

Panasonic PT-AE700U LCD projector

Peter Putman, February, 2005

Now Panasonic has followed up with the PT-AE700U, and it's more than just an upgrade of the PT-AE500U. The '700 has some new bells and whistles of its own, including a longer-throw projection lens, auto iris for deeper blacks, and an optical system that minimizes the "screen-door" effect so common to LCD projectors of all kinds.

For some time, the only way LCD projectors could compete with DLP models was on the basis of price. DLP projectors had the upper hand in contrast, black levels, color rendering, and achieving a "filmlike" look, thanks to the fine structure of DLP micromirrors. Of course, you paid a premium for that level of performance.

Two characteristics of LCD imaging have long befuddled projector manufacturers. The problem with black levels is intrinsic to the small, high-temperature polysilicon (HTPS) LCD panels, which behave like window blinds to pass different amounts of light through each pixel and form gray-scale images. If you use window blinds, you know that they don't completely cut off all light when drawn. Just as light leaks around the edges and through the slats of blinds, so too does it scatter, reflect, and refract within an LCD panel, even when that panel is switched off.

The second problem—the screen-door effect—is caused by the relatively thick boundaries around each individual pixel in an LCD panel. These edges are significantly larger than those found around DLP micromirrors or around liquid-crystal-on-silicon (LCoS) pixels, and they're easy to spot.

Many years ago, Cygnus Imaging of Michigan came up with a special lens adapter to slightly soften those edges, the presence of which was hard to miss, given the common VGA (640{x}480) and SVGA (800{x}600) pixel resolutions then in use. As pixel resolution and density increased, the screen-door effect was less noticeable, but it never entirely disappeared.

With the PT-AE700U, LCD projection has finally served notice that the technology is not going away any time soon. While the PT-AE700U is no earthshaking advancement in projection technology, it will do much to dispel the feeling of having "settled for second best" experienced by some who have bought LCD projectors.

Out of the Box

The first thing you'll notice about the PT-AE700U is its clean, simple layout. The connector complement has been kept to a minimum: one each of composite, S-video, and component Y-Pb-Pr inputs, plus a 15-pin VGA jack for computers and set-top receivers.

The last connector is an HDMI interface, strictly for use with DVD players and set-top receivers. (Nope, there's no DVI connector.) Of course, this being a home-theater projector, you won't find any onboard speakers or audio inputs or outputs.

The second thing you'll notice is a funny-looking joystick on the PT-AE700U's front, next to the lens. This is a dual-axis mechanical lens shift adjustment, which lets you pull the image considerably off to the sides, or up and down, as needed to fit your screen.

What you won't notice (unless you carefully read the specifications or owner's manual) is the long-throw 2:1 projection lens. Panasonic opted to go with this design to give you more options in projector placement. In general, a long throw distance means the aperture of the lens will be a tad smaller and the projected image a bit dimmer than shorter-throw designs, unless more horsepower is available from the projection lamp and optical system to compensate—which, as we'll see, it is in the PT-AE700U.

The side-mounted cooling fan is super-quiet but dissipates a lot of heat. With a longer projection throw, there's little chance you'd hear the projector or feel any of the warm airflow—to light up a screen 84 inches (7 feet) wide, the PT-AE700U can be up to 14 feet distant.

Remote and Menus

The supplied remote control, though small, has a nice layout of 18 buttons. After using it for a while, I was able to operate the important ones by feel, holding the remote behind my back (my test for a good remote design). My only complaint is that the remote doesn't give you direct access to video inputs. Panasonic has created three groups (Video, Component, PC/HDMI) within which you can make selections.

If you like to fiddle with image adjustments, the PT-AE700U has plenty of these. Depending on what video source you have connected, you can cycle among as many as five aspect-ratio presets (4:3, 16:9, Just, Zoom, Auto). There's also a digital keystone correction circuit, though with that joystick lens-shift control, I don't know why you'd ever need it.

For finer tuning of picture quality, Panasonic provides seven factory-preset combinations of brightness, contrast, gamma, and white balance: Natural, Cinema 1, Cinema 2, Cinema 3, Normal, Video, Dynamic. There are also five preset color-temperature selections to choose from.

Want to create your own settings? The Advanced menu gives you access to three gamma settings, RGB contrast, and RGB brightness. You can also adjust brightness, hue, and saturation for red, green, blue, cyan, magenta, and yellow and save those settings into user profiles.

Sounds like something a professional colorist in a video postproduction house would do, doesn't it? That was the precise inspiration for the earlier PT-AE500U's improved color rendering; in the PT-AE700U, Panasonic has simply expanded on that range of adjustment.

When this projector was shown at CEDIA's Expo 2004, what caught everyone's attention were its super-low black levels. These are due to its advanced auto-iris function, which acts continuously to adjust the projector's dynamic range up and down as the picture's brightness level changes. Panasonic first implemented this technique in their high-brightness, three-chip DLP projectors a few years ago; as you'll see shortly, it works quite well.