REVIEW CANON - REALiS WUX400ST PRO PROJECTOR

BY ALAN C. BRAWN CTS, ISF-C, DSCE, DSDE, DSNE, DCME

BrawnConsulting
"Grow Your AV IQ"

IN THE EYE OF THE BEHOLDER

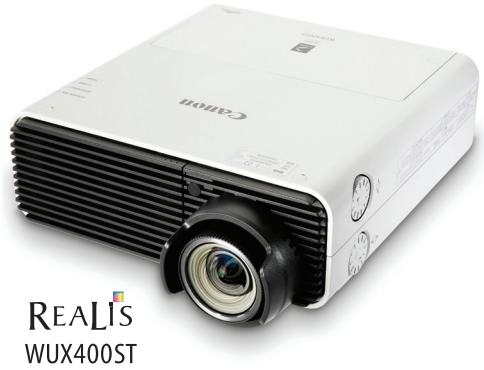
A "TRUE" SOLUTION

Like many of you, I get sick and tired of hearing industry "buzzwords" that should have meaning but in AV today is the word "solution". By definition a solution is the act of solving a problem or a question, as in "the situation is approaching solution". That being said, I have to back pedal a bit with the irritation. The word "solution" is still overused but I have in my possession the new Canon REALiS WUX400ST Pro AV Short Throw Compact Installation LCOS Projector that truly is a solution. Because in the end, if the word and the reality match, then using the word is appropriate - especially in this instance.

As many of you know, we have come a long way in video projection development over the years, but today the area that excites many of us the most is the development of truly high performance short throw optics and projectors specifically designed to use those capabilities. From the beginning we have had projectors with long throw capabilities and wide angle lenses, but true short throw close focus projectors as a high performance solution has been a development of recent times. This being the case we must ask ourselves if this is going to become a trend in AV design or a nice option as a footnote in a projector manufacturer's line-up.

If we look at the latest market research we see that there are three factors of significant growth in projection. One is that the sweet spot of light output is now in the 3,000 to 4,000 lumen range. In terms of resolution, XGA has ruled the roost for years driven by the relatively low resolution requirements of the educational community - but this is now migrating to higher resolutions since source material at those higher resolutions is more affordable and more readily available. Last but not least we are seeing significant growth in the use of short throw projectors. The question jumps out at you. **Is there a projector that excels in all of these growth areas?**

The answer is a resounding yes and it is the Canon REALiS WUX400ST. We will get into all the individual details and how they perform, but for a first glance it is a compact installation projector that uses LCOS technology featuring the highest fill factor in the digital display industry, boasts a high resolution of 1920 X 1200, produces 4000 lumens of light output, and features a .56:1 short throw optic. Sounds pretty good, but in our testing we found it looks even better than it sounds - so stay tuned.



OUTSTANDING SHORT THROW OPTICS & LENS SHIFT

Excellent image quality is the price of entry in the upper echelons of this category but we would be remiss if we did not speak of the physical nature of short throw capability in some detail. The specification states that this is a .56:1 lens and that tied into Canon quality is quite impressive. This translates into **a projector that can produce a 100" image from as little as 4 feet away.** Pretty impressive numbers, but I urge you not to stop there. What is truly unique, and takes this projector to a completely different level, is the mechanical lens shift capability that provides for the image to be raised vertically from 0 to 75% and horizontally plus or minus 10%. This compares with other short throw projectors on the market that have as little as W vertical lens shift. To all the skeptics out there concerned about how Canon's extreme lens shift will affect image quality - as a point of reference, in our testing with both cross hatch and geometry test patterns the WUX400ST performed extremely well with virtually no distortion!

Impressive as those numbers are, imagine what you can do with this in terms of a practical solution to problems you could not address before. You can now tuck the projector underneath the lip of a traditional conference table and literally take the projector out of the environment. Just try finding a better way to create a high quality image of 100" or larger for the price and the added benefit of no visible display device to distract you from the interior design. Another one of my favorite applications is to mount a series of these projectors along the ceiling or hallway and, thanks to the built in edge blending with **an overlap capability of 0 to 960 pixel horizontal and 0 to 600 pixel vertical,** create a continuous and seamless series of images as far as you want. And thanks to the aforementioned short throw capabilities, the viewers are out of the light path of the projectors. Even for those of us who are, shall we say, less imaginative, there are still benefits. You can now mount the project closer to the screen in front or rear projection in a more traditional sense while reducing installation time and costs (long cable runs). One can then simply fine tune with manual lens adjustment to fit perfectly on the screen.

PICTURE QUALITY

Lets state at the outset - no matter what a specification says, if the projector does not produce a stellar picture, all else is gilding the lily and simply marketing chatter. In short, it is and always will be about the image on screen and the WUX400ST does not disappoint in any sense. Based on LCOS technology that uses the best of both reflective and transmissive elements in the core chip, you get excellent resolution and high contrast for two basic reasons. As noted earlier, LCOS has the highest fill factor of any digital display technology so the active area on the screen is maximized while minimizing the screen door effect of other display technologies, and coincident with that there is the unparalleled quality of the Canon optics that go a long way to improve contrast.

Let's pause just a moment on optics and light and look at how this relationship fits into the picture. If you think about it, projection is actually based on the control and manipulation of light. And as we all know ambient light falling onto the screen surface, and a lack of lighting control, is to be filed under the heading of a bad thing and one that degrades the image on screen. Now think about light control inside the projector and depending upon the manufacturer there will be various degrees of success at controlling and utilizing available light. **This is another area where Canon excels not just in their exit optics (aka projection lenses), but inside the projector with their newly improved AISYS Optical Engine.** This group of optics is designed as a system to collect, combine, control, and maximize the individual components of light as they help create the images that transmit through the lens. In the new system they have found creative ways to enhance contrast and transmit more of that elusive electromagnetic spectrum that humans see.

COLOR ACCURACY

While we are still inside the projector I want to address the concept of color processing. You can have great optics and the most advanced core chip technology, but what if the color processing is inferior? To the first order, this is related to color bit depth stated as so many bits. For the uninitiated, a bigger number is better. Many projectors use 8 bit processing and yet others are more advanced and use a 10 bit system. The folks at Canon take their resident bit depth very seriously and **increase it to a class leading 12 bits of processing power incorporating an advanced color processing system** that is very sophisticated in terms of how it "handles" each color. Not to get to techy, so think about it this way, as the number of bits increases, the number of possible colors that can be displayed becomes larger. In side by side comparisons with projectors using lower bit depth processing, the difference is quite noticeable. Combine the film like quality of LCOS with advanced color processing and excellent contrast, and this produces image fidelity that is fully optimized in terms of replication content in an accurate manner. Suffice it to say that the WUX400ST produces an outstanding picture and we pay homage to that - but there is even more to consider in this tutorial about being a total solution in the broadest sense.

4 POINT INDEPENDENT KEYTSTONE CORRECTION

Another useful but unsung tool on several of the Canon REALiS projectors is 4 point independent keystone correction, with "independent" being the critical word. On some other projectors, keystone correction has a tendency to degrade the image in some manner. And although digital keystone correction has improved over the years, by design this feature uses fewer of the available pixels on the display (which should always be avoided if possible). Canon has taken this to the next level of performance and their **4 point system actually permits each corner of an image to be adjusted independently allowing for true diagonal projection.** Couple this will high quality moiré reduction and you get clear images without the loss of apparent resolution.

F-STOP

One final point on lensing is the fact that the .56:1 lens has an f-stop of 2.7. Before I lose you, this actually is extremely important and relates to depth of field. This feature facilitates the use of the projector on curved or spherical surfaces – as this allows the projector to remain in focus as the screen surface curves. To test this we placed the projector on a curved screen and measured focus and uniformity in the center of the screen and on the curved extremities. With typical projectors having less depth of field capability, the curved areas become out of focus and with the WUX400ST this was simply not the case.

ADVANCED FEATURES

Recognizing that the performance on screen is first and foremost followed by the expanded physical installation parameters of the short throw optics, if it all stops here then the solution limits itself and is not all it could be. Once again the Canon REALiS WUX400ST goes the extra mile in this regard in several areas. For example, **the WUX400ST has 5 color temperature options and more than 25 built in test patterns to assist in the calibration** of the projector so no external test pattern generator is required. With healthcare being one of the fastest growing segments of the display industry, it's also important to note that Canon offers a REALiS WUX400ST D version of this product which includes a DICOM Simulation Mode ideal for the viewing of medical images such as X-rays and CT Scans for educational and training purposes (not to be used for diagnostic applications).

OTHER FEATURES (NETWORKING, LOWER POWER CONSUMPTION, ETC.)

Under the heading of nice to have, there is picture by picture capability, a USB memory stick feature so you do not have to have the projector hooked up to a PC or other source, decent sounding 5 watt audio built in, and from a networking perspective there are full controls over IP. For the eco-friendly crowd, Canon caters to you as well. In comparative testing, **the WUX400ST consumed less than .081W per lumen,** and the standby power consumption was a mere 0.2 W, which are both very favorable when compared to similar products. Furthermore, its filter design provides for up to a lengthy 12,000 hours of operation before needing replacement. Wrap all of this up in the smallest physical form factor in its class and cover it with a 3 year parts and labor warranty and I suggest that all of this adds up to the definition of a true solution.

The parting thought is this. Take a look at some of the problems you face in AV design and also look at some of the things you have wanted to do but didn't have the right solution to accomplish the task, and now consider the REALiS WUX400ST. If the specifications don't convince you then get a unit in house to look at for yourself. You will see what we saw and that is outstanding performance with installation options that open up new opportunities for you to satisfy your customers.