P!NG™

Pink Noise Generator

- 20Hz-20KHz +/- 1dB
- Train your ear
- Phantom-powered
- Cable tester
- Keyring

FlatKeys
Unit 12 Falsgrave Mews, Scarborough, YO12 5ET
www.brikworm.co.uk Made in the UK

P!NG™

What is Pink Noise?
Pink Noise, unlike White Noise, has the same power output in each octave, so that when you listen to it no single frequency stands out louder than the rest.

Balance your sound system
If your sound system is unbalanced, pink noise is an excellent way of revealing this.

Train your ear
PA systems are marked in Hz and kHz, but for many people these markings have little meaning. Pink noise is constant, therefore any changes you make to equalization settings are revealed in the sound that you hear. Thus you can use pink noise to train your ear to recognise how these markings sound.

How do I use P!NG™?
1) Plug P!NG™ into an XLR socket.
2) Switch on phantom power. The red LED lights up on P!NG™ – this means that P!NG™ is generating pink noise.
3) Increase the input gain until the pink noise is at a suitable level but not clipping.
4) Listen to the sound and adjust the equalization to balance the sound.

Use P!NG™ to test XLR leads and multicore cables
You can use P!NG™ to test XLR leads too. The red LED comes on to show that power is being applied. If pin 2 or 3 of a lead is shorted to pin 1 then the LED will not illuminate. If either pin 2 or pin 3 is not connected then the pink noise will be at a low level compared to plugging directly into the microphone socket. If pins 2 & 3 are shorted together then there will be virtually no pink noise output.

Keyring
Use P!NG™ as a keyring fob – you'll always have a handy sound source with you!

Specifications

Power:	+48V phantom power (min 30v, max 60v)
Pink noise frequency response:	20Hz-20KHz +/- 1dB
Output:	Differential
Output impedence:	1KΩ

We recommend the use of P!NG™ with our range of digital audio multicore products.

For more information about pink noise and sound balancing, see overleaf.

FlatKeys customer care

We want you to be entirely satisfied with our products, so if this one pleases you, please tell others; if not, please tell us. We pride ourselves on our products but more importantly on our customer care.

Your own notes:

FlatKeys
Unit 12 Falsgrave Mews, Scarborough, YO12 5ET
www.brikworm.co.uk Made in the UK

Pink noise and sound balancing

Pink noise, often called 1/f or flicker noise, has the property of having the ***same spectral density in each octave***. That sounds rather technical so let's describe it in more detail.

Consider the various musical instruments. A bass guitar or double-bass produces low frequency sound. Think of frequency as **'how frequently the strings vibrate per second'.** Frequency is measured in Hertz, Hz for short. Bottom E on a bass guitar is about 40Hz, around 40 vibrations per second (it's actually 41.2Hz). Moving on to a cello or lead guitar, the middle `A' is 440Hz or 440 vibrations per second (that's a real, precise 440Hz).

Human hearing covers the range (spectrum) 20Hz to 20KHz. KHz is used to represent Kilo Hertz (Kilo = thousand), instead of writing 1,000Hz we write 1KHz so the 20KHz could also be written 20,000Hz; twenty thousand vibrations per second.

An `octave' is essentially a doubling or halving in frequency. Suppose you were playing middle `A' at 440Hz, the next higher 'A' (one octave higher) would have a frequency of 880Hz, and the octave below the 440Hz would be 220Hz.

But music is much more complicated than a single, fixed frequency (normally!). In music we hear complicated rhythms and chords which are very difficult for us to analyse; they don't stand still long enough for us to do any comparisons. But it is possible to train your ears to hear `balanced' sound.

Enter Pink Noise.

If you remember, the phrase ***same spectral density in each octave*** was used to describe pink noise - now we have the information to work out what that actually means. The spectrum part is the octave, (any octave), spectral density is therefore how dense (how loud) the sound is in **each octave**. So no band (octave) of frequencies stands out or sounds quiet compared to any other; we hear pink noise as being `flat'. Remember that octaves can overlap too, so the octave 40–80Hz has the same density as the one 60–120Hz.

A good way to begin is to obtain a good quality set of headphones, something an audio engineer uses as a standard tool. Plug in P!NG™ and turn on the phantom power – the red LED on the end of P!NG™ should illuminate. Now turn up the microphone gain and then the fader or volume control for that channel and you should be able to hear the pink noise – but it may not sound `flat' yet. Make sure that there is no `clipping' LED lit; if there is, reduce the gain.

For systems that just have bass and treble controls, adjust them to hear what happens to the pink noise – now adjust them so that neither the lower nor higher frequency band stands out. Remove the headphones and listen to the speaker system. If there are other equalization controls for the speaker system then these can be adjusted until the speaker system sounds similar to the headphones.

For systems that have swept eq you can now investigate what those markings actually mean to the ear. Set the eq gains to 0 and adjust the low and high until neither stand out. Now by increasing the gain of, say, the low band, hear the difference and then sweep through the band, looking at the markings on the dial to learn what a given frequency band sounds like. After some practice you should then be able to play a CD through the same channel and be able to boost or cut any particular passage just by dialling up the right frequency and then increasing or decreasing the gain.