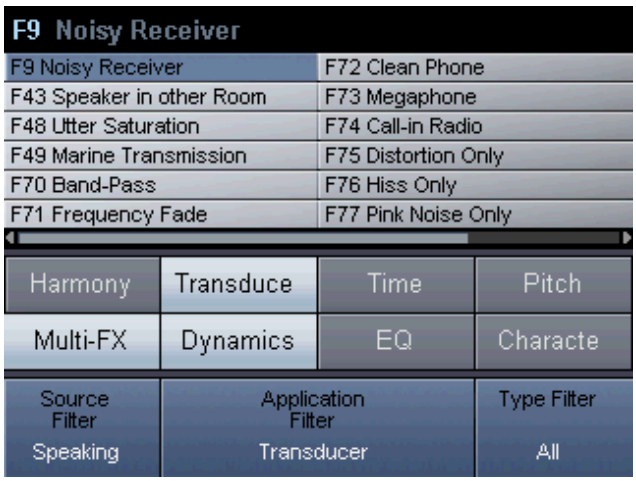
1. Start with a Character preset and disable all blocks except Growl
2. Enter the Character | Growl Tab by pressing the Character Button and using the Arrow Buttons.
3. Use Edit 1 to audition various Growl Styles. Try changing the Amplitude and Edge Weight Parameters to raise or lower the growl affect based on level or word onsets.

More growl or raspy voice sounds are possible using combinations of the Resonance Style "Throaty Voice" and the Breath Styles "Light Rasp" and "Heavy Rasp".

Re-creating the Sound of a Phone, Radio or other Transducer

VoicePro's Transducer emulates the tonal, distortion, and noise components of various transducer devices. These devices include combinations of the components including phones and radios. The components can also be used on their own to create distortions, band filters, and modulated noise patterns.

How to select a Transducer preset



1. Enter the Browser Tab by pressing the Browser Button.
2. Use Edit 1 and 2 to configure the Source Filter to "Speaking", and the Application Filter to "Transducer".
3. Using the Select/Scrol Wheel or the Arrows to preview one of the Transducer presets.
4. When you've selected a preset, press "Ok" to load the previewed preset.

Factory presets with Application set to "Transducer" only use the Transducer Block. The Special FX Application contains some presets that make use of the Transducer block in combination with Reverbs, Delays, etc.

Selecting a Transducer Style and modifying the sound

1. Start with a Transducer preset and disable all blocks except Transducer
2. Enter the Transducer | Transducer Tab by pressing the Tranducer Button and using the Arrow Buttons.
3. Use Edit 1 to audition various Transducer Styles. It is normal for the levels to be quite different between Styles.
4. To add or reduce noise in the Style use the Overall Noise Amout Parameter.
5. To add or reduce distortion in the Style use the Distortion Amount Parameter.

Section 4: Dialog and Speech Applications

Creating a low pitched voice

Interesting animated characters, monster or alien voices are often created with large down-shifts. Follow the steps below to down-shift and adjust the quality.

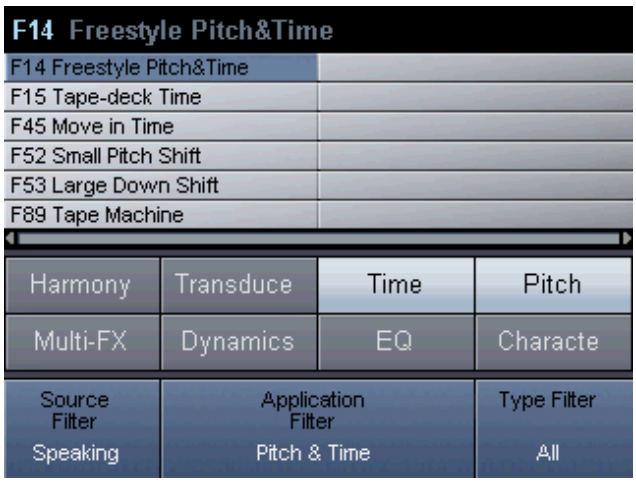
1. Enter the Browser Tab by pressing the Browser Button.
2. Use Edit 1 and 2 to configure the Source Filter to "Speaking", and the Application Filter to "Pitch & Time".
3. Using the Select/Scroll Wheel or the Arrows to select the preset "Large Down Shift"
4. When you've selected the preset, press "Ok" to load.
5. Enter the Pitch | Pitch Shift Tab by pressing the Pitch Button and using the Arrow Buttons.
6. Set the Coarse Shift Parameter to the desired downshift amount
7. Manipulate the UV Shift Amount and Formant Correct Amount to modify the quality of the down-shift.

The Downshift Quality Parameter is best used for smoothing out the 'breaks" in a voice introduced when its down-shifted beyond an octave.

Re-phrasing the Timing of a Performance

VoicePro's Time Block uses TC-Helicon's FlexTime™ algorithm to stretch and speed up a voice performance. The buffer for the Time effects is 5 seconds. The main application for the Time block is dynamic control over the phrasing of a voice by slowing down and speeding up words or phrases. Additionally, it is possible to reduce or increase the length of a 30 second voice clip by +/-17%

Real-time control over timing



1. Enter the Browser Tab by pressing the Browser Button.
2. Use Edit 1 and 2 to configure the Source Filter to "Speaking", and the Application Filter to "Pitch & Time".
3. Using the Select/Scroll Wheel or the Arrows to select the preset "Pitch & Time Freestyle"
4. When you've selected the preset, press "Ok" to load.
5. Enter the Time | Rate Freestyle Tab by pressing the Time Button and using the Arrow Buttons.

The Time block is typically configured to start at the beginning of the buffer. This means the first operation has to be slowing down the voice. However, it is possible with the Reset Position Parameter to set the buffer starting point to be "Middle" This will allow the audio rate to be increased or decreased.

Section 4: Dialog and Speech Applications

Shortening or lengthening the timing of a voice

1. Enter the Browser Tab by pressing the Browser Button.
2. Use Edit 1 and 2 to configure the Source Filter to "Speaking", and the Application Filter to "Pitch & Time".
3. Using the Select/Scrol Wheel or the Arrows to select the preset "Pitch & Time Freestyle"
4. When you've selected the preset, press "Ok" to load.
5. Use the Matrix | Blocks Tab to disable all blocks except Time
5. Enter the Time | Rate Freestyle Tab by pressing the Time Button and using the Arrow Buttons.
6. If you want to lengthen the clip set the Reset Position to “Front”. If you want to shorten the clip set the Reset Position to “Back”
7. On Edit Row 1, turn Edit 3 to Reset the buffer
8. Set the Rate Range to “Small” and Tape Effect to “0”
9. Set the appropriate Playback Rate to shorten or lenghthen the audio clip. To start again, turn Edit 3 on Edit Row 1 to reset the Buffer.

The UV Mod Parameter effects the quality of the time shift. When UV Mod is set to 100, all un-voiced signals are time shifted. This can sound unnatural. A UV Mod setting below 20 can reproduce more natural results. However, when UV Mod is set below 100, the resulting Playback Rate will not be precise because no time stretching will occur during un-voiced signals.

Shaping a voice with EQ, Dynamics and Character

There are two independent but identical sets of high precision EQ and dynamics processors in VoicePro. One set is inserted in the harmony voice path affecting only the harmony voices. The other set is inserted before the input signal is split off to the dry and VirtuaLead signal paths.

Additionally, the Spectral Block under Character is also an effective tool for shaping vocals.

Regardless of which path you insert these blocks into, the controls are the same:

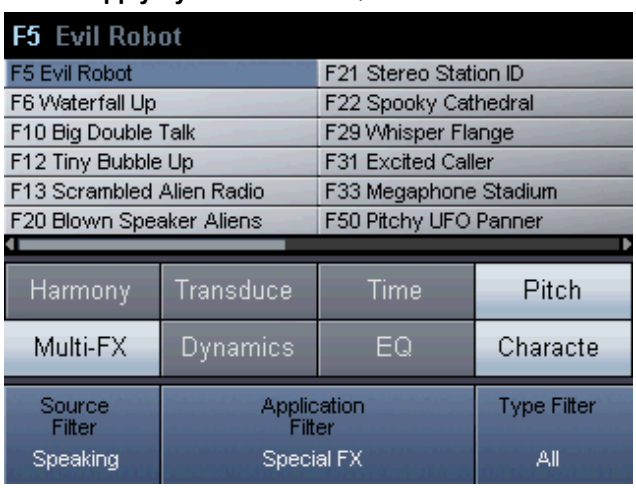
EQ:
- Low cut frequency
- Low shelf gain and frequency
- Mid 1 gain, frequency and bandwidth
- Mid 2 gain, frequency and bandwidth
- High shelf gain and frequency

Dynamics
- Threshold
- Ratio
- Release
- Makeup
- Knee
- Mode

De-Ess
- Amount
- Frequency

While other features of VoicePro can be adequately controlled with the four Assigned Edit Parameters on the Home Screen, full control of the EQ and dynamics blocks is done in their respective tabs.

How to apply dynamics and EQ in VoicePro



1. Navigate to the browser and set the Source Filter to “Speaking” and the Application Filter to “Shaping”, then select a preset using the Scroll Wheel and Ok Button.

Section 4: Dialog and Speech Applications

2. If you would like to edit controls not found on the Home Screen, press the Dynamics Button which will take you to the tabs for compression and de-essing where you will find the complete set of controls.
3. Use the Up/Down Arrow Buttons and Soft knobs to locate the desired parameters and to adjust them.
4. Follow the previous instructions to add EQ. The processing blocks can be used simultaneously if required.

How to add dynamics and EQ to an existing preset

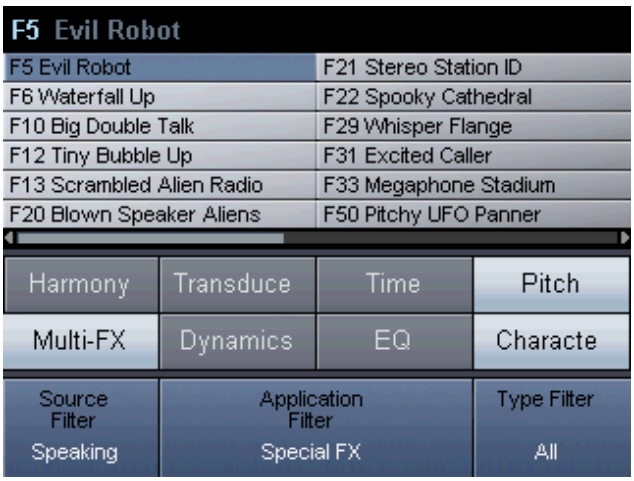
1. After loading the desired preset, press the Matrix Button to enable the processing blocks you require.
2. To access insert parameters on the dry or VirtuaLead path, press the Dynamics or EQ Buttons.
3. Use the Up/Down Arrow Buttons and Soft Knobs to locate and adjust the required parameters.
4. Press the Store button twice to save.

Note that there is plenty of gain available for each of the four EQ bands and compressor makeup to seriously exceed the headroom in VoicePro. If you hear unmusical cracking sounds while adjusting these, reduce the amount of send to the unit or reduce the Voice Sensitivity Parameter in Utility | I/O.

Special FX with Speech

The Special FX presets were created to quickly call up sounds which are notoriously time consuming to re-create in the post production environment.

How to load a Special FX preset



1. Navigate to the browser and set the Source Filter to “Speaking” and the Application Filter to “Special FX”, then select a preset using the Scroll Wheel and Ok

Tips for designing a Special FX

• Mix: experiment with using “Pre” for FX sends and turning off the Dry, VirtuaLead and Harmony levels.
• FX Routing: try routing an FX send signal into µMod. Then route µMod intro Delay, and Delay in Reverb.
• Modulated Noise: select a Transducer Noise Style. Set the routing to VirtuaLead. Then set the VirtuaLead µMod send to pre and set the VirtuaLead level to “off”.
• Harmony: create a custom scale in “Scale” mode where each note is assigned to the same note. This creates interesting monophonic voices.

Section 5: Live Performance Applications

Introduction

While VoicePro is an excellent tool for the studio, it can also be used for creating memorable voice effects in a live performance setting. Every musical group that features the human voice can benefit from using VoicePro including single acts or duos, touring pop acts and, live theatre performers.

This section is more of an introduction to live vocal processing applications as opposed to detailed feature discussions. Further parameter detail is found in the Detailed Parameters Description Section.

In this section we cover:
- Live hookups
- Some features applicable to live performance.
- Finding presets
- Optimizing latency
- Using MIDI

Hookup:

VoicePro does not feature a microphone preamp so this must be handled externally by an onstage or house console. In a live show it's best to run VoicePro as a mono-send stereo-return channel insert with routing of the dry signal handled by VoicePro's internal mixer. This allows the onstage performer the use of VoicePro’s voice transformation capabilites as well as dynamics and EQ. Also, some effects, such as uMod, often sound best fully wet. VoicePro has an analog hardware bypass when power is removed which adds a good measure of security in high-pressure live shows. Also, the auxilliary input allows use of VoicePro's non-pitch shifting effects for other instruments and singers in bands that have their audio mixer onstage.

Notes on VoicePro features in live performance:

Pitch correction, harmony, dynamics and EQ, vocal transformation, distortion, and Classic FX can all be used effectively when performing live.

• Pitch correction will help deliver a more polished vocal in live performance. One thing to note is that a singer hearing their corrected voice in the monitor may be distracted at first. If this is the case, the signal from the mic can be split so that the monitor produces the unprocessed vocal and the main house mix contains the corrected vocal. Also, each song usually requires different key and scale settings which can be saved as unique presets, and recalled by the onstage performer or sound crew.

• Using the four additional voices within VoicePro for harmony and doubling in live performance can produce succesful results. Whether the harmonies are controlled by a MIDI keyboard or by recalling user-specified key and scale presets for each song, even a single harmony voice produced by VoicePro will seriously improve vocals.

• Dynamics and EQ are usually handled by a front-of-house sound mixer because he or she is responsible for fitting vocals into the whole mix. This doesn't mean they shouldn't be used by the performer with an onstage VoicePro. Also be aware that these effects can increase the risk of monitor feedback.

• Vocal transformation can create memorable vocal effects live, compensate for a thin sounding voice, and even add extra breathiness where it's required.

• Distortion and band-limited megaphone effects are frequently used in pop songs and these can now be easily generated live with VoicePro. The same caveat regarding feedback with dynamics and EQ applies here.

• Reverb, modulation effects, and delay fit perfectly in live performance and give the onstage performer more control of effects, but its important to be aware of the balance of dry and effect in the mix the audience hears.

Section 5: Live Performance Applications

Optimizing Latency

Latency is a term for audio signal delay that results from DSP processes. When performing live, delay between singing and hearing the resulting sound from the monitors can be distracting. VoicePro has a system setting that you can adjust if necessary to trade audio performance for lower latency. The factory default latency setting may work fine for you depending on which audio processing block you're using. If you would like to lower the latency then you can adjust the Latency Mode Parameter to do so.

How to adjust latency for live performance

1. Press the Utility Button
2. Use the Arrow Buttons to locate the System Tab
3. Scroll down to the Latency Mode Parameter
4. Use the Soft Knobs to choose the value that works best for you while vocalizing through the preset you intend to use in performance.

MIDI and live performance control

VoicePro has no connection for a footswitch, so toggling presets, bypass etc. live is only possible with a third-party MIDI foot controller. If you want live control of effect levels etc., one or more MIDI volume pedals would be required as well.

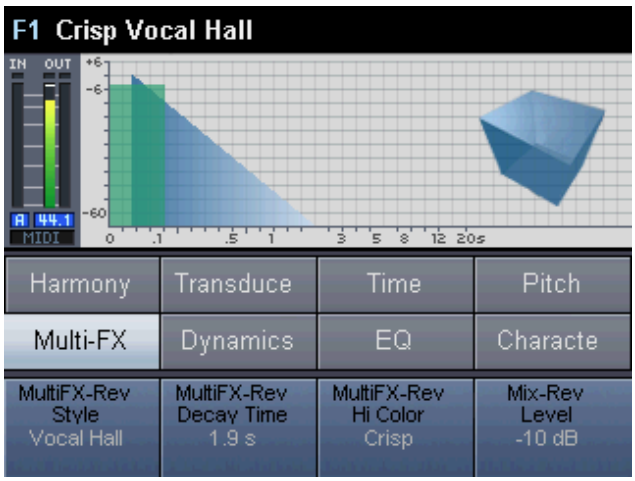
If you will be using VoicePro for live harmonies, then you will need to send MIDI control signals for Notes and Chord mode presets from a MIDI keyboard. This requires VoicePro's MIDI channel and continuous controller (CC) settings to match your keyboard and footswitch devices.

How to set VoicePro's MIDI Parameters

1. Press the Utility Button
2. Scroll to the MIDI Tab using the Arrow Buttons
3. Use the Arrows and Soft Knobs to locate and adjust the relevant parameters (more information on MIDI is found in Detailed Parameters: System). Usually, for live performance, the main settings that have to match the onstage MIDI controllers are Harmony V1(All) Channel and, if you will be adjusting levels and ranges, the CC Channel.

Section 6: Detailed Parameter Descriptions

HOME



The Home Page allows for preset recall, status, visualization and top-level editing. Aspects of the Home Page are assigned per preset. This allows each preset to be tailored to its application.

Recalling Presets
The Home Page presets can be previewed and recalled using the Select/Scroll knob and the OK Button. In the default "Preset Preview" mode, the block's status, editable parameters and preset name are previewed. When the OK Button is pushed, the previewed preset is recalled. In "Preset Immediate" mode, presets are recalled immediately when the Select/Scroll knob is turned.

The Home Page is split into the following elements from top to bottom:

Preset Number / Name
The current or previewed preset number is represented with "F" for factory presets or "U" for user presets. The number corresponds to presets 1 through 250. Blank user presets are not displayed. A "*" before a preset name indicates the preset has been edited. White text indicates the live/current preset while blue text indicates a previewed and inactive preset.

Status Area
The Status Area shows vocal input and stereo output meters. The index lines on the meters reflect the following values top to bottom: -3 dB, -6 dB, -10 dB, -15 dB, -30 dB. The red indicators above the meters display clip/overload status. Below the meters, input status is displayed using the following format: "D" for digital input, "A" for analog input, followed by the sampling rate. "MIDI" is displayed when MIDI data is detected at the MIDI input.

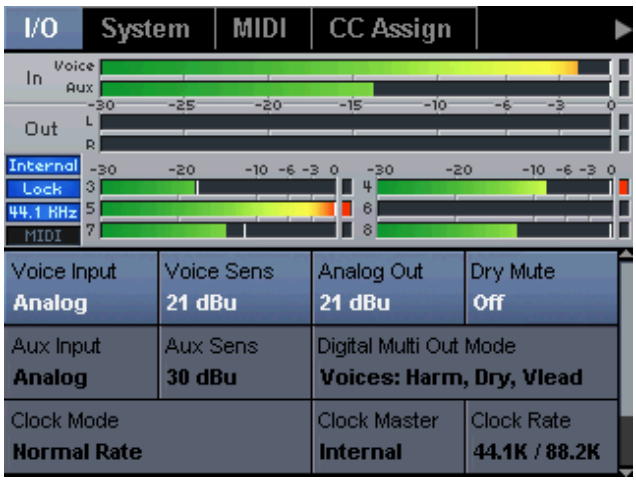
Assigned Visualization
Each preset can have a visualization assigned to the home page. A visualization is the graphical area on any tab that provides feedback for that tab. Factory presets are authored to have the most useful assigned visualization for the intended application. The home page visualization is assigned on the MATRIX | Visualization Tab.

Preset Status Area
The Preset Status Area contains indicators for the top-level blocks that have been enabled for the current or previewed preset. Any individual block enabled under the Character, Multi-FX and Dynamics Button; will cause its parent indicator to show "enabled" in the preset status area.

Assigned Edit Parameters
Each preset can contain up to four assignable parameters displayed on the bottom of the Home Page. These parameters can be controlled using the 4 soft knobs. Factory presets are authored to have the most useful Assigned Edit Parameters for the intended application.

Section 6: Detailed Parameter Descriptions

UTILITY | I/O



The UTILITY / I/O Tab sets the analog and/or digital input/output configuration. Below are descriptions of the various parameters:

Voice / Aux Input
Selects the input source for the lead or aux path.

Voice / Aux Sens. and Analog Out
In combination, these parameters are used for attaining the best possible dynamic range when using VoicePro with analog devices. Voice / Aux Sens sets the maximum input operating level. Analog Out sets the maximum output operating level. Nominal values for use in a typical auxiliary send configuration on a mixer would be 3dBu for inputs, and 24dBu for outputs.

Digital Multi Out Mode
This parameter configures the functionality of digital output channels 3 to 8 (digital channels 1 & 2 are always fixed to master stereo output). The three options are as follows:

"Off": no output on channels 3 to 8

"Voices": Harmony voices 1 to 4 on channels 3 to 6, lead voice on channels 7, VirtuaLead on channel 8.

"Blocks": stereo harmony on channels 3 and 4, stereo lead on channels 5 and 6, stereo Multi-FX on channels 7 and 8.

Clock Mode
Set this parameter at "Normal Rate" when working with sampling rates of 44.1K or 48K. For sampling rates of 88.2K or 96K, set the parameter to "Double Rate".

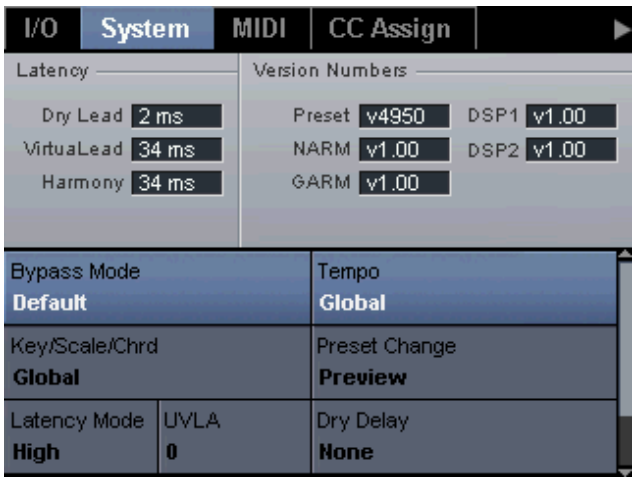
Clock Master
Synchronizes VoicePro's digital inputs to the clock rate from "Internal", "Word Clock" or "Digital In".

Clock Rate
When Clock Master is set to "Internal", the Clock Rate parameter sets the sampling rates based on the Clock Mode. If the Clock Master Parameter is set to "Digital" or "External", the Clock Rate Parameter sets the target sampling rate to which VoicePro will lock.

Master Output Level
Sets the stereo output level to the stereo analog and digital channels 1 and 2.

Section 6: Detailed Parameter Descriptions

UTILITY | System



This tab configures the functions related to bypass, latency, and preset change. Below are descriptions of the various parameters:

Bypass Mode
This parameter configures the functionality of the Bypass Button. There are four options:

"Default" bypasses all the processing in VoicePro. Dry Lead is routed to both left and right outputs

"Default with EQ & Comp" is the same as "default" mode except Dynamics & EQ are left on.

"Harmony Mute" this is a harmony performance mode where the harmony voices are turned on and off.

"Digital Wire" bypasses the voice input to the left analog/digital 1 output, and the aux input to the right analog/digital 2 output. This mode is useful when VoicePro is being used for analog to digital conversion.

Key/Scale/Chord
When using the harmony block, musical information is provided in the form of chords, key, and scale to produce intelligent results. The Key/Scale/Chord Parameter configures whether that information is set globally or by preset.

Preset Change
There are two modes of Preset Change in VoicePro. "Immediate" triggers preset changes when the Select/Scroll knob is used on the Home Page. "Preview" requires the OK Button to be pressed to load the selected preset.

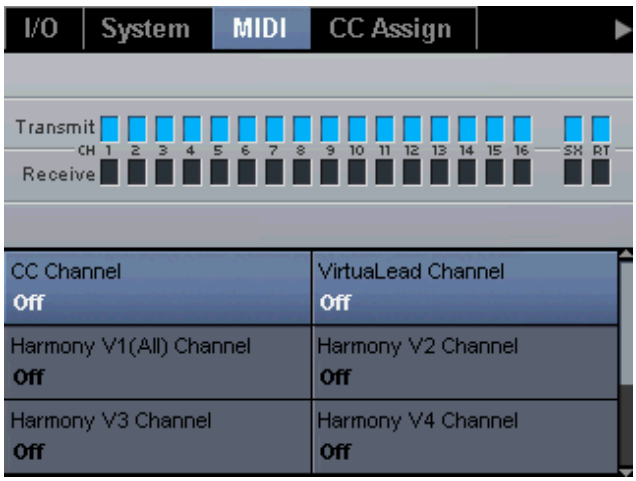
Latency Mode
VoicePro contains several latency modes. These modes affect the VirtuaLead path. The "Nominal" setting gives the best quality. Lower latencies are useful for performing live or monitoring applications. The latency of the VirtuaLead, Dry Lead, and Harmonies are shown in the visualization area.

Dry Delay
When Dry Delay is set to "None" the Dry Lead is outputed as fast as the system allows. When "Harmony Sync" is selected, the Dry Lead is delayed to synchronize with the Harmony Processing.

Tuning Reference
All the Pitch and Harmony Parameters related to shifting the pitch of the voice input are tuned to this reference. A440 Hz is the default reference. Use this parameter for tuning VoicePro in a situation where the reference tuning of instruments is sharp or flat.

Section 6: Detailed Parameter Descriptions

UTILITY | MIDI



The UTILITY / MIDI Tab configures MIDI functionality. Below are descriptions of the various parameters:

CC Channel
Sets the channel to send and receive user interface control messages (CCs).

VirtuaLead Channel
Sets the channel to receive Notes and pitch-bend information for the VirtuaLead Pitch Block. How the Pitch Block reacts to MIDI depends on the Pitch mode. See PITCH / MODE for more information.

Harmony V1(all) Ch, V2-4
Sets the MIDI channel to receive notes and pitch-bend information for the Harmony Block. "Harmony V1(all) Ch" is the only channel used if the harmony mode is set to Chord or Notes Mode. If the Harmony Mode is set to "Notes 4 Channel", then the MIDI channels for Voice 2, 3, and 4 are used for shifting the associated voices.

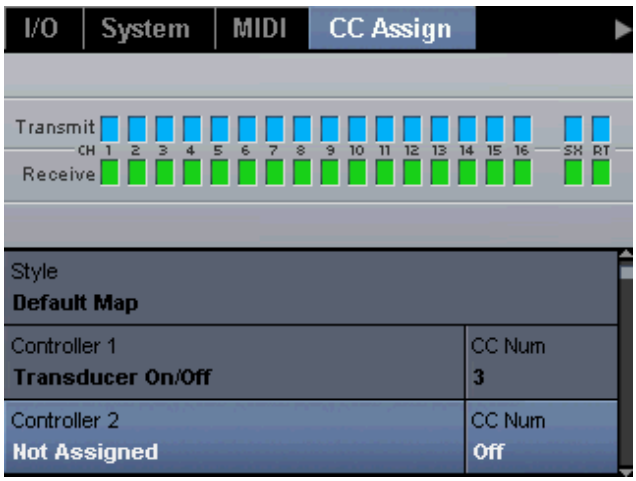
Filter
With this parameter, VoicePro can ignore Program changes, SysEx, or both types of MIDI messages.

MIDI Clock
Determines whether global tempo is derived from MIDI Clock or from the Tap Tempo Button.

Split Zone/Note
The Split Zone and Split Note Parameters divide the keyboard into two zones. Notes coming from the one zone are ignored while notes from the other zone are treated as valid. Split Note Parameter sets the split point in MIDI. Split Zone Parameter defines if notes above or below the split note are accepted.

Notes Transpose
Transposes the incoming MIDI notes a specified number of octaves. This applies to all incoming notes whether they are destined for the Harmony or Pitch Block.

UTILITY | CC Assign



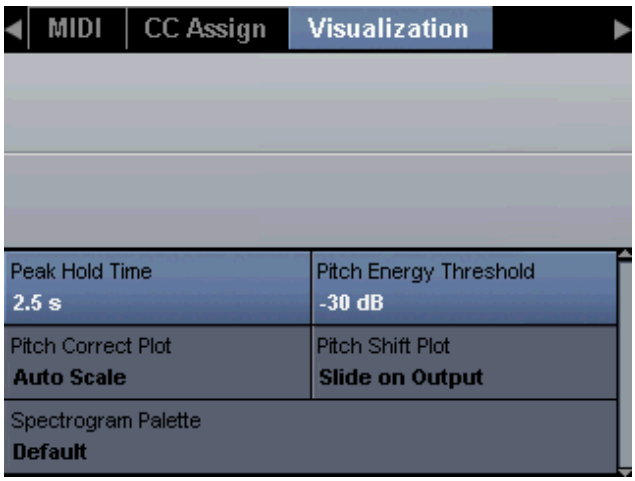
VoicePro contains a configurable CC assignment engine. Up to 70 of VoicePro's preset parameters can be assigned to any CC.

CC Assign Style
VoicePro contains several CC Assign Styles. This is a quick way to get external control setup. The included styles emulate aspects of other TC-Helicon products or typical external control applications:
- Default - standard for VoicePro
- VoicePrismPlus
- VoiceWorks
- VoiceLive
- VoiceOne
- Quintet

Assigning CCs
Each of the 70 assignments has its own editing row. In the edit row, choose the parameter and then the CC number. Parameters and CCs must be mapped in a one-to-one relationship.

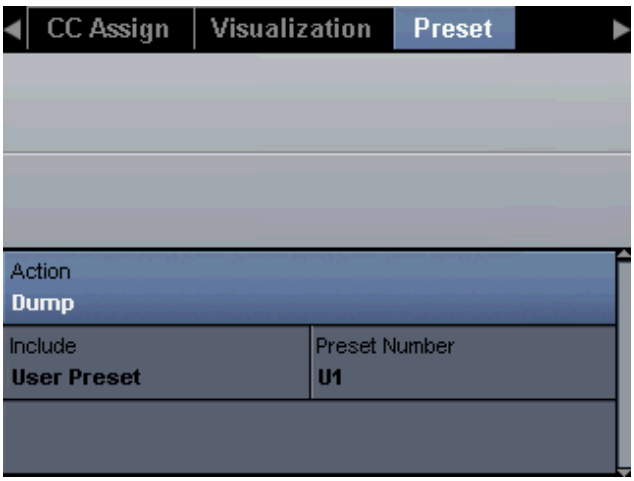
Section 6: Detailed Parameter Descriptions

UTILITY | Visualization



The Visualization Tab allows customization of graphics. This includes some colors, types of pitch plots, and meter peak hold times.

UTILITY | File



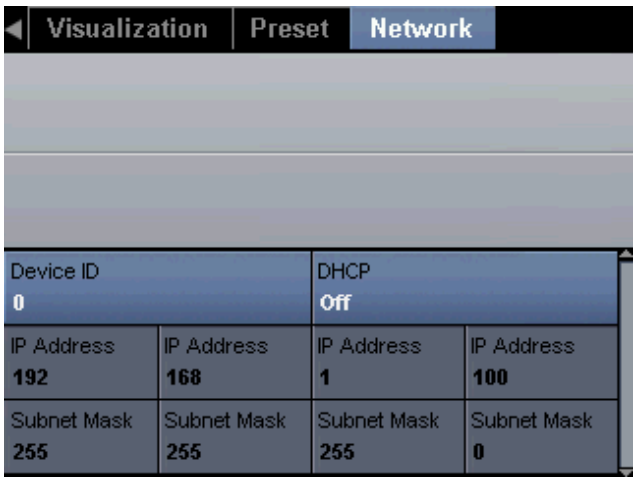
The UTLITY / File Tab allows for the backing up and restoring of presets and utility parameters via MIDI. Use the OK Button to execute the action.

Action
Select whether you want to dump, restore or erase data in the product. The Dump Action requires the MIDI Out to be connected to a MIDI sequencer or data filer. Press the OK Button to execute the action.

Include
This parameter determines what data is dumped, restored or erased when the OK Button is pressed. When the value is set to "Presets", use the Preset Number Parameter to select the preset. "All Presets" will dump all presets, or restore/erase all user presets. The last option is "System Settings", which will dump or restore all the parameters under the Utility Button.

Section 6: Detailed Parameter Descriptions

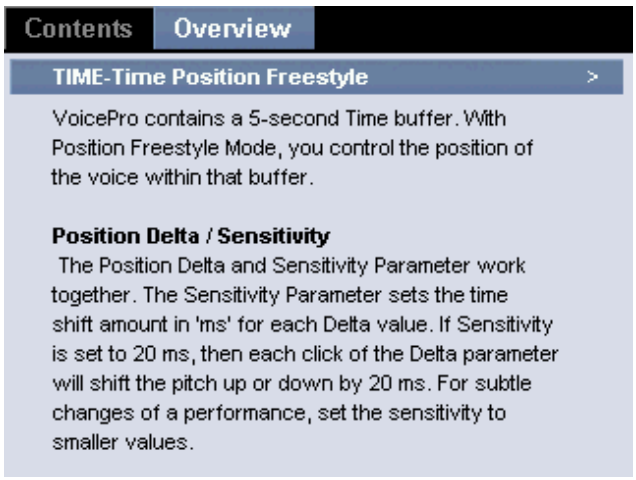
UTILITY | Network



This tab configures the networking parameters associated with connecting VoicePro via TCP/IP for software updates. Help for setting these parameters is included with software updates.

DHCP is helpful when setting up VoicePro to an established network. However, DHCP can increase boot-up time. When not uploading software it's suggested to leave the parameter disabled.

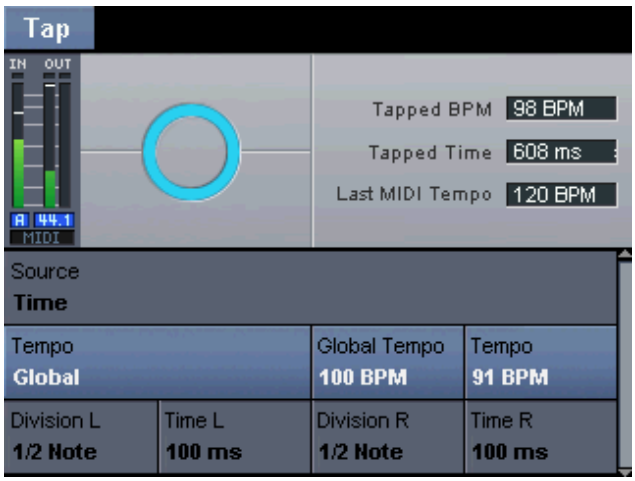
HELP



The Help System in VoicePro is context sensitive. Pressing the Help Button will bring you to the Topic Tab related to the function being viewed on the display. While in the help system, you can tab right to the Contents Tab, where you can navigate through all the topics.

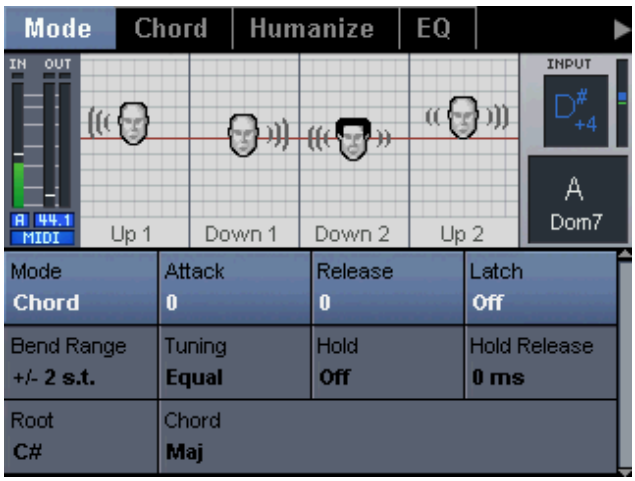
Section 6: Detailed Parameter Descriptions

TAP



The Tap Button is used to set the delay time in presets where the Delay Source Parameter is set to tempo. In this configuration, tapping the Tap Button will calculate a BPM value.

HARMONY | Mode



The HARMONY / Mode Tab is used to configure how the harmony voices will be generated. There are various levels of intelligence and MIDI control for each mode. The parameters for each mode can be different.

Mode: Shift
Shift Mode is best used for doubling and special FX. Shift is the most basic mode of operation for the Harmony Block. The harmony voices can be shifted a semi-tone away from the input note. In this mode there is no musical intelligence.

Mode: Scale
In Scale Mode, harmonies use key and scale information to create musically correct, diatonic harmonies. Scale Mode harmonies are more dynamic than Chord Mode harmonies. However, in some situations a custom scale needs to be created on the Scale Tab.

Mode: Chord
In Chord Mode, harmonies use chord information to create intelligent, diatonic harmonies based on the input pitch. Chords can be detected in real time via MIDI or using the Root/Chord Parameter.

Mode: Notes & Notes (4ch)
In this Mode, you provide VoicePro with specific MIDI note information to determine the pitch of the harmony voices. When "Notes (4ch)" is selected, each harmony voice is assigned a MIDI channel. When "Notes" is selected, a single MIDI channel controls the 4 harmony voices.

Key & Scale (available in Scale Mode)
Use these parameters to set the scale root (key) and scale type. The scale defines the map for how the harmony voices will react to the input pitch. Available scales are Major/Minor 1,2 and 3. However, in some situations a custom scale needs to be created on the Scale Tab.

Bend Range
This parameter sets how far a MIDI pitch-bender will shift the voice.

Section 6: Detailed Parameter Descriptions

Tuning
VoicePro includes three tuning options. These options have no effect in Notes mode.

"Equal" Tuning uses approximations for the tuning of each note, allowing us to easily alter the key of our music without re-tuning our instruments. This is the same way synthesizers are tuned.

"Just" Tuning maintains the relative ratios between pitches, creating perfect harmonies. Just Tuning will sound natural the majority of the time..

"Barbershop" Tuning differs from Just Tuning in Chord Mode and is best used for a cappella applications.

Hold
This control engages the Harmony Hold feature. When set to "On", Harmony Hold freezes the harmony voices while allowing the lead voice to ad lib over top. When a preset is stored, the parameter will always be saved as "Off".

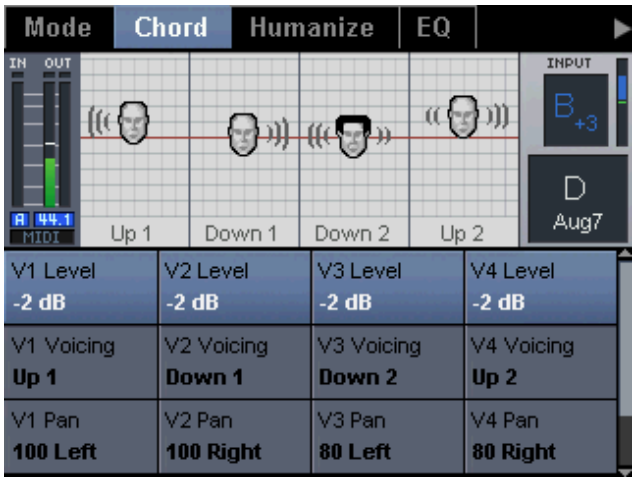
Hold Release
Sets a fade-out time for the hold feature when returned to the "Off" value.

Attack/Release (available in Chord and Notes Modes)
Attack Mode sets the envelope attack and release times for harmony voices. Using these parameters can make entrances and ends of harmony notes more natural. This function works when Latch is "off" and MIDI is being used.

Latch (available in Chord and Notes Modes)
When enabled, the last chord remains active after the notes have been released. When disabled, harmony output stops when MIDI notes are released.

Root/Chord (available in Chord Modes)
Use these parameters to set the chord root (key) and chord type. The chord defines the allowable notes for the harmony voices.

Harmony | Shift, Scale, Chord or Notes



The majority of parameters in this tab are vertically assigned to one of the harmony voices: "V1" for voice 1, "V2" for voice 2, etc.

Level
Each harmony voice can have its own level. There is also an "Off" value to disable that harmony voice. Since up to 4 voices of harmony can be added, be sure to leave headroom for additional level.

Voicing (available in Shift, Scale and Chord Modes)
In Shift Mode, the voices are shifted relative to the input note. The values range from -24 semitones to +24 semitones creating parallel harmonies.

In Scale Mode, the Voicing Parameter specifies the interval of the harmony note with respect to the input note according to the selected scale. The range of values goes from -2 octaves +2 octaves. For example, a setting of +3rd will result in a harmony voice a third above the input voice, related to the current scale.

In Chord Mode, the Voicing Parameter specifies the relation of the harmony note to the input note with respect to the current chord. The harmony voices are always notes in the chord. A setting of "Up1" places the harmony voice on the next chord tone above the input voice.

Pan
Each harmony voice can have its own stereo pan position. Spreading the harmony voices within the stereo field can help de-couple the harmony voices from the input voice, resulting in more natural harmonies.

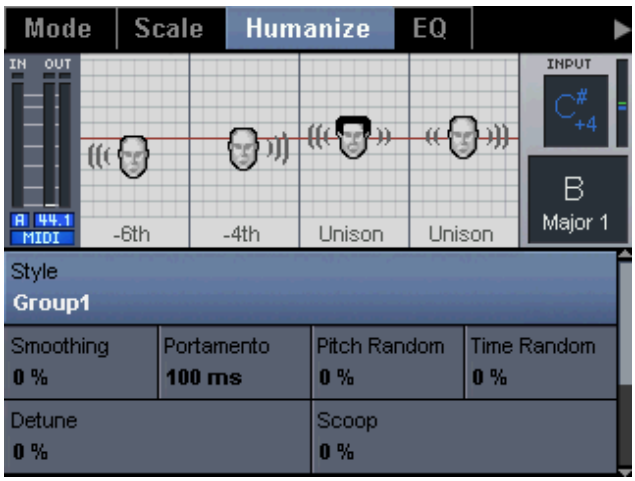
Gender
This parameter shifts the formants (often called gender) of the harmony voices. Use it to alter the character of the voice ranging from -50 (a big person with a deep voice) to 0 (no change) to +50 (mice/alien sound).

Section 6: Detailed Parameter Descriptions

Custom Scales in Scale Mode
Note Source/Input Note
The Note Source and Input Note Parameters are used to create custom scales. When Note Source is set to "Manual", the Input Note value can be set to any note in the scale. When Note Source is set to "Sung", the Input Note is set by the input pitch.

Output Note
Use these parameters to set the desired output note for each harmony voice for the select Input Note. To create a complete scale, make sure Output Notes are assigned for each Input Note.

HARMONY | Humanize



The HARMONY / Humanize Tab provides an overall style as well as detailed control over the performance of the harmony voices. Humanize makes the harmony voices very natural or effected.

Style
This parameter configures all the parameters in the Humanize Block. It provides quick access to different qualities of performance.

Smoothing
Sets how much of the input pitch nuance is applied to the output voice. Values from "50%" to "70%" produce the most natural results. A value of "0%" helps produce a Cher-like effect.

Portamento
Portamento sets the time in milliseconds to reach a target note when a harmony voice changes pitch.

Pitch/Time Random
These parameters apply a humanized randomization of the harmony voices' time and pitch contour. Moderate use of these parameters is very useful for de-coupling the harmonies from the lead.

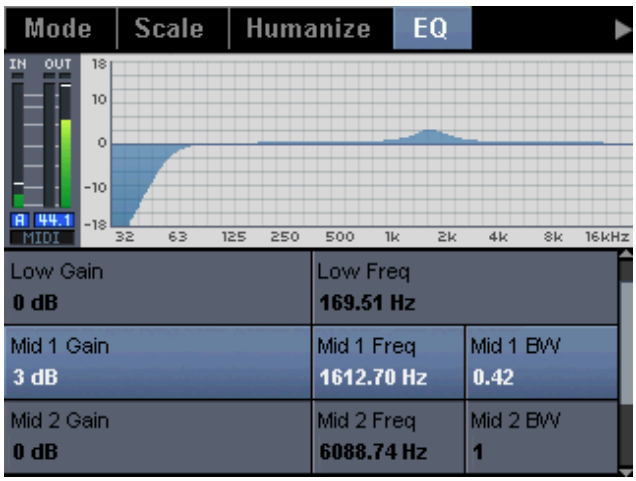
Detune
With the Detune Parameter, a fixed amount of pitch-shift can be applied to the harmony voices.

Scoop
The Scoop Parameter adds humanized pitch envelopes at the onsets of notes, further disconnecting the harmonies from the lead.

Vib Style & Amount
A modeled vibrato can be added to each harmony voice using a combination of Vib Style and Vib Amount Parameters. The vibrato styles are based on the analysis of real singers.

Section 6: Detailed Parameter Descriptions

HARMONY | EQ



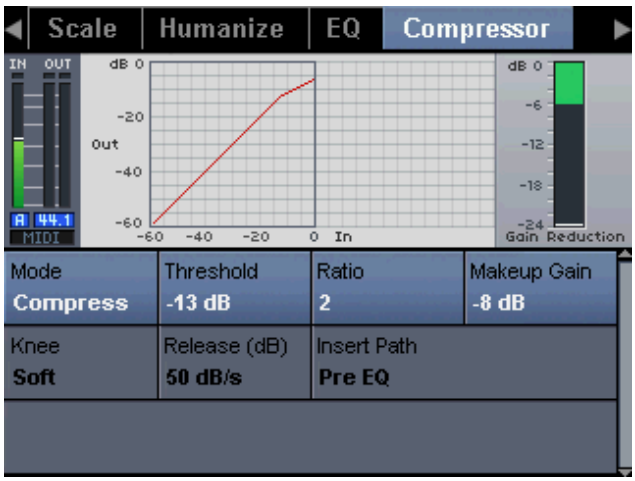
The EQ in the Harmony Block is designed using double precision filter algorithms. The resulting shape of all the filters is displayed in the visualization area.

Low/High Gain, Freq
The low and high bands are 2nd-order shelving filters. When any band's parameters are adjusted, a line representing the EQ curve for that specific band is shown.

Mid 1/2 Gain, Freq, BW
The 2 mid-bands are 2nd-order parametric filters. When any band's parameters are adjusted, a line representing the EQ curve for that specific band is shown.

Low Cut
The low cut is a 4th-order filter. There are preset cut-off points of "60 Hz", "80 Hz" and "120 Hz".

HARMONY | Compressor



The Harmony Compressor contains two modes depending on what dynamic effect is desired. The compressor visualization provides representation of the compressor curve and real-time gain reduction amount.

Mode
The two modes for the compressor are "Compress" and "Comp/Limit". The "Compress" mode is a variable knee compressor. The compressor is triggered by RMS level with automatic make-up gain. This makes it useful when trying to get a smooth compressed sound. The "Comp/Limit" mode is triggered by Peak Levels with traditional attack/release controls.

Threshold/Ratio
These parameters operate like any standard compressor. Threshold Parameter sets the input level when compression will occur. Ratio Parameter determines the amount of gain reduction when the threshold is triggered.

Make-up/Output Gain
When the mode is "Compress", the makeup gain is automatic. However, an offset can be applied using the Make-up Gain Parameter. When the mode is "Comp/Limit", Output Gain can be added to the desired level.

Attack / Release
In both modes, the release parameter determines the speed at which the compressor stops reducing levels. In "Comp/Limit" mode, the Attack Parameter determines the speed at which the compressor starts reducing levels. Because of the variable knee modes with "Compress", there is no Attack Parameter.

Knee
In "Compress" mode there are two knee modes. In "Hard" mode, the compressor ratio is used immediately when the threshold is reached. In "Soft" mode, the compressor ratio is gradually reached as the level increases past the threshold. "Soft" mode is ideal for a smooth compressor sound.

Section 6: Detailed Parameter Descriptions

Insert Path
The compressor can be inserted "Pre EQ" or "Post EQ". The "Pre EQ" value is useful for targeting compression on specific frequency bands.

HARMONY | De-ees

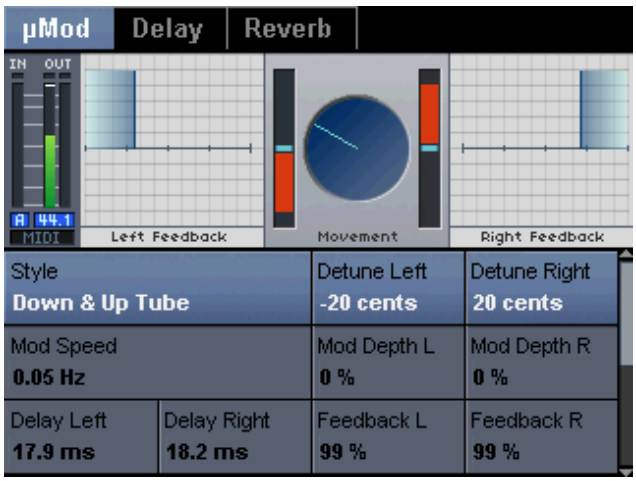
Use the Harmony De-esser to help reduce the sibilant levels associated with homophonic harmony parts.

Amount
Sets the amount that the De-esser will reduce sibilant levels.

Frequency
Sets the center point of the de-esser detection circuit that decides when to reduce sibilant sounds.

Section 6: Detailed Parameter Descriptions

MULTI- FX | µMod



µMod is short for MicroMod. By combining micro-pitch shifters, modulated delay, and feedback, the µMod block can create micro-shifts, choruses, flanges, and anything in between.

Style
The µMod style is essentially a preset for the µMod block. A style sets all the µMod Parameters.

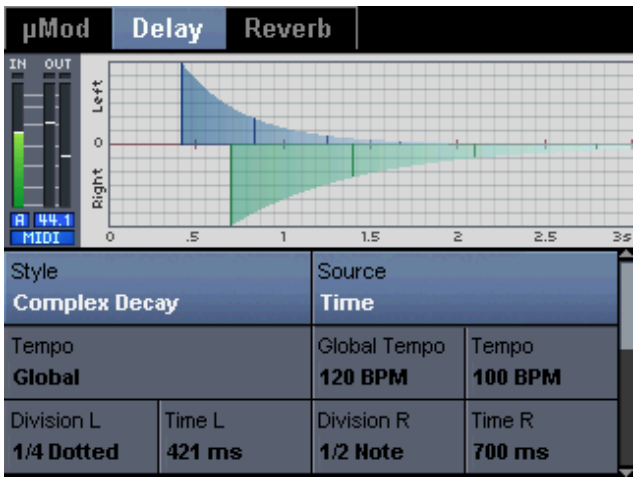
Detune L/R
This sets the amount of pitch shifting in the left and right input to the µMod block. The shifting can be +/- 25 cents.

Mod Speed, Depth, Phase, Wave
The Mod Parameters in µMod control the modulation of the delay parameter. The combination of modulation speed, depth, phase, and waveform are necessary to create flanged and chorused sounds.

Delay L/R
A subtle amount of delay on the right and left path adds depth to the µMod effect.

Feedback / X Feedback L/R
Feedback is essential for going beyond a simple detune sound with the µMod Block. X Feedback allows the left and right channel to be fed into each other for creating complex sounds.

MUTLI-FX | Delay



The Delay Block in VoicePro has been optimized for the voice. These optimizations include tempo control and a ducking feature for keeping mixes clean.

Style
The Delay Style is essentially a preset for the block. A style sets all the Delay Parameters.

Setting Source & Delay
There are four source modes for controlling the delay times:

"Tempo" Delay times are controlled by the Tap Button or the incoming MIDI clock. There are global parameters for how tempo is acquired on the Utility / System page. The delay times can still be adjusted to fine-tune the sound.

"Time" Delay is set with the Time L and Time R Parameters. Changing tempo does not change the delay times.

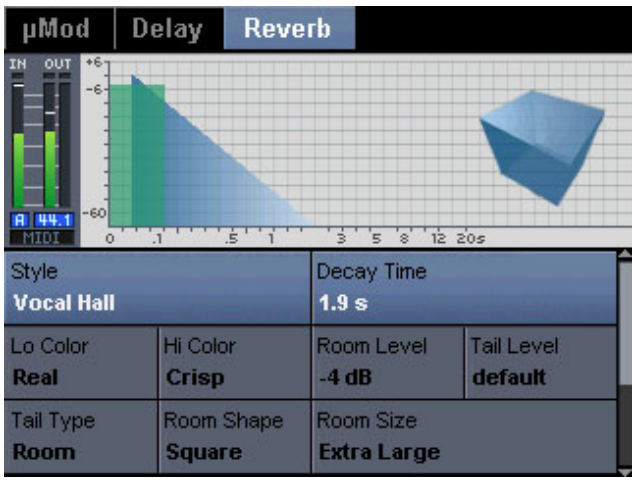
"Tempo left only" & "Tempo right only" Synchronize only one side of the delay to tempo.

Duck Thresh, Release, Attenuation
The ducking feature attenuates the output of the delay based on the level of the input voice. Setting the threshold at "-24 dB" and attenuation at "- 60 dB" will ensure the delay sounds is only heard at the end of a vocal line.

Lead / VirtLead / Harm / Aux Balance
The Balance Parameters allow the stereo inputs to the delay to be focused towards the left, right, or center of the stereo delay input. This is useful in creating more complex ping-pong effects.

Section 6: Detailed Parameter Descriptions

MULTI-FX | Reverb

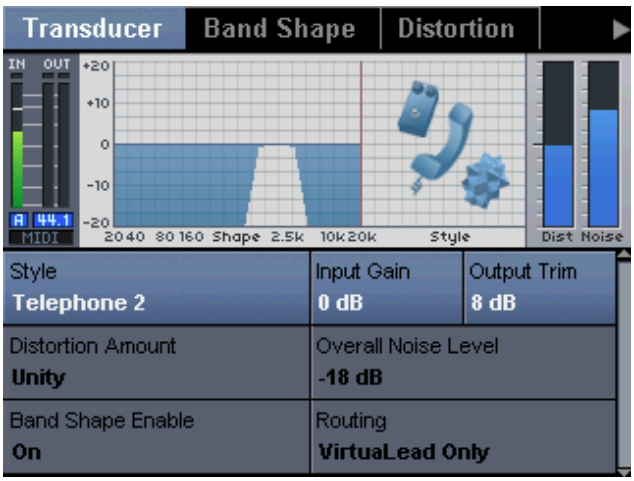


VoicePro's Reverb has been tuned for voice applications. The parameters allow control over the tail and room, allowing ambiences or spaces to be created. The room sound of the reverb is created through early reflections. The room level, shape, and size can be controlled separately. The tail sound is the decay part of the reverb.

Style
The Reverb Style is essentially a preset for the block. A style sets all the Reverb Parameters.

Duck Thresh, Release, Attenuation
The ducking feature attenuates the output of the Reverb based on the level at the input. Setting the threshold at "-24 dB" and attenuation at "- 60 dB" will ensure the Reverb sounds are only heard at the end of a vocal line.

TRANSDUCER



The Transducer Block emulates the noise, bandwidth and distortion characteristics of phones, radios and megaphones. There are three elements that make up a Transducer sound. Each element has its own tab: Band Shape, Distortion, and Noise. The Main Page gives overall control of the Transducer sound.

Style
The Transducer Style is essentially a preset for the block. A style sets all Transducer Parameters in all tabs.

Input / Output Gain
The input and output gain for the Transducer can be key in creating a sound. A perfect example is a quiet person talking through a phone with its volume turned up. This requires balance of those controls to emulate the correct sound for a specific Transducer setup.

Distortion Amount, Overall Noise Level and Band Shape Enable give Main-Tab access to the most important parameter from the other Transducer Tabs.

Routing
There are 3 routing choices for the Transducer Block: "VirtuaLead Only", "Harmony Only", "Stereo Output".

TRANSDUCER | Band Shape

The Band Shape section provides filters to emulate the bandwidth and resonances associated with various transducer devices. Additionally, the Frequency Fading introduces reception anomalies.

Low / High Cut
Use these filters to replicate the band-width limitations of phones or radios. The filtering is applied before the Distortion Block.

Presence Gain, Freq, BW
This is a standard parametric filter used to bring out the resonant frequency of the intended device.

Frequency Fade Amount / Rate
Frequency fading emulates the phase anomalies introduced in radios due to reception quality. Best used when emulating any device that communicates without wires.

TRANSDUCER | Distortion

The Distortion Block in Transducer is simple to use. Pick a style and set the amount of distortion. 0 will result in no distortion effect. The styles are created with the amount set at "unity". The benefit of the block comes from the complexity of the styles. The distortion algorithm can reproduce non-standard curves to reproduce anything from solid-state distortion to a torn speaker.

TRANSDUCER | Noise

A real-world transducer can have a complex noise pattern generated by the means of communication or by the device itself. The TRANSDUCER / Noise Block allows various noise patterns to be created.

Overall Noise Level
This parameter is on the output of the Noise Block. Therefore, hiss, pink, buzz, or hum level must be on before any output is heard.

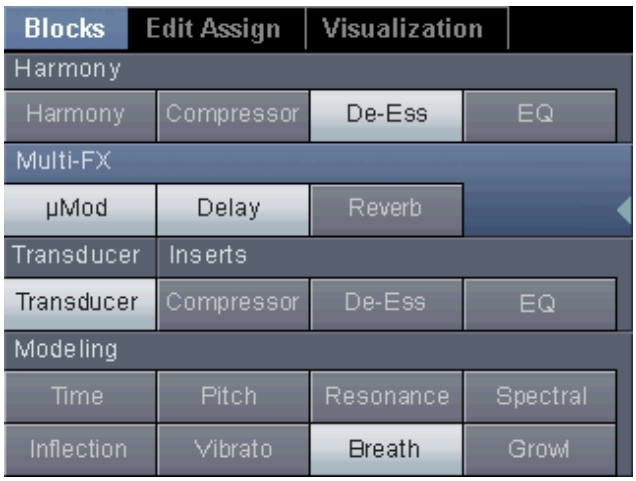
Hiss Level / Freq
Hiss is the noise pattern often associated with tape playback. The sound can also be heard in radio transmissions. In general, a higher hiss frequency would represent a higher quality transducer device.

Pink Level / High Cut / Low Cut
Pink noise is broadband noise. By adjusting the High and Low Cut, the noise can be shaped to match the band shape characteristics of a transducer device.

Buzz Level
Buzz is the noise pattern often associated with a guitar amplifier.

Hum Level / Power Freq.
A hum noise pattern is typically a result of grounding problems in an audio path. The frequency of hum is affected by main voltage. Therefore, 60 Hz emulates the hum sound for North America and Japan, 50 Hz represents most other countries.

MATRIX | Blocks



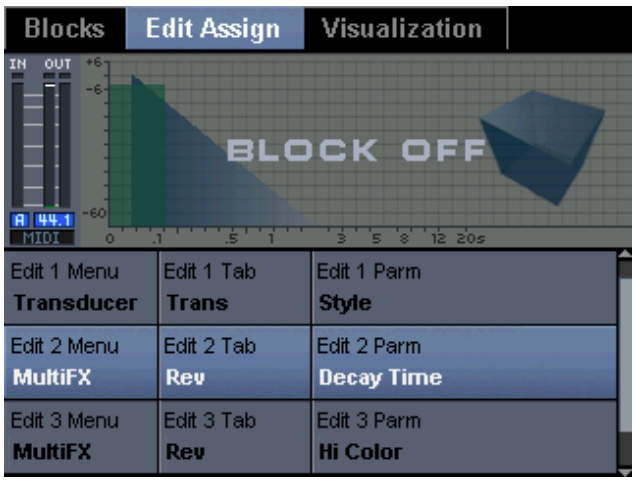
The MATRIX / Block Tab allows quick access for the enabling and disabling of blocks in VoicePro.

Use the Up and Down Arrow Buttons to highlight one of the five lines. The four soft knobs enable/disable the blocks on the highlighted line. For convenience, you can enable/disable any block directly on the block's edit tab using the OK Button.

The Harmony Compressor, De-ess and EQ blocks are only available when Harmony is engaged.

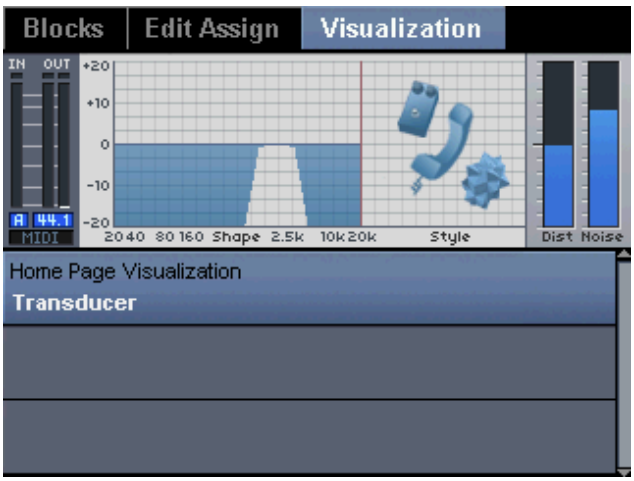
Section 6: Detailed Parameter Descriptions

MATRIX | Edit Assign



Use this tab to select the four assigned edit parameters on the Home Page for this preset. Each horizontal edit column is used to assign a parameter to a soft-knob . The first two parameters select the menu and tab for the parameter. The third parameter selects the parameter from the selected menu and tab.

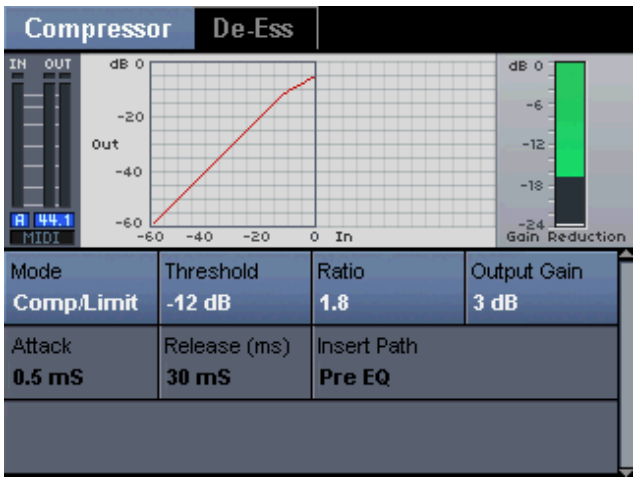
MATRIX | Visualization



Use this tab to select the assigned visualization on the Home Page for your preset. The factory presets have been designed with the most useful visualization for the preset application.

Section 6: Detailed Parameter Descriptions

DYNAMICS | Compress



The compressor contains two modes depending on what dynamic effect is desired. The compressor visualization provides representation of the compressor curve and real-time gain reduction amount.

Mode
The two modes for compressor are "Compress" and "Comp/Limit". The "Compress" mode is a variable knee compressor. The compressor is triggered by RMS levels with automatic make-up gain. This makes it useful when trying to get a smooth compressed sound. The "Comp/Limit" mode is triggered by Peak levels with traditional attack/release control.

Threshold / Ratio
These parameters operate like any standard compressor. Threshold sets the input level at which compression will occur. Ratio determines the amount of gain reduction at which the threshold is triggered.

Make-up / Output Gain
When the mode is "Compress" the make-up gain is automatic. However, an offset can be applied using the Make-up Gain Parameter. When the mode is "Comp/Limit", Output Gain can be added to the desired level.

Attack / Release
In both modes the Release Parameter determines the speed at which the compressor stops reducing levels. In "Comp/Limit" mode, the Attack Parameter determines the speed at which the compressor starts reducing levels. Because of the variable knee modes with "Compress", there is no Attack Parameter.

Knee
In "Compress" mode there are two knee modes. In "Hard" mode, the compressor ratio is used immediately when the threshold is reached. In "Soft" mode, the compressor ratio is gradually reached as the level increases past the threshold. "Soft" mode is ideal for a smooth compressor sound.

Insert Path
The compressor can be inserted "Pre EQ" or "Post EQ". The "Pre EQ" value is useful for targeting compression on specific frequency bands.

Section 6: Detailed Parameter Descriptions

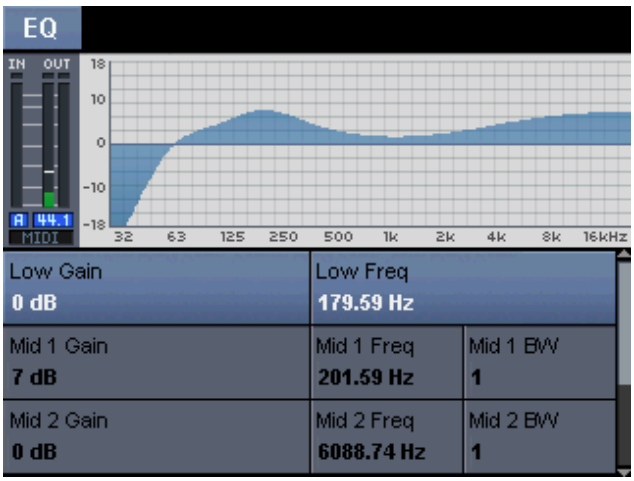
DYNAMICS | De-ess

Use the VirtuaLead de-esser to help reduce sibilant levels.

Amount
Sets the amount that the De-ess will reduce sibilant levels.

Frequency
Sets the center point of the de-ess detection circuit that decides when to reduce sibilant sounds.

EQ



The EQ in the VirtuaLead block is designed using double precision filter algorithms. The resulting shape of all the filters is displayed in the visualization area.

Low / High Gain, Freq
The low and high bands are 2nd-order shelving filters. When any band's parameters are adjusted, a line representing the EQ curve for that specific band is shown.

Mid 1 / 2 Gain, Freq., BW
The 2 mid-bands are 2nd-order parametric filters. When any band's parameters are adjusted, a line representing the EQ curve for that specific band is shown.

Low Cut
The low cut is a 4th-order filter. There are preset cut-off points of "60 Hz", "80 Hz" and "120 Hz".

Section 6: Detailed Parameter Descriptions

TIME | Mode

The Time Block uses TC-Helicon's FlexTime algorithm for stretching and shrinking the audio in natural and effected ways. There are two modes for controlling Time: Position Freestyle Mode allows the position of the voice to be freely set within VoicePro's time buffer, and Rate Freestyle Mode allows the speed of the audio to be controlled.

TIME | Position Freestyle

VoicePro contains a 5-second Time buffer. With Position Freestyle Mode, you control the position of the voice within that buffer.

Position Delta / Sensitivity
The Position Delta and Sensitivity Parameters work together. The Sensitivity Parameter sets the time shift amount in 'ms' for each Delta value. If Sensitivity is set to 20 ms, then each click of the Delta Parameter will shift the pitch up or down by 20 ms. For subtle changes of a performance, set the sensitivity to smaller values.

Smoothing
Lower smoothing values will cause the time to jump abruptly according to the sensitivity amount on each click of the edit knob. Higher Smoothing values will glide through each click. A value of “100” won’t allow the position to be moved with the Position Delta Parameter.

Reset / Reset Position
The Reset and Reset Position Parameters work together. When the reset Parameter is moved by a single click, the position of the voice is moved automatically to the Reset Position. This is very useful for extending notes in a song as the voice can be reset to back to real-time with a single click.

Tape Effect
When the Tape Effect value is "0", time is manipulated without effecting pitch. As the Tape Effect value increases, the pitch is shifted in a similar way to the effect of slowing down a tape. Slowing a tape down shifts the pitch down. Speeding up the tape, shifts the pitch up.

UV Mode
When the UV Mode Parameter is set to "0", the un-voiced portions of a voice signal, such as 'esses' are not time shifted. This is similar to how we time stretch our own voice. As the value increases, the un-voiced portions of the voice are time-shifted.

Section 6: Detailed Parameter Descriptions

Hold
Hold freezes the input voice when the parameter is engaged. At this point, the position can be moved within the buffer.

TIME | Rate Freestyle

VoicePro contains a 5 seconds Time buffer. With Rate Freestyle mode, you control the playback speed of the input voice.

Playback Rate / Rate Range
The Position Rate and Rate Range Parameters work together. Rate Range sets the amount to which you can speed up or slow down the input voice. The Playback Rate Parameter changes the rate within the rate range.

Smoothing
Lower smoothing values will quickly jump from by the sensisity value on each turn of the Position Delta Parameter. Higher Smoothing values will glide through each click.

Reset / Reset Position
The Reset and Reset Position Parameters work together. When the ResetParameter is moved by a single click, the position of the voice is moved automatically to the Reset Position. This is very useful for extending notes in a song as the voice can be reset to back to real-time with a single click.

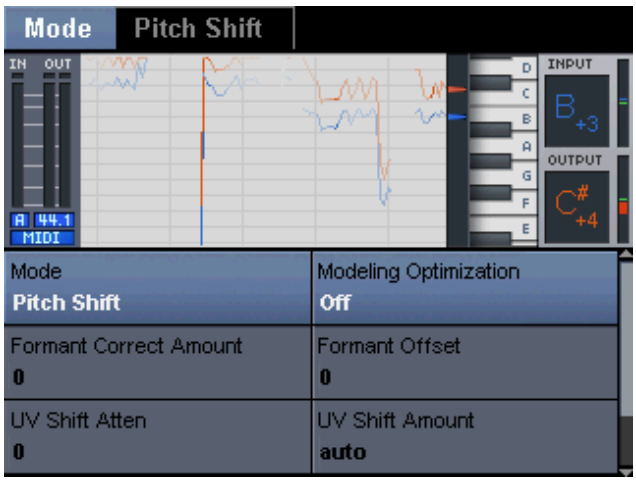
Tape Effect
When the Tape Effect value is "0", time is manipulated without effecting pitch. As the Tape Effect value increases, the pitch is shifted in a similar way to the effect of slowing down a tape. Slowing a tape down shifts the pitch down. Speeding up the tape, shifts the pitch up.

UV Mod
When the UV Mode Parameter is set to "0", the un-voiced portions of a voice signal, such as 'esses' are not time shifted. This is similar to how we time stretch our own voice. As the value increases, the un-voiced portions of the voice are time-shift.

Hold
Hold freezes the input when the parameter is engaged. At this point, the position can be moved within the buffer.

Section 6: Detailed Parameter Descriptions

PITCH | Mode



The pitch block in VoicePro has several modes. The visualization for the pitch block changes based on the mode. This tab also contains parameters that adjust the sound of the pitch shifting.

Modeling Optimization
To support legacy type pitch shifting, modeling optimization can be turned off. In this state, transitions can be heard when turning off various Character blocks. However, in this state the legacy pitch shift sounds used for effects like monster pitch shifts can be produced. It can also be useful to turn modeling optimization off when doing small pitch shifts in, for example, pitch correction applications.

Formant Correct Amount
Formants affect the naturalness of a pitch shift. In VoicePro formants and pitch can be shifted separately. The Formant Correction Amt control sets the amount the formants are corrected/shifted. When set to "0", formants are shifted with the pitch like an instrument shifter. When set to "100", the formants are not shifted like a PSOLA shifter. When set to Auto, the amount of formant correction is modified as a function of shift amount to sound the most natural.

Formant Offset
The overall formant structure of the voice can be shifted up to sound more feminine and even chipmunk like at extreme settings. Formants can be shifted down to sound more masculine or monster like. This control moves the formants independent of the pitch shift.

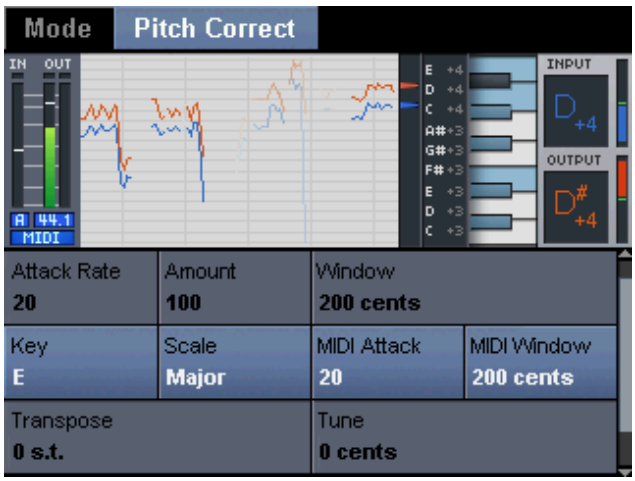
Un-Shift Atten
This parameter allows the un-voiced (sibilant) signals to be attenuated when pitch shifting. The effect is more noticeable the larger the shift.

UV Shift Amount
This parameter determines the amount that the unvoiced is shifted relative to the voiced signal. When this parameter is set to "100" the algorithm shifts unvoiced signals by the same amount as the voiced signals. When this parameter is "0", the algorithm will not shift the unvoiced sections regardless of the amount the voiced signal is being shifted. Intermediate values of this parameter will shift the unvoiced by a fraction of what the voiced signal is being shifted. When this parameter is set to "auto" the UV shift amount is set automatically for you.

Downshift Quality
This parameter can adjust the tonal quality of large down shifts. The effect of the parameters becomes more apparent for large down shifts.

Section 6: Detailed Parameter Descriptions

PITCH | Pitch Correct



With good use of VoicePro's automatic pitch correction, you can achieve musical and natural result that is very time consuming to achieve with graphical based pitch editing. The parameters are described below.

Attack Rate
Attack Rate determines the rate it takes for the input pitch to be shifted to the corrected note. Settings between “16” and “40” provide the most natural results. Effects can be created with extreme settings. Window and Attack Rate Parameters are key in achieving transparent correction.

Window
The Window Parameter works in conjunction with the selected or custom correction scales/notes. The window value determines how close in pitch a sung note needs to be to a note in the correction scale for correction to be applied. Lowering this value can help VoicePro chose the right correction note. Higher values can sometimes help when using a single note custom scale to correct a very out of tune note.

Amount
This parameter musically controls the amount of pitch correction applied to the input note. The actual amount varies based on the amount a voice is out of tune.

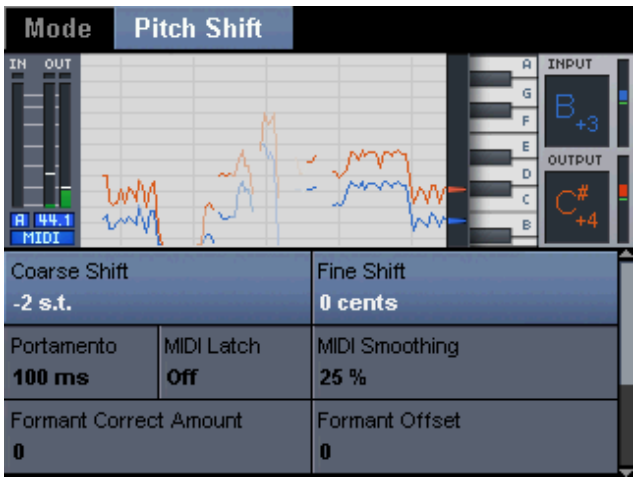
Root / Scale
Match the Key and Scale Parameter to the melody being pitch corrected. The key and scale determine the notes that the pitch corrector will correct to. Create a custom scale for more complex or single note corrections

MIDI Attack / Window
The pitch corrector can also be controlled via MIDI. When MIDI is used, the Attack & Window Parameters can be set to different values. This can be useful as sometimes MIDI is used to quickly override a single with agressive correction settings. MIDI notes received temporarily override the correction scale.

Custom Note Select / Enable
These parameters allow a custom correction scale to be used. Select the Custom Note using the Select Parameter and then turn it "off" or "on" in the scale using the Enable Parameter.

Section 6: Detailed Parameter Descriptions

PITCH | Pitch Shift



The pitch shift mode offers fixed pitch shifting by semitone and cents. MIDI control is also supported for re-pitching melody lines or creating a harmony part.

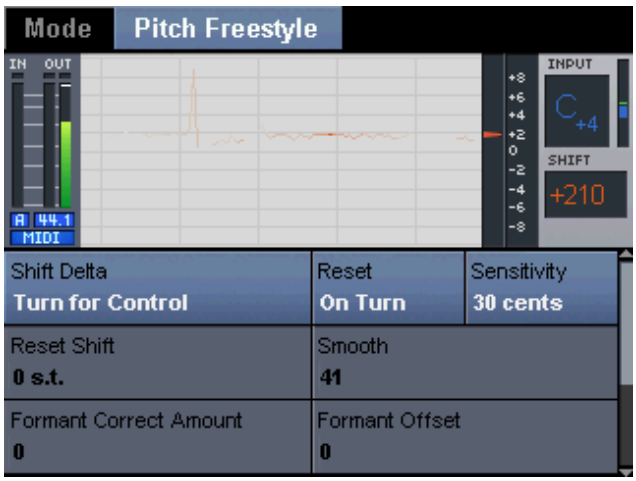
Coarse / Fine Shift
The Coarse Parameter shifts the pitch up or down with a range of +/- 48 semitones. The Fine Parameter shifts the pitch, relative to the Coarse Parameter, by +/- 99 cents. The distance between semitones is 100 cents.

Portamento
When MIDI notes are used to control the pitch shift, Portamento sets the time in milliseconds to reach a MIDI note.

MIDI Latch
When enabled, the last MIDI note sent to the pitch shift is used until a new note is received. This allows robot voices to be created by triggering the note of the desired monotone voice with MIDI Latch on.

MIDI Smoothing
Sets how much of the input pitch nuance is applied to the pitch shifted voice.

PITCH | Pitch Freestyle



Pitch Freestyle is ideal for creatively shifting pitch in non-musical applications like dialog.

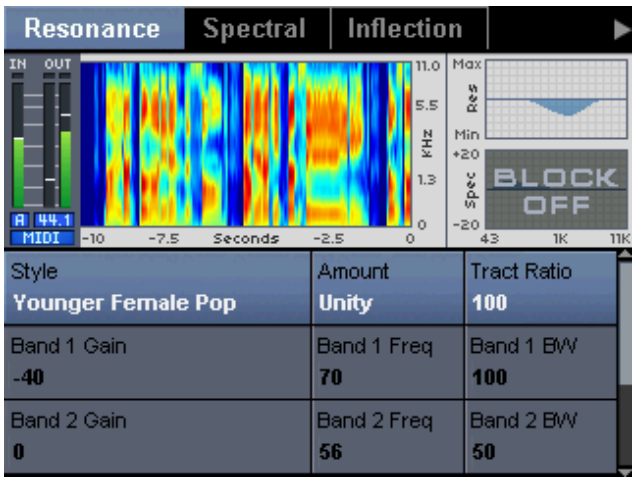
Shift Delta / Sensitivity
The Shift Delta and Sensitivity Parameters work together. Sensitivity sets the shift amount in cents for each Delta value. If Sensitivity is set to 20 cents, then each click of the Delta Parameter will shift the pitch up or down by 20 cents. For subtle changes of a performance, set the sensitivity below 25 cents. For more extreme effects try values above 50 cents.

Reset Trigger / Shift
The Reset Parameters allow pitch of the input to be reset to a set value. The Reset Shift Parameter sets the pitch in semitones where the input voice will be shifted when the Reset Trigger Parameter is turned. A single click on the Reset Trigger Parameter triggers the reset shift.

Smooth
The Smooth Parameter is useful when the sensitivity is higher. When smooth is set to lower values, stepping can be heard as the voice goes from one pitch to another. When set at higher values, the shifting is smoothed out.

Section 6: Detailed Parameter Descriptions

CHARACTER | Resonance



Resonance allows you change the positioning of the harmonic content that forms the identity of a voice. The results can yield anything from subtle tonal changes to a new character. The Freq Shift Parameter is very useful for tuning the Resonance Style to qualities of different voices.

Style
A Resonance Style sets all the Resonance Parameters to a preset sound. The styles are authored with the amount at "Unity". A style can be very dependent on the input voice. The name of the style will give you some indication of what the Style will do.

Amount
The Amount Parameter allows you to get more or less of the selected Style. With a value of "Unity", all the Resonance Parameters represent their actual values. Above or below unity, the parameters are scaled to achieve more or less of the sound.

Length
Alters the apparent vocal tract length. Changing length is similar to changing the apparent gender of the input voice.

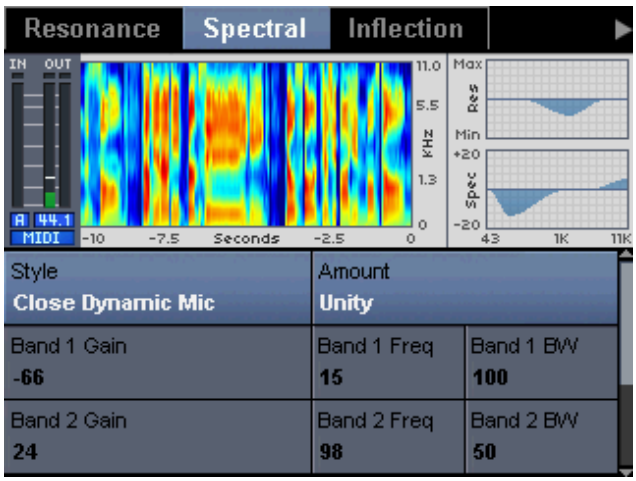
Band Gain, Freq, BW
There are three parametric bands controlled by Gain, Freq and BW, which control the spectral region that is modified. A positive or negative gain moves spectral energy to higher or lower frequencies respectively. Typically, the first, second and third band operate at low, mid and high frequency ranges respectively.

Freq Shift
Shifts the frequency center of all of the parametric bands. This can be used to tune a Resonance Style to a particular voice.

UV Balance
Controls how Resonance is applied to voiced and un-voiced segments. A value of “0” applies Resonance to voiced and unvoiced evenly, whereas positive values apply more Resonance to unvoiced and less Resonance to voiced. Similarly, negative values apply more Resonance to voiced and less Resonance to unvoiced.

Section 6: Detailed Parameter Descriptions

CHARACTER | Spectral



The Spectral block is a voice-modeled EQ that reflect the natural equalization equivalent to the control a singer has over his or her own voice. Most Spectral Parameters will appear very similar to a traditional EQ. However, the results achieved can be much more natural and more dynamic. The Freq Shift Parameter is very useful for tuning the Spectral style to qualities of different voices.

Style
A Spectral Style sets all the Spectral Parameters to a preset sound. The Styles are authored with the amount at "Unity". A style can be very dependent on the input voice. The name of the Style will give you an indication of what the Style will do.

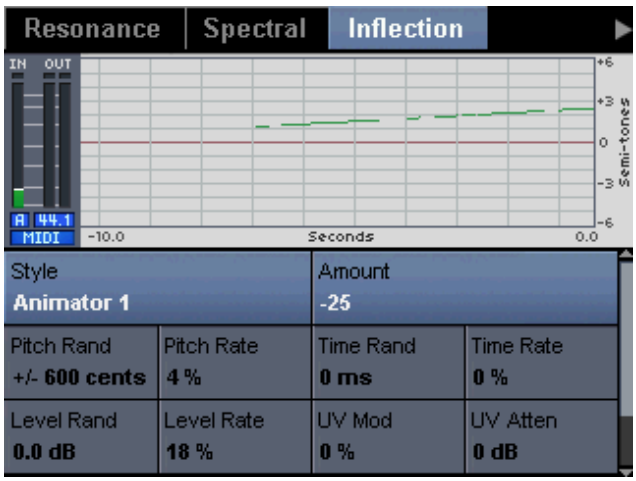
Amount
The Amount Parameter allows you to get more or less of the Selected Style. With a value of "Unity", all the Spectral Parameters represent their actual values. Above or below unity, the parameters are scaled to achieve more or less of the sound.

Band Gain, Freq, BW
There are three parametric bands controlled by Gain, Freq and BW, which control the spectral region that is modified. A positive or negative gain boosts or cuts spectral energy respectively.

Freq Shift
Shifts the frequency center of all of the parametric bands. This can be used to tune a Spectral Style to a particular voice.

UV Balance
Controls how Spectral is applied to voiced and un-voiced segments. A value of “0” applies Spectral to voiced and unvoiced evenly, whereas positive values apply more Spectral to unvoiced and less Spectral to voiced. Similarly, negative values apply more spectral to voiced and less Spectral to unvoiced.

CHARACTER | Inflection



The Inflection effect humanizes pitch, time, and level to create realistic doubled parts or re-takes.

Style
An Inflection Style sets all the Inflection Parameters to a preset sound. The styles are authored with the amount at "Unity". A style can be very dependent on the input voice. The name of the Style will give you an indication of what the Style will do.

Amount
Amount allows you to get more or less of a Style. With a value of "Unity", all the Inflection Rarameters represent their actual values. Above or below unity, the parameters are scaled to achieve more or less of the sound.

Pitch Time & Level Rate / Rand.
These controls effect the humanization of pitch, time and level. The Rand. Parameter sets the amount that the pitch, time and level can fluctuate. The Rate Rarameter determines the speed of the fluctuations.

UV Mod
When the UV Mode parameter is set to "0", the un-voiced portions of a voice signal, such as 'esses' are not pitch nor time shifted. This is similar to how we time stretch our own voice. As the value increases, the un-voiced portions of the voice are pitch and time shifted.

UV Atten
This parameter reduces the level of the un-voiced signals from the Inflection Block.

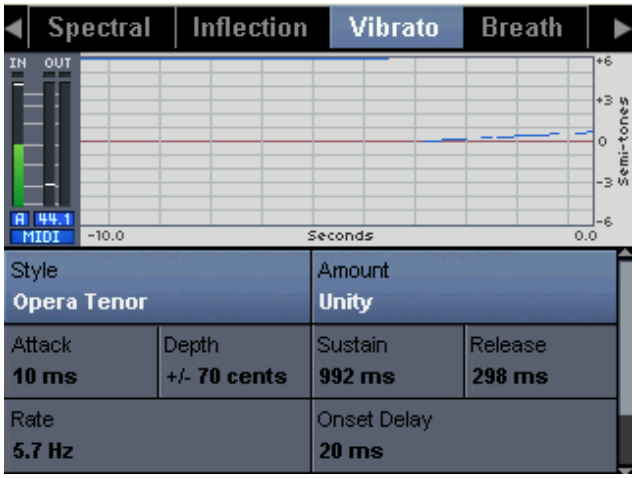
Scoop Dur/Level/Rand Mod
The parameters control pitch inflections that occur at the onset of notes. Scoop Dur determines how low the inflection will last after the onsert of the note. Rand Mod will randomize each onset inflection.

Scoop Duration / Rand.
Scoops are small pitch inflections at the beginning of notes.

Section 6: Detailed Parameter Descriptions

The Scoop Duration parameters set how long these inflections last after a note starts. The Rand. Parameter determines how often they occur.

CHARACTER | Vibrato



The Vibrato effect models the sound of human vibratos onto the input voice. The waveforms that control the vibrato are modeled from real singers.

Style
A Vibrato Style sets all the Vibrato Parameters to a preset sound. The Styles are authored with the amount at "Unity". A Style can be very dependent on the input voice. The name of the style will give you an indication of what the Style will do.

Amount
Amount allows you to get more or less of a Style. With a value of "Unity", all the Vibrato Parameters represent their actual values. Above or below unity, the parameters are scaled to achieve more or less of the sound.

Attack/Depth/Sustain/Release
Just like a synthesizer, the Vibrato style can be shaped with Attack, Depth, Sustain and Release Parameters. Attack will determine speed at which the Vibrato gets to its target amount. Depth will modify the amount of vibrato in each cycle. Sustain determines how long the vibrato will stay active. Release sets the time it takes for the vibrato effect to go off. It's important to note that vibrato is typically triggered with note onsets.

Onset Delay
Sets the amount of time following a note onset it takes the vibrato to reach its target amount.

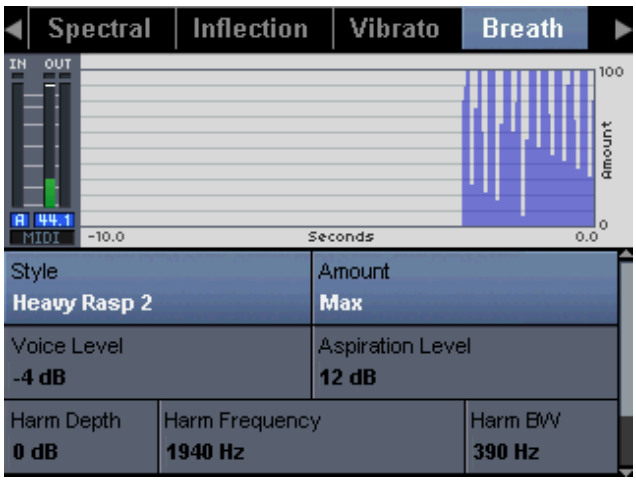
Rate
Sets the speed at which the vibrato modulates.

Trem Amt/Phase
Vibrato also modifies level. The Trem Amt and Phase parameters control how much the level fluctuates and its phase relationship when compared to the pitch modulation.

Rand Mod.
Allows an overall randomization to be applied to the vibrato style.

Section 6: Detailed Parameter Descriptions

CHARACTER | Breath

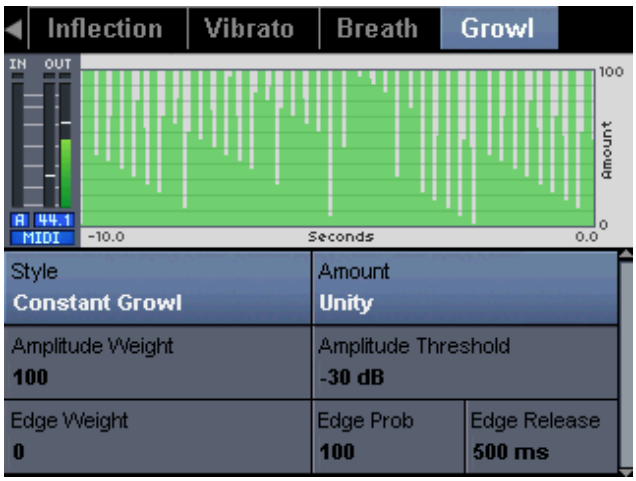


The Breath effect can bring out raspy or breathy sound already preset in a voice. Breath also creates interesting glottal effects like whispering.

Style
A Breath Style sets all the Breath Parameters to a preset sound. The Styles are authored with the amount at "Unity". A Style can be very dependent on the input voice. The name of the Style will give you an indication of what the Style will do.

Amount
The Amount Parameter allows you to get more or less of the selected Style. With a value of "Unity", all the Breath Parameters represent their actual values. Above or below unity, the parameters are scaled to achieve more or less of the sound.

CHARACTER | Growl



The Growl effect can bring out vocal sounds where the throat is constricted.

Style
A Growl Style sets all the Growl Parameters to a preset sound. The Styles are authored with the amount at "Unity". A Style can be very dependent on the input voice. The name of the Style will give you an indication of what the Style will do.

Amount
The Amount Parameter allows you to get more or less of the selected Style. With a value of "Unity" all the Growl Parameters represent their actual values. Above or below unity, the parameters are scaled to achieve more or less of the sound.

Amplitude Weight/Thres.
The Amplitude Parameters scale the amount of Growl based on the input level. The Amplitude Threshold Parameter determines the level where growl will begin to be applied.

Edge Weight
The Edge Parameters scale the amount of Growl triggered at the onsets of signals. Edge Probability determines how often Growl is triggered on onsets. The Release Times sets how long it takes for the Edge Growl to dissipate.

Section 6: Detailed Parameter Descriptions

MIX

To facilitate the creation of complete presets, VoicePro contains a full featured mixer. Mix is based around a traditional mixer. Vertical strips are used for each overall VoicePro block. Each block then contains typical mixer controls like sends, pans, levels, etc.

Dry Lead
This is the voice input signal through Dynamics and EQ inserts.

VirtuaLead
This is the output of the Dry Lead signal after going through Time, Pitch & Character.

Harmony
This is the stereo mix output of the Harmony Block.

Overall FX
Controls the overall level of µMod, Delay and Reverb

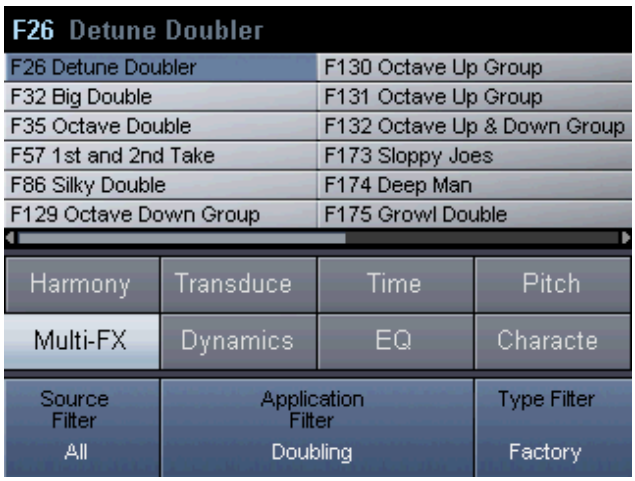
µMod, Delay, Reverb
Controls stereo output level of the respective blocks

Aux Input
This is the signal present at the Aux Input which can not be routed through Harmony or VirtuaLead.

Sends
The effects sends for Dry Lead, VirtuaLead, Harmony, Aux Input are configurable pre or post fader.

Pan / Width
The mono blocks Dry Lead, VirtuaLead, and Aux Input have standard pan controls to set stereo position. The stereo blocks have width controls that range from full stereo to mono.

BROWSER



The Browser is your starting point for finding a vocal sound. There are three filters on the Browser page to help choose the right preset. Use the Scroll Wheel to preview a preset. Press the OK Button to load the selected preset.

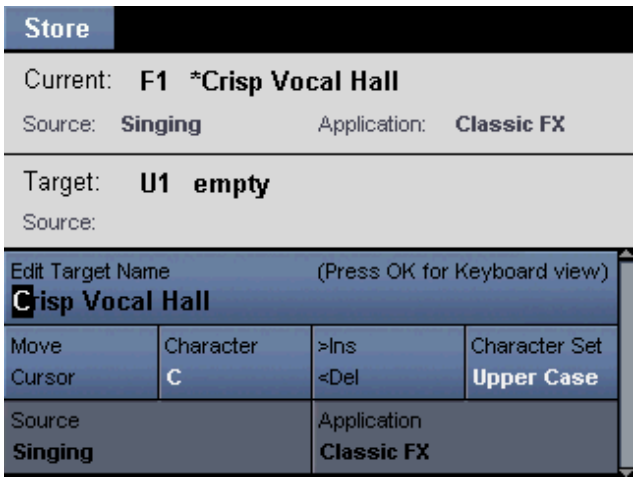
Source Filter
VoicePro can show presets intended for "Singing" or "Speaking" voices. When "All" is selected, all presets are shown based on the other filter settings.

Application Filter
Each preset is assigned an application. VoicePro contains 11 application types: Correction, Doubling, Harmony, Classic FX, Special FX, Character, Pitch & Time, Transducer, Live, Other. The Harmony application can also be filtered by the Harmony Mode.

Type Filter
Type allows "All", "Factory" or "User" presets to be shown. Additionally, the presets can be browsed alphabetically instead of sequentially.

Section 6: Detailed Parameter Descriptions

STORE



When you want to quickly save a preset just press "Store" to enter the Store Screen. Use the Scroll Wheel to select the target user location to store to. Then press "Store" again to execute.

Naming Presets
Each of the four edit knobs has its own purpose for editing a preset name.

"Edit Knob 1" sets the cursor position.

"Edit Knob 2" selects the character.

"Edit Knob 3" inserts spaces when turned clock-wise and deletes characters when turned counter-clockwise.

"Edit Knob 4" Jumps to lowercase, uppercase, or symbol characters.

Pushing the OK Button toggles a character map for easier edting.

Setting Source & Application
Setting the Source & Application will allows the preset to be categorized under the Browser Tab. Use the Down Arrow to navigate to the Source & Application Edit Row. The preset source can be set to "Singing" or "Speaking". There are 11 application types to choose from.

Section 7: Optimizing Hybrid™ Pitch Shifting

Introduction

Whenever you enable the Pitch Block or load a preset with it enabled, you are using VoicePro's Hybrid Shifting™ algorithm. The Hybrid Shifting™ algorithm is a proprietary TC-Helicon technique that provides four main benefits:

- It is more natural and transparent than other pitch shifting techniques for voice
- It has a wider usable shift range
- It has the ability to emulate the sound of other pitch shifting techniques
- It is integrated with VoiceModeling™ for manipulating voice character

This section discusses ways to get the best from our pitch shifting algorithm

In this section we cover:

- Background on non-Hybrid Pitch™ Shifting Techniques
- Understanding the Hybrid Shifting™ parameters
- Working with small shift intervals
- Raising the pitch most effectively
- Lowering the pitch most effectively
- Emulating the sound of other shifting algorithms

Background on non-Hybrid™ Pitch Shifting Techniques

If you're interested in understanding why the Hybrid Shifting™ algorithm offers its four main benefits, it's helpful to get an understanding by comparing it to other pitch shifting techniques. If you want to get the benefits right away, skip to "Understanding the Hybrid Shifting™ parameters".

There are two pitch shifting algorithms most prevalent in audio production; the technique we refer to as Instrumental (non formant-corrected) Pitch Shifting and PSOLA (or formant-corrected) Pitch Shifting.

“Instrument” Pitch Shifting

Instrument Pitch Shifting resamples the frequency scale of an audio signal. Reading and writing samples at different rates can alter the pitch of the audio signal. Instrumental Pitch Shifting is not suited to processing the human voice when shifting by more than a few semitones. The human voice contains resonant frequencies called formants which are responsible for the perception of different vowels and the overall character of the voice. The formant structure of the human voice is due to the shape of the vocal tract and is not affected by fluctuations in pitch. Instrumental Pitch Shifting shifts the entire vocal signal *including* formants, which causes the naturalness of a pitch-shifted voice to decrease as the shift amount increases.

Due to the limitations of the Instrument Pitch Shifting technique, the number of music and dialog production applications is limited. In music production, the technique is used for correcting mild intonation errors (pitch correction) or for detune effects where the overall shift is less than 100 cents (100 cents = 1 semitone). In this instance, the degradation of natural formant quality is less apparent. In dialog production, the instrumental technique is employed when natural formant quality is not important. This is popular for animated character effects that do not need to conform to the formant structure of the human voice.

“PSOLA” Pitch Shifting

PSOLA Pitch Shifting is a formant-corrected vocal pitch shifting method that works by changing the pitch of the human voice without altering the formant frequencies. By detecting the pitch of a voice, it can be windowed and cut out at a pitch synchronous rate and then pasted back in at a different rate. This process causes the pitch of the signal to be altered while maintaining the original formant structure. The primary drawbacks of PSOLA Pitch Shifting are the audible artifacts created by incorrect detection of input pitch as well as buzziness when the pitch is shifted down by an octave or more.

PSOLA shifting is mainly used in music production on non-lead vocal effects. Non-lead vocal parts include harmony parts and octave doubling. These pitch-shifted voices can be mixed at a level sufficiently low relative to the lead vocal that the artifacts are not exposed. For dialog production,

Section 7: Optimizing Hybrid™ Pitch Shifting

where the voice is predominant in the mix, artifacts significantly degrade the perceived audio quality.

Understanding Hybrid™ Shifting parameters

Each Pitch mode (Correct, Shift and Freestyle) has six common parameters that control the shift quality.

Modeling Optimization
To support legacy type pitch shifting, modeling optimization can be turned off. In this state, transitions can be heard when turning off various Character blocks. However, in this state, the legacy pitch shift sounds used for effects like “monster pitch shifts” can be produced. It can also be useful to turn modeling optimization off when doing small pitch shifts in, for example, pitch correction applications.

Formant Correct Amount
Formants affect the naturalness of a pitch shift. In VoicePro formants and pitch can be shifted separately. The Formant Correction Amt control sets the amount the formants are corrected/shifted. When set to "0", formants are shifted with the pitch like an instrument shifter. When set to "100", the formants are not shifted like a PSOLA shifter. When set to Auto, the amount of formant correction is modified as a function of shift amount to sound the most natural.

Formant Offset
The overall formant structure of the voice can be shifted up to sound more feminine or chipmunk like. Or formants can be shifted down to sound more masculine to monster like. This control moves the formants independently from the pitch shift.

UV Shift Attenuation
This parameter allows the un-voiced (sibilant) signals to be attenuated when pitch shifting. The effect is more noticeable when shift intervals are larger.

UV Shift Amount
This parameter determines the amount that the unvoiced is shifted relative to the voiced signal. When this parameter is set to "100" the algorithm shifts unvoiced signals by the same amount as the voiced signals. When this parameter is "0", the algorithm will not shift the unvoiced sections regardless of the amount the voiced signal is being shifted. Intermediate values of this parameter will shift the unvoiced by a fraction of what the voiced signal is being shifted. When this parameter is set to "auto", the UV shift amount is set automatically for you.

Downshift Quality
This parameter can adjust the tonal quality of large down shifts. The effect of the parameters becomes more apparent for large down shifts.

Working with small shift intervals

A small interval is considered anything less than 2 semitones.
1. Select or create a preset that only has the Pitch block enabled, and the VirtuaLead Level set to "0dB”, and dry and harmony turned off.
2. Navigate to the Pitch Mode Tab. Use the Edit Knobs to select "Pitch Shift" for the mode parameter.
3. Set the Pitch quality parameters within the guidelines below:
4. Navigate to the Pitch Shift Tab and select a small interval shift using the Coarse or Fine Shift parameters.

Parameter	
Modeling Optimization	On
Formant Correct Amount	Auto
Formant Offset	0
UV Shift Attenuation	0
UV Shift Amount	Auto
Downshift Quality	0

5. Modify the Pitch parameters above based on their ranges to further tune the shift.

Working with large up-shifts

A large up-shift is considered a shift interval more than 2 semitones above the input voice. The range of values will change as you move beyond an octave.
1. Select or create a preset that only has the Pitch block enabled, and the VirtuaLead Level set to "0dB", and dry and harmony turned off.
2. Navigate to the Pitch Mode Tab. Use the Edit Knobs to select "Pitch Shift" for the mode parameter.
3. Set the Pitch quality parameters within the guidelines following:

	Shift Interval	
Parameter	+2 to +12	+12 to +36
Modeling Optimization	On	On
Formant Correct Amount	Auto	Auto
Formant Offset	0	0
UV Shift Attenuation	0	20 to 60
UV Shift Amount	Auto	0 to 100
Downshift Quality	0	N/A

4. Navigate to the Pitch Shift Tab and select a large up-shift using the Coarse or Fine Shift parameters.
6. Modify the Pitch parameters above based on their ranges to further tune the shift.

Working with large down-shifts

A large down-shift is considered anything more than 2 semitones. The ranges of values will change as you move beyond an octave down-shift.

1. Select or create a preset that only has the Pitch block enabled, and the VirtuaLead Level set to "0dB", and dry and harmony turned off.

2. Navigate to the Pitch Mode Tab. Use the Edit Knobs to select "Pitch Shift" for the mode parameter.
3. Set the Pitch quality parameters within the guidelines below:

	Shift Interval	
Parameter	+2 to +12	+12 to +36
Modeling Optimization	Off or On	Off or On
Formant Correct Amount	Auto	Auto
Formant Offset	0	0
UV Shift Attenuation	0	20 to 60
UV Shift Amount	Auto to 20	20 to 100
Downshift Quality	0	0 to 50

4. Navigate to the Pitch Shift Tab and select a large downshift using the Coarse or Fine Shift parameters.
5. Modify the Pitch parameters above based on their ranges to further tune the shift.

Emulating the sound of other shifting algorithms

By setting the Pitch parameters to the correct values, you can emulate the sound of a PSOLA or Instrument shifter.
1. Select or create a preset that only has the Pitch block enabled, and the VirtuaLead Level set to "0dB", and dry and harmony turned off
2. Navigate to the Pitch Mode Tab. Use the Edit Knobs to select "Pitch Shift" for the mode parameter.
3. Set the Pitch quality parameters within the guidelines below:

	Shift Interval	
Parameter	PSOLA	Instrument
Modeling Optimization	Off	Off
Formant Correct Amount	100	0"
Formant Offset	0	0
UV Shift Attenuation	0	0
UV Shift Amount	0-100	100
Downshift Quality	0	0

4. Navigate to the Pitch Shift Tab and shift using the Coarse or Fine Shift parameters.

Section 8: Harmony and Tuning

Harmony

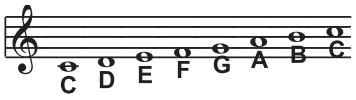
Here's where we can go into a little more depth about harmonies. We've tried to keep it practical, focusing on what VoicePro can do for you.

Harmony Hold

Truly an innovation, the Harmony Hold feature lets you sustain the backing harmony voices while you continue to sing through them. On activation, you can freeze the syllable the harmony voices are producing, and they will hold it in a very natural way until you cancel Harmony Hold.

Harmony Modes

VoicePro has five different harmony modes, which offer 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.



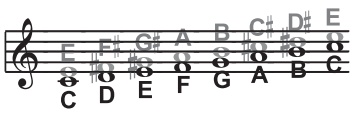
Notes Mode

In this Mode, you provide the VoicePro with specific MIDI note information to determine the pitch of the harmony voices. VoicePro has two "/Notes" harmony modes, single and 4 channel. The VoicePro may be set to Notes 4 Channel mode through the Harmony Mode Tab. Notes 4 Channel mode allows you to send 4 channels of MIDI information, including MIDI Pitch Bend, 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 Mode

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 this type of harmonizing to be non-intelligent because VoicePro 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 or above the input pitch.

Below is The C Major scale, showing third above chromatic scale harmony, as used in VoicePro Shift Mode.

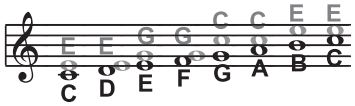


Black = Lead & Grey = Harmony

Chord Mode

Chord harmonies take your chord information to create intelligent, diatonic harmonies based on your voice. To make "Chord" harmonies, you need to input in real time the chords of the song. This may be done either via MIDI or through a programmed sequence of chord roots and types via CC control changes. Chord information consists of the chord root and type, which define the 3 or 4 notes in a given chord. In Chord mode Voicepro will only create harmony voices that fall on the notes of the chord. Chord harmonies are "intelligent" because they decipher the chord you're playing and the note you're singing to produce musically pleasing harmonies. When 1 above is defined as a harmony voice (Up1), the next note from the chord above the input note is output for that harmony voice.
The subsequent illustration shows the harmony notes for the C major scale with a voicing selection of a C major chord and a single "one above".

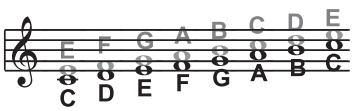
Root: C, Chord Type: Maj, Voicing: Up1



Black = Lead & Grey = Harmony
You might have noticed that each harmony note can cover more than one input note, or that each input note doesn't necessarily 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 when using other harmony methods (shift mode for example). The benefit of this method is that it is very easy to integrate vocal harmonies into your songs if you already know their chord progressions!

Scale mode

Scale Harmonies use key and scale information to create musically correct, diatonic harmonies. Most popular music uses a single scale, so you usually 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 single "third above" harmony voice. You can see from the next diagram that the "Scalic" harmonies are intelligent and closely follow your lead voice for a tighter sound.



Black = Lead & Grey = Harmony

Under the Harmony Key is a parameter called Smoothing. When set to 100%, the harmony voices follow your input pitch, errors and all, but when set to 0%, the harmonies will jump directly to the scale harmony notes, kind of like a

hard pitch correction on the harmony voice. Setting the Smoothing parameter between 0 and 100% is like having variable amounts of pitch correction on the harmonies. VoicePro has five preprogrammed harmony scales: three major, three minor and one custom per preset. To create a custom scale or pitch map see HARMONY / Chord Tab in the Detailed Parameter Description Section

It can also be 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 VoicePro 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 or transition smoothly from its previous pitch until the lead voice pitch changes to a non “nc” note.

	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	Bb	Bb	nc	C	nc	D	Eb	nc	F	nc
MIN2	**3rd above**	Eb	nc	F	G	nc	A	nc	Bb	C	nc	D	nc
	5th above	G	nc	A	Bb	nc	C	nc	D	Eb	nc	F	nc
MIN3	**3rd above**	Eb	nc	F	G	nc	Ab	nc	B	C	nc	D	nc
	5th above	G	nc	A	Bb	nc	C	nc	D	Eb	nc	F	nc

Section 8: Harmony and Tuning

Diatonic and Chromatic Harmony

We've described scale and chord harmonies as diatonic, and shift harmonies as chromatic; but what do those words mean?

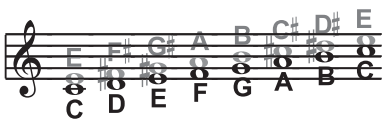
Look at a piano keyboard. Between middle "C" and the next "C" there are twelve keys - 7 white keys and 5 black keys. Each of those keys are pitched one semitone apart for a total of, you guessed it, 12 semitones. The chromatic scale uses all twelve semitone notes opposed to the diatonic scales. Thus 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?

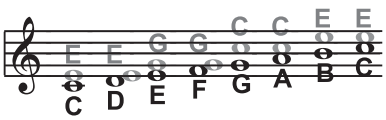
Diatonic scale harmonies can only use notes from the underlying diatonic scale, so a “third above” harmony voice actually varies between 3 and four semitones above the lead note where the chromatic harmony would stay exactly 4 semitones (a major 3rd) above each note.

To recap: we have three different harmony modes that use chromatic or diatonic scales.

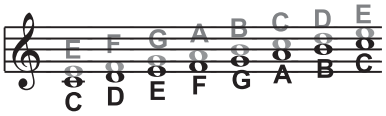
Shifting, which uses the chromatic, 12 semitone scale, changes the input pitch by a fixed number of semitones:



Chord, 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:



Scale, 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 VoicePro's possible harmony modes. Not only will you develop an 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.

Just Tuning

What is Just tuning (or Just intonation)? This is the practice of maintaining the relative and perfect mathematical ratios between pitches, creating “perfect” harmonies. Just tuning is different from Equal temperament tuning which is what most of us use and hear everyday. Equal temperament uses approximations for the tuning of each note, allowing us to easily alter the key of our music without re-tuning our instruments. Although probably no one has ever told you this, your expensive grand piano and the last great keyboard synthesizer you bought are both out of tune! Well, to be fair we can say instead that they are all tuned using Equal temperament.

Harmony is the result of the interaction between differing audible frequencies in ratios that sound musical to the human ear. A more exact ratio leads to a nicer sounding harmony. Most instruments like the piano are absolute by nature, meaning that each note has a specific pitch. Unfortunately, with this method of tuning we lose the ability to create perfect ratios when playing multiple notes. As a result, much of the harmony you’ve heard in music has not been perfectly in tune!

Singers, especially when performing multi-part a cappella (no accompaniment) music, base their tuning on how it harmonically sounds with other singers. The natural tendency, and what sounds best, is to sing with Just tuning so that inharmonic “beating” is minimized. One of the goals in Barbershop quartet singing is to strive for “Just relative intonation” so that a sub-frequency is audible. Achieving this goal results in what Barbershop fans often describe as the coveted "ring and lock" sound. In Barbershop music it is the lead singer's responsibility to try to sing the melody as close to the tuning of a piano (equal temperament) as possible. The other singers must then tune their harmonies to the melody using Just relative intonation. VoicePro is able to do this in both the Just and Barbershop tuning modes.

When the Just or Barbershop Modes are selected in the VoicePro, the harmony tunings are based on the following relationships:

Minor 3rd = 3 cycles for every 4 cycles of the input
Major 3rd = 5 cycles for every 4 cycles of the input
5th = 3 cycles for every 2 cycles of the input.

Barbershop differs from Just tuning in Chord mode. Just tuning will use the root of the chord for the tuning reference, while Barbershop tuning uses the input notes as the tuning reference. For this reason it is better to use Barbershop in an a-cappella situation and Just when playing with other instruments, because Just tuning sounds more in-tune with the other instruments that most likely have Equal temperament tuning.

Our best advice is to experiment and use your ears!

Section 9 : Appendix

Detailed Application Descriptions

VoicePro's Browser is an efficient tool for getting to the right preset. Understanding the criteria behind the Sources and Applications of the Factory presets will help you get good results.

Source: Singing
Singing presets were created with music and melody in mind. Many of the singing presets shift the pitch for doubling, correction and/or harmony creation.

Application: Correction
Correction presets make use of the pitch block, EQ and dynamics to musically correct intonation and dynamic problems. These presets will not contain any other effect.

Application: Doubling
Doubling presets add dimension and richness to voices in a natural or effected way. The µMod, Harmony and Inflection effects are used on their own or in combination to produce doubling sounds. Some doubling presets contain octave shifting and other auxiliary effects.

Application: Harmony (all, Shift, Scale, Chord, Notes)
Harmony presets use 1 to 4 of VoicePro's Harmony voices for intelligent harmony parts. You can refine the search by looking for a specific harmony control mode. Harmony presets may use other auxiliary effects to create a complete vocal sound.

Application: Character
Character presets are useful for enhancing aspects of a voice's character. Examples of enhancements are bringing out breathiness, adding air, and deepening the gender.

Application: Classic FX
The Classic FX presets have been crafted to emulate popular reverb, delay, flange and combination effects commonly used on vocals.

Application: Special FX
Special FX presets are good starting points for finding an interest hook for a song. Special FX presets may be subtle or out of this world. Any or all blocks are used in these presets.

Application: Transducer
Transducer presets use the Transducer Block to offer Distortions and Telephone effects.

Application: Shaping
Shaping presets offer starting points for simple Dynamics and EQ processing.

Application: Live
The select group of Live presets has been authored for use at VoicePro's lowest latency rates. These presets offer Doubling, Correction, and Character starting points for processing.

Application: Other
The other application can be used when authoring User Presets that don't meet other application criteria.

Source: Speaking
Speaking presets were created with dialog effects and Character enhancement in mind. Pitch shifting may be used on Speaking presets. However, the shifts will not relate to a musical scale.

Application: Pitch & Time
Pitch & Time presets are intended for real-time manipulation of dialog expressiveness. The top-level editable parameters are setup for creative control. Some of the presets start with no pitch or time shifting.

Application: Character
Character presets are useful for enhancing aspects of a voice's character. Examples of enhancements are bringing out breathiness, adding air, and deepening the gender. Pitch shifting is also used to alter character.

Application: Special FX
Special FX presets offer excellent starting points for monsters, aliens and animated characters.

Application: Transducer
Transducer presets use the Transducer Block to emulate the sound of telephones, radios, cockpits, etc.

Application: Shaping
Shaping presets offer starting points for simple dynamics and EQ processing.

Application: Other
The other application can be used when authoring User Presets that don't meet other application criteria.

Section 9 : Appendix

Configurable MIDI Implementation

VoicePro MIDI CC configuration is configurable. Therefore, you can define the implemenation. There are several CC Assign Styles to choose from that emulate other TC-Helicon products. The default implementation is listed below.

CC	Tab	Parameter
1	Matrix | Blocks	Harmony on/off
2	Matrix | Blocks	Harmony Comp on/off
3	Matrix | Blocks	Harmony De-ess on/off
4	Matrix | Blocks	Harmony EQ on/off
5	Matrix | Blocks	uMod on/off
6	Matrix | Blocks	Delay on/off
7	Matrix | Blocks	Reverb on/off
8	Matrix | Blocks	Transducer on/off
9	Matrix | Blocks	Compressor on/off
10	Matrix | Blocks	De-ess on/off
11	Matrix | Blocks	EQ on/off
12	Matrix | Blocks	Time on/off
13	Matrix | Blocks	Pitch on/off
14	Matrix | Blocks	Resonance on/off
15	Matrix | Blocks	Spectral on/off
16	Matrix | Blocks	Inflection on/off
17	Matrix | Blocks	Vibrato on/off
18	Matrix | Blocks	Breath on/off
19	Matrix | Blocks	Growl on/off
20	Mix	Dry Lead Pan
21	Mix	Dry Lead Pan
22	Mix	VirtuaLead Pan
23	Mix	VirtuaLead Level
24	Mix	Harmony Level
25	Mix	Overall FX Level
26	Mix	Delay Level
27	Mix	uMod Level
28	Mix	Reverb Level
29	Mix	Aux Pan
30	Mix	Aux Level
31	Utility	Master Out Level
32	Time	Rate
33	Time	Hold
34	Freestyle	Shift Delt
35	Inflection	Style
36	Inflection	Amount
37	Vibrato	Style
38	Vibrato	Amount
39	Breath	Style
40	Breath	Amount
41	Growl	Style
42	Growl	Amount
43	Spectral	Style
44	Spectral	Amount
45	Resonance	Style
46	Resonance	Amount

Downloadable PC/MAC Based Editor

A third party, PSI Craft has designed a PC/MAC Based Editor for controlling VoicePro from a computer. The editor can be downloaded at

www.tc-helicon.com/editors

To use the Editor you must have a computer with a MIDI device connected to VoicePro. Installation and User's Manual for the Editor is provided with the download.

Section 9 : Appendix

Terms & Descriptions

There are some general terms when using VoicePro that are helpful to understand. Additionally, some VoicePro applications require specific understanding of terms. These terms are summarized below.

General

Term	Description
Voiced	Voiced describes vowel sounds produced by the human voice. Voiced sounds have a recognizable pitch
Un-Voiced	Un-Voiced describes sounds produced by the human voice that don't have pitched signals. These sounds can include breaths, sibilant sounds like 'sss', etc.
Interval	The distance between two pitches

Harmomy

Term	Description
Harmony Mode	Method by which musical input is sent to VoicePro.
Diatonic	Refers to the tone structures in major and minor scales. Knowledge of these scale structures is the "intelligence" VoicePro uses to produce automatic harmony.
Interval	The distance between two pitches
Notes Mode	Fully manual harmony mode where notes and chords performed on a MIDI keyboard are used to select the fixed harmony pitches independent of the pitch of the sung note.
Notes 4Ch Mode	A second Notes Mode where each note is received on a different MIDI channel from a sequencer program, enabling unique pitch bends on each channel.
Chord Mode	An intelligent harmony mode where a sequence of chords played on a MIDI keyboard are interpreted to produce musically correct pitches that move according to the pitch of the sung note.
Scale Mode	An automatic harmony mode where you set only the key and scale of your song. Usually, no on-going musical input from a keyboard is required.
Shift Mode	This is the one non-intelligent harmony mode where a fixed interval is set for each harmony voice that is maintained throughout the song.
Humanization	Various methods by which VoicePro introduces random variations to the sound that mimic human deviations in pitch and timing.

Doubling

Term	Description
Unison	The same pitch
Micro shift	Refers to an effect where detuned copies of a vocal are played back at the same time. Sometimes there is a time-varying delay.

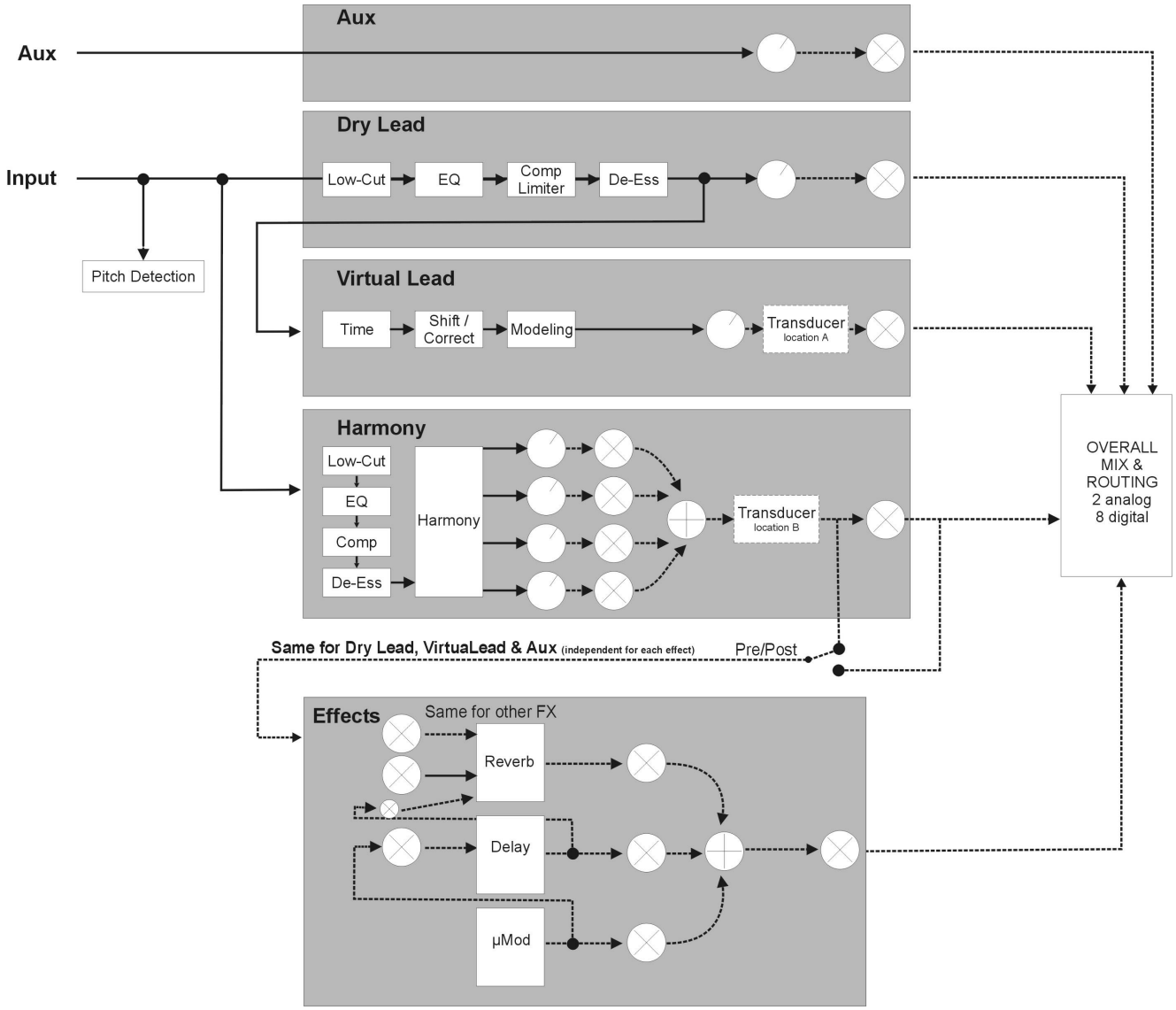
Correction

Term	Description
Window	The pitch range around a scale tone where correction will occur.
Key	The musical center of the song i.e. key of C
Scale	Major, minor or custom (edited); these are the target notes that the vocal is nudged towards.
Attack Rate	When a singer's pitch falls winthin the Window, the Attack Rate Parameter sets how fast the vocal will be shifted to the Window's center.
Amount	Can be used to reduce the effect of correction if desired.

Time Phrasing

Term	Description
Playback Rate	Think of this as the "accelerator" and "brake pedal" for the timing of the incoming audio.
Reset	Returns playback to real time instantly

Section 9 : Appendix



Section 9 : Appendix

Digital Inputs and Outputs	
Connectors:	(2 in, 8 out AES/EBU)
Input Impedance:	11/4 kohm (Balanced/unbalanced):
Output Impedance:	40/20 ohm (Balanced/unbalanced)
Max Input Level:	+15 to +30 dBu with analog domain scaling
Max Output Level:	+15 to +24 dBu with analog domain scaling
Dynamic Range:	> 110 dB (unweighted), BW: 20-20kHz, note 1
THD:	< -100 dB @ BW: 20-20kHz
Frequency Response, +0/-0.1 dB:	12 Hz - 20 kHz
Crosstalk:	< -110 dB, 20 Hz to 20 kHz
AD and DA Conversion:	24 bit (Dual bit delta sigma sampling at 6.1 MHz)
AD and DA + Processing Delay Total:	1.54 ms
DSP	
Internal sample rate:	44.1, 48, 88.2, 96 kHz
Internal processing:	24 bit
Processing Algorithms:	Hybrid Shifting™, Flextime™, VoiceModeling™, 4-part harmony, 4-band EQ (2), Compressor (2), De-esser (2), Reverb, Delay, µMod, Transducer, Multi-path mixer.
Control Interface	
Ethernet:	10/100 Mbits/s, Base-T (RJ45 XLR-housed EtherCon connector)
Ethernet passive HUB for network:	10/100 Mbits/s, Base-T (RJ45 XLR-housed EtherCon connector)
MIDI:	In/Out (5-pin DIN connector)

General	
Display:	Color TFT, QVGA 320x240 pixels 450 cd/m2 Luminance
Finish:	Anodized aluminum face and side plates Plated and painted steel chassis
Dimensions:	19" x 3.50" x 11" (483mm x 89mm x 274mm)
Weight:	11.95 lbs. (5.4 kg.)
Mains voltage:	100 to 240 VAC, 50 to 60 Hz (auto-select)
Power consumption:	<45W
EMC Complies with:	EN 55103-1 and EN 55103-2 FCC part 15, Class B CISPR 22, Class B
Safety Certified to:	IEC 60065, EN 60065, UL 6500 and CSA E65 (CSA File#LR108093)
Operating/Storage	
Temperature:	0° C to 50° C (32° F to 122° F) / -30° C to 70° C (-22° F to 167° F)
Humidity:	Max. 90% non-condensing
Warranty Parts and Labor:	1 year