USER'S MANUAL

BUILT FOR PRO TOOLS|HD®

HARMONY4

NATURAL, INTELLIGENT VOCAL HARMONY

TC-HELICON
VOCAL TECHNOLOGIES

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ULTIMATE SOUND MACHINES

Harmony4 User's Manual

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Chapter 1: Introduction

Thank you for purchasing the Harmony4 Pro Tools® TDM plug-in from TC-Helicon. This product is a landmark in that it is the first time our harmony technology has been made available as a Pro Tools plug-in. You can now add vocal sparkle and depth to your songs, advertising jingles, spoken word content, video games and more from within the Pro Tools environment. All you need is a nicely recorded vocal track to send to Harmony4. The four Hybrid Shifting™ algorithms can be thought of as well trained singers that you can manipulate in order to create vocal magic.

We hope you become as excited by the possibilities of Harmony4 as we are to bring it to you.

The TC-Helicon Team
February 2007

Main Features

- ◈ Runs in realtime on Pro Tools HD systems

- ◈ Up to 4 harmony voices can be derived from a single vocal track

- ◈ Choice of harmony intervals up to 2 octaves above or below

- ◈ Humanization styles offer maximum realism and special FX

- ◈ Tabbed interface simplifies and speeds editing

- ◈ Range of musical inputs possible: "Notes" or "Chords" MIDI input modes, "Key and Scale" or "Shift"

- ◈ All settings are easily automated for precise results

- ◈ Compatible with 96 KHz recordings

System Requirements

WINDOWS and MAC
• Digidesign Pro Tools|HD® running Pro Tools® version 7.0 or newer

• Available TDM DSP resources in project

Parameter Inputs

Mouse Click/Drag
Single-clicking and dragging the mouse vertically is supported in any text edit field or on the harmony "heads".

Direct Input
Double clicking in any edit field allows you to type in an exact number. In a text field, you need only type in the first few characters and press enter.

Installation

Installing the Harmony4 plug-in is handled automatically when you double click on the file you received when it was purchased. An iLok key with a valid authorization for Harmony4 must be inserted into your computer before the installation or the procedure will abort. All should go smoothly but if an error occurs, you can contact TC Support from the contact information shown on the next page.

Terminology: "Presets"

Throughout this manual we refer to the loading, saving and use of *presets*. Of course, this is the way to describe pre-configured sets of parameter values that simplify use of a product. In the Pro Tools world, the term is *settings*. the functions of "presets" and "settings" are mostly interchangeable except that:

1. Selection of settings and presets is done in different areas of the plug-in; settings are found on the Pro Tools host banner at the top of the plug-in and presets towards the bottom left of the "face" of the plug-in.

2. Saving an edited *setting* will not be reflected in the *presets* drop down menu. Because of this, it's best to choose one way of retrieving and storing parameter sets and stick with it.

Support Information

The TC Support Interactive website www.tcsupport.tc is designed as an online support and information center. At the site you can find answers to specific questions regarding TC-Helicon software and hardware. All known issues are stored in a database searchable by product, category, keywords or phrases. Under the section "My Stuff" you can login to check the status of your questions, download materials such as product manuals, software updates and new presets. This site has been specifically designed to meet the needs of our users. We constantly update the database and you will find the site to be a huge resource of information. Browse through Q&A's and discover new aspects of your TC-Helicon product. If you can't find an answer online, you have the option of submitting a question to our technical support staff who will then reply to you by e-mail. The TC Support Team is on constant alert to help you in any way they can.

Contact Details
Alternatively, you may contact the TC Electronic distributor in your area or write to:
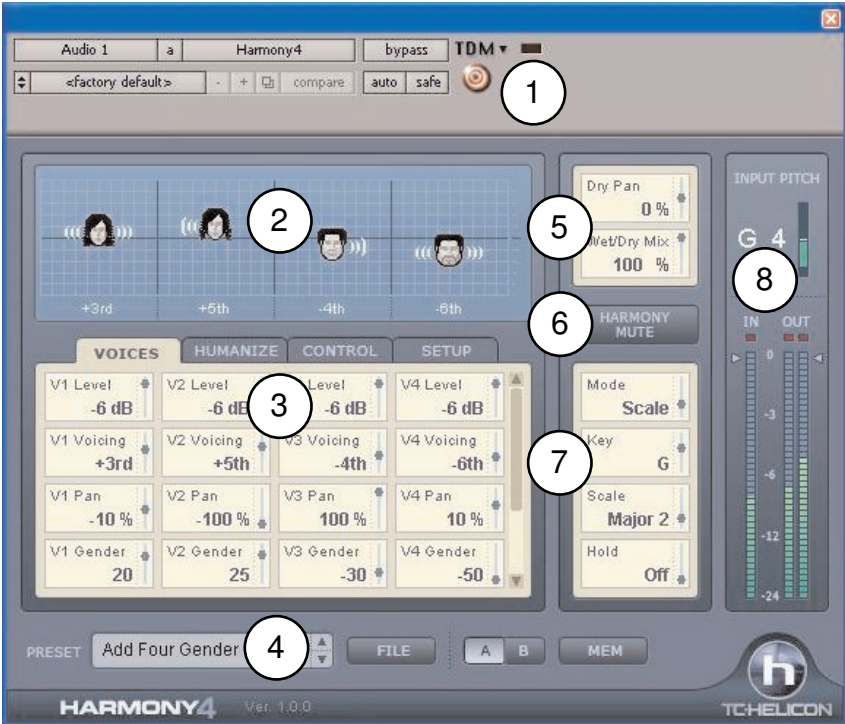
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Chapter 2: Descriptions

The Main Interface

Here we discuss getting around the GUI. More detail on parameters follows later in the manual.

1. Host Area - Here you will find, among other features, the Settings drop down menu with a selection of pre-configured parameter values grouped by harmony mode. Consult your Pro Tools manual for more information on this area.

2. Visualization Area - Here you can see at a glance information about the current preset. Each head represents an enabled harmony voice. Click on a head and you can drag the mouse to change the harmony interval of each voice (although not in Notes and Notes 4CH presets because harmony intervals in these presets are determined by incoming MIDI note messages). Gender is represented by the apparent male or female characteristic of each voice. The soundwaves emanating from the heads show both level and pan position. The lower part of the window shows text representing the harmony intervals or a MIDI note number depending on the current harmony mode.
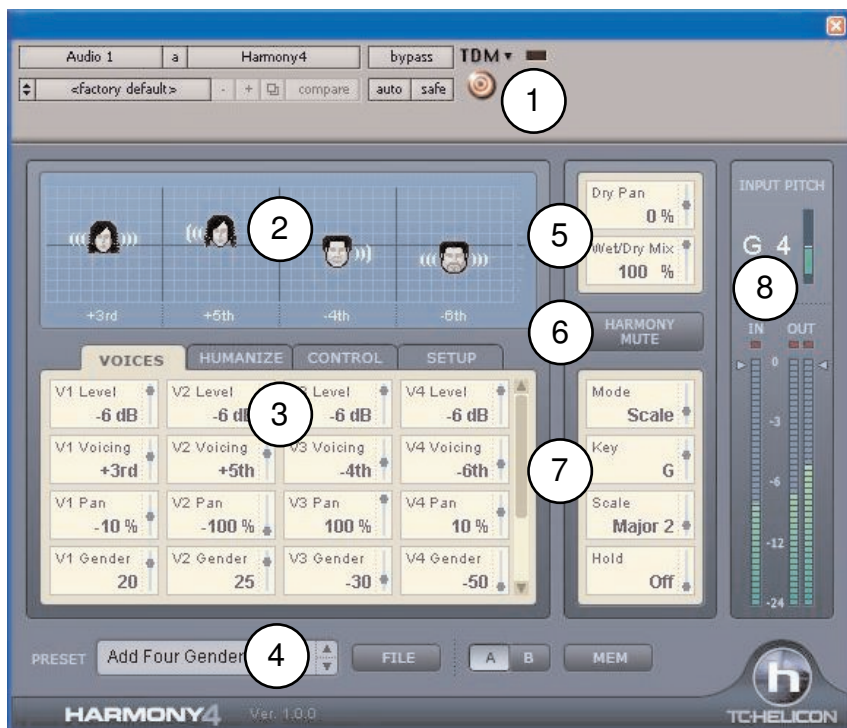
3. Tab Editing Area - This is composed of 4 tabs containing parameters that are grouped by function. Generally, each voice has its own vertical column of parameters. The slider on the right side of this window can be used to reveal more parameters if they exist in the harmony mode the preset is based upon.

4. Preset Area - Clicking the File button presents a drop down list of the factory presets grouped by harmony mode, any new or edited presets and the Load and Save features. Clicking in the preset name area will allow renaming of the current preset. The A, B and Mem buttons offer an edit comparison feature. Press the Mem button first to clear the comparison memory. Any edits you make then become the A setting and the A button will light. Pressing the B button will allow you to compare your edits (A) with the existing preset (B). To return to the unedited version of the preset, press the Mem button or reselect the preset using the File button.

5. Wet/Dry Mix and Pan - There is an optional dry path through the plug-in for times when you use Harmony4 as a channel insert. Note that when used as a stereo input insert, only the left channel of the audio track will be used as input to Harmony4.

The Main Interface (cont.)
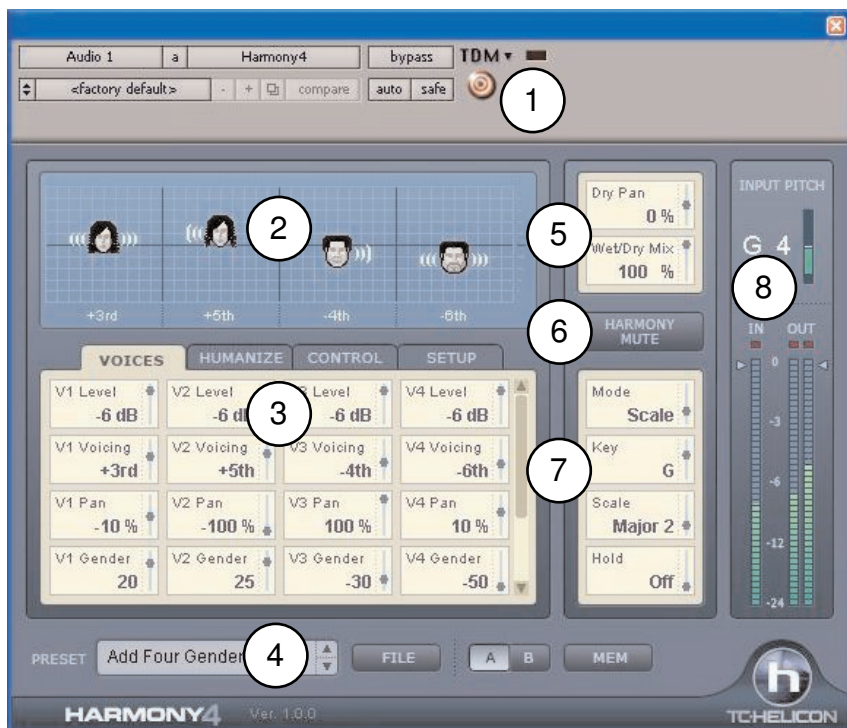
6. Harmony Mute - Pressing this button will quickly turn the harmony voices off.

7. Musical Info/Various - Each preset in Harmony4 is based on one of the 4 harmony control modes. Each harmony mode has different requirements in order to make the voices produce musical sounding harmonies. It's important to read the "Harmony Modes Background" section later in this manual to fully understand each harmony mode's control requirements. The parameters in this area of the GUI will differ depending on which mode is selected. You can see at a glance the harmony mode of the loaded preset.

8. Meters and In/Out Levels - The Input Pitch area shows the recognized sung input note and octave as well as whether the input note is sharp or flat by +/- 50 cents. The lower meters display input and output audio levels. You can reduce the input level or both output levels by clicking and dragging the arrows.

The Voices Tab

The Voices Tab allows editing of settings you need most for each harmony voice. The number of parameters differs depending on the harmony mode in the current preset.

Level
Here you can mix the relative levels of each of the four voices. There is also an "Off" value which will disable any voice. Setting all four voices to 0dB (full) will most likely cause output clipping with hot inputs. If this occurs, you can either reduce the input level with the IN slider or reduce the level of each voice. Note that any voice whose level is set to Off will ignore MIDI. If you want to use automation to fade-up a voice in a MIDI controlled harmony mode, you should start at -60dB and not Off.

Voicing (Scale mode), Offset (Shift mode), Position (Chord mode)
These parameters allow you to arrange the intervals of your four singers above and below the lead singer. They are available in all modes except Notes and Notes 4CH and they work slightly differently in each harmony mode:

In **Shift** Mode, the Offset values range from -24 semitones to +24 semitones in a fixed, non-diatonic interval relative to the input melody.

In **Scale** Mode, the Voicing parameter specifies a diatonic interval relative to the input. The range is -2 octaves to +2 octaves. For example, a setting of +3rd will result in a harmony voice a third above the input voice, which could be major or minor depending on the current Key and Scale settings. Values of for example, ++3 or --5 are over an octave away from the input note.

In **Chord** Mode, the Position parameter determines a more general relationship between the harmony note and the input note. The harmony intervals relate to the chords played on your MIDI keyboard. A setting of "Up1" generally places the harmony voice a third above the input voice.

In **Notes** and **Notes 4CH** modes, the Voicing parameter is not shown or editable because intervals are determined by the incoming MIDI notes.

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 sounding harmonies. Left = "-", Right = "+"

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

Note Source and Input Note (Only available in Scale Mode)
These parameters help you to create custom scales for times when the lead voice melody, the harmony voice(s) and the musical accompaniment don't sound correct on certain notes. You can edit the individual harmony notes of all four voices (if they are all enabled) for each input note.

When Note Source is set to "Manual", you can select the Input Note with your mouse and then edit the resulting note or notes produced by the harmony voices. When Note Source is set to "Sung", the Input Note is determined by the pitch of the singer.

Output Note
Each of the 4 harmony voices can produce a different harmony note for every given input (sung note). Use these parameters to set the desired output note for each enabled voice.

The Humanize Tab

TC-Helicon's Humanize settings make the harmony voices sound more natural or even wildly effected if you prefer. You can select a pre-programmed Humanize style or start with the "Off" style and experiment with each parameter.

Style
This parameter contains preset values for all the parameters in the Humanize block. It provides quick access to different qualities of performance.

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

Smoothing
This setting determines how in-tune the harmony pitches are in relation to your sung pitch. It is most effective in Scale mode but it can also be useful in Notes and Chords modes to "naturalize" the fixed pitches coming from a MIDI keyboard. At Smoothing settings near zero, the harmony voices will be pitch-corrected which may make them sound too stepped without a little portamento. Settings near 100 allow the lead singer to float between pitches with the harmony voices following closely. This high value of Smoothing sounds the most real in Scale mode if the input voice is in tune but a value of 50 to 70 is best for the MIDI modes.

Detune
With the Detune Parameter, a tiny, fixed amount of pitch shift is applied uniquely to each of the harmony voices. This creates a thicker, chorus-like effect when applied to harmony voices set to similar pitches.

Pitch Randomize
Small amounts of this parameter apply a unique, moving pitch shift to each voice that is derived from the study of human singing. It is used to remove the sometimes mechanical sound of perfectly in-tune harmonies.

Time Randomize
No group of singers is able to start their harmony notes at the exact same time. Lower values of this parameter create slight timing differences to the onset and sustained portions of each harmony note. This feature greatly increases realism when the harmony voices are panned in stereo.

Vibrato Style & Amount
A unique modeled vibrato based on the analysis of human singers can be added to each harmony voice using a combination of these two parameters. When Style and Amount are chosen, vibrato occurs when the pitch of the lead voice has settled momentarily. This more closely simulates human singing. Vibrato may not occur if the lead voice melody is changing quickly.

The styles are randomized so that they sound slightly different on each voice even when the same style is chosen for all. Mixing different styles can create a very realistic sounding vocal group.

Scoop Style & Amount
The Scoop parameter adds a brief pitch envelope to the onsets of the harmony notes, further disconnecting the harmonies from the lead. Select a style, then use the Amount control to determine the shift range of the scoop.

The Control Tab

The Control Tab is used to configure parameters that relate to the different harmony modes. Depending on the mode, different parameters are available. A brief description of each harmony mode follows here with more detailed discussion following in Chapter 3.

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 above or below the input note in semi-tones.

Mode: Scale
In Scale Mode, harmonies use key and scale information to create musically correct, diatonic harmonies. Scale Mode harmonies are more parallel than Chord Mode harmonies. To overcome situations where the harmony interval is incorrect for one or two sung notes, the custom scale editing parameters may be used. Refer to Appendix: Scale Types and Voicings Table

Mode: Chord
In Chord Mode, musically correct harmonies are produced by chords recognized from the incoming MIDI notes.

Mode: Notes & Notes 4CH
In this Mode, incoming MIDI notes determine the pitches of up to four harmony voices. When "Notes" is selected, a single MIDI channel controls the 4 harmony voices. When Notes 4CH or "Notes Four Channel" is selected, each harmony voice is assigned a unique MIDI channel in the Setup tab which has many benefits including:

1. the ability to use unique pitch bends on each channel
2. full stability of panning and gender assignments for each voice.

To take full advantage of this mode, you will need to have 4 tracks of MIDI data on separate channels driving Harmony4.

Key & Scale (available only in Scale Mode)
Use these parameters to set the 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. Custom scales can be created for situations where the predefined scales don't produce the desire results. Refer to Appendix: Scale Types and Voicings Table

Attack and Release
Available only in Chord and Notes Modes, these parameteres set the envelope attack and release times for harmony voices. Using these parameters can make entrances and exits of the harmony notes softer or harder. This function works when Latch is "Off" and MIDI notes are being received.

Latch (available only 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. In notes mode, the number of notes played must equal the number of harmony voices enabled for any voices to be triggered.

Bend Range
You can define how far the harmony pitches are shifted when you move the pitch wheel on your MIDI keyboard. The values go from 0 to +\- 24 semitones.

Tuning
There are three micro tuning options for all harmony modes except Notes, Notes 4CH and Shift.

Equal tuning uses approximations for the tuning of each note, allowing you to easily alter the key of your music without re-tuning your instruments. This is the same way synthesizers are tuned. Most non-digital instruments are tuned this way.

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

Barbershop tuning differs from Just tuning only 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 will wait until the pitch of a sung note has remained stable enough to allow "freezing" or looping of 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 ("H.Release")
Sets a fade-out time for the hold feature when returned to the "Off" value.

Root and Chord (available only in Chord Mode)
Use these parameters to set the chord root (e.g. C) and chord type (e.g. major 7). The chord defines the allowable notes for the harmony voices.

The Setup Tab

When using the two modes that require MIDI input, Notes and Chords, it is essential to match the MIDI settings of Harmony4 to those of your Pro Tools MIDI track for controlling harmony.

Important note: All parameters in the Setup tab are saved with the current preset or Pro Tools setting. This is especially important when considering MIDI channels. Changing the MIDI channel to a non-default channel in one preset and then changing to another factory preset will require setting the MIDI channel again. If you plan on using a different channel it's best to save your favorite MIDI presets as user presets with your chosen channel assigned.

Harmony V1(All) Channel
The MIDI channel for notes and sustain pedal information must match the channel of the transmitting keyboard controller or sequencer MIDI track. Chord and Notes modes (but not Notes 4CH) require only the Harmony V1(All) Channel be set to match your controller.

The other three channel assignments only apply when using Notes 4CH mode where each voice has its own channel assignment. The "V*n*" nomenclature denotes each edit field as the channel setting for Voice 1 through 4.

Harmony V2/ V2 / V3 / V4 Channel
In Notes 4CH mode only, these settings determine which channel controls each single voice.

Notes Transpose
In Notes mode only, this setting works in tandem with the Split Zone and Split Note settings to allow you to play high harmony notes on the lower section of your keyboard and vice versa.

Split Zone & Split Note
You can use these settings to isolate which section of your MIDI keyboard will control Harmony4. This is mostly used when playing live with keyboard sounds triggered from one side of the keyboard and harmonies triggered from the other.

Tuning Reference
If the vocal track that drives Harmony4 was recorded with a non-440Hz instrument reference, you can use this setting to bring the harmonies into tune.

Bend Range
See the Control Tab description.

Chapter 3 - Producing Harmony

Harmony Modes Background

A quick description of why the harmony modes are required is that they help Harmony4 "sing the right notes". Each harmony mode requires different input from you and is capable of producing different harmony sounds. We will use a little allegory to explain.

When you and a fellow musician get together to play and sing, typically some musical information is passed from one to the other before commencing the song. You do this in order to make sure the music sounds pleasant and not discordant. The information can be as simple as the name of a song you both know, a musical key or even pointing out the chords on your instrument. In this respect, Harmony4 is similar. You will need to share some musical information in order for it to do its job properly. The ways in which you communicate this information to Harmony4 are through the "harmony modes".

Like your friend in our analogy, Harmony4 has intelligence that can contribute to making good music. You can choose to use this intelligence or not depending on the chord structure of your song and the harmony lines you have in mind. You make this choice when choosing presets to produce harmony in your song.

The factory presets are organized on the basis of the four harmony modes:

- ◈ **Scale**
- ◈ **Chords**
- ◈ **Notes**
- ◈ **Shift**

The "intelligent" harmony modes, **Scale** and **Chords,** calculate a harmony map with the following inputs from you:

1. The note the lead vocal is singing at any given moment;
2. Either the key and scale you've set at the beginning of your song (Scale mode);
3. or the chord root and type interpreted by Harmony4 from incoming MIDI track (Chords mode).

The map has an output note associated with every input note. This creates a harmony melody that moves with your lead melody while generally sounding harmonically correct with your accompaniment.

The non-intelligent modes, **Notes** and **Shift,** each have unique requirements so we will deal with them individually:

The **Notes** harmony mode requires a MIDI keyboard and other MIDI source to dictate to Harmony4 what harmony notes you'd like to hear. Once a harmony note or notes are held down on your MIDI keyboard or MIDI track, this is where they will stay regardless of your changing vocal melody.

Shift mode shifts the pitch of the lead melody by a fixed interval. This is most useful for doubling, special effects or Gothic-sounding 5ths.

A Comparison of the Harmony Modes

The following table gives an overview of the plusses and minuses of each harmony mode.

Harmony Mode	Input Action	Benefits	Challenges
Shift	Set shift amount with the Voicing parameter	Easiest to use	Fixed interval less useful for musical harmony
Scale	Set Key and Scale of song	Most natural sounding with minimal input. Can be the fastest.	Diatonic harmony doesn't work with all chord accompaniments.
Chord	Play chords on a MIDI keyboard	Works for nearly every chord change accompaniment.	Limited harmonic movement not always realistic sounding.
Notes	Perform harmony melodies on MIDI keyboard or MIDI track	Any harmony melody can be created for each voice.	Requires keyboard skills. Wide-panned voices may swap sides due to voice allocation.
Notes 4 Channel	Perform harmony melodies on four MIDI channels/tracks using a MIDI keyboard and/or sequencer	Any harmony melody can be created for each voice. Unique pitch bends on each channel add realism. Pan and Gender assignments locked to voice	More time required to input melodies. Sequencing knowledge required.

Getting Set Up

1. After you've successfully installed Harmony4, open a new Pro Tools session or an existing one with a dry vocal track in it.

Notes concerning vocal input files:

◆ The vocal track driving Harmony4 can be mono or stereo. In the case of it being stereo, only the left channel send is sent to Harmony4.

◆ There should be as little as possible pitched instrument or other vocal leakage onto the main vocal track. Increasing leakage compromises the harmony quality.

◆ Any equalization of the send to Harmony4 should be minimized. You can add EQ after the plug-in if required.

◈   While Harmony4 has excellent pitch detection, it may have trouble finding a pitch in growled or extremely raspy voices.

2. Connect a MIDI keyboard to your computer and create a MIDI track to pass the live MIDI notes through to Harmony4. You can also use a pre-existing track or record a new one to control Harmony4.

3. Follow the procedure for creating an auxilliary send and return buss for your version of Pro Tools. In the return buss/channel, load Harmony4 as a TDM plug-in from the Pitch Shift menu. Once it is correctly loaded, press play and confirm that audio is reaching Harmony4 by checking that the IN meter is showing audio. Set Harmony4's wet/dry to 100% wet.

Insert or Auxillary Send?
◈   While you can run Harmony4 as either an insert or auxiliary send plug-in, typically it's best to run it as a pre-fader auxilliary send effect. This allows you to process and mix the lead and the harmony voices separately. Also, the auxilliary input channels in Pro Tools feature delay compensation. Ensure that no other tracks are inadvertently sending to Harmony4 on its assigned send bus.

◈   You can use Harmony4 as an insert if you don't mind controlling wet/dry mix within the plug-in as opposed to the track fader controls in the Pro Tools mixer.

4. You can confirm that Harmony4 is receiving MIDI note information by loading a Notes mode preset e.g. "Notes In Stereo" and observing note names in the visualization area as you play your keyboard or play back a MIDI track.

Checking Out The Harmony Presets

Now that you're setup, you can start producing harmony! If you are familiar with TC-Helicon harmony products you can proceed directly to the presets dedicated to the harmony mode of your choice and experience the results.

1. If this is your first time creating virtual harmonies, start by loading the first preset in the factory preset list. The first group of presets are based on the **Chords** harmony mode so get ready to play chords on your MIDI keyboard or play back an existing MIDI track with the song's chord changes. Chords presets will recognize the MIDI chords and produce harmonies relevant to the song.

2. Press Play and confirm all of your audio paths are correctly set. You should hear a mix of the lead voice and the harmony voices and see metering indications in your track meters. Until you play the keyboard or MIDI track, the harmonies won't follow the song but this is OK while you're making sure the audio paths are correct.

You may want to record a scratch MIDI chord track in Pro Tools during the song sections where harmony is required so you can try the different Chords presets without having to play at the same time.

3. You can now listen to how the different Chord presets sound as the song plays. At this point you can also start learning about editing. A good place to start is with parameters in the Voices Tab. Here you can move the Voicing up and down and hear the effect of different Gender settings on each voice.

4. Once you've experimented with the Chords mode presets, you can check out the presets built on **Notes** mode. You'll need your MIDI keyboard or MIDI track again but this time, instead of simply playing chords, you also have the option of playing melody lines or holding static notes.

Again, it will help if you create a scratch MIDI track with some harmony lines so you can sample the different Notes presets.

One of the Notes mode presets is called MIDI 4 Channel. To hear this preset correctly, you will need to record up to four MIDI tracks on different MIDI channels each with a mono melody line. The four MIDI channel assignments of the tracks must match the assignments set in the Setup tab of Harmony4. It sounds like a lot of work but this is arguably the most flexible and powerful harmony mode so it is worth the extra effort to hear it. Be sure to try a pitch bend on at least one MIDI channel.

5. Auditioning the **Scale** mode presets with your lead vocal track is much easier. All you have to do is determine which Key and Scale matches your song or song section and enter it when you load each preset. If the song chord structure is fairly simple, one setting of Key and Scale will sound wonderful. What may happen though is that the harmony part will sound great for most of the song or section but when the accompaniment goes to a particular chord and the singer sings a particular note, the harmony at that moment doesn't sound musically correct.

When Scale harmony needs help, the beauty of Pro Tools automation comes to the rescue! Take note of where the harmony needs to be adjusted. Then loop this section and find a Key or Scale combination that works for that moment. Now automate a Key or Scale edit just before that note or phrase. Return to the original Key and Scale settings for the rest. You may have to do this at a couple of places in your song but the often breathtaking reality of Scale mode harmonies will make it worth the effort.

A table outlining the differences between the three Major and three Minor scales is in the Appendix. These scale modifications have been developed by performing musicians to make Scale harmonies work for more songs.

6. Shift is the last harmony mode group in the factory presets. These are least likely to produce what we expect as harmony but they can be useful for doubling and special FX. No input on these presets is required beyond loading

the preset. Editing the voicing parameters will give you a good idea of what is possible with this harmony mode.

If you've stayed with this text up to this point, you've received a good overview of what Harmony4 has to offer. From this point onwards you can work with presets in the harmony modes that suit your workflow best.

Chapter 4: Appendix

Troubleshooting

For the more extensive and up to date troubleshooting information please visit www.tcsupport.tc

I don't hear any harmony voices, but the input meter to Harmony4 shows input level - nothing on the output?
There are several common reasons harmonies are not being produced when the plug-in shows input level:
   1. Harmony Mute is enabled: disable it to hear harmonies
   2. A Notes or Chord preset is selected: make sure there is MIDI being sent through the correct path in Pro Tools.
   3. If MIDI is being sent, but there are still no harmonies: confirm that:
   a) the MIDI channel for Harmony4 is matched to your track with MIDI information. or;
   b) the split point settings are allowing MIDI notes through

Why do my meters only show activity on the left channel?
If Harmony4 is inserted on a mono channel only the left side of Harmony4 is used. For both meters to function, use Harmony4 on a stereo channel.

Can I reduce excessive sibilance when using Harmony4?
The harmony voices are pitch shifted and humanized versions of the input voice. If there is sibilance on the original recording, that effect becomes more noticeable with each harmony voice added. Try using Time Randomize = 10. Additionally, consider using a de-esser plug-in.

I hear a slight delay between the lead voice and the harmonies, can that be fixed?
Pro Tools doesn't default to having plug-in delay compensation turned on. You will need to turn this on and set the buffer size to at least 1792 samples at 44.1 or 48 KHz or 3588 samples at 88/96 KHz.

I hear the harmony voices clipping but the Harmony4 input meters don't show it.
In this case, drag the IN fader in Harmony4 down to reduce the input level. If your vocal track is very dynamic, you could also place a compressor plug-in before the Harmony4 send or insert.

Scale Types and Voicings Table

	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	nc	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

The table at left illustrates the how the six scale types differ. It shows the third and fifth intervals for input notes in the key of C.

The bold line of notes at the top represent the sung or input note.

The symbol "nc" means no change, in that the harmony voice will simply stay on the previous note until the lead voice changes to a non "nc" note.

The following table shows the range of harmony voicings available in Scale mode.

+2 Octaves
++7
++6
++5
++4
++3
++2

+1
+7
+6
+5
+4
+3
+2

Unison

-2
-3
-4
-5
-6
-7

-1 Octaves
- -2
- -3
- -4
- -5
- -6
- -7
-2 Octaves

Chord Types and Voicings Table

The following gives additional detail on Chords mode. It shows the range of chords recognized by Harmony4 based on a chord root of C in the left column. To the right in the table is the combination of notes that are required to be played in order for Harmony4 to recognize each chord type.

Recognized Chord Types with Root of C

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

Voicing intervals in Chord Mode Presets

+2 Octaves
+1 Octave
Up 6
Up 5
Up 4
Up 3
Up 2
Up 1

Unison

Down 1
Down 2
Down 3
Down 4
Down 5
-1 Octave
-2 Octaves
Bass 2
Bass 1
Root 2
Root 1