Samsung Color Expert Technology for video walls

Enhance video wall visibility with advanced factory tuning and an exceptional user calibration tool

Highlights

- Achieve a uniform picture across video wall displays with advanced and improved factory calibration

- Manage brightness and color uniformity conveniently with Samsung Color Expert Software and improved 16-bit processing ACM Integrated Chip (IC) hardware

- Reduce total cost of ownership (TCO) with a thorough color management solution that includes a user calibration tool for fine tuning

Conveniently elevate video wall displays to a new and stunning level with advanced Samsung technology

Video walls enable effective communication with customers, employees or guests, however, they are typically composed of individual displays that may vary in luminescence, brightness, color and so on, which can create a negative impression and may make viewers less receptive to business messaging. Therefore, when installing a video wall, before network configuration or content testing, customers often need to complete the tedious process of calibrating White Balance, Gamma and Gray Scale, and Local Uniformity for consistency throughout all the displays. Samsung Color Expert Technology for video walls eliminates this inconvenient and time-consuming step with factory calibration, which uses advanced technology to adjust all panel specifications to similar conditions for enhanced viewing. When even more fine tuning of color accuracy is needed for consistency throughout the video wall, users can also easily adjust brightness and other elements of the video picture with the displays' software system.

Three ways to enhance the display of video walls

Samsung Color Expert Technology incorporates a three-part approach to enable stunning video wall displays:

1. **Factory calibration.** Samsung's factory calibration process finely tunes displays more meticulously than typical customer calibration that is performed with a sensor and software after factory shipment. Samsung video wall displays are tuned to the highest-performing uniform brightness and color for detailed color in grayscale, consistent color across the display and accurate white color.

2. **ACM IC hardware.** Users can experience excellent video wall color performance with an advanced 16-bit ACM chipset that enables more comprehensive factory and user calibration than most other displays on the market. The innovative hardware also enables local uniformity calibration which is impossible for displays without a color chipset.

3. **User calibration tool.** Samsung Color Expert Software allows the user to more finely adjust the color and other attributes to further enhance the video wall displays' appearance.

Figure 1. Samsung's multistep factory tuning helps ensure uniform brightness and color across video wall displays.

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Optimize video wall displays with uniformity and vibrant color through Samsung factory tuning and Samsung Color Expert Software

Dazzle viewers with consistent brightness and color through Samsung factory calibration

Samsung's refined manufacturing system manually tunes each Samsung video wall display's x and y color coordinates and brightness to the highest-performing factory standard for exquisite color and uniformity. The new factory tuning results in stunningly uniform brightness and color, with support for Local Uniformity which provides consistent color across the display, multi-step gamma for detailed color in grayscale and White Balance Correction for accurate white color.

The Samsung manufacturing procedure contributes to more detailed color management. This step helps eliminate the color expression gap and enhances the uniformity of video wall displays from the factory. The process is designed to achieve uniformity even when displays are combined with other displays into a video wall.

Natural and accurate image from gamma curve close to ideal

Consistent color across the display
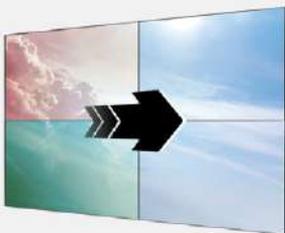
Accurate white color

Figure 2. Benefits of Samsung factory tuning calibration

Benefits of Factory Tuning Calibration

Samsung SMART Signage displays are individually and meticulously pre-calibrated in the factory. Local uniformity, gamma and White Balance are corrected by different color modes.

To ensure uniformity with the same conditions as the customer's operating conditions, Samsung displays undergo an Aging process which enables the calibration process to be conducted under the optimal conditions for excellent results.

Each display is individually calibrated by splitting the entire display screen into 25 sections (5 x 5), which provides greater calibration accuracy.

Customers can significantly reduce content creation and editing issues by viewing more accurate and precise color in the grayscale. Gamma Curve and Grayscale Correction ensure clear color, even in the grayscale from white to black.

Through meticulous White Balance Correction, users can view images with perfectly corrected white balance for accurate and precise color.

Get ultimate video wall color performance with a color-dedicated integrated chip (ACM IC)

The Samsung 16-bit ACM chipset enables more meticulous and comprehensive factory and user calibration than many other displays on the market. The chipset also enables local uniformity calibration which is impossible for displays without a color chipset.

Improved Samsung ACM IC hardware

Users can experience superior video wall color performance with 16-bit processing (compared to conventional 12-bit or lower processing) with Samsung SMART Signage exclusive color-dedicated IC (ACM IC) and user calibration software.
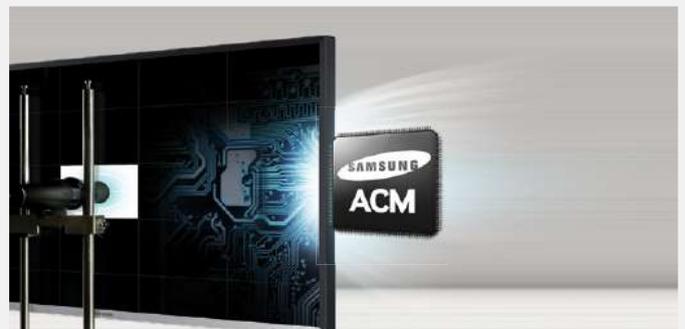
Figure 3. Samsung's improved ACM IC is color-dedicated.

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Adjust and configure colors easily with intuitive, easy-to-use Samsung Color Expert Software

Excellent calibration through advanced color fine-tuning software

Many businesses use video walls to communicate important messaging to consumers, staff or guests. However, colors displayed on digital signage may appear different from the original colors, depending on the screen settings and the environment in which the digital signage is used. Adjustments to the screens' colors may be required to improve the displayed color quality. Samsung factory calibration for video walls adjusts all the display specifications to a similar condition to enhance the display color quality.

If a customer wants even more accurate color displayed on the SMART Signage, Samsung Color Expert Software allows the customer to set the screen colors using standard settings or customizing the colors to suit their preferences. With Samsung Color Expert Software, the user can calibrate a video wall display consisting of multiple Samsung SMART Signage displays to sync the color settings between the displays. This capability improves the picture uniformity of the displayed content.

Benefits of Samsung Color Expert Software

Samsung Color Expert Software offers the following key benefits:

- **Easy installation.** More advanced than conventional ACM solutions that require a complex, multi-step installation procedure, Samsung Color Expert Software features easy setup with support for automatic identification (Auto ID) and easy connection.

Figure 4. Samsung Color Expert Software provides straightforward connection.

- **Intuitive user interface (UI).** Users can adjust the calibration of video wall products with an intuitive UI that simplifies the calibration process. Instead of the separate Gamma, Uniformity and White Balances used in conventional ACM user interfaces, Samsung Color Expert solution has a one-step, easy calibration process.

- **Reduced calibration time through firmware and an enhanced algorithm.** This feature saves calibration time required to check the color performance of a video wall.

Detailed configuration through Samsung Color Expert Software

Based on advanced video and color expert technologies, Samsung Color Expert Software is a customized calibration program that enables businesses to adjust and configure color specifications, such as brightness and x and y coordinates. Designed for ease of use, Samsung Color Expert Software offers three options so that users can show the colors they want in their video displays:

- **Gamma Calibration.** Subtle differences from white to black gradation can be calibrated with this option in steps of 32, 64 and 128. Higher steps require longer correction time but provide a more accurate result.

Figure 5. Subtle differences from white to black gradation can be calibrated.

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Leverage new Samsung technology for greater color accuracy, enhanced display consistency and lower operating costs

- **Local Uniformity.** Users can adjust white uniformity of selected displays by selecting a 5 x 3, 5 x 5 or 7 x 7 matrix configuration. A higher matrix requires longer correction time, but produces a more accurate result.
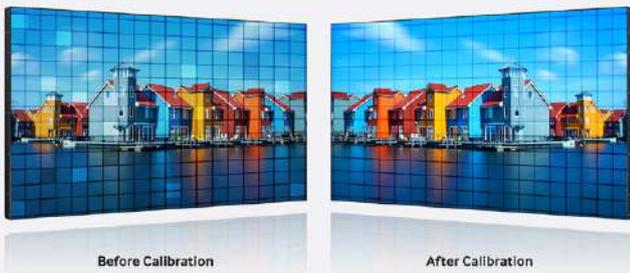
Figure 6. Users can adjust white uniformity for accuracy.

- **White Balance.** For clearer images, users can adjust the display's white balance through three convenient options. Auto Calibration calibrates displays automatically according to user-set target values. Manual calibration can then be done to fine-tune the RGB gain and offset, digital gain, contrast and BLU brightness values. Duplicate calibration can be used additionally to "copy and paste" calibrated result to other displays.

Figure 7. Three options enable the user to adjust the display's white balance.

Reduce total cost of ownership (TCO) with complete color expert technology

Because Samsung video displays are factory tuned, there is no need to purchase additional equipment or accessories to enhance video quality. However, companies that want to fine-tune video appearance can use the Samsung Color Expert Software that is easy to install, intuitive to use and has the ability to reduce the time required for calibration. Samsung provides this software at no additional charge. With the standard Samsung Color Expert Software, customers save

on TCO by eliminating their investment in calibration software. They also increase operational efficiency and business productivity with a more uniform video wall.

Figure 8. Businesses can fine-tune video appearance using Samsung Color Expert Software.

Increase color accuracy, improve display matching and reduce TCO

Create exquisite and stunning video walls with advanced Samsung Color Expert Technology, which delivers correct color to support branding with the utmost accuracy, and is critical to enable the viewer to more readily recognize the brand. Deliver true-to-the-original color automatically with a calibrated display that shows content that is more accurate to the creator's original material and intent. Display images that are easier to read, improving the viewer's ability to comprehend any message with an optimal amount of brightness adjusted to ambient light and glare. Get lasting color accuracy that enables a display to maintain optimal color output throughout its lifetime without showing faded images. Enjoy trouble-free installation with strict calibration management that virtually eliminates installation problems caused by incorrect uniformity or white balance. Achieve matching color for optimized multi-display video walls, configured to a color standard that allows various displays -- regardless of the product -- to closely match each other. Save energy and costs through reduced power consumption for multiple displays. Optimize screen light output through calibration to output only the required light, reducing TCO with reduced power consumption and improved panel life.

Samsung Color Expert Technology: Compatibility

Samsung SMART Signage compatibility

Year	Type	Model Name	User Calibration (Samsung Color Expert S/W)			Factory Calibration		
			Gamma	Uniformity	White Balance	Gamma	Uniformity	White Balance
2011	UDA	UD55A	Yes	No	Yes	Yes	No	Yes
		UD46A	Yes	No	Yes	Yes	No	Yes
2012	UEA	UE46A	No	No	Yes	Yes	No	Yes
		UE55A	No	No	Yes	Yes	No	Yes
2013	UDC-B	UD46C-B	Yes	No	Yes	Yes	No	Yes
		UD55C-B	Yes	Yes	Yes	Yes	No	Yes
	UEC	UE46C	Yes	Yes	Yes	Yes	No	Yes
		UE55C	Yes	Yes	Yes	Yes	No	Yes
	UDC	UD46C	Yes	Yes	Yes	Yes	No	Yes
		UD55C	Yes	Yes	Yes	Yes	No	Yes
2014	UDD	UD46D	Yes	Yes	Yes	Yes	Yes	Yes
		UD55D	Yes	Yes	Yes	Yes	Yes	Yes
	UED	UE46D	Yes	Yes	Yes	Yes	Yes	Yes
		UE55D	Yes	Yes	Yes	Yes	Yes	Yes

Accessory (calibrator) compatibility

	Model
Konica Minolta	CA210
Konica Minolta	CA310
xrite	i1 Display Pro (i1D3)
Datacolor	Spyder 4
xrite	Color Munki

System requirements (compatible operating systems)

	System requirements
Samsung Color Expert Software	• OS: Microsoft® Windows® XP 32-bit / 64-bit, Windows Vista 32-bit / 64-bit, Windows 7 32-bit / 64-bit, Windows 8 32-bit / 64-bit • A calibrator is required to use the Samsung Color Expert Software. Customers must purchase the calibrator separately. X-Rite i1Display Pro is recommended.

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For more information

For more information about Samsung Color Expert Technology for video walls, visit www.samsung.com/business or www.samsung.com/displaysolutions.

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