

# Active and passive noise headphones, which type?

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## Why should noise protection be needed for headphones?

While you enjoy the music, in addition to the quality of the diaphragm, one of the factors that affect the sound quality the most is the noise outside that reaches your ears. Many types of noise from the surroundings can interfere or even block music from our headphones. When wearing earbud headphones, such as the Apple Airpod to listen to music on the road, on the train. Certainly users will not be able to focus on the music by the car horn, the voice will reach the human ear wear, overtake the sound emitted from the headset. To temporarily fix this problem, we tend to increase the volume to overpower the noise, which seems to be effective but forces the ear to endure two large sound sources at the same time. This is a non-scientific way of listening to music, and can greatly affect our hearing later.

In order to be able to listen to music in a variety of noise-free environments, manufacturers have produced many types of noise-canceling headphones. These headphones are divided into two categories, including Active Noise Canceling (ANC) and Passive Noise Canceling (PNC) noise reduction. Among them, ANC is definitely more and more effective in noise technology than PNC.

## When to use active noise protection?

Technically, any headset or headset has the ability to passively reduce noise. That is because the material of the headset itself blocks some sound waves. Reduce noise by about 15 to 20 decibels (dB). But for example, when a

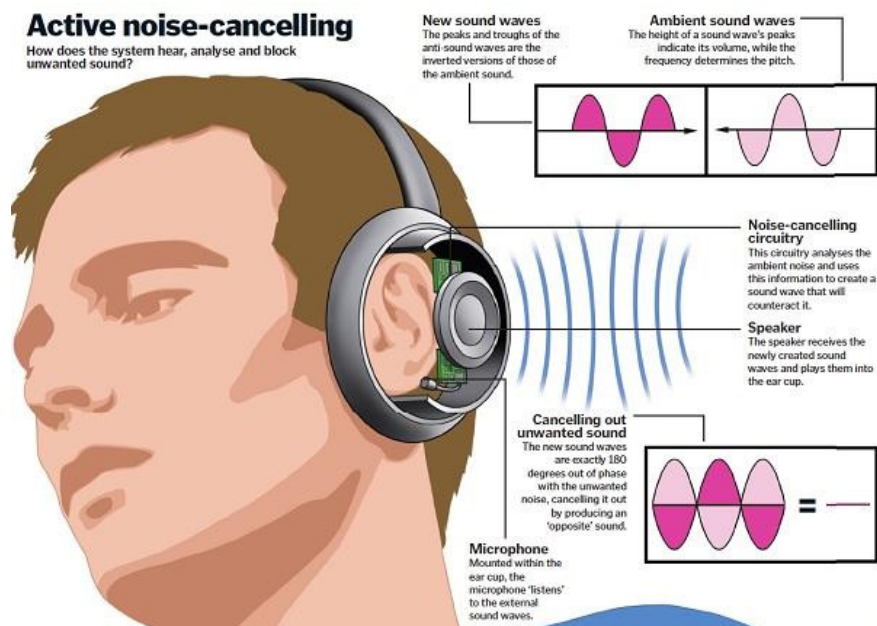
jet engine generates 75 to 80 dB of noise inside the aircraft cabin, passive noise-canceling models can only reduce about 20dB of noise, the remaining 55-60dB is still too much. and will ruin your listening space, so ordinary headphones always have some serious limitations in certain situations, and this is where active noise canceling headphones can create great difference.

## What is an active noise-canceling headset?

Active Noise Canceling (ANC) is a modern technology developed by Bose Audio in the late 20th century. The principles of ANC operation are not too complicated. Headphones with this technology will be equipped with a mic to recognize the audio stream from the outside environment, then a part on the headset will actively create sound waves inverted with the mic sound. get. These two mixes of sound waves meet, and because they fluctuate in opposite directions, they will cancel each other out. As a result, users will no longer hear the noise from the outside lips. Thus, the wearer can comfortably enjoy the favorite music when traveling on the street or in crowded places without hearing any significant noise from outside the headset.

However, this is not a perfect technology. When active noise protection is activated, the headset creates a slight pressure on the wearer's eardrum, feeling similar to when we were on a plane that just took off. You do not need to worry about this problem, because the pressure is not so strong that it does not cause an earache like it happens on an airplane. Along with that, when ANC system works, you will probably hear a small noise on the music platform, for the common users, this is not a big problem, but for the fastidious audiophiles, that is a minus point is not small. Finally, active noise suppression will not prevent 100% noise from the environment completely, so listeners can still be aware of what's going on around them. While noise-canceling headphones do quite well in distinguishing between the sound the user wants to hear and the background noise he or she wants to remove, some people claim that they agree to sacrifice some sound quality. bar to counter this artificial tranquility.

## Which part of the anti-noise headset is active? How does it work?



1. Battery - Electronic devices responsible for noise cancellation will be powered by batteries.

2. Mic - Noise canceling headset with mic to pick up ambient noise (such as car horns, crowds, machines .).
3. Noise canceling circuit: The electronic devices inside the headset will create a noise-canceling wave that oscillates in stark contrast to the ambient noise recorded by the mic. This wave acts as a noise eraser, it removes unwanted sounds around you without reducing the main sound emanating from the headset driver.

## **Demand for active noise-canceling headphones**

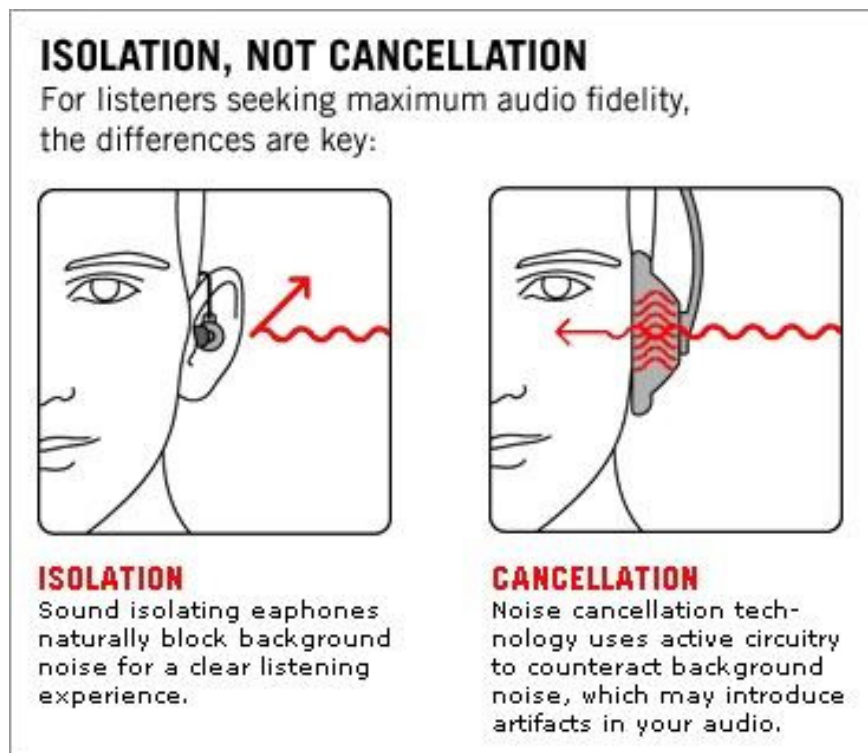
Ignoring the price factor, some people said they would never return to normal headphones. That's because active noise canceling headphones are really useful in today's bustling modern life. For example, you can even use a headphones to get rid of it to relax, create a quiet space for reading or working in public places, not just listening to music.

## **What is passive noise protection?**

Passive noise-canceling headphones do not contain noise-canceling electronic devices. Instead, they help passively reduce noise by covering the ears to prevent outside noise.

Most passive noise-canceling headsets mainly use only designs that match the inner ear structure to form a sound shield, to help prevent ambient noise and, therefore, allow for an increase in mid-range Real sound desired with lower volume level. Basically passive noise isolating is essentially a very familiar concept. Most headsets are more or less able to isolate outside noise, except for the back-to-back headphones like Grado's, Stax . The headphones are designed to be the driver cover (the speaker) and the The higher the sound insulation capacity. Besides, materials such as sponge, leather . in the ear cushions also support sound insulation. Passive soundproof headphones can cause a sense of squash when used, while also causing more or less impact on sound quality

## **What is the active noise suppression with passive noise protection?**



Passive noise protection simply uses the in-ear tip or earpad on the headphone to block some noise from the outside. The idea here is to create a physical barrier between your ear and the sound from outside. The principle of operation is the same as when you cover your ears to avoid noise.

In the case of over-ear headphones, noise isolation ability is not much, just enough to prevent sound around to a certain extent.

With in-ear headphones, the amount of external sound they restrict is based primarily on the level of tightness and fit of the earpiece tip with your ears. Everyone's ear structure is not the same, and as such, in-ear headphones certainly can't fit everyone. Finding yourself an ear-fit in-ear is the key, especially if you're looking for headphones that block good ambient sound.

And active noise suppression is an electronic system capable of identifying and eliminating sound sources. Of course, ANC is more advanced and complex technology, so headphones with this feature are more expensive than regular headphones.

Active noise reduction headphones require batteries. They also have good sound quality. There are almost no significant minus points.

## Active and passive: Advantages and disadvantages

### The advantages and disadvantages of active noise suppression

#### Advantages

1. Can reduce ambient noise effectively.
2. Allows you to listen to music at lower volume.

3. It may be good for your hearing by reducing loud noise coming into your ears.
4. Relatively comfortable use.

#### Defect

1. Requires battery to operate. Sometimes it is quite inconvenient though, most active noise-canceling headphones have rechargeable batteries and battery life is quite good.
2. Price is quite expensive
3. Great difference in quality. The quality of expensive proactive noise-canceling headphones is great, but for inexpensive models it is almost as if the noise reduction is quite 'muddy'.
4. For sound quality is not as good as traditional headphones at the same price.

## **The advantages and disadvantages of passive noise protection**

#### Advantages

1. Can reduce ambient noise to some extent.
2. Cheaper than active noise-canceling headphones.
3. No batteries required.

#### Defect

1. No more noise reduction than active noise-canceling headphones.
2. May not be comfortable during use. When these headphones block noise by pressing on or placing it on your ear, they can feel uncomfortable when worn for a long time.

## **Conclude**

When considering which headphones to choose, you need to consider factors such as interests, business goals and financial conditions.

If you work in a studio or in fairly quiet environments, you probably won't need active noise protection. However, if the job requires you to travel regularly, or you reside or work next to a noisy environment, active noise-canceling headphones will be a valuable companion.

In summary, Active Noise Canceling headphones can create a quiet, private music space, helping listeners not to be disturbed by the noise from the outside environment. Although the sound quality is not as good as the passive noise-canceling earphones of the same price range, the ANC headphones score points thanks to the comfortable experience offered to users.

See more:

1. What is a headset driver and how does it affect sound quality?
2. How to use both headset and speaker simultaneously on the computer
3. Instructions for converting headphones and speakers on Windows 10
4. Using headphones properly to prevent hearing damage

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