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Название: JVC DLA-X5000 – “Лучшая покупка” по мнению avforums.com

**Аннотация:**

JVC DLA-X5000 является отличным сочетанием производительности, возможностей, великолепной картинки и цены. Благодаря увеличенной яркости, оптимизации алгоритма CMD, наличию HDMI 2.0a/ HDCP 2.2 и поддержки HDR, модель будет актуальна в ближайшие несколько лет, за что ей и присуждается заслуженная награда в категории «Лучшая покупка».

**Оригинальный текст обзора:**

## What is the JVC X5000?

The DLA-X5000 is JVC's latest entry-level D-ILA projector and represents their first new model in nearly two years. The fact that there were no new projectors last year led some to speculate that the JVC might pull out of that particular market entirely, whilst others hoped that the gap was to give the company more time to develop a native 4K D-ILA panel or laser light technology. As a result some people were disappointed when [JVC announced](#) that the new models still use lamps and 1080p panels but, despite the similarities in design, these latest projectors include plenty of new features that allow them to embrace current developments in display technology. The X5000 is brighter than previous generations at 1,700lm and crucially now includes support for [High Dynamic Range](#) (HDR), as well as full HDMI 2.0a inputs. So let's see if it was worth the two year wait.



## Design

This is the fifth generation of JVC projectors to use the same chassis design so there's a distinct sense of déjà vu when you look at the new X5000. In fact from the outside it looks identical to the [X500](#) that came before, with the usually high quality centrally mounted lens and air vents on either side. As with previous models JVC include motorised lens controls, along with a lens memory feature, and the X5000 is very easy to set up. The build quality

is excellent but you don't get some of the added touches found on the more expensive models like the motorised lens cover or a glossy finish. There are some basic indicator lights at the top front left of the projector as you face it, whilst all the other controls and connections are at the rear. The X5000 measures 455 x 179 x 472mm (WxHxD), weighs in at 14.7kgs and comes in a choice of black or white.

The X5000 uses the same chassis as previous generations but there really is no need to change it.

## Connections & Control

At the rear you'll find the exact same layout as the previous generation with a set of basic controls, in case you misplace the remote. There are two HDMI inputs, an Ethernet port, an RS232 serial connector, a LAN socket, a 3D emitter port and a 12V trigger. As before, the RS232 connector and the LAN port can both be used for system control. However, although these connections might look identical to the X500, the HDMI inputs have had a major upgrade and are now HDMI 2.0a inputs with HDCP 2.2 support. These inputs can pass HDR metadata, as well as handle transfer rates of 18Gbps and 4K signals such as 4K60p 4:4:4, 4K60p 4:2:2/36-bit and 4K24p 4:4:4/36-bit, allowing them to support new formats like [4K Ultra HD Blu-ray](#). We were able to confirm all of these capabilities using our new [Fresco Six-G test generator](#).



The provided remote control is exactly the same as previous generations with a standard black plastic design that includes a backlight and sensibly laid out buttons. There are keys for selecting the inputs, the Lens Control, Lens Memory and Lens Aperture controls, along with buttons for selecting the Picture Modes and directly accessing many of the calibration and setup features. The remote is comfortable to hold, easy to use and very effective, so why change it? The X5000 supports active shutter 3D but if you want to take advantage of this feature, you'll have to buy a 3D pack which includes the emitter and two pairs of glasses.

## JVC DLA-X5000B Unboxing Video

### Features & Specs

The X5000 includes a number of features, some of which have appeared on previous generations and some of which are completely new. First of all the X5000 uses a new 265W high power lamp, so those hoping for a laser light source will be disappointed. However the brightness has been increased to 1,700lm, which JVC claim will allow the projector to deliver images in rooms with ambient light but if you want to take full advantage of its inherent dynamic range, then a darkened room is preferable. Perhaps due to this increased brightness, the claimed contrast ratio has taken a slight drop to 40,000:1 but, as with the previous generation, the X5000 includes a user-selectable Intelligent Lens Aperture to boost the contrast further.

JVC claims that the increased brightness and inherently deep blacks of the X5000 means that it can simultaneously reproduce brighter highlights and darker details in scenes, making it compatible with HDR ([High Dynamic Range](#)) content. Although we have seen a demonstration of JVC's HDR capabilities, we were not in a position to actually test this feature, so how effective it is in practice remains to be seen. However the previously mentioned inclusion of both HDMI 2.0a and HDCP 2.2 is crucial and the fact that they can handle transfer rates of 18Gbps and 4K signals such as 4K60p 4:4:4, 4K60p 4:2:2/36-bit and 4K24p 4:4:4/36-bit gives the X5000 an excellent degree of future-proofing.

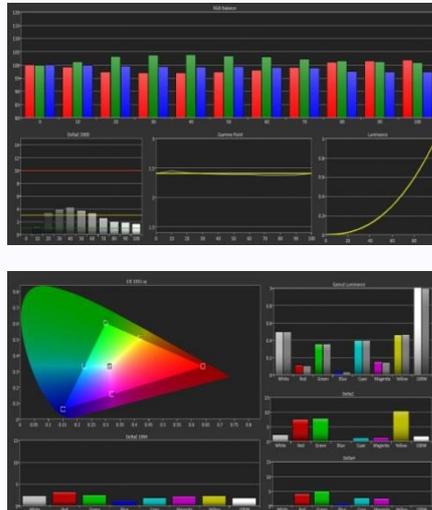
Another disappointment for some people this year is the fact that JVC's projectors still aren't native 4K and continue to use 1080p D-ILA panels. However the X5000 does include JVC's e-shift4 technology, which creates a greater perceived level of resolution by shifting each pixel 0.5 pixels diagonally. In addition it can use this technology to create a higher resolution image when receiving a 4K signal and e-shift4 has been optimised for 4K60p and the increased brightness of the projector. The X5000 also includes the latest version of Multiple Pixel Control which is part of the Super Resolution technology developed by JVC using a proprietary algorithm that has been optimised for 4K content.

In addition the X5000 includes the latest version of JVC's Clear Motion Drive frame interpolation technology which adds a new Motion Enhance feature. JVC claim that this has been developed to minimise the motion blur significantly by optimising the drive of the D-ILA panels and that it's also compatible with 4K and 3D signals. As with previous generations, the X5000 supports active shutter 3D, includes a lens memory control, which is very useful if you use a 2.35/2.40:1 screen, and pixel alignment feature. There's also an Auto Calibration feature, along with a 6-axis colour management system, a 2-point white balance control and 12-point manual gamma adjustments. However, unlike the more expensive X7000/X9000 models, the X5000 doesn't support the full DCI colour space.

The X5000 has some great future proofing with HDMI 2.0a inputs, HDCP 2.2 and support for HDR.

## Picture Settings - Out-of-the-Box

The X5000 includes JVC's usual menu system, which is sensibly laid out and relatively easy to navigate with related features grouped together. We chose the Cinema Picture Mode and the Standard Colour Profile (which should be closest to the current industry standard of Rec.709), along with a Colour Temperature of 6500K and a gamma of 2.2. You sometimes need to bring the Brightness control up a notch or two to retain all the shadow detail but this will probably depend on your viewing environment. As you can see from the measurements below, even after a very simple setup the X5000 delivered an excellent out-of-the-box performance.

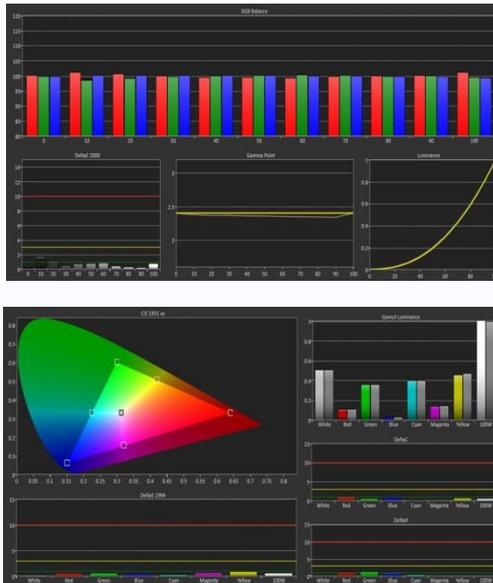


The greyscale tracking was generally very good, although there was a slight excess of green energy in the middle part of the image and a slight deficit of red. This could, on occasion give whites a slight push towards yellow but it was barely noticeable. However the gamma curve was tracking our target of 2.4 very precisely, which is good to see. The colour performance was even better with the Standard Colour Profile measuring very close to Rec.709 and overall errors at or below the visible threshold of three. There was a slight over-saturation of red and green, and thus yellow, but the luminance measurements were spot on and overall this is a great out-of-the-box performance.

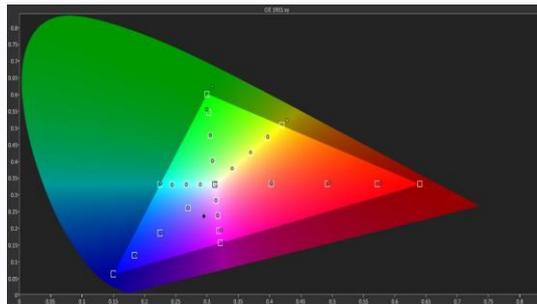
## JVC DLA-X5000 Picture Settings

### Picture Settings - Calibrated

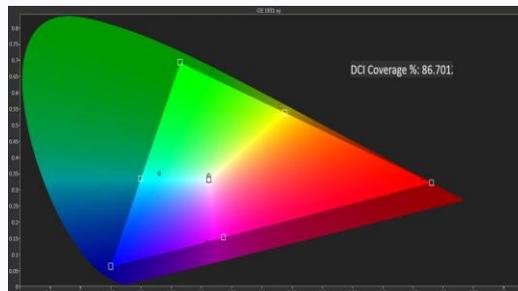
The X5000 includes extensive calibration controls, starting with a two-point white balance control that we used to correct that slight over-saturation of green in the greyscale. We only had to bring green down slightly and increase red a touch and before long we had a reference greyscale performance from the X5000. The error measurements were all well below the visible threshold of three and most were below one. The X5000 also includes gamma calibration controls but since it was tracking our target curve of 2.4 very precisely, we didn't need to use them.



The X5000 also includes a full colour management system with controls for hue, saturation and luminance. Interestingly JVC have dropped the rather pointless orange control from previous generations but the CMS still includes the three primary colours (red, green and blue) and the three secondary colours (cyan, yellow and magenta). We used the CMS to dial in the already very accurate colour gamut to deliver what, on paper at least, appeared to be a reference performance with errors that were now all below one.



However when looking at actual content the greens and reds appeared under-saturated and the reason was obvious when we ran the saturation sweep which measures at 25, 50, 70 and 100%. In using the CMS to bring the measurements into line on the previous set of graphs, the controls had adversely affected the performance of red and green at lower saturation points. We then switched the Colour Management off and ran the saturation sweep again, resulting in the graph shown above. As you can see, although green, red and yellow are over-saturated at 100%, they track very accurately at lower saturation points. So in actual fact the best approach for calibrating the review sample was to just reduce the saturation of green and red slightly and tweak the hue of magenta, which then resulted in a very accurate colour gamut across all the saturation points.



As we mentioned in the out-of-the-box section we chose the Standard Colour Profile because it was closest to the current industry standard of Rec.709. However these [standards are now in the process of changing](#) and future 4K formats like [Ultra HD Blu-ray](#) will probably use the DCI colour space that is currently used in the cinema. The X5000 has a wider native colour gamut which you can access by turning the Colour Profile off on the projector and we measured this against the DCI colour space. As you can see in the graph above, the X5000 can deliver 87% of DCI which means you won't be able to take full advantage of any wider colour gamuts used in the future, although you'll get some benefit.

# Picture Quality

It's an indication of the seismic changes happening in the consumer electronic industry that, at the moment, we aren't able to fully test certain aspects of the X5000 performance. Although we do have some [HDR](#) demo clips, we had no actual way of sending them to the projector. As we mentioned in a previous section we have seen demonstrations of HDR with JVC projectors but until [UHD Blu-ray](#) arrives it's going to be difficult for us to test some of these features. Thankfully our new [Murideo Fresco Six-G test generator](#) arrived just in time to save the day and although we couldn't test the HDMI 2.0a input's ability to pass HDR metadata (Murideo will be adding that feature soon), we could test every other aspect of the HDMI input's performance and confirm that it does indeed support HDCP 2.2 and can handle transfer rates of 18Gbps, along with 4K signals such as 4K60p 4:4:4, 4K60p 4:2:2/36-bit and 4K24p 4:4:4/36-bit.

We were also able to use the [Fresco](#) to generate 4K test patterns to judge how effective the e-shift4 was with an actual 4K source and we were pleased to see that the X5000 could accept both 4096 x 2160 and 3840 x 2160 resolutions. We were able to compare the same test pattern in both 1080p with and without e-shift4 and then in 4K with e-shift4 and the results were impressive. The e-shift could take the 1080p pattern and make it appear that bit sharper and more defined without adding unwanted artefacts or noise. When we switched to the 4K version of the same pattern the image was noticeably sharper than the 1080p version, although as a result of how the e-shift4 combines two images to create the 4K resolution, there were some moire artefacts that wouldn't be present if the pattern was shown on a native 4K projector. However if we pulled up normal images that wasn't an issue and the X5000 delivered an impressive level of resolution given its inherent limitations.

There have been reports that e-shift4 introduces more noise into the image than previous iterations, perhaps due to the increased brightness, and although we didn't have an [X500](#) available to make a direct comparison, there didn't seem to be any more noise present. We have always found that e-shift is very source dependent, so if you feed it a pristine transfer like *Tomorrowland* or *Jurassic World* the results are very clean but if you choose a film with more inherent grain the e-shift can emphasise this. We always think that it's best to experiment with the e-shift to get the best results and ideally you want that increased sense of resolution without the image appearing over-processed. Of course there will be those that would rather just turn the e-shift off, which is always an option and the X5000 is just as impressive as a 1080p projector. As usual, e-shift is not applied to 3D content which is the standard 1080p for each eye via active shutter glasses.

Of course Ultra HD is about more than just increased resolution and HDR, there's also 10-bit colour depth, which the X5000 supports, and wider colour spaces. As you will have seen in the calibration section the X5000 supports 87% of the DCI colour space, which means that you will at least be able to benefit from some of the increased gamut in Ultra HD content, if not all of it. However when it comes to the current standard of Rec.709, the X5000 delivers an excellent performance with natural colours. It also delivers a very accurate greyscale and gamma performance, so regardless of what you're watching the results are excellent. The video processing is as impressive as always, although clearly when it comes to a projected image the better the source, the better the results but the X5000 was able to make standard definition watchable even if we rarely do these days.

Naturally the big selling point of a JVC projector is its native blacks and contrast ratio but, despite the claimed contrast ratio actually being lower than the previous generation, we actually found that the performance was comparable to the X500 and certainly superior to the [X3](#) we had available for comparison. We respect JVC for being honest about the contrast ratio performance in their marketing and specifications but we'll take a small reduction in favour of all the other benefits that the X5000 offers this year.

As with the previous generation, the X5000 also includes a dynamic iris which will undoubtedly divide opinion between those who swear by it and those that feel it's unnecessary. We ran the notorious scene from the final *Harry Potter* film where Voldemort's army amasses on a hill top overlooking Hogwarts. It's a very dark scene that is composed primarily of blacks and shades of grey, making it a difficult test for any dynamic iris system. We have to say that the JVC handled it very well and managed to bring out peoples faces a little better, although overall we still preferred the native contrast ratio. Regardless of which setting we chose there were scenes where we could see the DI slightly crushing blacks or pumping the image to boost the contrast performance, although it was very minor. Ultimately it will come down to personal preference, there's certainly no harm in experimenting to decide which setting you prefer and the DI could be very useful if you're using the X5000 in less than ideal conditions.

When it comes to motion handling the D-ILA chips in the X5000 are still based upon LCD technology and thus suffer from that technology's limitations. The native motion resolution was around 400 lines but obviously you could get that up to the full 1080 by using the Clear Motion Drive frame interpolation feature. However this immediately makes the image appear

too smooth, so we would never use it with film based content, although there is room for experimentation with other content like sports. JVC have added a new feature this year called Motion Enhance which is designed to reduce motion blur. However despite repeated testing, we really couldn't see any perceivable improvement in terms of motion blur when we used the feature. The motion blur appeared the same regardless of whether the feature was on or off, so we ended up just leaving it off.

Finally for those that are still interested, the X5000 delivers a fantastic 3D performance. The projector certainly benefits from the increased brightness and delivered images that were detailed and full of depth, whilst still remaining largely free of any crosstalk. The 3D in *Gravity* looked stunning, with the bright white spacesuits offset beautifully by the blackness of space. There are moments of deliberate high contrast and negative parallax that the X5000 handled well, although there was a hint of crosstalk as Marvin the Martian floated through the ruined space shuttle cockpit. However the highly negative parallax sequence of spores floating through the air in *Avatar* was delivered without any crosstalk and our recently purchased extended cut of *The Hobbit: The Battle of the Five Armies* looked stunning. However we noticed that, when watching another 3D title, the CMD (frame interpolation) feature was being applied despite the fact it was turned off. We found that turning CMD on and then off again fixed the problem but it's clearly a bug in the firmware and we've reported it to JVC.

The X5000 delivers a superior performance to any other projector in its price range.

## Conclusion

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OUT OF 10

### Pros

- Reference black levels
- Impressive dynamic range
- E-shift can be effective
- Accurate greyscale and colours
- Great video processing
- Superb picture performance
- Excellent 3D images
- HDR support
- HDMI 2.0a/HDCP 2.2
- Attractive price

### Cons

- Panel not native 4K
- Doesn't support DCI colour space

## JVC X5000 (DLA-X5000B) Projector Review

### Should I buy one?

Although some people might be disappointed that JVC have yet to adopt native 4K panels or laser light sources on their projectors, we actually think that the DLA-X5000 is an excellent addition to their line-up that delivers a surprising amount of future-proofing. The exterior design might be identical to previous generations but there have been quite a few changes on the inside that allow the X5000 to take advantage of upcoming 4K formats like [Ultra HD Blu-ray](#). The inclusion of e-

shift4 means that the projector can not only deliver a higher perceived resolution with Full HD content but it can also accept 4K signals and thus deliver actual higher resolution images as well. These might not be full native 4K but it's debatable if you could actually tell the difference at sensible viewing distances. In fact the consumer electronics industry has realised that higher resolution alone isn't enough and it's here that the X5000 delivers with full HDMI 2.0a/HDCP 2.2 inputs and support for [High Dynamic Range](#). This means that not only will you be able to take advantage of the higher resolution on offer from new 4K formats but also benefit from 10-bit colour depth, wider colour gamuts and HDR.

Whilst these future-proof features are obviously important, the X5000 also delivers a fantastic picture with Full HD content, utilising all the image technology for which JVC are justifiably famous. The X5000 is brighter this year, partly to support HDR but also to allow the projector to be used in rooms with more ambient light; although if you want to take full advantage of the native black levels we would recommend getting your room as dark as possible. Despite the lower claimed contrast ratios, once properly setup we felt the performance of the X5000 was on a par with previous generations whilst still offering increased brightness. The out-of-the-box greyscale and colour accuracy was also superior to previous generations and overall the calibration controls were very effective. The combination of all these factors meant that the X5000 delivered an accurate film-like picture that is sure to delight projector fans everywhere. The 3D performance was also excellent, with bright and detailed images that revealed plenty of depth without introducing crosstalk. In fact the JVC DLA-X5000 proved to be a superb all-round performer delivering an excellent combination of performance, features and price and winning a Best Buy badge in the process.

## What are my alternatives?

The JVC DLA-X5000 sits at an interesting price point of £3,999 where it doesn't actually have any direct competitors. If Ultra HD 4K isn't for you just yet, then there are excellent Full HD projectors at below £3,000 such as the [Optoma HD91+](#) or the [Epson TW9200](#) you could choose instead. If you have your heart set on a laser projector then your only choice is currently the [Epson LS10000](#), although that will set you back £5,999 and it isn't as future-proofed as the X5000. In terms of native 4K projectors the nearest option is the [Sony VW320](#) but that costs around £5,800 and doesn't even support HDR. In fact if your budget can stretch to around £5,000 then you should really be considering JVC's X7000 which includes all the benefits of the X5000 but adds support for the full DCI colour space, a superior contrast performance and THX certification. However the simple fact is that at its price point there is nothing that can touch the JVC DLA-X5000 and that's why it's a Best Buy.

