

User's Guide

WavePRO™

Professional 24-bit
Digital Recording Interface

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First things first!

Thank you for purchasing your WavePRO digital recording interface. We "gadgeteers" genuinely appreciate your patronage. This guide contains information on installing and using the interface, and we tried to make it as brief as possible (because no one has time to read manuals anyway).

If you have ideas about how we can improve our products, we'd like to hear from you. *Our contact information is on the back cover of this manual.* Also, if you have any difficulty installing or using the WavePRO interface, please refer to the Support section of this guide.

Our goals

When we designed the WavePRO family, our primary focus was to create a professional recording tool with a straight-forward design that's easy to use. Our emphasis is on bringing you the very best combination of quality and value. To that end, we didn't clutter the product with lots of features that might be confusing or get in the way of the primary reason you bought this thing in the first place: to make great music & audio recordings! Thanks again and *Have Fun!*

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GETTING STARTED

Here's a list of stuff that's included with this package:

	Wave/824	Wave/496	Wave/424
WavePRO PCI card	✓	✓	✓
Computer interface cable (6 feet / 2 meters)	✓	✓	
MIDI adapter cable			✓
Patch Box: 4 in, 4 out half-rack		✓	
Patch Box: 8 in, 8 out rack-mount	✓		
AC Power Cube	✓		
4 Rubber feet for bottom of Patch Box. For placing patch box on a desktop instead of equipment rack.	✓	✓	
WavePRO software drivers diskette	✓	✓	✓
Applications & Demos software CD	✓	✓	✓
User's Guide (duh)	✓	✓	✓

INSTALLING THE WAVEPRO HARDWARE & SOFTWARE DRIVERS

WavePRO interfaces are designed to be truly Plug and Play.
Installation in most systems should take only a few minutes.

If you have any difficulties with installation or operation of WavePRO, check the Troubleshooting section later in this guide.

NOTE: if you are installing 2 or 3 WavePRO cards in a PC, you will need to connect the Sync Cable between the cards before installing. Please see page 6 for instructions.

STEP ① Shut down and turn off your PC

Before you begin installing your WavePRO interface please note:

Static electricity can damage electronic components!

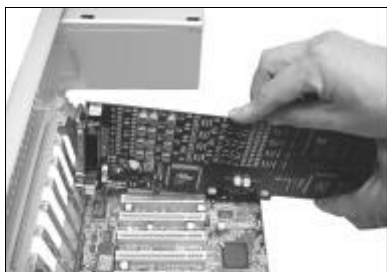
Take the following precaution before you begin installation:

Shut down and turn off the PC *but leave it plugged in*. Touch the metal chassis of the PC to drain the static from your bod ☺ **before** you touch the WavePRO PCI card.

Next, unplug the PC's power cable. Follow the steps in your PC's user manual and remove the PC chassis cover.

STEP ② Install the WavePRO PCI card

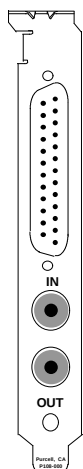
Select a PCI slot in your computer that has enough clearance for the WavePRO card. The WavePRO cards have been specially designed to be extremely immune to noise generated by other components in your PC.



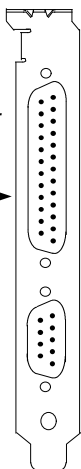
- Be careful to avoid damaging any components and plug the WavePRO PCI card into the slot.
- Make sure the card fits securely and then replace the PC's card mounting screw.
- Reinstall the PC's chassis cover
- DO NOT TURN ON THE PC YET

WavePRO PCI card connections

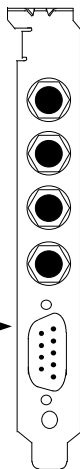
Wave/824



Wave/496



Wave/424



IF YOU ARE INSTALLING THE WAVE/824 OR WAVE/496, FOLLOW THE NEXT STEP.

(note: if you are installing the Wave/424, go to Step 6)

STEP ③ Connect the PCI card to the Patch Box



Connect one end of the Computer Interface Cable to the WavePRO PCI card connection at the back of the PC.



Connect the other end of the Computer Interface Cable to the back of the Patch Box.

For the Wave/824, you can also connect MIDI cables to the MIDI IN & OUT connections.

IF YOU ARE INSTALLING THE WAVE/824, FOLLOW THE NEXT STEPS 4 and 5

(note: if you are installing the Wave/496 or Wave/424, go to Step ⑤)

STEP ④ Connect the cord from the AC Power Cube to the Patch Box



Plug the small connector on the end of the cable from the Power Cube to the Wave/824.

Make sure this connection is secure since the Wave/824 must have power to operate properly.

If you won't be using the Wave/824

STEP ⑤ Connect the Power Cube to an AC outlet



Connect the Power Cube to an AC power outlet. This can be directly into a wall outlet or a power strip.

When this power is on, the green light on the front of the Wave/824 will turn on.

The Patch Box does not have a power on/off switch and it's OK to leave it powered on or off when not in use.

STEP ⑥ INSTALLING THE SOFTWARE DRIVER

Windows® 95/98:

- After installing the WavePRO hardware, reconnect the PC's power cord, turn on the PC power switch and boot your PC.
- As Windows starts up, it will recognize the WavePRO interface and automatically install it.
- The following prompts will be displayed by the system:
 - 'New Hardware Found'
 - 'PCI Multimedia Audio Device'
 - 'Select which driver you want to install for your new hardware'
- Choose: 'Driver from disk provided by hardware manufacture'
- Insert the WavePRO Drivers Diskette into the floppy drive.

The next steps are slightly different depending on if you're using Windows 95 or Windows 98.

Windows 95:

- Make sure that 'Copy Manufacturer's files from:' shows, 'A:\'
- Click OK

Windows 98:

- A new message box will appear, with a list of search options and check boxes. Uncheck everything except, 'Floppy Drive'. Click 'Next'.
 - Windows will display a new message box saying it found the drivers, and asks you to Click OK to install.
- The driver files will be copied and the system automatically setup

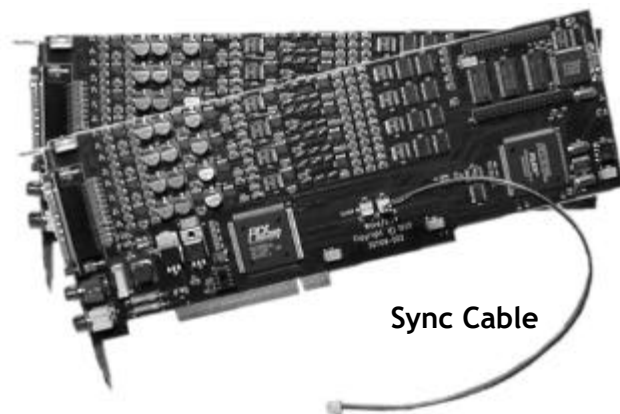
to use the WavePRO interface

Windows NT 4 driver for Wave/824

- After installing the hardware, turn on the power and boot your PC into Windows NT.
- After NT has booted, click on **'Start'**, then **'Settings'**, then **'Control Panel'**.
- Double click on the icon called, **'Multimedia'**
- A new window will appear, with a series of tabs up at the top. Click on the **'Devices'** tab. Under the devices tab, click on the button called **'Add'**.
- A new window will appear showing a list of devices. Choose the top line, **'Unlisted or Updated Driver'**, and click, **'OK'**.
- A new window titled, **'Install Driver'** will appear. Insert the Wave/824 Drivers Diskette into the floppy disk drive. In the box which has a drive letter and path, change that to read:
a:\nt where 'a' is your floppy disk drive letter.
- A new window will appear listing the **'Gadget Labs Wave/824'** Double Click it. It will install the drivers and ask you to reboot your machine. Now have fun!!

INSTALLING THE CLOCK SYNC CABLE FOR MULTIPLE WAVEPRO CARDS

If you have 2 or 3 WavePRO cards, you should connect them together with the optional clock sync cable. This will ensure that all the audio channels use the same hardware clock timing and won't drift apart.



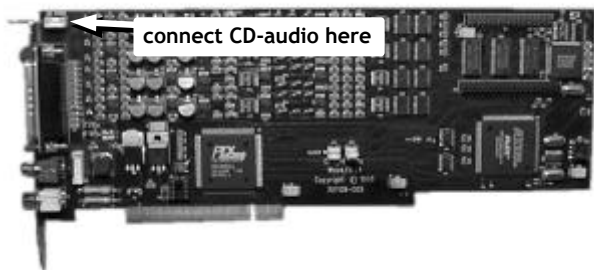
Make sure that the **CLOCK SYNC CABLE** is plugged into the **CLOCK-OUT** jack on one card & the **CLOCK-IN** jack on the other card.

CONNECTING CD-AUDIO TO THE WAVEPRO CARD

The WavePRO cards also provide an internal connection jack to allow you to run the audio from a CD-ROM drive to interface inputs and outputs. The cable that runs from the CD-ROM drive to the jack on the WavePRO card is usually provided with the CD-ROM drive (it's not included with the WavePRO). The connector jack on the WavePRO cards is compatible with standard SoundBlaster®-type connections.

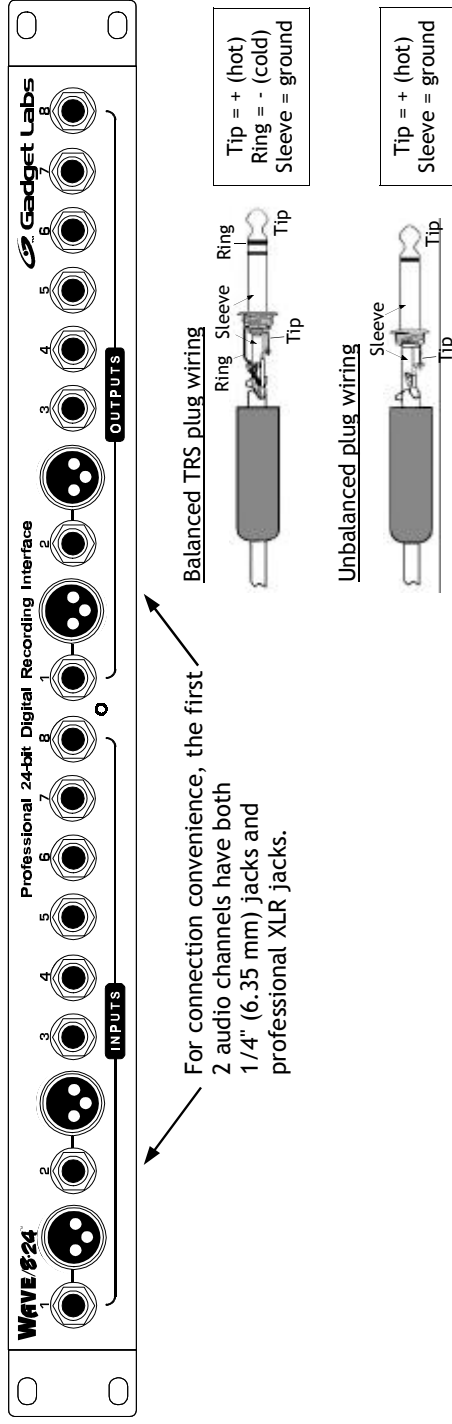
When connected, the audio from the CD-ROM drive is routed to the WavePRO input channels. On the Wave/424 and Wave/496, it's routed to input channels 3 & 4. On the Wave/824, it's routed to input channels 7 & 8.

To output the CD-audio from WavePRO interface, you must turn on the monitoring feature.

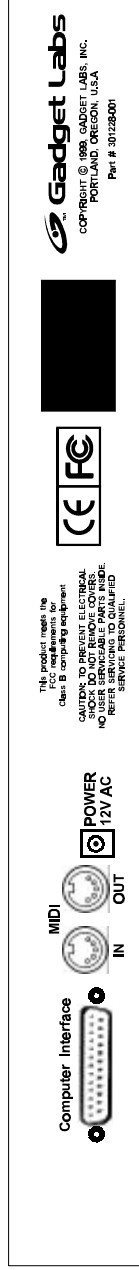


Wave/824 Audio connections

The audio connections for the Wave/824 are very versatile. They are LINE-LEVEL which means that you will need to preamplify any microphone or low-level signal prior to connection. Almost any type of analog audio line-level signal can be connected to the Wave/824. This includes both balanced (3-wire) and unbalanced (2-wire). Additionally, the strength of the input or output signal can be switched to either the professional standard of +4 dBu (louder) or the consumer audio standard of -10 dBV (about 12 dB softer). The Control Panel software applet is used to switch signal levels.



Rear panel

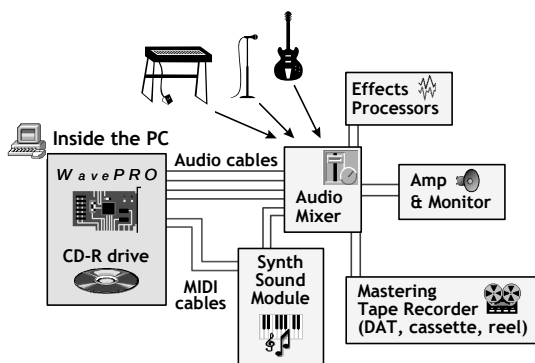


CONNECTING A WAVEPRO INTERFACE TO YOUR MUSIC STUDIO SYSTEM

The WavePRO interfaces are designed to work seamlessly within your music recording system in a fashion similar to a traditional multi-track recorder. Typically, major components of the recording system are:

- multi-channel audio mixer console
- microphones and preamplifiers
- effects processors such as limiters, noise gates, reverb units
- multi-channel audio recorder
- power amplifier and monitor speakers

NOTE: Microphones do not have enough signal strength and must be amplified by a mixer or preamplifier prior to connecting to WavePRO.



At the heart of the system is the mixer whose inputs and outputs are connected to all the other pieces of equipment. The mixer is the router or traffic cop and it connects signals together and controls volume levels and equalization. Thus, the mixer is an essential part of the system and it's often built-in to mini-studio products such as multi-track cassette recorders. In a professional environment, the mixer is always a separate piece of equipment.

The mixer and the sound card

Typical low cost multimedia sound cards are not designed for multi-channel recording. They usually include a low-quality, integrated mixer that controls the volume of stereo audio streams from wave file output, music synthesizer and CD-audio player that are produced by games and applications.

When you get started with serious music recording on your PC, it's important to recognize that *achieving the full benefits of multiple channels requires using an external audio mixer to route and mix the channels down to two channel stereo.*

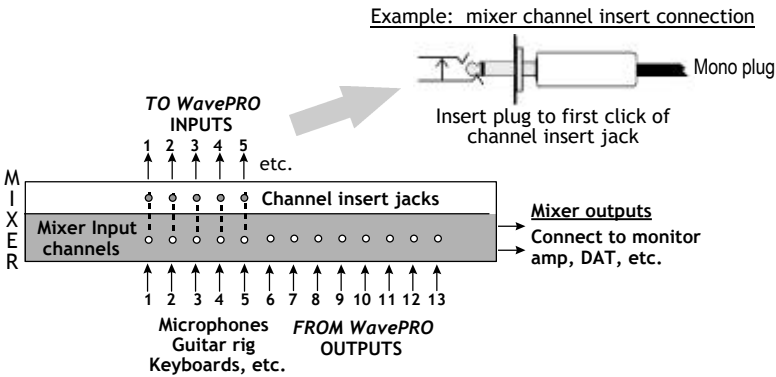
Why isn't there extra mixer circuitry included with the WavePRO interfaces? When we designed WavePRO, we concluded that having a built-in mixer would make it more complicated to use the card in conjunction with an external mixer. Also, when extra mixer circuitry is included in an audio card, an extra level of amplification is required. This can diminish audio quality and add noise. We decided to avoid needless complexity and preserve the highest audio quality. Since the WavePRO interface requires a line level signal, you will need to make sure that any low-level signals, such as microphones, are preamplified.

Connecting a WavePRO interface to an audio mixer console

Below is a block diagram for connecting a WavePRO interface to a mixer. A wide variety of mixers is available from many different manufacturers. If you are considering the purchase of a mixer for your recording setup, you can buy small consoles with prices that start at around \$300 US.

We recommend that you use a mixer that has channel inserts (also called patch points). For quietest operation, we recommend that you directly patch the WavePRO inputs to the channel inserts jacks. This offers maximum mixing flexibility.

Connections for WavePRO to mixer with Channel Insert Jacks



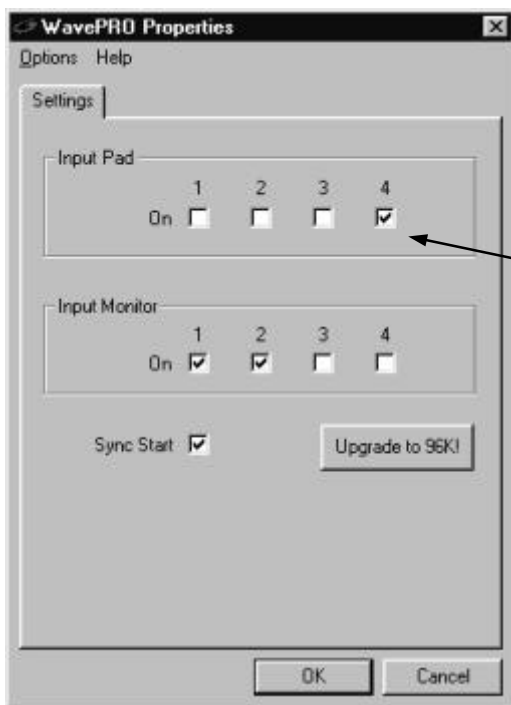
ADVANCED CONFIGURATION: WavePRO Control Panel

We've included a control panel software applet to select the input and output levels of the WavePRO interfaces and control other features.

To start the WavePRO applet, select 'Start | Settings | Control Panel' and double click on the 'WavePRO' icon. For quick access, the applet can also reside Windows system tray. This feature is enabled under the Options menu.

Input and Output Gain Settings

The settings for input and output sensitivity are unique to the different Wave/PRO models.



On the **Wave/424**, the input and output levels are set to the popular consumer levels (-10 dBV nominal).

If audio being input to the **Wave/424** is overloading and distorting the inputs, enable the Input Pad settings by checking the box next to the appropriate channel

The **Wave/824** and **Wave/496** are designed to connect to virtually any preamplified, line-level audio signal. The connection can be 3-conductor, balanced or 2-conductor, unbalanced. Additionally, the signal level can be professional +4dBu (higher, i.e. "louder") or -10dBV, the standard for consumer audio equipment. The Control Panel applet switches whether an input or output level is set to +4 or -10. The facilitation of either Balanced or Unbalanced signals is automatic.

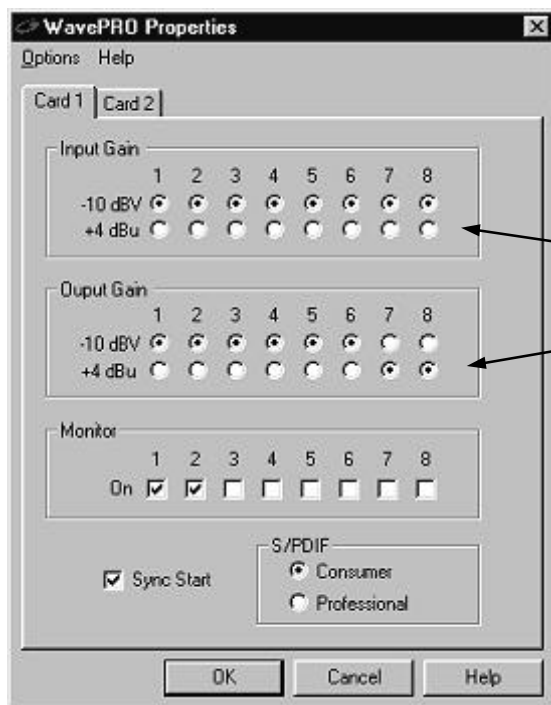
These settings help you match the signal level (sensitivity and loudness) of the audio inputs and outputs of the Wave/824. The difference in the 2 levels is about 12 dB.

Inputs: -10 dBV setting is more sensitive than the +4 dBu setting.

Outputs: +4 dBu output is louder than the -10 dBV setting.

TIP: by default, the gain levels are set to -10 dBV. This is most common setting for music and audio gear. It's best to try out this setting first and then, change the levels to +4 dBu if you need more output gain from the Wave/824 or Wave/496.

TIP: If you are experiencing overloading on the audio inputs, change the setting to +4 dBu to decrease the input sensitivity.



Setting Input
and Output
Gain on
Wave/824
&
Wave/496

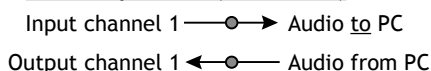
Monitor (Input monitor)

Unlike a tape recorder, WavePRO interfaces are full duplex audio devices which means that you can record and play on all channels simultaneously. We have also included an input monitoring feature that allows the audio signal that is being input to WavePRO to be "echoed" to the corresponding channel number output.

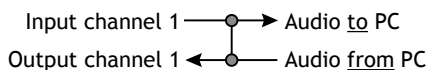
Important note

When Monitoring is enabled (ON) you will hear both the signal that is being input to the WavePRO interface for recording and the audio playback signal from the PC. As noted in the diagram, when monitoring, each input channel is monitored to its corresponding output channel.

Normal operation (Monitor off)



Monitor ON



SyncStart

Windows and software applications control all multichannel sound card's channels as separate left+right channel stereo pairs. This operating system limitation can cause a slight delay (between 10-100 milliseconds) between stereo pairs when playing or recording on 4 - 8 channels on a WavePRO interface.

To workaround this current Windows limitation, the SyncStart feature can be enabled to ensure that all the channels start playing or recording together. This setting will provide *very* tight sync. SyncStart has been tested and works great with the top multitrack audio applications, but it may not be supported by all applications.

NOTE: *Disable SyncStart when you use 2 separate software applications to access different WavePRO stereo channel pairs.*

INSTALLING THE APPLICATIONS & DEMO CD SOFTWARE

A CD-ROM disk is included with your WavePRO interface with Cool Edit Pro SE and several trial/evaluation software applications. To Install:

- Place the CD in your CD ROM drive.
- Click “**Start**” on the Windows task bar and choose “**Run**”.
- In the open window type: **D:\setup.exe** (where “D:” is the letter of your CD ROM drive).
- The Installation will begin with a list of the software applications.
- Choose the application(s) you wish to install, follow the on-screen directions for each application.
- *Refer to page 13 for Cool Edit Pro SE optimization settings.*
- Gadget Labs' WaveWARM, WaveZIP, Timeworks EQ and Reverb are time-limited demos. Contact Gadget Labs or you dealer if you would like to purchase these applications.

SETTING UP SOFTWARE APPLICATIONS FOR WAVEPRO

To most Windows applications, the WavePRO interfaces appear as multiple, stereo sound card devices. To use a WavePRO interface with your software, its inputs and outputs ***must be selected*** as the active devices. The steps to accomplish this vary from application to application. Typically, there is a menu item in the application which brings up a dialog box that's used to select and setup devices. A list of available audio or MIDI devices is displayed and you select the active devices. An additional step of selecting the device for a specific track is often required.

You will also need to enable the 24-bit mode. WavePRO interfaces also support 16-bit mode for compatibility with all applications.

Once WavePRO is installed, the following devices will be found. (“...” will be substituted with the WavePRO model number 424, 496, and 824)

- | | |
|-----------------------|----------------------------------|
| ■ Ch 1/2 In Wave/... | first, stereo wave audio input |
| ■ Ch 3/4 In Wave/... | second, stereo wave audio input |
| ■ Ch 1/2 Out Wave/... | first, stereo wave audio output |
| ■ Ch 3/4 Out Wave/... | second, stereo wave audio output |

Additionally, for the Wave/824

- | | |
|-----------------------|----------------------------------|
| ■ Ch 5/6 In Wave/... | third, stereo wave audio input |
| ■ Ch 7/8 In Wave/... | fourth, stereo wave audio input |
| ■ Ch 5/6 Out Wave/... | third, stereo wave audio output |
| ■ Ch 7/8 Out Wave/... | fourth, stereo wave audio output |
| ■ Wave/... MIDI In | MIDI port input |

SPECIFIC APPLICATION CONFIGURATION

Really important note! Configuring your application

Music & audio software places special demands on the capabilities of your PC. Although Windows provides a standard sound card programming interface to applications, there are differences and nuances in both applications and sound cards. ***It's pretty much guaranteed that some tweaking of your application software's settings will be required.***

We accumulated the following information as we tested the WavePRO card with various software. The settings represent starting points for your setup and you may need to fine-tune them for your particular PC configuration. ***This is important stuff; please take the time to review it.*** To be bluntly honest, the likelihood of you having problems with your PC digital audio recording setup increases substantially if you ignore these details.

Setting up Cool Edit Pro for WavePRO

Cool Edit Pro is a multitrack version of the popular Cool Edit program from Syntrillium. It's a really good tool for recording and processing digital audio. Here are the steps to configure this application.

Note: you may need to tweak these settings depending on the performance characteristics of your PC. Any settings not mentioned may be left in their default state.

- select the menu item, 'Options | Settings'. A tabbed dialog box will appear.
- click on the 'System' tab
- in the section, 'Play/Record Buffer', set 'Total Buffer Size' to: 4 seconds using 8 buffers.
- in the 'Wave Cache' section, set the 'Cache Size' to 4096.
- click on tab labeled, 'Multitrack'
- set 'Playback Buffer Size (response time)' to 4 seconds
- set 'Playback Buffers' to 16.
- set 'Recording Buffer Size' to 2 seconds
- set 'Recording Buffers' to 10.
- set 'Background Mixing Priority' to 2.
- click on the 'Devices' tab.
- select the WavePRO devices.

You'll also need to assign the WavePRO interface to individual tracks. First, make sure you're in the Multitrack View (press the F12 key to toggle between Waveform view and Multitrack view. (The menu item 'File | New' is used to start a new Session and select sample rates and resolution modes).

- Select the check box for 32 bit resolution to enable 24 bit

recording.

After a New Session is created, you'll find some small windows that display Pan (P) and Volume (V) settings. Next to these are 2 small buttons that are used to select the Playback and the Record devices for each track. Click on these buttons to assign the Wave/824 devices to individual tracks.

Important note: when using Cool Edit Pro 1.1 in 24/32 bit mode, there is a bug in the record meters display that causes the range to be compressed. Record meters work fine in preview mode (see menu "Options|Monitor VU meter") but once recording starts, the meter levels are incorrect. A free update will be available for download at the Gadget Labs web site when this is corrected.

Setting up Vegas for WavePRO

- Run Vegas and select the menu item, 'Options|Preferences. The preferences window will be displayed.
- Select the "Routing Tab" then check the "Custom Bus Routing" check box.
- Finally, on the routing tab set the "Preview" and "Bus A" to the WavePRO channels you wish to use.

Setting up Cakewalk for WavePRO

To take advantage of WavePRO's 24-bit recording and playback capability, we recommend Cakewalk version 9 or higher. The following steps will configure Cakewalk for good performance and MIDI synchronization; you may wish to "tweak" values for higher track counts or lower latency. Any settings not mentioned can be left at the default values.

NOTE: Cakewalk has calibrates itself to different audio devices with a 'Wave Profiler'. Anytime that Cakewalk finds new audio hardware installed, it runs the 'Wave Profiler'. Afterwards, it's important to double check the settings noted below.

- Select the menu item, 'Options | Audio
- Select the 'General' Tab
 - For 'Playback Timing Master', choose CH1/2 playback. Choose the same setting for "Recording Timing Master.
 - For 'Audio Driver Bit Depth' choose **24**.
- in the Mixing Latency section:
 - For 'Buffers in Playback Queue' choose **4**.
 - Set 'Buffer Size' to **87 msec**.
- Select the 'Drivers' Tab

Highlight each stereo pair (1+2, 3+4, 5+6, 7+8) that you wish to use by holding down the 'Shift' key and clicking on each stereo pair that you want activated.

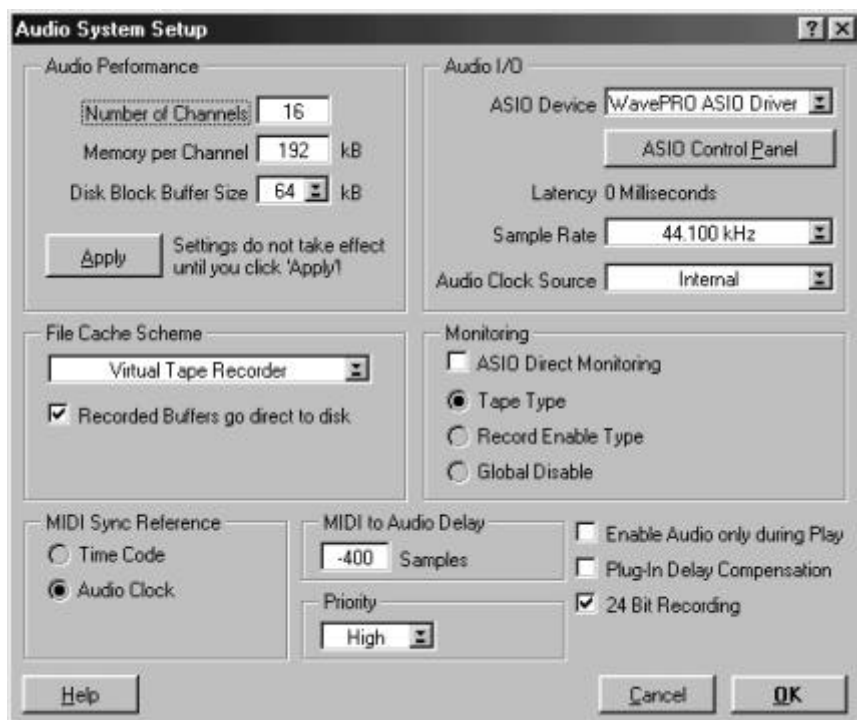
- Select the 'Advanced' tab
 - 'I/O Buffer Size (KB)' should be set to **32**
 - 'Simultaneous Record and Playback' should be **checked**
 - 'Stop on Driver Underrun' should be **checked**
 - 'Wave Pipe Acceleration' should be **checked**
 - 'Clip Audio Mix Upon Overflow' should be **checked**
 - 'Apply Dither' should be **checked**
 - The last two boxes should remain **unchecked** (*don't* enable Unpack >16-bit audio or Left-justify unpacked data)
- Select the 'Device Profiles' Tab
 - 'Show Profile for:' should show CH1/2 out Wave/824
 - 'Use Wave Out for Position Timing' should be **checked**
 - Set 'Buffer Characteristics' to **4096** for each Sampling Rate found in 'Stereo'. For 'Mono' choose **2048**. All of the offsets should be set to '0'.
 - Select the menu item, 'Tools | Audio Options'. The Audio Options dialog box will be displayed.
- Once this setup is finished, use the Track Properties Source and Port settings to assign specific WavePRO input and output channels to individual tracks.

Setting up Cubase VST/24 for WavePRO

Cubase VST is a powerful MIDI & digital audio program from Steinberg. Steinberg has defined a specification called ASIO that helps applications communicate efficiently with audio cards. The WavePRO driver for Windows 95/98 includes support for ASIO.

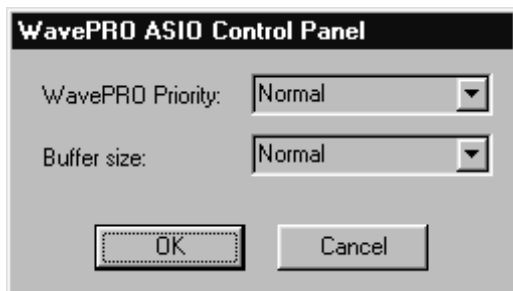
Here are the steps to configure Cubase VST for the WavePRO. Any settings not mentioned can remain in their default configurations.

- run Cubase VST and select the menu item, 'Audio | System'. A dialog box titled, 'Audio System Setup' will be displayed.
- in the section 'Audio Performance'
 - set 'Number of Channels' to **16**
 - set 'Memory per channel' to **192KB**
 - set 'Disk Block Buffer Size' to **64KB**
- in the 'Monitoring' section, select '**Global Disable**'.
- in the 'Priority' section, select '**Normal**'
- Make sure that the "24 bit recording" box is checked.



- Click on the pull-down menu, 'ASIO Device' and select the item, 'WavePRO ASIO Driver'.
- in the 'MIDI-to-Audio delay' section, enter a value of -400 samples (negative number).

NOTE: this value sets the synchronization between MIDI and Audio and is somewhat dependent on the speed of your PC. Thus, you may need to 'tweak this value. An easy way to test MIDI to audio sync is to play a MIDI click track and then record it to an Audio track. Listen to both the MIDI and the Audio tracks and change this value until the clicks are in sync.



ASIO Control Panel

In addition to the settings in the 'Audio System Setup' windows, a few additional settings are available that are specific to WavePRO.

Normally, you won't need to change these settings, but they are provided in case you experience any performance issues or dropouts when recording or playing audio tracks

- In the 'Audio System Setup' window, click on the button, 'ASIO Control Panel' and a dialog box will be displayed.
- Change the settings to increase processing priority for the Wave/824 or extend the audio data buffer size.

Setting up Samplitude 2496 for WavePRO

Samplitude is a popular multi-track digital audio program from Germany. Follow these steps to configure the program for the WavePro interfaces. Settings not mentioned here can be left at their default values.

- The initial step in using Samplitude is to setup a new virtual project (a VIP). To do this, select the menu item 'File | New Multitrack project'. A dialog box will appear. Choose the number of tracks you will use. (Note: these are virtual tracks and you are not limited to 8. The maximum number of tracks is determined by the performance capability of your PC).
- Next select the length of your project (default is 1 minute). Then, select your sampling rate (default is 44100). Depending on the model, the WavePRO interface will support sampling rates up to 48000 or 96000.
- After the VIP is setup, make sure that '**Multi-card mode**' is **active** (green). This option can also be set with the menu item, 'File | Properties | Multiple cards'.
- Recording: select 'File | Record' or click on the Record button (it's a red circle). The Record dialog box will be displayed.
- Set the record mode to **Stereo** or **Mono**.

- Select the check box **"Float"** to enable **24 bit recording**.
- Select the desired **Wave/... In Device** for input.
- Make sure that 'monitor' is **checked**.
- Set the 'Record Offset' to **0**.

Samplitude 2496 also has a number of **buffer settings** for digital audio. These can be left at their default value of **8192**. The '**Buffer number**' should be set to **6**.

Setting up SAW for WavePRO

SAW is one of the original multi-track digital audio programs for the PC and it is designed to fully utilize multi-channel cards. Here are the steps to configure SAW for WavePRO.

- Select the menu item, 'Options | Audio Hardware Setup'. A setup dialog box will appear.
- For 'Wave Device 1' select '**Ch 1/2 Out Wave/...**'
- Make sure that 'Device 1 interrupt Hook' is set to '**None**'
- For 'Wave Device 2' select '**Ch 3/4 Out Wave/...**'
- Make sure that 'Device 2 interrupt Hook' is set to '**None**'
- Set 'Preload Buffer Queue' to '**8**'.

If you have difficulties, SAW has lots of good troubleshooting information within the application help files.

Setting up Sound Forge for WavePRO

Sound Forge is a very popular digital audio editor that has a number of advanced features. Use the following steps to configure Sound Forge.

- Select the menu item, 'Options | Preferences'. A tabbed dialog will be displayed. Select the "Wave" tab.
- For 'Playback', select the desired **Wave/... Out** device.
- Leave the option, 'Interpolate play position for inaccurate devices **unchecked**'. Yes, **WavePRO** is indeed an accurate device ☺. Also, leave the 'Play position bias' at **0**.
- For 'Record', select the desired **Wave/... In** device.
- Again, leave the option, 'Interpolate record position for inaccurate devices unchecked' and leave the 'Record position bias' at **0**.
- Set 'Total Buffer Size (kilobytes)' to **512**.
- Set 'Preload Size (kilobytes)' to **64**.

A FEW BASIC TIPS ABOUT MULTI-TRACK RECORDING WITH YOUR PC

Multi-channel, multi-track recording consumes a great deal of resources on your PC. Depending on how serious you are about the results and how many tracks you need, you should have the fastest processor and the biggest and fastest hard drive that you can afford. Of course, most of us working folks can't afford to rush out and buy the fastest PC and besides, at today's pace of technology change, it would start to become obsolete before we got it home. So in the interest of making the best use of what we have, here's a couple of very basic tips (most of which are obvious, but sometimes forgotten).

- Don't skimp on RAM — it's really cheap and it can help performance quite a bit. Windows swaps applications to and from your hard disk when it runs out of RAM and this can wreak havoc on your digital audio recording. Try to have at least 64MB.
- Before recording, shut-down any applications that aren't necessary to the recording. You can never tell if an application is really idle; it could be doing something stupid in the background that sucks up some of the PC's processing power.
- Turn off unnecessary background programs like screen savers, virus scanners and power management.
- Clean up your hard drive: here's a tip, run your web browser and delete all of those little files in the browser's cache directory. They take up more space than you might think and also cause drive fragmentation.
- If you can afford it, a wise incremental investment to your PC would be to purchase a good-sized Ultra DMA hard drive (6-12 GB drives are a real bargain these days) and dedicate it to digital audio. This can improve performance and reduce fragmentation and clutter.
- Finally, immediately before you start recording, do the obvious and run your systems **hard disk defragmenter** utility. Along with processor speed, hard drive performance is the most important factor in determining how many tracks you can record and whether or not you'll get any dropouts in your audio.

Troubleshooting

This section provides a logical flow of troubleshooting information that will solve most installation issues. If you have an installation problem, we ask that you take time to review this section.

If this information doesn't resolve the problem, please save yourself further hassles and frustration -- take time to visit the support section of our web site: www.gadgetlabs.com. Also, don't hesitate to send an email to us at to our special customer support inbox, 'hotline@gadgetlabs.com'.

■ I installed the WavePRO card, but now, my PC system won't boot.

This happens rarely, but when it does, it is usually caused by a PCI card that's not seated securely in its slot. Check *all* of your PC's expansion bus cards and make sure they are completely plugged into slots and their retaining screws are tight. If this doesn't resolve the issue, you can also try plugging the WavePRO PCI card into a different slot.

■ I installed the WavePRO card, and the PC starts-up fine but when I play a wave file, I can't hear any sound.

Believe it or not, we've had a few users that called us with this problem and didn't have the WavePRO audio outputs connected. Even if you're insulted by this comment (sorry), check your cables and connections to your music/audio system.

■ The WavePRO interface seemed to install properly and the outputs *ARE* connected properly, but I still can't hear any sound.

Make sure that your music/audio software application is configured to use one of the 'Wave/... Wave OUT...' devices. Check the prior section in this guide, 'Setting up applications ...', for information.

■ The WavePRO interface seemed to install properly, but it's still not working correctly

This usually indicates an IRQ (interrupt request address) hardware resource conflict between WavePRO and another device in your system. Please take a deep breath and review the comments at the start of this Troubleshooting section ☺. Don't bang your head against this issue for too long before contacting us for help!

The purpose of the Plug and Play support in Windows is to assign IRQs to cards "auto-magically" but sometimes, Windows "gets confused".

This can be caused by a number of different factors, but is more likely to occur if you have older cards in your system that have manual switches for IRQ setting(s). If this is the case, refer to the older card's documentation to determine the IRQ(s) that are used. Make sure that these IRQ numbers are reserved in your PC's **BIOS Setup** (usually accessed by pressing DEL while the system is booting but sometimes a function key is used -- refer to your PC or motherboard user guide). Refer to the BIOS Section called, 'PnP/PCI setup' and tweak the corresponding IRQ setting to 'Reserved for ISA/Legacy device'.

Another tip: if you have ports on your motherboard that you are using it's

a good idea to reserve their IRQs.

<u>Port</u>	<u>IRQ to reserve</u>
1st serial port (COM1)	IRQ 4
2nd serial port (COM2)	IRQ 3
Parallel printer port	IRQ 7
PS/2 mouse port	IRQ 12

There are other configuration settings in your **BIOS Setup** that you should review. In the PnP/PCI Setup section, make sure that the setting '**Using Plug and Play OS**' (operating system) is '**Enabled**' or '**Yes**'. Also, make sure that **resources are controlled automatically**.

IRQ conflicts can also occur when there aren't any free IRQ resources. There are only 16 IRQ addresses in a PC and many are used by the PC motherboard and standard devices. Yes, of course, under Windows 98 and later versions of Windows 95, PCI cards should be able to share IRQs but this doesn't always work (please don't ask us why this is...ask Bill's folks up in Redmond). To free up IRQs, go to the BIOS Setup section called, 'Integrated peripherals' (or general features) and disable any peripheral or port that you are not using. Then, make sure the corresponding IRQ is **not** Reserved for Legacy Devices (see the PnP/PCI section of the BIOS Setup).

To exacerbate the IRQ complexity, Windows does not display alert messages when there is an IRQ conflict when installing a new card. And so it's not surprising that even if there's no indication of a resource conflict by Windows in the Device Manager (run Control Panel | System), there may still be one. *The Windows Help File also has info about resolving conflicts; see its 'Hardware Conflict Troubleshooter'.*

To see Window's report on the status of the devices or if it's found a conflict:

- Run the Windows Control Panel and select 'System'.
- Click on the 'Device Manager' tab.
- Click on the '+' sign next to the line, 'Sound, video, and game controllers'.
- The list should show the WavePRO interface. If the WavePRO line is showing an '!' (exclamation mark) then the interface and its driver are not active and there's a problem.

Check to see if Windows has found the resource conflict by viewing the 'Properties | Resources' information for WavePRO . As noted above, if a resource conflict is indicated, you may need to reconfigure any non-PCI or non-plug and play card that's in your PC by manually changing its IRQ in the devices properties windows or change on-board switches — see the card's documentation.

OTHER IMPORTANT TROUBLESHOOTING TIPS

- Try a "START-FROM-SCRATCH" re-installation. The detailed instructions for completely resetting and reinstalling a WavePRO interface are in the README.WRI file on the driver diskette.

- **Change Windows setting for IRQ Steering.**

If you experience installation problems under Windows 95 or Windows 98, you might want to try modifying the system setting for IRQ steering. With later version of Windows 95 and Windows 98, PCI devices can share system interrupt resources (IRQs). Since there are a limited number of IRQs available in a PC and since many systems now come with new devices (like USB ports and other stuff), the ability to share IRQs can help configuration.

BUT, in order for the IRQ steering function to work properly, all the drivers for PCI devices in a system must be "well-behaved". Obviously, we live in an imperfect world, and this ain't always the case. Sometimes it's necessary to enable or disable IRQ steering to get stuff all working in a PC. Here's how to change the setting:

- Click on Start, then Settings, then Control Panel.
- Double-click on 'System' and the System Properties window will appear.
- Click on the tab that's labeled, 'Device Manager'. A list of devices will be displayed.
- Scroll down to the bottom of the list to find the item, 'System Devices'.
- Click on the '+' sign next to this item and more items will be displayed.
- Double click on 'PCI Bus', and then, click the 'Resources' tab.
- Click on the the box, 'Enable IRQ Steering' to enable or disable the setting.
- Click OK until you are back out, and restart your computer.

- **Issues caused by Modems with Voice/audio support.**

Some modems include audio support for features such as PC-based phone message systems and simultaneous voice/data connections. Unfortunately, voice modems can sometimes interfere with other audio devices in a system, including a WavePRO interface. If you have a modem with Voice/audio support and you don't need this feature, we suggest that you disable the audio feature. Your modem will still work fine for internet access, email and other data connections.

(these instructions are for Windows 95B and Windows 98. If you are using Windows 95A, please send an email to hotline@gadgetlabs.com)

- From the Windows Start menu, select 'Settings'
- Open the Control Panel. Double-click on the 'Multimedia' icon. The 'Multimedia properties' window will open.
- Click on the tab that's labeled, 'Devices'. A list of devices will be displayed.
- Click on the '+' sign next to the item 'Audio devices'.
- If you find a device that has modem and audio or voice in its description, then highlight it by clicking on it.

- Click on the properties button and select the option, 'Do not use audio features on this device'.
- Click on the OK buttons to save the settings and close the windows.
- Shut down and re-start the PC.

■ **The WavePRO interface installed fine and it's playing sounds OK, but now another card in my system won't work.**

This could indeed be caused by a device conflict with the another card. See the previous item for information on resolving this. Alternately, there could be a basic electrical problem with your PC's bus. Trying moving the cards into different slots.

■ **Audio from the WavePRO interface is garbled or distorted.**

Check all your audio connections. Also, make sure the selection of the +4 dBu or -10 dBV levels is correct in the Wave/824 Control Panel applet.

This could also be a sign of an IRQ conflict. Please refer to the previous comments in this Troubleshooting section.

■ **Audio from the WavePRO interface starts stuttering or making a helicopter-like sound.**

This is often a sign that the track count is exceeding the hard drive performance of the PC. Also, the number of active software effects plug-ins (e.g. DirectX) could be exceeding the capabilities of the PC processor. Try decreasing the resource consumption by lowering the track count or number of effects plug-ins.

This could also be a sign of an IRQ conflict. Please refer to the previous comments in this Troubleshooting section.

■ **I can't record and play audio at the same time.**

Make sure that the *full duplex* feature of is enabled in your audio software application. This is usually found in the audio configuration setup of the software.

CAKEWALK NOTES: We've had occasional reports that the 'Enable Simultaneous Record/Playback' feature in Cakewalk is disabled (grayed out) after installing a WavePRO interface. This seems to be a occasional glitch when Cakewalk installs a new audio device. Not to worry...YES, WavePRO operates in full-duplex mode.

Try this:

- Exit Cakewalk
- Run the Windows Explorer to view the Cakewalk program directory.
- Delete the file(s), "audmm.ini" and/or "ttsauidx.ini" (the name of the file depends on the Cakewalk version you're using).
- Re-start Cakewalk. When it starts, let the Wave Profile run.
- After the WaveProfiler runs, exit Cakewalk and shutdown and re-start Windows.

If you install Emagic's Logic Audio 4 software after installing the

WavePRO interface, and are experiencing lockup problems during the installation, follow these steps:

- Click on Start -> Settings -> Control Panel -> Multimedia.
- Click the Devices tab, then Audio Devices. Double click Gadget Labs Wave/....
- Click the bubble called 'Do not use Audio features on this device' and hit OK.
- Keep hitting OK to close everything, and reboot your computer.
- After your computer has rebooted, proceed with the Logic Audio 4 installation.
- After Logic Audio 4 is installed, reboot and go back into the Control panel and re-enable the WavePRO interface.

Registration, Support & Warranty information

Product registration

If you purchased directly from Gadget Labs, you are automatically registered. Otherwise, please surf to the on-line registration form at our Internet web site: <http://www.gadgetlabs.com/register>. This will help us maintain your warranty info. We also maintain a customer e-mail list and periodically we'll send out notices about driver updates, special offers and new product announcements. If you would like to be included on this e-mail list, send an e-mail to 'hotline@gadgetlabs.com' or visit our web site, www.gadgetlabs.com, and sign up.

Support

Problems with PC products can sometimes be tricky to resolve. But prior to starting Gadget Labs, since we spent many years in the PC business, we'll apply all our knowledge to helping you sort out any difficulties. We will need some assistance from you so that we can help resolve issues quickly. The most important thing you can do is prepare a good description of the problem. If you send us e-mail or call us, please include or have the following information ready:

- Your name and e-mail address
- Your PC hardware configuration (processor, RAM, hard drive, other cards installed in your system).
- Operating system and software applications
- Problem report: Please be as specific as you can. If possible, list any error message that was displayed, how you were using the program, any observations about audio problems, etc.

E-mail: The fastest way for us to provide support is with e-mail sent to our special customer support inbox 'hotline@gadgetlabs.com'.

World Wide Web: surf to our web site at 'www.gadgetlabs.com'. The support section includes details about common technical issues and how to resolve them. **Driver updates** can be downloaded from the web site as well.

Telephone support: Call us at **503-827-7372** from 9AM to 5PM US Pacific time.

Customer Satisfaction promise

If you purchased the WavePRO interface directly from Gadget Labs, you may return it to us for any reason within 30-days of the purchase for a full refund. Before returning the card, you must first contact us to obtain a return authorization number (RMA number).

If you purchased the product from a dealer, please contact them for help. We strongly encourage all dealers to offer a similar 30-day return policy on our products.

Warranty

After our 30-day guarantee period, your WavePRO interface is warranted against defects in materials and workmanship for a period of **five years** from the date of delivery. We will repair or replace products which prove to be defective during the warranty period provided they are returned to us. All parts or components contained in this product are covered by Gadget Labs' limited warranty for this product; the product may contain fully tested, recycled parts, warranted as if new.

If you have difficulties with your WavePRO interface, please follow these steps:

- Verify that the WavePRO interface was installed and configured according to the information in this guide.
- Read the "Troubleshooting" section of this User's Guide to see if you can find a solution. (this is certainly the quickest and easiest way to resolve difficulties).
- If you purchased WavePRO from a dealer, contact the dealer for additional help. If the dealer is unable to resolve the issue with you, contact us (see our technical support contact information, above). Please, don't return products to Gadget Labs without authorization.
- If you must return the card for warranty repair or replacement, you must first obtain a return authorization number (RMA) from Gadget Labs. Please pack the card in its original box.

FCC and other agency compliance stuff

American user's information - FCC compliance statement

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian user's information - Industry Canada compliance statement:

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulation of Industry Canada.

"Le présent appareil numérique n'émet aucun bruit radioélectriques dépassant les limites applicables aux appareils numériques de Class B prescrites dans le Règlement sur le brouillage radioélectrique édicté par Industrie Canada"

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Part # 9206400-LT01. Printed in the USA.

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