

## NEC Solutions (America), Inc., Visual Systems Division

### Projector Buying Tips

Before purchasing a projector, you'll want to put some thought into how/where the projector will be used, the lighting conditions in the room, the type of sources that will be connected to the projector, which sources will be viewed most often, what type of screen will be best suited for your use, and should you ceiling mount it or set it to floor mode.

From there, you can determine the best compromise of performance and budget to meet your need.

#### **Digital Light Processing (DLP) and Liquid Crystal Display (LCD) Projection Technology:**

**Pixel Structure:** DLP has a tighter pixel structure than LCD (less screen door effect and a smoother image).

**Contrast Ratio:** DLP is typically capable of higher contrast ratio allowing for deeper blacks.

#### **COLOR**

**DLP/Residential Projectors(HT)** have a 6-segment color wheel allowing for excellent color reproduction.

**DLP/Commercial Projectors(LT)** have a 4-segment color wheel which gives very good color reproduction.

**LCD Projectors(VT, MT)** have 3 panels allowing for good color reproduction

#### **BRIGHTNESS**

**DLP/Residential Projectors** the 6-segment color wheel sacrifices light output for color. This is not typically an issue as a good home theater design should have a dark "cinema" environment so the projector can display it's best black levels for an optimal experience.

**DLP/Commercial Projectors** the 4-segment color wheel allows for more light output due to its white (clear) segment but sacrifices color reproduction.

**LCD projectors** typically have good light output.

#### **RESOLUTION**

**SVGA(800x600):** Units with this resolution will have the least amount of detail but at a budget price. Note that 16:9 sources are displayed at 800x450 pixels not filling the panel(s) vertically.

**XGA(1024x768):** Units with this resolution will produce an image with better detail than SVGA units but at a higher cost. Note that 16:9 sources are displayed at 1024x576 pixels not filling the panel(s) vertically.

#### **COST**

**DLP** typically can have a higher cost than LCD, especially for a Home Theater projector as the video performance features add cost.

**LCD** cost is typically lower than DLP (however pricing is becoming aggressive at the low end for both technologies). XGA units will have a higher cost than SVGA due to the higher resolution.

#### **CONNECTIONS**

You will need to consider what sources you are going to be using and how you are going to connect them to the projector. How you connect these sources can impact video quality.

**Component Video:** Using a component input on a projector for video is best; this is the cleanest type of video output from a video source if available. Some video sources do not have a component output.

Most commercial units do not have a component input as they are optimized for RGB sources, however most commercial units will allow you to connect a component signal to the RGB input by using a component to 15-pin adapter cable (typically an option) and this method is just as good, but with the added cost of the adapter cable.

**S-Video:** If a component video output is not available on the video source, the next best option is an S-Video output if available. Some video sources do not have an S-Video output.

**Composite Video:** This is the noisiest type of video output from a video source. This might be your only option for sources like cable TV and a VCR.

## **VIDEO PROCESSING**

**Residential units** have good video processing circuitry, are optimized for use with video and have the most options of connecting video sources. These units will display component sources well, but also do a good job processing S-Video and Composite Video sources. For the HT1000, it is best to connect video sources to the component input. The best DVD option is one with a basic interlaced player. Or, set a progressive player to "interlaced" or "progressive disabled" and use the component output. The video processing in the HT1000 is so good and makes so many valuable adjustments available that it is better to let the projector process the interlaced video than to use a progressive player to convert the video to a progressive signal. If there are any other component sources like HDTV, an RGB or Component switcher may be needed. For other sources it is better to use component than S-Video and only use Composite Video as the last option. Quality will depend on the source; VCR and Satellite are not as clean as DVD but this depends on the quality of the original content. Cable TV quality is usually worse since reception quality varies a lot and the noise degrades image quality a great deal.

**Commercial units (LT/VT)** have very basic video processing circuitry as they are optimized more for presentations of data, but can also be used for video. They will display the component output from a good progressive DVD player well (set to progressive), but will not do the best job processing interlaced video whether composite, S-Video or component. You should consider a 3<sup>rd</sup> party video processor box if you are going to use interlaced video sources a good portion of the time. One inexpensive 3<sup>rd</sup> party processor is the iScan Pro by DVDO which has a good deinterlacer, composite input, S-Video input and a component input with an SRP of \$499.

## **SCREENS**

Consider a 16:9 screen as almost all DVDs are available in widescreen, only some very old movies are 4:3 and recently some movies are available in either widescreen or 4:3. But HDTV is becoming more available now via cable, satellite and off air (antenna). Deciding on a 16:9 screen is thinking ahead.

The HT/LT series can also make a 4:3 source fit onto a 16:9 screen (similar to the plasma) by changing the aspect ratio settings.

Screen size will be dependent on the model projector, throw distance, offset angle and ceiling height.

A 4:3 screen should be considered for a few reasons:

- If you are determined to support a 4:3 video library of many VCR tapes or want to watch movies or sports on basic cable or satellite.
- If you plan on the above type of 4:3 source usage and you are considering a VT60 (VT46/465/460/560/660/660K) as they cannot convert 4:3 to fit onto a 16:9 screen like the HT/LT product can.

### **Screen Types**

**Fixed:** Can be a cost affective solution if you can dedicate a wall to leave a screen hung on it. The type that stretch and snap to a frame with either a black border or black frame border are very popular and reasonably priced. (WT series cannot use the type with a frame on the front, the type with a frame on the back and screen material snapped on the front with a black border is best for the WT series. The frame will block the top or bottom of the image if it is on the front due to the steep projection path of the WT series)

**Pull Down/Motorized:** These type are convenient as they can go up and be out of the way leaving a small enclosure or even hide into the ceiling. Pull down screens are much less expensive than motorized. Tab-Tension are the best of these type as they keep the screen flat, but they are much more expensive than ones that are not a Tab-Tension type. The type that mount into the ceiling are expensive. The best compromise is usually the type that goes up into an exposed enclosure, some of the new ones have very low profile enclosures and are not bad looking.

A screen with no gain or gains of no more than 1.3 are usually best for Home Theater as higher gains tend to produce a 'hot spot' on the screen. Some of the new 'silver or gray' screens can help to improve contrast ratio especially on LCD projectors but cost more and can change the white balance which you would have to readjust in the projector.

## **FINAL NOTE**

Once you have taken all these things into account, you should consult an NEC VSD engineer to confirm you are going down the right path and that you are comfortable with how everything is going to come together in your system.

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