

Empowering Hybrid Workspaces: SM770 Enables Triple 4K Displays for Universal Docking

As the dynamics of the modern workforce evolve, the demand for adaptable, seamlessly connected, and highly efficient work environments has become increasingly critical. With hybrid work models—where employees split their time between remote and office-based environments—now a standard for many organisations, it's essential to have technology that supports seamless transitions between work locations without sacrificing productivity. At the heart of these dynamic work setups are universal docking stations, devices that bridge personal and professional workspaces by enabling a quick, streamlined connection of multiple devices to a single workstation setup. In response to these demands, Silicon Motion's SM770 USB display interface SoC has emerged as a creative solution for docking stations, providing advanced features designed to handle high-resolution displays and high-performance demands across multiple screens. Leveraging advanced adaptive technologies, including Silicon Motion's proprietary CAT™ 2.0 Content Adaptive Technology, the SM770 optimises data throughput and power efficiency, demonstrating cutting-edge innovation in universal docking solutions (Figure 1).

Triple 4K Displays @60Hz

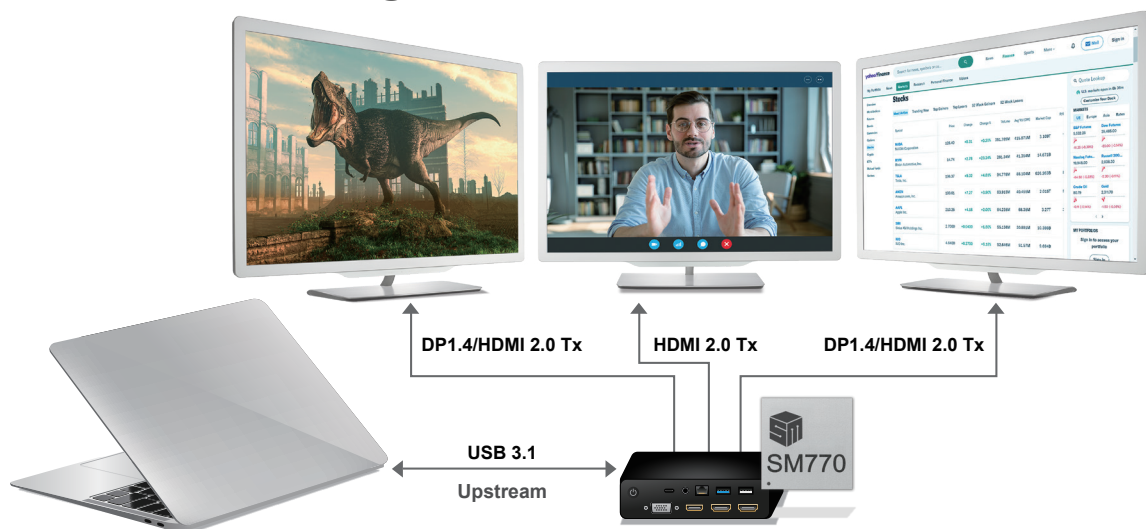


Figure 1: The SM770 supports up to three concurrent 4K UHD (3840x2160@60p) displays

The Evolution of Universal Docking Stations

Supporting the Hybrid Work Model

In hybrid work environments, users require docking stations that are easy to operate, support high-resolution displays, and ensure smooth, lag-free performance to maintain productivity across locations. Silicon Motion's SM770 USB display interface SoC addresses these needs with features like triple 4K display support, adaptive bandwidth optimization, and driverless plug-and-display connectivity, delivering a seamless and efficient docking experience.

Addressing BYOD and CYOD Trends

As organisations continue adopting Bring Your Own Device (BYOD) and Choose Your Own Device (CYOD) policies, employees benefit from familiarity and comfort with their devices. However, managing compatibility between various devices and docked workstations can be challenging for IT departments. Universal docking stations powered by Silicon Motion's SM770 provide a consistent experience across multiple devices and operating systems, delivering uniform video quality, high FPS performance, and user-friendly connectivity for devices with differing technical requirements.

The Demand for High-Resolution Multi-Display Workspaces

The demand for high-resolution displays has skyrocketed, driven by the rise in advanced professional applications, multimedia content creation, and immersive gaming experiences. Today's hybrid work setups require docking stations that can manage this increased data throughput and maintain a high FPS for smooth playback across multiple displays. Meeting these needs requires sophisticated solutions that leverage bandwidth efficiency, reduce the load on host CPUs, and provide seamless display interfaces. Silicon Motion's SM770 delivers on these fronts, providing a platform tailored for high-resolution, multi-display work environments.

Addresses Universal Docking Needs

The SM770 USB display interface SoC incorporates unique Silicon Motion technologies specifically designed to support the demanding requirements of modern universal docking stations. Notably, it supports up to three concurrent 4K Ultra HD (3840x2160 at 60Hz) displays, making it ideal for various applications, from creative workstations to office setups.

Key Technologies: Content Adaptive Technology (CAT™) 2.0 and InstantView™

The SM770's two flagship technologies—Content Adaptive Technology (CAT™) 2.0 and InstantView™—enable high performance and seamless user experiences for universal docking solutions.

1. Content Adaptive Technology (CAT™) 2.0

Silicon Motion's CAT™ 2.0 leverages the 2nd Generation CAT™ Technology to optimise USB interface bandwidth between the host device and docking station. Featuring real-time content adaptive CODEC with Premium Image quality support, this intelligent system dynamically selects the optimal compression algorithm during runtime, ensuring superior visual quality and an enhanced user experience (Figure 2). By employing advanced image and video processing algorithms, CAT™ 2.0 minimises data requirements and achieves ultra-low latency from the host to connected displays. Its hardware-accelerated compression further reduces CPU usage, efficiently managing multiple data streams—such as Ethernet, USB data, and display content—even under high data loads. These

innovations allow the SM770 to deliver seamless visuals and responsive performance for demanding hybrid work environments.

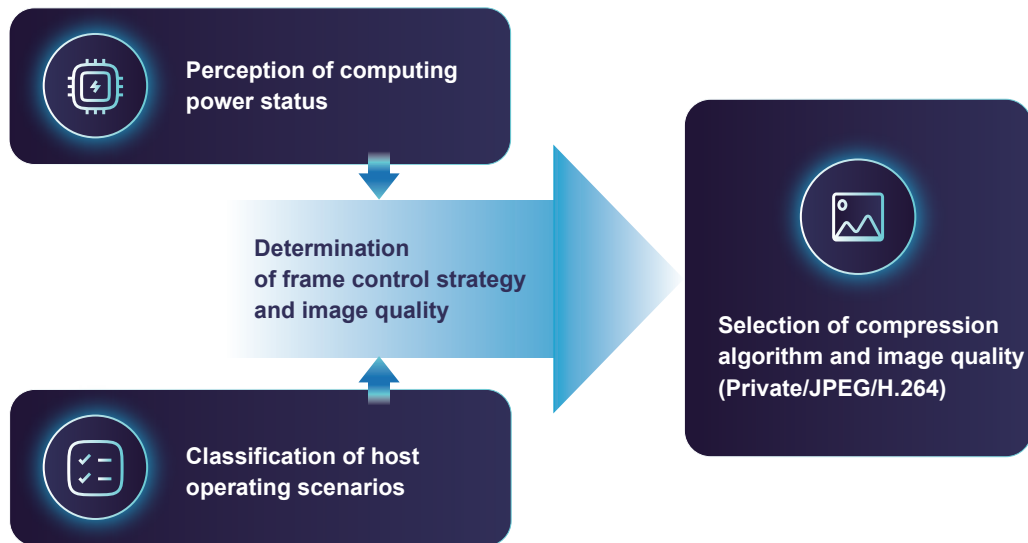


Figure 2: CAT™ 2.0 is an intelligent module that dynamically selects the optimal compression algorithm during runtime, enhancing the user experience

2. InstantView™: Driverless Plug-and-Display Connectivity

The InstantView™ software provides a true plug-and-display experience. As soon as the USB connection is established between the host computer and the docking station, InstantView™ automatically initiates without the need for driver installation or complex setup (Figure 3). Users can mirror or extend displays instantly, making it as straightforward to use as connecting a mouse or keyboard. This ease of use reduces technical barriers and IT support needs, facilitating a more efficient docking experience in both corporate and personal environments.

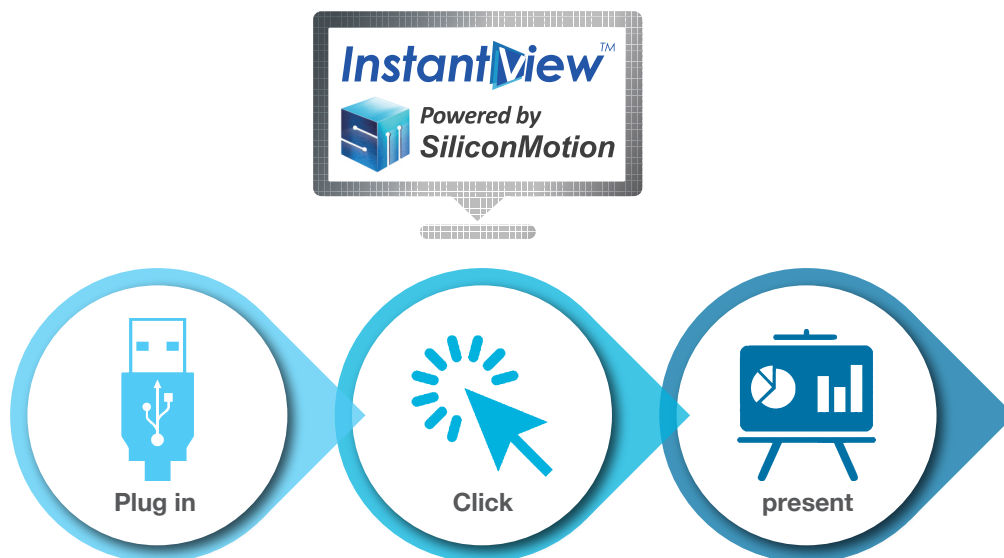


Figure 3: InstantView® effortlessly configures host content for any display without the need for a display driver

A Comprehensive Docking Solution

The SM770 is a compact, high-performance solution in a small 15mm x 15mm package, designed to maximise DRAM efficiency. It can achieve the maximum display output of 3×4K@60Hz using just 512MB of LPDDR4 or 1GB of DDR4, while supporting up to 2GB of external DRAM (DDR4 or LPDDR4) for added flexibility in docking station designs.

Below are several ways in which the SM770 elevates the functionality of universal docking stations:

1. Triple 4K Display Output

The SM770's supports up to three simultaneous 4K video outputs at 60Hz, allowing users to connect multiple high-resolution displays to a single docking station without compromising on quality. This multi-display capability is invaluable for professionals in fields such as graphic design, video editing, and digital finance, who rely on extensive real estate for efficient multitasking and precise visuals.

2. Sustained High FPS for Optimal Visuals

The SM770 ensures high FPS performance through the CAT™ 2.0 algorithm, maintaining smooth video playback across all three 4K outputs. This high FPS performance is critical for smooth visuals, creating an immersive and professional-grade experience, whether for design-intensive applications, gaming, or live streaming.

3. Low Power Consumption for Sustainable Operations

Designed with power efficiency in mind, the SM770's power management adjusts based on current workloads, preventing energy waste and ensuring minimal heat output. This feature is particularly advantageous for large-scale applications, such as digital signage or multi-display corporate setups, as it translates to lower energy costs and a reduced environmental footprint.

4. Cross-Platform Compatibility

Compatibility across different operating systems—Windows, macOS, and Linux—is a key feature of the SM770. This cross-platform support ensures that users in diverse device ecosystems can rely on consistent performance, making it suitable for corporate environments where employees bring varied devices, as well as for remote or hybrid work setups at home.

Addressing Key Demands of Hybrid Workspaces

The SM770's combination of high-resolution support, cross-platform compatibility, and low power consumption makes it ideally suited for the demands of modern work environments. As companies increasingly embrace hybrid work, IT departments face challenges in managing device compatibility, connectivity, and performance across multiple locations. Silicon Motion's SM770 offers a versatile, high-performance solution that simplifies IT management, reduces hardware costs, and enhances productivity.

For USB Docking Station Manufacturers, OEMs, and Notebook and PC manufacturers, Silicon Motion provides a ready-to-deploy reference design based on the SM770. This reference design includes support for Windows, macOS, and Linux and extensions for Android and ChromeOS environments,

ensuring a universal docking solution compatible with various devices. The InstantView™ software application enables true plug-and-display functionality, making the SM770-based docking stations as easy to use as any standard USB peripheral.

Elevating the User Experience with SM770

Consider a design agency with multiple workstations where employees use different devices. With an SM770-powered universal docking station, each designer can connect their laptop or tablet seamlessly, extending their display setup with three 4K monitors. Thanks to InstantView™, setup is automatic and requires no IT support, while CAT™ 2.0 manages the intensive video data flow, ensuring high-quality display with minimal lag. In addition to facilitating work, the SM770's energy-efficient design helps the agency lower operational costs and meet sustainability goals.

Conclusion

As organisations continue to adopt hybrid work models, the demand for versatile, high-performance docking solutions grows. Silicon Motion's SM770 addresses this need with a unique blend of advanced video technology, cross-platform support, and power efficiency, making it an ideal solution for USB docking stations in modern workspaces. By supporting triple 4K displays, maintaining high FPS, and providing driverless plug-and-play convenience, the SM770 enables seamless, flexible work experiences that meet the high demands of today's professionals while increasing IT efficiency and cost savings.

For USB Docking Station Manufacturers, OEMs, and Notebook and PC manufacturers, the SM770 offers a future-proof solution that enhances user satisfaction and productivity in hybrid environments. As Silicon Motion continues to innovate, the SM770 stands out as a powerful, scalable, and efficient SoC for universal docking—meeting the growing needs of hybrid workspaces worldwide.

For more information about SM770, please go to
www.siliconmotion.com