BLACK BOX®

BROCHURE
VIDEO WALLS

How to Set Up a Small Video Wall for Your Business

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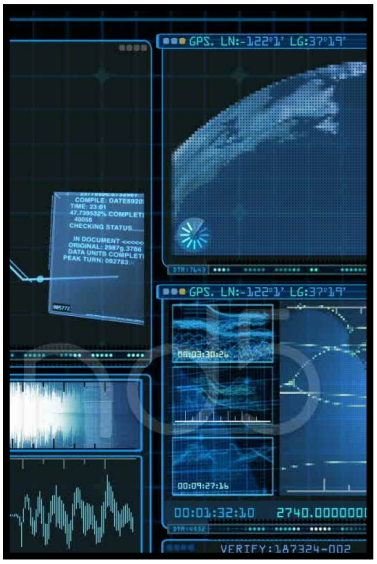
1×4, 2×2, and 2×4 HD or 4K HDMI Video Walls

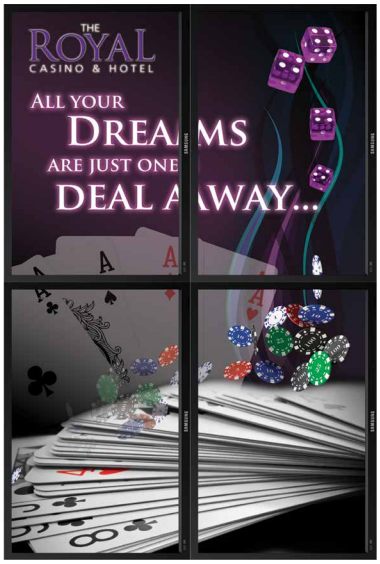
What is a video wall?

A video wall is multiple LED screens unified to make one large display. Video walls are usually rectangular arrangements with one row of screens or multiple rows of screens mounted side by side, horizontally or vertically. A video wall can also be just one large screen with multiple content zones.

Why are video walls needed?

Video walls offer multiple benefits. First, they can display multiple video sources with mixed video formats and sizes in high quality and with consistent brightness. Video walls can also extend a single source over multiple screens, zoom image details into a focus area, or show multiple pieces of video content on customized tiles.





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Where are video walls commonly used, and what are some new trends?

You have probably seen the massive video wall the NASA control center uses. Video walls have become an integral part of today's monitoring applications, like operation centers (TOC), surveillance, and manufacturing facilities, because they offer a quick overview of all processes and allow you to zoom in on specific sources in the event of a crisis. Video walls are also popular in entertainment, like concert venues and stadiums, because they enable every visitor to see what's going on at all times, regardless of where they're standing or sitting.

But not every application requires a video wall with dozens of screens and complex video configurations. For retail stores, showrooms, restaurants, smaller control rooms, and similar applications a video wall with one, four, or eight screens is often the perfect solution. In fact, the market for these smaller video wall applications is steadily growing into double digits. It's also becoming larger because the COVID-19 pandemic is requiring public places, stores, and hospitality applications to install video wall solutions that assist with thermal surveillance.

How is the content distributed to a video wall?

A computer graphics card can distribute content to a video wall, similar to how it can extend a laptop's image to multiple monitors. However, this type of distribution offers very limited design options and is only recommended for simple video wall applications. Most applications, including those with small video walls, should use a video wall controller to send multiple AV sources to a video wall. There are many cost-effective and feature-rich video wall controllers on the market that make setting up and managing a small video wall easy. Large-scale video walls are usually managed with software-based controllers that offer the most advanced and creative video wall control, like Radian Flex from Black Box.

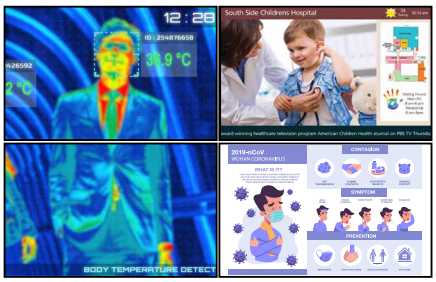
Use Case Examples

Control Rooms and Security Centers: 1 x 4 Video Wall

A 1 x 4 video wall is ideal for smaller control rooms in manufacturing, emergency centers, facility management, police stations, and many other security centers that need to control a limited number of video sources. This video wall configuration can give operators in these control rooms complete visualization of all critical processes to improve their efficiency. It can also display industrial controls, sensor data, and camera feeds in real time with a high-quality image that matches the native screen resolutions. This type of video wall also features a flexible layout, and it can switch between sources to allow operators to react quickly during an emergency.

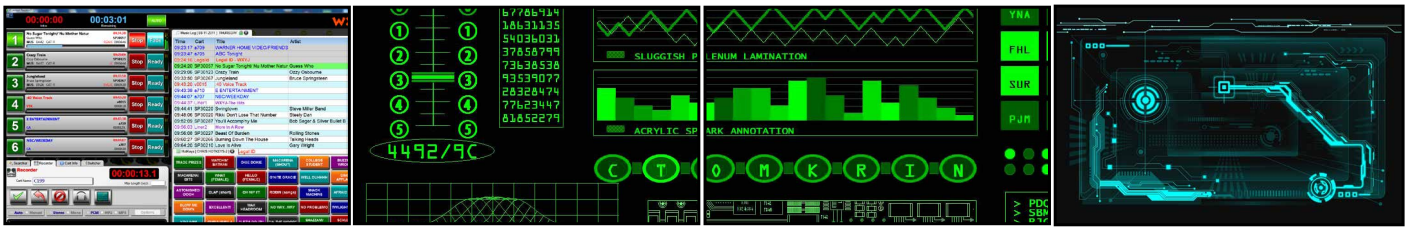
COVID-19 Safety: 2 x 2 Video Wall for Thermal Screening

A 2 x 2 or 1 x 4 video wall can display thermal screens, floor layouts, and promotional content all at the same time. This functionality makes these video walls perfect for enclosed public areas that need to adhere to new COVID-19 safety precautions, like hospitals, subway stations, shopping centers, museum entrances, cinemas, and enterprise lobbies.



Retail, Events, and Museums: Artistic Video Wall

You can find digital information and advertising boards at almost any show, event, or store. But even the most eye-catching content can get lost in places with too many screens. If you want your display to be noticed, an artistic video wall stands out with its extraordinary screen arrangement. You can mount these screens in the shape of a Christmas tree for a year-end sale in a store, a locomotive for a train museum, or your company logo in a lobby or waiting area. The options are endless.

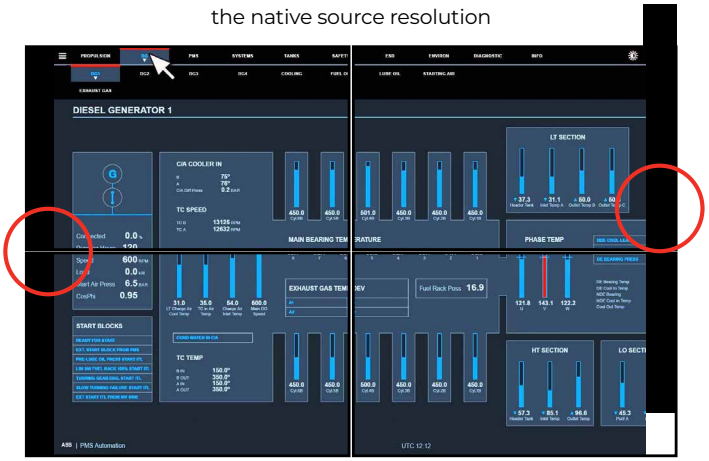


Layout Features Explained

Native Screen Resolutions

Often the native resolutions of your sources do not match the resolutions of the screens in your video wall. If these resolutions don't match, your image will not be displayed over the entire video wall, leaving black edges at the sides. Even worse, your image will lose quality. To overcome this issue and keep lossless image quality, choose a video wall controller that can upscale and downscale images by adjusting the aspect ratios of your source images.

No aspect ratio adjustment keeping the native source resolution



With aspect ratio adjustment to native screen resolution

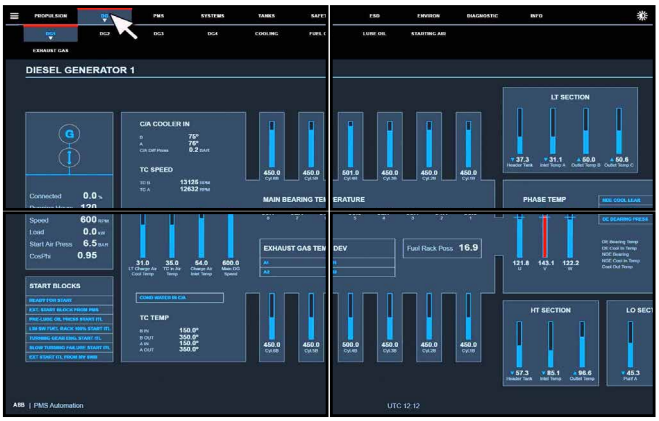
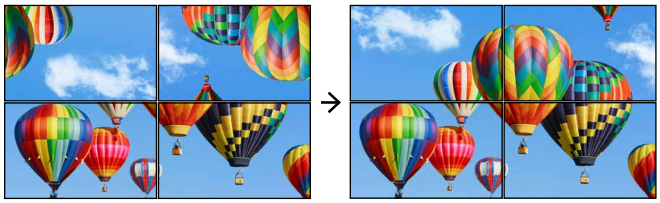


Image Rotation and Flip

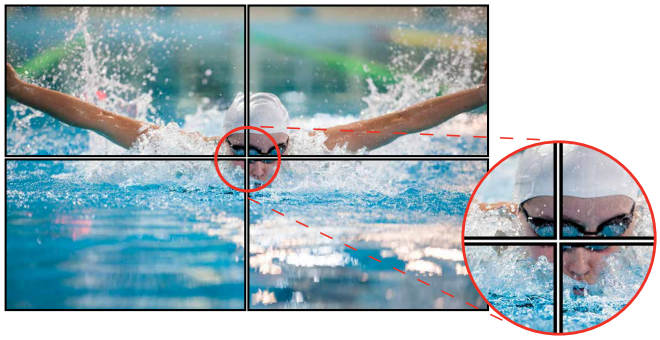
Image rotation and flip are often needed in digital signage applications. They allow a video wall controller to rotate an image left, right, 90°, 180°, and more. With these functions, you can significantly reduce the gaps between LCD screens and the distortion of the image from the seam. The example below shows a 180° rotation of the screen in the top row.



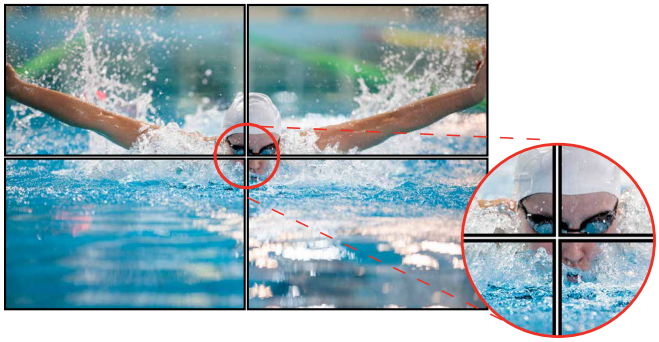
Bezel Gap Correction and Edge Blanking

Bezel gap correction, or edge blanking, ensures that images look more natural. Images are no longer ripped up and look much livelier when you use this function.

Before



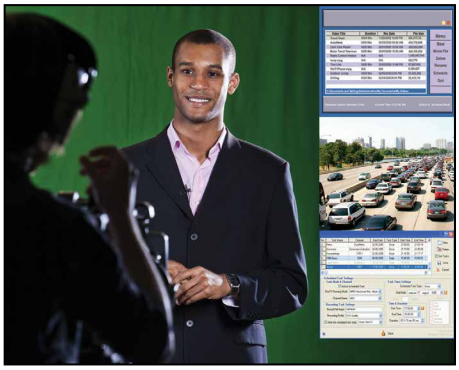
After



Full Screen Layout, PiP, and PoP

A video wall controller enables you to arrange the sources on the video wall any way you want to support your application. In full screen layout, the content from a single source is scaled and spread over the entire video wall. Picture in picture (PiP) allows you to display a full screen image and freely arrange other source content in smaller tiles on top. Picture over picture (PoP) enables you to freely arrange source content in tiles that can overlap with or without transparency.

Full screen



Picture in Picture (PiP)

Quad Screen

Picture over Picture (PoP)

Introduction to Black Box Entry-level Video Wall Controllers

Quad MultiViewer

4K 60, HDMI, DisplayPort, VGA, 5 x 1 (AVSC-0501QMV)

The Quad MultiViewer allows you to display four sources on a single HDMI screen or up to four daisy-chained LED screens with resolutions up to 4K 60. Simultaneously, the video wall content can be displayed on a DisplayPort monitor. This multiviewer has five input options: three HDMI ports, one DisplayPort port, and one VGA port. These inputs allow you to connect cameras, thermal scanners, media players, PCs, and industry controls to the multiviewer.

This device is also simple to use and flexible. It allows you to change the layout and/or sources with push buttons, an IR remote, an Ethernet network, or an RS-232/Telnet terminal.

Key Features:

- Scale HDMI, DisplayPort, and VGA video up or down and adjust aspect ratios to match the native resolution of your screen
- Rotate, enlarge, or flip images
- Supports full screen, PiP, PoP, and multiview video wall layouts
- Predefine up to six preset screen layouts and eight extra customized screen layouts
- Control the layout through front panel buttons, an IR remote, an RS-232/Telnet terminal, or Ethernet
- Supports Dolby Digital® 5.1, DTS® 5.1, and uncompressed 7.1 linear PCM audio as well as an external audio system through stereo analog audio in/stereo audio out

Download the data sheet for more information ▸

VideoPlex4000 Artistic 4K Video Wall Controller (VSC-VPLEX4000)

VideoPlex4000 gives users the flexibility to create video walls with the screens arranged however they want. One VideoPlex device supports up to four independent HD HDMI screens, but you can add more screens by stacking VideoPlex4000 units. This controller features two HDMI 1.4 ports and one DisplayPort 1.2 port so you can connect a variety of 4K video sources.

It comes with user-friendly software that allows you to easily drag and drop configurations and preview the video wall settings, players, PCs, and industry controls.

Key Features:

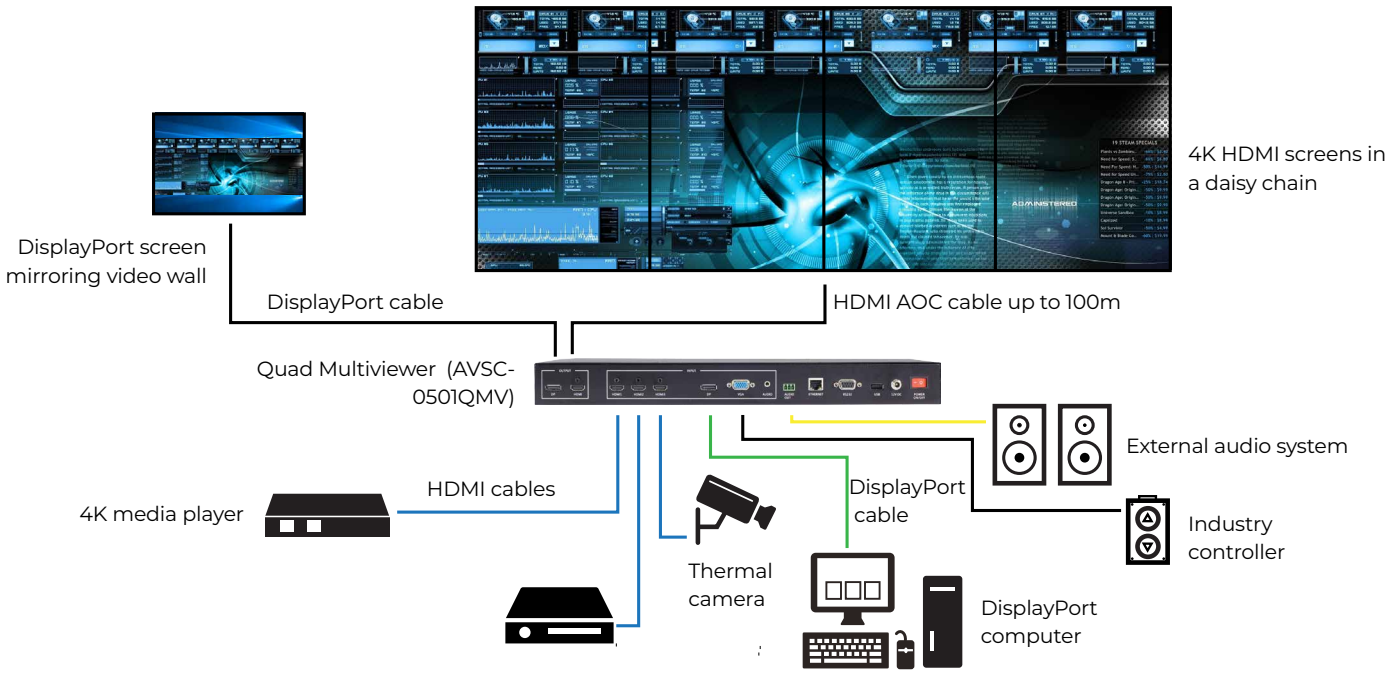
- Images can be scaled, rotated, or cropped individually on each screen
- Supports corrections for frame gap
- Automatic screen bezel settings
- Supports PiP and PoP configurations
- Includes six preset screen layouts
- Supports stereo analog audio input and stereo digital audio output

Download the data sheet for more information ▸

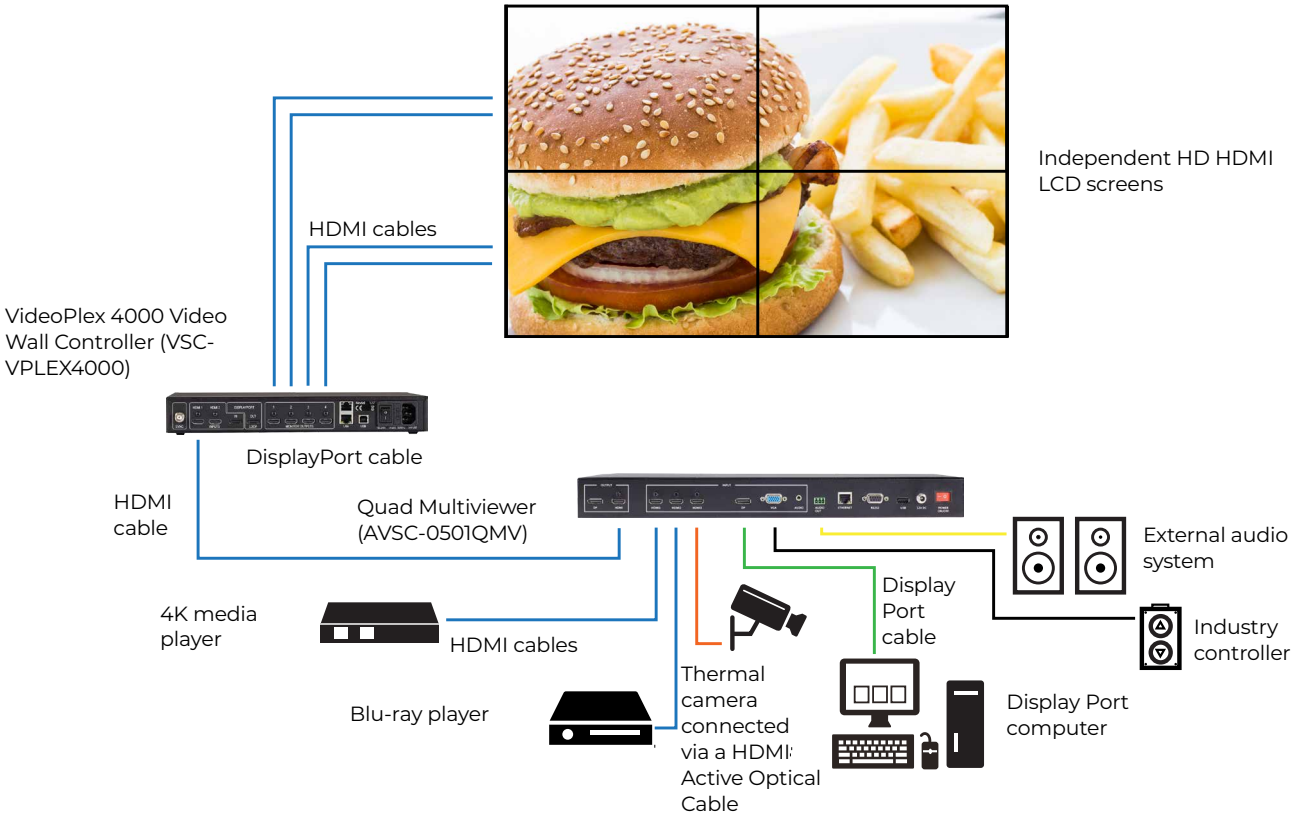
to get the utmost flexibility and control over your HDMI video wall.

Diagrams of End-to-End Video Wall Solutions

1 x 4 Video Wall Delivering Native Screen Resolution



2 x 2 Video Wall with Preview Feature and Advanced Control



Conclusion

Video walls are no longer limited to large applications. The price reduction for professional LED screens led to an increasing trend utilizing video walls also in smaller rooms. There is quite some choice for wall controllers, too. Make sure that the controller offers an easy, user-friendly operation with local preview or monitoring. Check the resolutions of your sources and video wall screens to determine your requirements for scaling and aspect ratio adjustments. Consider screens with daisy-chain feature for clutter-free installation. Evaluate which video wall layouts support your applications best, choose preset capabilities if you frequently need to switch between configuration. There is not a lot budget needed to setup a video wall that supports a great visualization of your contents for monitoring or promotional purposes.

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