



Synway ATP Series

SHT-2B/USB

SHT-4B/USB

USB Recording Box

Hardware Manual

Version 1.0

Synway Information Engineering Co., Ltd

www.synway.net

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Revision History

Version	Date	Comments
Version 1.0	2006-3	Initial publication

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Chapter 1 Overview

The ATP series SHT-2B/USB and SHT-4B/USB are the recording boxes using analog telephone lines and USB1.1 interface. With various recording modules configured in a different way, they can enable the high-impedance recording of the analog phone line via parallel connection and the direct recording of the microphone.

1.1 Functions

- High-impedance passive monitoring
- Start/stop recording using multiple methods
- Activity/silence detection
- Call progress monitoring
- Supports simultaneous full-duplex recording and playback on 4 channels, each with a different format (CCITT A/ μ -Law 64kbps, IMA ADPCM 32kbps or Windows WAV)
- Calling party info (Caller_Id) detection, DTMF and FSK support
- Programmable tone analyzer detects all kinds of tones
- Automatic Gain Control (AGC) support in recording/playback operation
- Automatically checks the USB recording box to determine the number and type of installed modules
- Supports most telephone signaling standards (analog)
- All-in-one setup (recording/playing/signaling)

1.2 Features

- **USB1.1 Bus Support**
Includes USB1.1 bus; supports hot-swap and PNP (plug and play) features; provides portable application and easy installation without the need for any external power supply.
- **High-impedance Recording**
Simply achieved by parallel connection. Very high input impedance rules out interruption on transmission of monitored signals.
- **Module Configurable**

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

- **Available Analog Phone Line Jack**

Adopts the RJ11 jack to connect the phone line directly, eliminating the need for extra junction boxes, making connection easy and malfunctions rare.

- **Available Telephone Handset Jack**

The telephone handset jack can directly connect with the handset of either a digital telephone or an analog telephone, enabling a complete handset recording.

- **Available Microphone Jack**

Connects the microphone to the microphone jack to record any voice that enters the microphone.

- **Available Audio Output Jack**

Equipped with an audio amplifier to directly drive the speaker of the headset or handset.

- **Programmable Tone Detector**

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

- **Realtime Analog Line Voltage Detection**

The recording is started immediately once the pickup behavior is detected.

- **Various CODECs Support**

Offers a large selection of voice CODECs, including G711 A-Law, μ -Law, 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.

- **Hardware Serial Number & Authorization Code Identification Circuit**

Each recording box has a unique hardware serial number and an authorization code identification circuit, designed for software safety. Users can apply to our company for the authorization code.

- **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. All features are available via simple function calls on the driver platform, without having to understand complex call procedures.

1.3 Operation Principle

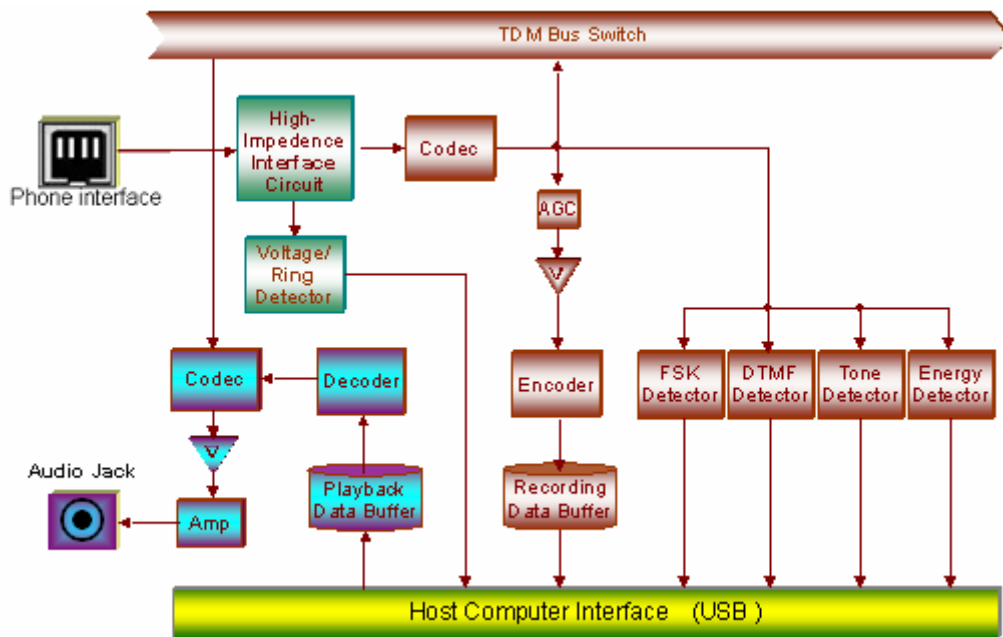


Figure 1-1 Operation Principle

Chapter 2 Installation

2.1 External Structure

- SHT-2B/USB or SHT-4B/USB

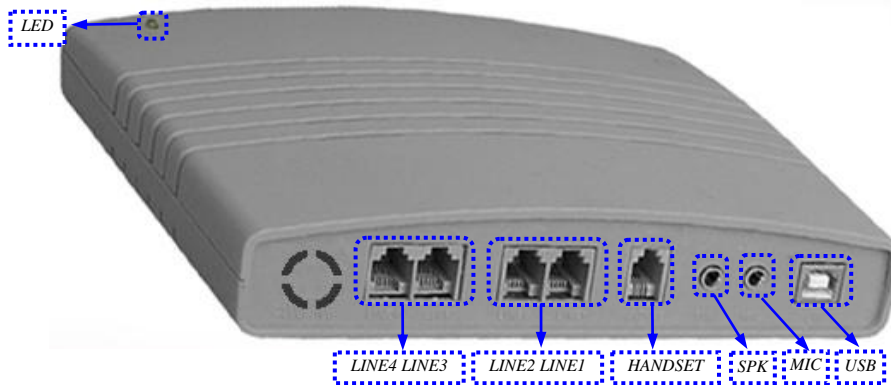


Figure 2-1 Outside View

LED: On - Power on; Off - Power off; Flashing - Operating normally

LINE1: Jack to the 1st channel

LINE2: Jack to the 2nd channel

LINE3: Jack to the 3rd channel

LINE4: Jack to the 4th channel

HANDSET: Phone handset jack, whose input shares the 1st channel with LINE1 and output is synchronized with the SPK

MIC: Microphone input jack, which is a $\Phi 3.5$ stereo jack and shares the 1st channel with LINE1

SPK: Audio output jack, which is a $\Phi 3.5$ stereo jack

USB: USB jack

Notes:

① SHT-2B/USB doesn't include LINE3 and LINE4;

② Because the input of LINE1, HANDSET and MIC shares the first channel, only one of them could be used at a same time;

③ The first channel on the board must be fitted with a microphone recording module should you use HANDSET or MIC;

④ You must be cautious not to connect the analog phone line to the channel installed with

microphone recording modules;

⑤ As to voice playing, the audio signals will be output via both HANDSET and SPK at the same time;

⑥ The minimum interval between insertion and extraction of the USB data line should not be shorter than 9S.

2.2 Label Description

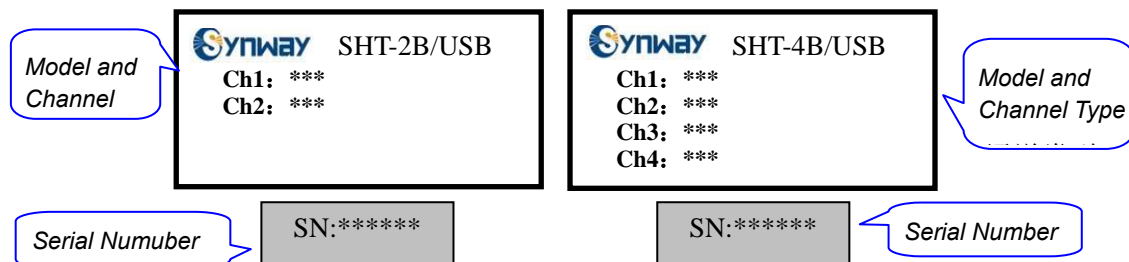


Figure 2-2 Labels for SHT-2B/USB and SHT-4B/USB

There are two channel types 'recording' and 'handset (headset)', which respectively indicate the analog recording channel and the microphone recording channel. The serial number is denoted by Arabic figures and each product has a unique serial number.

2.3 System Requirement

To ensure the proper operation of the USB recording box, the computer hardware and software configurations must meet the following requirements:

- Host System Requirements
 - CPU: 300 MHz Intel® Pentium® II or above
 - RAM: Each USB recording box needs at least 1 MByte RAM
 - HD: At least 1Gbyte remaining disk space
 - Interface: Each USB recording box needs a USB interface
- Supported Operating Systems

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

2.4 Installation Procedure

Step 1: Connect to analog phone line or microphone input line

Refer to Figure 2-3 below for interface signal definitions to avoid improper connection.

Notes:

- ① Do not connect the analog phone line to the corresponding channel of HANDSET(Headset) lest the USB recording box suffer from a permanent damage;
- ② See '2.2 Label Description' for how to obtain the channel type;
- ③ Read '2.1 Note ① ~ ⑤' before you perform this step.

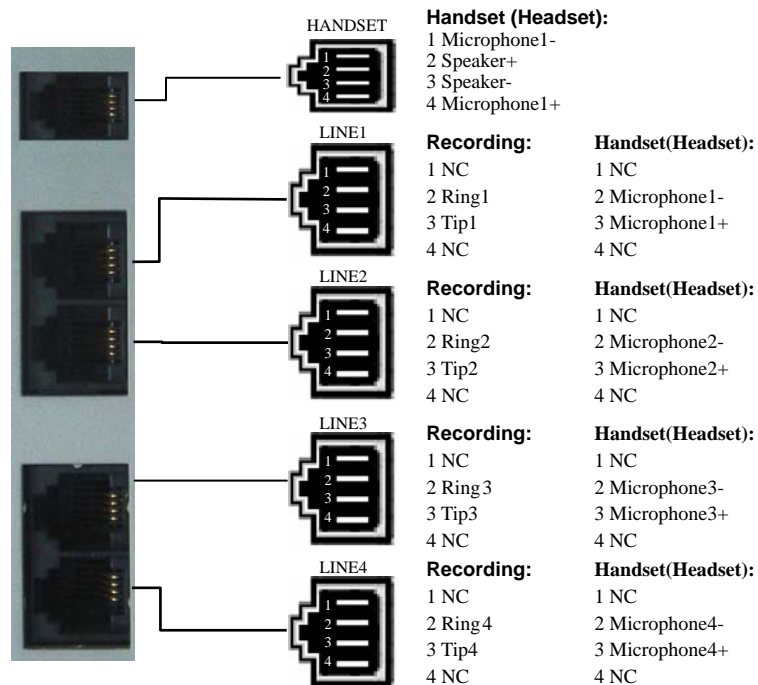


Figure 2-3 Interface Signal Definitions

Step 2: Connect the sound box or other appropriate 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.

Step 3: Connect the USB recording box and the PC by USB data lines (See Figure 2-4)

Note: The USB recording box is not allowed to share the same USB port on the PC with other USB devices.

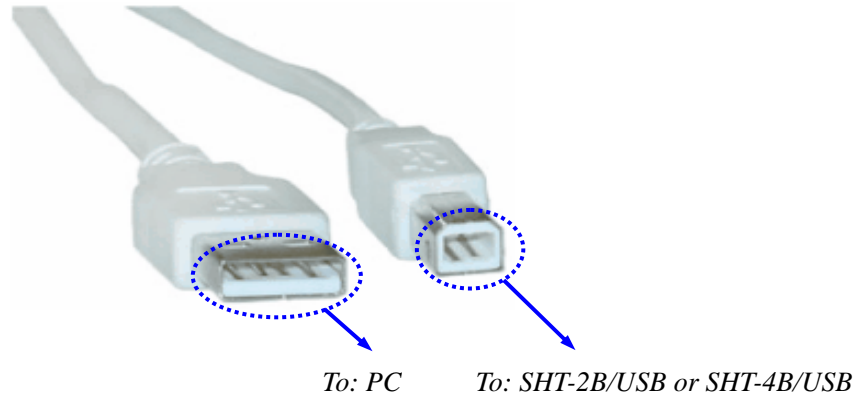


Figure 2-4 USB Data Line

Step 4: Install the driver

If it's the first time to install the USB recording box on the PC, please run the installation program in the driver installation package before Step 3; otherwise, the driver will be installed by the operating system automatically. Regarding driver installation, refer to *SynCti_InstManual.pdf*.

Note: If the installation error occurs, remove the USB data line from the PC. Plug it and install the driver again.

Key Tips:

- As the system is expected to run for long hours unattended, '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.
- A chassis installed with the USB recording box must be grounded 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 x 130 x 20mm3

Weight

≈ 200g

Environment

Operating temperature: 0 °C—55 °C

Storage temperature: -20 °C—85 °C

Humidity: 8%—80%, non-condensing

Input/output Interface

Headset jack: One ϕ 3.5 stereo jack

Microphone jack: One ϕ 3.5 stereo jack

Telephone line jack: Four 4-pin RJ11 connectors

Handset jack: One 4-pin RJ11 connector

USB jack: One USB1.1 standard interface

Audio Specifications

CODEC: CCIIT A/ μ -Law 64kbps,

IMA ADPCM 32kbp

Audio output power: \geq 50mW

Distortion: \leq 3%

Frequency response: 300-3400Hz (\pm 3dB)

Signal-to-noise ratio: \geq 38dB

Echo suppression: \geq 40dB

Maximum System Capacity

Up to 8 USB recording boxes concurrently per system; up to 4 channels per box

Audio Encoding & Decoding

16Bit PCM 128kbps

8Bit PCM 64kbps

A-Law 64kbps

μ -Law 64kbps

VOX 32kbps

ADPCM 32kbps

GSM 13.6kbps

MP3 8kbps

Impedance

Input impedance: \geq 1M Ω /500V DC;
 \geq 10k Ω /1000V AC

Insulation resistance for PC isolation from telephone line: \geq 2M Ω /500V DC

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

Power Requirements

+5V DC: \leq 400mA

Power: \leq 2.1W

Safety

Lightning resistance: Level 4

Safety certificates: FCC;CE

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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