



MODERN COMMUNICATION TECHNOLOGY

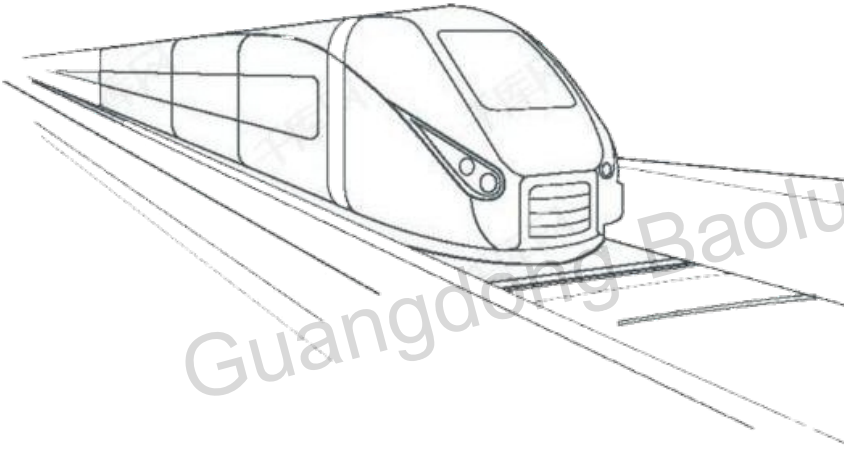
Offshore Platform IP PA System

Guangdong Baolun Electronics Co., Ltd.



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Part 1 System Overview

All functions of offshore platform IP PA system are designed according to the requirements of offshore platform for alarm and entertainment broadcast, adapting to the operating environment and special requirements of offshore platforms. It can realize safe and stable operation in harsh environments with extremely high safety requirements, even when there are potentially flammable and explosive gases. It can work continuously for tens of thousands of hours without failure. In case of emergencies, alarm signals can be issued in a timely and accurate manner.

The offshore platform IP PA system has the functions of automatic/manual alarm, emergency broadcast, telephone broadcast, timed broadcast, zone broadcast, and all-zone broadcast. In the event of emergencies, the emergency broadcast will override manually/automatically to direct the rescue and evacuation efforts.

"General Specifications for Marine PA System" GBT 37661-2019

"Code for Classification of Sea-going Steel Ships"

"National Life-saving Appliances Rules"

"Code for Alerts and Indicators 2009"

"Technical code for Public Address System Engineering" GB-50526-2010

"Code for design of telecommunication for unit in petrochemical industry" SHT3028-2007

"Specification for design of telecommunication for petrochemical factory" SHT3153-2007

"Regulations on Emergency Alarms for Offshore Petroleum Facilities" SY6633-2012

"Intelligent Building Design Standards" GB 50314-2012

"Fire Alarm and Fire Control Linkage" JGJ/T16-92-24.1

"Code for Construction and Acceptance of Automatic Fire Alarm System"
GBJ50166-2007

"Code for Construction Quality Acceptance of Building Electrical Engineering" GB
50303—2012

ICS 47.020.70
U 66



中华人民共和国国家标准

GB/T 37661—2019

船用广播系统通用规范

General specification for marine public address system

2019-06-04 发布

2020-01-01 实施

国家市场监督管理总局 发布
中国国家标准化管理委员会

Platform Function

AB system

Emergency broadcast

Alerts broadcast

Offline alarm

Abandon platform broadcast

Oil and gas leakage broadcast

LED display

Comprehensive alarm broadcast

Four-color light control

TTS broadcast

Real-time broadcast

IP paging

Timed broadcast

Telephone broadcast

Two-way intercom

Zone broadcast

Real-time monitoring

Priority setting

Hardware Function

Amplifier hot backup

Voice control override

Amplifier detection

Loop detection

Main and standby power switch

Analog backup



Offshore platform



Freighter



Chemical plant

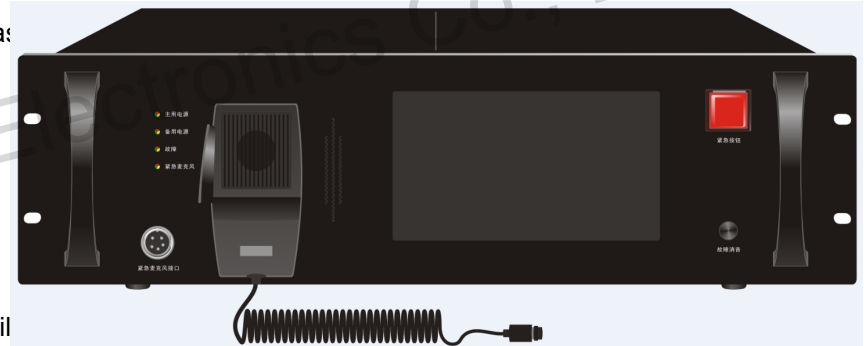
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Part 2 Product Introduction

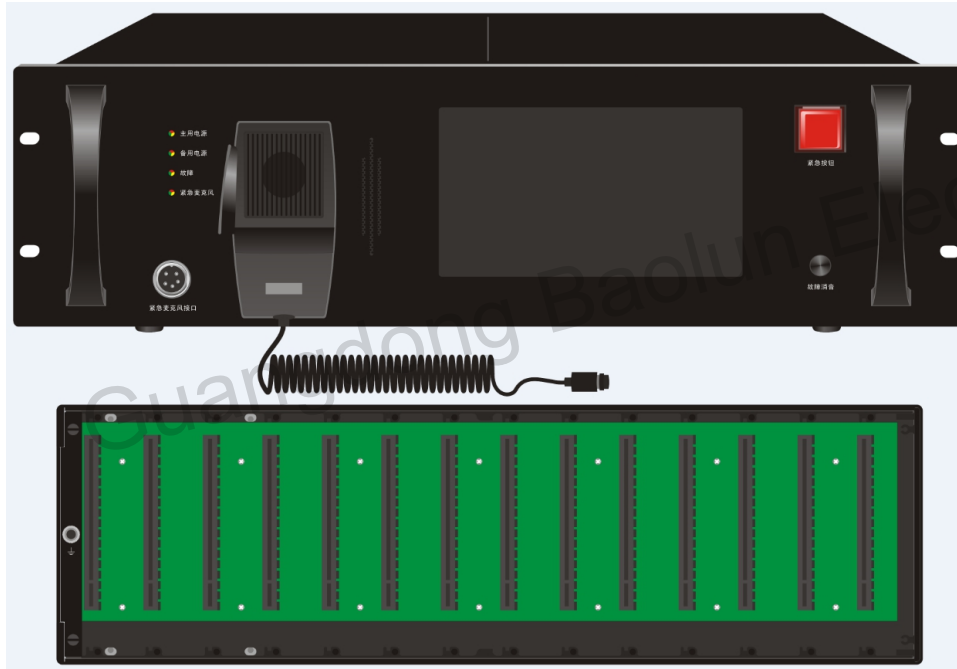
Features

- With a 7-inch touch screen to view device status and zone status;
- Built-in emergency audio supports server offline alarm function;
- With different LED indicators to identify the status of the device;
- With emergency microphone, support one-key microphone broadcast server offline broadcast function;
- Built-in mute button, support manual failure mute;
- Built-in buzzer, support failure sound and light prompt;
- Built-in monitoring speaker supports zone monitoring function;
- Support dual power supply design. When the main power supply fail will automatically switch to the backup power supply.
- Support mixed plugging of boards.



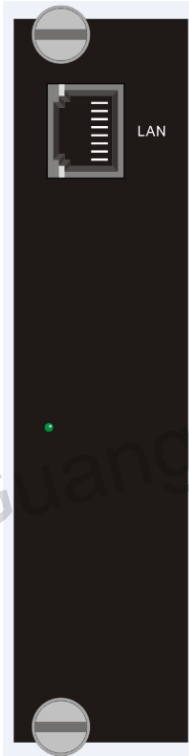
Controller cabinet (VA-6500 CC21)

Support insertion of up to 14 boards, support display of device status and zone status, monitoring and microphone broadcasts.



PS: The controller microphone can initiate a microphone broadcast with the highest volume to the all zones in the case of system controller failure.

Main control board (VA-6500C CM21)

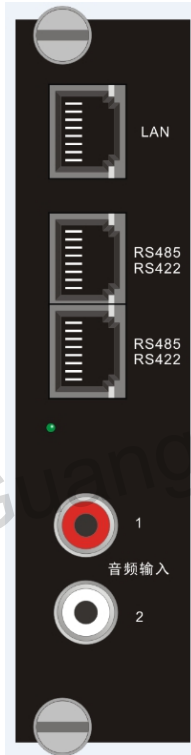


Perform data interaction with the server to realize communication between the broadcast controller cabinet and the server.

Must configure and only need to configure 1 board

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Audio board (VA-6500C CA21)

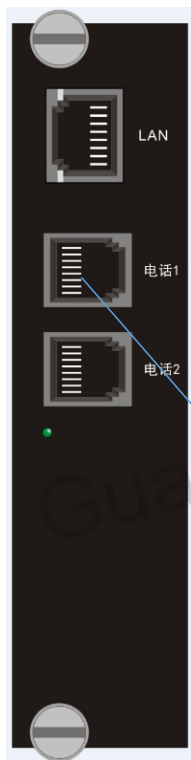


1. Audio input interface - connect to audio source output device (CD player, MP3, etc.), receive external audio source and play to the designated area.

2. RS485/RS422 interface - interact with the external system through RS422/RS485 to realize the forwarding of external system commands. Each port can only be configured as one of 422 bus mode or 485 bus mode.

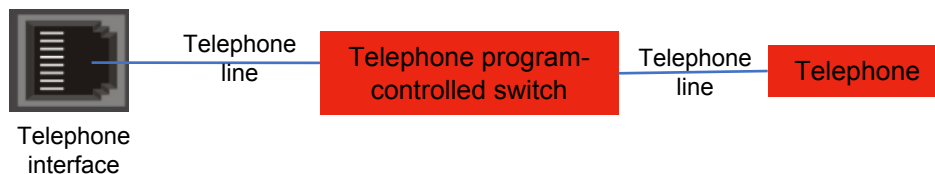
Optional on demand, configure when line input or 422/485 interface is required

Telephone board (VA-6500C CT21)

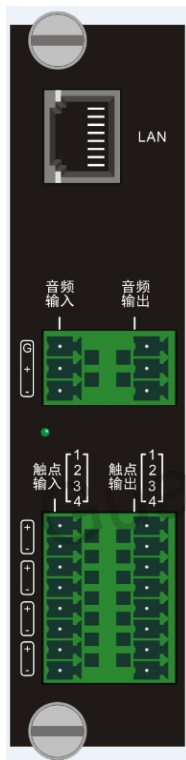


1. Handle telephone dialing operation, and broadcast telephone to designated zones according to user operation.

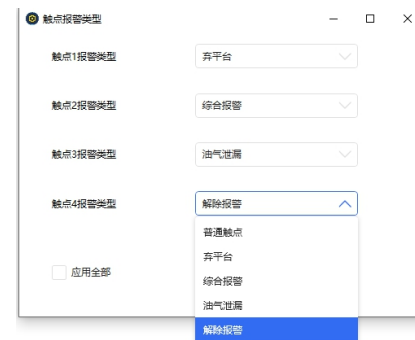
2. Receive the scheduling commands and initiate intercom to the broadcast console or digital microphone;



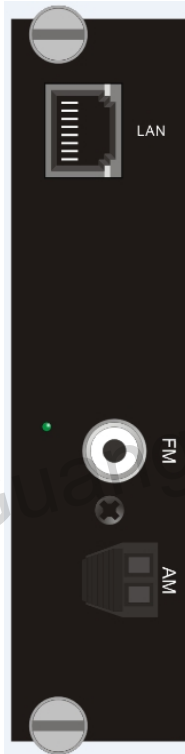
Short circuit board (VA-6500C CF21)



1. Audio input interface - connect to audio source output device (CD player, MP3, etc.), receive external audio source and play to the designated area.
2. Audio output interface - connect to audio receiving device, and output the system audio to other devices.
3. Contact input interface (short-circuit mode, level mode, active mode) - receive contact signals from third-party systems (such as fire linkage control system) and perform preset tasks.
4. Contact output interface - output short-circuit signal to third-party equipment.



FM/AM board (VA-6500C FM21)



FM/AM board is used to receive FM and AM broadcast signals to realize radio broadcast.

Optional

PS: You can search for channels in the indoor remote control station

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Explosion-proof remote telephone station interface board (VA-6500C CI21)

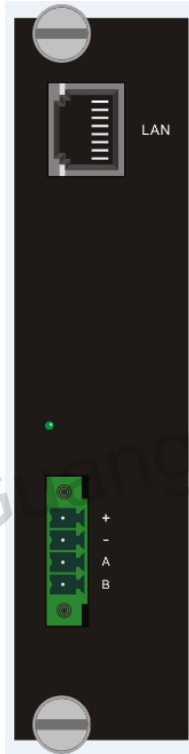


Connect to explosion-proof remote telephone station, use four-core cable to realize power supply, control and audio transmission to explosion-proof remote telephone station, support maximum 4-channel access of explosion-proof remote telephone station.

Optional on demand, used with outdoor explosion-proof remote telephone station

PS: The maximum transmission distance is 1 km.

Four-color light logic board (VA-6500C LC21)



Connect to four-color light control panel. When the telephone station initiates an alarm command, the four-color light control panel is controlled to perform corresponding operations and displayed through the four-color light.

Optional on demand, used with four-color light control panel

Power board (VA-6500C CP21)

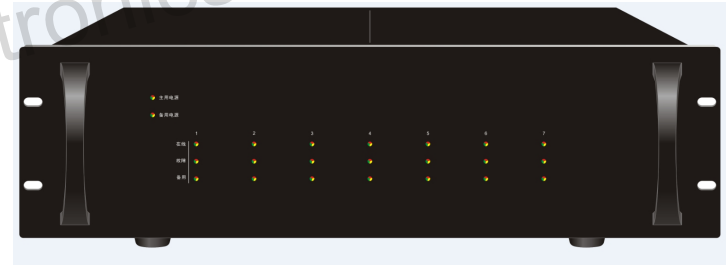


1. Provide power for the cabinet and boards
2. Support working status indication of the boards

Configure two boards when dual power supply is required

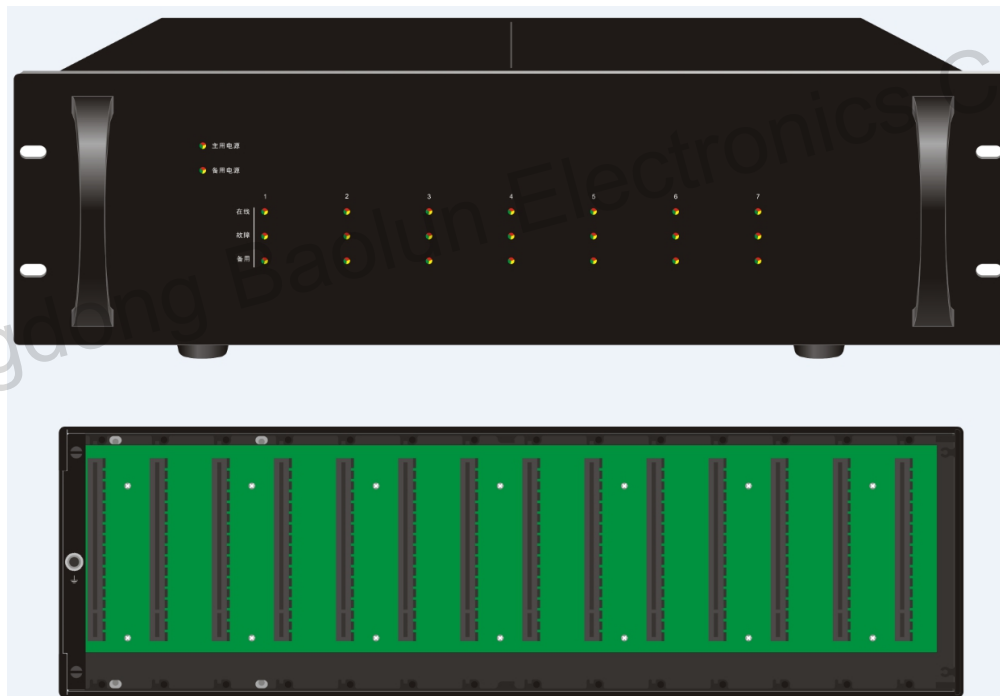
Features

- Built-in LED indicators to identify the status of equipment and boards;
- Built-in cooling fan, support air cooling;
- Support different power selection of digital power amplifier board;
- Support local emergency audio input;
- Support real-time monitoring of speaker lines, and automatic isolation of short-circuit loops;
- Support main and standby power amplifier switching mode with a maximum of 8 main and 1 standby;
- Support power amplifier protection including over-current, overload, over-voltage, and over-temperature;
- Support the delayed power-on of the power amplifier board to prevent the impact on the power grid when starting up;
- Support dual power supply design; when the main power supply fails, it will automatically switch to the backup power supply;
- Support idle sleep function of power amplifier board;
- Support start key of power amplifier board, support hot swap;
- Support voice control override.

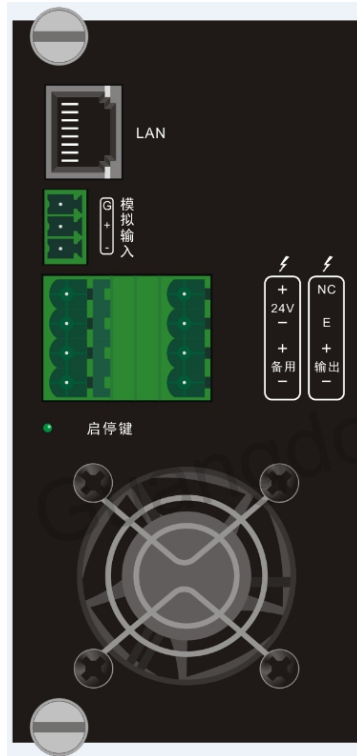


Power amplifier cabinet (VA-6501 PC21)

Support insertion of up to 7 power amplifier boards and power boards, and support indication of online status, failure status and standby status of each board.



Power amplifier board (VA-6501P PA21/2/3/5)



Features:

1. High-efficiency Class D amplifier
2. Built-in digital decoder to decode network audio directly
3. Support disconnected local analog audio input broadcast
4. Support speaker loop status detection
5. Support automatic switching of amplifier board failure; support main and standby switching mode with a maximum of 8 main and 1 standby;
6. Support three-phase four-wire wiring
7. Support sleep mode of power amplifier

Note: Regardless of whether there is a network signal or not, when the analog input port has signal input, the analog signal will be amplified and output first.

VA-6501PA21: 120W
VA-6501PA22: 240W
VA-6501PA23: 350W
VA-6501PA25: 500W

Power board (VA-6501P PP21)



1. Provide power for the cabinet and boards
2. Support working status indication of the boards

Configure two boards when dual power supply is required, and when the cabinet is equipped with more than 4 power amplifier boards of 500W.

Sheng Bao Electronics Co., Ltd.

System controller VA-6502 HC21

The system controller is the core management equipment of the broadcasting system, runs server software and network management software, stores and manages audio files, has 4 network ports, and has functions such as maintenance, management, network management, voice-to-text conversion, and docking with other systems.



Indoor remote telephone station VA-6504 BA21

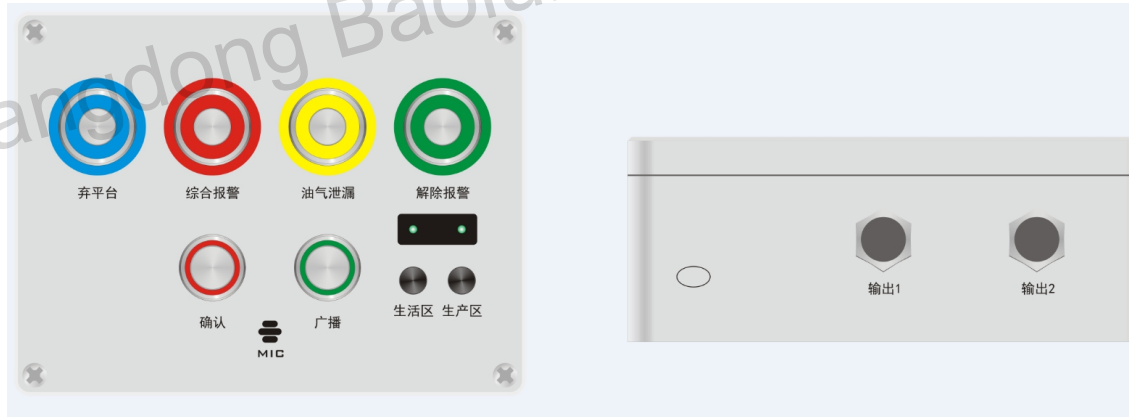
Used by the central platform and the secondary platform, the full-featured broadcast station is used for remote control of PA system, supporting functions such as broadcast, monitoring, intercom, alarm, and real-time recording.

- With a 10.1-inch touch screen to control the system;
- With USB interface;
- Built-in monitoring speaker supports zone monitoring and internal two-way intercom;
- Support timing task configuration, support task list viewing and management;
- Support voice broadcast and TTS broadcast, and support storage of media files converted by TTS;
- Support recording tasks, which can be saved as local media library or initiate broadcast tasks;
- Support local media library management, which can perform operations such as file upload or deletion;
- Support equipment failure display;
- Support log management function.



Outdoor explosion-proof remote telephone station VA-6504 BD2

Adopt dustproof, waterproof and explosion-proof design, support outdoor installation, the interface card of the telephone station and the explosion-proof telephone station is connected by four-core cable (including power supply and signal). With buttons including abandon platform (blue), oil and gas leakage (red), comprehensive alarm (yellow), and alarm reset (green) as well as corresponding color light indication at the same time. After pressing the alarm button, you need to press the confirm button to send out the alarm. It also has simple zone function, which is divided into living area and production area. (With explosion-proof certification)



IP remote control terminal VA-6507 RC21

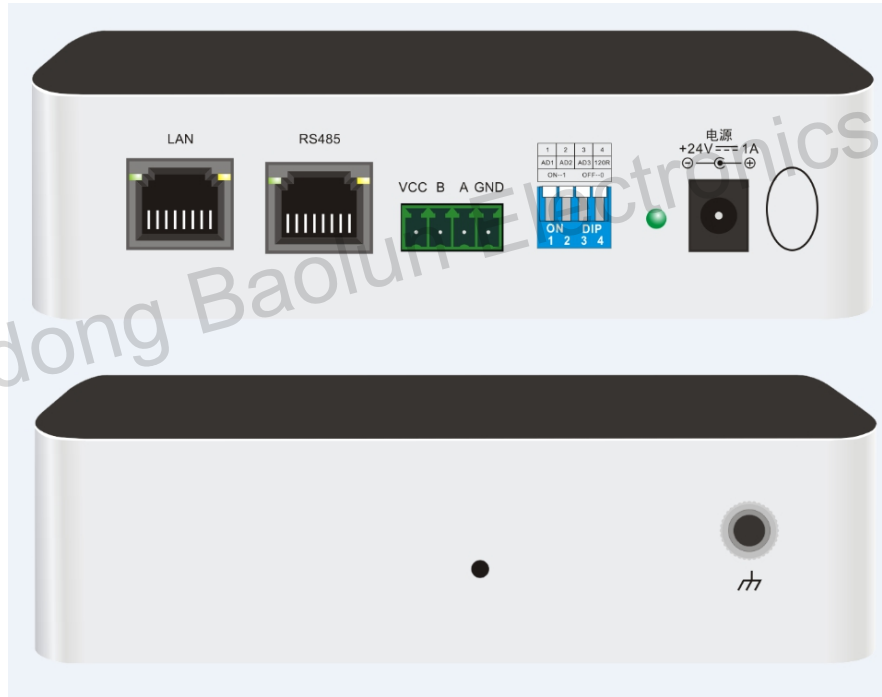
IP remote control terminal realizes the free on-demand of entertainment broadcasting. The on-demand unit can display the catalog through the touch screen, and supports list playback, loop playback, random playback, pause/play, previous/next song, volume adjustment, etc.



Guanjun Electronics Co., Ltd.

IP decoding terminal VA-6508 RD21

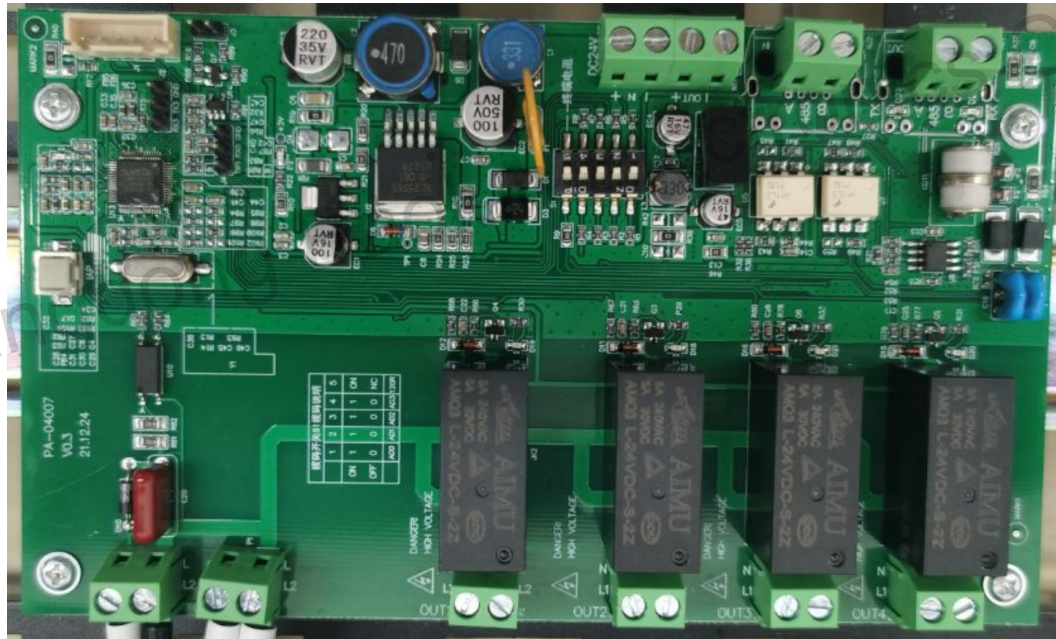
IP decoding terminal is an interface conversion product specially used with the IP remote control terminal. It converts the RS485 communication port of the IP remote control terminal into the standard network interface and supports power supply to it.



Guangdong Baolun Electronics Co., Ltd.

Four-color light control panel VA-6500F FC21

Connect the four-color light logic board, and connect to the power supply. The power supply of the four-color light is input from the input interface of the board, and then output to the four-color light device through the output interface. Board controls power supply circuit for switching four-color lights. Support equipment cascading with maximum of 16 boards.



o., Ltd.

IP speaker VA-6506SP2

IP ceiling speaker supports adapter/POE power supply.

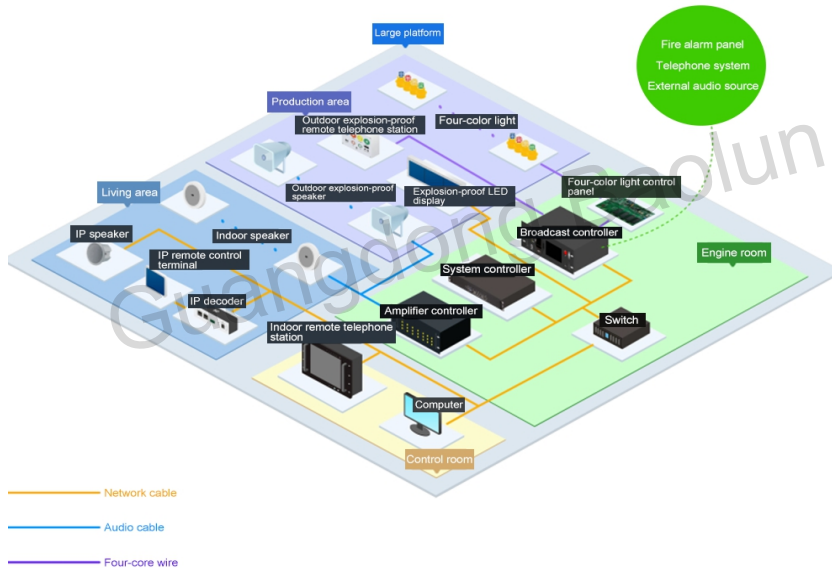




Part 3 System Architecture

Single system

Single system broadcast is an independent PA system that is not controlled by the superior system. The system is mainly divided into four areas: control room, switchboard room, production area and living area.



Area	Equipment	Model	Remark
Switchboard room	Broadcast controller	VA-6500	Optional boards on demand
	Amplifier controller	VA-6501	Optional boards on demand
	System controller	VA-6502 HC21	Required
	Speech-to-text server	TS-8611	Optional, for speech-to-text conversion
	Indoor remote telephone station	VA-6504 BA21	Rack or desktop installation
	Four-color light control panel	VA-6500F FC21	Optional, used with VA-6500C LC21
	Docking service software	AC21	Required
	Management service software	SC21	Required
	Network management service software	SD21	Required
	Operation and maintenance service software	SM21	Required
	Recording service software	SR21	Optional
	Speech synthesis service software	SS22	Optional
	Speech to text software	/	Use with TS-8611
	Switch	/	
	Rack	/	Optional
Rack accessories and wiring	/	Optional, required for rack installation	
Single-platform broadcast ship inspection certificate	/	Optional	
Control room	Indoor remote telephone station	VA-6504 BA21	Rack or desktop installation
	Network management computer	/	Optional
Living area	IP speaker	VA-6506 SP2	Optional
	Line detection terminal	VA-6000TB	For line detection
	IP remote control terminal	VA-6507 RC21	Optional, use together
	IP decoding terminal	VA-6508 RD21	
Indoor speaker	/	Required, optional model on demand	
Production area	Explosion-proof speaker	/	Required, optional model on demand
	Outdoor explosion-proof remote telephone station	VA-6504 BD2	Optional, used with explosion-proof telephone station interface card
	Explosion-proof LED display	/	Optional, used with TS-8611
	Four-color light	/	Buy separately
Line detection terminal	VA-6000TB	For line detection	

Living area

It refers to the area where the offshore platform staff rest and entertain, including dormitories, living rooms, dining halls, libraries, etc.

System features

1. Any song in the music list can be played **on demand** via the IP terminal in the dormitory.
2. It supports **entertainment broadcasts** in designated areas to help staff personnell relax.
3. Broadcasting is **prioritized**, and other high-priority broadcasts are not affected during entertainment broadcasts.



Living area	IP speaker	VA-6506 SP2	Optional
	Line detection terminal	VA-6000TB	For line detection
	IP remote control terminal	VA-6507 RC21	Optional, use together
	IP decoding terminal	VA-6508 RD21	
	Indoor speaker	/	Required, optional model on demand

Production area

It refers to the indoor and outdoor areas where workers carry out drilling operations, and are characterized by open air, high noise, potentially flammable and explosive gases, etc.

System features

1. The equipment installed in the production area are all explosion-proof and have passed the **explosion-proof certification**;
2. Messages such as rescue and evacuation can be quickly broadcast through explosion-proof remote telephone stations, so as to ensure the **safety** of the operating platform;
3. The explosion-proof LED display can **convert the broadcast content into text display** to solve the problem of inaudible broadcast in high noise working environment;



Production area	Explosion-proof speaker	/	Required, optional model on demand
	Outdoor explosion-proof remote telephone station	VA-6504 BD2	Optional, used with explosion-proof telephone station interface card
	Explosion-proof LED display	/	Optional, used with TS-8611
	Four-color light	/	Buy separately
	Line detection terminal	VA-6000TB	For line detection

Control room

It refers to the area where managers uniformly manage and control related equipment.

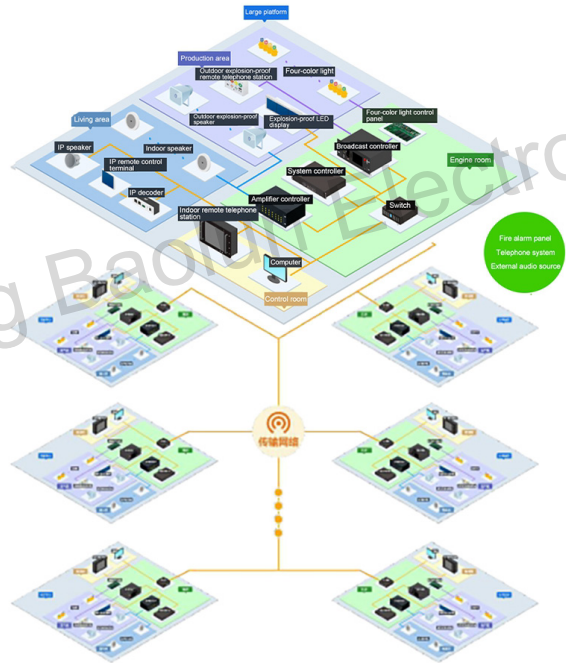
System features

1. The broadcast **system** can be **configured** through the terminal and remote telephone station.
2. It supports real-time **monitoring of the operating status** of the PA system to ensure the safe operation of the system.
3. Any zone broadcast can be **monitored** through the telephone station to ensure the effective transmission of broadcast content.
4. In an emergency, an **alarm broadcast** can be initiated through the indoor remote telephone station to **evacuate the workers**.



Control room	Indoor remote telephone station	VA-6504 BA21	Rack or desktop installation
	Network management computer	/	Optional

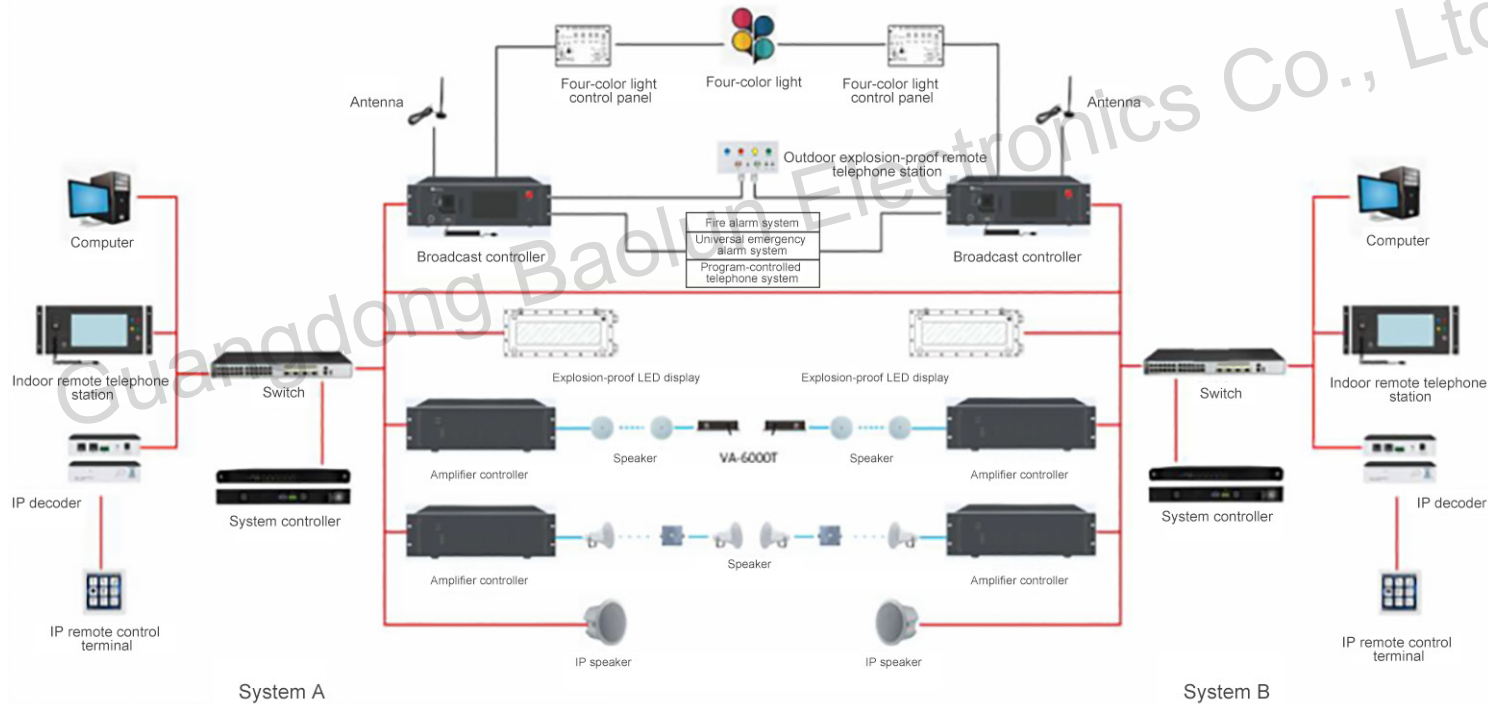
Multi-level system cluster is composed of multiple single systems connected through network. There is a central system in the cluster, which can monitor and manage other systems.



Guangdong Baoyuan Electronics Co., Ltd.

Companion dual system

Offshore platform IP PA system supports AB system to realize dual-system online backup. When one of the systems fails to broadcast due to sever failure, the other system can take over its equipment without delay to ensure that the broadcasting is not affected.





Part 4 System Features

1. System backup

When the system A or system B fails, the overall system is still running normally, and all functions can be used as usual.

2. Server mutual backup

When the server A or server B fails, the normal working one can take over the equipment of the other system, the overall broadcast is still running normally.

3. Remote telephone station

Telephone stations are divided into indoor telephone stations and outdoor telephone stations. Indoor telephone station can broadcast to system A or system B through network cable. While outdoor telephone station can be connected to system A and system B at the same time; when it initiates broadcasting, system A and B will respond at the same time.

4. Zone and all-zone broadcast

When the system A starts zone or all-zone broadcast, the same zone of system B will broadcast at the same time, and vice versa.

5. Shared audio sources

The audio source input is shared and used synchronously, and the audio of the server media library and line input can be used.

The alarm broadcast is divided into four levels, from high to low are abandoned platform alarm, comprehensive alarm, oil and gas leakage alarm, and alarm cancel from high to low. The alarm is divided into automatic and manual alarms. It is usually set to automatic alarm, which is connected with the fire panel. **(Multiple alarms and automatic alarms)**

When multiple alarm buttons in more than one position are pressed at the same time, the high-level alarm broadcast will be output, and the alarm button indicators of each telephone station will light up synchronously, and the alarm events of each position will be recorded and fed back at the same time. **(Status synchronization)**

The alarm button has anti-mistouch design (the alarm button of the indoor telephone station has a transparent protective cover, and the alarm button of the outdoor station needs to be pressed firmly). When a certain alarm is selected, in order to prevent misuse, the confirmation button must be pressed to initiate alarm broadcast. **(Anti-mistouch)**

During the alarm period, the broadcast speech can be forcibly inserted, which is the emergency broadcast with the highest priority. Press and hold the microphone button to make an broadcast speech in the whole area. At this time, the alarm sound is reduced to the background sound and mixed with speech sound to output, release the microphone button after speaking to continue the alarm broadcast. **(On-site command)**

PS: There are three situations for microphone broadcast, with different priorities.

- a. Emergency broadcast: After the abandoned platform alarm/oil and gas leakage alarm/comprehensive alarm is issued, press the broadcast button of the station to initiate emergency broadcast with highest volume in the whole area, and the alarm sound will be reduced to background sound. The emergency broadcast has the highest priority, zone is invalid, and the all-zone broadcast is automatically selected.**
- b. Alert broadcast: When there is no alarm, press the alarm confirmation button, and then press the station broadcast button to initiate broadcast. The priority is lower than that of the emergency broadcast, zone is invalid, and the all-zone broadcast is automatically selected.**
- c. Ordinary broadcast: Broadcast by ordinary microphone when there is no alarm and no confirmation button is pressed. Zone is available, and if there is no zone, all-zone broadcast is available.**

The system supports telephone broadcasting, and supports SIP trunk access and analog 2-line telephone access. (Multiple access methods)

There are two types of telephone broadcast: direct broadcast and recording broadcast. The broadcasting mode of the telephone board interface can be set through the background software. Direct broadcasting is usually used in occasions with high timeliness requirements, such as telephone broadcasts in emergencies. Recording broadcast requires real-time recording before playback to eliminate howling, so as to avoid mixing of other sounds and noises. (Direct broadcast and recording broadcast)

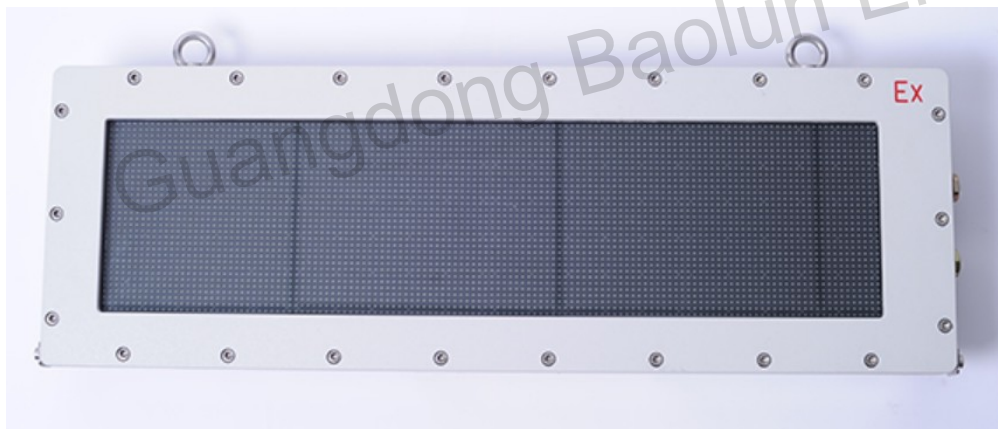
After the telephone broadcast is completed, the system will automatically figure out the broadcast situation. And it is forced to hang up after 10s of silence to avoid broadcast occupancy and consume resources. (Forced hangup)



The system can realize the text-to-speech conversion through the man-machine interface, and the converted speech can be pre-listened, and broadcast to the area within the broadcasting range. Support Mandarin and English conversion. Text can be imported, or received from third-party systems to realize the function of text-to-speech.

The system can realize the function of speech-to-text conversion, display the text on the LED, and convert the broadcast content into text to display on the screen. If broadcast cannot be heard clearly in a high-noise environment, an explosion-proof LED display is used to display the broadcast content.

(Combined with speakers and four-color lights to form audiovisual and lighting comprehensive broadcast)



All control and management functions of the digital PA system are handled by the system controller. In order to protect the life safety of the staff in case of system controller failure, the system supports offline alarm function.

When the server is offline, the alarm can still be initiated through the indoor remote telephone station and the outdoor explosion-proof remote telephone station. The alarm audio is stored in the broadcast controller. And the microphone of the broadcast controller can also initiate all-zone broadcast. (Safe and reliable)





Part 5 System Advantage

With the increase of offshore platforms, various requirements such as intelligentization of PA system are also put forward. The traditional PA system is mainly an analog PA system, which cannot cope with new demands. Compared with the traditional offshore platform PA system, this system has the following advantages:

1. Fully digital PA system has rich interfaces to link with other systems, and can also be integrated into the unified dispatching platform for unified broadcast.
2. More flexible system configuration, plug-in design, and various functional boards for selection;
3. More types of warning sounds can meet the growing needs of different types.
4. With remote IP broadcast power amplifier, which is not limited by the distance of the scene, and can realize clear broadcast and intercom.
5. The system can realize cross-network segment control, monitoring and multi-user management, and can realize linkage control with the video monitoring system. It can monitor the system operating status in real time;
6. High reliability of the PA system: In order to ensure the absolute stability of the system, the offshore platform PA system adopts redundant design
7. With the function of converting analog signals to digital signals: the system realizes digital transmission, avoiding transmission attenuation and noise, and makes the sound reach CD-level high-fidelity sound quality
8. The system has multi-level user authority settings.
9. Free combination of zone: with more zones, it is more flexible to call the speaker unit. Each decoder can be managed and controlled through broadcast software, and different network decoders can be combined into zones for convenient management.
10. More powerful emergency broadcast function: the system is equipped with a fire panel alarm trigger interface. When there are alarms, it can automatically or manually broadcast early warning and alarm signals to reduce damage.
11. The system has open protocols and ports, and is controlled by the dispatching system to realize unified switching management of audio and video, achieving high-efficiency network information.
12. Support platform cluster management function. Large platforms can remotely monitor and manage small platforms.
13. More powerful entertainment broadcast function. Equipped with the corresponding network on-demand unit, it can realize any on-demand program in the music library of the sever;

CCS certification implements effective control over all aspects of product design, manufacturing, testing and quality management that affect product quality, thereby ensuring that product quality meets the requirements of relevant conventions, regulations, norms and standards, so as to provide prerequisites for the safety of ships and people at sea.

(Approved abroad)

In an explosive gas environment, the equipment used must be in accordance with explosion-proof standards, and an explosion-proof certificate must be obtained. The system's explosion-proof speakers, outdoor explosion-proof remote telephone station and explosion-proof LED display have all passed explosion-proof certification to meet the reliable use of the system even in flammable and explosive environments.

中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
GZ21PTB00095

型式认可证书 CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。
This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

广州市保伦电子有限公司
Guangzhou Baolun Electronics Co., Ltd.

地址/Address

广州市番禺区钟村街创源路19号
No.19 Chuangyuan Road, Zhongcun Street, Panyu District, Guangzhou.

产品名称/Product

公共广播系统
Public Address System
船用公共广播系统
Marine Public Address System



防爆合格证

CONFORMITY CERTIFICATE OF EXPLOSION-PROOF

证号
Certificate No. CB21.0007

产品名称
Name of Product
型号及规格
Type of Product
防爆标志
Marking
技术文件
Technical Documents

室外防爆遥控话站

VA-6504 BD2

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Offline alarm

- When the server is offline, the alarm can still be initiated through the remote telephone station, and the microphone of the broadcast controller can also initiate the all-zone broadcast.

Auto alarm

- Oilfield operations need to pay special attention to fire safety. The system is connected to the fire alarm panel. When a fire occurs, the alarm can automatically sound at the first time to ensure the safety of operators.

Anti-mistouch setting

- A confirmation button is added to prevent the staff from accidentally touching the alarm button during the operation or by mistakenly selecting the wrong alarm type in an emergency, resulting in delayed alarm information or loss due to wrong alarms.

On-site command

- During the alarm period, the commanding personnel can use the microphone to make an emergency speech, instructing people to evacuate the dangerous area in a timely and orderly manner.

Voice control override

- Support three-phase four-wire wiring, and force output with maximum volume in the case of alarm

Audio

- Accurately broadcast voice information to the staff in the area through the speakers set in each broadcast area.

Light

- When the PA system receives alarm signals such as comprehensive alarm, oil and gas leakage, abandon platform, and alarm cancel, it will broadcast at highest volume. And according to different levels of emergencies, it will convey alerts to staff through the light signals of the four-color lights.

Video

- Explosion-proof LED display can be set in the high noise environment of the work area, and display text transcribed from broadcast to ensure that the broadcast information can be accurately conveyed in the high noise environment.



Companion dual system

The two systems A and B back up each other. When one of the systems fails, the other system can take over its equipment without delay to ensure that the normal operation of the system.

Redundant power supply

The main equipment supports dual 220V or 220V+24V power supply mode. When one of the power supply modules fails, it will not affect the normal operation of the equipment.



Analog audio backup

The power amplifier has an analog audio input interface. When the system network is paralyzed, audio can be input through the analog audio input interface for emergency broadcast.

Offline alarm

When the server is offline, the alarm can still be initiated through the remote telephone station, and the microphone of the broadcast controller can also initiate the all-zone broadcast..

Amplifier hot standby

The system has the function of automatic backup of power amplifiers, and the switching mode of main and standby power amplifiers can be set freely, supporting a maximum of 8 main and 1 standby.

Thanks!

Guangdong Baolun Electronics Co., Ltd.

