



VOICEWORKSPPLUS v1.2

Manual Addendum

Overview

Useful features and bug fixes comprise this update for VoiceWorksPlus. This manual addendum lists and describes these as well as details how to install the software update.

These improvements are largely due to customer feedback. Thanks to those who helped us improve this exciting product!

New features overview

- Preset preview has been expanded to show more information
- MIDI CC control and Aftertouch has been greatly expanded
- Sustain pedal support has been added to Chords and Notes modes
- A new momentary footswitch mode allows setting of key and scale via MIDI keyboard chords
- A new Setup parameter allows you to select the Factory or User preset bank as the main target for program change messages
- A new Model preset parameter allows you to disengage MIDI note control of pitch when desired
- Deletion of individual User presets now possible

Bugfixes and tweaks

- All Notes Off implementation has been corrected
- Main FX Level control is now post-mixer
- Preset change is faster with fewer audio artifacts
- Pitch correction custom scales now save correctly
- A strategy to prevent loss of Setup configuration during incomplete shutdown has been added
- μ Mod phase control fixed
- Small factory preset adjustments
- MIDI filter removed from Setup dump

...and many more small fixes.

Update preparation

Required materials:

1. A computer with a MIDI output port
2. VoiceWorksPlus version 1.2 update file from the TC-Helicon.com website.
3. A program capable of sending MIDI system exclusive data such as MIDI-Ox (PC) or Sysex (Macintosh). These are both free and available on the web.
4. You'll need to check that a second version of firmware, AVR code version 1.7 is up to date by powering up the unit while holding the Bypass and Store buttons. The first screen will display this version. If your version is not up to date, there are instructions and a file on the <http://tcsupport.cus-thelp.com> website that will allow you to upgrade it.

Setup data is not transferred from your previous version. You will need to edit your Setup parameters manually when the new version is installed. As a safety precaution, you should also dump your User bank (not including Setup data) to your MIDI librarian program.

Performing the update

1. Connect a cable from your MIDI output port to the MIDI input on VoiceWorksPlus.
2. Load the version 1.2 file into your MIDI program.
3. Power up VoiceWorksPlus while holding the Bypass and Store buttons. You'll see "VW Plus Firmware V(current version)".
4. Turn the Data Wheel until you see "Downld DSP Code?" in the display window. Press the Data Wheel.
5. Send the data from your MIDI program. If all is connected properly, you'll see numbers incrementing in the VoiceWorksPlus display.
6. Relax with a beverage while the dump proceeds, it may take a few minutes. This is a good time to review this addendum and become more familiar with the new features.
7. When it is complete, the display should read "Download Successful!". If not, check your cables and repeat.

New features detail

- **Expanded preset preview**

The second line of the display offers more accurate information on the current preset than before. Now, in addition to seeing Harmony and Model pitch information, you are able to see the Correction, Transducer and Effects settings active in the preset.

All settings are not displayed at once for obvious space reasons. Priority is given to certain active blocks over others. By turning off higher priority blocks with the Block On/Off buttons, you can quickly see the settings for the next block that is turned on. The following table shows this hierarchy.

Priority	Block abbreviation and detail
1	H: Harmony including shift mode and amount/interval if applicable
	M: Model including shift mode and interval
2	C: Correction key and scale
3	T: Transducer and insert path
4	F: Effects and active sub-blocks including μ Mod, Delay and Reverb

Note that the preset must be loaded for Block enable and disable to preview the settings.

- **Expanded MIDI CC and Aftertouch control**

The new MIDI Aftertouch feature is detailed below. Please see the table at the back of this addendum for detail on the new CCs (Continuous Controllers).

If your controller keyboard sends MIDI Aftertouch data when you press down on the keys, you can now modify a selection of the effects in VoiceWorksPlus. This can open up creative avenues for expression. The Aftertouch targets listed below are selected in Setup menu M4:

None - no change via Aftertouch

Harmony Boost - This allows you to modulate the level of the harmony voices from the preset value to the maximum per voice. Note that this could cause distortion when applied with hot input signals. Reduce input level or lower the Harm/Model control on the

front panel if this happens. An interesting approach is to greatly reduce the level of one or more of the voices so that they only sound when Aftertouch is applied.

Harmony Threshold - This is similar to Harmony Boost. The difference is that an Aftertouch threshold is derived from each voice's current level and boost will only occur once you have pressed hard enough to reach this threshold.

Harmony Boost +6dB - This applies a more subtle level boost limited to 6dB maximum for each voice.

Vibrato Boost - Now you can modulate the vibrato amount without having to remove your hands from the keyboard. Note that vibrato styles need to be assigned to the harmony voices in the preset for this to work.

Vibrato and Harmony - This is a combination of Vibrato Boost and Harmony Boost +6dB.

Transducer Lo-Band Up - When the Transducer is inserted into the Lead, Harmony/Model path or main output of VoiceWorksPlus, Aftertouch can be used to move the band filters up and down in a creative way. This option raises the Low BandLimit frequency from its starting point set in Edit menu T4.

Transducer Lo-Band Down - As above only the Low BandLimit frequency moves downward from its starting point. To be audible, the frequency must be set to a high value first.

Transducer Hi-Band Up - Increases the Hi BandLimit value from its starting point. Set the initial value low to hear the effect.

Transducer Hi-Band Down - Lowers the Hi BandLimit value from its starting point. Set the initial value to a high value to hear the effect.

- **Sustain pedal support in Chords and Notes modes**

Keyboardist/Vocalists who use Chords and Notes mode to produce harmonies from VoiceWorksPlus are going to enjoy this addition. No parameter adjustment is required to enable this feature.

Pressing the sustain pedal connected to your keyboard now freezes the MIDI notes used to create harmony in Notes mode presets. This allows much more natural performance of piano parts during vocal passages. Previously, lifting your fingers off the keys muted any harmony voices regardless of whether the sustain pedal was pressed or not. Now you can play a chord

that triggers your desired harmony, press the sustain pedal and play an arpeggiated run to augment your keyboard part. As you continue singing, the harmonies remain on the notes you played.

The parameters NotesExt and Latch should be set to Off to use this feature in Notes mode presets. Most Notes presets already have these parameter values.

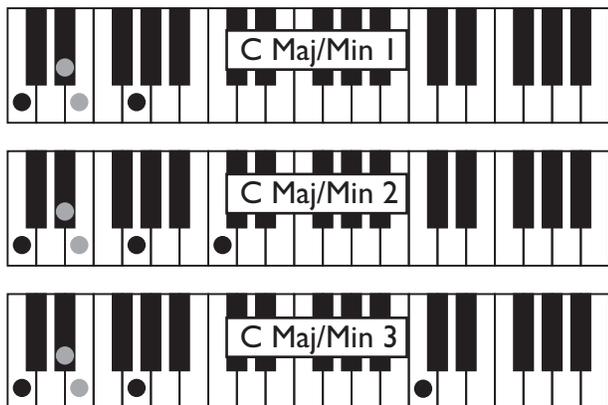
In Chord mode presets, the Latch parameter is typically set to On so that lifting your fingers off the keys does not cause the harmony voices to stop sounding. The difference now is that you can use the sustain pedal to freeze the most recently fingered chord while you continue with arpeggiated playing. In the previous software version, performing and singing while using the sustain pedal would sometimes cause odd harmony notes as the chords would change with every note played in an arpeggiated run.

- **Key and scale entry via footswitch and keyboard chord**

It is now possible to assign one of the footswitches on the optional Switch-3 accessory to KeyS, an abbreviation for Key Set. This is a convenience to allow changing of Scale harmonies without reaching around to push buttons on the VoiceWorksPlus front panel or using MIDI CCs.

To change key and scale, assign one of the Footswitch 1-2-3 parameters in the Setup menu (U4) to KeyS.

Play a chord that follows the convention in the following illustration then press the footswitch you have assigned to Key and Scale setting.



The above shows that a three note chord formed by:

key root - major/minor third - fifth

will select a Major 1 or Minor 1. Chord inversions are not recognized. By adding a note one octave up from

the key root, you can select Major or Minor “2”. If you want to select Major or Minor “3”, replace the note one octave up from the key root with a note two octaves above. To select the Custom scale saved with the preset, play a major or minor chord as shown and then add any note *but* the octaves described above.

The display for the current preset will change to the new setting when you press the footswitch.

- **Selectable Factory or User preset bank program change target**

It’s not always convenient to use MIDI Bank Select messages to switch banks, so we added this parameter to simplify this procedure. In the Setup menu, there is a new screen called Program Bank (M5) where you can select how you want to initiate your program changes.

The values for this parameter are:

External - Presets in the Factory bank are called up with a Bank Select 0 (MSB) message which is the default for most keyboards. Presets in the User bank can be called up by sending a Bank Select 1 (MSB) message.

Factory - All Program Change messages, regardless of Bank selection call up Factory presets.

User - All Program Change messages, regardless of Bank selection call up User presets.

When you want to select from a combination of Factory and User presets without using Bank Select messages, simply copy any Factory presets you like into the User bank and select User for the Program Bank parameter.

- **MIDI note input disable in Model presets**

In the previous version of VoiceWorksPlus, a MIDI keyboard that was used to control Notes or Chord mode harmony presets would also affect pitch shift in Model presets. In some cases, this is the desired behaviour but in others the Model is desired simply to provide an interesting vocal transformation, a fixed octave shift or both and the moving pitches transmitted by the MIDI keyboard during performance were unwelcome.

For this reason an additional Model preset parameter called simply, “MIDI” in menu S3 allows you to choose whether MIDI notes coming in from a keyboard or

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sequencer are used to select pitch shift interval (NotesOn) or are ignored (NotesOff).

Most of the Model presets in version 1.2 have this parameter adjusted to NotesOff. If the previous behaviour is desired, you can turn the value to NotesOn, store the preset in the User bank and proceed as before.

- **Delete individual User bank presets**

This update allows you to arrange presets more easily in the User bank. In the Setup menu F1, turning the Edit 1 control will present the new parameter values “Erase User #1, Erase User #2”, etc in addition to the Restore Setup and Erase User Bank values.

Before erasing any presets, it is a good idea to dump them to the VoiceWorksPlus editor or to a MIDI system exclusive librarian program as a backup.

MIDI Implementation

The following table lists the MIDI CC (continuous controllers) available in VoiceWorksPlus version 1.2

VoiceWorksPlus parameter	CC	Range
Bypass	114	0-63 off 64-127 on
Lead Level	86	0-127
Harmony/Model Level	12	0-127
Effects Level	91	0-127
Output Level	87	0-127
Harmony/Model block on/off	110	0-63 off 64-127 on
Correction block on/off	113	0-63 off 64-127 on
Effects block on/off	112	0-63 off 64-127 on
Harmony Hold	119	0-63 off 64-127 on
Voice 1 Pan	16	0-127, 64 is center
Voice 1 Level	46	0-127
Voice 2 Pan	20	0-127, 64 is center
Voice 2 Level	17	0-127
Voice 3 Pan	24	0-127, 64 is center
Voice 3 Level	21	0-127
Voice 4 Pan	28	0-127, 64 is center
Voice 4 Level	25	0-127
Key or Chord Root	30	0=C, 1=C# ... 11=B
Scale or Chord Type	31	Scale Mode: 0=Maj1, 1=Maj2, 2=Maj3, 4=Min1, 5=Min2, 6=Custom Chord Mode: 0=Maj, 1=Maj6, 2=Maj7, 3=Maj7sus, 4=Min, 5=Min6, 6=Min7, 7=Min7b5, 8=Dim, 9=Dim7, 10=Dom7, 11=Dom7b5, 12=Aug, 13=Aug7, 14=Sus, 15=Sus2, 16=Sus7
Voice 1 Voicing	14	0-19 in Chord Mode, 0-28 in Scale/Combi, 0-48=Shift, N/A in Notes
Voice 2 Voicing	18	“ ”
Voice 3 Voicing	22	“ ”
Voice 4 Voicing	26	“ ”
Correction Key	47	0=C, 1=C# ... 11=B
Correction Scale	48	0=Major, 1=Minor-Har, 2=Minor-Nat, 3=Minor-Asc, 4=Chromatic, 5=Custom
Correction Window	49	0-127
Correction Amount	57	0-127
Dry Level	13	0-127
Dry Pan	10	0-127, 64 is center

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VoiceWorksPlus parameter	CC	Range
Lead Voice send to Delay	55	0-127
Harmony/Model send to Delay	56	0-127
AuxIn send to Delay	106	0-127
μMod send to Delay	54	0-127
Lead Voice send to Reverb	52	0-127
Harmony/Model send to Reverb	53	0-127
AuxIn send to Reverb	107	0-127
Delay send to Reverb	58	0-127
Lead Voice send to μMod	50	0-127
Harmony/Model send to μMod	51	0-127
AuxIn send to μMod	108	0-127
Voice 1 Gender	29	0-127
Voice 1 Vibrato Style	89	0-28
Voice 1 Vibrato Amount	90	0-127
Voice 2 Gender	19	0-127
Voice 2 Vibrato Style	61	0-28
Voice 2 Vibrato Amount	62	0-127
Voice 3 Gender	23	0-127
Voice 3 Vibrato Style	88	0-28
Voice 3 Vibrato Amount	15	0-127
Voice 4 Gender	27	0-127
Voice 4 Vibrato Style	3	0-28
Voice 4 Vibrato Amount	105	0-127
Notes Attack	73	0-127
Notes Release	72	0-127
Latch	35	0-63 off 64-127 on

General Purpose

MIDI Parameter	CC	Comments
Modulation	1	Vibrato control, preset dependent
Sustain pedal	64	Notes and Chord mode presets only
All Notes Off	123	
Bank Select	0	MSB. 0=Factory, 1=User. Alternate configuration in Setup
Aftertouch	N/A	Selectable mapping in Setup
Pitch Bend	N/A	Global bend range in Setup
MIDI Notes	N/A	Notes and Chord mode presets only
Program Change	N/A	Factory or User bank assignable