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BenQ W8000

AV projector



The High Lights

+
BenQ rises up the projector market with a model that has interestingly interchangeable lenses and a thoroughly enjoyable performance.

SUMMARY

BenQ W8000
AV projector
Price: \$4499

- + Excellent overall performance
- + Excellent 3D
- + Rec.709 calibration

- No faults we'd highlight

It has been a while since we've laid hands on a premium BenQ projector. Mostly it has been models highly suitable for home theatre, but relatively lower cost, lower featured models. Now with the W8000, BenQ is back in the game.

Equipment

The BenQ W8000 shares, of course, some similarities with the lower-cost models. It offers a full-HD picture — 1920 × 1080 pixels — using DLP technology. You can read a quick tech refresher on the remarkable DLP use of digital micromirror devices (DMDs) in the panel overleaf. The specific DMD used here is not specified.

This BenQ is a much heftier projector than the lesser models noted above, with very different optics. The W8000 weighs twice as much and would have to be termed

mid-sized. Does that matter? Well for one thing a larger, heavier body does tend to operate more quietly. As indeed this projector did, keeping the noise down to a very low level of white noise.

This is especially so when operated in Eco mode. This reduces the output and extends lamp life from the quoted 2500 hours when it's operating at full brightness to 3500 hours. There's also a 'Smart Eco' mode which bumps it up to 6000 hours but disables some other features, such as the dynamic iris.

The projector is THX certified and implements the Rec. 709 colour space, for which it is calibrated at the factory.

The placement of the projector is exceptionally flexible if one avails oneself of the range of user-swappable lenses. The unit comes with the default standard lens — about which more later — included in the price. But

you can purchase the projector for \$3999 without the lens instead, and choose one (or more if you have very unusual circumstances) of the four lens options. These include a wide-angle fixed focal length lens, a wide zoom one, and two longer-throw zoom lenses. Prices range from \$1299 to \$2299.

The standard lens has a zoom range of 1.25:1. For a 100-inch (2.54 metre) screen, it needs to be between 3.41 and 4.27 metres away. But taking into account all the available lenses, this range can be between 1.72 (Wide Fixed) and 11.07 (Long Zoom) metres. The projector also offers convenient horizontal and vertical lens shift.

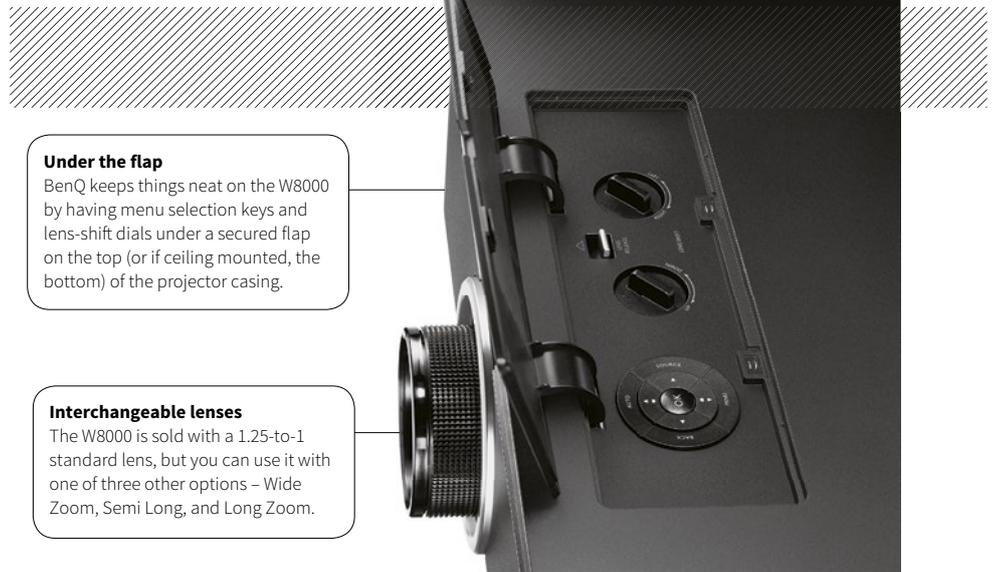
There are two HDMI inputs (one supporting MHL) and also older analogue inputs. The USB-A port is apparently for providing power — a healthy 1.5 amps is available — to an accessory. You might consider hanging a Chromecast there, but it could only be for photo display given there's no audio support. The USB-B port is for connecting a computer in order to control the projector. RS-232C is also provided, along with a trigger.

A 3D sync port is included to allow an external IR sync emitter to be positioned in difficult rooms. There was no need for this in my set-up; the built-in sync emitter worked perfectly reliably. You don't get 3D glasses with the projector, but they're available at \$149 per pair.

Performance

The projector defaulted to 'THX' picture mode, which somewhat surprisingly had full white slightly darker than 'whiter-than-white' on a test pattern. No matter: winding up the 'Contrast' control from 50 to 55 fixed that, leaving an even grey scale from a good bright white to a solid, dark black. The sharpness control also needed to be brought down from its middle position, but again BenQ has an excellent sharpening system that does what the name implies, rather than introducing a ghosting distortion like that on most TVs.

There are lots of tweaks available for the picture. For example, there's a section under the 'Advanced' picture menu option called 'CinemaMaster' which allows five quite specific options for additional sharpening and colour enhancement plus, importantly, a 'Motion Enhancer'. This is a frame interpolator, with three settings. I'd



Under the flap

BenQ keeps things neat on the W8000 by having menu selection keys and lens-shift dials under a secured flap on the top (or if ceiling mounted, the bottom) of the projector casing.

Interchangeable lenses

The W8000 is sold with a 1.25-to-1 standard lens, but you can use it with one of three other options - Wide Zoom, Semi Long, and Long Zoom.

recommend the 'Low' one if you wish to use it. This seems to add just one frame between the incoming frames, and so takes the edge off the worst judder while completely eliminating the more common slight judder — and it does this with no addition of 'studio gloss', and almost no heat-haze distortion. The next two levels still manage to remain fairly gloss free, while offering increased smoothness in motion, but at the cost of more visible distortion.

Also in the 'Advanced' menu is a switch for the dynamic iris. This was a smoother, slower acting iris than on some projectors, so it didn't respond on a frame-by-frame basis. Rather it ramped the iris more open and more closed over a few tenths of a second. It was effective in the sense of increasing black levels rather well, but it also tended to pump the light level of a whole darkish scene if a bright element appeared and disappeared. This was particularly evident when credits were being displayed over a dark scene.

The other important thing within the 'Advanced' menu was a Film Mode setting. This had 'On' and 'Off' available. A bit of experimenting revealed that 'Off' forced the projector to use video-style motion adaptive deinterlacing (essentially, weave together the steady parts of the picture, and bob the moving parts). Having it 'On' did not force film mode (weaving everything), but it gave it a strong film bias, at least for 576i/50 signals. All the tricky parts of DVD clips were deinterlaced perfectly, producing a clean, highly watchable picture.

Things were different with 1080i/50 material though. Having the 'Film' mode 'On' produced no difference to 'Off', so moving elements tended to shimmer and wobble as horizontal slices of them were displayed in sequence, rather than being woven together and shown at the same time. This was especially obvious on rolling end-of-film credits, as the horizontal strokes, if thick, pulsated in width as they scrolled up the screen and, if thin, just flickered in and out of existence.

So, best to use this projector with a Blu-ray player that features fine deinterlacing, or an AV receiver that can do good upscaling.

SPECS

BenQ W8000

\$4499

Projection technology: 1 x Digital Micromirror Device (size not stated)

Resolution: 1920 x 1080 pixels

Aspect ratio: 16:9

Lamp: 280 watts

Lamp life: 2500/3500/6000 hours (Normal/Economic Mode/SmartEco Mode)

Contrast ratio: 50,000:1

Brightness: 2000 ANSI Lumens

Inputs: 2 x HDMI (1 with MHL support), 1 x component video, 1 x composite video, 1 x D-SUB15

Other: 1 x RS-232C, 1 x USB-A, 1 x USB-B, 1 x 12V trigger, 1 x 3D sync

Dimensions (whd): 431 x 175 x 335mm

Weight: 8.1kg

Warranty: Three years (one year or 1000 hours for lamp)

Contact: BenQ Australia

Telephone: 1300 130 336

Web: www.benq.com.au

DLP - all done with mirrors

A DLP projector uses one or more digital micromirror devices (DMDs), mostly just one in consumer models. A full-HD DMD is a silicon chip, typically about 19mm on the diagonal, which has arrayed on its face more than two million tiny little mirrors.



Image: TI

Each of these has a hinge at one end. When the relevant connection on the chip is activated, the particular single mirror it controls swings out by 12 degrees. The light that would have reflected from it in one direction is thereby redirected to another direction.

So in a world of solid-state technology, DLP is actually electro-mechanical! Furthermore, it's better than solid state in some respects. In particular, it acts quickly. The mirror can't be halfway; it has to be either on or off. It swings exceptionally quickly, and it typically goes back and forth a thousand times or more a second. The proportion of the time it spends in the 'on' position determines the brightness. The whole concept is a tech marvel by any standards.

When there is only one DMD, the colour is created by mixing red, green and blue, one after the other. This is achieved by using a six-panel colour wheel that spins in synchronisation with the operation of the chip, filtering the light from the lamp to the appropriate primary colour just as required. Your own persistence of vision merges the separate RGB pings of light into a particular shade.

Which is, of course, what we did, and enjoyed the W8000's presentation enormously. The blacks (with the dynamic iris switched off) were on the right side of that subjective margin at which they become convincing. The colours built on that solid foundation with an excellent naturally-hued boldness. As a single-chip DLP the focus was first-class, top to bottom, side to side, corner to corner; there are no multiple chips to become misaligned. There was no evident rainbow effect. There was no visible 'dithering' (greyscale flickering at the pixel level) in dark greys, even on very close inspection. The only real evidence that the colour was sequential rather than overlaid was that a white element moving at just the right speed on a black background could show a very thin slice of leading edge in one of the primary colours. The only time I saw this was in a moving white bar on a test pattern.

And then there's 3D. BenQ included 3D eyewear so we could check them out. Again we confirmed that the very best way at the moment to view 3D in the home is with a DLP projector. It popped with a wonderfully solid appearance and an almost perfect absence of crosstalk. On some scenes in which leakage of image content through to the wrong eye is normally evident, after much searching I could, I think, detect the tiniest amount. I think. In practice, watching a movie, there is no crosstalk at all. The only improvement would be to increase the brightness a little.

The projector supports automatic lip sync adjustments when used with a compatible AV receiver. The information for this seems to be keyed to the 'Game' mode, so audio and picture are in perfect alignment in this picture mode. However with the default 'THX' mode, and most of the others, the delay is greater. I'd suggest setting a manual delay to around 120ms for movie watching. The latency in game mode was 50-60ms.

Conclusion

We reckon BenQ has a winner here. The W8000 offers very good performance at a reasonable price. The only thing that gives pause is that we know there's a BenQ W11000 coming — and that will be a 4K model. It might well be worth the wait and the additional dollars.

Stephen Dawson †



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