Closed-back circumaural noise-cancelling headphone
Made by: B&W Group Ltd, West Sussex
Supplied by: B&W Group Ltd
Telephone: 0800 232 1513
Web: www.bowers-wilkins.co.uk
Price: £329

AUDIO FILE

Bowers & Wilkins PX

It took some time to develop its first noise-cancelling headphones, but Bowers & Wilkins has thrown down the gauntlet to its rivals with this high-tech PX model

Review: **Cliff Joseph** Lab: **Keith Howard**

Noise-cancelling headphones are undoubtedly useful if you want to relax and block out the background drone on a long journey by train or plane, but the technology can also have a frustrating, deadening impact on sound quality. And rarely is adding Bluetooth wireless streaming a boon to great sound.

That's why Bowers & Wilkins has taken so long to release the PX, its first set of noise-cancelling (NC) headphones and a design calculated not to mar the listening experience. That would be a pretty impressive achievement in itself, and would justify the £329 price tag that pits it right up against market-leading rivals such as the Bose QC35. However, B&W has gone even further and equipped the PX headphones with just about every state-of-the-art digital feature that it could lay its hands on.

DOWN TO EARTH

Like many new headphones, the PX offers 'adjustable' NC with three listening modes that are designed for different locations and situations. As you'd expect, the primary 'Flight' mode is intended for travellers who want to block out engine noise in an aircraft cabin. However, the NC features can also be used when you come back down to earth as well. There's an 'Office' mode that relaxes the noise-cancellation enough to allow you to hear voices around you in a busy office. And if you're strolling around town and looking cool with your cans then the 'City' mode will allow you to listen out for traffic...

That's a common option with many recent headphones, as is support for the AptX version of Bluetooth, but the PX goes further than many rivals. For example, it's the first set of headphones we've seen that supports AptX HD – the latest version of AptX, which claims to provide 'better than CD-quality' wireless streaming at up to 48kHz/24-bit, along with upsampling of both wired and wireless inputs to 768kHz. It's also equipped with the versatile new USB-C interface, which can be used to both charge the internal battery and handle USB audio from a variety of computers and mobile devices. I was pleased to see that B&W provides an adapter cable for older devices that don't have USB-C, although it's odd that it doesn't also include a cable for the many laptop computers that now *only* have USB-C.

There's also a 1.2m cable with 3.5mm jack included, so the PX can be used as standard wired headphones, either with or without noise-cancelling. Neither cable includes in-line controls, but I like the playback and volume buttons on the right-hand earpiece, which feel firm and responsive, and are large enough to find easily when needed. The tiny little buttons for power and NC are a little more fiddly, though, especially as the power button performs multiple functions.

The B&W Headphones app can be somewhat irksome at times as well. You can turn the NC on or off using the controls on the earpiece, but the Headphones app (available for iOS and Android) is required in order to select other features, such as the 'City' or 'Office' modes. However, the app still requires Bluetooth to connect to the headphones, which means that you're sometimes forced to turn on your device and briefly activate Bluetooth even if listening in wired mode.

> 'The PX tempted me to go fully wireless for the first time'

And, of course, Bluetooth and the noise cancellation DSP have an effect on battery life too. This is quoted at 22 hours when using Bluetooth and NC together, or 33 hours when using NC in wired mode. The headphones also require power even when NC and Bluetooth are both turned off, although that should then go up to about 50 hours.

And, to save power, the PX design includes a motion sensor that can tell when you take the headphones off when it will automatically pause the music. It will then resume playback when you put them back on again, or switch them into standby mode if you don't use the headphones for a few minutes.

LONGTERM COMFORT

Of course, none of that smart tech would matter if the headphones themselves weren't up to scratch, but the PX proves more than capable of standing on its own two feet. The 40mm drivers are based on those developed for B&W's well-received P9 Signature 'phones [*HFN* Mar '17], with similar earpieces that are angled slightly forward to mimic the effect of listening to external speakers. You can also fold the earpieces flat to save space when you're carrying them in their smart, padded pouch.

The earpieces are smaller than the P9's, though, and fit more tightly around the ear in order to form an effective seal

RIGHT: The PXs include a range of high-tech features, with good battery life, effective noise-cancellation, AptX HD and USB-C connectivity

LEFT: The PX's 40mm drivers are based on those developed for B&W's impressive P9 Signature, and angled slightly forward in order to open up the soundstage and mimic the effect of listening to external speakers

and provide good noise-insulation. The adjustable, padded headband is sturdy enough to cope with life on the road and grips fairly tightly, but the padded leather earpieces feel comfortable enough to wear for long periods of time.

However, while the PX isn't terribly heavy (only weighing around 350g with its cable) the combination of the tight headband and earpieces can feel somewhat vice-like at first, so it might take a little while to wear them in. Nevertheless, depending on hat-size, your mileage will surely vary!

RELAXED AND OPEN

Auditioned as plain-vanilla wired 'phones via Pro-Ject's Pre Box DS2 Digital [*HFN* Nov '17], the gentle acoustic sound of 'The Blower's Daughter' by Damien Rice [*O*; 14th Floor Records 5050466-4788-5-6] had a lightness of touch via the PXs that captured the hesitancy in his vocals, and the warmth of the gently strummed guitar. There was a bitter-sweet edge to the sound, as the deep, wistful tone of the cello accompanied the chorus and then hung in the air as though afraid to let go. The angled design of the earpieces might seem like a bit of a gimmick, but the sound is relaxed and open, so that it felt as though Rice was sitting there, strumming away in front of me.

CATHEDRAL OF SOUND

The headphones also managed to cope with the soaring cathedral of sound invoked by the Pro Cantione Antiqua choral singers on their recording of 'Spem In Alium' [*Tallis – Spem In Alium*; Alto ALC1082]. The piece starts gently, and the PX tracked the intertwining melodies as each of the eight separate choirs joined in. The various groups of choristers remained clear and distinct, and even the quiet, whispered voices in the background remained audible throughout. Furthermore, while the tight fit and closed-back design of the earpieces can feel a little claustrophobic at times, the PX was still able to achieve a great sense of grandeur and scale as the piece built towards its peak.

Of course, the PX is primarily designed as a set of travelling headphones, and I was pleased to find they continued to perform well with my mobile music set-up, listening to the lossless music files on my iPhone via the sturdy RHA Dacamp L1 [*HFN* Apr '17]. The PX kept the same clarity and detail in the layered voices, and the sense of space was impressive and dramatic for a portable set of headphones in this price range. But, as we've seen with other B&W headphones in the past, the PX does go a little overboard with the lower-mid and bass frequencies. To be fair, this didn't seem like a glaring weakness – in fact, the deep rumble of the PX was quite effective with the ambient electronics of Max Richter's 'Shadow Journal' [*The Blue Notebooks*; DG 479-4443], producing an ominous, subterranean rumble that was well suited to the mood of the piece.

But the PX did sound a little unbalanced when I turned to some more densely arranged tracks. I liked the firm thud ➔

NOISE ABATEMENT

In most of the best noise cancelling (NC) headphones it is arranged that their frequency response remains largely unaltered whether NC is engaged or disabled, to ensure consistency of sound quality. But in the PX this is not the case. When the Environment Filter is set to 'Office' (the mildest of the three NC regimes) the PX's frequency response does indeed remain the same as when the Filter is disabled. But on the two more effective NC settings – 'City' and 'Flight' – the frequency response, and hence the perceived tonal balance, changes markedly. Subtracting the responses results in a complex difference but, essentially, with 'City' or 'Flight' the PX's output increases a little below 45Hz (+1.3dB at 20Hz) and a lot at two frequencies in the presence band: +2.5dB at 2.2kHz and +5.8dB at 3.4kHz. Elsewhere output is reduced, by an average of about 2.5dB from 100Hz to 1.6kHz and 3.5dB above 4.5kHz. Whichever tonal balance you prefer, the PX will not deliver it in all modes. KH

ABOVE: Compact over-ear design helps to form a noise-insulating seal but, along with the tight grip of the headband, the PX can take a little while to get used to

of the slap-bass on 'The Big Sky (Meteorological Mix)' by Kate Bush [*Hounds Of Love*; EMI 7243-8-57978-2-8] and the crashing avalanche of drums, but the chanting vocals that lead towards the end of the song were a little overpowered by the bass-heavy sound and didn't quite ring out as clearly as perhaps they should.

THE SOUND OF SILENCE

The wired connection worked well, so I stayed in wired mode when turning on the noise-cancelling feature for the first time (tested with a number of background noise files from *www.mynoise.net*). As KH's Lab Tests revealed [see boxout, p71], the mildest 'Office' mode has little effect on frequency response, and the PX continues to deliver strong sound quality while allowing voices to stand out more in the background. I was less impressed by 'City' mode, which serves its safety-first purpose by letting in traffic noise, but sounded rather cluttered and did prove a bit distracting while listening to music.

But, of course, it's the full noise-cancellation of 'Flight' mode that will appeal to the travelling audiophile. The soundstage of the PX did seem just a little more constrained in 'Flight' mode, but the detail and richness of instruments and voices remained impressive while it went about the task of blocking out the rumbling background noise very effectively indeed. Ultimate sound quality certainly takes a slight downturn with the NC DSP switched on, but the PX is otherwise a match for any of its rivals in this regard.

The headphones even performed well when I activated Bluetooth streaming and 'Flight' mode together. Ordinarily, I draw the line at using Bluetooth, yet the PX managed to avoid much of the muffling effect normally associated with this technology. In fact, the PX tempted me to go fully wireless for the first time, so while there are few mobile devices that currently support AptX HD, that option does mean that the PX also offers a degree of future-proofing, and holds out the prospect of real hi-fi quality wireless audio in the future.

HI-FI NEWS VERDICT

The slightly heavy bass may not appeal to everyone, but B&W's PX is still money well spent, even if you primarily use it as a set of wired headphones. But the PX will also earn its keep when travelling, thanks to its effective noise-cancellation that still manages to provide a detailed, attractive sound quality. And with AptX HD and USB-C, it provides good connectivity for the next generation of mobile devices too.

Sound Quality: 80%

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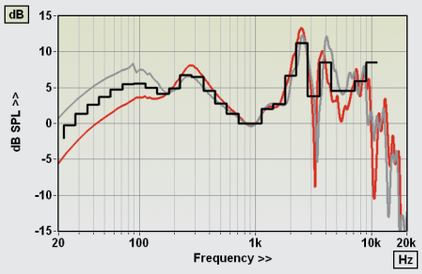
LAB REPORT

BOWERS & WILKINS PX

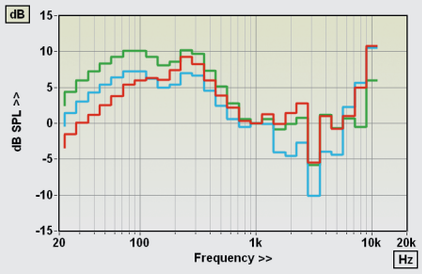
We tested the PX exclusively via its analogue input with noise cancelling off. As its gain controls operate only with digital signals, it necessarily has a fixed sensitivity: we measured 117.5dB for 1V input at 1kHz, averaged for the two capsules, so with an analogue source it acts like a conventional headphone with slightly above-average sensitivity. The difference is that the PX has higher input impedance – around 850ohm – so draws much less drive current. A surprise was discovering that the PX is polarity inverting. You can argue all you like about whether this is audible or not, but the plain fact is it shouldn't be the case. Previous B&Ws that we've measured [P3; P7, *HFN* Aug '14; P9 Signature, *HFN* Mar '17] have all been characterised by tonal balances which strongly favour lower-midrange and bass, and the PX is a chip off the same block.

The uncorrected frequency responses [Graph 1] are rather different at low frequencies for the two capsules, suggesting a sealing issue with the right side. No matter how carefully it was placed on the artificial ear, it never matched the LF output of the left capsule – which presumably demonstrates the intended response. The hump in output below 900Hz is obvious, as is a lower, narrower peak at 2-3kHz than conventionally considered necessary to achieve neutral tonal balance.

Because of this LF disparity, the third-octave corrected responses [Graph 2, below], which are based on the average of the two capsule responses, are if anything less fulsome in the bass than they should be but still demonstrate an obvious lower-mid/bass excess. The perceived frequency response above 1kHz is much flatter but for the expected dip around 3kHz. Not indicated in any of the measurements is that the PX – again in line with previous B&Ws – has headband vibrational issues at LF, although it lacks the higher frequency ping previously caused by thin wire capsule hangers. **KH**



ABOVE: Unequalised responses (L/R, grey/red; average 3rd-octave, black). Poorer capsule sealing on the right results in a reduced bass output vs. the left



ABOVE: Third-octave freq. resp. (red = Harman corrected; cyan = FF corrected; green = DF corrected)

HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL at 1kHz for 1Vrms input)	117.5dB
Impedance modulus min/max (20Hz-20kHz)	846ohm @ 20kHz 904ohm @ 20Hz
Capsule matching (40Hz-10kHz)	±10.4dB
LF extension (–6dB ref. 200Hz)	22Hz
Distortion 100Hz/1kHz (for 90dB SPL)	0.1% / 0.4%
Weight (inc cable)	350g