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New Generation Signage Displays with LCD Panel Resizing Technology

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Digital signage is an innovative medium for targeted information, entertainment, promotions and advertising, delivered in visually rich multimedia formats designed to attract consumers. Since digital signage so ubiquitous these days, people no longer ask what it is because digital signage has matured into a fully developed, versatile product that has adapted to many different applications and environments. Applications are constantly diversifying and we are now seeing semi-transparent digital signage displays (with products inside), large-format multi-touch displays, video walls, and tiles (smaller displays that can be configured in new ways), and interactive digital signage that aims to give consumers a more fun, educational and enhanced customer experience that helps drive sales. Digital signage displays now come in unusual shapes or configurations but 42" and above are the most common sizes. However, large-sized displays with conventional aspect ratios have limitations— in locations where they are restricted in height or physical space, like on elevators, buses, or in the transportation and medical markets. LED signages seem to be a good fit for these kinds of space-limited applications; however, LEDs are usually heavy, power consuming, and display low-resolution images.

LCD Panel Resizing Technology

For space limited requirements, panel resizing technology is a highly cost effective alternative. This relatively new technology allows a resized LCD to be made to fit almost any application yet it retains all its original performance and features—perfect for a cost effective, low/medium volume solution. LCD panel resizing consists of LCD disassembly, physically cutting the glass to a new size, sealing the edges, and re-assembly of backlight/polarizer/frame. The technology can also be used in a wide range of applications where standard sizes are not suitable, generally where there are height or width restrictions. Advantech DSD-5000 series of stretched signage displays which use this technology are a highly cost-effective solution for these low and medium volume demands. For example, DSD-5000 series offer a number of resized displays such as a 1/2 size panel resized from a 42" LCD, and a 1/3 size panel resized from a 32" panel. By performing a series of complicated panel cutting processes, resized displays retain their original panel specifications, functions and performance, yet open up a new range of application possibilities. Their ultra-wide 'letterbox' shape is a perfect fit for public signage applications in narrow, limited spaces. Advantech is proud to offer this technology which provides customers with a whole new choice of resized signage displays, and opens up new avenues of opportunity.

Resolution 1920 x 1080 (HD)



1/3 Cut



Resolution 1920 x 358



28"



1/2 Cut



Resolution 1920 x 538 38"

Resolution 1920 x 1080 (FHD)

Panel resizing technology requires a certain amount of disassembly/re-assembly. Take DSD-5038, 38" stretched signage display for example, the first step is to take a full 42" LCD module apart into its constituent LCD glass, polarizer, backlight and circuit boards. The 42" LCD glass is then cut to 1/2 size whilst preserving the circuit boards. To avoid diminishing their original performance, the aim of LCD resizing is to conserve as much panel EE design as possible. The resized DSD-5038 display preserves the Tape Automated Bonding (TAB) chips on the bottom side after the 1/2 size vertical cut, and because the remaining TABs dictate the remaining number of active lines available for an image, so DSD-5038 can be cut down to any horizontal size without impacting on performance of its horizontal 1920 pixel resolution. However, because this cuts into the vertical area of the display, the vertical resolution is reduced by half. The circuit boards are placed in the bottom half of the original 42" panels, so the effect of row cutting does not affect the input signals, they

remain the same which saves cost from rearranging circuit boards. The DSD-5038 series incorporates a smart auto-scaling function so when users play their original content, the dimensions are automatically modified to fit DSD-5000's super-wide resolution.

The most critical step in the whole process is to cut the LCD glass and seal the LCD cell edges simultaneously. This tricky process requires a complex and professional sealing technique. The LCD sealing process must take place in a vacuum environment to avoid air getting into the liquid crystal module, which will result in liquid crystal leakage¹. After the compressed sealing stage, the 1/2 size 42" cut panel cell is bonded with the IC driver and backlight which are used to provide a light source to the panel cell. After the mechanical frame has been installed, the super-wide signage is finally complete.

DSD-5000 Series Highlight

Super Wide Aspect

One of the key characteristics of DSD-5000 series is its 'letterbox' shape. The super wide aspect is a direct outcome from the original 42"/32" wide panel, so the horizontal dimension retains its 1920 x 538 (DSD-5038), and 1920 x 358 (DSD-5028) resolution. This means DSD-5000 can fit into particularly limited spaces, and high-definition content can be perfectly presented on their narrow, ultra wide surface.



High Brightness

The advanced panel cutting technology allows DSD-5000 series to keep their high brightness: DSD-5038 with 800 nits; and DSD-5028 with 700 nits. As a result, DSD-5000 series can support various industrial applications in outdoor or semi-outdoor scenarios. Compared with the traditional LED sign boards, DSD-5000 series present brighter, more vivid and stunning images.

LED Backlight and Power-saving

Following the trend for environmentally friendly and power saving products, DSD-5000 series features LED backlight technology, and low operating temperatures of under 40° C and 24/7 playback. The LED backlight can save 50% less power consumption than traditional LED signage boards. Surprisingly, DSD-5000 series still offers long-time operation up to 50,000 hours for both performance and energy-saving applications.

Wide Viewing Angle

Digital signage displays are often deployed in confined spaces where it's crowded and noisy. Therefore high brightness, high contrast displays with wide-viewing angles are the key to grabbing and holding the user's attention. Advantech DSD-5000 series with 176°(H)/ 176°(V) viewing angle, is suitable for both horizontal and vertical installation and ensures that colors will be bright and accurate when viewed from any direction.

Flexible Placement

¹ The screen is not broken, but there are blotches of a black ink-like liquid in the screen. The ink can be pushed / moved slightly by wiping with a lot of pressure, but it stays in the same general area. Even if the backlight is replaced, the ink is still visible in the TFT glass.

To provide more flexible placement and present different content in all kinds of venues, DSD-5000 series supports both horizontal and vertical installation. A 200 x 100 mm wall-mount solution simplifies the installation process and lets you present information the way you'd like to.

Multiple Connectivity

To ease the complicated connection process, DSD-5000 series is integrated with DVI and VGA signal interfaces. Just connect with the plug-and-play system to display your information in no time at all. DSD-5000 series also has an RS-232 interface reserved for alternative connectivity.

New Digital Signage Experiences

Although used in restricted spaces, DSD-5000 series stretched signage displays present visual entertainment and information that traditional LED display mediums cannot. Because of its high brightness, DSD-5000 series can also be commonly used in semi-outdoor environments. Compared to dull, plain billboards or posters, DSD-5000 series delivers with its unique letter-box shape, beautiful color and real-time capability, and via smart remote management tools, users can change display content with ease.

Transportation



DSD-5000 series is a perfect tool for busy bus and train stations. Breaking the space limitations commonly found in public terminals, passengers can browse route maps, schedules, public information or advertisements - all presented in high definition.

Elevators



If you are looking for stimulating display media to fit into a small elevator space, then DSD-5000 series can provide floor information or the latest promotional events, and more. Placed in a landscape or portrait orientation, passengers can enjoy entertainment and information at any time.

Quick Service Restaurant



DSD-5000 series can replace traditional banners to provide animated multimedia content in the QSR industry, such as menu boards in restaurants. Because of its high brightness, DSD-5000 can also be used for a "drive-thru" menu board which will be installed in semi-outdoor or fully outdoor environments.

Hospitality



Hospitality applications in hotels and hospitals require signage banners which provide real-time messages, like currency exchange rates or service numbers, DSD-5000 is the best solution for this kind of application.