

Constant Technologies, Inc.

# Display Resolution and Pixel Pitch

**High Quality Video Wall Displays**

## Introduction

In recent years the application of video walls has expanded to a variety of settings, but a video wall used for a public digital signage purpose will have far different requirements and considerations than a video wall in a command center. Constant Technologies specializes in AV systems integration for mission critical spaces and is well-versed in the complexities of video wall technology.

A large video wall with such a vital application will require numerous considerations including resolution, pixel pitch, aspect ratio, and size as well as types of input sources and the number of sources to be displayed simultaneously in addition to other factors. All of these are important aspects of a successful video wall display in your mission critical environment

### Pixel Pitch

Pixel pitch is an industry term that pops up often when researching video wall solutions. As many sources will tell you, selecting the right pixel pitch is imperative to the success of your LED video wall. With all the importance hanging on this one term, it begs the question: just what does pixel pitch mean?

Put simply, pixel pitch is the distance between the center of two pixels on an LED video wall panel. This distance is measured in millimeters. The closer the pixels are to one another, the smaller the pitch. The lower the pixel pitch, the higher the resolution that will fit into the same area.

However, lower pixel pitch may not always be the best choice for your space. Smaller pixel pitch means a higher number of LED clusters in your display -- and thus a higher cost. Higher resolution LED displays are more expensive due to the complexity of the circuits behind each

module, which increases as the resolution gets higher.

The display resolution and pixel pitch of your LED screens also correlates to the optimal viewing distance. The lower the pixel pitch, the closer an operator can be located and still have good resolution for viewing. However, if your operators will be located further from the LED video wall installation, a less expensive video wall with higher pixel pitch may be the right fit for both your room and your budget.

There are several factors for determining what pixel pitch works best at what distance. Our experienced design team at Constant can help determine the best fit for you and your space.

### Display Resolution

In any environment, a video wall should be capable of producing high quality images for all viewers in the space; in a mission critical environment, it is absolutely vital that all viewers have a clear, high quality view of the information displayed on the 24/7 video wall. Good resolution goes from a "should" to a "must" when a video wall is used to monitor critical data.

Good resolution on a video wall can be perceived through details such as sharp and detailed images and a lack of visible pixels. But what, by definition, is resolution, and how do you know which resolution is the right choice for your space?

Let's begin with the basics: the image displayed on a video wall is composed of pixels. Resolution can be described by the pixel density — that is, the number of pixels per unit of area — rather than simply the total number of pixels. Screens or video wall panels of different sizes can still have the same resolution since resolution is based on the number of pixels in a given area.



Resolution can be a somewhat ambiguous term, affected by various elements in different kinds of display. As a general rule, however, display resolution is usually given as width x height, in pixels. Some common display resolutions referenced within the professional AV industry include:

- Full HD (high definition) = 1920 x 1080, often referred to as 1080p
- Ultra HD = 3840 x 2160
- 4K = 4096 x 2160
- 8K = 7680 x 4320

When displaying large or detailed images, resolution is a key consideration. In a command and control environment each operator should be able to view the details of the data displayed on the operation center video wall as clearly as possible. Even the operators situated closest to the command center video wall should not see visible pixel structure. If there are multiple high-resolution sources that are being displayed on the video wall, higher resolution is required.

While having a large video wall that all operators in your command center installation can see is important, it's also vital that the video wall system can display high-resolution images. The size of the video wall may not indicate the quality of its resolution, which is why it is important to pay attention to all factors. Regardless of the size of your command center video wall, your operators need to view the data with as clear an image as possible. Constant ensures that we only install video wall systems of the highest quality.

Our engineers and designers will help you choose the video wall and monitor resolutions that best suit your space. The team at Constant is highly skilled in integrated large-format, tiled

video walls that fit with your architectural design and operational goals.

## Conclusion

Together with video wall resolution and other factors of picture quality such as pixel pitch, brightness, contrast, and color, Constant also considers that the final videowall design and configuration is in line with ergonomic requirements for sight lines and head tilt. For further reading on our detailed video wall design considerations, read our blog series on "The Rules of Operations Center Video Wall Design," which covers our ergonomic video wall considerations, display technologies such as LED vs LCD, and video wall sources.

## About Constant

Constant Technologies, Inc. is a premier mission critical systems integrator providing customized audiovisual integration of large scale operations center video walls and control center console furniture worldwide. With over three decades of experience, Constant's team has the knowledge and clearance to work with sensitive environments in both the public and private sectors and has implemented turnkey solutions all over the world. Constant designs, installs and services projects of all scopes and sizes to create solutions with the highest levels of security, aesthetics and functionality in mind.

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