



VOCALIST PERFORMER

VOCAL HARMONY PROCESSOR WITH REVERB



USER'S MANUAL

Version 1.1



The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrowpoint in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

U.K. MAINS PLUG WARNING

A moulded mains plug that has been cut off from the cord is unsafe. Discard the mains plug at a suitable disposal facility. NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAINS PLUG INTO A 13 AMP POWER SOCKET. Do not use the mains plug without the fuse cover in place. Replacement fuse covers can be obtained from your local retailer. Replacement fuses are 13 amps and MUST be ASTA approved to BS1362.

ELECTROMAGNETIC COMPATIBILITY

This unit conforms to the Product Specifications noted on the Declaration of Conformity. Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation. Operation of this unit within significant electromagnetic fields should be avoided.
- use only shielded interconnecting cables.

FCC COMPLIANCE

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 a residential installation. 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 that may cause undesired operation.
- 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.

DECLARATION OF CONFORMITY

Manufacturer's Name: IVL Technologies Ltd.
per DigiTech specifications
6710 Bertram Place
Victoria, B.C.
Canada V8M 1Z6

declares that the products:
DigiTech Vocalist Performer

conform to the following product specifications:

EMC: EN 55022 (1987):
CISPR 22 (1993) Class B
EN 50082-1 (1992)

WARNING

FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:

Water and Moisture: Appliance should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

POWER SOURCES: The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

GROUNDING OR POLARIZATION: Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

POWER CORD PROTECTION: Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

SERVICING: To reduce the risk of fire or electric shock, the user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

CAUTION: To reduce the risk of fire replace only with same type fuse.
ATTENTION: Utiliser un fusible de recharge de même type.

CAUTION: To reduce the risk of fire replace LAMP with manufacturers recommended part (Refer to service literature)

SAFETY INSTRUCTIONS

Notice For Customers If Your Unit Is Equipped With A Power Cord.

WARNING: THIS APPLIANCE MUST BE EARTHED.

The cores in the mains lead are coloured in accordance with the following code:

GREEN and YELLOW - Earth BLUE - Neutral BROWN - Live
As colours of the cores in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

- The core which is coloured green and yellow must be connected to the terminal in the plug marked with the letter E, or with the earth symbol, or coloured green, or green and yellow.
- The core which is coloured blue must be connected to the terminal marked N or coloured black.
- The core which is coloured brown must be connected to the terminal marked L or coloured red.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. Connect this equipment only to the power source indicated on the equipment rear panel. If the attachment plug needs to be changed, refer servicing to qualified service personnel who should refer to the table below. The green/yellow wire shall be connected directly to the unit's chassis.

CONDUCTOR		WIRE COLOUR	
		Normal	Alt.
L	LIVE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	GREEN/YEL	GREEN

WARNING: If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and earth ground are touched simultaneously.

Supplementary Information:

The product herewith complies with the requirements of the EMC Directive 89/336/EEC (1989) as amended by the CE Marking Directive 93/68/EEC (1993).

IVL Technologies Ltd.
6710 Bertram Place
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Canada V8M 1Z6
February 19, 1997

Peter George, Vice President of Engineering

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Digitech Vocalist Performer User's Manual

Table of Contents

Introduction.....	1
<i>Jump Start</i>	1
Front panel description	2
Back panel description.....	5
Connections.....	6
Operation.....	7
Setting the input level	7
Setting the harmony level	7
The reverb effect.....	7
The Harmony options	7
Choosing key and scale	8
Part A and B.....	9
Stereo voice panning.....	10
Storing your programs	10
The optional footswitch and micstand mount	10
Specifications	11

Warranty

The warranty registration card must be mailed within ten days after purchase date to validate the warranty.

DigiTech warrants this product, when used solely within the U.S., to be free from defects in materials and workmanship under normal use and service.

DigiTech liability under this warranty is limited to repairing or replacing defective materials that show evidence of defect, provided the product is returned to DigiTech WITH RETURN AUTHORIZATION, where all parts and labor will be covered up to a period of one year. A Return Authorization number may be obtained from DigiTech by telephone. The company shall not be liable for any consequential damage as a result of the product's use in any circuit or assembly.

Proof-of-purchase is considered to be the burden of the consumer.

DigiTech reserves the right to make changes in design, and make additions or improvements to this product without incurring any obligation to install the same on products previously manufactured.

The foregoing is in lieu of all other warranties, expressed or implied, and DigiTech neither assumes nor authorizes any person to assume any obligation or liability in connection with the sale of this product. In no event shall DigiTech or its dealers be liable for special or consequential damages, or from any delay in the performance of this warranty due to causes beyond their control.

IMPORTANT! The information contained in this manual is subject to change at any time without notification. Some information in this manual may also be inaccurate due to undocumented changes in the product or operating system since this version of the manual was completed. The information contained in this version of the manual supersedes all previous versions.

Introduction

Thank you and congratulations on your purchase of the DigiTech Vocalist Performer. This vocal harmony product is a breakthrough in ease-of-use, sound quality and affordability. Whether you sing for your own entertainment or for the entertainment of others, Performer can be your “singing partner” who can effortlessly hit the high notes and provide full-sounding backup hour after hour. Performer offers the latest vocal harmony technology that has made DigiTech the world leader in natural-sounding vocal harmony processing. In addition, Performer features a high quality reverberation effect to further enhance your vocals.

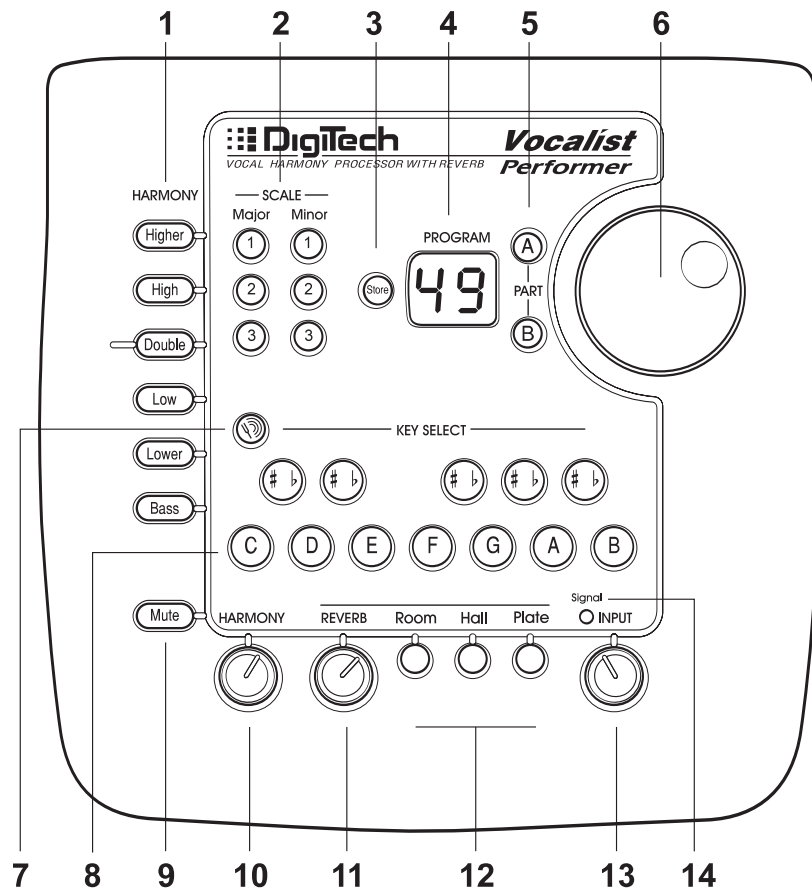
Performer's features include:

- Two assignable voices for harmony, automatic doubling and special effects
- Built-in stereo reverb with three preset types
- Stereo harmony and reverb output
- 50 user programs
- Part A and Part B switching
- Easy user interface
- Sound source for cue-in note and guitar tuning reference
- Optional microphone stand mounting bracket
- Optional DigiTech FS300 footswitch

Jump Start

- 1) *Connect Performer as shown on page 6. The Signal LED will glow red during the ~5 second power-up delay.*
 - 2) *Press the Mute button so it lights and adjust the Harmony and Reverb knobs to 12 O'Clock.*
 - 3) *Sing into your mic and adjust the Input knob so that the Signal LED shows red only on the loudest notes you will sing.*
 - 4) *Sing a song you know. For a starting pitch, press the cue button.* 
The cue button volume is controlled by the Reverb Level knob.
 - 5) *You can change the harmony sound by using the buttons from the Harmony group.*
 - 6) *Select a different Key or Scale from the respective button groups.*
- Enjoy! Don't forget to read this whole manual to make the most of Performer.*

Front Panel



1) Harmony buttons

These allow you to turn on and off up to two harmony voices at a time. The High and Higher buttons produce harmonies above your voice. the Double button produces slightly detuned copies of your voice on the same note. The Low, Lower and Bass buttons produce harmonies below your voice.

2) Scale selection buttons

Choose a Major or Minor scale that sounds correct with your song. The difference between the 3 Major or 3 Minor scales is fairly subtle and may not be obvious right away but, for some songs, one scale will sound “right” where another might not. Whether a certain scale “works” or not depends on what note you sing *in relation to the key you have chosen*.

See “Choosing Key and Scale” description in the Operations section for more information.

3) Store button

This is used when you want to save the settings you have chosen. In each program you may store the Key, Harmony voicing and Scale settings. When pressed, the number in the program window will flash. The flashing indicates that you have a choice of program number in which to store your new program. You can press the store button one more time to accept the current number or use the data wheel to choose another number before accepting. Press any other button to cancel the store operation.

4) Program window

This window displays the currently loaded program. There are 50 user program locations.

5) Part A and B buttons

The A and B buttons allow you to change harmony settings in the middle of a song without changing programs. The A and B parts can have different keys, scales and harmony settings if desired, and these buttons allow you to select one or the other. This function can also be selected by the footswitch. For information on storing programs see page 10.

6) Data wheel

Turning this wheel cycles through the programs and loads them automatically.

7) Cue-in note

This is the on/off button for the sound generator that can be used to derive a starting pitch for the key you have chosen. It's also handy for a reference pitch to tune your guitar with. When pressed, the sound will continue until this button is pressed again.

The volume of the cue note is determined by the Reverb level control.

8) Key Select keyboard

These buttons allow you select the “key” of your song. For most songs, the key needs to be set only once before you begin singing. If you are unsure of the key of your song, a good bet is to enter the first chord you will play on your accompanying instrument.

9) Mute button

You can turn the harmony effect on and off with this button. When the Mute button is lit, your voice minus the harmonies will be heard. If the Harmony control is set fully clockwise (fully “wet”) no sound will be heard. The Mute function can also be activated via an optional footswitch. The footswitch feature is described on page 5.

10) Harmony level control

This knob allows you to control the blend between your voice and the harmony voices. Turning this control to the right adds progressively more harmony voice level to the mix while keeping the volume of your voice constant. Your voice and the harmonies are equal volume at approximately one o'clock. At its furthest right position, the output is 100% harmony.

11) Reverb level control

This knob allows you to vary the amount of reverb effect blended in with yours and the harmony voices. At the maximum setting, the mix is approximately 50/50. Reverb is present on your voice even when the harmony voices are turned off. This also controls the cue note volume.

12) Reverb type buttons

There are three pre-set reverb settings adjusted for general usefulness and simplicity. You can choose one type at a time or bypass the reverb effect by selecting any lit button.

13) Input level control

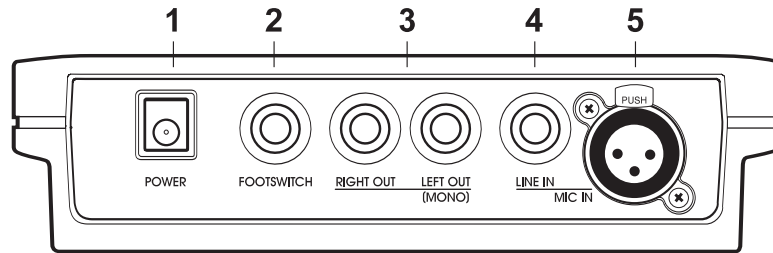
This controls the analog level before it goes into the digital circuitry. If the input signal level is too high, you will see the Signal indicator glow red and you will hear distortion from the audio outputs.

14) Signal indicator

This is a bi-color LED that glows green when Performer has recognized the pitch of your voice and red when the input signal is in danger of distorting. The proper setting is reached when this is green more often than not with red showing only on the loudest notes you sing.

The Signal LED also indicates that the unit is in its power-up sequence. The LED will glow red for approximately 5 seconds and then turn off when the Performer is ready to produce harmonies.

Back panel



1) Power entry jack

Insert the plug from the supplied adaptor here. This turns the unit on and off.

2) Footswitch jack

You may connect a standard momentary footswitch for harmony muting only or a DigiTech FS300 footswitch for extra features. The three switches on the FS300 do the following:

- Switch A - Toggles between the A and B settings you have programmed
- Switch B - Turns the reverb effect off and on
- Switch C - Mutes and unmutes the harmonies (Bypass)

3) Output jacks

The output of Performer is stereo or mono as desired. Use one or two mono 1/4" cables to connect to your mixer or amplifier. The stereo output consists of:

- Your voice in the center
- Stereo reverb with independent left/right decay processing
- Two harmony voices panned to the left and right when two voices are enabled
- One harmony voice appearing in the center when only one voice is enabled

Inserting a cable into the left output jack only will sum the stereo harmony voices and reverb to mono. When an additional jack is connected to the right output, you will hear the stereo image. If you wanted mono and you accidentally plugged your output cable into the right output, you will hear only the one harmony voice that is panned to that side and not the other.

4) Line input jack

If you have connected your microphone to an external mixer, or you will be running a pre-recorded vocal track through Performer, you would insert the cable from the external line-level source here. Inserting a plug into the Line Input jack will override the microphone input. See the Connection diagrams for more details.

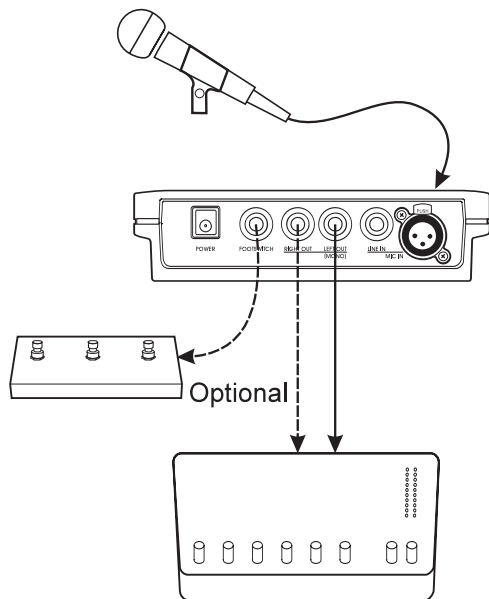
5) Microphone input jack

Connect a balanced XLR-equipped cable from your microphone to this input.

Connections

Live performance

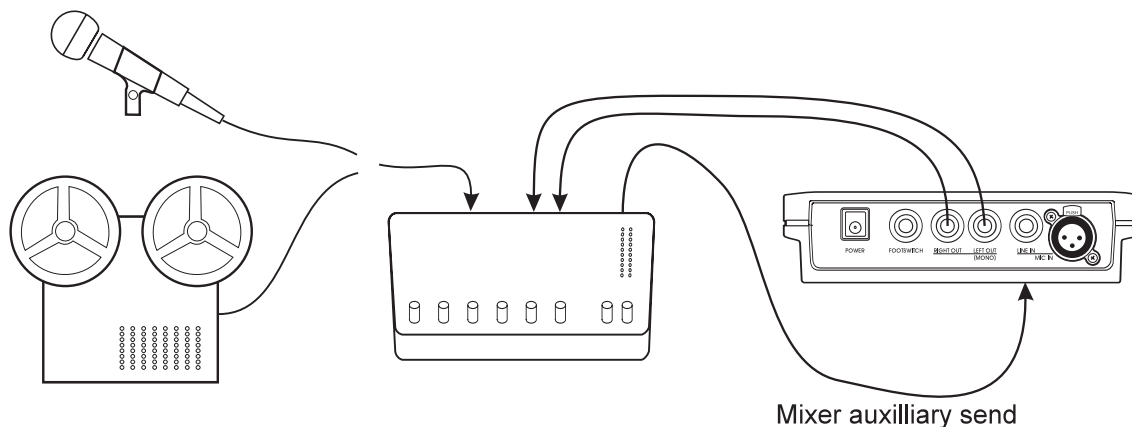
The graphic below shows the typical connection scheme. Your voice is fed through the microphone directly into Performer where it is harmonized and sent to your mixer/power amp. The output from Performer can be either mono (one cable) or stereo (two cables).



Studio or alternate live setup

The graphic below shows how you can drive Performer with an effects send from your mixer. This is useful if you want to add equalization to your voice before it is sent to Performer. If your mixer has multiple effects sends, you could have different effects on your voice and the harmony voices.

This setup also allows you to add harmonies to a recorded vocal track. A vocal track recorded on a ministudio, reel to reel or digital multitrack can be harmonized as if it was being sung live.



Operation

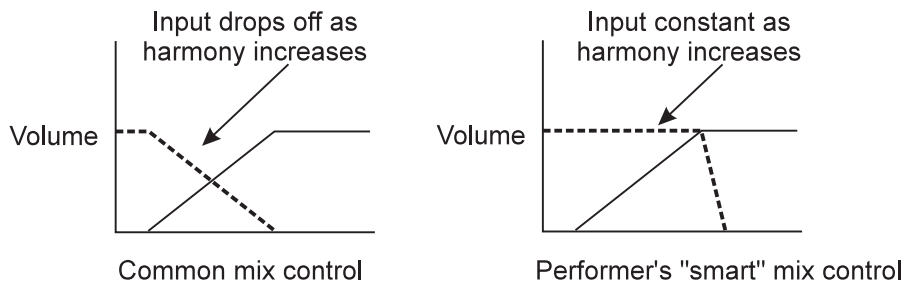
Setting the input level

Adjust the input level control until only the loudest notes you sing cause the Signal LED to turn orange briefly. The LED shows green when it hears a signal, orange at 3 dB below clipping (distortion) and red when the input signal has clipped.

Setting the harmony level

You can adjust the Harmony control to find the blend you like when at least one harmony voice is activated. Unlike standard mix controls, Performer's Harmony control has a "smart" volume curve. As you adjust the volume of the harmonies with this control, your voice does not reduce in volume as it would with a standard mix control. Past 1 o'clock of the Harmony control's travel, the volume of your voice is reduced quickly until it becomes zero at the fully right position. This allows you to produce only harmony voices for special effects and alternate mixing arrangements.

Note: With the control at full right position, you will not hear your unharmonized voice when you press the Mute button.



The Reverb effect

Reverberation is an important effect that makes sounds appear bigger by adding the simulation of an acoustic space. The three reverb effects in Performer have been chosen to allow you a broad range of acoustic spaces. The "Room" reverb type is a medium-size, highly reflective room that adds richness with a very short duration "tail". The "Hall" type emulates a large concert hall that has high frequency damping for a darker, longer effect. The "Plate" reverb type copies the classic effect whereby a metal plate is hung on springs to produce a bright and slightly longer "tail" than the Hall setting. While Performer's reverb is very good, too much reverb in the mix is annoying to the listener and it is best to be conservative in how much you add.

The Harmony options

Double. This is an effect often used in recording where the singer sings exactly the same vocal melody on several tracks so that, when they are mixed together, the combination sound is richer. When you select the Double Harmony button on Performer, you can achieve the same type of effect. When singers perform in a recording studio, they never sing perfectly in tune on each track (and indeed this the key to the fuller sound) so Performer introduces small pitch imperfections to the doubling voices in order to sound more natural and full.

Bass (Octave down). This setting produces the same melody as your input voice but in the octave below. Adding the Bass harmony to your voice produces a sound reminiscent of gospel music. Adding one of the other harmony choices produces an even bigger sound.

If you want to be the Bass singer in your group but you just can't sing that low, try adjusting the Harmony level control all the way to the right. This way you can sing the part in a range you are comfortable in but the sound will be an octave lower.

Note: There is no need to set key or scale when the Double or Bass voice are the only ones selected.

High and Lower. These are the “smart” voices that produce the 3rd intervals. The High button is a third above your voice and the Lower button is a 3rd in the octave below. Much of contemporary popular music features “3rd above” harmony where the main vocal is closely followed in choruses and selected lines with this harmony. The “3rd in the octave below” harmony produced by the Lower harmony voice produces a sound reminiscent of the Beatles.

They are referred to as being “smart” because once you tell them what key and scale your song is in, they will vary their harmony intervals to sound correct over your music. It's important to pick the correct key and scale because some notes may sound “offkey” otherwise. See the section on “Choosing the right key and scale” for more details.

Higher and Low. These voices produce the 5th intervals. The Higher button produces a 5th above your voice and the Low button produces a 5th in the octave below. The Minor 2 scale is an exception where the Low voice is actually a 6th in the octave below and the Lower voice becomes the 5th. Used by themselves, these voices produce a Gregorian monk type of harmony sound. When used in conjunction with the High and Lower harmony voices (3rds) you can produce a sound more like the Eagles or Crosby, Stills and Nash. A fun special effect is to enable only the Low voice and turn the Harmony mix fully to the right. This can make your talking voice sound a little deeper for announcing and effects.

Choosing Key and Scale

Don't let the musical terms of key and scale scare you. Just as you tell fellow musicians what key you're in before you start into a song, you should tell Performer the same. Though the chords in a song may change from moment to moment, most songs remain in one key. Determining the key is usually easy because it often is the first chord in the song. Once you have found the key you can press the appropriate button on the Performer's keyboard.

Setting the scale may take a little experimentation. In many of the songs you sing, the difference may not be noticeable between one Major scale and the next or one Minor scale and the next. This is because your melody doesn't land on the one or two altered notes in each scale. If your melody centers around the root note (an E in the key of E) and maybe the 3rd (G# in E major or G in E minor), you might not hear any difference between the scales. When you find a song where the melody centers around the 5th of the scale (B in key of E), the difference becomes more obvious. Instead of jumping into the theoretical descriptions, let's try a tutorial.

To give you an example of the difference between the three Major scales, let's try with a song everybody knows called "Louie Louie". Set the key to E, pick the Major 3 scale and enable only the High voice. Push the cue button for a moment if you need a starting note. Now sing: "Louie Louie (pronounced Lou-eye), Whoa Baby I said we gotta go now." The difference between the three scales occurs on the word "...Whoa..." which is the 5th of the scale. Sing it again and listen closely for the harmony note on this word. Now change to the Major 1 or Major 2 scales and sing the same thing. You should hear the difference when you sing the "Whoa" note. For a further test try the "Sha Lala Lala....La Tee Daa" part in Van Morrison's "Brown Eyed Girl". This one works best with the Major 2 scale which you'll probably find is the most versatile of the three Majors.

Now let's explore the difference between the three Minor scales. We'll use the song "Summertime" from the Broadway show "Porgy and Bess" as our first example. Set the Performer to key of G, High voice on and the scale to Minor 1. Now sing the first two lines of the song: "Summertime and the livin' is easy, Fish are jumpin' and the cotton is high". Neat huh? This scale works well for this. Sing the line again while you try the other two scales. You should notice that the scales sound different on the words "Summertime..." and "...Jumpin'". Now if you know the song "Evil Ways" by Santana you can explore the Minor 2 scale. This song will really illustrate the difference for you.

Rather than give you a technical explanation of the scales, let's express the differences as chord changes you could generally use as accompaniment.

Major 1- E major / B major

Major 2- E major / B suspended

Major 3- E major / B minor

Minor 1- E minor / A minor / B minor

Minor 2- E minor / A major / B minor

Minor 3 - E minor / A minor / B major

Experiment with all the scales in as many songs as you can. This should give you an intuitive sense about what will work for a particular song and what won't. If you're still having trouble with a particular song, you may also want to try entering a different key than the one you figure the song is in. A good example of this is "Sweet Home Alabama". You would think that this song is in the key of D because that's the starting chord but the harmony actually works best when set to the key of G. Try it for yourself - set the Performer for Major 2 scale, High voice on and the key to D. Sing the chorus a couple of times and then change the key to G.

Part A and B

Songs sometimes change to another key or use a different scale somewhere in the song. Perhaps you would like to stay in the same key but change to a higher or lower harmony voice in the bridge of your song. These are the reasons for A/B switching. With A/B switching you can pre-select an alternative harmony sound in each program and switch back and forth using the front panel buttons or, more conveniently, with the optional FS300 footswitch.

To create a program with unique settings for the A and B parts, press the Part A button and select settings that will work for the main part of your song. Now press the Part B button and do the same for the alternate harmony. Store as described below. When you change programs using the data wheel, Part A is automatically loaded first.

Stereo voice panning

All stereo panning is pre-set in Performer. Your input voice is panned center and the harmony voice pan position depends on how many voices are on. When only one harmony voice is activated, it will be panned to the center. Two harmony voices will be panned hard right and left. If you prefer the harmony voices to appear closer to the center of the stereo image, adjust the pan controls on your mixer accordingly.

Although there is no built-in way to adjust the volume difference between any two harmony voices, you can use this mixer trick to adjust the volume relationship between them:

First of all, connect Performer according to the Studio/Alternate live setup graphic at the beginning of this manual. Turn up the effects send control on the channel your mic is connected to.

Set the pan controls for the on the mixer to the center. Set Performer up for a two-voice harmony and sing. You can now adjust the volume of each voice using the two faders on the mixer.

Storing your programs

When you've found a selection of songs you would like have Performer sing with you, you can store the Key, Scale and Harmony settings into a memory slot for instant recall at your next performance. Press the Store button when you have found settings you like. This will cause the program number to flash. At this point you can choose to store your settings at this location by pressing Store again *or* use the Data Wheel to find another location before pressing Store again.

Although Performer can be easily used without programming, you may find it easier to write down the program number you have chosen for each song to save you from having to remember exactly what your settings were.

The optional Footswitch and Mic Stand Mount

If you perform live, it is strongly recommended that you invest in the FS300 footswitch. The FS300 has three buttons that allow you to bypass the harmony voices, switch between the A and B parts of each program and mute the reverb effect to talk to your audience between songs.

The Mic Stand Mount is handy if you have nothing to rest Performer upon. It brings all the controls within easy reach.

SPECIFICATIONS

Microphone Input	Balanced XLR, 1 KOhm
Line Input	Unbalanced 1/4 TS, -10 dBV level, 2.2 KOhm
Microphone Input Range	-39 dBV minimum to -17 dBV maximum
Line Input Range	-29 dBV minimum to -7 dBV maximum
Line Outputs	Unbalanced 1/4" stereo or mono, -10 dBV nominal
Sampling	16 bit A/D conversion @ 48 KHz
Frequency Response (dry)	20 - 20KHz
Signal to Noise	>92 dB A weighted
Total Harmonic Distortion + Noise	< 0.04%
Power Requirements	9 VDC, 500 mA, tip negative
Size	6.75" H x 6.8" W x 1.75" D
Weight	1 lb

Specifications subject to change without notice.

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