



Sintefex Audio



**Remote Control
Software for the
CX2000
Sampled Digital
Stereo Compressor
(PC Version)**

Users Guide

Remote Control Software for the CX2000 Sampled Digital Stereo Compressor (PC Version)

User Guide v1.1

Notice: Whilst all reasonable effort has been made to ensure that the information in this manual is accurate, Sintefex Audio Lda accepts no liability for inadvertent errors, omissions or changes in operating software or hardware specification referred to in this manual.

This edition 2nd July 2001

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2 Introduction

The CX2000 remote control software is a simple application that allows the user to operate the CX2000 hardware from a PC equipped with a USB port and running the Windows Operating System. Note that the software is optimised for use with USB as it allows much faster communication than MIDI.

This software also allows updating of the firmware and compressor models stored inside the CX2000 in line with improvements that are made available occasionally via the Sintefex audio web site www.sintefex.com.

3 Using the CX2000 Remote Control Software

Starting the Program

Open Windows Explorer and select the disk and directory in which the CX2000 software resides. You will see the CX2000 icon and this can be started by double clicking on the icon. You can instead drag this icon to your desktop to create a shortcut that you can use in future to run the program.



The icon look a bit like this....

When you run this software for the first time* you are presented with the Main Application Window and the Main Controls Window. When you run the program in future, the windows you had open and their sizes and positions are remembered.

When you turn remote control on (it starts the way you left the program the previous time) the CX2000 software will upload the current settings from the CX2000 hardware and display these for you to adjust.

*See the section "Installing the CX2000 PC software" if you have not already done this.

Opening Control Windows

The Main Window is described below. Under its "View" menu you can select a number of control windows to display on the screen. Some of these can be resized to fit your screen layout.

Using Extended Compressor Models

The Main Window "File" menu allows you to "load compressor from PC". This allows you to use additional compressor samples not installed in compressor bank of the CX2000 hardware when operating under remote control.

When you download a compressor model not in the CX2000 bank, the CX2000 hardware stops automatically keeping track of adjustments you make.

The CX2000 hardware normally keeps storing adjustments so that if it is powered down it always restarts doing exactly what it was doing at power down. However if you have downloaded a compressor model the CX2000 can no longer restore the condition as the compressor model is not "on-board". You will need to restore the compressor from the PC next time you power-up. For this reason it is best to use on-board compressor models whenever you are working in real-time situations where automatic power-up operation is required.

4 The Main Window/Menu



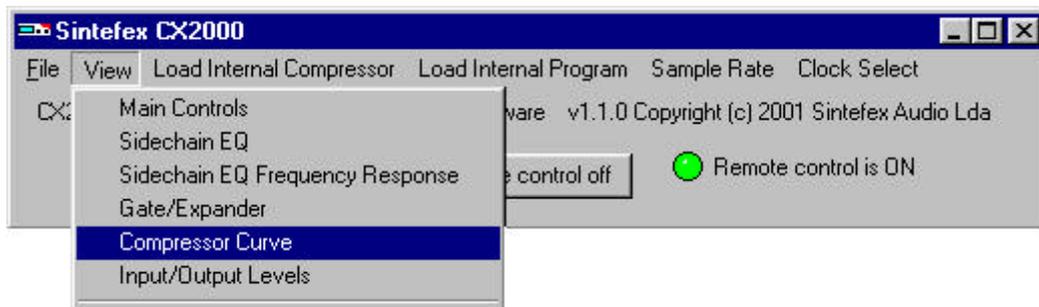
This window controls the rest of the program.

When you run the remote control software for the first time, the program will automatically attempt to connect to the CX2000 hardware via a USB connection. When the software is run on subsequent occasions, the connection will only be made automatically if the program was previously closed whilst remote control was still on.

The “Turn remote control on/off” button does exactly what it says; the text inside the button changes according to what will happen if it is pressed.

If you have any problems with Windows trying to connect to the CX2000 hardware, see the section "Installing the CX2000 PC software".

The main control screens are selected by using the VIEW menu as shown here...



The Menu Bar

This allows you to load programs, compressors, set the sample rate, download firmware updates, select the type of input clock and more.

File Menu

This gives the following options:

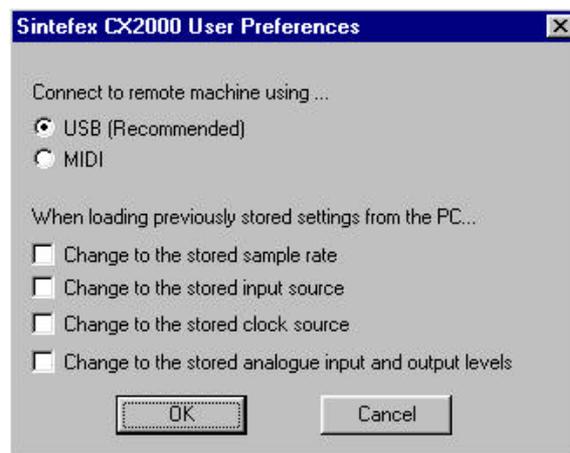
- *Load Current State From PC* - Allows the user to load a previously saved setup configuration, i.e. which compressors should be installed and the settings applied to them.
- *Save Current State To PC* - Allows the user to save the current settings being used.
- *Preferences* – This allows the user to select what type of remote control connection they want to use.

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It is recommended that USB is selected, as the communication is much faster and more reliable.

Normally, when settings are saved on the PC and reloaded, you don't want the sample rate or the input selection of the CX2000 to change; you just want a sound setting you have used before to be loaded. The four options shown here can be ticked however if these items are to be changed when a program is loaded to match the setting they were at when the program was saved.



- *Load Compressor from PC* – Use this to load an individual compressor (.cxx file) stored on the PC, rather than one of the internal compressors stored on the hardware
- *Hardware Update* – Use this to update the firmware (.cxs file) or the compressor bank (.cxp file) stored in the CX2000 hardware. Simply select which file you want to load into the hardware and wait. Note: if at any stage nothing appears to have happened for a minute or so the operation has probably failed. Close the progress window and try again. The entire operation takes between about two and five minutes, depending on your PC specifications.

View Menu

Use this to display the controls you want to use. The most important of these will be discussed later.

Load Internal Compressor

Use this to load one of the compressors from the hardware compressor bank. If the system is stereo ganged then the compressor selected will be loaded to both channels, otherwise the user is given the option of channel 1, 2 or both.

Load Internal Program

Selecting this and then *List Programs* brings up a list of all the saved programs on the CX2000 hardware. If no programs have been saved then the list will not appear.

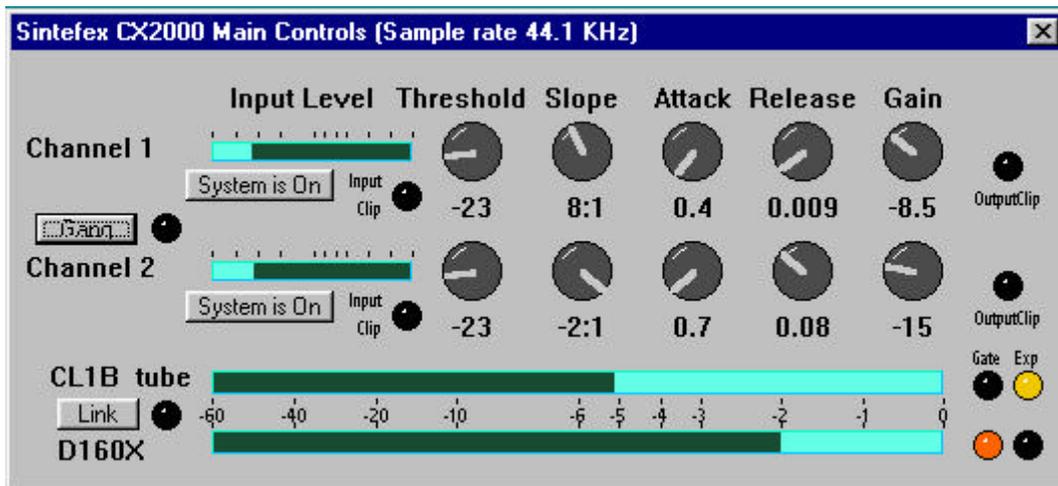
Sample Rate

This allows you to change the sample rate currently being used on the CX2000 hardware.

Clock Select

This allows you to select which sample rate reference clock the CX2000 hardware uses for its digital sampling. If you are using a digital input the input must be in synchronisation with the reference selected. Automatic is the best setting unless the CX2000 is to be the master reference in a looped back system.

5 The Main Controls Display



This display automatically appears every time you run the program.

Use the knobs to adjust the compressor threshold, slope, attack, release and gain on either channel. To adjust a knob, click on the knob and slide the mouse up or down until the desired setting is reached. Do not attempt to "rotate" the mouse cursor around the knob centre as is done in some programs.

The bar meters to the left of the threshold knobs can monitor either Input or Output levels. To switch between Input and Output monitoring, click on one of the meters. The legending above each meter corresponds to that used on the gain reduction meters.

The Gang button forces the setting of one channel to be the same as the other. When the CX2000 is ganged the knobs for each channel change simultaneously as would be used for stereo operation. (Note that this is not the same as gain linking between channels which is separately selected - see below).

If the CX2000 is selected to "Ganged" operation when the settings on both channels are different, you are requested to confirm whether the channel 1 or the channel 2 settings are to be applied to both channels to bring them into step.

The System On/Off buttons are used to activate or bypass the CX2000 on that channel. Bypass is a digital operation and passes the digital signal in directly to the digital signal out. This means that analogue users should be aware that the signal is still passing through the analogue to digital converters and back again. The analogue gain trim settings still apply although all digital gain is set to unity. In "bypass" the system delay is the same as when in operation, subject to any variations in frequency dependent delay of a particular samples analogue compressor, or to any delays inherent in compressors loaded from the PC which may vary from those stored in the internal compressor bank.

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The two large meters at the bottom of the display represent the gain reduction in dB for each channel and are the sum of the compressor gain reduction and any expander / gate gain reduction.

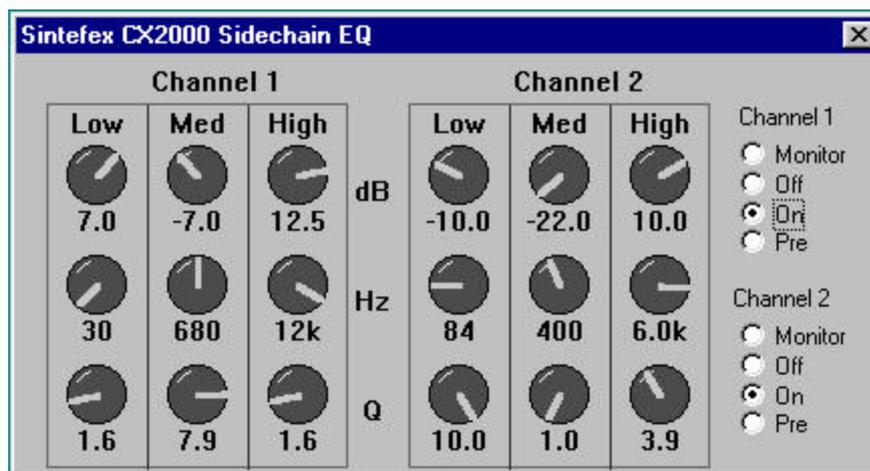
The currently loaded compressor sample on each channel is displayed to the left of each meter and indicators for whether the gate or expander is currently active are on the right.

The Link button provides gain linkage across the two channels. This links the gain of the compressor sections so that whichever channel is demanding the most gain reduction has its gain reduction applied to both channels equally.

The current sample rate is displayed in the title bar. (This can be altered in the main window).

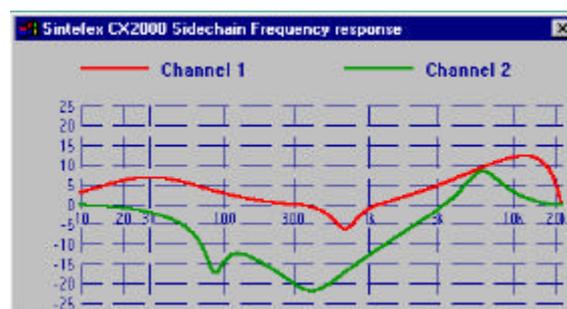
6 Sidechain EQ Display

The 3 band parametric equaliser may be seen here. It is possible to select the EQ to be OFF, MONITOR (in which case compressor is bypassed), into the compressor side-chain ("On"), or into the main signal path before the compressor ("Pre").



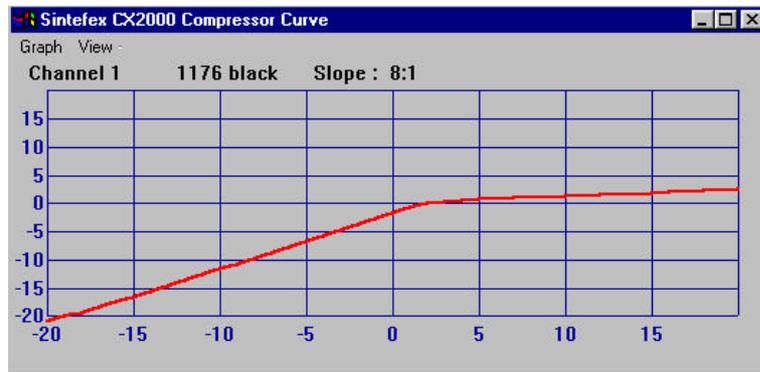
Each band of the equaliser has a gain control offering up to 25dB boost or cut, a frequency range from 20Hz to 20kHz and a width control (Q) from wide at the lowest setting (1.0) to narrow at the highest setting (10.0). Although the bands are labelled "Low", "Med" and "High" they are in fact identical in frequency range - the designations are just recommendations for ease of use.

It is also possible to get an accurate graph of the EQ curve.



7 Compressor Curve Display

The curve of the compressor can be displayed as shown here.



This indicates the input level along the bottom of the graph and the corresponding output level up the left hand side (in dB).

This graph graphically illustrates the way different compressors have markedly different transfer curves. Try comparing the curves from two classic compressors, the 1176 and the Fairchild to see how different two analogue compressors can be in terms of the transfer curve.

You can also see clearly with the 1176 sample how many different curves were taken from the same compressor and these are selected as you adjust the slope control. The changes in threshold level that occur are directly as sampled from the original machine so re-creates the effect of selecting different slopes would have as on the original. In this example, curves of 4:1, 8:1 12:1 and 20:1 were sampled from the front panel buttons, with 25:1 being a combination of buttons and "limit" corresponding to pressing all the buttons in on the 1176. You can see that this drops the threshold and alters the shape of curve to give the characteristic sound of that setting on the 1176.

If you select a curve, for example 5:1 that was not available on the original machine, the CX2000 uses the 4:1 and 8:1 curves to calculate the appropriate intermediate setting, allowing you more freedom than on the original equipment. In fact the CX2000 can generate intermediate curves all the way down to 1:1 for subtle compression effects even when such gentler curves were not available on the original equipment. For example the LA2 offers only "limit" on the original machine, and this is the curve you will get when you choose "limit" on the CX2000. However you can go for a lower slope and still retain the sound of the LA2.

The CX2000 can even handle negative slopes for "Dynamic Reversal" as you will find when you experiment with samples of compressors that offered this option.

Use the View menu option to select which channels' curve is displayed.

8 Expander/Gate Display

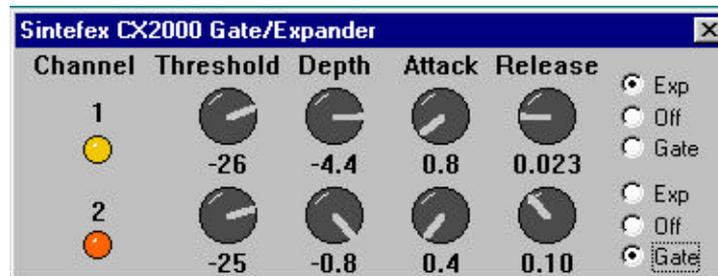
The CX2000 sampled digital stereo compressor provides an expander gate option even when the original sampled equipment did not offer this option. This enables dynamic range to be restored after

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compression, or more dramatic gating effects to be achieved while using either the character rich analogue sound of a sampled compressor or the internal digital compressor channels.

The expander/gate may be displayed as shown here.



Threshold indicates the levels below which the expansion gating begins to take effect. The CX2000 expands the signal at the slope of 2:1 below this threshold with a maximum depth indicated by the depth control. This allows precise control of the expansion option of the CX2000.

When the input signal falls below the threshold the signal attenuates according to the time constant set by "Release", and when a louder signal occurs the gain recovers according to "Attack" time constant.

Gating differs from expansion in that once the signal is attenuated, a proportionally louder signal is required to open the gate which then usually opens fully as the signal is progressively admitted. A fast attack is usually used to allow dramatic gating on percussion or a quick restoration of gain when for example a vocal part comes back in again.

9 Updating CX2000 Operating Firmware and Compressor Banks

The CX2000 Sampled Digital Stereo compressor is supplied with operating firmware and set of compressors installed. Follow the steps below to update either the firmware or the compressor banks stored in the internal memory of the CX2000.

This program will always tell you if the new firmware or data you are about to download is the same as already installed. If it is, you do not need to continue with the load, but you can load it again if you want.

Before Updating Firmware

You only need to update firmware if the version installed is not the current version.

What is the Latest Version?

Visit our web site at www.sintefex.com to determine the latest version of operating software and download any version you want to install.

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First we recommend you download and install the latest remote control software. Installation details for this are at the end of this guide.

Which Firmware Version Do I Have Already Installed?

You can find out the firmware version installed by powering the system on while holding down the "DO IT" button. You will see some start-up messages. Keep the "DO IT" button held until you have seen the following:

```
Sintefex CX2000
Compressor/Gate
96k DSP analogue
ver 1.0.0 ( c ) 2001
```

This last line contains the version number. After a few seconds this message will be replaced by the normal operating screen. If this is the latest version you will not need to update the firmware.

Note that a digital only system will say "digital" rather than "analogue" and a system without the 96 option will say "48k" rather than "96k."

Firmware Not Installed

If no firmware is installed, when you switch on the CX2000 you will see

```
Sintefex CX2000
Compressor/Gate
96k DSP analogue
Normal start failed
```

This then changes to

```
h/w:23/03/2001(16)
Start ver 1.0.2-6
( c ) 2001
<<-remote      test-->>
```

If you press the left select button this advances to the following

```
Start ver 1.0.2-6
( c ) 2001
<<-remote      test-->>
usb ad=0 cf=0 0
```

Once you have made a USB connection to a PC and installed the drivers as described below you will see the "ad" and "cf" figures advance (typically to 2 but it depends on the PC). The final digit shows the number of USB transfers and while you download firmware you will see this steadily advance.

Bypassing Installed Firmware

You can force the system to enter the start up ROM by turning the system on while holding down the MENU button. You will see messages similar to the above and can proceed to download firmware and compressor banks as described below.

Before Updating Compressor Banks

Sintefex Audio makes the set of compressor banks available as a single file with the extension .CXP. This contains a set of 8 compressors at each of the 4 main sample rates.

This is rarely updated and the date of the last update is 18th June 2001.

You will only need to do this update if you received your CX2000 machine before that date. However it does no harm to re-install the compressor bank at any future time.

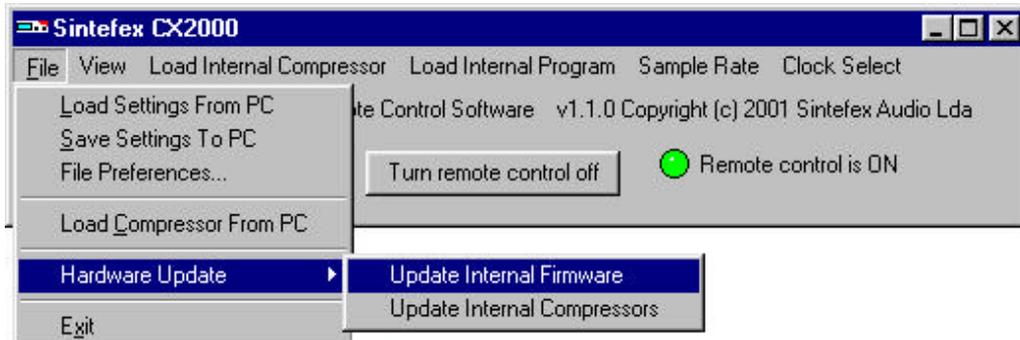
The set of compressors has been carefully adjusted for equal system delay, and optimal phase and gain (although there are slight variations due to the analogue nature of the samples). This optimises phase differences when compressing multiple channels using different compressor models.

The Updating Operation

CX2000 Software Installed and Operating Normally

If the CX2000 remote control software is installed and operating, simply select the menu option

File | Hardware Update

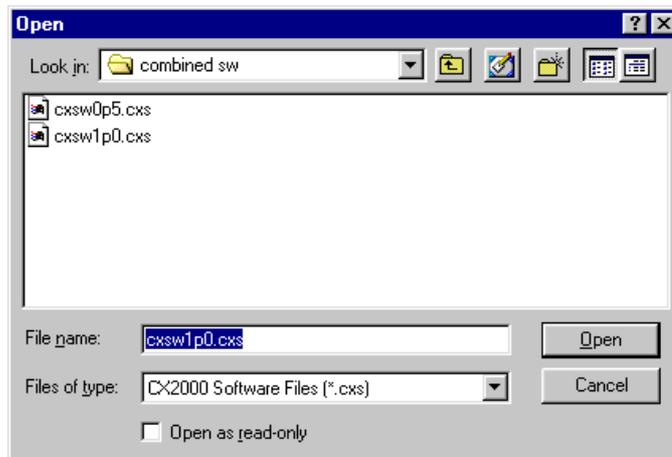


then select either "Update Internal Firmware" or "Update Internal Compressors".

You are prompted to select the file name to send. Operating software always has the extension .cxs and the compressor bank always has the extension .exp.

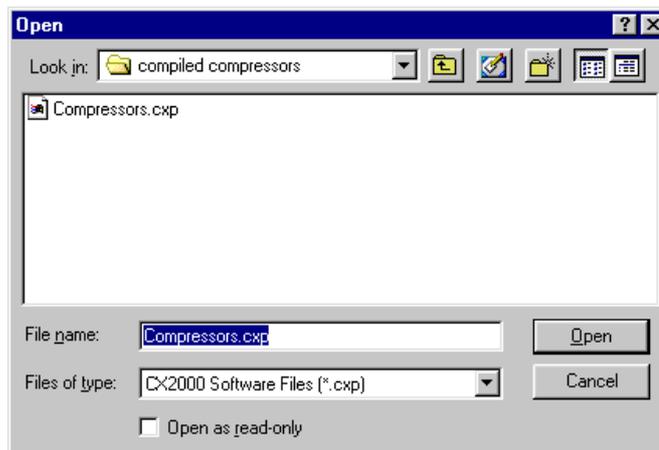
NOTE: Before downloading the firmware the CX2000 application compares the data already installed on the hardware with the image to download. This can take several minutes, especially if the images are the same. Please wait for the status messages to show the complete process of downloading. If the image already on the hardware is the same as the image you are about to download you will be asked if you wish to proceed. There is no need to do the download in this case.

So selecting "Update Internal Firmware" shows a screen like this in which you must navigate to the location in which you downloaded the CXP file from the web.



Press Open to start the download and watch the progress display.

Selecting "Update Internal Compressors" shows a screen like this in which you must navigate to the location in which you downloaded the CXS file from the web.



Press Open to start the download and watch the progress display.

NOTE: Before downloading the compressor data the CX2000 application compares the data already installed on the hardware with the image to download. This can take several minutes, especially if the images are the same. Please wait for the status messages to show the complete process of downloading. If the image already on the hardware is the same as the image you are about to download you will be asked if you wish to proceed. There is no need to do the download in this case.

CX2000 Software Not Installed

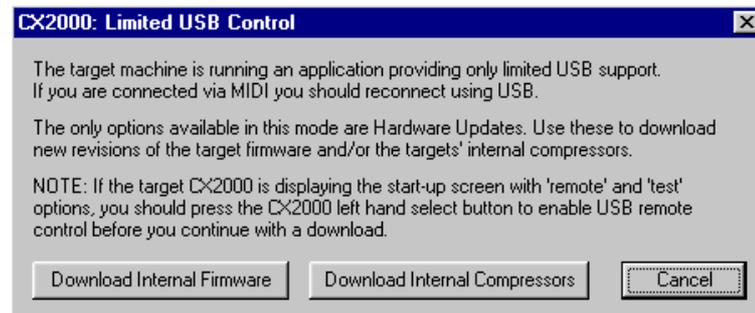
If CX2000 is not currently operating, install it and enable remote control to complete the steps above.

CX2000 Software Installed, CX2000 Hardware in Start-up ROM

If the CX2000 is operating in its start-up ROM (perhaps because it has no firmware installed, or a previous load failed for some reason), then when you turn the remote control on, or when you first start the program, you will see



When you press OK you will get...



You can go straight to the download stage by pressing either of the two buttons.

10 *Installing the CX2000 PC software*

The CX2000 software for PC requires you to have a CX2000 sampled digital stereo compressor connected to the PC by means of a standard USB connection. The software is supplied with a set of USB drivers which should be installed when prompted by Windows. You will need to be running at minimum Windows 98 (second edition) or the Windows 2000 operating systems for USB to work correctly.

The software does not need any fancy "install" operation as it comprises just a few files that all placed together when you unzip the file you download from the internet (see "Starting the Program" above). However like any new hardware attached to your PC you do need software "drivers" to tell Windows how to talk to the hardware. Installing these is described below.

If you think you have installed the drivers but when you try and connect using the CX2000 software, you see get nasty messages, see the section labelled "Trouble" below.

Installing the Sintefex USB Device driver

These are the steps required to install the Sintefex Devices USB driver that is required for the remote control software. There are two possible methods for installing the driver depending on whether the CX2000 hardware has been connected to your computer (via the USB).

NOTE: if you have downloaded the software from the Sintefex Audio web page, ignore any requests to insert a disk and use the windows browser buttons to find the correct directory (e.g. step 10)

Method 1. - CX2000 has not been plugged in

1. Start the "Add New Hardware" wizard from the Control Panel
2. On the first and second screens click Next
3. On the third screen, when asked if you want windows to search for new hardware, select "No, I want to select the hardware from a list" and click Next
4. From the list of Hardware types, select "Other Devices" and click Next
5. Ignore any Manufacturer and Model lists displayed and click "Have Disk"
6. At the "Install From Disk" dialog box, use Browse to select the "Sintefex Devices Driver" directory which is located within same the directory as "CX2000.exe"
7. Ensure that the file "_SignalProcessors.inf" is selected and click OK in both dialog boxes.
8. Back in the Add New Hardware dialog box, click Next
9. Click Next on the screen beginning "The hardware you are installing is Plug and Play compatible"
10. If you are installing this from a location on your hard disk you should get a message saying "Please insert the disk labelled 'Replicator Software Disc', and then click OK", Click OK.
11. In the "Copying Files" box, use browse, as before to get back to same location as in Step 6, and click OK until you the you are returned to the Add New Hardware wizard.
12. The new driver should now be installed on your computer. You may be asked to restart your computer, if not just click Finish.

Method 2 - CX2000 has been plugged in

1. Plugging in the CX2000 hardware to your computer via USB and turning it on should start windows automatically searching for a driver and will start the Add New Hardware wizard.
2. In the first screen of the Add New Hardware wizard, select Search for the best driver... and click Next
3. Select "Specify a location" and use the Browse button to find the 'Sintefex Devices driver' directory and click next.
4. Follow the same procedure given above from step 10 to complete the installation.

Trouble?

If you think you have installed the drivers but when you try and connect using the CX2000 software, you see this...



(or something similar as the exact message can depend on what other devices are attached to the PC) there are two likely problems:

1. The driver is okay but the CX2000 hardware is switched off, or the USB cable is not connected properly, or
2. The driver is not installed properly or is out of date.

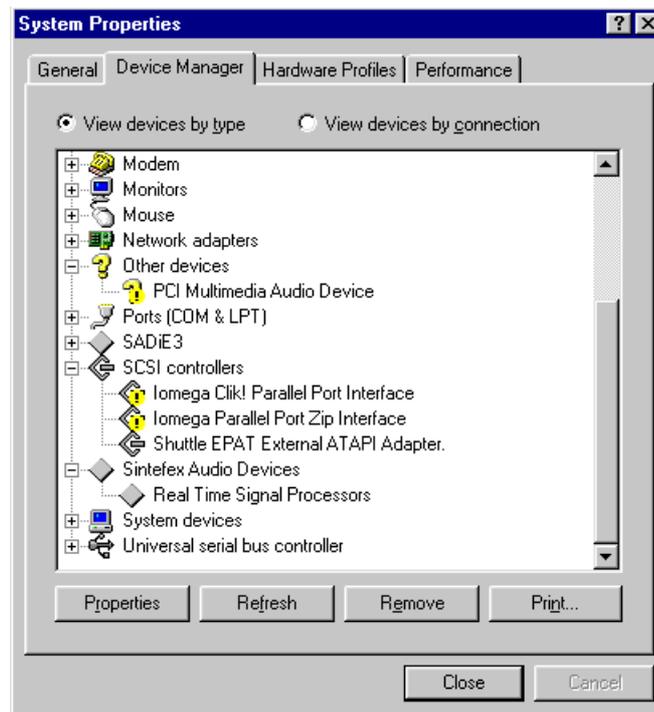
In the first case try unplugging and re-plugging the USB cable, make sure the CX2000 is on and running, or try different USB sockets on your PC. If no luck, assume the second case:

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Windows can keep hold of old drivers even if you think you have updated them. Try looking in the Control Panel | System and selecting the Device Manager tab. You should see something like the screen shown below.

The entry for Sintefex Audio Devices will only appear if the CX2000 is connected properly, so if it is there you can be pretty sure about the connections.



(Users of older drivers from Sintefex Audio may see the words "FX8000 Replicator" instead of "Real Time Signal Processors". If so select that in the next step)

If you select the "Real Time Signal Processors" under "Sintefex Audio Devices" and select "Properties", then select the "Drivers" tab then "Driver File details" you can check that the version of "sfxusb.sys" is at least v1.1.0.0. Later versions may be available by the time you read this.

In any event, proceed to install the latest drivers in your most recent download as follows:

- Select "Update Drivers", "Next" then "Display a list of all the drivers in a specific location".
- Select "Have Disk" and browse to the drivers subdirectory of the new software (if this is the second or third time you have done this you can usually find the last directory you went to by pressing the drop down arrow and scrolling to the top of the list).
- Press okay and even if Windows says that the drivers are not newer than those you already have, tell it to continue.
- Windows is now likely to ignore the directory you just selected and ask you to insert a disk. Once again browse to the download directory's drivers subdirectory. Again it is at the top of the drop down list in the directory box, so Windows actually knew all the time where to go but was just winding you up.
- Now Windows should tell you it has installed everything okay and hopefully you can continue to run the CX2000 software.

MIDI

The CX2000 software can be used for remote control over MIDI provided the PC is fitted with a standard MIDI adapter. Two cables will be needed, one from PC to CX2000, and the other from CX2000 to the PC as the communications is two directional.

Please note that USB operation is preferred to MIDI operation because MIDI is rather slow for the exchange of data, and it is better to leave the MIDI ports of the CX2000 available for use of the CX2000 with your sequencer for real time remote control. See the CX2000 user manual for details. Also some PCs have problems with MIDI due to connection quality and Windows software support.

11 List of File Extension Used by CX2000 Software

File extensions identify the file type to Windows. Users often hide these but there are times when you need to know what they are. This table summarises the main file types used by the CX2000 Remote Control application for Windows.

<i>extension</i>	<i>means</i>
CXF	Saved CX2000 Compressor Settings
.CXP	Complete bank of compressors for installation onto CX2000 hardware
.CXS	Firmware for installation onto CX2000 hardware.
.CXX	Individual compressor model for use on CX2000 hardware under remote software control, extending the available compressor models
.EXE	Executable file for the CX2000 Windows application
.DLL	Dynamic Link Library containing parts of the CX2000 software application
.SYS	Driver files for installation to allow Windows to talk to the CX2000 hardware over the USB port.
.INF	Information file to tell Windows how to load the drivers for the USB interface.

12 Acknowledgements, Disclaimers and Licensing

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