



# PA-4.8

Part Nr. 280234



User Manual

# Precautions

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- Do not configure the machine or read this user manual while driving.
- Adjust the volume of the audio system to a level where you can still hear traffic sounds.
- Read this manual thoroughly to understand relevant safety tips and warnings regarding the machine. After reading, keep this manual in a safe place for future reference.

**Remember : Traffic safety should always be your top priority.**

1. If you encounter any issues operating the machine, park the vehicle in a safe location before troubleshooting. Prevent children from operating the machine to avoid personal injury or damage.
2. Do not install or repair the machine while it is powered on. Do not attempt to maintain or repair the machine yourself. If necessary, seek professional assistance.
3. To ensure smooth operation, avoid exposing the machine to humid environments or spilling liquids on it.



# Packing list

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The package includes the following items. If any item is missing, please contact the authorized seller or manufacturer promptly.

| Items              | Quantity |
|--------------------|----------|
| PA-4.8 Machine     | 1 Pc     |
| User Manual        | 1 Pc     |
| 1.5m USB 2.0 Cable | 1 Pc     |

# Contents

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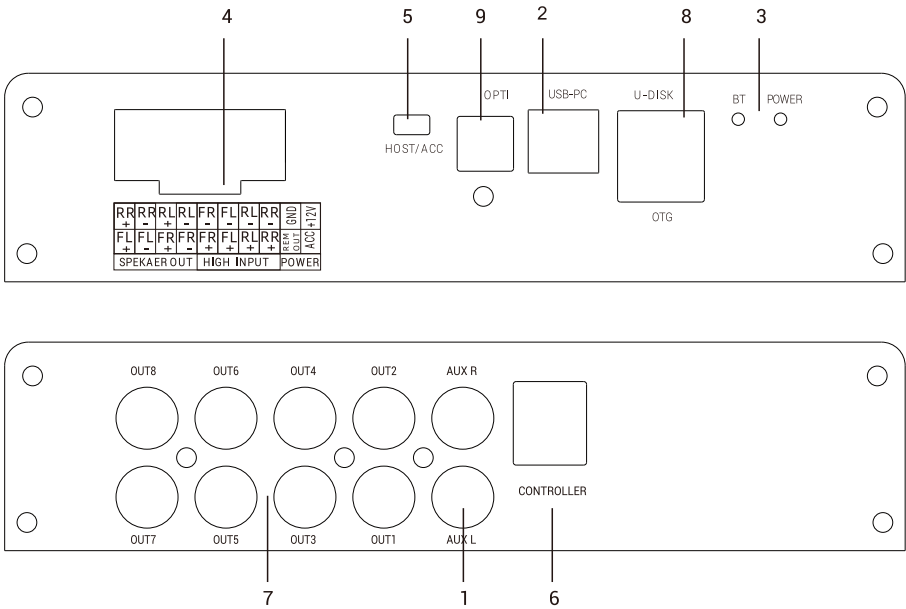
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# Part 1: Introduction to Machine Interface



- 1. Low level input interface
- 2. USB 2.0 interface
- 3. Power indicator
- 4. High level input, output and power interface

|      |     |     |     |     |     |     |     |     |      |
|------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| RR+  | RR- | RL+ | RL- | FR- | FL- | RL- | RR- | GND | +12V |
| OUT  | OUT | OUT | OUT | IN  | IN  | IN  | IN  |     |      |
| FL + | FL- | FR+ | FR- | FR+ | FL+ | RL+ | RR+ | REM | ACC  |
| OUT  | OUT | OUT | OUT | IN  | IN  | IN  | IN  | OUT |      |

- 5. Startup Mode
- 6. Controller interface
- 7. Low level output interface
- 8. Music USB interface and OTG interface
- 9. Optical interface

**Note:** PA-4.8 is compatible with the DRC PRO from Rainbow Audio.



# Part2: Overview of Control Software

## PC Software Introduction



### 1. Main Menu Settings

Load or save PC presets or the entire machine preset. Switch between Chinese and English. Update firmware, reset the device, view the version number, configure channel delay settings, and enable data encryption. Select and store up to six preset sound effects. Set the main source selection.

### 2. Filter Settings

Select frequencies, slopes, and types of high-pass and low-pass filters.

### 3. EQ Settings

Adjust the equalizer for the output channel, including frequency, Q value, and gain. Pass through, restore or reset the equalizer. Toggle between joint tuning and solo tuning.

### 4. Volume Settings

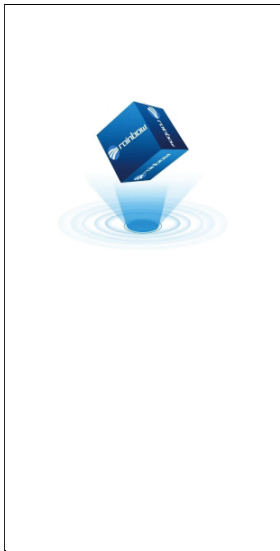
Setting range: OFF, -59dB to 0dB. Click the speaker button to mute.

### 5. Output Channel Settings

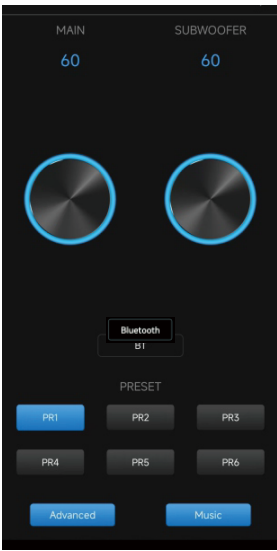
Set the volume, mute, and phase shift for the output channel. Choose between joint tuning and solo tuning methods.

# Part2: Overview of Control Software

## Mobile Software Introduction



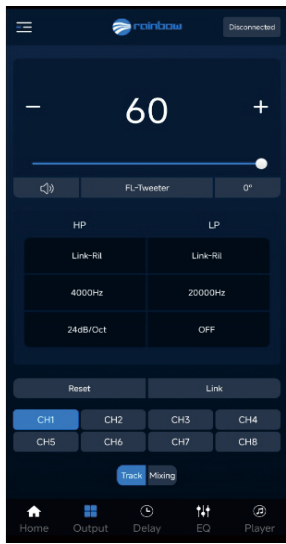
Start page



Home



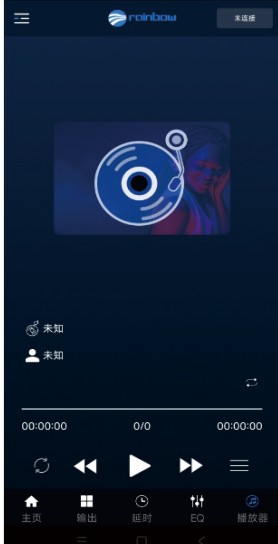
Delay



Channel



EQ



Player

## Part2: Overview of Control Software

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### 1. Start Page

A clear and intuitive interface to begin configuring your audio system.

### 2. Home Page

Encrypt data and view the model and version numbers of the machine and software. Adjust the master volume, select the main audio source, store and access up to six preset sound effects, and switch to the advanced interface.

### 3. Delay Page

Set the delay for the output channel. Use the "DELAY" button to adjust and fine-tune delay settings.

### 4. Channel Page

Control the output channel's volume, phase, and mute functions. Configure high-pass and low-pass filters including their types, frequencies, and slopes. Perform joint tuning across output channels for unified adjustments

### 5. EQ Page

Customize the equalizer for the output channel by adjusting frequency, Q value, and gain. Options include pass-through, restore, or reset for quick configuration. Toggle between joint tuning or solo tuning modes for precise equalizer adjustments.

### 6. Player

Play/pause, skip tracks, and browse track list from USB drive folders.

## Part 3: Product Parameters

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|                           |                                                                                                                                                                                                                      |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High-End Components       | AKM high-performance DSP chip: 269 MHz/48 kHz/24 Bit<br>Integrated ADC/DAC: 10 - 192 kHz/24 Bit<br>High-end, low-noise dual operational amplifier                                                                    |
| Input                     | 4-channel high level, AUX, optical fiber (48 kHz/16 Bit),<br>integrated digital Bluetooth, USB playback (MP3, WMA, WAV, FLAC), OTG play                                                                              |
| High-Level Input Mixer    | Each channel supports up to 4 independent input signal mixing.                                                                                                                                                       |
| Bluetooth                 | 1. Bluetooth 5.0<br>2. Bluetooth protocol: SBC + AAC + BLE + SPP<br>3. Bluetooth format: SBC, AAC                                                                                                                    |
| Output                    | 8-channel RCA, 4-channel high level                                                                                                                                                                                  |
| Amplifier Output          | Class D amplifier<br>4CH × 30 W (RMS)<br>4CH × 70 W (MAX)                                                                                                                                                            |
| Dynamic Range             | ≥100 dB                                                                                                                                                                                                              |
| Signal-to-Noise Ratio     | ≥98 dB                                                                                                                                                                                                               |
| Total Harmonic Distortion | ≤0.03%                                                                                                                                                                                                               |
| Input sensitivity         | RCA: 1 - 6 Vpp, High level: 8 - 28 Vpp                                                                                                                                                                               |
| Frequency Response        | 20 Hz - 20 kHz                                                                                                                                                                                                       |
| Input Impedance           | Low level input: 20 kΩ, High level input: 4.7 Ω                                                                                                                                                                      |
| RCA Output Voltage        | RCA: 6 Vpp                                                                                                                                                                                                           |
| Power Supply              | DC 9 V - 17 V (support EV)                                                                                                                                                                                           |
| Output Crossover          | Each channel is equipped with independent multi-stage HPF and LPF:<br>1.Type: Butterworth, Linkwitz-Riley, Bessel<br>2.Crossover frequency range: 20 Hz - 20 kHz, resolution: 1 Hz<br>3. Slope: 6 dB/Oct - 48 dB/Oct |

### Part 3: Product Parameters

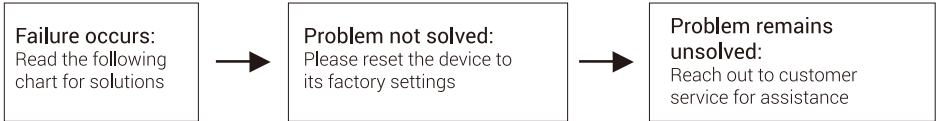
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|                       |                                                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output EQ             | 1. 31-band EQ<br>2. Frequency response: 20 Hz - 20 kHz, resolution: 1 Hz<br>3. Q value (slope): 0.429 - 16.052<br>4. Gain: -20.0 dB - +20.0 dB, resolution: 0.3 dB                |
| EQ Adjustment         | Single channel adjustment, left/right channel link adjustment, delay link adjustment, gain link adjustment, etc                                                                   |
| Output Phase          | Each channel can be independently switched between 0° and 180°.                                                                                                                   |
| Output Delay          | Each channel:<br>0.000 - 20.000 ms, 0.00 - 692 cm, 0.00 - 272 inch                                                                                                                |
| Output Volume         | Single channel output volume: mute, -60dB - 0dB<br>Single channel subwoofer volume: mute, -60dB - 0dB<br>Master Volume Control: mute, -60dB - 6dB                                 |
| DRC                   | Mode selection, master volume control, language switch (Chinese/English), bass volume control, USB flash drive song control (previous/next track, play/pause, track display, etc) |
| Computer Tuning       | Windows, Windows XP, USB interface, no driver required                                                                                                                            |
| APP                   | Android, iOS                                                                                                                                                                      |
| Operating Temperature | -20 - 60 °C                                                                                                                                                                       |
| Storage Temperature   | -20 - 80 °C                                                                                                                                                                       |
| Sampling Rate         | DSP: 269 MHz/48 kHz/24 Bit<br>Integrated ADC/DAC: 10 - 192 kHz/24 Bit                                                                                                             |
| REM Input             | High-level input (FL+/FL-) or ACC startup (optional)                                                                                                                              |
| REM Output            | +12 V starting voltage output (0.1 A)                                                                                                                                             |
| Standby Power         | ≤0.1 W                                                                                                                                                                            |
| Gross Weight          | Approx. 0.75 kg                                                                                                                                                                   |
| Dimensions            | Approx. 178 × 131 × 42 mm                                                                                                                                                         |
| Scene operation       | The machine can save 6 preset music scenes.                                                                                                                                       |

# Part 4: Common Troubleshooting

Please ensure all cables and interfaces are correctly connected before turning the power on.

## Troubleshooting Process:



## Common Troubles & Solutions:

| NO | Fault Phenomenon      | Causes & Solutions                                                                       |
|----|-----------------------|------------------------------------------------------------------------------------------|
| 1  | No Power              | Check the power connection;<br>Check the startup mode.                                   |
| 2  | No Sound              | Check if it is in mute mode:<br>Check if the correct input channel has<br>been selected. |
| 3  | Unable to connect USB | Check the USB connection;<br>Check if a "HID-compliant device" has<br>been installed.    |

## Notice

This manual is subject to minor updates or modifications. For the most accurate and up-to-date version, scan the OR code on the box to access the latest manual on Rainbow Audios official website.

# 注意事项

为了您的安全，请不要在驾驶过程中操作机器或查看本说明书；驾驶车辆时，请将音量调到能清楚听到外界声音水平。开始操作前，请详细阅读本手册，了解本使用手册和机器上的相关安全提示和警告标识，阅读完之后妥善保管，防止丢失。

## 首先请注意交通安全：

- 1、如您在操作本机器遇到困难时，请将车辆停靠在安全的地方后操作，勿让儿童操作本机器，以免造成人身伤害或者机器损坏。
- 2、在接通电源的情况下请勿安装或维修本机。机内没有用户能维修的地方，请勿自行保养，维护安装本机器，如有需要，请找专业人员打开和维修。
- 3、为了保证机器正常运行，请不要将机器暴露在潮湿的空气中，更不能将液体洒落在机器上。



# 包装清单

根据您购买的型号，包装箱内应放置如下物件，如有缺少，请尽快通知销售商或厂家：

| 配件            | 数量  |
|---------------|-----|
| PA-4.8        | 1 台 |
| 用户手册          | 1 本 |
| 1.5米USB 2.0线束 | 1 条 |

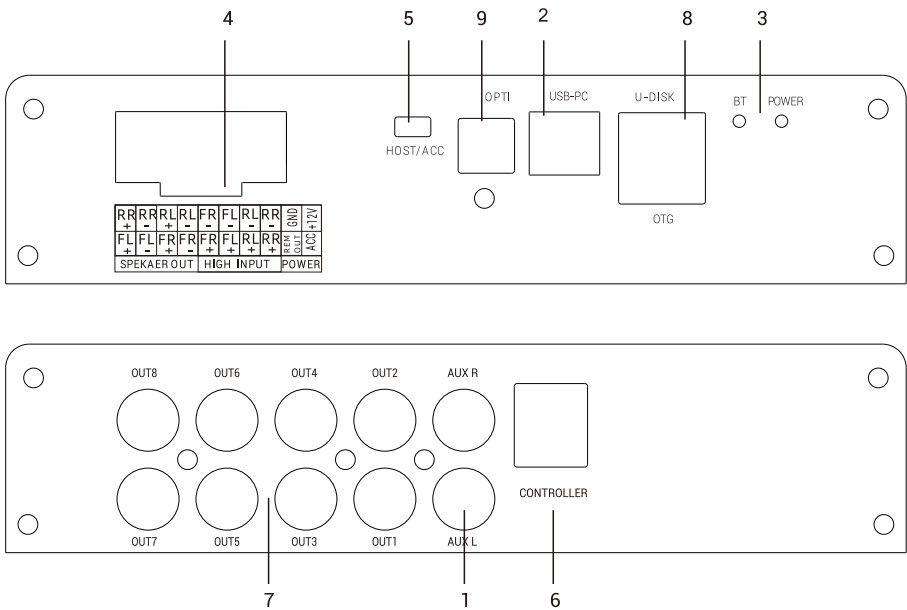
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# 第一部分：机器接口简介



- 1、低电平输入接口
- 2、USB 2.0接口
- 3、电源指示灯
- 4、高电平输入、输出及电源接口

|            |            |            |            |           |           |           |           |            |      |
|------------|------------|------------|------------|-----------|-----------|-----------|-----------|------------|------|
| RR+<br>OUT | RR-<br>OUT | RL+<br>OUT | RL-<br>OUT | FR-<br>IN | FL-<br>IN | RL-<br>IN | RR-<br>IN | GND        | +12V |
| FL+<br>OUT | FL-<br>OUT | FR+<br>OUT | FR-<br>OUT | FR+<br>IN | FL+<br>IN | RL+<br>IN | RR+<br>IN | REM<br>OUT | ACC  |

- 5、机器启动方式
- 6、控制器接口
- 7、低电平输出接口
- 8、音乐U盘和OTG输入接口
- 9、光纤输入接口

注意：PA-4.8适配Rainbow Audio的DRC PRO控制器。

## 第二部分：控制软件介绍

### 一、PC软件使用简介



#### 1、主菜单编辑区

加载或另存电脑上场景文件，加载或保存整机场景；中英文切换、固件更新、恢复出厂设置、查看版本；通道的延时设置、数据加密；6组预置音效的调用和存储；主音源选择操作。

#### 2、滤波器编辑区

高通和低通滤波器的频率、斜率以及类型的选择。

#### 3、输出EQ编辑区

输出通道的均衡设置，频率、Q 值（响应带宽）和增益（增加或减少该频率点附近的频响幅度），可直接通、恢复和重置均衡，联调或不联调切换等操作。

#### 4、主音量调节区

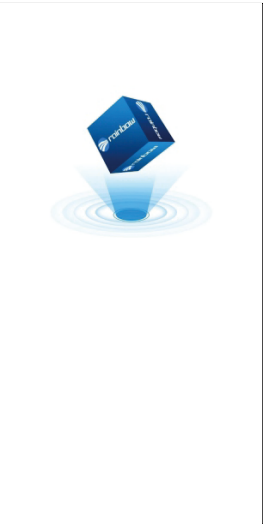
音量调节范围：关闭，-59dB-0dB，点击喇叭按钮可直接静音总音量。

#### 5、输出通道编辑区

输出通道的音量、静音、正反相设置、联调方式选择以及独奏选择。

# 第二部分：控制软件介绍

## 二、手机软件使用简介



启动页



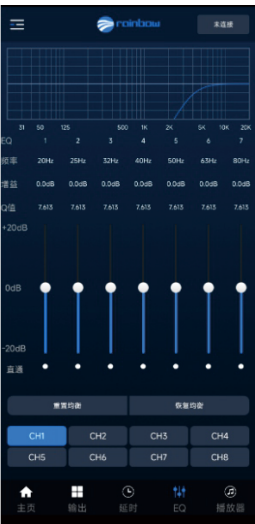
主页



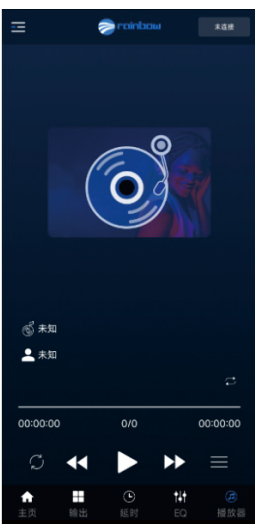
延时



通道



EQ



播放器

## 第二部分：控制软件介绍

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### 1、软件的启动页面

一个清晰且直观的界面，让您开始配置您的音频系统。

### 2、主页界面

可对数据加密，查看设备和软件的型号和版本号；对主音量大小进行调节；主音源选择、6组预置场景的存储或调用；切换至高级界面。

### 3、延时界面

声场定位输出通道延时调节，点击“延时”按键进入延时设置。

### 4、通道界面

设置输出通道音量、相位和静音；可调节滤波类型、频率和斜率，输出联调设置。

### 5、EQ界面

对应输出通道EQ曲线的调节(增益、Q值和频率)，可直通、恢复和重置均衡，联调或不联调切换等操作。

### 6、播放器界面

对应U盘的文件夹和歌曲播放/暂停、上下曲切换，曲目显示浏览。

### 第三部分：产品参数指标

|          |                                                                                                                                                    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 优质元件     | AKM高性能DSP芯片：269 MHz/48 kHz/24 Bit<br>内置数模转换ADC/DAC：10 - 192 kHz/24 Bit<br>高性能低噪声双运算放大器                                                             |
| 输入通道     | 4通道高电平、AUX、光纤（48 kHz/16 Bit）、内置数字蓝牙<br>支持U盘播放（MP3, WMA, WAV, FLAC）、OTG播放                                                                           |
| 高电平输入合频  | 每个通道最多支持4路独立输入合频                                                                                                                                   |
| 蓝牙       | 1、蓝牙5.0<br>2、蓝牙协议：SBC + AAC + BLE + SPP<br>3、蓝牙格式：SBC, AAC                                                                                         |
| 输出通道     | 8通道低电平RCA、4路高电平                                                                                                                                    |
| 功放输出（峰值） | D类功放<br>4CH × 30 W 额定<br>4CH × 70 W 峰值                                                                                                             |
| 动态范围     | ≥ 100dB                                                                                                                                            |
| 信噪比      | ≥ 98dB                                                                                                                                             |
| 总谐波失真    | ≤ 0.03%                                                                                                                                            |
| 输入灵敏度    | RCA：1 - 6 Vpp    高电平：8 - 28 Vpp                                                                                                                    |
| 频率响应     | 20 Hz - 20 kHz                                                                                                                                     |
| 输入阻抗     | 低电平输入：20 kΩ    高电平输入：4.7 Ω                                                                                                                         |
| RCA输出电压  | 6 Vpp                                                                                                                                              |
| 电源       | DC 9 V - 17 V (支持新能源车)                                                                                                                             |
| 输出信号分频器  | 每通道输出配有多阶高低通独立滤波器<br>1、专业滤波类型：巴特沃斯（Butterworth）、宁克-锐（Linkwitz）、贝塞尔（Bessel）<br>2、滤波分频点：20 Hz - 20 kHz，分辨率：1 Hz<br>3、滤波斜率（坡度）设置：6 dB/Oct - 48 dB/Oct |

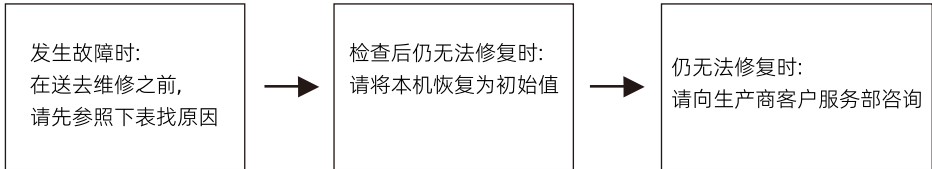
### 第三部分：产品参数指标

|         |                                                                                                               |
|---------|---------------------------------------------------------------------------------------------------------------|
| 输出信号均衡器 | 1、31段均衡器<br>2、频率范围：20 Hz - 20 kHz，分辨率1 Hz<br>3、Q值（斜率或坡度）：0.429 - 16.052<br>4、增益：-20.0 dB - +20.0 dB，分辨率0.3 dB |
| 均衡器联调模式 | 独立调节/左右联调/延时联调/增益联调等                                                                                          |
| 输出相位    | 每个通道独立调节：正相/反向（0°/180°）                                                                                       |
| 输出延时    | 每个通道：0.000至20.000毫秒，0.00至692厘米，0.00至272英寸                                                                     |
| 输出音量    | 单通道输出音量：静音、-60 dB - 0 dB<br>单通道超低音音量：静音、-60 dB - 0 dB<br>总音量调节：静音、-60 dB - 6 dB                               |
| 线控扩展    | 模式选择、总音量选择、中英文切换、低音音量控制<br>U盘上下曲控制、U盘歌曲暂停/播放、曲目显示等                                                            |
| 电脑调音    | Windows系统、XP系统、USB接口、免驱                                                                                       |
| 手机APP   | 安卓手机APP、苹果手机APP                                                                                               |
| 使用环境温度  | - 20 - 60 °C                                                                                                  |
| 保存温度    | - 20 - 80 °C                                                                                                  |
| 系统采样率   | DSP：269 MHz/48 kHz/24 Bit<br>内置 ADC/DAC：10 - 192 kHz/24 Bit                                                   |
| 启动REM输入 | 高电平启动（FL+/FL-）、ACC启动可选                                                                                        |
| 启动REM输出 | +12 V启动电压输出（0.1A）                                                                                             |
| 待机功耗    | ≤0.1 W                                                                                                        |
| 毛重      | 约0.75 kg                                                                                                      |
| 产品尺寸    | 约178 × 131 × 42 mm                                                                                            |
| 场景操作    | 机器可保存6种预置音效                                                                                                   |

## 第四部分：常见故障解决

在通电前，应仔细检查连接线是否正常，必须保证所有接口为正常连接。

常见故障判断及处理方法：



故障排除方法：

| 序号 | 故障现象    | 原因及解决方法                        |
|----|---------|--------------------------------|
| 1  | 不通电     | 电源连接是否正确？<br>启动方式是否正确？         |
| 2  | 无声音     | 是否启动了静音操作？<br>信号输入通道选择是否正确？    |
| 3  | USB联机不上 | USB 连接线有无插到位？<br>是否安装了HID兼容设备？ |

### 注意

本手册可能会有小的更新或修改。如需最新版本，请扫描产品包装上的二维码，进入彩虹音响官方网站，查看最新手册。