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NEC U321H Ultra Short Throw Projector Review



Performance



Features



Ease of Use



Value

Intended Use:
Business

NEC U321H

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10000:1 Contrast Ratio

3200 Lumens

PC 3D Ready

\$2,199 Street Price

\$3,099 MSRP

[NEC U321H merchants](#)

NEC U321H Ultra Short Throw Projector

Allan Abbott, May 10, 2016

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If **NEC** is not the first name that comes to mind when you are looking for a 1080p ultra short-throw projector, the **NEC U321H** could change that. With a native resolution of 1920x1080 and plenty of brightness (rated at 3200 ANSI lumens), the 10.4 pound U321H puts up a big, bright image from as close as 9 inches from the screen for an attractive street price of \$2,199.

The U321's short-throw performance is very good in both video and data modes. As you would expect it eliminates the possibility of casting shadows on the image as a presenter walks around the room, but its competitive edge really shows up when you crank up a 1080p DVD or bring up video content embedded in a presentation. Right out of the box, you will see an excellent video image that is color-balanced, vivid, and with flesh tones that are right on the mark. Like many short-throw projectors, the brightness uniformity is around 65%, but you will probably not notice it when projecting video. Data projections look solid also, but the U321H's video performance is what sets it apart.

In addition to its general purpose uses, the U321H also offers an interactive group viewing option using DisplayNote software. Two fast-charging pens are included along with a projector-mounted camera and a DisplayNote user license for an additional \$582. If you work in

classrooms or conference rooms and need an interactive collaboration with multiple viewers, this Model NP04WI kit is an available option.

Picture Quality

The first thing that strikes you on setting up the U321H is the video projection quality. With no adjustments to factory settings, video material looked outstanding with good black levels and detailed highlights thanks to the U321H's contrast ratio of 10,000:1. Flesh tones were on target and natural, and the color spectrum was well balanced. Movie viewing was a pleasure.



Data quality was good, but as with many short-throw projectors, getting the entire image into sharp focus was very difficult. With the center of the image in sharp focus, the extremes of the image had a soft look although not to the point of making text fuzzy. However, you would do well to keep font sizes at 10pt. or above to ensure readability.

Because of the U321H's high incidence angle from the lens to the center of the image (about 60°), the projection distances where focus can be controlled properly is with the lens from 19 to 22 inches from the screen. This provides image diagonals from 82 to 104 inches, respectively. If the projector cannot be placed within the above limits, focusing the image becomes an increasing problem.

Key Features

Ultra Short Throw. For best results, the U321H sits less than two feet from the wall.

Video Image Quality. It is a treat to finally see a short-throw projector with 1080p resolution. The image was smooth and displayed no noise or posterization. While some projection modes had their own color bias (green in High Bright, blue in Video mode, and a slight red tendency in Movie mode), both sRGB and Presentation modes were remarkably neutral.

Two HDMI Ports. The extra port may be handy, and it is MHL compatible.

Brightness. Our test unit exceeded its 3,200-lumen rating in High Bright mode, and with all room lights on and shades open, there was little image washout. Even Movie mode put out over 2,200 lumens, so although that may be a bit bright for a dark room, it was perfect for a well-lit one.

Dual User Memory. Most projectors offer a User memory setting so you can store your favorite settings and get back to them easily if another user has changed anything. The U321H has two User memories. So, a colleague can have his/her own favorite settings stored, too, and that means less set-up time when the projector changes hands.

On-Screen Menus and Remote. The U321H's on-screen menus are simple to understand, and minimal layering makes navigation simple. Menus cannot be moved from the center of the image, but they are small enough not to obscure much of the image while you make adjustments. The remote is full-sized so it will not get lost, and it color codes critical keys

and labels all of them clearly.



NEC U321H Connection Panel

8-watt onboard speaker. The built-in 8-watt speaker is sufficient for a mid-sized room, and there are audio outputs if you wish to use an external speaker system.

Vertical Keystone. If you need to angle the projector to center the image on the screen, there is $\pm 20^\circ$ of vertical keystone correction available. With no horizontal keystone correction, you must be sure the projector is perpendicular to the screen to avoid horizontal distortion of the image.

Warranty. NEC offers a 2-year warranty on the projector and it warrants the lamp for one-year or 500 hours of usage, whichever occurs first. A replacement lamp is available from dealers for about \$299. NEC also offers its InstaCare service which offers quick replacement for projectors that fail within their first year of operation.

Maintenance. Keeping the U321H in peak condition takes little more than an occasional vacuuming of the air intake grills and a filter replacement every 500 hours. Lamp life is 3,000 hours in normal mode and 4,000 hours in Eco mode. The lamp is accessed from the top of the projector, so even with a ceiling mount, lamp replacement is easy.

Performance

Brightness. The NEC U321H has five projection modes and two User modes where setting preferences can be stored. Our test projector yielded the following brightness levels:

NEC U321H ANSI Lumens

MODE	Normal/Full Lamp
High Bright	3,375
Presentation	2,700
Video	1,915
Movie	2,250
sRGB	955

Eco Mode. Eco mode reduced brightness in each mode by about 18% and lowered fan noise in half, so Eco mode may be the best choice for all but the highest ambient light rooms.

Brightness uniformity. The uniformity of 65% is poor for a longer throw video projector, but about average for ultra short throw models.

User Settings. In User mode, you can fine-tune the displayed image by adjusting contrast, brightness, saturation, tint, color temperature (three settings), and Brilliant Color which varies the white content of the image. If you are looking for the best possible screen image, you may want to try the U321H's Color menu where you can make fine adjustments to all six colors produced by the light engine (red, green, blue, cyan, magenta and yellow). Casual users may shy away from such detailed adjustments, but they can enhance the viewing experience if judiciously applied. If you want to take the time to get the best image possible, then the User mode offers you the tools to do it.

Set Up

Image Size and Position. For a 100" diagonal image, the lens centerline is about 7 inches below the bottom of the image, and the front of the projector is only 9" from the screen. Depending on screen placement, you may have to tilt the projector upward to get the image high enough for easy viewing at the rear of the room. In this case, there is about $\pm 20^\circ$ of vertical keystone correction available. The projector can be inclined by a front elevator foot, and adjustable screw-in rear feet solve any horizontal leveling issues.

With a short-throw projector, you have to be aware of a couple of issues. The first is that you must use a flat surface for projection to avoid vertical or horizontal distortions of the image that cannot be corrected with keystone adjustments. This results from the acute angle from the lens to the screen. In particular, a pop-up screen will probably show a wavy vertical image since it is nearly impossible to get a pop-up screen surface perfectly flat.

The second issue is that since short-throw projectors do not have zoom lenses, the image size is directly proportional to the distance of the projector from the screen. Depending on the projector's specifications, this may present some problems with desk or cart mounting of the projector if the area in front of the screen is inaccessible.

Connections to the U321H are pretty straightforward as it offers the usual array of computer and video inputs with the added benefit of two HDMI inputs. There is also a monitor loop-through connection and a USB connector for devices including the optional camera for interactive presentations. Sources can be selected from the projector control pad or the remote control.

Limitations

Image Size. Because of its close proximity to the screen, the U321H has a narrow range of screen image sizes that it can handle without getting into focusing issues. The diagonal range is from 82" to 104", and if you want an image size outside those limits, you may find that getting good focus is a problem.

Placement Flexibility. Like its short-throw competitors, the U321H has a focus capability, but it does not have a zoom lens. This means that there is a direct and unchangeable relationship between image size and projection distance. If you want a 100" diagonal image, there is only one projection distance that will provide it, and if there is something preventing placement of the projector at that distance from the screen, you will have to live with a smaller or larger image.

Fan noise. Even though the fan is a little noisy (32 dB even in Eco mode), the noise is in the mid-frequency range and is not likely to provide any significant distraction since the

projector is at the front of the room. Even the usual whine of the color wheel motor is nicely suppressed.

Rainbow Artifacts. DLP projectors can produce intermittent rainbow artifacts that can be distracting when you are immersed in a movie. They tend not to be an issue when viewing still data images. The U321H is no different than many commercial DLP projectors in this regard. The video image is solid for conference room and classroom use. For dedicated home theater use, you will probably want to go with a DLP projector with a faster wheel speed, or an LCD projector which will not manifest the rainbow issue.

Conclusion

Combining 1080p with ultra short throw the NEC U321H does itself proud with excellent picture quality. Data projections come up a bit short with a slight focus gradient across the image, but it is a minor limitation if font sizes are not too small. For those that need it, the optional extra cost camera, styli, and DisplayNote application offer a versatile interactive presentation environment. With a bright, smooth image, a cost of \$2,199, and a very short throw distance, the U321H is merits our highest value rating.

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