

### FEATURES

- "Sound Blaster" & Adlib compatible
- Microsoft Windows® compatible and Object Link and Embedding (OLE) compliant
- Microsoft Windows® Sound System Compatible
- Record, compress, and playback voice, sound and music with selectable 8/16-bit file formats
- Record and playback to and from hard disk with real-time compression and decompression
- ESPCM and ADPCM compression supported
- Programmable volume control for both record and playback
- Programmable sample rate from 4000 to 44,100 samples per second
- Direct line-level and microphone inputs with AGC
- FM music synthesizer
- Plays MIDI files
- Optional Windows Drivers/Tools
- Optional DOS/Embedded Driver Code
- Development kit available
- 16-bit, PC/104 stackthrough connector
- Small size: 3.6" x 3.8" (90mm x 96mm)
- Operating temperature: 0°C to +70°C

The PCM-AUDIOPRO is a Sound Blaster Pro™ compatible PC/104 module that can record, compress, store, and playback voice, sound and music. This module offers functionality for industrial applications requiring audio, FM music synthesis, or sound effects enhancing the man-machine interface.

A full set of Windows® compatible drivers and Audio Applications are available for development. Also a set of C source code driver routines are available for DOS or embedded system use.

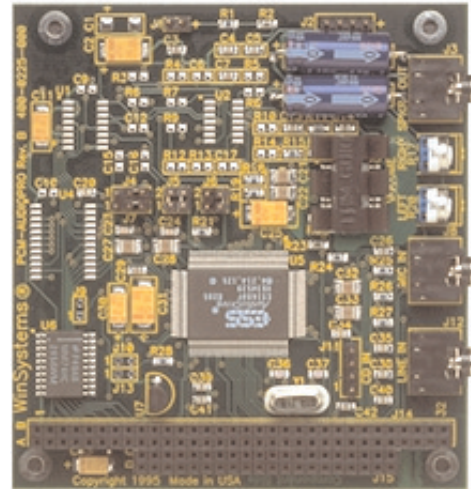
### FUNCTIONAL CAPABILITY

**PC/104 Interface** - The module is I/O mapped and requires 16 contiguous port addresses for the audio drive section.

The PCM-AUDIOPRO is a 16-bit stackthrough card that supports DMA, which is customer selectable.

Hardware interrupts are supported and are selectable on the available IRQ lines.

**Audio Controller** - The controller contains an embedded microprocessor, A/D and D/A, DMA control with FIFO, memory, timer and logic interface for direct PC/104 bus interface.



**Analog Input** - There are three input sources for this unit: Microphone, Line and CD-ROM. Both the Microphone and Line inputs are AC coupled.

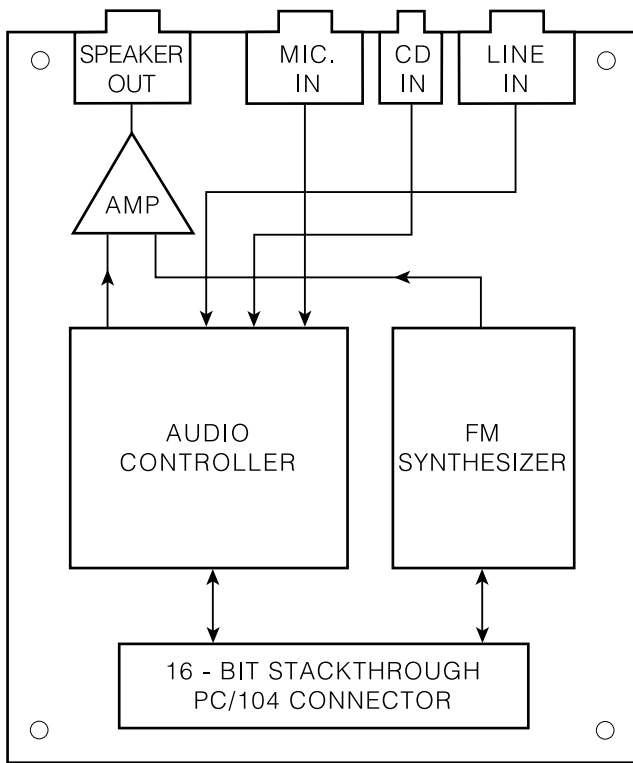
**Filter** - The output of the input gain stage is connected to a 5-pole switched capacitor low-pass filter. The filter pole will track with the sample rate in DMA mode.

**Analog Output** - In the DAC mode, the output of the D/A converter is connected to a 5-pole low pass filter, buffered and then inputs a programmable gain amplifier. The PCM-AUDIOPRO supports stereo with 2 watts per channel.

**FM Music Synthesis** - The PCM-AUDIOPRO also supports a 20 voice, 72 operator (OPL3 compatible) FM music synthesizer. It can be ordered without FM music synthesis for cost-sensitive OEM applications. Please contact the factory for details.

**Compression** - The audio controller offers two types of compressed sound DAC operations: ESPCM that uses a patented compression technique developed by ESS Technology and ADPCM, which is supported by many other sound cards, but is of lower quality.

The major advantage of the compression options is that by compressing audio data you have more disk or EPROM space. This board will support up to 4:1 compression. Extreme compression, such as 4:1, will cause too much distortion to be practical for music and even normal speech. This amount of compression is suitable for sound effects only. The 2.6 bit compression is



**PCM-AUDIOPRO BLOCK DIAGRAM**

appropriate for speech. Compression is not recommended for music.

**Development System** - WinSystems offers the optional KIT-PCM-AUDIOPRO-16 to help speed development. The kit consists of a PCM-AUDIOPRO-16 board, PCM-ISA adapter board, microphone, two speakers, Windows® Audio Applications Users Guide, and DOS/Embedded systems tools and drivers. This kit allows the user to develop and debug the application code on either a desktop PC or the target embedded CPU running in a Windows® or DOS environment.

A Windows® 3.1 compatible audio utility software called Audio Accessories is supplied allowing one to record, compress, store, and playback voice, sound and music. It includes the Audio Clips Library, Audio Recorder, Audio Reminder, Talking Calculator, Talking Clock, Timer, Stop Watch, and Chime.

WinSystems has written a utility for applications not running in a Windows® environment. It will allow record and playback of audio or voice with control of sample speed, volume, and compression for use with DOS or non-DOS applications. It also supports playback of Windows® .WAV files in a non-Windows environment.

## **SPECIFICATIONS**

### **Electrical**

PC/104 Bus: 16-bit, stackthrough  
 Vcc = +5V ±5% @ 10mA typ. idle  
 +12V ±5% @ 15mA typ. idle

### **Mechanical**

Dimensions: 3.6" x 3.8" (90mm x 96mm)

### **Connectors**

Speaker: 3.5mm miniature stereo phone jack  
 Microphone: 3.5mm miniature stereo phone jack  
 Line Input: 3.5mm miniature stereo phone jack  
 PC/104: 64-pin, 0.100" (32-pin double row)  
 40-pin, 0.100" (20-pin double row)  
 Jumpers: 0.025" square posts  
 CD Input: 3.5mm miniature stereo phone jack

### **Environmental**

Operating Temperature: 0°C to +70°C  
 Non-condensing relative humidity: 5% to 95%

## **ORDERING INFORMATION**

PCM-AUDIOPRO-16 PC/104 Sound Blaster Pro™ module  
 KIT-AUDIOPRO-16 PCM-AUDIO-PRO Development kit

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