

# ISD/Winbond ChipCorder Frequently Asked Questions (FAQ) List

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# The Questions:

## Questions about the Technology:

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## General Questions:

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6. [I have a product that uses the \(ISD1016A, ISD1020A\). I understand that this chip has been discontinued. What do I do?](#)
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## ISD1100, ISD1200, 1400, ISD2500 Questions:

1. [I would just like general information on the easy to use, 10-second through 2-minute ISD products that do not require a microcontroller for basic operation. Where can I find that?](#)
2. [My application is very simple, I need more than 2 minutes of storage and I do not want to use a Microcontroller. When are you going to offer an ISD2500 with longer than 2 minutes?](#)
3. [How can I record onto the chip from a line level signal such as that from the tape recorder?](#)
4. [I would like to connect headphones to an ISD chip. How do I do that?](#)
5. [I have a power amplifier connected to the speaker output of my product. When playback starts and stops, there is a large "pop" in the speaker. How do I get rid of this pop?](#)
6. [I am using an \(ISD1100, ISD1400\) and a microcontroller to playback words and phrases linked together to form whole sentences. However, there is a slight pop or click between every word. How do I get rid of that?](#)
7. [Is it possible to defeat the automatic gain level in ISD chips with AGC?](#)
8. [What frequency response range can I get with an ISD product? I would like to make a simple data logger using your chip and I need a frequency range of 5 to 2000 Hz.](#)
9. [I am not using the microphone circuit in my \(ISD1100, ISD1400, ISD2500\). What do I do with these pins?](#)
10. [I am just using the SP+ output on my \(ISD1100, ISD1400, ISD2500\). What do I do with SP-?](#)
11. [I have two ISD chips that I need to drive the same speaker. How do I hook them up?](#)

12. [I am using your \(ISD1100, ISD1200, ISD1400, ISD2500\) as a repetitive play back device but I am having trouble making it work. What am I doing wrong?](#)
13. [Do you have an example layout for the \(ISD1100, ISD1200, ISD1400, ISD2500\) products? I need something to look at to see how to start.](#)
14. [I am trying to control a \(ISD1100, ISD1200, ISD1400, ISD2500\) and I am not always sure what is going on. What clues can I get from the external pins of the chip?](#)

#### **ISD33000 Series Questions:**

1. [I have heard the ISD33000 series was being phased out in favor of the ISD4000 series. What is the story?](#)

#### **ISD4000 Series Questions:**

1. [I have tried and tried and I just cannot seem to make my ISD4000 series application work correctly. What am I doing wrong?](#)
2. [I sometime see erratic operation when I command the ISD4000 series. For example, some times when I send the STOP command, the chip does not stop.](#)
3. [I am designing a project using the ISD4000 and only have a single 5-volt supply. Can I operate this device from 5 volts?](#)
4. [I understand that the ISD4000 series must operate using a 3-volt supply. However, the rest of my system uses 5 volts. Is there a way to connect the ISD4000 into my system without a lot of level shifters?](#)
5. [I like the longer duration of the ISD4000 series but do not know how to program a microcontroller. Is there anyway to use the chip in a stand-alone mode?](#)
6. [Is there an easy way to determine if an ISD4000 chip is Recording or Playing back?](#)

#### **ISD5008 Series Questions:**

1. [I sometimes have to send a command twice to the ISD5008 to get it to respond. What am I doing wrong?](#)

#### **Programmer, Development and Demo System Questions:**

1. [I have an ISD-SD101 and my old computer is died. How can I use it with a new Pentium class computer?](#)
2. [I have heard that ISD/Winbond is discontinuing their ISD-SD101 and ISD-SD200 Programming Systems. I have one of the above and it does not work any more. What can I do?](#)
3. [I have an ISD-SD101 and want to upgrade it to the latest revision. How can I do that?](#)
4. [I want to buy a programmer for ISD chips. Where do I get one?](#)
5. [I bought an ISD-ES302 several years ago to use with an ISD33000. Will it work with the ISD4000 series?](#)

# The Answers:

## Questions about the Technology:

1. **Q: *What exactly is multi-level storage?***  
**A:** "Multi-level" storage is a high-density storage methodology. Conventional digital storage, for example, stores one "bit" of information per memory cell - a "1" or a "0" (or, in terms of voltage levels, an "on" or an "off"). ChipCorder<sup>®</sup> technology improves upon this and stores up to 256 distinct voltage levels per single cell! That is, ChipCorder<sup>®</sup> devices store up to 8 times ( $2$  to the power of  $8 = 256$ ) more information in the same amount of space. Thus, for a given quality of voice reproduction, one-eighth the silicon storage is required over conventional techniques.
2. **Q: *How are signals actually stored in the memory cells using ChipCorder<sup>®</sup> technology?***  
**A:** ISD/WINBOND's patented technology enables small packets of charge to be pulsed in a controlled manner through the oxide into the floating gate in the storage cell. Digital solutions, in comparison, drive a tremendous amount of charge through the oxide all at once, literally causing much greater "wear and tear" on the thin gate oxide. ISD's storage implementation, therefore, provides much greater reliability and a higher number of record cycles over conventional storage devices.
3. **Q: *How many times can a message be re-recorded and how long will it be stored?***  
**A:** Messages can generally be re-recorded up to 100,000 times and can be stored up to 100 years. These are typical numbers based on accelerated life tests performed on ChipCorder<sup>®</sup> devices. Consult individual datasheets for the specific numbers.
4. **Q: *How can multi-level storage technology benefit my product design?***  
**A:** ChipCorder<sup>®</sup> technology benefits product design in many ways:
  - a. The natural sound reproduction offered creates a high-quality product impression. Other solutions have often been rejected for their artificial or "electronic" sound quality;
  - b. A single-chip solution simplifies the design process, enables very compact products and shortens time-to-market;
  - c. ISD/WINBOND's non-volatile, multi-level storage ensures valuable data is never lost;
  - d. Multiple record cycles extend the life and increase the value of your products; and
  - e. The high-density storage achieved by this patented technology facilitates cost-effective record and playback products for price-sensitive markets. Before ISD/WINBOND's technology, these non-volatile products were cost prohibitive.
5. **Q: *Compression techniques are increasingly being used with digital solutions. Does this reduce ChipCorder's technology advantage?***  
**A:** Any compression or digital reduction technique performed on digital data results in lower reproduction quality: the greater the compression, the lower the quality. The superior sound quality ChipCorder<sup>®</sup> technology provides over compressed digital data, therefore, is very pronounced, even at equal sampling frequencies. Compared to a common digital reduction technique (4-bit ADPCM), ChipCorder<sup>®</sup> devices retain a storage density advantage (4:1, in this case).
6. **Q: *How do ChipCorder<sup>®</sup> devices perform in lower-power, battery-powered applications?***  
**A:** ChipCorder<sup>®</sup> devices are ideal for handheld battery-powered applications for four main reasons:
  - a. All devices are non-volatile and require no battery back-up;

- b. A single microchip provides the entire record/playback solution, saving both space and power;
- c. ChipCorder<sup>®</sup> devices have significantly fewer storage cells than conventional solutions, thereby requiring less power; and
- d. All new ChipCorder<sup>®</sup> solutions have designed with power savings in mind. They either automatically power down at the end of every message or have programming modes that put them into a very low power state. Most ISD/WINBOND ChipCorder products power down to under 10 microamperes (typical) standby current.

**General Questions:**

1. **Q: *Where can I get sample ISD or Winbond devices?***  
**A:** The easiest way to get samples from almost any manufacturer is to contact the sales organization for the company. In the case of ISD/Winbond, first look here: <http://www.isd.com/products/purchase/index.html>. To buy small quantities of ISD devices, you should contact our catalog supplier, Digi-Key, at <http://www.digikey.com/>.
  
2. **Q: *How do I get literature on a product?***  
**A:** You can contact your local sales person found in the previous question. Or you can contact ISD/Winbond customer service directly at [info@isd.com](mailto:info@isd.com). It is also possible to download the literature in Adobe Acrobat .PDF files from our websites, or to order the CD-ROM to be mailed to you.
  
3. **Q: *For a Chip-on-Board (COB) design, how do I connect the backside of the die?***  
**A:** When attaching ISD die to PC boards (or to other hybrid packages) it must be remembered that present ISD products have the substrate material connected to Vss! The die attach area CANNOT be connected to Vcc OR have signal lines running under the die. They will be shorted to Vss through the substrate resistance and cause early or immediate failure of the design, in addition to high battery standby current. This is particularly noticeable if the die attach material is a conductive epoxy.  
  
The die attach area must be grounded (Vss) or left floating. Connecting the die attach area to Vss may, in some cases, improve the noise performance of the design. This is the preferred procedure that the Applications Department suggests.
  
4. **Q: *I would like to build an (100 millisecond, ½ second, 5 second, pick any number) analog delay line. Do any of the ISD chips support this feature?***  
**A:** An analog delay line requires simultaneous record and playback. Unfortunately, none of the current ISD products can do this.
  
5. **Q: *In past years I have bought a chip from Radio Shack called the ISD1000. Is this chip still available?***  
**A:** The ISD1000A sold by Radio Shack was a room temperature tested 20-second version of our ISD1000A device family. It was closest in specification (other than temperature) to the ISD1020A. The ISD1000A series is now discontinued and is not available from ISD/WINBOND. Instead, you should look at using the ISD1400 or ISD2500 series. These chips do all the functions of the ISD1000A and more.
  
6. **Q: *I have a product that uses the (ISD1016A, ISD1020A). I understand that this chip has been discontinued. What do I do?***  
**A:** The ISD2500 family of products is most similar in function to the ISD1000A series but with longer playback and record times. The Application note “*Technical Considerations for the Conversion from an ISD1000A Application to an ISD2500 Application*” explains similarities and differences between the two parts. This Application Note is located at <http://www.isd.com/products/chipcorder/applicationbriefs/apbr09.pdf>. Alternatively, if you

only need 10, 16 or 20 seconds of sound storage, you might be able to use the ISD1100 or ISD1400 series devices. See the Application Note "Technical Considerations for the Conversion from an ISD1000A Application to an ISD1400 Application" located at <http://www.isd.com/products/chipcorder/applicationbriefs/apbr01.pdf>.

7. **Q: I need to program ISD chips with prerecorded audio files in exact address locations. How can I do this?**

A: ISD/WINBOND no longer makes programmers for our products. Instead, 3<sup>rd</sup> party vendors are supporting this function. We suggest that you contact a company called Quadravox (<http://www.quadravox.com/>) to purchase a programmer for our products. Quadravox makes both single socket and multiple socket programmers for almost all of the ISD product line.

8. **Q: I get clicks or pops whenever I start playback or I get a click or pop whenever playback ends. How can I eliminate this?**

A: It is sometimes difficult to determine if the clicks or pops you hear are being recorded into the device during the Record operation, or if the clicks or pops occur during the Playback operation. We have often seen mechanical noise being recorded into the chip because the STOP RECORD push button was located on the PC board near the microphone. Also, you should be aware that recording does not stop instantly when you tell the chip to stop recording. It usually continues to record for several milliseconds; if the push button makes noise, it can get recorded into the chip. A good test for this is to temporarily remove the mechanical buttons from your PC board and operate them on remote wires without physically being mounted on the board.

*Note: Other comments on pops and clicks are located in FAQ sections for specific chips later in this list.*

9. **Q: I need to record wider audio bandwidth than any of your products currently support. How can I use your chips to store "high fidelity" audio?**

A: Current ISD/Winbond technology only supports record and playback for approximately "telephone" quality audio. The fastest sample rate we support on any of our products is 8 KHz. The Nyquist Criteria demands that the filters in our chips roll off any frequency higher than somewhat less than 1/2 the sample rate. The widest bandwidth audio we support is limited therefore to something a little less than 3.4 KHz. Unfortunately, there is no way around this limitation.

10. **Q: I want to buy (a system, a product, a board) that uses your product. What do you offer?**

A: ISD/Winbond makes several demonstration systems for their products. These systems are generally sold so that customers may evaluate our products. They are usually not cost effective as real customer products. ISD/Winbond does not make any low cost merchant market products of any kind that use ISD/Winbond chips. We leave that for our customers to offer to their customers.

11. **Q: I need a product designed and manufactured that uses your chips. Whom can you recommend to do this?**

A: Please go to the ISD web pages at <http://www.isd.com/applications/help/>. This page shows proven Design Consultants and manufacturing houses who have used ISD/WINBOND chips in past applications.

ISD1100, ISD1200, ISD1400, ISD2500 Questions:

1. **Q: *I would just like general information on the easy to use, 10-second through 2-minute ISD products that do not require a microcontroller for basic operation. Where can I find that?***  
**A:** There is a general explanation on the operation of these products to be found in the Applications Information section of the ISD Web pages. You should download and read the PDF files located in the "Stand Alone/Parallel Interface Products" section of page <http://www.isd.com/products/chipcorder/applicationinfo/>.
2. **Q: *My application is very simple, I need more than 2 minutes of storage and I do not want to use a Microcontroller. When are you going to offer an ISD2500 with longer than 2 minutes?***  
**A:** Alas, ISD/WINBOND will not be offering a "longer" ISD2500. However, a third party company has made it easy to use one of ISD's longer duration products such as the ISD4004-16M with up to 16 minutes of storage. Go to the Quadravox site at <http://www.quadravox.com> and investigate the QV301 playback controller chip for ISD33000-4000. This may solve your problems without your becoming a microcontroller chip programmer.
3. **Q: *How can I record onto the chip from a line level signal such as that from the tape recorder?***  
**A:** Most ISD/WINBOND ChipCorder devices have an ANA-IN input pin. Connect the audio signal to be recorded through a variable attenuator such as a volume control and then through a coupling capacitor into the ANA IN pin. Try an initial capacitor value of 0.1  $\mu$ F. The input level to the chip should be adjusted according to the data sheet for the device. In general, the older 5-volt ChipCorder devices need 50 to 75 millivolts P-P of input level. The newer 3-volt devices want to see 30 to 50 millivolts P-P of level. However, do not worry too much about this adjustment until you do a trial recording. You cannot hurt the chip by driving the ANA-IN input with even several volts of input level. The recording will just be distorted. Turn the input level up or down until your recording sounds good. Of course, if you are designing your system to make tens of thousands of units, you should carefully obey the data sheet restrictions.
4. **Q: *I would like to connect headphones to an ISD chip. How do I do that?***  
**A:** The ISD1100, ISD1400, ISD2500 and ISD5008 devices all have a speaker driver output with a + and - differential signal of about 1 volt peak-to-peak. This level will directly drive most headphones (no capacitors required) although you may find this level rather loud. Use a series resistor of 10 to 20 ohms (or more) to reduce this level. *Do not* ground either side of the headphone connection.
5. **Q: *I have a power amplifier connected to the speaker output of my product. When playback starts and stops, there is a large "pop" in the speaker. How do I get rid of this pop?***  
**A:** When driving an external amplifier, always connect the SP+ and SP- pins from the ISD device in a differential configuration. See the Application Note "Using External Speaker Amplifiers with the ISD Single Chip Voice Record/Playback Devices" for an example of how to do this. This Application note may be found at <http://www.isd.com/products/chipcorder/applicationbriefs/apbr06.pdf>.
6. **Q: *I am using an (ISD1100, ISD1400) and a microcontroller to playback words and phrases linked together to form whole sentences. But there is a slight pop or click between every word. How do I get rid of that?***  
**A:** Unfortunately you may not be able to fix this. If you are using an external amplifier, make sure you are connected to it differentially as explained in the previous question. However, the real problem is that the ISD1100 and ISD1400 series automatically power

down between each word and phrase as you play them back. The automatic power up/down process may cause a slight pop in the speaker and there is no way to defeat this. A better choice for this type of application is the ISD2500. It has a separate Power Down pin. This allows you to keep the device powered up continuously during the time you are playing back the individual words and phrases.

7. **Q: *Is it possible to defeat the automatic gain level in ISD chips with AGC?***  
**A:** Each of the ISD products with microphone AGC built in have an ANA IN pin. Connect your input to the chip via the ANA IN pin. You have now bypassed the AGC stage.
8. **Q: *What frequency response range can I get with an ISD product? I would like to make a simple data logger using your chip and I need a frequency range of 5 to 2000 Hz.***  
**A:** You would probably want to connect to ANA-IN in the device to bypass the chip's AGC. In general, the on-chip filter determines the high end of the frequency response curve and the input coupling capacitor and the input resistance of ANA IN determines the low-end frequency response. For the ISD2560, the typical R(ANA IN) is 3 K ohms. This would require roughly a 10  $\mu$ F input coupling capacitor to achieve a 5 Hz low-end frequency response. (The equation for the low-end frequency response is  $F=1/2\pi RC$  where R is R(ANA IN) and C is the input coupling capacitor).
9. **Q: *I am not using the microphone circuit in my (ISD1100, ISD1400, ISD2500). What do I do with these pins?***  
**A:** These pins (MIC, MIC REF, AGC and ANA OUT) should be left floating. *Do not connect them to ground!*
10. **Q: *I am just using the SP+ output on my (ISD1100, ISD1400, ISD2500). What do I do with SP-?***  
**A:** Whatever you do, do not ground it! Just leave it floating, i.e. unconnected. If you ground the SP+ or SP- pins, *you may destroy the chip!*
11. **Q: *I have two ISD chips that I need to drive the same speaker. How do I hook them up?***  
**A:** Unfortunately you cannot just connect the speaker outputs of two ISD chips together. The two outputs will "fight" each other and draw large amounts of current. The chips might even be damaged. If you need to connect multiple chips to a single speaker, you must use an external speaker amplifier and mix the two chip outputs together.
12. **Q: *I am using your (ISD1100, ISD1200, ISD1400, ISD2500) as a repetitive play back device but I am having trouble making it work. What am I doing wrong?***  
**A:** Check out the section in the web site that describes the Operational Modes of the appropriate device for the details on this issue. The URL for this information is: <http://www.isd.com/products/chipcorder/applicationinfo/apin08.pdf>. You will be interested in the M3 Mode.
13. **Q: *Do you have an example layout for the (ISD1100, ISD1200, ISD1400, ISD2500) products? I need something to look at to see how to start.***  
**A:** Look at the ISD Web pages at <http://www.isd.com/products/chipcorder/applicationinfo/apin12.pdf>. The general principles of this layout will work for all the 5-volt ISD products.
14. **Q: *I am trying to control a (ISD1100, ISD1200, ISD1400, ISD2500) and I am not always sure what is going on. What clues can I get from the external pins of the chip?***  
**A:** Several good clues are available to the troubleshooter. When any of the 5-volt ChipCorder devices are in Record, the MIC, MIC REF, AGC and ANA OUT pins are all

setting at approximately 2.2 volts. When they are in Playback, the Speaker pins are biased up to an average also of about 2.2 volts.

#### ISD33000 Series Questions:

1. **Q: I have heard the ISD33000 series was being phased out in favor of the ISD4000 series. What is the story?**

**A:** You have heard correctly though we will continue to support the ISD33000 for some time. The ISD4000 series is the replacement for the ISD33000 family. We recommend that all new designs be done with the ISD4000. The good news is that the two parts are pin for pin compatible and that software written for the ISD33000 is compatible with the ISD4000 in almost every case. An Application Note has been written that explains the differences. It is called "Upgrading an ISD33000 Design to an ISD4000 Series Device" and may be found at

<http://www.isd.com/products/chipcorder/applicationbriefs/apbr26.pdf>.

#### ISD4000 Series Questions:

1. **Q: I have tried and tried and I just cannot seem to make my ISD4000 series application work correctly. What am I doing wrong?**

**A:** A first time user of the ISD4000 should go to the ISD web page and get a copy of: "The ISD4000 Series SPI Control Port Operations, a Simplified Guide." It may be found at: [http://www.isd.com/products/chipcorder/applicationbriefs/an\\_5a.pdf](http://www.isd.com/products/chipcorder/applicationbriefs/an_5a.pdf).

2. **Q: I sometime see erratic operation when I command the ISD4000 series. For example, some times when I send the STOP command, the chip does not stop.**

**A:** Please look at your SPI timing. Make sure that the SCLK line in the SPI port is LOW when SS\ goes low and that SCLK stays LOW for at least 500 nanoseconds after SS\ goes LOW. This is the T<sub>sss</sub> timing in the data sheet.

3. **Q: I am designing a project using the ISD4000 and only have a single 5-volt supply. Can I operate this device from 5 volts?**

**A:** The ISD4000 series devices were designed to operate from a 3-volt (+/- 10%) supply. Some devices may operate correctly at higher voltages for an extended period while others may not. It is NOT a good idea to exceed the tested guaranteed operating voltage.

4. **Q: I understand that the ISD4000 series must operate using a 3-volt supply. However, the rest of my system uses 5 volts. Is there a way to connect the ISD4000 into my system without a lot of level shifters?**

**A:** The Application Note: "Using the ISD4000 Series with 5-Volt Powered Processors" located at <http://www.isd.com/products/chipcorder/applicationbriefs/apbr25a.pdf> will show you how to do that.

5. **Q: I like the longer duration of the ISD4000 series but do not know how to program a microcontroller. Is there anyway to use the chip in a stand-alone mode?**

**A:** The ISD4000 series requires a control signal through a serial port. That is, a microcontroller is required for its operation. However, a third party company has made it easier to use the ISD4000. Go to the Quadravox site at <http://www.quadravox.com> and investigate the QV301 playback controller chip for ISD33000-4000. This may solve your problems without your becoming a microcontroller chip programmer.

6. **Q: Is there an easy way to determine if an ISD4000 chip is Recording or Playing back?**

A: There sure is! During active Record or Playback, you will find the Row Address Clock (RAC) pulsing LOW at a slow rate. The LOW pulse will be 25 to 50 milliseconds wide and the RAC clock period will be 200 to 400 milliseconds.

#### ISD5008 Series Questions:

1. **Q:** *I sometimes have to send a command twice to the ISD5008 to get it to respond. What am I doing wrong?*

A: The data sheet does not make it obvious enough that the  $T_{PUD}$  time delay is needed anytime the analog settings of the part are changed. For example, if you turn power up or down any of the amplifiers on the chip, change the sample rate, or change any of the analog switches, you must wait  $T_{PUD}$  before you can do another function to the chip. When funny things happen, add a  $T_{PUD}$  time and see if the problem goes away.

#### Programmer, Development and Demo System Questions:

1. **Q:** *I have an ISD-SD101 and my old computer has died. How can I use it with a new Pentium class computer?*

A: Unfortunately, you may not be able to use the ISD-SD101 with anything but an older DOS based computer. We have seen customers use the ISD-SD101 with Windows 95 based computers successfully but we do not warrantee that they will work with anything later than a 486 DOS based machine.

2. **Q:** *I have heard that ISD/Winbond is discontinuing their ISD-SD101 and ISD-SD200 Development and Programming Systems. I have one of the above and it does not work any more. What can I do?*

A: You are correct, ISD has gotten out of the programmer business. If you already have one of our programmers and it is not working, contact the ISD Applications department at [chipcorder@isd.com](mailto:chipcorder@isd.com) before December 15 of 2000. They may be able to help you get your system working. In some cases, you may need to upgrade your sound card and software.

3. **Q:** *I have an ISD-SD101 and want to upgrade it to the latest revision. How can I do that?*

A: The latest software for the SD101 with the 8-bit sound card is Version 5.00. There were later versions of the SD101 shipped with 16-bit sound cards when the 8-bit ones were no longer available. The software for these units is Version 5.20. Both versions of the software are available for download from our web site at [www.isd.com/software/SD101](http://www.isd.com/software/SD101). The version 5.00 is contained in file 500\_disk.ZIP, which is the diskette image for a floppy. Version 5.20 is contained on three diskette images, 520\_dsk1, 2, and 3.ZIP along the manuals and some installation suggestions. The manuals are 5MANUAL.DOC and 520-MAN.DOC in Microsoft Word format. The installation tip for the Version 5.20 is called DRVRINIT.DOC.

4. **Q:** *I want to buy a programmer for ISD chips. Where do I get one?*

A: Go to the Quadravox Corp. at <http://www.quadravox.com>. They make several different products that program ISD devices. Among these products are single chip development programmers and multsocket production programmers.

5. **Q:** *I bought an ISD-ES302 several years ago to use with an ISD33000. Will it work with the ISD4000 series?*

A: Yes, if the firmware in the microcontroller is of the correct version. The updated microcontroller to operate the ISD4000 series devices is marked with a "yellow dot" to

indicate the updated program. If yours does not have a yellow dot then you need to contact ISD/Winbond Customer Service for an updated microcontroller chip.

6. **Q:** *I have the SD101 and wish to program the ISD2532,40,48,64 series of devices. They do appear in the choices on the screen menu. What do I do?*  
**A:** This is correct. The ISD2532 devices came out after the last version of the ISD-SD101 software. The work around is explained in "Programming the ISD2532/40/48/64 Products in the ISDSD101 Programmer" which may be found on the web site at <http://www.isd.com/products/chipcorder/applicationbriefs/apbr31.pdf>.
7. **Q:** *I have lost track of the 16-bit sound card that came with the ISD-SD101. How can identify it among a bunch of old computer boards?*  
**A:** The Sound Blaster 16-bit board is the CT-1471 even though it is marked CT-1470 on the printed circuit board, itself. This was marketed as the Sound Blaster 16 WavEffects or the Blaster 16 Value PnP.
8. **Q:** *How do I know I have the latest version of the ISD-SD200 Programmer software?*  
**A:** The latest release of the SD200 software is Version 1.0 (Build 35) and can be identified by clicking on the "?" button on the toolbar when the SD200 pod is connected to the parallel port and turned on. In the dialog box, this information will be found as well as the version of the EEPROM inside the pod. It should be Ver. 1.02a B005. The software and the hex files for programming the EEPROM are available on our web site at [www.isd.com/software/SD2000](http://www.isd.com/software/SD2000) as SD200DSK.ZIP. There are two hex files, one for the 64K version of the EEPROM and one for the 128K version. NOTE: This software is Windows 95 only; it no longer supports Windows 3.11.
9. **Q:** *I have discovered that the SD200 and the Quadravox programmers do not use the same type of .WAV files. How do I know what to use?*  
**A.** The ISD-SD200 is designed to take files of 22.050 KHz, 8-bit, monophonic in the .WAV format. The Quadravox systems take 11.025 KHz, 16-bit, monophonic .WAV files. Since our chips are about the equivalent of 8-bit, 8 KHz sample rate, either scheme works fine. Perhaps you are having trouble with the conversion of the files on your computer. I use two shareware programs, one called Cool Edit from Syntrillium <http://www.syntrillium.com/> and the other is Gold Wave from <http://www.goldwave.com/> each of which will do transformations from one format to another.