Synway ATP Series

SHT-8B/PCI

Analog Tap Passive Board

Hardware Manual

Version 2.1

Synway Information Engineering Co., Ltd

www.synway.net

Contents

Copyright Declaration

Revision History

Version	Date	Comments
Version 1.0	1997-5	For overseas markets only
Version 1.1	1999-2	Rearranged edition: Added description of interfaces and the connection between them
Version 2.0	2003-10	Changes: Modified the hardware description, added figures of boards and modules for better understanding
Version 2.1	2006-5	Changes: Separated call-recoding products from the CTI series to be a new series

Note: Please visit our website http://www.synway.net to obtain the latest version of this document.

Chapter 1 Overview

The ATP Series SHT-8B/PCI is an 8-channel analog tap passive board including PCI bus. By configuring different recording modules in different ways, this board can be used for recording of analog phone lines via high impedance and direct recording of microphones.

1.1 Functions

- High-impedance passive monitoring

- A variety of ways to start/stop recording

- Supports simultaneous recording on 8 channels, each with a different format

- Caller ID detection, DTMF and FSK support

- DTMF digits detection

- Programmable tone analyzer detects all kinds of tones

- Activity/silence detection

- Automatic Gain Control (AGC) support in recording/playback operation

- Call progress monitoring

- Automatic line voltage detection

- Automatically checks board to see if recording modules are correctly inserted

1.2 Features

- **PCI 2.1 Bus Support**

  Includes PCI 2.1 bus with burst data transmission rate up to 133 MB/s; PNP (plug and play) feature eliminates the need for jumper leads.

- **Module Configurable**

  4 on-board dual channel modules can be freely arranged in pairs or groups for various complex combination applications, such as call center and recording functions available on a single board.

- **On-board SIMM Slots**

  Fit recording modules to board. Contacts on both sides of the SIMM slots greatly improve connection and ease installation.

- **Analog Phone Line Interface**

  The on-board RJ11 jack can directly connect to phone lines without extra adaptors, making connection easy and malfunctions rare.

- **2 to 8 Port Hi-Z Monitoring of Analog Lines**

Flexible positioning of the access point on the communication line between Central Office Terminal (COT) and PBX, COT and telephones, PBX and telephones, etc. allows monitoring of any analog tone signal such as tone signals from radio station. This function is widely used in small-to-large capacity call recording systems, call centers and microphone recording systems.

- **Programmable Tone Detector**

Detects single or dual tones at any frequency, offering facility for use with a variety of PBXes and key telephone systems.

- **High-impedance Recording**

The recording impedance is up to 10kΩ AC/2MΩ DC, ruling out interruption on transmission of monitored signals.

- **Various CODECs Support**

Offers a large selection of voice CODECs, including A-Law (G.711), μ-Law, 16-bit linear PCM, IMA-ADPCM, MP3 and VOX.

- **Supports WAV File**

The recorded voice files can be edited and played by audio tools such as Cooledit.

- **Audio Output Interface**

Equipped with an analog tone amplifier circuit and an output interface, the first channel on the board can directly connect to the headset or sound box, and monitor a specified channel in real time via a simple function call.

- **Unique Hardware Serial Number**

Each board has a unique hardware serial number written in the firmware to distinguish itself from other boards and prevent piracy. The number is available via an easy function call with applications.

- **Authorization Code Identification Circuit**

The on-board authorization code identification circuit is designed for software safety. Users can apply to our company for an exclusive one.

- **Synway's Unified SynCTI Driver Development Platform**

Synway owns the intellectual property rights for the unified high-intelligence SynCTI driver development platform. Each system supports up to 2048 channels. Functions such as the detection and analysis of rings, tones and Caller IDs, are available via simple function calls on the driver platform, without having to understand complex call procedures.
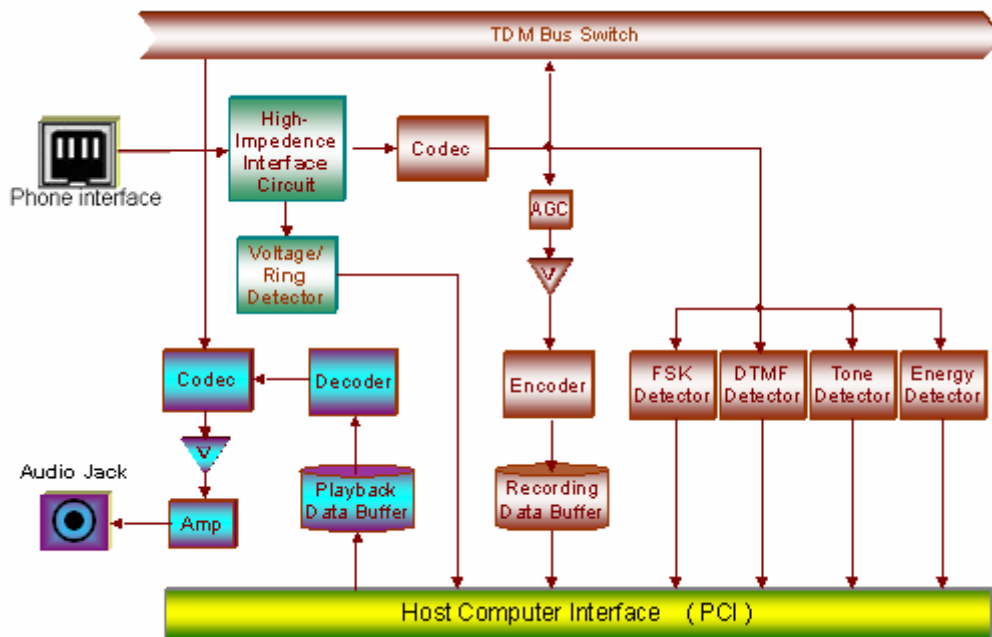
1.3 Operation Principle

Figure 1-1 Operating Principle

1.4 Functional Modules

This board can be used with two kinds of recording modules: High-impedance recording module and microphone module.

- **High-impedance recording module**

  Equipped with high-impedance input interfaces, this module is used for the recording of local lines, extension lines, dynamic microphones and other audio tones. See Figure 2-3 and Figure 2-4 for details.

- **Microphone module**

  Equipped with battery feed circuits, this module connects directly to condenser microphones (common sound-card-compatible microphones). See Figure 2-5 and Figure 2-6 for details.

Chapter 2 Installation

2.1 Hardware Structure
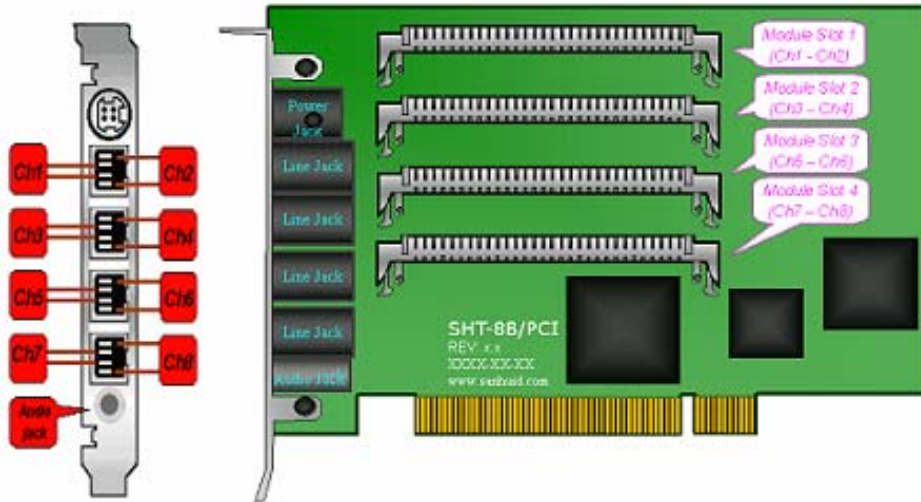
- **SHT-8B/PCI Board**
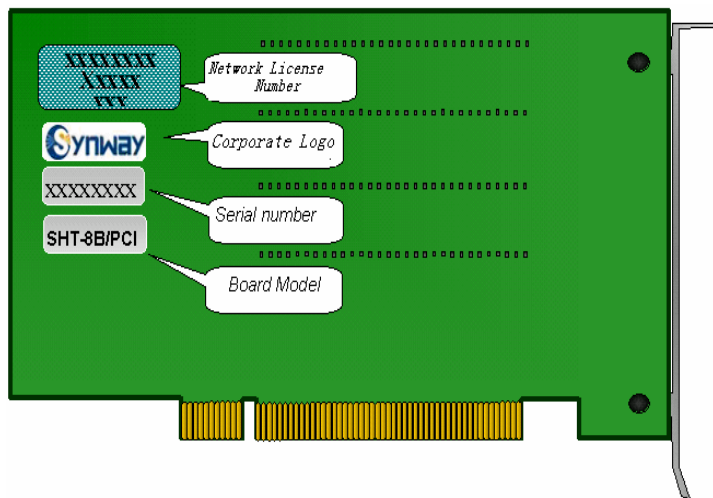

Figure 2-1 Left and Front Views

Figure 2-2 Rear View

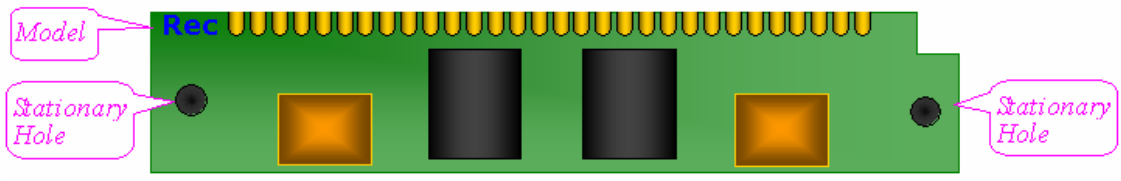● **On-board High-impedance Recording Module**
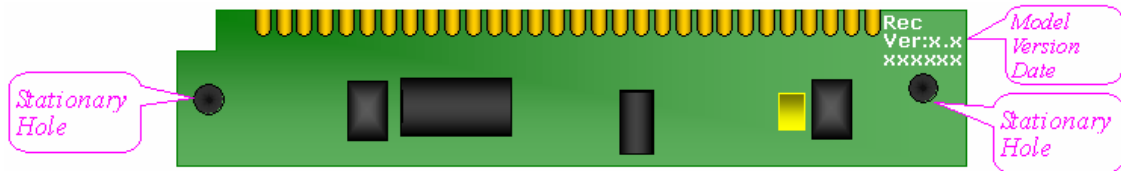

Figure 2-3 Front View

Figure 2-4 Rear View

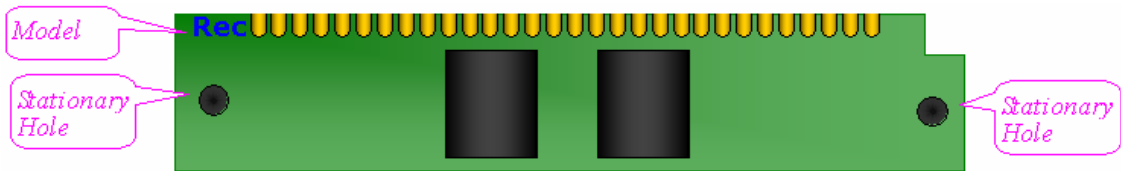● **On-board Microphone Module**
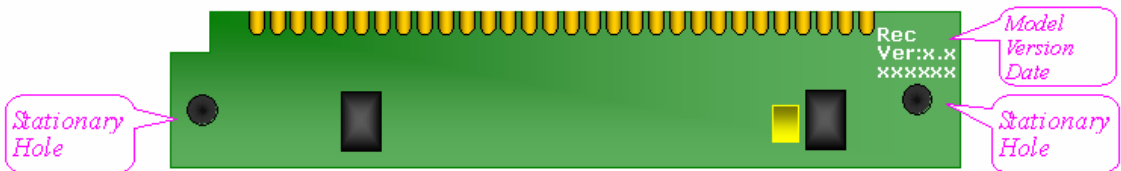

Figure 2-5 Front View

Figure 2-6 Rear View

2.2 System Requirements

Host System Requirements

CPU: 300MHz Intel® Pentium®Ⅱ or above

Memory: 256M or more

HD: Depends on individual requirements

Supported Operating Systems

Refer to *SynCTI Programmer's Manual.pdf*.

2.3 Installation Procedure

Note: Always turn off the power before installation!

Step 1: Plug the desired module into the on-board module slots, and fit the board into the chassis

Step 2: Connect to analog phone lines or other input signals (e.g. recording modules)

Each RJ11 jack can house a 4-lead line which corresponds to 2 channels. For pin layout, refer to Figure 2-1.

Note: A microphone module is not allowed to connect with phone lines from a terminal PBX, or it may be damaged.

Step 3: Connect the microphone module

Skip this step if there is no need to record the condenser microphone.

Note: Pay attention to the pin polarity shown in Figure 2-7 below while connecting lines to the modules.
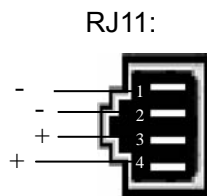
RJ11:

Figure 2-7 Polarity for Connection of Microphone Module

Step 4: Connect the sound box or other proper sound devices

Skip this step if there is no need to 'monitor in real time' or 'play'.

Regarding how to choose proper sound devices, refer to 'Input/output Interface' and 'Audio Specifications' in *Appendix A Technical Specifications*.

Note: The first module slot on the board must be fitted with a module should you wish to play sound via the amplifier.

Step 5: Boot your computer and install the driver

Regarding driver installation, refer to *Driver Installation Manual*.

Step 6: Set the high-impedance recording module to be of high-sensitivity (-20dB) with software

Skip this step if there is no need to record line input signals or dynamic microphones.

Key Tips:

● As the system is expected to run for long hours unmanned, 'energy-saving' mode should be turned off for both the CPU and the HD in CMOS or WINDOWS operating system. This is to ensure full-speed operation of the computer, or it may lead to a drop in performance or unexpected errors after running for some time.

● It is important to ground the chassis with analog tap passive boards for safety reasons, according to standard industry requirements. A simple way is earthing with the third pin on the plug. No or improper grounding may cause instability in operation as well as decrease in lightning resistance.

Appendix A Technical Specifications

Dimensions

170×108mm^2 *(excluding L-bracket)*

Weight

≈ 250g *(including 4 dual channel modules)*

Environment

Operating temperature: 0℃—55℃

Storage temperature: -20℃—85℃

Humidity: 8%— 90% non-condensing

Storage humidity: 8%— 90% non-condensing

Input/output Interface

Headset jack: One φ3.5 stereo jack

Telephone line jack: Four 4-pin RJ11 jacks

Audio Specifications

Codec: CCITT A/μ-Law 64kbps,

IMA ADPCM 32kbps

Output power: ≥50mW

Distortion: ≤3%

Frequency response: 300-3400Hz(±3dB)

Signal-to-noise ratio: ≥38dB

Echo suppression: ≥40dB

Maximum System Capacity

Up to 10 boards concurrently per system; up to 8 channels per board

Power Requirements

+5V DC: 600mA

-12V DC: 80mA

+12V DC: 300mA

Maximum power consumption: ≤12W

(PC power supply only)

Impedance

Input impedance: ≥1MΩ/500V DC;
≥10kΩ/1000V AC

Insulation resistance for PC isolation from telephone line：≥2MΩ/500V DC

Telephone line impedance:
Compliant with the national standard impedance for three-component network

Audio Encoding & Decoding

16Bit PCM	128kbps
8Bit PCM	64kbps
A-Law	64kbps
μ-Law	64kbps
VOX	32kbps
ADPCM	32kbps
GSM	13.6kbps
MP3	8kbps

Sampling Rate

8kHz

Safety and Certifications

Lightning Resistance: Level 4

Safety: FCC; CE; CCC

Appendix B Technical/sales Support

Thank you for choosing Synway. Please contact us should you have any inquiry regarding our products. We shall do our best to help you.

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