



WIRELESS CONFERENCE SYSTEM

EMMU02 USER MANUAL



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Chapter 1: Security

1.1 SAFETY OPERATION

- Please read the safety precautions carefully before installing and using the equipment.
 - Please strictly adhere to the Warnings in the user's guide.
 - Equipment cleaning: Make sure to turn off the power supply and disconnect the units before cleaning. Clean only with a dry soft cloth.
 - To prevent from any hazard do not expose the equipment to moisture or humidity.
 - Adequate ventilation is good for the maintenance of the equipment.
 - Power supply cords:
 - America, Japan: AC 110V~120V 60Hz
 - Asia, Europe: AC 220V~240V 50Hz
7. Grounding: 3-wire grounding plug
 8. To maintain the normal operation of the system, system extension cables should be discreetly routed to avoid being walked on or coreched by heavy items.
 9. The quantity of connected transceivers in one system should not exceed prescribed quantity. For service, please contact the nearest Service Center.
 10. Do not remove the cover of the equipment at will; no hard conductor or liquid substance should be left inside the products.
 11. For service, please contact the nearest SINGDEN Service Center. Do not disassemble the equipment by non-authorized personnel.
 12. All SINGDEN products are guaranteed for 3 years excluding the following cases:
 - A. All damage or malfunction caused by human negligence;
 - B. Damage or malfunction caused by improper operating by operator;
 - C. Parts damage or loss caused by disassembling the product by non-authorized personnel.
 13. Use ONLY specified connection cable to connect the system equipment.
 14. Turn off the power supply and unplug the equipment from the power supply in case the equipment is not in use for a long time.
 15. Upon receipt of the product, please fill out the Warranty Card enclosed and post it to SINGDEN Service Center nearby in your region.



TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

This label appears on the rear of the unit due to space limitations



The lightning flash with an arrowhead symbol, with an equilateral triangle, is intended to alert the user to the presence of annulated 'dangerous voltage' within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Warning: To prevent fire or shock hazard, do not expose units to rain or moisture.



Attention: Installation should be performed by qualified service personnel only in accordance with the National Electrical or applicable local codes.



Power Disconnect: Units with or without ON – OFF switch have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON – OFF switch is in the ON position. The power cord is the main power disconnect for all units.

Chapter 2: Introduction

■ System Description

Designed for wireless audio and video digital conferencing systems specifically, the system without complicated cable installation, it can configured to: Conference discussion systems, multimedia video conferencing systems, remote video conference system, the system using 2.4G band public, without any applications ,the advanced frequency hopping 2.4G DSSS and digital transmission technology which greatly reduces the impact of various interference signals, 2.4G has a unique transmission characteristics, whole have a bad ability of passes obstacles, so it can prevented the leakage of signals, digital transmission technology, consummate communication protocol to ensure security of the conference content, system that can meet the needs of ordinary fixed conference room, and can also set up a mobile conference room, and in the convenient premise, providing a highly reliable conferencing solutions.

■ Features:

1. The system uses worldwide public 2.4G ISM band (2400-2483MHz), no need complex cable installation, no need troublesomely frequency application.
2. Digital encryption self-adaption frequency hopping spread spectrum technology, high confidentiality.
3. Configurable 1-999 microphone units as needed. Under FIFO mode all microphone unit can click the TALK button to start to speak. The default number of speaking simultaneously is limited to the last 4 people. The number of speakers can be set to 1-4 in the host.
4. "FIFO", "LIMITED", "LIMITED TIME", "CHAIRMAN" 4 kinds of discussion mode, you can easily realize conference management.
5. Any chairman unit can initiate a vote.
6. 4 input 1 output video signal control and automatic tracking of the current speaker.
7. 24-bit PCM high precision audio signal quantification processing, lossless wireless transmission, the sound quality comparable to wired.
8. Built-in frequency shift, feedback suppression, intelligent balancing, etc anti-howling functions, effectively enhance the sound transmission gain.
9. 1 system with 1 host, 1-999 microphone units. Microphone units including delegate unit and chairman unit, delegate unit can be set as VIP, both units can be used in any combination statement.
10. Chinese and English interface optional, user-friendly menu, easy to operate.

■ Safety Criterion

CAUTION: To prevent electrical shock hazard, do not expose the system equipment be exposed to rain or moisture

1. Please read and note to the stripe with a warning symbol, these provisions will provide important safety information.
2. The EMMU02 have been grounded by the power line.
3. To prevent the risk of electrical shock or leakage, do not open the EMMU02chassis;
4. Make sure that any substance or liquid into the system equipment, to prevent short circuits.
5. Do not secretly conduct instructions without mentioned on the dimension if any of the following circumstances occur, please contact repair center.
 - A. Any system device cannot work properly (or some of part normal work).
 - B. the power line of EMMU02 be broken
 - C. substance or liquid into the system equipment
 - D. mechanical parts subject to severe impact.
6. Please pull out plug if the machine is free long time
7. Smoke situation, immediately shut down the system and disconnect the EMMU02 power supply.
8. System equipment with digital circuits, although these devices are complete anti-interference in the radio interference measures, but when close to the radio, television or High power radio transmitters, and may still electromagnetic interference. If there are any problems, Please stay away from the system interferes.

■ Installation / warnings

In order to properly install the system and avoid electrical hazards, this chapter must have professional and technical qualified engineering staff responsible for this content, it is not important to the user; the user does not need to reading. As the supply voltage of EMMU02 is quite high, easy to produce the risk of electrical shock, and Do not turn on the power before completing the installation and connection

■ Connect / Warnings

Please read general information prior to the installation system and following points:

1. The system only requires 115/230V power supply is EMMU02. Note the back of the AC power toggle switch carefully.
2. Conference microphone unit and antenna must be in the same visual environment, and they can not be cover such as walls, screens, ceilings, etc., if want to built-in antenna, please choose wooden materials, cloth, or other low density non-metallic materials.
3. The antenna cable between the antenna and the host use a dedicated SYV-50-5 antenna cable. The antenna cable is longer than 2M, must use antenna signal amplifier, the antenna signal amplifier must be connected to the antenna at the end of antenna,
4. Microphone may use two 1.5V AA batteries, and also support the 1.2V NI-MH battery, please note that the bottom of microphone the battery toggle switch in the correct position
5. Outer plate of EMMU02 must be grounded properly, for safety of operation
6. The antenna divided into Omni-directional antenna and directional antenna, base on requirement of different venues, choose the corresponding position of the antenna and microphone installation, antenna installation instructions detail please refer to system debug gin

■ Installation / warnings

The EMMU021 heat removal or ventilation is required, Avoid direct sunlight and away from heat (Figure 6.1), avoid the equipment placed on the vibration desk and to exposure damp, a little snow or rain and dust, it can be placed on the desktop or plane because of rubber supporting point, or use of special accessories can be installed in cabinet.

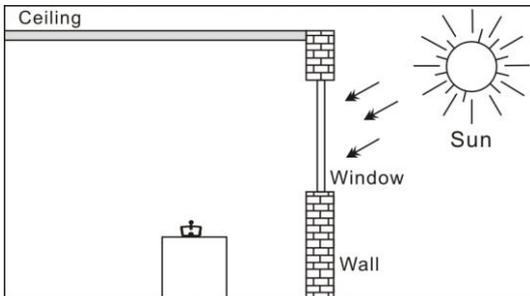


Figure 6.1: Away From Sunlight

■ Connection Warnings:

Before turn on system, please check all connection to ensure that no short circuit. The entire system needs to be installed under the circuit standard electrical system standards.

Note: cable away from the following places In order to avoid “hum” or interference generated by the electromagnetic induction:

1. Generate strong electromagnetic field equipment (such as large power transformers)
- 2.AC power supply wire
3. High-power acoustics wire

▲ CAUTION:

1. Please make sure the voltage values is same with input voltage values, if not, please contact repair center.
2. Connected parts of the input circuit must be connect to ground
3. When Thunder, shut doors and windows; stop to use the equipment, it is best to unplug the power cord, below conditional circumstance, it will be best to installed arrester, (Figure 6.2)

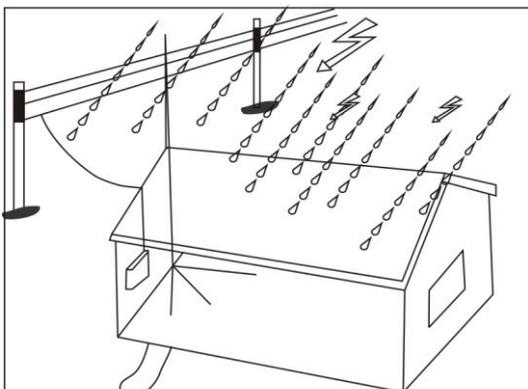
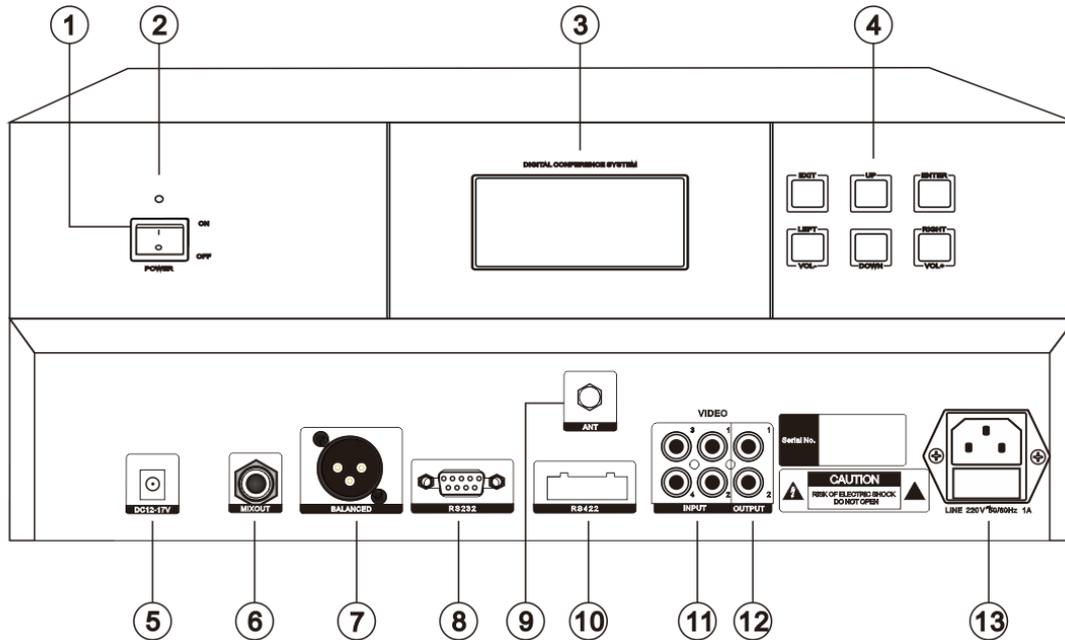


Figure 6.2 Avoid lightning

Chapter 3: Function.

■ 3.1 EMMU02 Host Unit Functionality



- | | |
|--|--|
| <p>1) ON indicator light
When the machine is turned on, red light</p> <p>2) Power switch
When the switch is set to the ON position, turn on the machine</p> <p>3) Display screen
Display a variety of information and microphone state</p> <p>4) Multi-function keys</p> <p>5) 12V-17V DC power input socket, inside positive, external negative</p> | <p>6) Mixed audio signal output socket</p> <p>7) Balanced audio signal output socket</p> <p>8) Central control machine connecting interface (RS-232, 9600pbs)</p> <p>9) Antenna cable SMA interface</p> <p>10) Control camera RS-422 interface, pin3-, pin4+</p> <p>11) 1-4 video signal input socket</p> <p>12) Video signal output socket, dual port parallel output</p> <p>13) Main power input socket
220V AC input socket</p> |
|--|--|

■ EMC02 Chairman Microphone Unit Functionality



- 1) Microphone stem socket
- 2) "PRIOR" bottom, Priority function, overrides all the active delegate units
- 3) "TALK" bottom, start up and shutdown functions

- 4) Display screens to show microphone id
- 5) Charging port
- 6) Power button

■ EMD02 Delegate Microphone Unit Functionality



- 1) Microphone stem socket
- 2) "TALK" bottom, start up and shutdown functions
- 3) Light indicator

- 4) Display screens to show microphone address
- 5) Charging port
- 6) Power button

Chapter 4: System Inventory.

The box designed according to product safety, rationality of the assembly parts. Nice, good safety performance. Which can be placed on conference microphone unit, rechargeable battery, manual, warranty card, and other accessories .Conference microphone unit will be good protect in a block of foam, reduces damage in an accident

■ Hosts Unit Inventory. (Figure 9.1)

NAME	MODEL
Conference host unit	EMMU02
host power cord	
warranty card copy	
Host instructions	

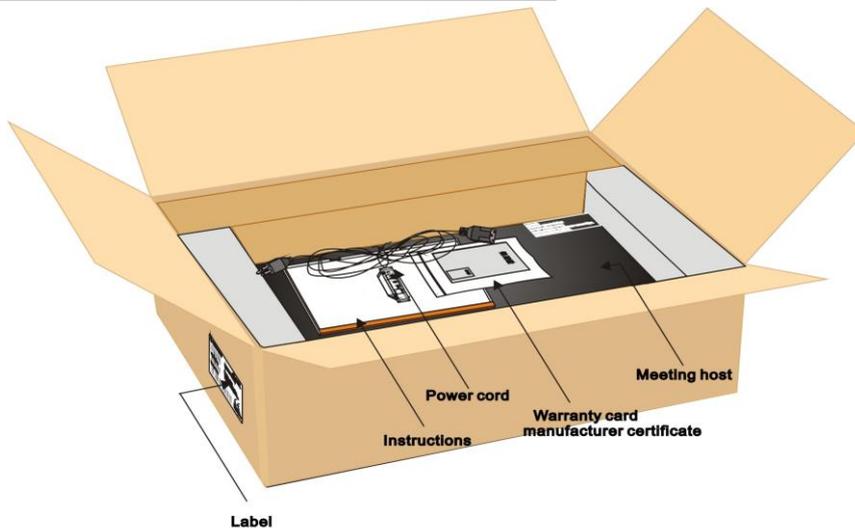
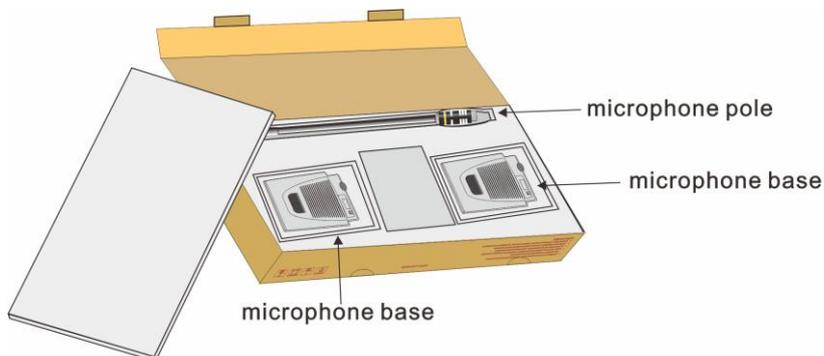


Figure 9.1

■ Microphone Unit Inventory (Figure 10.1)

NAME	MODEL
Microphone unit	EMC02/EMD02
Microphone pole	
warranty card copy	
AA rechargeable battery	



■ Note

1. when receipt this product, you should pay attention to check the packaging is intact, packaging case of damage please check the box whether the product is damaged, if damaged, can be rejected, and please contact the supplier.

2. the purchase of this product, please carefully check all original accessories are complete, cover the end of the meeting microphone label on the box label coding, and any discrepancies, please contact supplier.

■ Accessory**EM63****Directive Antenna**

Connected to the main unit EMMU02 directly, no need any external power supply.

Transmission range: 30m (Directional)

Installed in the microphone working venue, effective protection of system stability and management.

Extend line up to 10M.

Dimensions: 208x178x45mm

**EM34****Pro-AMP**

Connected to the wireless receiver EM37/EM36 directly, no need any external power supply.

The signal amplification, so make the microphone connection to be more stable

Dimensions: 68.5X51X23mm

**EM48**

Charger (charge for 12pcs microphone one time)

World -wide voltage adaptable (100-240V)

Dimensions: 344*224*84(mm)

**EM35**

NI-MH rechargeable battery

EM35 is Ni-MH AA rechargeable batteries

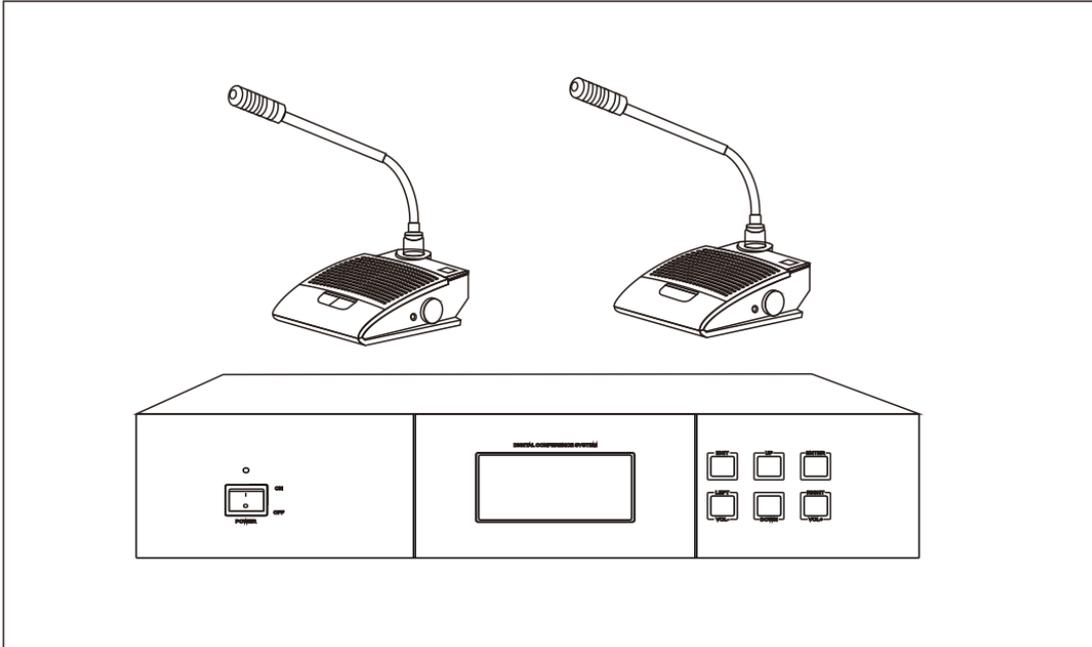
4 hours charging for saturated time, 30-hour operation with fully charged battery

Capacity: 2000 mAH

Size: 50.5*14mm

Chapter 5: Installation Guide

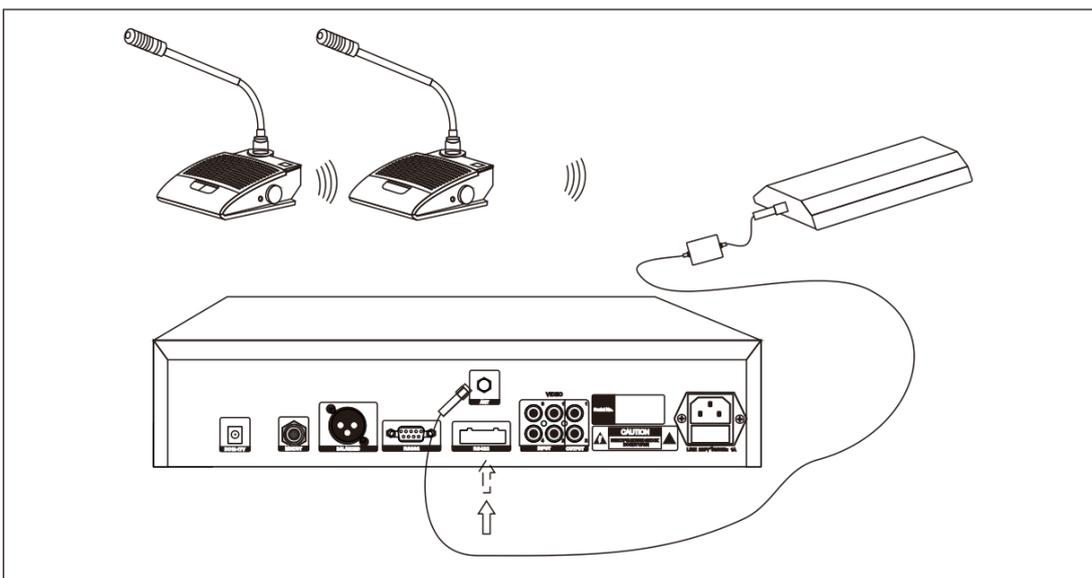
- System components. Conference host unit, chairman microphone unit, delegates microphone unit (Figure 12.1).



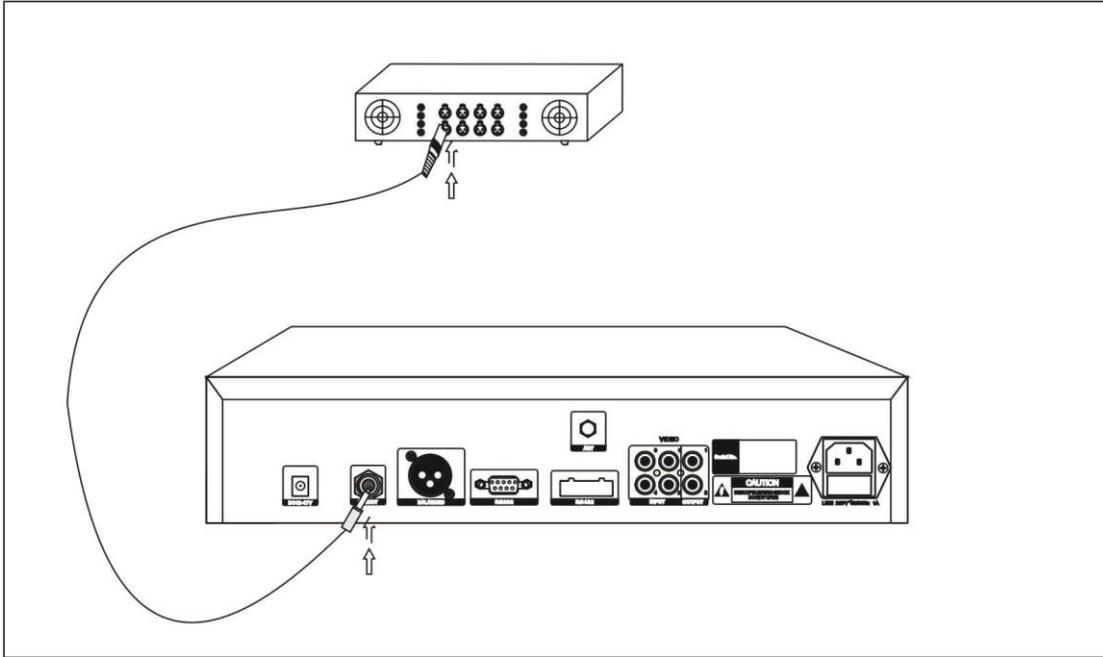
■ System Installation

1. The antenna divided into Omni-directional antenna and directional antenna, base on requirement of different venues, Do first the first connection now, Omni-directional antenna is suitable for that the conference main unit and microphone use in one room.

1. Now we do the second connection, directional antenna is used when the conferment main unit and the microphone are in different rooms. Leads directly from the control room to the meeting room, put the antenna box on the wall (Figure 13.1)



2. Using a special audio cable connect EMMUO2 conference host with amplifier. (Figure 13.2)



Chapter 6: Debugging.

System Connected and installation.

The system has two installation solutions for different conference rooms and limitations of site layout.

1. Do the first connection now, Omni-directional antenna is suitable for that the conference main unit and microphone use in one room. And it can get the single 360 degree, generally placed the Omni-directional

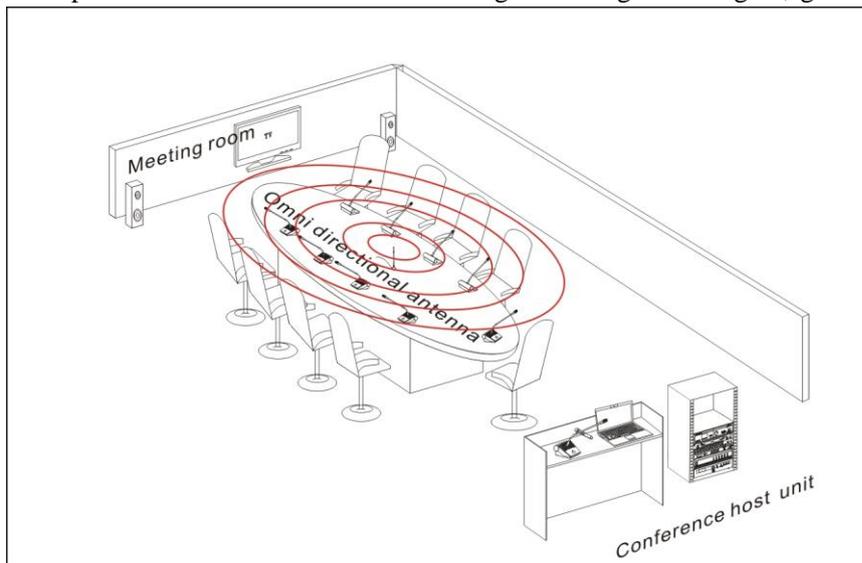


Figure 15. 1

antenna in the middle of the conference microphone units, distance of microphone units and the antenna can not be greater than 2 m.

2. Now do the second connection, directional antenna is used when the conferment main unit and the microphone are in different rooms. Leads directly from the control room to the meeting room, put the antenna box on the wall (Figure 15.2)

Directional antenna is in front of microphone units, range of receiving is 180 degrees horizontally and 38 degree vertically. General put it up on the wall. Distance of microphone units and the antenna can not be greater than 20 m.

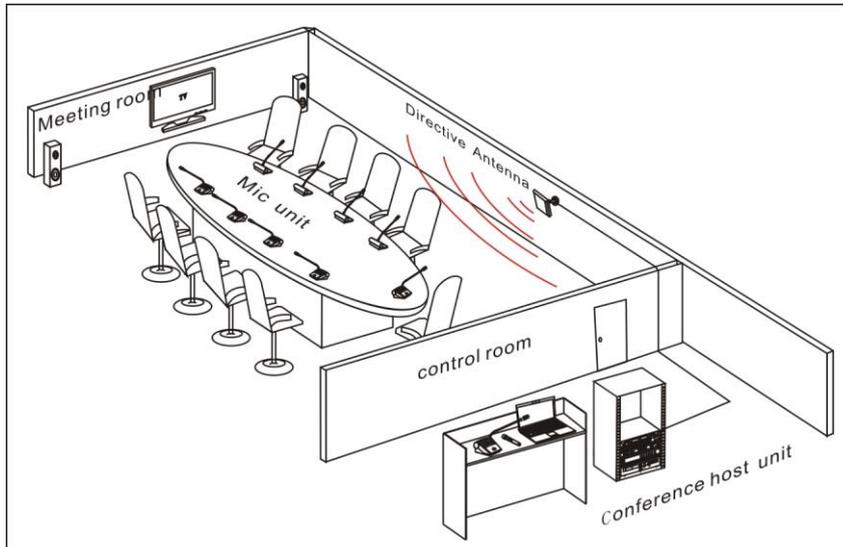
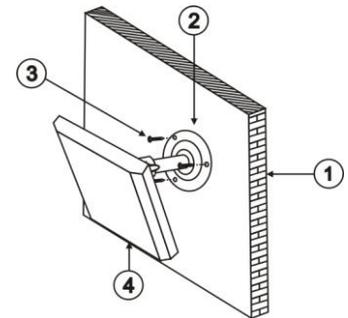


Figure 15.2



Installation diagram

- 1. Wall 2. Bracket
- 3. Screws 4. Antenna

Battery service regulations

Microphone using the standard 14500 battery, you can use 1.5V/2000MAH alkaline batteries, also support 1.2V/2000MAH NI-MH rechargeable batteries, In the case of ordinary alkaline AA batteries, place the red DIP switch "2" to "ON" position, In the case of NI-MH rechargeable batteries, place the red DIP switch "2" appropriated "OFF" position, so that the microphone can get reliable power supply properly, note , remove the battery If you don't use microphone for a long time(have to take out of iron pan)

■ Camera connection

Camera communication is RS-485; the communication protocol supports Pelco P, Pelco D, and SONY. Baud rate is 9600 (not modified), support up to 3 camera balls, and expanded to 8 camera balls by computer, the connection is tandem connection, if the line did not connect to the device, set connect the 485+ and 485- together by - 120 ohms to prevent signal reflection and interference

please Connect camera ball 485+ to the host unit 485-B Socket, connect 485- to the host unit 485-A, all ball machine should be consistent with this standard. Panoramic bit of the system default is one ball 63 preset positions, also modify by the computer.

View the available two-core line view of transmission line, if length of the line more than 100 m, please use shielded cable, shielded cable connected to the earth wire of ground alternating current, Specifications are as follows (maximum support distance is 300M)

0-30 m	2 * 0.5 RVVP cable
50-100 m	2 * 1.0 RVVP cable
100-200 m	2 * 1.5 RVVP shielded cable
200-300 m	2 * 2.0 RVVP shielded cable .

connection of video signal

This system can support input signal of the three ball machines, and setup the main output automatically, this system has a three -way video input, three -way video output, two -way main outputs, the video input of the ball machine is connected to the No.17 port, No.20 port as the main output, single video signal connect to No.17 port.

Connection of audio signals

This system with one-way non-equilibrium output (No.14 port), one way balance output (No.15 port), one-way to non-balanced audio output (No.13 port)

■ Camera ball preset settings

CDD ADDRESS (5) for the 2nd camera ball-tracking microphone start bit,(6) for the 3rd camera ball-tracking microphone start bit, operation by binary mode, left is the Most Significant Bit, such as (5) 001 010, it is 10 (decimal digit), that is mean the No.2 camera tracking start bit is No.10 microphone. As (6) DIP 001 010. It is 10 (decimal digit). That is mean the No.3 camera tracking start bit is No.20 (sum of 5 and 6) .now. The conference main setting: the No.1 camera is tracking No.1-No.9 microphone, the No.2 camera is tracking No.10-No.19 microphone, and the No.3 camera is trackingNo.20 microphone to another microphones

Camera ball preset settings

Control by a computer or camera ball equipment, and setup the preset, Match Camera ball preset and the correspond microphone, For example, tracking the No.1 camera ball to No.1-No.9 microphone, setup No.1 camera corresponding to No.1-No.9 microphone positions; tracking the No.2 camera ball to No.10-No.19 microphone, setup No.2 camera corresponding to No.10-No.19 microphone positions. And so on.

Debugging system

Check the all connected cable in properly, Turn on all the microphones power switch, wait for 10 second, then turn on the host unit, at that moment, the host unit can star scan how many microphone have been connected, it will take some time, after scanning is complete, the host display screens “1” position will show the number of microphone has been connected, the quantity should be consistent as the microphone have been connect. if not ,please refer to the relevant part of system maintenance

System has to enter the working mode

turn on any microphone when press the “TALK” button, “TALK” indicator and indicator of microphone are red light, the microphone can be speech.

Speech control

FIFO mode: setup the quantity of delegates (max 4 pcs). If active microphones are over the pre-set quantity, turn off the first active microphone automatically. Except for VIP microphone, VIP microphone is controlled by itself and the chairman unit microphone

Priority control

President microphone priority function is turned on, the chairman microphone unit TALK light will be green, at this moment , all active microphone will turn off automatically, all the Not-chairman microphone can't turn on before the chairman shut off, this system can support 4pcs microphone, when we turn on another chairman unit microphone , they can't effect each other .

Video automatic tracking

System enables star video-tracking mode by button, the system automatically track to the microphone which turn on last time,

if the tracking microphone is closed, the camera returned to the last open speech microphone automatically, such as all the microphone are closed ,camera will return to a panoramic view of the preset position automatically, the system default panorama preset is 63 preset position of the No.1 Camera .

■ Video switching

This system comes with an three in one out automatic video switching system

■ Audio output

The main output volume of this system is 600MV

under working state, turn on 4 pcs microphone .open state of the four microphone to speak to the host of the volume is raised to 20, gradually increase the volume of after-class audio equipment, until the emergence of acoustic feedback phenomenon, then, the volume of the host received as small as 18, to ensure the stability of the voice in the meeting,

This system uses a digital feedback suppression technology, pickup distance can be up to 60CM

After audio equipment such as balancing equipment, reasonable adjustments can obtain better results

■ System Setup Operating Instructions

(1) System Chinese language interface or English language interface selection:

After the host is power on, the LCD display the following picture



If the arrow points to the ENGLISH, the language of the system (including the host and microphone units) LCD is set to English.

If the arrow points to the "Chinese", the language of the system (including the host and microphone units) LCD is set to Chinese.

If you do not do any operation, this state will be maintained for about 10 seconds automatically into the next state – Welcome interface.

When the host display language selection screen, press the up and down arrow to change the

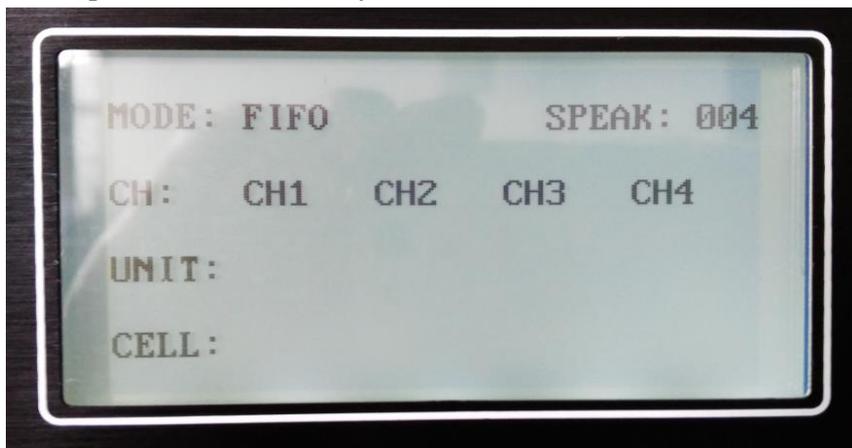
language, then pressing the "ENTER" button or wait for 10 seconds, the system will enter the next state - welcome interface.

(2) Welcome interface (Chinese or English)



The welcome screen will be displayed about 5 seconds; the system automatically enters the standby.

(3) Speech state or standby mode.



The above screen shows the status of the English language interface and the standby, for detail as:

A. "MODE: FIFO". Through the setting, this can be set to the "MODE: FIFO", "MODE: LIMITED", "MODE: LIMITED TIME", "MODE: CHAIRMAN".

B. Allows up to 4 people at the same time to discuss speech, through the setting, which can be set to 1,2,3,4.

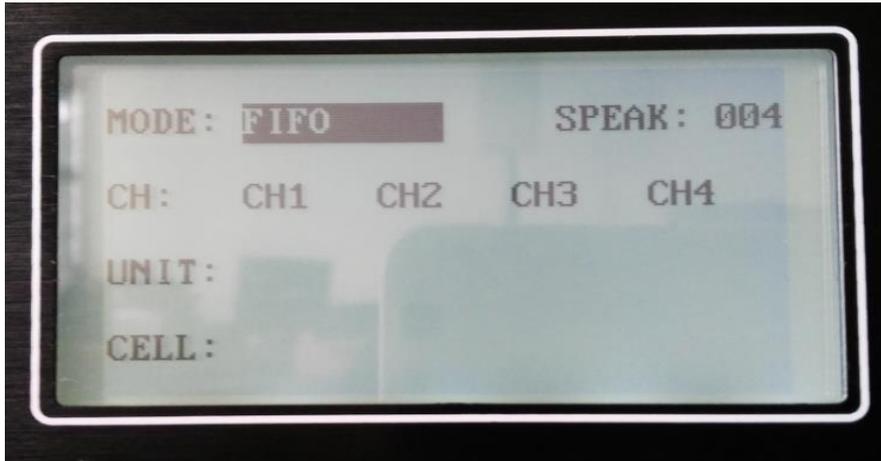
C. "CH: CH1 CH2 CH3 CH4", meaning that the following display contents (microphone unit ID and battery information), respectively, occupy the host channel 1 to 4.

D. "UNIT", respectively to display the 1-4 channels are connected the microphone ID. The microphone ID range is 001-999, which means that the channel is not connected to any microphone. None digit indicates that the channel is not connected to any microphone

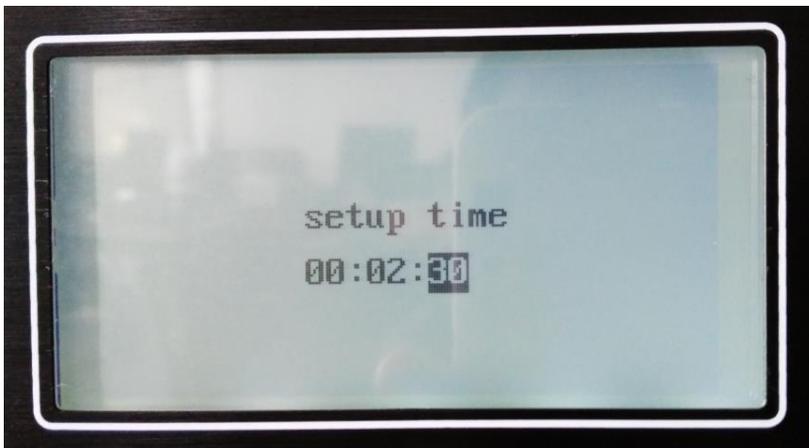
E. "CELL: ", displays the remaining capacity of the microphone battery.

(4) The system mode setting

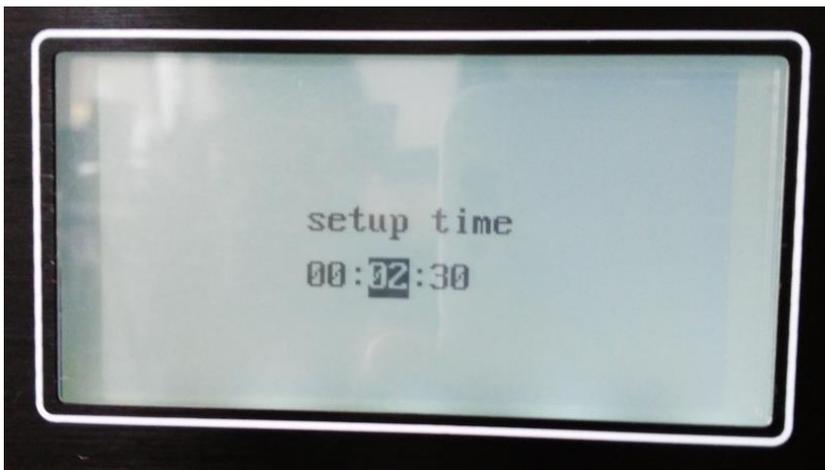
In standby state click the "ENTER" key on the front panel of the host, the LCD "MODE: "area display is highlighted,

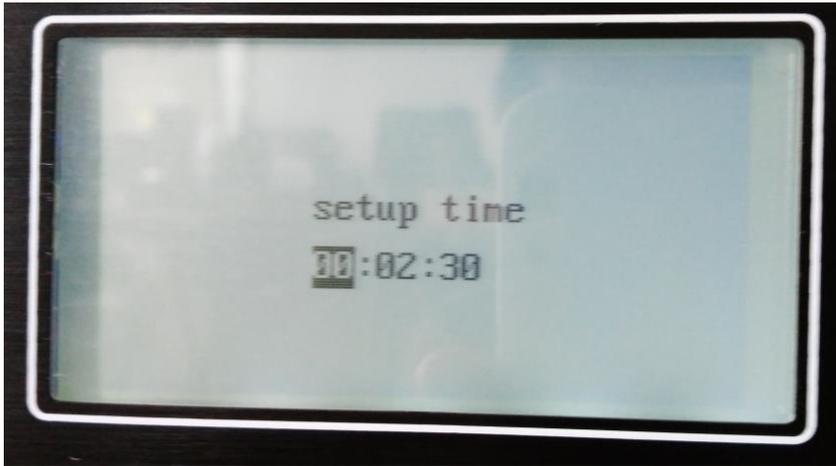


Press the "UP" or "DOWN" button to select the required mode, and then press the "ENTER" button to determine and save, the system will return to standby mode. If you choose the "TIME LIMITED" mode, continue to set the hours, minutes, and seconds. As shown below:



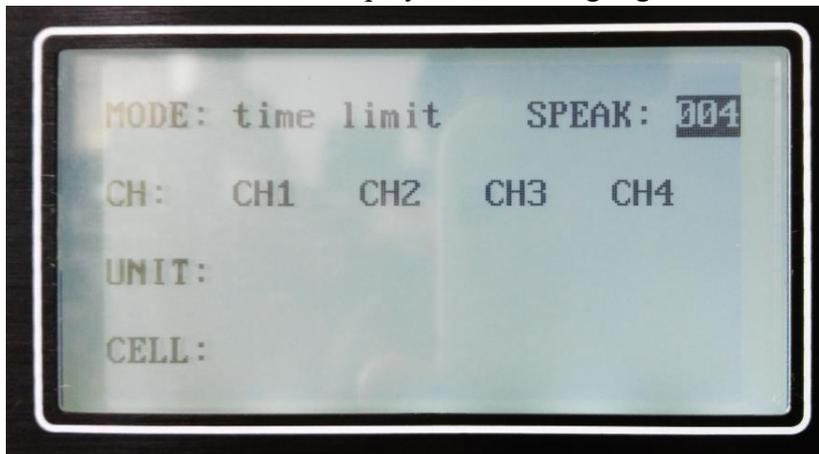
Press "LEFT" or "RIGHT" key to set the item, hours, minutes, seconds.





(5) Press "UP" or "DOWN" to adjust the setting item value, and then press the "ENTER" button to determine and save and the system will return to the standby mode.

In the standby mode, Twice press "ENTER" button on the front panel of the host, the number of "SPEAK: " area on LCD display content is highlighted.



Press "UP" or "DOWN" key to select the required number of the discuss people, which is the range of 1-4, and then press "ENTER" button to determine and save, the system will return to standby mode.

(6) Microphone unit setting method.

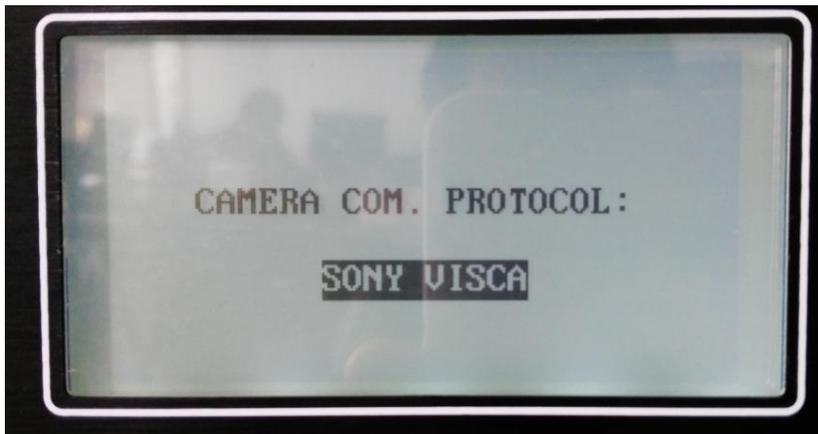
The setting is to be used for all microphone units in the same meeting place with a host to consist of a system, and to assign different ID for each units, the process is also called coding. Only the unit with the host to complete the coding can be join to the system, the unit number can be 1-999. In a system, the unit ID can not be same. In the standby state, press the "enter" key three times, the host LCD display setting unit, the character of the unit ID is highlighted



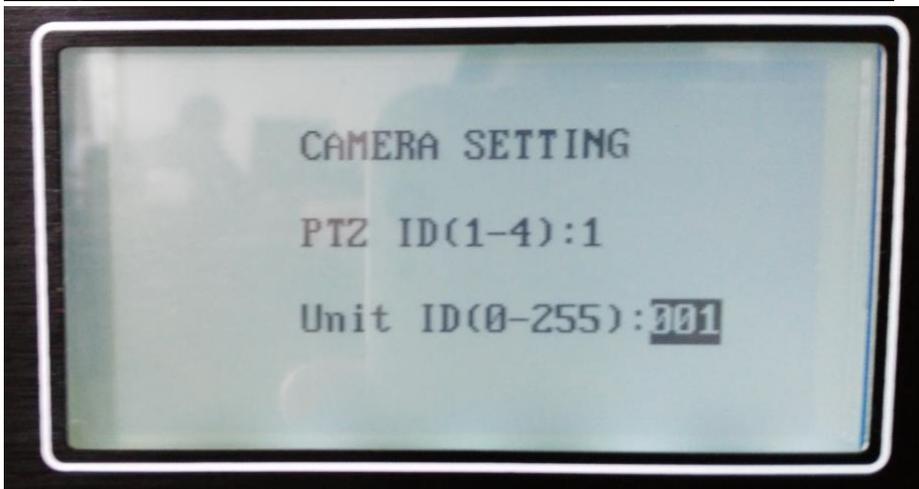
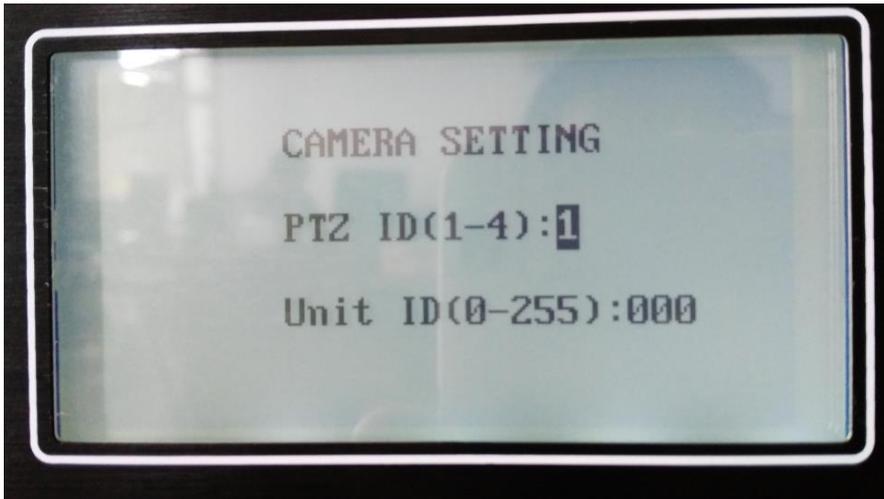
Press "UP" key or "DOWN" button to select the unit ID, then to power on the microphone unit, then press the speech button, about 5 seconds after the completion of the unit to return to the standby state, the host LCD display "set up to complete" and enter the next unit set up interface. At this point, you can continue to set the ID for more units, or press the "EXIT" button to exit the setting state, the system will return to standby mode.

(7) Video communication control protocol settings.

On the host front panel and press the "ENTER" key four times, the LCD display of host video communication protocol is highlighted, as shown below:

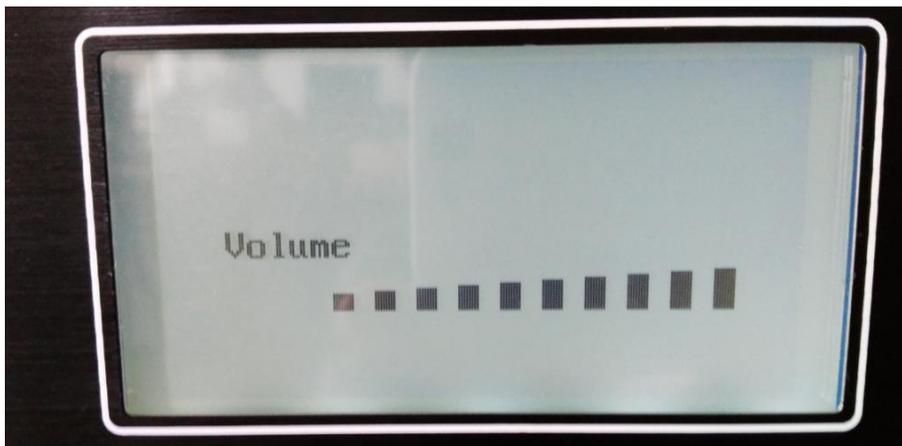


Press "UP" or "DOWN" button to select the camera protocol, then press enter key to determine and save, the system will enter the four circuit video selection and camera focusing state adjusting selection interface for each microphone unit. Press "LEFT" or "RIGHT" button to switch between camera and microphone ID. Press "UP" or "DOWN" button to change camera or microphone ID. Unit ID "0" corresponding to the main scene. Press "ENTER" button to save settings. Press "EXIT" button to return to the standby mode. This setting is shown in the following figure:



(8) Volume adjustment settings.

In the system standby or speech state, directly press the "VOL-" or "VOL+" button to adjust the volume.



After the volume is set, press the "exit" button or wait for 15 seconds without any action, and the system will exit the setting state and return to the standby state or the speech state.

Chapter7: System Parameters

■ Usual Troubleshooting

Failure	Reason	Solution
No response when turn on system controller(Power light is dark)	power supply trouble	clear
	plug is not stable	clear
	AC fuse is damaged (F3A250V)	replacing
system controller can't edit No automatically	Haven't edit mic'ID No	Press unit's "MIC" key, editing ID No for every mic unit.
system controller can't control camera	System controller and camera have different communication protocol、 baud rate.	Please reset communication protocol & baud rate of system controller and camera. Suggest using PELCO-P 9600.
Above information is only for reference. If have other problems, please contact distributor, and request technique support.		

■ Main unit Technical parameters

Model	EMMU02
Power	Power Eurasia: AC 220 V ~ 240 V 50 Hz (manual selection required)
Power consumption:	Standard: <50 W
Frequency response	80-18000 Hz (3 dB)
SNR	>80 dB(A)
Dynamic range	>90 dB
Total Harmonic Distortion	≤0.01%
Channel Crosstalk	>80 dB
Display	128*64 LCD screen
Ambient temperature and humidity	-20~60°C/0-95%
Waterproof	anti-rain, dust, salt fog
Supply / consumption	115/230Vac (±5%) – 50/60Hz / 50 VA
Dimensions (L* H* D)	480*268*90 mm
Weight	4KG

■ Microphone unit Technical parameters

model	EMC02/EMD02
frequency	2.400-2.500
Pickup distance	30m±5m Use 11 dB antenna in visible distance
Audio output amplitude	<0dB 20CM
Frequency response	100Hz-18KHz
THD&SNR	≥80 dB
Power supply	2. 4/3V-DC
sensitivity	-57dB+-2dB
Chairman unit electric current	60/86mA+-3mA standby mode / working mode, 3V
Delegate unit electric current	60/82mA+-3mA standby mode / working mode, 3V

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