Douk Audio AK2515 (PJ454_US)

Nobsound AK2515 Pro Audio Spectrum Analyzer User Manual

Model: AK2515 (PJ454_US) | Brand: Douk Audio / Nobsound

1. Overview

The Nobsound AK2515 is a high-resolution VFD (Vacuum Fluorescent Display) audio spectrum analyzer designed for musicians and audio enthusiasts. It functions as a precise sound level meter and offers advanced features for detailed audio analysis and visual representation. This manual provides comprehensive instructions for setting up, operating, and maintaining your AK2515.



Figure 1.1: Nobsound AK2515 Pro Audio Spectrum Analyzer

Key features include a 25x15 resolution VFD display, a precise clock display with high accuracy, versatile 20Hz-20kHz frequency range, and both 3.5mm AUX and MIC inputs for flexible connectivity. It incorporates advanced AGC (Automatic Gain Control) and spectrum algorithms for optimal visual effects, along with extensive customization options for display modes, brightness, and response speeds. The device also features noise filtering and multiple operational modes to suit various environments and preferences.

2. Product Features

- **High-Resolution VFD Display:** Features a 25x15 resolution VFD display for accurate frequency band representation. Includes a precise clock display utilizing an SD3078 built-in crystal oscillator for ±3.8ppm accuracy, ensuring minimal monthly error.



Figure 2.1: High-Resolution VFD Display with Spectrum and Clock

- **Versatile Frequency Range and Connectivity:** Supports an extensive 20Hz-20kHz frequency sweep for high-precision frequency point testing. Equipped with 3.5mm AUX and sensitive MIC inputs, allowing for both wired and wireless audio connections.



Figure 2.2: Connectivity Options: 3.5mm AUX and MIC Input

- **Advanced AGC and Customizable Display Modes:** Integrates a special AGC and spectrum algorithm to ensure optimal visual effects across a wide range of input signals. Users can switch between -10/-5/-3/-1/0dB gain settings and select from three display modes: Real Output, Smooth Output I, and Smooth Output II.



Figure 2.3: Customizable Display Modes and AGC Functionality

- **Extensive Customization and Adjustable Settings:** Offers comprehensive customization, including adjustable brightness, main light column falling speed, peak holding and falling speeds, date and time display, four font types, five music spectrum modes, five clock modes, and three level modes. All settings are retained with a power-off memory function.

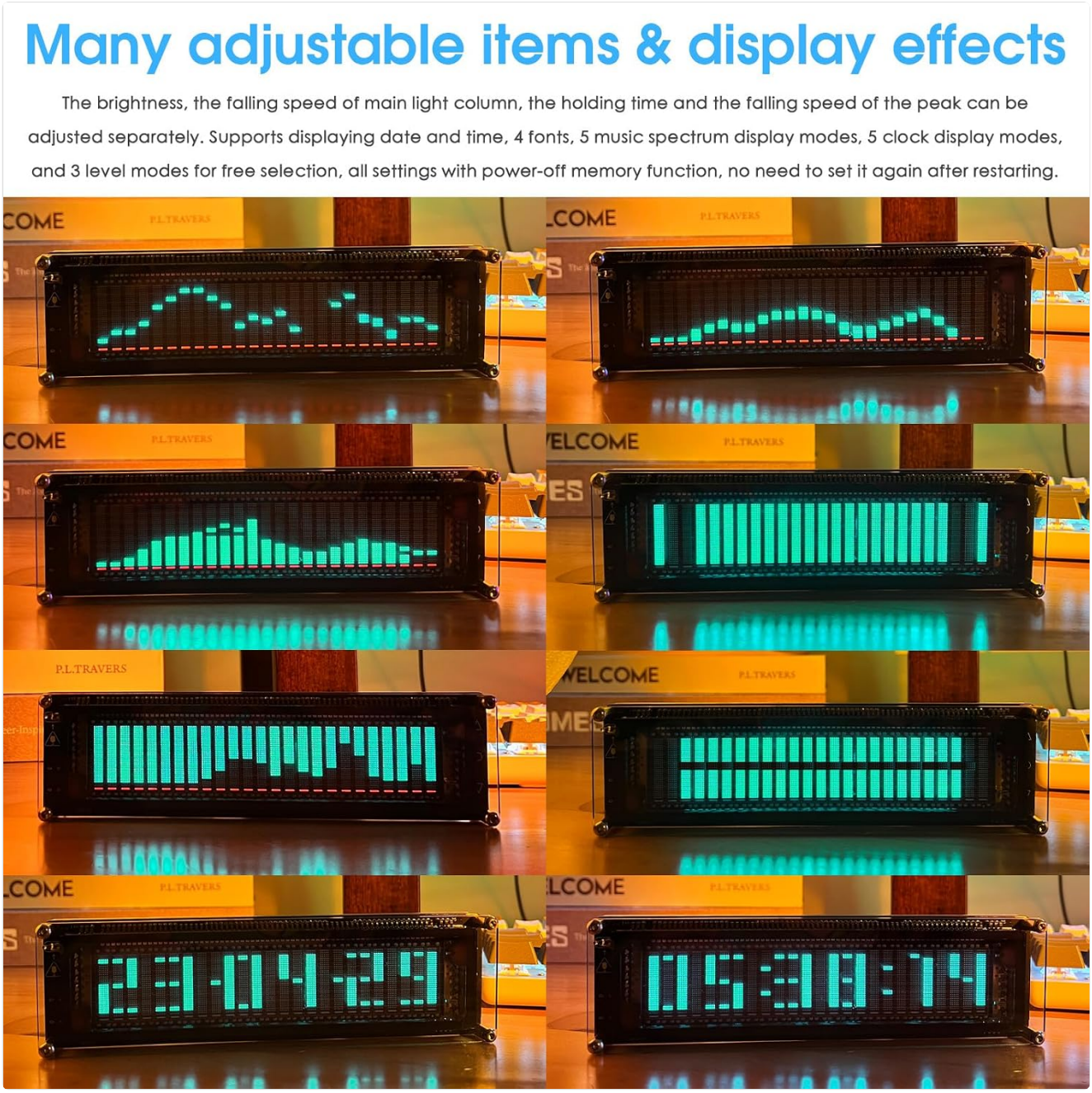


Figure 2.4: Variety of Adjustable Display Effects

- **Noise Filtering and Multiple Modes:** Features five frequency division and amplification curve modes to enhance visual clarity and sound quality. A dedicated noise filtering function significantly improves sound clarity, making it suitable for diverse environments. Operational modes include Auto, Deep Sleep, Music Spectrum, and Clock Display.

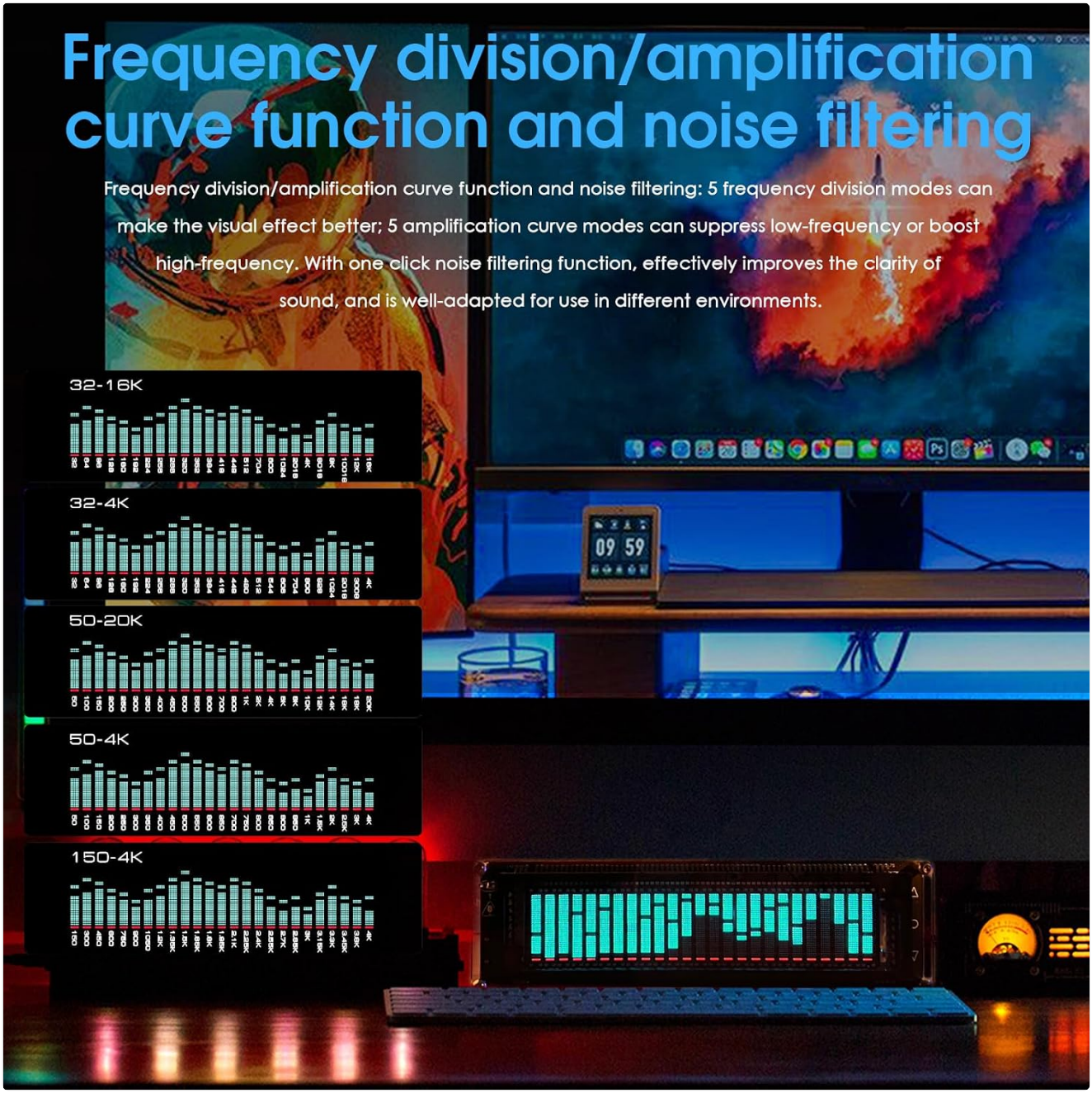


Figure 2.5: Frequency Division and Noise Filtering Capabilities

3. Setup

3.1 Package Contents

Before assembly, verify that all components are present in the package:



Figure 3.1: Included Package Contents

- 1 x AK2515 Audio Spectrum Analyzer Board
- 2 x Acrylic Boards (for casing)
- 1 x 3.5mm Audio Cable
- 1 x USB Cable (Type-C)
- 1 x 1:2 3.5mm Cable
- 1 Set x Installation Screws (including standoffs and nuts)

3.2 Assembly Instructions

The AK2515 requires minor assembly to enclose the circuit board within the acrylic casing. Follow these steps:

1. Carefully remove all components from their packaging.
2. Identify the main AK2515 Audio Spectrum Analyzer Board.
3. Take one acrylic board and align it with the bottom of the circuit board, ensuring screw holes match.
4. Insert the longer standoffs through the aligned holes from the bottom acrylic board, through the circuit board.

5. Place the second acrylic board on top, aligning its holes with the top of the standoffs.
6. Secure the assembly using the provided screws and nuts. Ensure all connections are snug but do not overtighten.

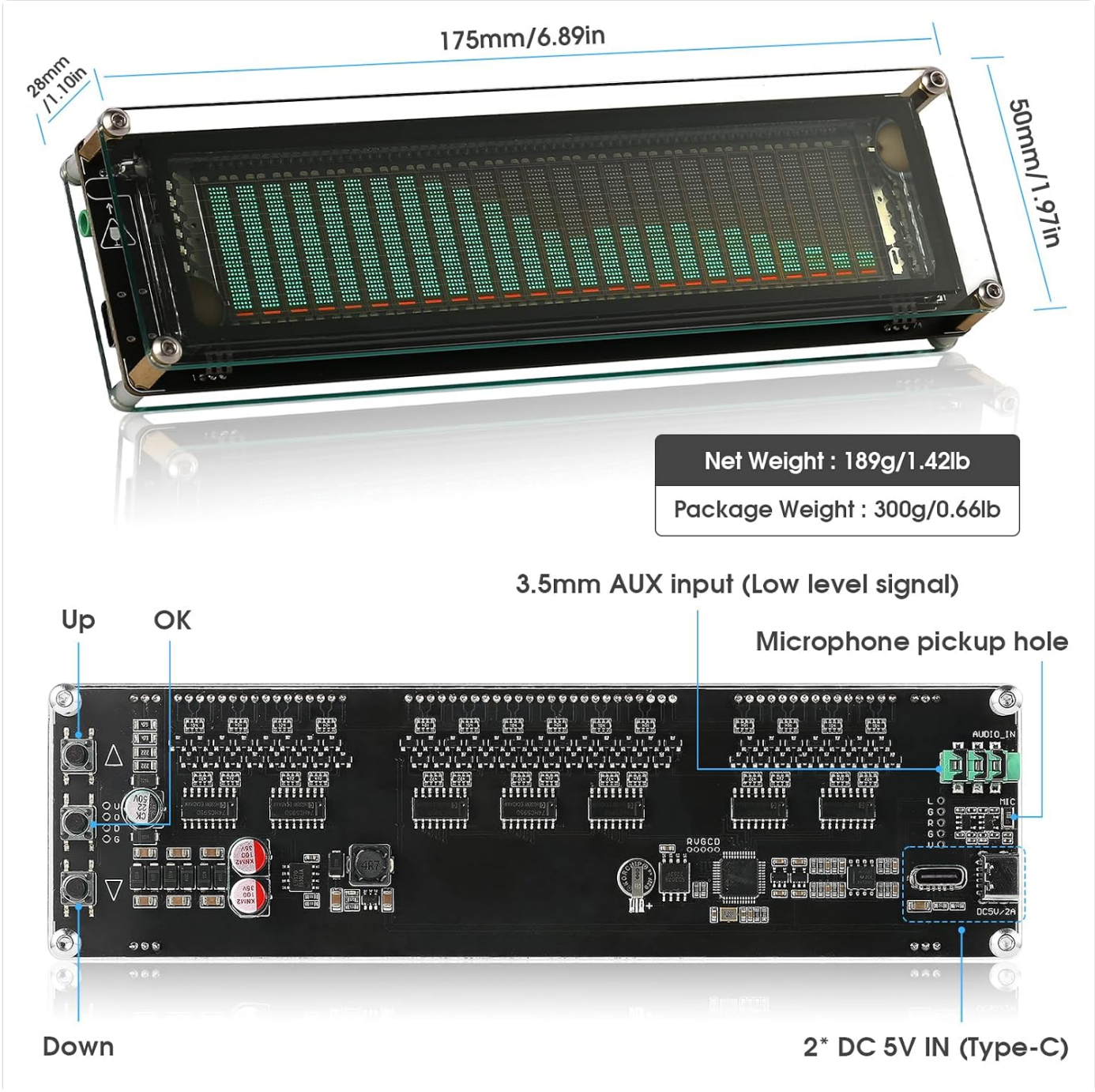


Figure 3.2: AK2515 Board Layout and Connection Points

3.3 Power and Audio Connections

Connect the AK2515 to power and audio sources:

1. **Power Connection:** Connect the provided USB Type-C cable to one of the two "DC 5V IN (Type-C)" ports on the AK2515 board (refer to Figure 3.2). Connect the other end to a standard 5V DC USB power adapter (not included).
2. **Audio Input:**
    - **3.5mm AUX Input:** For wired audio sources (e.g., smartphone, computer, audio player), use the 3.5mm audio cable to connect your device's audio output to the "3.5mm AUX input (Low level signal)" port on the AK2515.
    - **Microphone Input:** The AK2515 has a built-in microphone for ambient sound pickup. No external connection is needed for this mode. The "Microphone pickup hole" is visible on the board (refer to Figure 3.2).

Ensure all connections are secure before powering on the device.

4. Operating Instructions

The AK2515 features three control buttons: "Up", "OK", and "Down" (refer to Figure 3.2 for their location on the board). These buttons are used to navigate menus and adjust settings.

4.1 Basic Operation

- **Power On/Off:** The device powers on automatically when connected to a 5V DC power source. To power off, disconnect the power cable.
- **Input Mode Selection (MIC/AUX):**

  By default, the device may start in MIC mode. To switch between MIC and AUX input modes, press the **OK** button. The display will indicate the currently active input mode. Ensure the correct input is selected for your audio source.
- **Gain Adjustment:**

  The AK2515 supports gain settings of -10dB, -5dB, -3dB, -1dB, and 0dB. To adjust the gain, enter the settings menu (see Section 4.2) and navigate to the gain option. Use the **Up** and **Down** buttons to select the desired gain level. This helps optimize visual effects for different input signal strengths.

4.2 Advanced Settings and Customization

To access and adjust advanced settings, press and hold the **OK** button for a few seconds until the settings menu appears. Use the **Up** and **Down** buttons to navigate through the menu options, and press **OK** to select an option or confirm a setting.

- **Brightness Adjustment:** Adjust the overall display brightness to suit your environment.
- **Light Column Falling Speed:** Control how quickly the main light columns fall after reaching their peak.
- **Peak Holding and Falling Speeds:** Customize the duration the peak indicator holds and its subsequent falling speed.
- **Date and Time Display:** Set the current date and time for the clock display mode.
- **Font Types:** Choose from four different font styles for text display.
- **Music Spectrum Modes:** Select from five distinct music spectrum display patterns.
- **Clock Modes:** Choose from five different clock display styles.
- **Level Modes:** Select from three different level display modes.
- **Frequency Division and Amplification Curve Modes:** Utilize five different modes to fine-tune the visual representation of frequencies.
- **Noise Filtering:** Enable or disable the noise filtering function to improve sound clarity, especially in noisy environments.

All customized settings are saved automatically and will be retained even after the device is powered off.

4.3 Operational Modes

The AK2515 supports several operational modes:

- **Auto Mode:** The device automatically switches between display modes.
- **Deep Sleep Mode:** A low-power mode for when the device is not actively in use.
- **Music Spectrum Mode:** Displays the audio spectrum in real-time.
- **Clock Display Mode:** Shows the current time and date.

Switch between these modes using the control buttons as described in the advanced settings section.

5. Troubleshooting

This section addresses common issues you might encounter with your Nobsound AK2515.

Problem	Possible Cause	Solution
Device does not power on.	No power, incorrect power adapter, loose connection.	Ensure the USB Type-C cable is securely connected to both the device and a 5V DC power adapter. Verify the power adapter is functional.
No spectrum display or incorrect display.	Incorrect input mode (MIC/AUX), low audio signal, high ambient noise (in MIC mode), incorrect gain setting.	◦ Press **OK** to cycle between MIC and AUX input modes. ◦ Increase the volume of your audio source if using AUX input. ◦ If in MIC mode, ensure the environment is not excessively noisy or try adjusting the gain setting. ◦ Adjust gain settings (-10dB to 0dB) to match input signal strength.
Display appears erratic or "stuck".	Software glitch, incorrect display mode selected.	◦ Try cycling through display modes (Real Output, Smooth Output I, Smooth Output II). ◦ Disconnect and reconnect power to restart the device.
Difficulty navigating settings.	Unfamiliarity with button functions.	Review Section 4.2 "Advanced Settings and Customization" for detailed instructions on using the **Up**, **OK**, and **Down** buttons.
Loud buzzing sound (in MIC mode).	Interference, high microphone sensitivity in a noisy environment.	◦ Enable the noise filtering function in the settings. ◦ Reduce the gain setting. ◦ Consider using the AUX input if the environment is consistently noisy.

6. Specifications

Attribute	Detail
Model Number	PJ454_US
Display Type	VFD (Vacuum Fluorescent Display)
Display Resolution	25x15
Frequency Range	20Hz-20kHz
Input Voltage	5 Volts (DC)
Input Interface	3.5mm AUX, Built-in MIC
Clock Accuracy	±3.8ppm (monthly error within 10 seconds)
Package Dimensions	7.76 x 5.67 x 1.65 inches

Attribute	Detail
Item Weight	10.55 ounces (approx. 300g)
Manufacturer	Nobsound
Mounting Type	Surface Mount

7. Care and Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the display and casing. Avoid abrasive cleaners or solvents that could damage the acrylic or VFD screen.
- **Storage:** When not in use for extended periods, store the device in a cool, dry place away from direct sunlight and extreme temperatures.
- **Handling:** Handle the device with care to prevent drops or impacts, which could damage internal components or the VFD display.
- **Power Supply:** Always use a stable 5V DC power supply to prevent damage to the unit.

8. Warranty and Support

This product is manufactured by Nobsound, a brand of Douk Audio. For warranty information, technical support, or service inquiries, please refer to the official Douk Audio website or contact their customer support directly. Please retain your proof of purchase for warranty claims.

For further assistance, you may visit the Douk Audio Store on Amazon.

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

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Answered questions about this manual

How do I switch from the date/time setting to the spectrum display on the Douk Audio AK2515?

To switch the Douk Audio / Nobsound AK2515 from the clock/date setting back to the music spectrum display, follow these steps using the control buttons (Up, OK, Down) located on the board:Accessing the Menu:...

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