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# CAS2000 series Hardware Manual

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CAS2000 Series

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Version: 1.1



## Warning

Thank you for your purchasing CAS2000 Ether audio Router developed by our company. Human and high-tech essences are fused in our products. CAS2000 series will give you one brand-new application experiences.

Please follow the steps to protect your products, work area and personal safety, in order to avoid the potential danger of damage.

### When you are using CAS2000 equipments:

Please follow the steps when you are using CAS2000 equipments,



**Warning:** Don't operate CAS2000 equipments when you demount the covers (including cover, front panel, and back panel and so on).

- Please make sure the voltage of the CAS2000 according to local AC voltage standard, in order to avoid to damage CAS2000 equipments.
  - There are 115V/60Hz in most of countries and districts in South America, North America and Far East, e.g. Japan, Korea and Taiwan.
  - There are 230V/50Hz in most of countries in Europe, Middle East and Far East.
- Please make sure the electrical outlet is unplugged before interior setup of CAS2000 equipments, in order to avoid to damage main board of CAS2000 equipments. Some main boards are electrified still when the equipment is plugged.
- Installation and servicing should be performed by qualified and experienced personnel.
- Please make sure all the cables of CAS2000 equipments and peripheral equipment are connected to the correct ground electrical outlets, in order to avoid electrical shock. All the cables are equipped three-phase plug to ensure they are grounded correctly. Don't use the unidirectional plug and don't remove the pins from the cable. Please use three-phase cable with correct ground electrical outlet if you need to use extension cords.



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- Don't use CAS2000 equipments in thunderstorm, in order to avoid the potential risk of electrical shock.
  - Don't connect or disconnect any cable and don't repair or reconfigure the product in thunderstorm, in order to avoid the potential risk of electrical shock.
  - Please make sure the connection of CAS2000 equipments and electrical outlet is severed before cleaning.
  - Make sure that CAS2000 equipment's power is off when you clean it. Clean your CAS2000 equipment exterior casing regularly with a soft and dry cloth or a fluff brush. Do not use liquid or aerosol cleaners which maybe include caustic or flammable substance.
  - Wait for a period about ten seconds before severing the connection of peripheral equipment and CAS2000 equipment, in order to avoid damage to the system board.
  - Pull out the cable from the network adapter which is on the back of CAS2000 equipment first and then pull out the cable from the network hole, in order to avoid short circuit when you sever the connection. Plug the cable into network hole first and then plug the cable into network adapter when you reconnect the products.
  - Please use surge protective device, circuitry adjuster and UPS, in order to avoid instantaneous high or low voltage damage to CAS2000 equipment.
  - Make sure there are no goods exert pressure on cables. Do not make cables exposure, which will cause trample and stumble.
  - Never push objects of any kind through openings of CAS2000 equipment as that may cause interior short circuit and result in fire, electric shock, or other hazards.
  - Do not use CAS2000 equipment near a source of heat and don't jam the refrigeration vent. Don't make paper underlie CAS2000 equipment. Use CAS2000 equipment in ventilated area and don't locate CAS2000 equipment on bed, sofa or carpet.
  - Never spill food or liquid of any kind on the CAS2000 equipment.
  - Do not use the CAS2000 near water or other liquids, or in rainy/moist situations. If liquid gets into your CAS2000, turn it off and take it to your dealer for inspection.
  - Water and/or Moisture Do not use this equipment near water or in contact with water.

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## Technical instructions



**Warning:** Perhaps there are some mistakes of description and printing in technical instructions

- With the rapid technical development, our products keep on improving and renewing, so there are may some demoded or useless specifications about some standards in this manual.
- We are very conscientious for reorganizing this manual, but we do not guarantee there is no negligence or mistake in this manual, and we can't exclude the possibility that this manual will be renewed again. If there are any revises, we will not give notice any more.
- If there is any revises in this manual, it will be promulgated in Digispider Website: <http://www.digispider.net>

## Do not tear up any label



**Warning:** Please do not voluntarily tear up any label on CAS2000 equipment; otherwise it will affect to recognize the standard of product maintenance deadline.

- All labels on CAS2000 equipment show information when the products are manufactured and sold, these labels are very important for technology recognition and maintenance of products.
- All labels on CAS2000 equipment are belonged to recognized standard of product maintenance deadline. If you voluntarily tear up them, it will affect to recognize the standard of product maintenance deadline.

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## Looking for help



**Warning:** Do not attempt to repair this equipment yourself, or it will damage your equipment and result in serious results, e.g. personal injury.

- All CAS2000 products are manufactured by DigiSpider Inc., All maintenance should be performed only by authorized Units.
- Do not attempt to repair this equipment yourself. Refer all repairs to qualified service personnel.
- If there is any question, please contact the dealer you purchased CAS2000 equipments from, you also can call Digispider customer service, ask for help.



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# ABOUT THIS GUIDE

This manual will help you to be acquainted with the products and functions of CAS2000 Series Ether audio Router, by presenting the methods of installation, configuration, operations and maintenance. If you encounter any problem, or it is the first time for you to use Digispider's CAS2000 Series, please read this manual first for relevant information and technical supports. As for its upgrades and updates, some descriptions and illustrations in the manual may be different with your hardware. Please visit <http://www.digispider.net> from time to time for the latest documentation.

## HOW TO USE THIS MANUAL

Read it in any order you like.

You may begin with any page and skip to the desired one. It will surely provide you with a complete flowchart if you read it from the beginning to the end.

There are Table of Content and Index in the manual, providing different research methods for various reading habits.

If you encounter any unknown words or expressions, please refer to the attached "Glossary".

For the person who use the system for the first times:

We recommend you read all the content of the manual, especially the information with words of "Note, Caution and Warning". You are required to operate strictly according to the prospectuses in the manual.

During the installation of hardware, frequently read the "Safety Guidelines" section of the manual.

For ordinary users

As for system administrator and operator, they may read the necessary information at their own choice. Please refer to the "General description" section of the manual for specific description. If the manual can't solve the problem, please contact the technical support personnel and trained & qualified engineers for the solution.

For experienced and qualified engineers:

For the reason that our products keep on upgrading and updating, please make attention to the update information of the manual. The specific update information is easily accessible at the all time on our service and support website, which will be incorporated into the last version of manual.

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## PREPARING FOR INSTALLATION

In consideration of safety and convenience, we recommend you prepare the following tools before the installation. If possible, prepare multi-meter and electric soldering iron for some special conditions.



### **Cross screwdriver**

Used in most procedures. Choose one with good magnetic head.



### **Pliers**

Used as an auxiliary tool for drawing out power connecting wire or removing panels.



### **Nippers**

Used for picking up tiny screws or configuring wire jumper.



### **Rubber gloves**

Used for preventing injury and electrostatic discharge.



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## **GENERAL DESCRIPTION**

Part 1: "CAS2000 SYNOPSIS" contains the main features, hardware configuration and specifications of CAS2000 Series Ether audio Router.

Part 2: "Basic Operation" contains the applicable Ethernet mode and operation steps for installing CAS2000 Series Ether audio Router

Part 3: "Technical Specifications" contains the specifications for various interfaces and their dimension.

Part 4: "Glossary" contains the explanation of some terms used in the manual.

## **ANNOUNCEMENT AND PROVISIONS**

The manual prepared by Digispider Inc. does not provide any form of guarantee, clear or implied, including but not limited to, implied guarantees or a special-purpose commercial reasonableness. In some areas of specific transactions is a clear or implied guarantees, therefore, this statement may not apply to you.

The manual may contain technical inaccuracies or typographical errors terminology. Identify changes and updating information regularly updated content will be updated to version. Digispider Inc may make improvement or updates for the products and procedures described in this document, at any time as it sees fit. The manual applies to CAS2000 Ether audio Router configured with different channels.

For more technical information, please consult your Digispider Inc sales representative and retailers.

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# Chapter 1 CAS2000 SYNOPSIS

The CAS2000 can transmit or receive digital audio signals in real time on a CobraNet Ethernet network .The audible delay is less then 5 millisecond .The CAS2000 can carry the control and monitor data with Simple Network Management Protocol(SNMP) through the same network. For more information about the CobraNet technology, please refer to website: [www.cobranet.info](http://www.cobranet.info).

The CAS2000 can work in Ethernet mode. In Ethernet mode, several CAS2000 devices are interconnected by Ethernet switches. The maximum CAT-5 cable length is 100 meters.For greater distance ,CAS2000 with fiber optic interface can be used .

The CAS2000 consists of 4 part: mother board , CobraNet module, I/O boards and power supply.The block diagram is as figure1

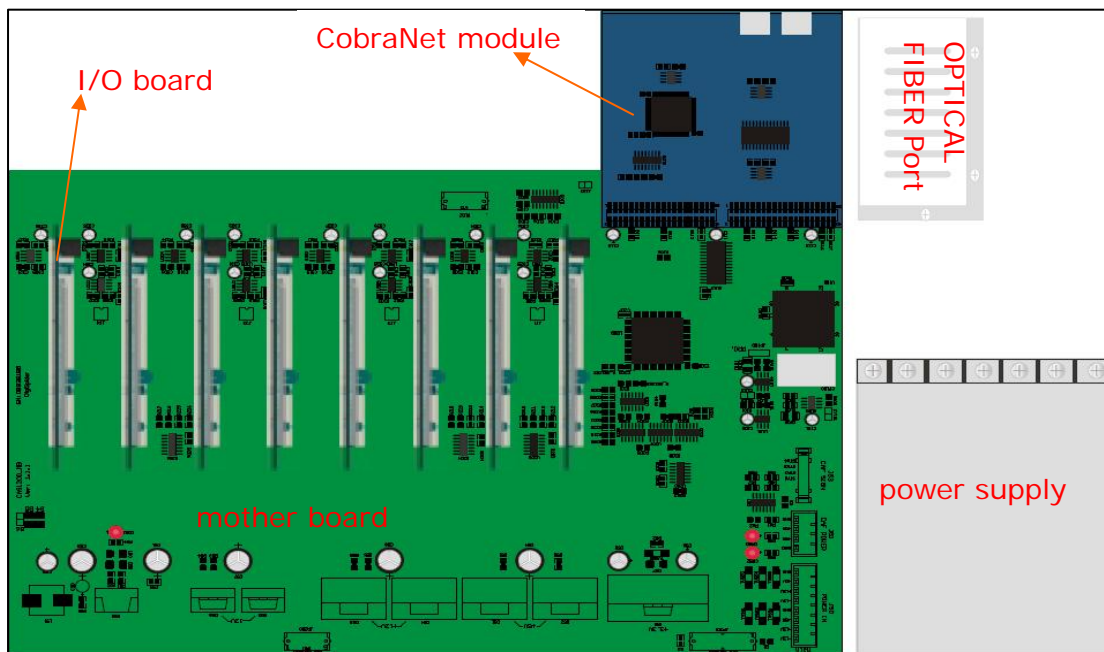


Fig1.CAS2000 Block Diagram

The CobraNet module providing a CobraNet compliant interface is the digital engine of CAS2000 .

The mother board contains the control hardware and software interface to the CobraNet module, controls the Analog to Digital (A/D) converters, the Digital to Analog (D/A) converters and AES in/out .The mother board also scans commands coming from network or RS232 port .

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I/O board may be a Analog audio in(ADC ) board ,a Analog audio out(DAC ) board or a Digital audio(AES)I/O board.The ADC's or DAC's gain is adjustable. A mother board contains 8 I/O slots, can plug the ADC ,DAC or AES board according different requirement.

The power supply is designed independently. The power board provides +5VDC , +12VDC , -12VDC .

## **1 THE CAS2000 FEATURES**

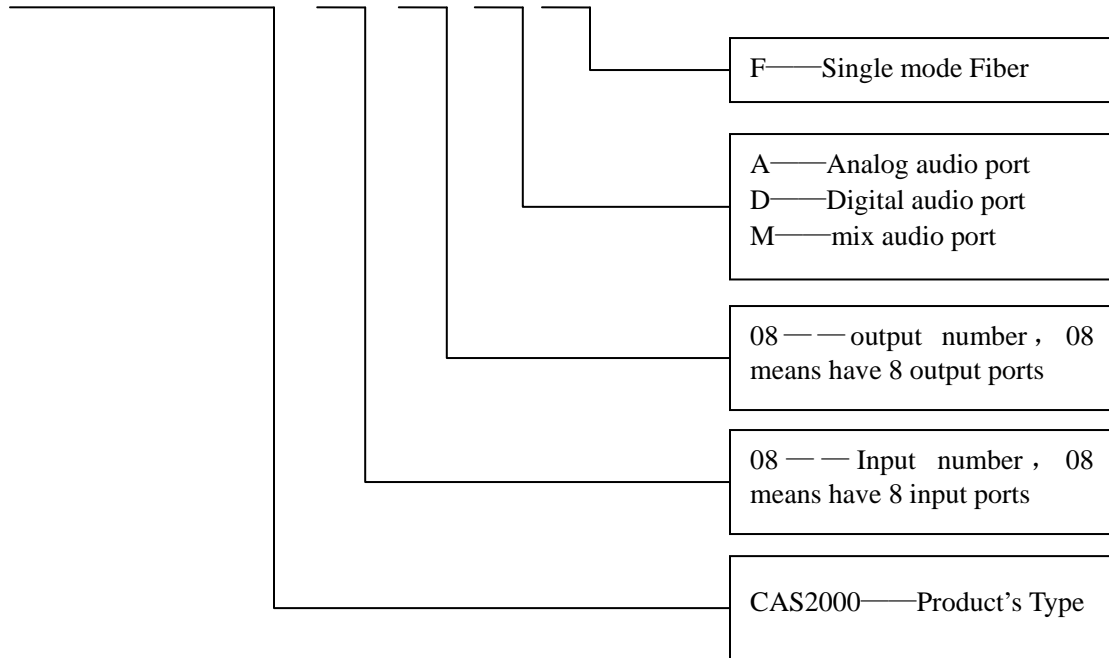
- Realize audio transmission in real time on CobraNet Ethernet network
- Configuration flexible
- Maximum 16 channels analog balanced input
- Maximum 16 channels analog balanced output
- Maximum 16 channels digital input and 16 channels digital output
- Independent MCU control
- Every received channel can be controlled independently
- Every received channel can be controlled according to schedule
- All CAS2000 setup parameters can be stored in flash memory
- Software updatable via RS232 port
- Network transmission redundantly
- Easy installation

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## 2 MODEL DESCRIPTION

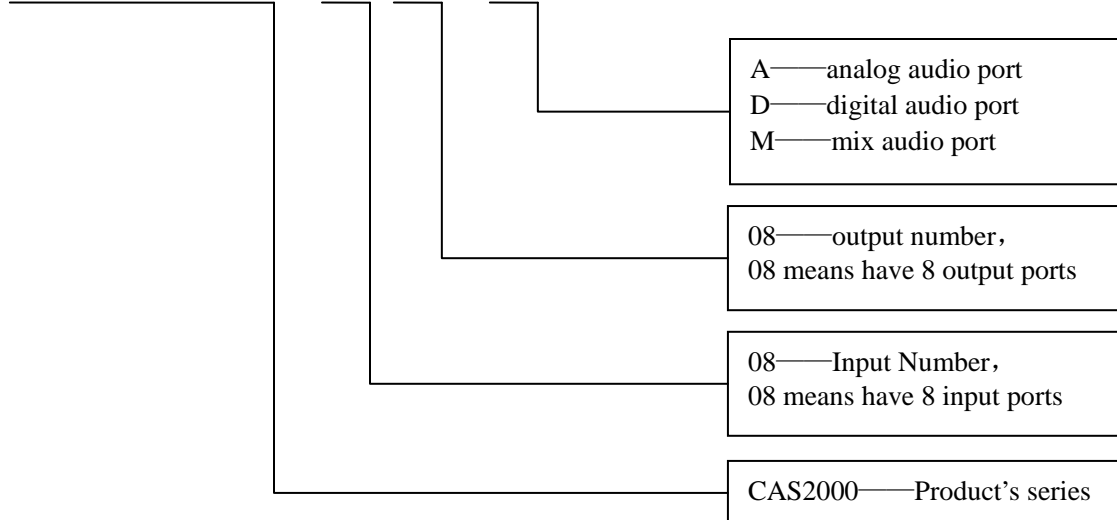
OPTICAL FIBER Port:

# CAS2000-08 08 A F



RJ-45 Port:

# CAS2000-08 08 A



### 3 FRONT PANEL

The front panel's sketch map is as figure 2

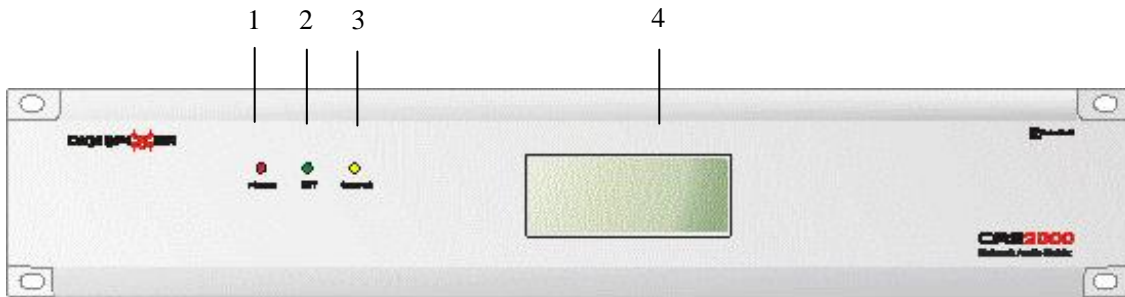


Fig.2 Front Panel

#### (1)—POWER

power status indicator LED (RED)

#### (2)—NET

network status indicator LED (GREEN).If the CAS2000 connects with the network normally ,the LED is on all the time,otherwise the LED is off .

#### (3)—STATUS

CAS2000 work status indicator LED (YELLOW ). If the CAS2000 works normally ,the LED is on all the time,otherwise the LED is off .

#### (4)—Liquid-Crystal Display(LCD )

- Normally initialization displays as figure 3, it is a CAS2000-1616D device's initializing interface.



Fig.3 LCD Initial Display

- After initializing, the LCD displays like figure 4.

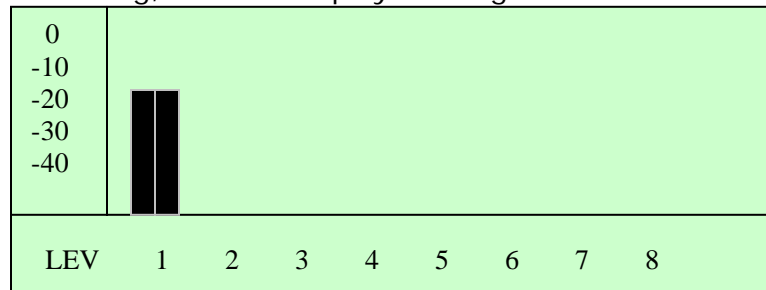


Fig.4 LCD Display after initialize

### Note 1:

The vertical represents the input signal level, "0,-10,-20,-30,-40" is the level value(dB).

The horizontal represents the input channel, "1,2,3,4,..."represents the input channel number.

The black rectangle symbols represents the channel have signal input, and the AES input would have left channel and right channel.

- After initializing ,if the CAS2000's network is disconnected, the LCD displays as figure 6

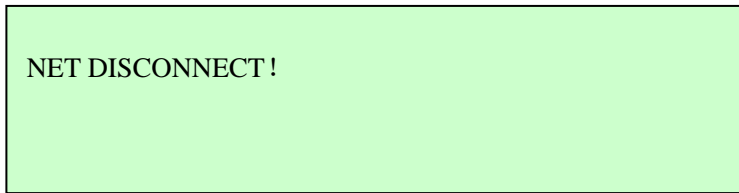


Fig.5 LCD Display when net disconnected

## 4 REAR PANEL

The rear panel's sketch map is as figure 6

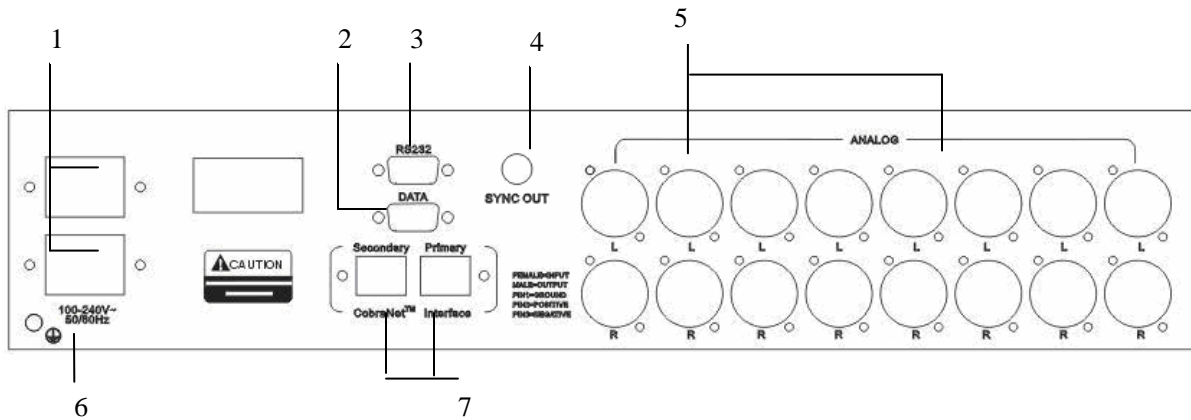


Fig.6 CAS2000 rear panel

- 1— Power sockets (primary and secondary)
- 2— DATA port (reserved)
- 3— RS232 port(reserved)
- 4— SYNC OUT(reserved)
- 5—input or output audio XLR jacks

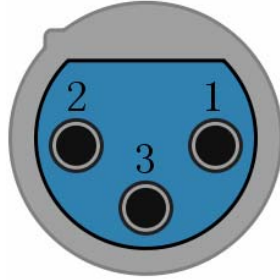


Fig.7 CAS2000 Input XLR

Balanced input (XLR)	
PIN	Define
1	Chassis ground (cable shield)
2	positive polarity terminal ("hot")
3	Return terminal "cold"



Fig.8 CAS2000 Output XLR

Balanced output (XLR)	
PIN	Define
1	Chassis ground (cable shield)
2	positive polarity terminal ("hot")
3	Return terminal "cold"

---

6— RJ45 jacks (primary and secondary )

the local sketch map of RJ45 is as figure 9

Normal status : left LED is always green ,right LED is always blinking (yellow or green )

Error status : left LED is always red and blinking ,right LED is off .

Left LED      Right LED

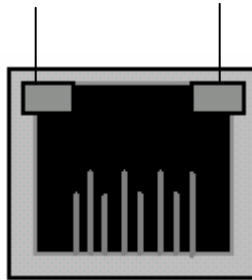


Fig.9 RJ45 Interface



**Signal Flow:**

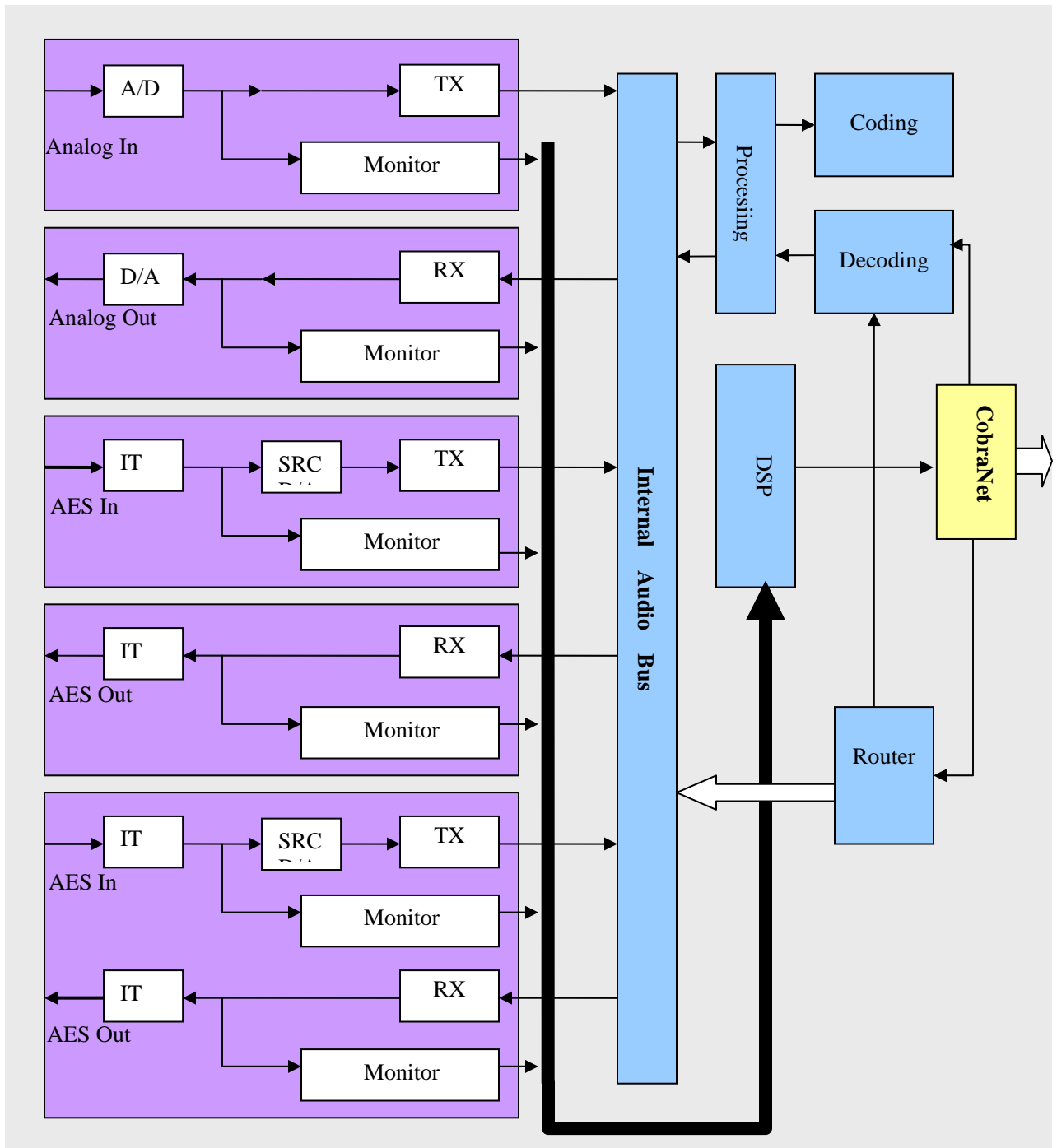


Fig10. CAS2000 Internal Signal Flow

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# Chapter 2 BASIC OPERATION

## 1 ETHERNET MODE

If one CAS2000 works on Ethernet mode, it can be controlled by The CAS2000 software . The basic operation is as follows

### First step:

Same as stand alone mode, connect all CAS devices through switches as figure 11.

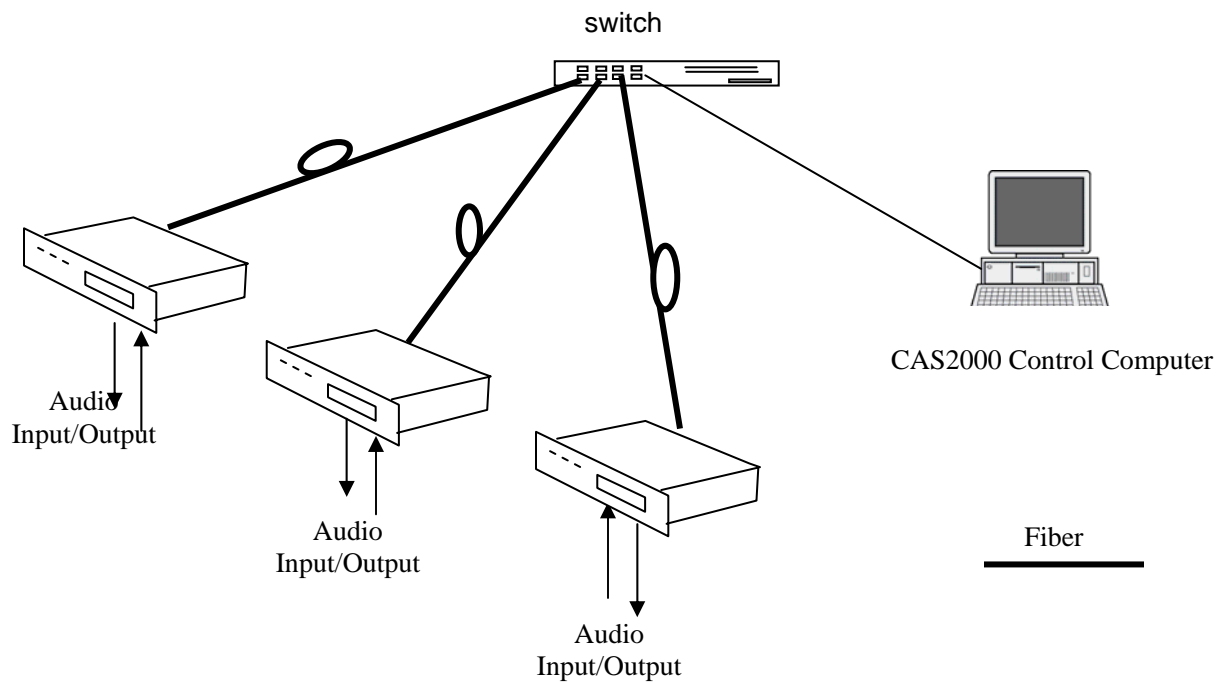


Fig.13 the example of Ethernet mode

### Second step:

Connect input audios with CAS2000'S input XRL. Connect CAS2000'S output XRL with output audio devices.

### Third step:

Open the power switch, and observe the LED status and LCD menu .Be sure CAS2000 work normally

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**Fourth step:**

Configure CAS2000 network parameters by software. (Please refer to software CAS2000 software manual)

**Fifth step:**

Control the CAS2000 router by software. (Please refer to software CAS2000 software manual)

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# Chapter 3 TECHNIQUE SPECIFICATION

## 1 ANALOG AUDIO INPUT SPECIFICATION

- 2,4,6,8,10,12,14,16 channels input configurable
- analog input converted to 20-bit ,48khz digital audio
- frequency response +/-0.2dB, 20Hz~20kHz
- THD plus noise : <0.005% @4dbu
- Dynamic range : 103dBA, 101dB
- Maximum input level: +21dBu,balanced differential
- Input impedance: 20kOhms

## 2 ANALOG AUDIO OUTPUT SPECIFICATION

- 2,4,6,8,10,12,14,16 channels output configurable
- 20-bit ,48khz digital audio converted to analog output
- frequency response +/-0.2dB, 20Hz~20kHz
- THD plus noise : <0.005% @4dbu
- Dynamic range : 103dBA, 101dB
- Maximum output level: +21dBu,balanced differential
- Output impedance: 100 Ohms designed to drive a minimum load of 600 Ohms

## 3 DIGITAL AUDIO INPUT/OUTPUT SPECIFICATION

- 2,4,6,8,10,12,14,16 channels digital input configurable
- 2,4,6,8,10,12,14,16 channels digital output configurable
- input digital audio SRC(sample rate converter)to 20-bit ,48khz digital audio
- output digital audio is 20-bit ,48khz
- THD plus noise : -113dB at 1khz
- Dynamic range : 118Db

## 4 INTERFACE SPECIFICATION

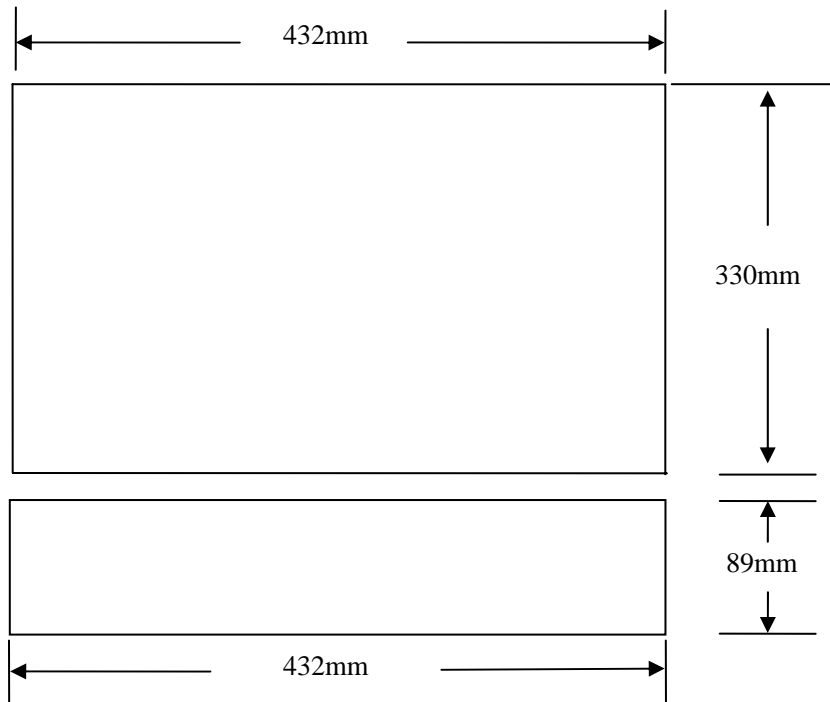
- Two RJ45 network interface
- One RS232 interface (9-pin D-type)

## 5 OTHER SPECIFICATION

- Power supply: 220ACV +/-20%,frequency: 40~60hz
- Power consumption: less than 30W
- Device dimension(L×W×H): 432×330×89 (unit: mm)
- Surrounding temperature : +5-40°C
- Surrounding humidity: 5-85%

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## 6 FIXING DIMENSION SKETCH MAP



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# Chapter 4 GLOSSARY

## **CobraNet:**

Developed by Peak Audio, CobraNet technology allows real-time uncompressed digital audio distribution over industry standard 100Base-T Ethernet networks. Up to 128 channels, 64 in each direction, can be carried simultaneously over a switched 100Base-T network (64 channels on repeater networks). CobraNet currently supports a 48 kHz sampling rate with 16, 20, or 24-bit resolution. CobraNet devices can happily coexist with networked computers, printers, etc., on a switched 100Base-T Ethernet network, however, a dedicated network infrastructure is strongly recommended.

## **CobraNet audio channel:**

In CobraNet terminology, an audio channel is one 48 kHz digital audio signal with a 16, 20, or 24-bit resolution.

## **CobraNet primary/secondary ports:**

CobraNet interfaces feature built-in redundancy, with primary and secondary ports for connection to primary and secondary networks. If an unrecoverable fault should occur on the primary network, CobraNet automatically switches to the secondary network, providing uninterrupted operation. Both ports are transformer isolated and fully comply with the IEEE 802.3 standard.

## **Conductor:**

The device on a CobraNet network that acts as wordclock master and network arbitrator. Only one device can be Conductor at any one time. If that device is unplugged or fails, another device automatically takes over as Conductor. The conductor ensures that only one device transmits data in each bundle at any one time. See also Performer.

## **Ethernet:**

The most widely implemented network protocol. The first implementation 10Base-T supports data transfer rates of 10 Mbps. The next implementation, 100Base-T (or Fast Ethernet) supports 100 Mbps. The newest version, Gigabit Ethernet, supports transfer rates of 1,000 Mbps (i.e., 1 gigabit).

## **Fast Ethernet:**

Also known as 100Base-T, the Ethernet standard that supports data transfer rates of 100 Mbps. CobraNet runs on Fast Ethernet networks.

## **LAN (Local Area Network):**

A network that exists in the same building or group of buildings. CobraNet is a LAN technology. See also WAN.

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**RJ-45 connector:**

The type of connector used to connect 10Base-T, 100Base-T, and 2000Base-T Ethernet devices.

**RS-232:**

A serial interface for connecting serial devices, offering a transmission distance of approximately 15 meters, typically using 9- or 25-pin D-sub connectors.

**Switch:**

switch know the network address of each device on the network and automatically route network traffic accordingly, so each device receives only data addressed to it.

**COBRANET device**

A device is designed according to COBRANET technology to receive and transmit audio data.

**Channel type**

A classification of input and output audio signals, depending on its type, it can be divided into analog or digital channel

**Signal Identity**

The identity of signals transmitted through audio channel, convenient for being identified by system.

**Router**

Indicating the path along which audio signals should be forwarded.