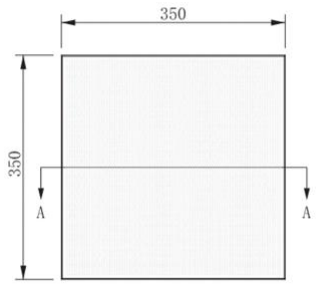
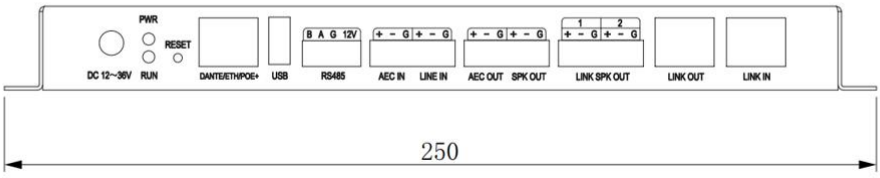
BAM32 Software Operating Instruction

Catalogue

1、Product overview

1.1、Product appearance





1.2 Product Overview

- Built-in 32 microphones, high sensitivity, wide range of sound, for video conference and local expansion of the smallpox array microphone. With smallpox installation, simple configuration can provide excellent audio capture and amplification function.
- It has many practical functions and core technologies such as automatic beamforming voice picking, voice enhancement and 3 D space accurate sound source positioning technology, sound curtain wall technology and AI noise reduction to complete efficient voice interaction. It can be widely used in enterprise conference room, auditorium, university and other scenarios, bringing users a new experience of audio technology upgrading.

2、Product interface description

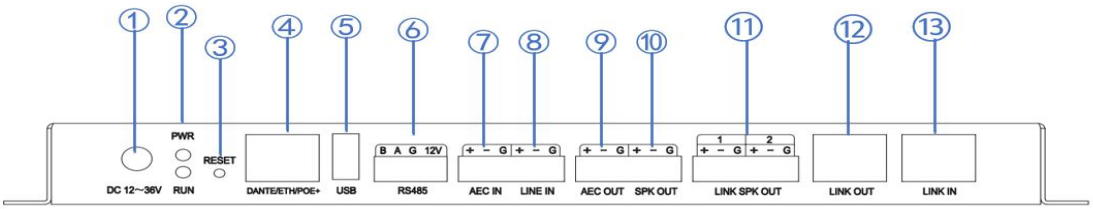


Figure 2.1 Interinterface of smallpox

① DC12~36V interface ·: DC12~36V power interface

② PWR indicator: Power indicator, on, not off; RUN indicator: on, wait for 15 seconds, green light flashing, normal operation;

③ RESET: The system reset button;

④ Eth / PoE +: Control port / PoE power supply port

⑤ USB: Firmware upgrade only;

⑥ RS485 interface: 485 equipment docking;

⑦AEC IN Interface: Remote audio input (echo reference signal);

⑧LINE IN Interface: External sound source input;

⑨AEC OUT Interface: Output to the remote audio data;

⑩SPK OUT Interface: Local output in single-machine use scenarios;

⑪Link SPK Out Interface: The local output of Master during the simulation cascade;

⑫Link Out Interface: Cascade analog link output network port;

⑬Link in Interface: Cascade analog link input network port;

3. Operation instructions of the PC management software

The default IP address of the device is 192.168.1.3, subnet mask: 255.255.255.0, gateway: 192.168.1.1; Please add the IP address of the network segment to the PC (not consistent with the device IP, to avoid conflicts, it is recommended to turn down the firewall, antivirus software and other interception systems) to ensure the normal connection of the device.

3.1 Overview of the management software

1、Device search and parameter saving.

2、Search out the device display IP area, select IP, double-click to log in.

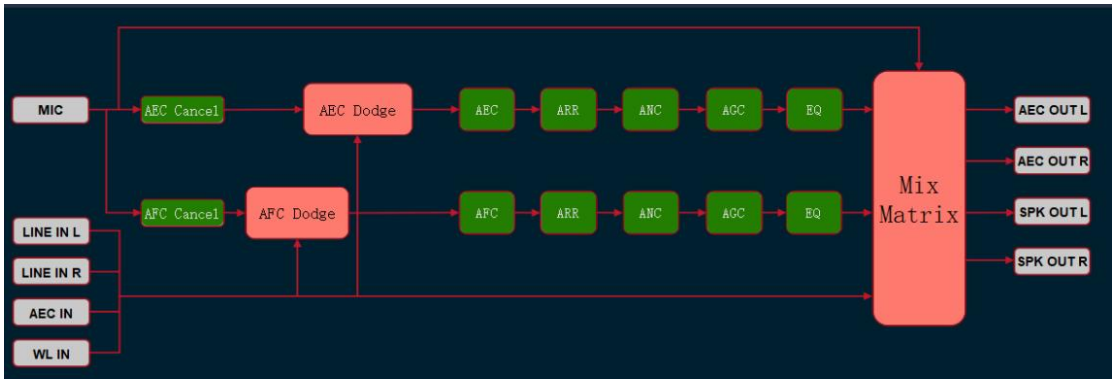
3、System flow area, equipment signal process.

4、Display area of device main parameters, display device software version information.

5、Process control area: audio data flow chart, you can click the icon to set the parameters of each processing module in detail.

6、Processor parameter control area: you can drag or scroll the mouse to display the hidden parts.

3.2 System process



1、Microphone input channel.

2、Whether the microphone channel algorithm enables the switch, green represents enabled, red is not enabled.

3、Echo path selection: click switch to switch to the path dodge interface in the processor parameter control area.

4、Feedback path selection: Click Switch to switch to the path dodge interface in the processor parameter control area.

5、LINE IN and AEC IN input channels.

6、Echo channel algorithm function configuration, click toggle, green represents enabled, red is not enabled.

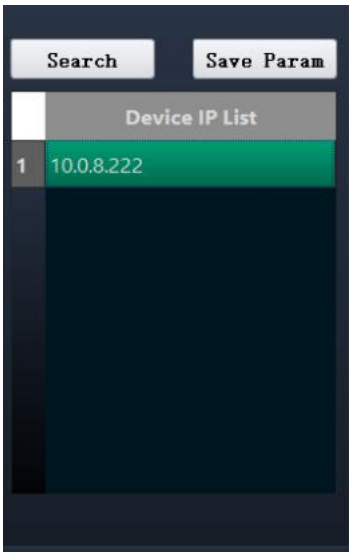
7、Feedback channel algorithm function configuration, click toggle, green represents enabled, red is not enabled.

8、Mix selection: Click Switch to switch to the mixing matrix interface in the processor parameter control area.

9、outgoing channel.

3.3 Software function features

3.3.1 Device search function: Click Device Search, all devices in the same LAN will be searched, and the IP address will be displayed. Select the IP you need to log in, and double-click to log in. Click Parameter Save to save the currently tuned parameters,



3.3.2. Main parameters of equipment: SN: display the serial number of the equipment; Fire Ware: display the software firmware version number; Run Time: indicate the time of normal operation; Mac Addr: display the MAC address information; Name: modify the equipment name, confirm; Tips: display the mode status of the current equipment.

3.3.3 Process control area: Click Switch, select the processor function, and configure the parameters.

3.4 Processor module

3.4.1 Input the settings

1、Array of the microphone input channel

Mute function: turn on the array microphone input signal and turn off the array microphone signal.

Level value: real-time display volume level size, not adjustable.

Level display bar: displays the current volume change of the array microphone.

2、LINK IN Enter the cascade channel

Mute function: open the LINK IN channel input signal and open the LINK IN channel input signal.

Level value: real-time display volume level size, not adjustable.

Volume Setpoint: Enter the numbers to change the volume gain with a

maximum adjustment range from-18 to 18.

Gain pusher: Volume gain can be changed, with a maximum adjustment range of-18 to 18.

Level display bar: displays the current volume change of the LINK IN channel.

Maximum value: set the maximum value of the volume gain adjustment, with the maximum value not exceeding 18.

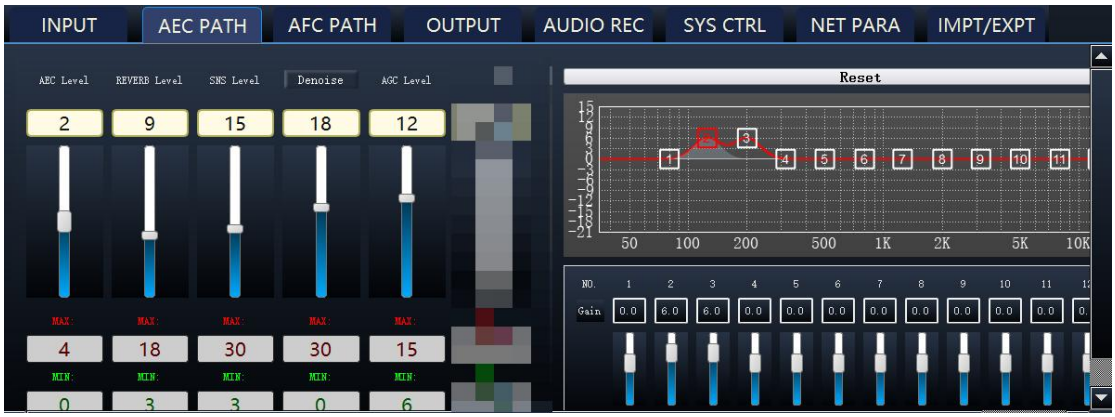
Minimum value: set the minimum value of the volume gain adjustment, the minimum value is not lower than-18.

3、LINK MIC IN The channel of the cascade microphone; the same operation as the LINK IN input channel.

4、AEC IN Input channel; the same operation as the LINK IN input channel.

5、LINE IN Input channel; the same operation as the LINK IN input channel.

3.4.2 AEC Pathways



1、Echosuppression level: value shows current level; pusher can change the level, adjustment range 0 to 4; maximum value sets echo suppression level, maximum value does not exceed 4; minimum value sets echo suppression level, minimum value is not less than 0.

2、Oberation suppression: the current level; the adjustment range is 3 to 18; the maximum value set level, the maximum value is not more than 18; the minimum value set level, the minimum value is not less than 3.

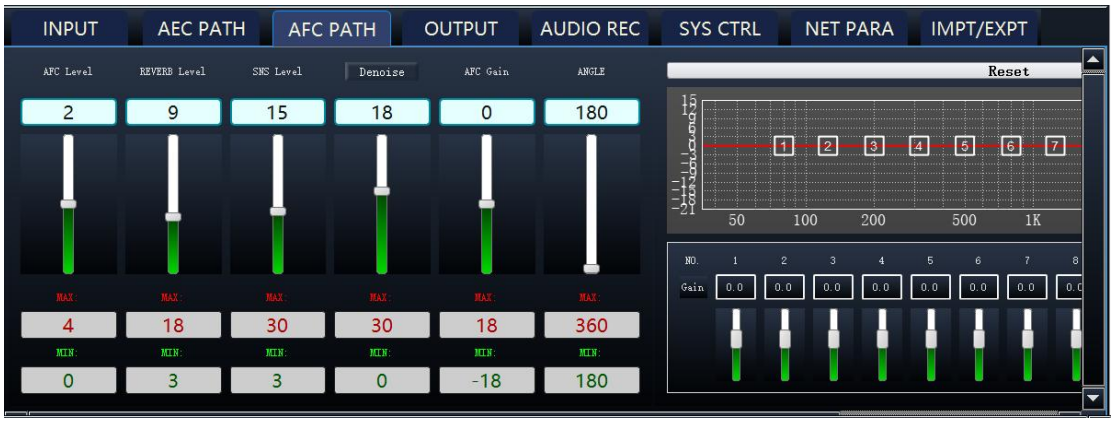
3、Smooth noise suppression: the value shows the current level; the pusher can change the grade, adjust the range of 3 to 30; the maximum value set level, the maximum value is not more than 30; the minimum value set level, the minimum value is not less than 3.

4、Transient noise suppression: the value shows the current level; the pusher can change the level, the adjustment range is 0 to 30; the maximum value is set, the maximum value is not more than 30; the minimum value is set, the minimum value is not less than 0.

5、Automatic maximum gain: the value shows the current level; the adjustment range is 6 to 15; the maximum value set level, the maximum value is not more than 15; the minimum value set level, the minimum value is not less than 6.

6. Section 13 balanced adjustment, click the mouse and pull the label to change the amplitude of the frequency segment; the gain function, directly input gain parameters, directly input parameters to change the amplitude of the frequency segment; push the pusher to change the amplitude of the frequency segment.

3.4.3 AFC pathways



1、Feedback suppression level: the value shows the current level; the adjustment range is 0 to 4; the maximum value sets echo suppression level, the maximum value does not exceed 4; the minimum value sets echo suppression level, the minimum value is not less than 0.

2、Oberation suppression: the current level; the adjustment range is 3 to 18; the maximum value set level, the maximum value is not more than 18; the minimum value set level, the minimum value is not less than 3.

3、Smooth noise suppression: the value shows the current level; the pusher can change the level, adjust the range is 3 to 30; the maximum value set level, the maximum value is not more than 30; the minimum value set level, the minimum value is not less than 3.

4、Transient noise suppression: the value shows the current level; the pusher can change the level, the adjustment range is 0 to 30; the maximum value is set, the maximum value is not more than 30; the minimum value is set, the minimum value is not less than 0.

5、Automatic maximum gain: the value shows the current level; the adjustment range 6 to 15; the maximum value set level, the maximum value is not more than 15; the minimum value set level, the minimum value is not less than 6.

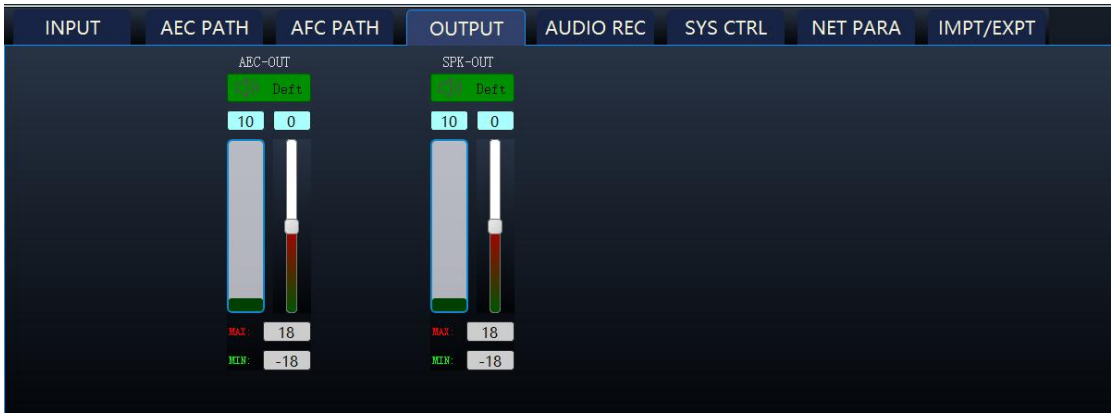
6、Feedback gain: the value shows the current level; the adjustment range-12 to 6; the maximum value set level, the maximum value is not more than 6; the minimum value set level, the minimum value is not lower than-12.

7, sound angle: the value shows the current angle; the pusher can change the level, adjustment range 180 degrees and 360 degrees.

8. Section 13, click the mouse and pull the label to change the amplitude of the frequency segment; the gain function, directly input gain parameters, directly

input parameters to change the amplitude of the frequency segment; push the pusher to change the amplitude of the frequency segment.

3.4.4 Output settings



1, the AEC OUT output channel

①, mute function: open the AEC OUT channel input signal, open the AEC OUT channel input signal.

②, Sound output: turn on the sound output function (yellow) to indicate that the output has a feedback function; turn off the audio output function (gray) to indicate the normal output of the function defined by the channel AEC OUT.

③, Level value: the real-time display of the level size of the volume, not adjustable.

④, Volume display: display the current volume gain.

⑤, Level display bar: displays the current volume level change of the output channel.

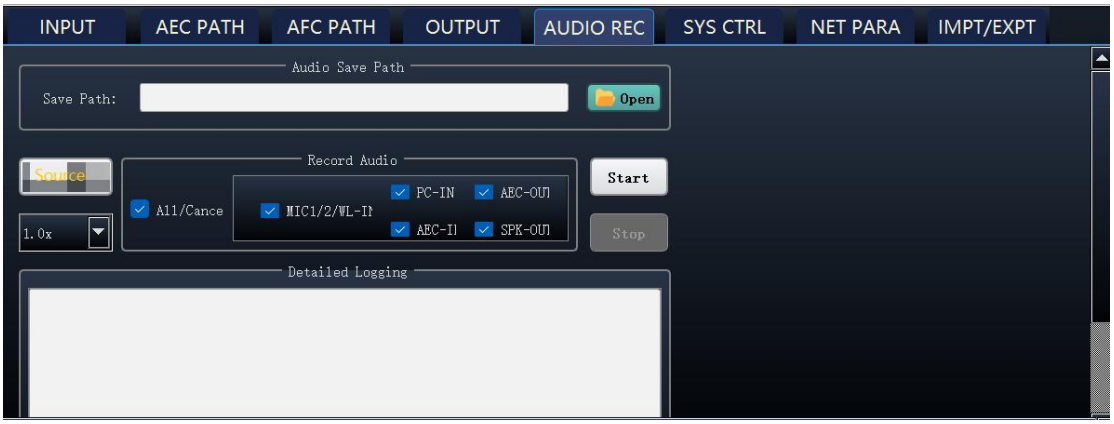
⑥, Gain push: can change the volume gain, the maximum adjustment range in-18 to 18.

⑦, Max value: set the maximum value of the volume gain adjustment, input the number to change the maximum value, the maximum value does not exceed 18.

⑧, Minimum value: set the minimum value of the volume gain adjustment, input the number to change the minimum value, the minimum value is not lower than-18.

2. SPK OUT (analog output of no cascade), LINK MIC OUT (MIC output of analog cascade) and LINK SPK OUT (analog output of analog cascade) output channel are configured in the same way.

3.4.5 Audio recording



1、Save path: Click Open to set the path of the recording audio file saved in the computer.

2、Source: there are 5 audio sources can selectively recording, the default is to select the sound source to record; after selecting the sound source, click start, recording; click stop recording, recording stop, sound source files saved in the folder set by the computer.

3、Deatiled Logging: record some information about when the device is working.

3.4.6 System control

1、Write SN: according to the actual requirements, write the actual SN code, and click on the write SN code; after successful writing, the pop-up box prompts the SN code to be successfully modified.

2、Upgrade: Click Open to find the save path of the upgraded firmware, select, open and click to start upgrade; after successful upgrade, pop prompt successful upgrade! The device starts automatically, please search the device again.

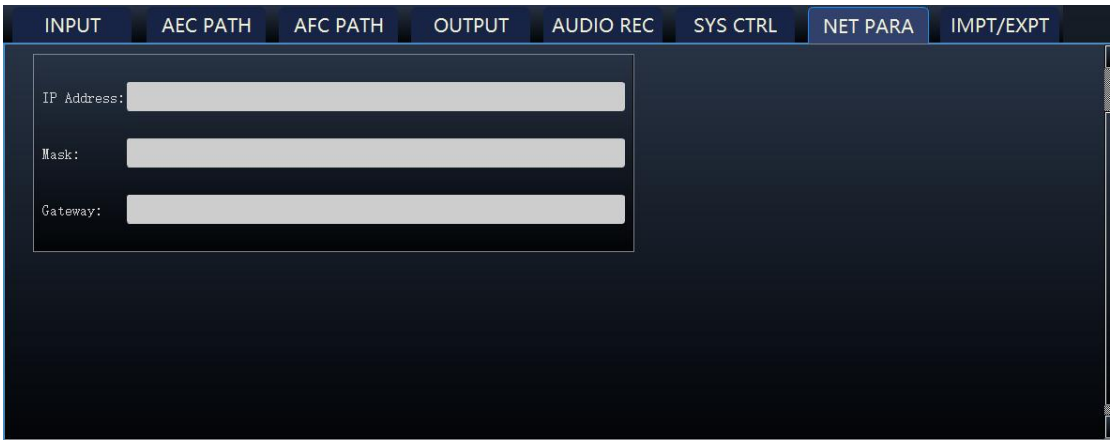
3、Grab Logs: click open, set the grab eye special, save in the path of the computer, click grab day special.

4、Setting: there are two log modes, terminal output and write file; there are 4 daily special levels, INFO, DEBUG, WRN and ERR.

5、Restart: the restart of the normally running equipment.

6、Reset: restore the parameters to the factory default configuration.

3.4.7 Network Parameters



1、Set to get the IP address automatically, and the IP cannot be changed manually (default IP: 192.168.0.3).

2、When set to use the following IP address, you can manually change the IP.

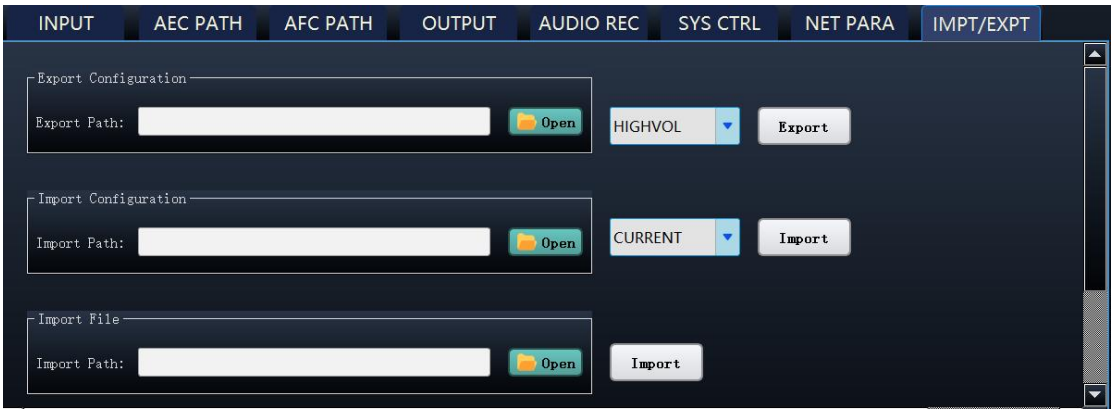
3、IP address: The IP address to be set, such as 192.168.1.3.

4、Subnet mask: Enter the subnet mask, such as 255.255.255.0.

5、Default gateway: input the gateway, such as 192.168.1.1.

7、After entering IP, subnet mask, gateway, click confirm, after successful upgrade, the pop-up box prompts successful upgrade! The device starts automatically, please search the device again.

3.4.8 Import and Export



1、Export configuration: Click Open, set the exported file saved in the computer path. Click the inverted triangle of the current configuration, select the scene to be exported, and finally click Export configuration; prompt.

2、Import configuration: Click Open to find the path of the file saved in the computer. Click the selected file; click the inverted triangle of current configuration, select the scene to be imported, and finally click Import Configuration; prompt the import configuration.

3、Import file: Click Open to find the path of the file saved in the computer. Click the selected file; click Import file; prompt prompt.

4、Scene switching, there are a total of 10 scenarios, the default is clear mode scenarios.

5、Scene save: save the when debug scene.

6、Scene application: After selecting the scene, click this button to switch the scene.

7、Cascade module setting: the devices can be set to different modes, with a total of 8 modes, corresponding to different application modes.

4. Product parameter and indicators

4.1 Algorithm parameter index

function	parameter	BAM32
Automatic feedback inhibition	AFC	√
Automatic echo elimination	AEC	√
Automatic noise suppression	ANC	√
AGC	AGC	√
The reverberation inhibition	ARR	√
Sound feedback gain	≥18dB	√
Noise reduction range	≥30dB	√
Echo elimination amplitude	≥90dB	√
Echo elimination length	≥1s	√
The reverberation inhibition	≥18dB	√
maximum gain	≥30dB	√

4.2 Specification and technical parameters and indicators

function	parameter	BAM32
sampling rate	48k	√
frequency response	75-20KHz，±0.3dB	√
degree of distortion	≦0.1%	√
noise-signal ratio	>100dB	√
Input impedance (balance)	20kΩ	√
Output impedance (balance)	200Ω	√
Maximum input level (balanced)	4dBu	√
Maximum output level (balanced)	10dBu	√
Input gain regulation	64dB	√
Output gain regulation	64dB	√
485 Central control interface	support	√
maximum sound pressure level	124dB SPL	√
Beam number	12 Beams	√

working voltage	DC12~36V	√
working temperature	-10℃~50℃	√
size (mm)	350*350*42(mm)	√