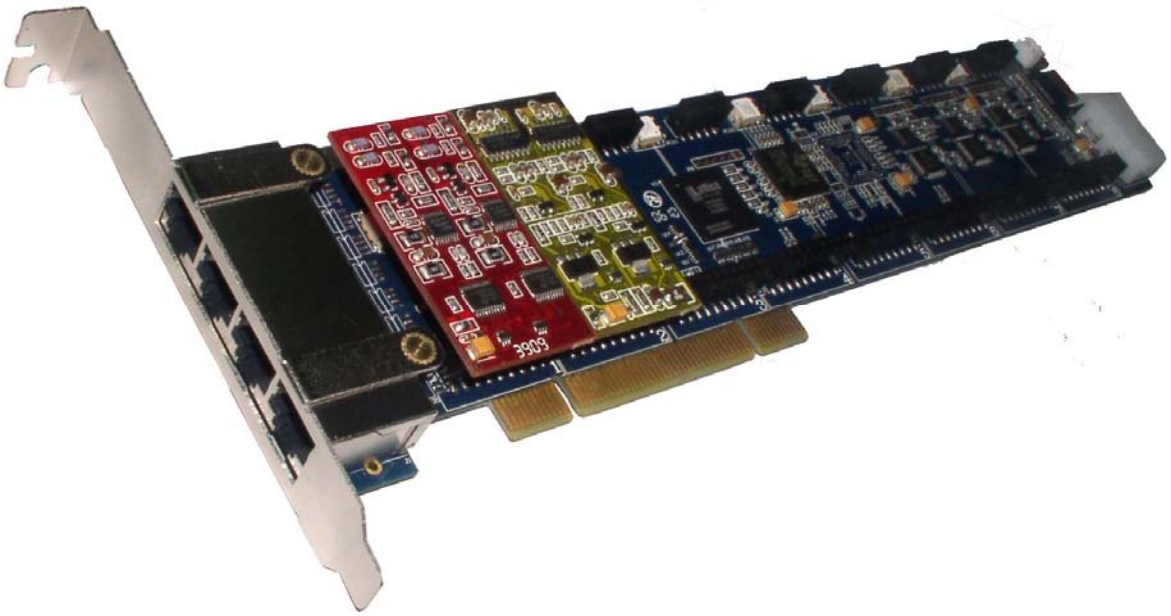
Synway AST Series

# FXM32 Full-length

## Analog Voice Board

# Product Introduction



Synway Information Engineering Co., Ltd

www.synway.net

# Brief Introduction

The FXM32 full-length board is designed with a smart appearance and a flexible structure. The voice quality it provides is rather splendid. The echo canceller which we developed out independently to cancel echoes in hardware supports 128ms for time delay estimation. With the extendable daughterboards and the selectable modules, you can customize systems to what you want. The half-height and full-length design it has minimizes the space to install in a chassis so that most common main frames you find in daily life are big enough to hold it. In a word, this product is really cost effective.

**Note: The FXM32 full-length motherboard can extend only with a daughterboard to set up a system involving up to 32 ports. To be exact, each motherboard supports up to 16 channels and the extension with a daughterboard which is achieved by the backboard BP200, enables the support of 32 channels.**

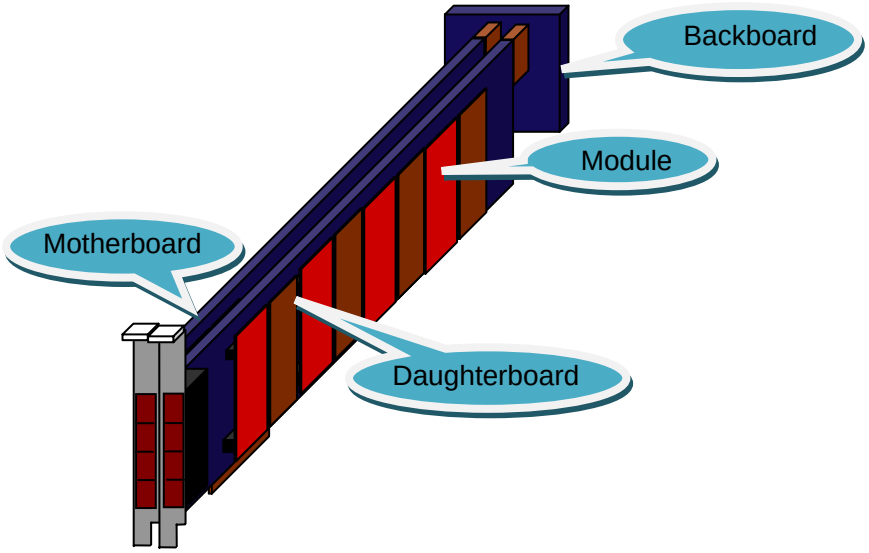



Figure 1 Overall Structure

# Characteristic Features

- **Echo Cancellation**

  1) Compliant with G.168-2002.

  2) The basic motherboard supports 256 point (32ms) for time delay estimation on each channel while the enhanced motherboard supports 1024 point (128ms).

  3) Uses the DSPs on the motherboard to process echoes, not wasting any host resources.

  4) Not only cancels out the effect of voice playback on DTMF and busy tones detection, but also avoids self-excited oscillation and howling, minimizes the possibility of registering wrong DTMF and busy tones in a conference call, especially suitable for VoIP application environments.

- **DMA**

  Uses the DMA technique for data reading and writing, greatly minimizing the cost of host CPU.

- **Structure**

  1) Assembles piecemeal just like piling up building blocks. A motherboard offers 16 channels and you may use the backboard to extend with a daughterboard to support up to 32 channels. Although the daughterboard takes some space, it works without the need of PCI/PCIe slots (**at present we can only provide the motherboard that is applicable to PCI and PCI-X slots, the daughterboard is unavailable now**).

  2) Several kinds of modules are optional for you to install with the mother/daughter boards to achieve different purposes. Actually, we provide FXS, FXO and FXC (a compound body of FXS and FXO). FXC has the capability to ensure safe communication even when the PC is powered off, which eliminates the damage caused by sudden power cuts.

  3) The half-height and full-length design (Height: 64mm, Length: 270mm) minimizes the space for installation, allowing a great many choices of mainboards and main frames.

  4) You may use the spring steel buckle to fix the backboard on the mother/daughter board so as to prevent them from loosening or disengaging during transportation or in removal.

- **Compatibility in Software and Hardware**

  1) Compatible with all commercial and home mainboards.

  2) Includes PCI 2.2 bus with burst data transmission rate up to 132 MB/s; PNP (plug and play) feature eliminates the need for jumper leads; general PCI design supports 3.3V/5V PCI slot and PCI-X slot.

     Includes PCI Express 1.0a bus with the single-way transmission rate up to 2.5Gb; supports PCI Express X1, X2, X4, X8, X16 slots.

     **(At present we can only provide the motherboard that is applicable to PCI and PCI-X slots, the daughterboard is unavailable now)**

  3) Supports Unix, Linux and Solaris.

  4) This board driver is compatible with Zaptel. So it supports a lot of open source PBX systems, like Asterisk, Trixbox, Yate, CallWeaver, FreeSwitch, etc.

- **Interface**

  Four on-board RJ45 jacks: to connect with analog voice paths (don't forget to install analog modules correspondingly), use the four-way hub for RJ45 to convert each RJ45 to four RJ11 jacks which can connect directly to telephone lines, making connection easy and malfunctions rare.

- **Power**

  The power is supplied by the host computer. In case only the motherboard is used, connect it with the HD power plug. In case the backboard and the daughterboard are also used, connect the backboard with the HD power plug.

# Operation Principle

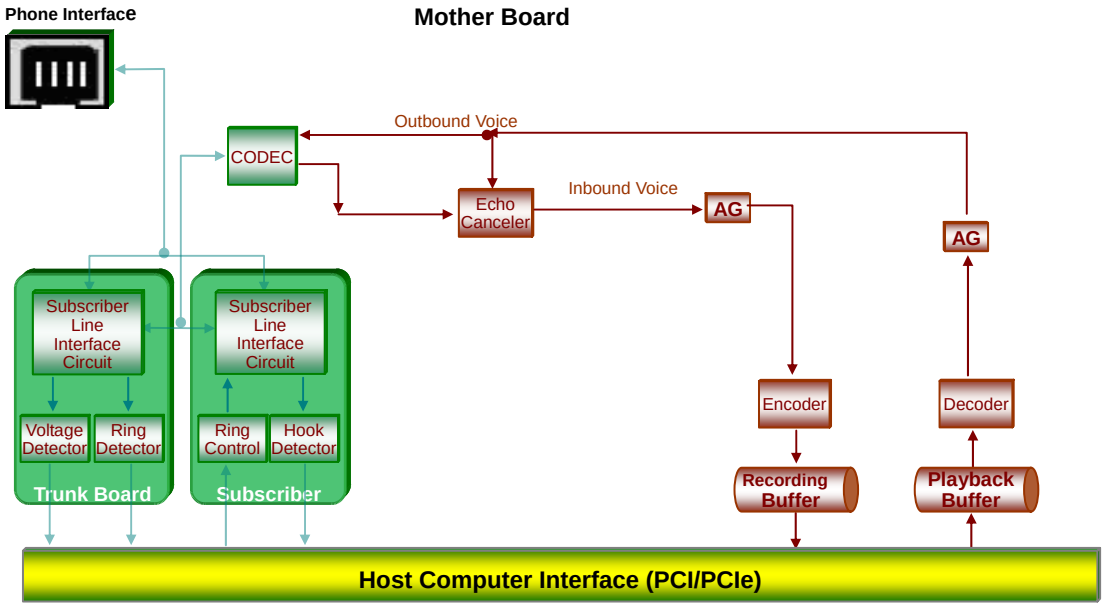



Figure 2 FXM32 Full-length Board Operation Principle

# Typical Application

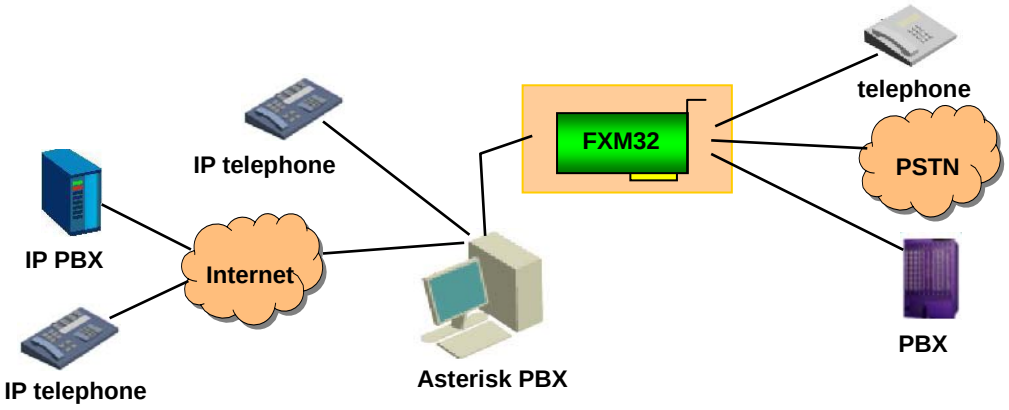



Figure 3 FXM32 Full-length Board Application Model

# Technical Specifications

**Dimensions**

*270x64 mm$^2$ (excluding L-bracket)*

**Weight**

*Motherboard：about 120g*

*(excluding modules)*

*Module：about 10g*

*Backboard：≤10g*

**Environment**

*Operating temperature: 0℃—55℃*

*Storage temperature: -20℃—85℃*

*Humidity: 8%—90% non-condensing*

*Storage humidity: 8%—90%*
*non-condensing*

**Input/output Interface**

*Telephone line jack: 4 or 8 8-pin RJ45*

**Audio Specifications**

*CODEC: CCITT A/μ-Law 64kbps*

*Distortion: ≤3%*

*Frequency response: 300-3400Hz (±3dB)*

*Signal-to-noise ratio: ≥38dB*

*Echo suppression: ≥40dB*

**Maximum System Capacity**

*Up to 8 boards concurrently per system;*
*up to 4 channels per board*

**Power Requirements**

***Total Power Consumption includes the electricity use of all motherboards and daughterboards.***

*A single motherboard*
*(with modules fully inserted)*

*+3.3V DC: 1100mA*
*(power consumption: 3.63W)*
*+12V DC: 2000mA*
*(power consumption: 24W,*
*supplied by power socket)*
*+5V DC: 1600mA*
*(power consumption: 8W,*
*supplied by power socket)*

*A single daughterboard*
*(with modules fully inserted)*

*+12V DC: 2000mA*
*(power consumption: 24W,*
*supplied by power socket)*
*+5V DC: 1600mA*
*(power consumption: 8W,*
*supplied by power socket)*

**Impedance**

*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**

*A-Law 64kbps*
*μ-Law 64kbps*

**Sampling Rate**

*8kHz*

**Safety**

*Lightning resistance: Level 4*

# Purchasing Guide

The Synway FXM32 full-length analog voice board provides a complete range of features to meet all requirements (models in grey are not yet published).

- **Model List of FXM32 Full-length Motherboard, Daughterboard, Module & Backboard**

| Component | Model | PCI Bus | Echo Cancellation |
|---|---|---|---|
| Motherboard | FXM3210P | PCI | Basic |
| | FXM3211P | PCI | Enhanced |
| | FXM3210E | PCIe | Basic |
| | FXM3211E | PCIe | Enhanced |
| Daughterboard | FXD1610 | — | — |
| Module | FXO200 | — | — |
| | FXS200 | — | — |
| | FXC200 | — | — |
| Backboard | BP200 | — | — |

# Technical/sales Support

## Headquarters

Synway Information Engineering Co., Ltd

http://www.synway.net/

9F, Synway D&R Center, No.3756, Nanhuan Road, Binjiang District, Hangzhou, P.R.China, 310053

Tel: +86-571-88860561

Fax: +86-571-88850923

## Technical Support

Tel: +86-571-88864579

Mobile: +86-13735549651

Email: techsupport@sanhuid.com

Email: techsupport@synway.net

MSN: scycindy_sh@hotmail.com

## Sales Department

Tel: +86-571-88860561

Tel: +86-571-88864579

Fax: +86-571-88850923

Email: sales@synway.net

## TIPS

- **All the content and data herein have been scrupulously checked. However, we do not guarantee the absence of errors.**
- **Product specifications and relevant data are subject to conditions on the purchase contract.**
- **Our company reserves the right to modify this document without prior notice and the right for final explanation.**