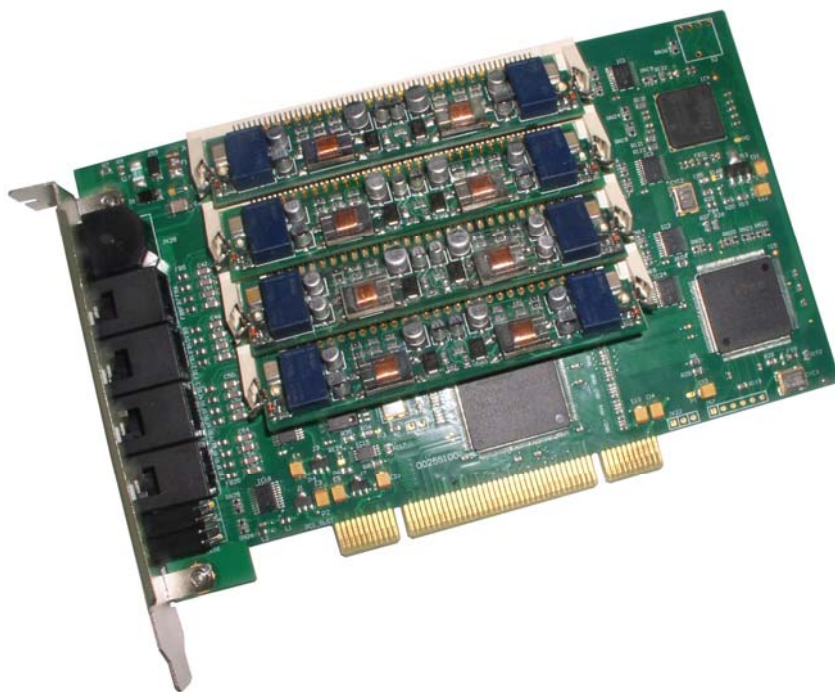




Synway FXM Series

FXM-8A/PCI
FXM-16A/PCIe
Analog Voice Board

Product Introduction



Synway Information Engineering Co., Ltd

www.synway.net

➤ Brief Introduction

The Synway FXM series are analog voice boards newly developed for Asterisk system. They can work with Asterisk system and allow various configurations by using different modules to provide all features and functionalities of common voice boards. What's more, they have the enhanced capability in echo cancellation (128ms for time delay estimation on each channel). As a link between the board hardware and Asterisk, they are only used to set up the Asterisk platform, but not applicable to secondary development.

In view of board features and functionalities, the Synway FXM series is absolutely a perfect substitute for the 800 series analog voice cards such as AEX800 and TDM800P from Digium Inc. Since the FXM board integrates the capability of echo cancellation, when using it, there is no need to purchase an extra module of VPMADT032 (to enable echo cancellation) from Digium Inc.

➤ Characteristic Features

FXM-8A/PCI

1. PCI 2.2 Bus Support

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.

2. DMA Read and Write

The use of PCI-based DMA technique for data reading and writing helps minimize the cost of the host CPU.

3. Compatible with Asterisk

Entirely compatible with Asterisk at the hardware/driver level, with all source codes open.

4. On-board SIMM Slots

Fit modules to board. Contacts on both sides greatly improve connection and ease installation.

5. Module Configurable

4 on-board dual-channel modules can be freely arranged in pairs or groups for various complex, multi-functional applications.

6. RJ11 Jack

The on-board RJ11 jack can connect directly or via a proper 2-way hub with telephone lines, making connection easy and malfunctions rare.

7. External Ringing Current & Battery Feed Power Supply

Provides station modules with battery feed, and enables the phones which are linked to station channels to ring.

8. Echo Cancellation

The self-adaptive echo cancellation feature gives the board the capability of 128ms echo cancellation so as to effectively eliminate echoes under various conditions, canceling out the effect of voice playback on DTMF and busy tones detection, avoiding self-excited oscillation and howling, and minimizing the possibility of registering wrong DTMF and busy

tones in a conference call, designed especially for VoIP application environments.

9. Voice CODEC Support

Supports the hardware-based A-law, μ -law codecs. The recorded voice files can be edited and played by audio tools such as Cooledit.

FXM-16A/PCIe

1. PCI Express Bus Support

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 and DMA transfer.

2. On-board SIMM Slots

Fit modules to board. Contacts on both sides greatly improve connection and ease installation.

3. Module Configurable

8 on-board dual-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 board.

4. RJ45 Jack

A single board has 4 8-pin RJ45 jacks, each of which can be converted to 4 2-pin RJ11 jacks via a four-way hub so as to connect with analog phone lines, making connection easy and malfunctions rare.

5. External Ringing Current & Battery Feed Power Supply

Provides station modules with battery feed, and enables the phones which are linked to station channels to ring.

6. Echo Cancellation

The self-adaptive echo cancellation feature gives the board the capability of 128ms echo cancellation so as to effectively eliminate echoes under various conditions, canceling out the effect of voice playback on DTMF and busy tones detection, avoiding self-excited oscillation and howling, and minimizing the possibility of registering wrong DTMF and busy tones in a conference call, designed especially for VoIP application environments.

7. Voice CODEC Support

Supports the hardware-based A-law, μ -law codecs. The recorded voice files can be edited and played by audio tools such as Cooledit.

➤ Operation Principle

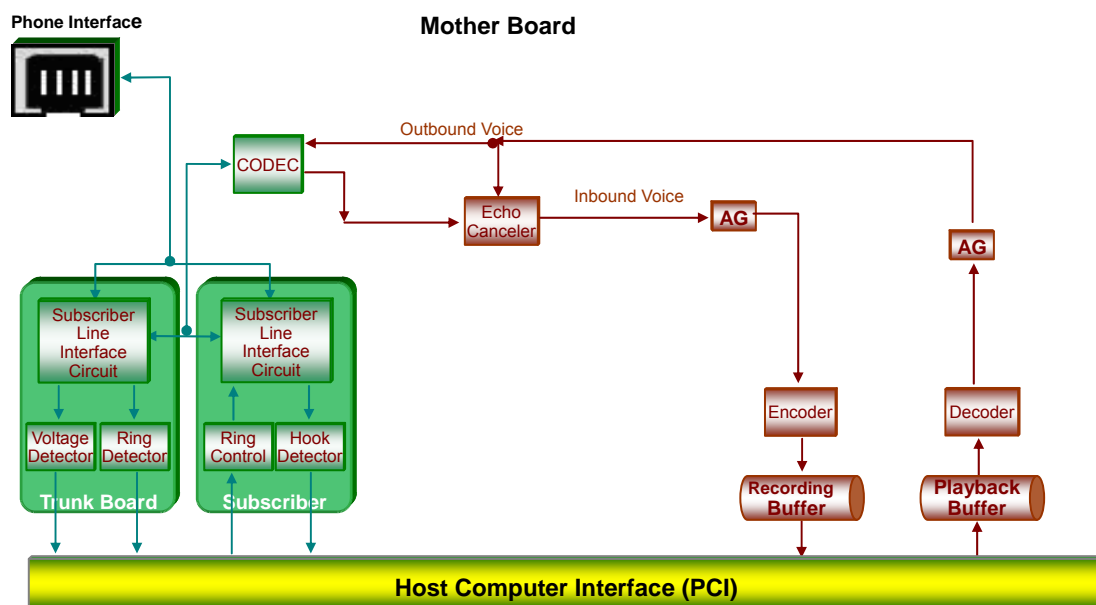


Figure 1-1 FXM-8A/PCI Operation Principle

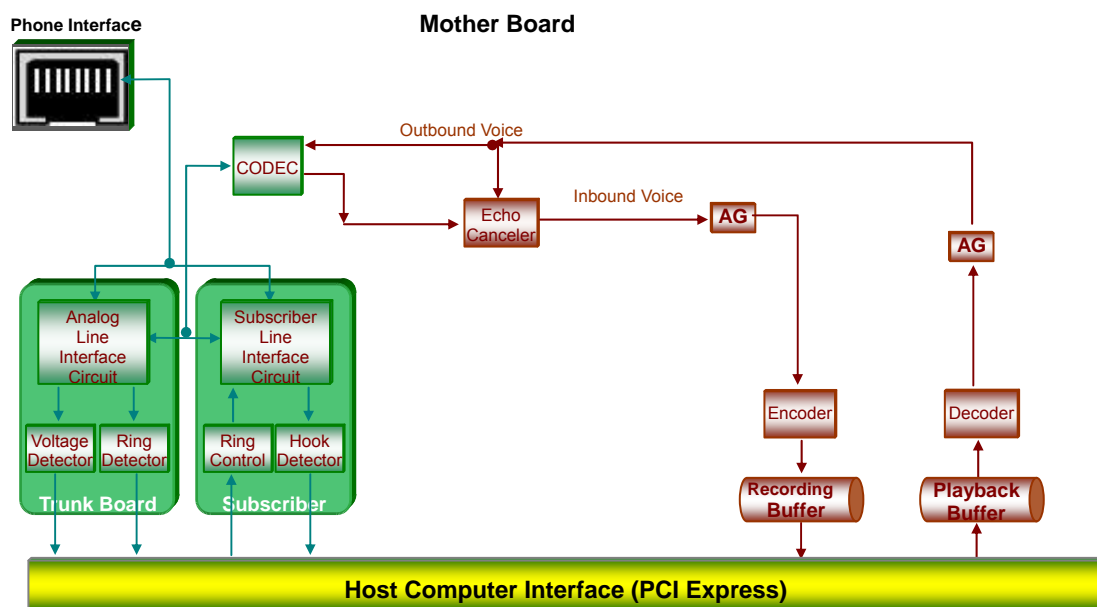
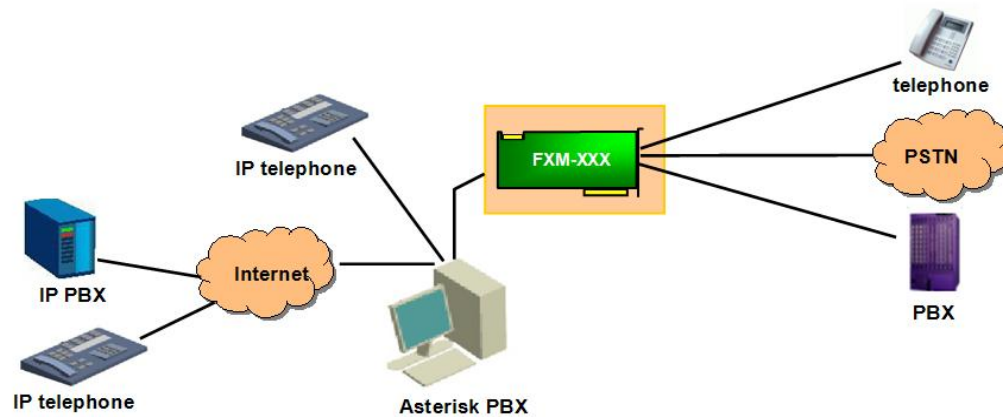


Figure 1-2 FXM-16A/PCIe Operation Principle

➤ Typical Application



xxx: represents the existing and future board models in the FXM series

Note: Refer to the section [Purchasing Guide](#) for board models now available in the FXM series.

➤ Technical Specifications of FXM-8A/PCI

Dimensions

170×115mm² (excluding L-bracket)

Weight

≈120g (Excluding modules and external power supply)

Environment

Operating temperature: 0℃—55℃

Storage temperature: -20℃—85℃

Humidity: 8%—90% non-condensing

Storage humidity: 8%—90%
non-condensing

Input/output Interface

Ring current & battery feed power supply jack: One 4-pin MPC-4

Telephone line jack: Four 4-pin RJ11

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 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 only)

Impedance

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

A-Law 64kbps

μ-Law 64kbps

Sampling Rate

8kHz

Safety

Lightning resistance: Level

➤ Technical Specifications of FXM-16A/PCle

Dimensions

280×111mm² (excluding L-bracket)

Weight

≈200g (Excluding modules and external power supply)

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: Four 8-pin RJ45

*Ringing current & battery feed power
supply jack: One 4-pin MPC-4*

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 10 boards concurrently per system;
up to 16 channels per board*

Power Requirements

+3.3V DC: 3A

+12V DC: 0.5A

*Maximum power consumption: ≤12W
(PC power only)*

Impedance

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

A-Law 64kbps

μ-Law 64kbps

Sampling Rate

8kHz

Safety

Lightning resistance: Level 4

➤ Purchasing Guide

The Synway FXM Series analog voice boards provide a complete range of features to meet all requirements.

➤ Model Description

Model	PC Bus	Voice Channels	Voltage Detection	Echo Cancellation	Tone Detector	ANI	G.729A MS-GSM	DTMF Detector	Board TDM	Between-board TDM
FXM-8A/PCI	PCI	8	√	√	—	—	—	—	√	—
FXM-16A/PCle	PCI	16	√	√	—	—	—	—	√	—

➤ Technical/sales Support

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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.
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