

XingSound Help

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Setting-Up XingSound

Before using the XingSound Recorder to encode audio data, you must configure the XingSound Recorder for your audio board's I/O base address and interrupt:

- 1** Determine your audio board's I/O base address and interrupt according to the board's documentation.
- 2** Start the XingSound Recorder by opening the "XingSound Recorder" program item in Window's Program Manager or by running the XING_REC.EXE program. The XingSound Recorder appears.
- 3** Click the appropriate radio buttons to inform the XingSound Recorder of the settings you determined in step 1.
- 4** Click the "Quit" button to exit the XingSound Recorder program.

Using the XingSound Recorder

To perform real-time capture of data from an attached audio source, complete the following steps:

- 1** Start the XingSound Recorder by opening the "XingSound Recorder" program item in Window's Program Manager or by running the XING_REC.EXE program. The "XingSound Recorder" window appears.
- 2** Specify a destination MPEG Audio file and make appropriate entries in the XingSound Recorder's "Settings" fields as described in "Controlling the XingSound Recorder".
- 3** Click the "Power" button (if necessary) until it indicates "On"; when the XingSound Recorder's power is "On," XingSound communicates with your PC's audio board and the Left/Right Channel Amplitude meters indicate the relative amplitude of the incoming audio signal.
- 4** Click the (Record) button to begin recording. The "Record" button flashes to indicate that recording is in progress. Throughout the recording, the XingSound Recorder window displays:
 - o **Size** - the size (in bytes) of the destination MPEG Audio file;
 - o **Left/Right Channel Amplitude** - these meters indicate the relative amplitude (volume) of the audio data processed by the audio-digital converter on your PC's audio board (read "Using the Gain Adjustment" for details).
- 5** Click the (Record) button to stop recording.

Playing-Back Audio Files within the XingSound Recorder

To play-back a newly-captured MPEG Audio file (or any MPEG Audio file whose name appears in the XingSound Recorder's "File" field), click the (Play) button; the XingSound Player appears and plays the MPEG Audio file. To cancel playback, click the XingSound Player's "Stop" button. When playback is finished, the XingSound Player automatically exits.

NOTE If clicking the "Play" button fails to successfully playback the MPEG Audio file, start the XingSound Player manually as described in "Using the XingSound Player" and make sure it is properly configured as described in "Controlling the XingSound Player".

Controlling the XingSound Recorder

When recording data from an attached audio source, you must make appropriate entries in the following fields:

- o **File** - enter the name of the MPEG Audio file to which recorded data is written; if the file's path is omitted, it is written to the directory in which the XING_REC.EXE program resides; click this field's corresponding "Browse" button to open a dialog with which you can specify the destination file using standard Windows techniques;
- o **Gain** - specifies the amplitude adjustment applied to the incoming analog audio signal prior to its conversion to digital data; valid values are integers from 0 to 15; read "Using the Gain Adjustment" for instructions for determining the optimum gain setting.

To access additional fields that affect recorded audio data, click the "Config" button. The XingSound Recorder window is redrawn to reveal its configuration fields:

NOTE Read "Setting-Up XingSound" for a description of the "Interrupt" and "I/O Base" fields.

- o **Channels** - controls the encoding of incoming audio data (if data from the audio source is monaural, only the "Mono" item is available):
 - o **Mono** - all incoming audio data is treated as a single channel and written to a single-channel MPEG Audio file;
 - o **Stereo** - causes the encoding model to employ an algorithm that maintains stereo separation of the left and right channels; the number of bits of encoded data dedicated to each channel may vary e.g., if data in the left channel is "uninteresting" (i.e., insignificant to the human ear), more bits are dedicated to the right channel;
 - o **Joint Stereo** - causes the encoding model to employ an algorithm that maintains stereo separation of the left and right channels while specially treating higher frequencies (in higher sub-bands, the left and right channels' relative amplitudes are preserved, but differences in their waveforms are partially sacrificed); this procedure results in more efficient encoding of higher frequencies, so more bits can be dedicated to lower frequencies;
 - o **Dual Channel** - causes the encoding model to treat the left and right channels of the incoming audio data as independent monaural channels and dedicate an equal number of bits of encoded data to the left and right channels in the target MPEG Audio file. Because the model performs no comparison of the channels, this method is less efficient (at the same bit rate) than the Stereo or Joint Stereo methods.
- o **Input Source** - specifies the source of incoming audio data:
 - o **Microphone** - causes the XingSound Recorder to read audio data sent to your audio board's "Microphone" port;
 - o **Line Input** - causes the XingSound Recorder to read audio data sent to your audio

board's "Line In" port.

- o **Per Channel Bit Rate** - specifies the size of the resulting MPEG Audio file measured in kilobits/second per channel; valid values are: 32, 48, 56, 64, 80, 96, 112, 128, 160, and 192. Entering a large value produces a larger MPEG Audio file while yielding higher-quality sound; entering a small value minimizes the size of the resulting MPEG Audio file while yielding lower-quality sound. To translate these values into Kilobytes/minute, divide the bit rate by 8 and multiply by 60; e.g., setting a bit rate of "96" produces an audio file containing 720 Kilobytes per minute per channel (because a stereo audio file has two channels, it is twice the size of a monaural audio file).
- o **Joint Stereo Bands** - this field is enabled only when the "Joint Stereo" item is selected in the "Channels" field; specifies the lowest sub-band to which the encoding model applies the joint stereo algorithm; valid values are 4, 8, 12, 16; e.g., setting a value of 12 causes sub-bands 12 through 32 to undergo joint stereo treatment;
- o **Sample Rate** - specifies the interval (in KHz) at which data from the audio source is sampled; valid values are: 32, 44.1, and 48. Entering a large value increases the encoded data's frequency range; entering a small value decreases the encoded data's frequency range.

Using the Gain Adjustment

Before recording audio data, you should use the "Gain" setting to specify the amplitude adjustment applied to the incoming analog audio signal prior to its conversion to digital data. To determine the optimum gain setting, complete the following steps:

- 1 Click the "Power" button (if necessary) until it indicates "On."
- 2 Initiate transmission of data to your audio board; the Left/Right Channel Amplitude meters indicate the relative amplitude of the audio data processed by the audio-digital converter on your PC's audio board.
- 3 Observe the Left/Right Channel Amplitude meters to determine the relative amplitude of the incoming audio signal. If the meters indicate a very low amplitude, you should increase the gain; if the meters indicate a very high amplitude, you should reduce the gain. In general, you should adjust the gain so that the amplitude meters occasionally enter the red area.

NOTE An improper gain setting will adversely affect the quality of recorded audio data:

- o if the gain is too high, the analog-digital converter is saturated resulting in distortion of the audio data;
- o if the gain is too low, the encoding algorithm loses precision and the resulting audio is noisy as low-amplitude data approaches your audio board's noise level.

To observe the effect of gain adjustments upon the quality of captured audio: set the gain, capture audio data, and playback the resulting MPEG Audio file as described in "Playing-Back Audio

Files within the XingSound Encoder"; repeat this process to determine the optimum gain setting.

Using the XingSound Player

The XingSound Player can be started from within the XingSound Recorder and XingSound Encoder programs as described in "Playing-Back Audio Files within the XingSound Encoder" and "Playing-Back Audio Files within the XingSound Encoder". To manually start the XingSound Player and play an audio file, complete the following steps:

- 1** Start the XingSound Player by opening the "XingSound Player" program item in Window's Program Manager or by running the XING_PLY.EXE program. The XingSound Player appears.
- 2** Choose appropriate items from the "Audio" menu as described in "Controlling the XingSound Player".
- 3** Choose "Open..." from the "File" menu. A dialog appears and asks you to select an audio file.
- 4** Use standard Windows techniques to select an MPEG Audio (.MP2) or Wave (.WAV) file and click the "OK" button. The XingSound Player window's title bar displays the name of the loaded audio file.
- 5** Click the (Play) button to start playback. Click the (Stop) button to stop playback. As the audio file is played:
 - o the **scroll bar** is updated to reflect the current position within the audio file; you can use this scroll bar to set the position within the audio file from which playback will commence;
 - o the **digital counter** displays the current chronographic position within the audio file.

Controlling the XingSound Player

When playing an audio file, you can control the XingSound Player's behavior by choosing items in the "Audio" menu:

- o **Repeat** - when this item is checked, the loaded audio file is played in a continuous loop.
- o **MPEG Audio Player** - contains two items that let you establish compatibility with your PC's audio board:
 - o **Xing Software Decode** - select this item if your PC does not have an audio board equipped with an Analog Device's 2115 DSP (read "Configuring the Xing Software Decoder" for more information);

- o **DSP Driver** - select this item if your PC has an audio board equipped with an Analog Device's 2115 DSP (read "Configuring the DSP Driver" for more information).

Configuring the Xing Software Decoder

To configure the Xing Software Decoder, choose "Configure..." from the "MPEG Audio Player" item in the XingSound Player's "Audio" menu. The "Configure Sound" dialog appears.

Click the appropriate radio buttons, and click the "OK" button:

- o **Quality** - controls the type of data sent to your PC's audio board:
 - o **High** - uses a maximum sampling rate of 22 KHz and a high-precision decoder; requires more CPU power;
 - o **Medium** - uses a maximum sampling rate of 22 KHz and a low-precision decoder;
 - o **Low** - uses a sampling rate of 11 KHz and a low-precision decoder; requires less CPU power;
- o **8 Bit/16 Bit** - select one of these items to match the signal resolution of your PC's audio driver.

Configuring the DSP Driver

To configure XingSound's DSP driver, choose "Configure..." from the "MPEG Audio Player" item in the XingSound Player's "Audio" menu. The "Configure Sound" dialog appears.

Click the appropriate radio buttons, and click the "OK" button:

- o **I/O Port and IRQ** - specifies your audio board's I/O Base Address and Interrupt (read "Setting-Up XingSound" for details);
- o **Volume** - use this scroll bar to control your audio board's playback volume.

Associating Audio Files with the XingSound Player Program

If you frequently use the XingSound Player to play audio files, you may want to associate the ".MP2" and/or ".WAV" file extensions with the XingSound Player program; e.g., if you are running Windows version 3.1, you associate filename extensions with programs through the "File Manager" program:

- 1 Launch the "File Manager" program and choose "Associate" from the "File" menu. The "Associate" dialog appears.

- 2** Enter in the "Files with Extension" field a three character extension; enter in the "Associate with" field the pathname of the XingSound Player program (click the "Browse" button to open a dialog with which you can locate the XingSound Player program); and click the "OK" button.

Read your Windows documentation for complete instructions for associating file extensions with executable programs.

Using the XingSound Encoder

To convert a Wave (.WAV) file to an MPEG Audio file, complete the following steps:

- 1** Start the XingSound Encoder by opening the XingSound Encoder item in Window's Program Manager or by running the XING_ENC.EXE program. The "XingSound Encoder" window appears.
- 2** Specify the input and output files and make appropriate entries in the XingSound Recorder's "Settings" fields as described in "Controlling the XingSound Encoder".
- 3** Click the "COMPRESS" button to begin encoding. A dialog appears and reports the status of the encoding process.

Throughout the encoding process, the status dialog displays:

- o **Percent Complete** - the ratio of the Bytes Read to the total size (in bytes) of the source Wave file;
- o **Frames Done** - the number of MPEG frames (one MPEG Layer 2 audio frame = 1152 PCM samples per channel) written to the destination file;
- o **Bytes Read** - the amount of data read from the source Wave file;
- o **Bytes Written** - the amount of data written to the destination file.

NOTE If you switch to another Windows applications while encoding is in progress, encoding continues in the background.

- 4** When the encoding process is complete, the status dialog closes.

Playing-Back Audio Files within the XingSound Encoder

To play-back a newly-encoded MPEG Audio file (or any MPEG Audio file whose name appears in the XingSound Encoder's "Output File" field), click the "PLAYBACK" button; the XingSound Player appears and plays the MPEG Audio file. To cancel playback, click the XingSound Player's "Stop" button. When playback is finished, the XingSound Player automatically exits.

NOTE If clicking the "PLAYBACK" button fails to successfully playback the MPEG Audio file, start the XingSound Player manually as described in "Using the XingSound Player" and make sure it is properly configured as described in "Controlling the XingSound Player".

Controlling the XingSound Encoder

When converting a Wave (.WAV) file to an MPEG Audio file, you must make appropriate entries in the following fields:

- o **Input File** - enter the name of the source Wave file; if the file's path is omitted, it is read from the directory in which the XING_ENC.EXE program resides; click this field's corresponding "Browse" button to open a dialog with which you can specify the source file using standard Windows techniques. To convert multiple Wave files, use DOS wildcards in the name of the input file, e.g., enter "\AUDIO*.WAV" to convert all Wave files in the "\AUDIO" directory; when you enter wildcards in the "Input File" field, no entry is required in the "Output File" field.

NOTE The XingSound Encoder can load only 16-bit Wave files with a sampling rate of 44.1 kHz; all other Wave files must be converted to this form prior to loading in the XingSound Encoder.

- o **Output File** - enter the name of the destination MPEG Audio file (by default, this field specifies an MPEG Audio file whose basename is the same as the source Wave file); if the file's path is omitted, it is written to the directory in which the XING_ENC.EXE program resides. Click this field's corresponding "Browse" button to open a dialog with which you can specify the destination file using standard Windows techniques.

To access additional fields that affect encoded audio data, click the "Settings" button. The XingSound Encoder window is redrawn to reveal its configuration fields.

Read "Controlling the XingSound Recorder" for a description of these fields.

Troubleshooting

XingSound Recorder

The Amplitude Meters do not move

- o Make sure you have clicked the "Power" button until it indicates "On."
- o Make sure the I/O Base Address and Interrupt settings are correct as described in "Setting-Up XingSound".
- o You can use the XingSound Recorder only if you have installed in your PC an audio board equipped with an Analog Device's 2115 DSP.

Turning the Power "On" locks up your PC

- o Make sure the I/O Base Address and Interrupt settings are correct as described in "Setting-Up XingSound".

The Amplitude Meters remain disabled when the Power is "On"

- o Make sure the I/O Base Address setting is correct as described in "Setting-Up XingSound".

XingSound Player

Audio files can not be loaded

- o Make sure your MPEG Audio files have a ".MP2" extension.

Playback volume is low

- o If the XingSound Player is using the "Xing Software Decode," use your audio driver's configuration program to increase the playback volume (read "Controlling the XingSound Player" for details); if it is using the "DSP Driver," increase the volume as described in "Configuring the DSP Driver".

The XingSound Player fails to playback or locks up

- o If the XingSound Player is using the "DSP Driver," make sure you have specified the correct I/O Base Address and Interrupt as described in "Configuring the DSP Driver".

XingSound Encoder

Some Wave files can not be converted to MPEG Audio format

- o The XingSound Encoder can load only 16-bit Wave files with a sampling rate of 44.1 kHz; all other Wave files must be converted to this form prior to loading in the XingSound Encoder.