PEQ Settings Instructions for FiiO Portable DAC/AMP

1.The FiiO Products with PEQ support

FiiO products that support wired PEQ settings include:

KA17, KA15, JA11, BTR13, BTR17, BTR15, K19, K17, Q7, Q15

FiiO products that support web control (https://fiiocontrol.fiio.com/) PEQ settings include:

KA17，KA15，JA11，BTR13，BTR17，K15

FiiO products that support DSP client PEQ settings include:

K19, K17

FiiO Products that support Bluetooth PEQ settings include:

UTWS5 2025, Q7, Q15, BTR13, BTR15, BTR17, FW5, FW3, UTWS5, K9, K9AKM, K9Pro, K9Pro ESS, K17, K19, K15, K7BT, BTR7

FiiO products supporting PEQ—whether Bluetooth or wired—can be adjusted via the FiiO Control app. The web-based interface currently only supports some newer models, with more to be added later. UI interfaces may vary slightly

between different versions and products, so please refer to the actual display after connecting your device.

Here, we use the KA15 as an example to explain how to use the PEQ function in FiiO products. The KA15's PEQ can be configured via the FiiO Control mobile app or the web-based interface, and settings are saved and remain effective after exiting. Below are the usage instructions.

2.PEQ setting via mobile App: FiiO Control APP

1.After downloading the FiiO Control app on your phone, connect the KA15 to an Android device via an OTG cable to adjust PEQ settings in the app.

Note: The K15/K17 connects to FiiO Control APP via Wi-Fi and does not require a data cable.

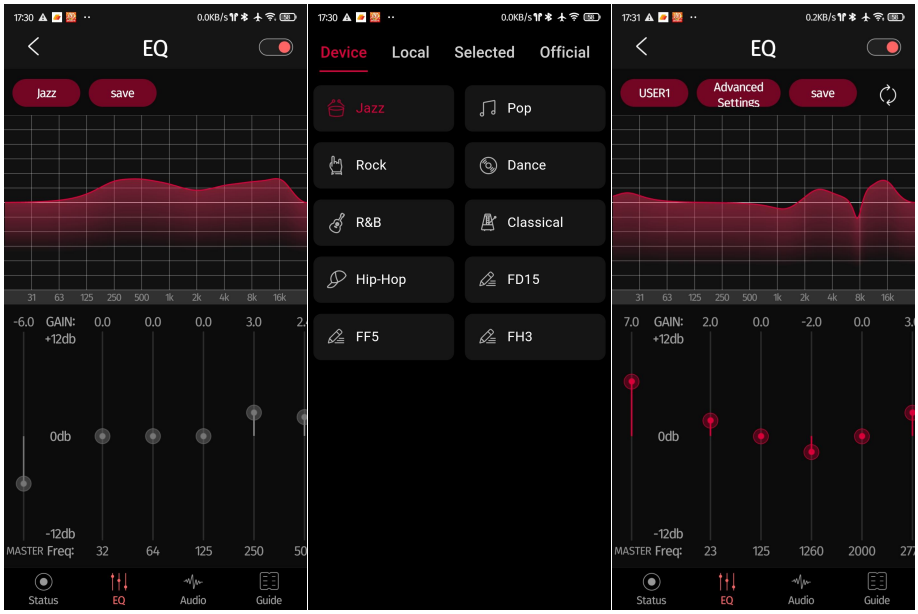
2.Enter the Equalizer to configure EQ settings.

The KA15 includes seven built-in EQ presets (Jazz, Pop, Rock, Dance, R&B, Classical, Hip-Hop) that cannot be modified.

Below these are three customizable EQ slots (USER1, USER2, USER3), where you can adjust settings, including renaming the EQ by long-pressing the name.

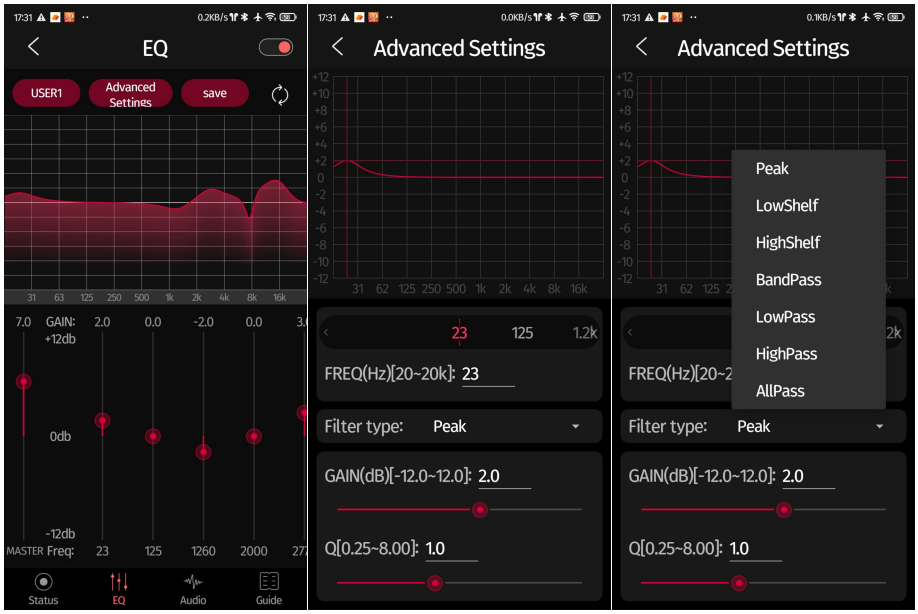
Gain: Adjusts global gain(-12 dB to +12 dB)

Frequency: Sets the frequency point (20–20,000 Hz).



3.Switch to USER1, click Advanced Settings. You could adjust Gain, Q value and select from seven filter types.

Q Value: Adjustable from 0 to 100.



The KA15 supports cloud sharing, downloading, uploading (requires FiiO account login), and saving PEQ presets.

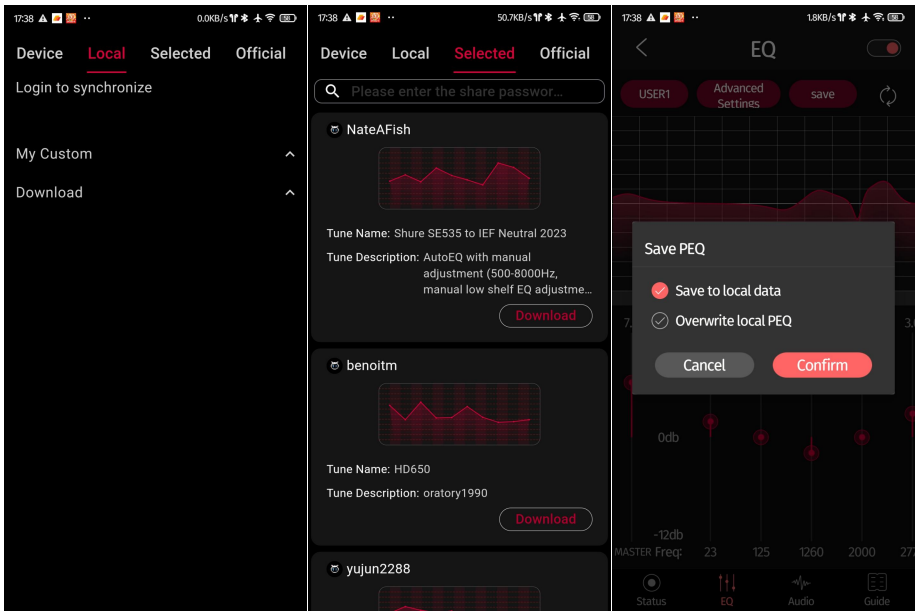
Local: View and manage your saved or downloaded PEQ presets.

Selected: Download PEQ presets shared by other FiiO users.

Save:

Save to Local data: Stores the current settings as a local EQ preset for future access.

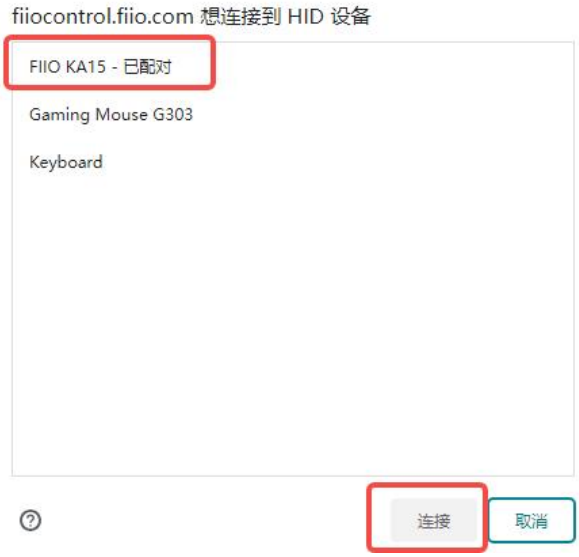
Overwrite Local EQ: Replaces an existing local EQ preset with the current settings.



3. PEQ setting via Web control

Web control link: https://fiiocontrol.fiio.com/

Connect the KA15 to your computer via USB (preferably using the rear motherboard port), click "Connect", select KA15, and click Connect for EQ adjustment.



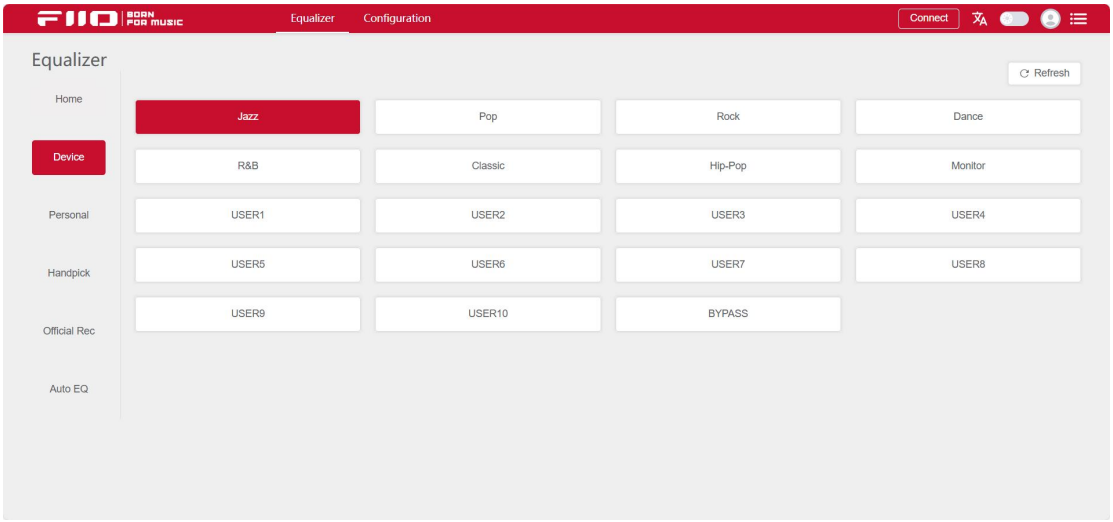
The EQ adjustment options are similar to the mobile app, providing a convenient way to configure PEQ on a computer.

The Configuration-device update feature is currently only available for some

devices.

Like the mobile app, the web version offers seven preset EQ curves (Rock, Pop, Classical, Blues, Jazz, Hip-Hop, Dance), but adjustments cannot be saved.

Custom EQs allow saving three presets, with changes taking effect immediately without needing to click Save.



Filter Type Explanations:

P: Peak

LS: Low Shelf

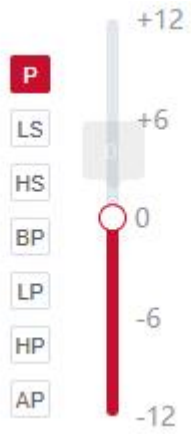
HS: High Shelf

BP: Bandpass

LP: Lowpass

HP: Highpass

AP: Allpass



4. PEQ introduction

PEQ, also known as a parametric equalizer, is an equalizer that allows for detailed adjustments of various parameters. The adjustable parameters include frequency bands (e.g., low, mid-low, mid-high, and high frequencies), frequency points (sweepable, allowing arbitrary selection), gain (boost or cut), and quality factor Q (bandwidth, with options for arbitrary adjustment, high Q, or low Q). It is generally used for subjective sound adjustments, making musical styles more distinct, vibrant, and achieving the desired listening effect.

Users can adjust PEQ parameters such as frequency, gain, and Q value through the FiiO Control app to achieve more accurate and precise frequency responses across different frequency ranges. In the future, we will also introduce various filter options to assist in achieving more audio effects.

In audio processing, PEQ (Parametric Equalizer) has three main parameters: frequency, gain (often denoted as G), and Q value.

(1)Frequency: This refers to the specific frequency point being adjusted. It determines which frequency range the equalizer operates on.
For example, setting the frequency to 1kHz means the equalizer will primarily adjust audio frequencies around 1kHz. By selecting different frequency points, you can selectively boost or cut specific frequencies to adjust the audio timbre. For instance, boosting high frequencies can enhance brightness and clarity, while

cutting low frequencies can reduce rumble.

(2)Gain (G): This refers to the degree of volume adjustment for the selected frequency point.

2.1 Positive Gain: When the gain is positive, it increases the volume of the selected frequency. For example, a gain of +6dB will amplify the volume around that frequency, making it more prominent. This can be used to emphasize specific frequency components, such as enhancing harmonics of instruments or improving vocal clarity.

2.2 Negative Gain: When the gain is negative, it reduces the volume of the selected frequency. For example, a gain of -3dB will attenuate the volume around that frequency. This can be used to reduce unwanted frequency components, such as noise or resonance.

(3)Q Value: This reflects the width of the frequency range adjusted by the equalizer.

3.1 Low Q Value: The equalizer adjusts a broader frequency range. For example, a Q value of 0.5 affects a relatively wide band of frequencies, making it suitable for overall tonal adjustments, such as moderate boosts or cuts to entire low or high-frequency regions without overly emphasizing specific frequencies.

3.2 High Q Value: The equalizer adjusts a very narrow frequency range. A Q value of 10 or higher targets a precise frequency range, making it ideal for eliminating specific noise or resonance or emphasizing particular harmonics of an instrument.

(4)Additional Notes

4.1 PEQ Adjustment Tips

4.1.1 When adjusting gain, prioritize attenuation over boosting. For example, it’ s often better to cut mid-frequencies rather than boost low or high frequencies. Of course, you can also boost the overall gain after attenuation.

4.1.2 Adjust the gain to a level where you can perceive the change. Typically, a 2dB change is already noticeable to the human ear. Unless necessary, avoid maxing out the gain to +12dB.

4.1.3 During adjustments, compare the sound by toggling the equalizer on and off. This helps avoid scenarios where boosting highs makes lows seem thin, leading to further adjustments that might weaken mids.

4.1.4 In the app, gain can be adjusted manually by dragging. If entering numbers is cumbersome, you can set the frequency and Q values first and then drag the

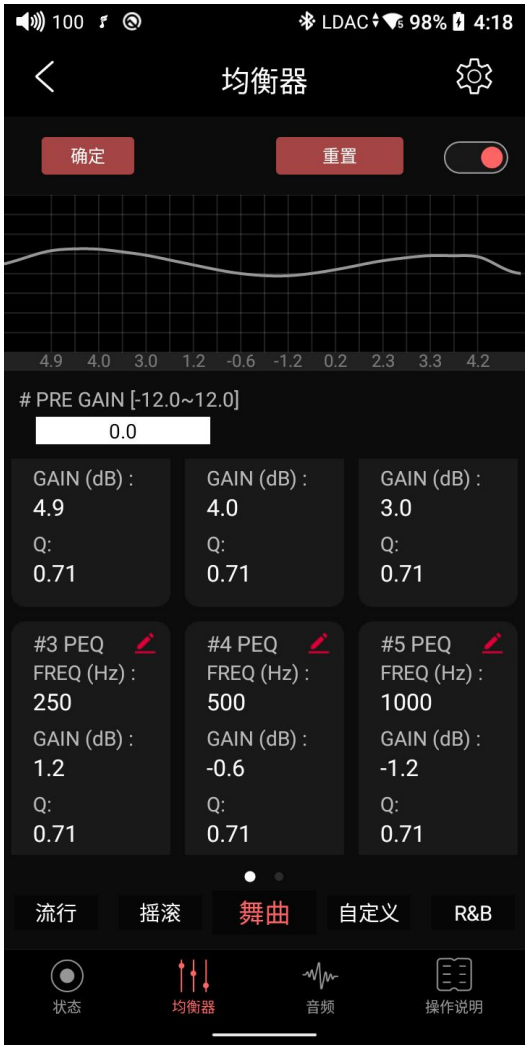
overall or individual frequency gains.

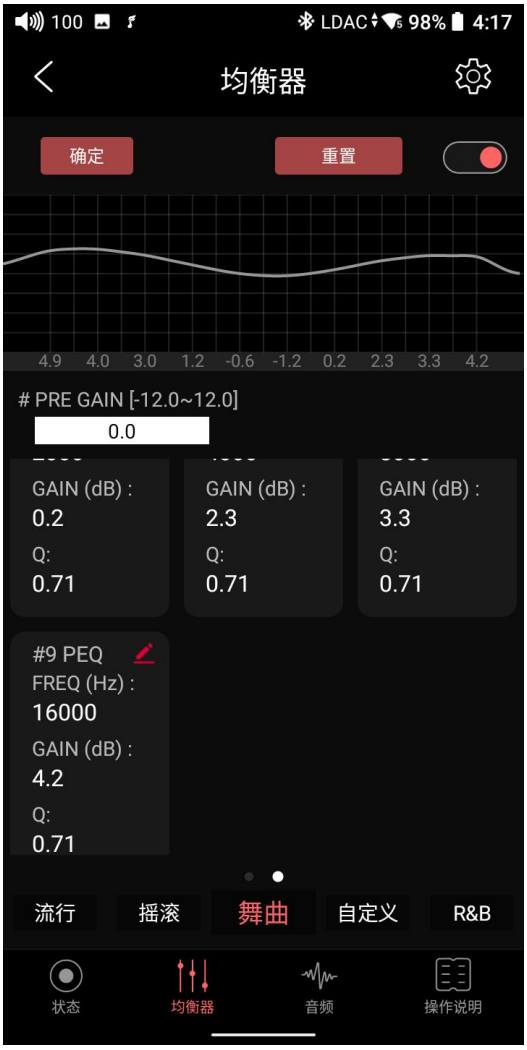
4.2 Audio Metric Changes Before and After PEQ Adjustment

Audiophiles generally pursue high-fidelity listening experiences and may worry about sound quality degradation when using EQ. To address this, our engineers tested the same audio signal with PEQ enabled and disabled, focusing on distortion.

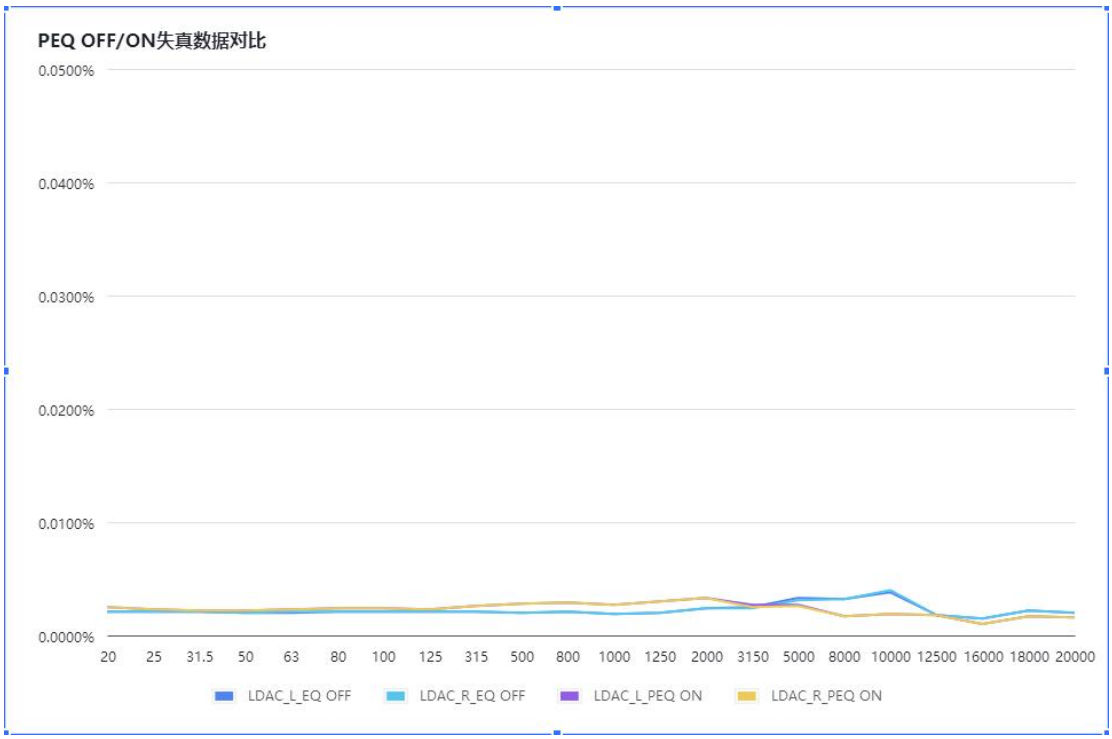
The test results show that after adjusting PEQ, distortion changes slightly as the amplitude of corresponding frequencies varies. Some frequencies may show improved distortion, while others may slightly worsen. However, these minor differences are imperceptible during normal listening. The primary effect is the altered listening experience due to amplitude adjustments.

PEQ Parameters Used in Testing:





Detailed Metric Parameters:



4.3 Functions of Different Filter Types (For Reference)

4.3.1 Low Shelf:

Adjusts the low-frequency range as a whole. Boosting gradually increases the volume below a specific cutoff frequency, enhancing the power and ambiance of lows (e.g., making drums or bass sound fuller). Cutting reduces low-frequency volume, helping to eliminate rumble or muddiness for clearer audio.

Applications:

In electronic music, boosting the low-frequency shelf can enhance bass impact.

For recordings with excessive low-frequency noise, cutting the shelf can improve sound quality.

4.3.2 High Shelf:

Adjusts the high-frequency range as a whole. Boosting increases volume above a specific cutoff frequency, enhancing brightness and clarity (e.g., making high-frequency harmonics of instruments more pronounced). Cutting reduces high-frequency volume, softening harsh highs.

Applications:

In classical music, boosting the high-frequency shelf can make string instruments sound brighter.

For poorly recorded audio with piercing highs, cutting the shelf can improve listening comfort.

4.3.3 LowPass Filter:

Allows signals below a set frequency to pass while attenuating higher frequencies. It removes high-frequency noise, creating a softer, warmer sound with a 朦胧, distant effect.

Applications:

For vocals, it can reduce sibilance and breathiness for smoother sound.

In ambient music, it can create a mysterious, tranquil atmosphere.

4.3.4 BandPass Filter:

Allows only signals within a specific frequency range to pass, attenuating others. It can emphasize a particular frequency band (e.g., highlighting the midrange of a guitar) or isolate specific audio elements.

Applications:

During mixing, it can make certain instruments stand out.

In audio analysis or sound design, it can extract specific frequency characteristics for further processing.

4.3.5 AllPass Filter:

Allows all frequencies to pass without attenuation. It primarily adjusts phase characteristics rather than frequency response, affecting spatial and stereo perception.

Applications:

In audio system calibration, it can optimize phase relationships between speakers for better soundstage.

In special audio processing, it can create effects like echo or reverb adjustments.