



ALF-IPKIH-ED
AVoIP VIDEO WALL AND SIGNAL DISTRIBUTION - OPERATIONS CENTRE



HDMI



LAN



DANTE



USB 2.0



USB-C



HDBT



SPEAKER



AUDIO

Solution Overview

This solution delivers a scalable, high-performance video and audio distribution platform purpose-built for control centre environments, leveraging the Alfatron AVoIP ecosystem as its core infrastructure. The system is designed around ALF-4K encoders and decoders for distributed 4K video transport, ALF-IPK1HD processors for advanced display and video wall management, and the ALF-DSP1616-UD for centralized audio processing and routing. All AV signals are transported over a standard unmanaged network switch using Alfatron's unicast streaming architecture, eliminating the need for complex multicast configuration, IGMP management, or advanced switch programming. This simplifies installation while ensuring stable, low-latency performance across all operational displays.

All video sources — including operator workstations, NVR platforms, surveillance feeds, and external data sources — connect to ALF-4K encoders, allowing any source to be routed to any display location in real time. The main display area functions as a highly adaptable visual command surface and can be configured in virtually any layout depending on the operational situation. It may operate as a single large-format display for critical incident management, multiple independent single-window views for routine monitoring, or a mixed configuration combining grouped screens and standalone sources simultaneously. This flexibility ensures the display environment can be instantly reconfigured to support changing priorities, live events, or escalation scenarios within the control centre.

Video wall layouts, source routing, and preset management are controlled via the Alfatron PC software platform, enabling operators to create custom layouts and recall them instantly as needed. The system is also fully compatible with third-party control systems, allowing seamless integration into existing professional automation platforms. Through this integration, operators can manage layout switching, source selection, preset recall, and overall system control from a centralized control interface. Serial command pass-through over the AVoIP network further enables display power management and input switching directly through the decoders, removing the need for separate control cabling and simplifying overall system architecture.

Audio distribution is managed by the ALF-DSP1616-UD, which receives audio streams from the AVoIP network and provides advanced zone-based routing, processing, and volume control. Each zone within the control centre can independently select its required audio source, ensuring operators can monitor specific feeds regardless of the video configuration on the displays. Optional wall-mounted control panels provide localized, user-friendly control for source selection, preset recall, and volume adjustment via a single CAT cable connection for both power and control.

Overall, this solution delivers a reliable, scalable, and operationally flexible AV infrastructure tailored for control centre applications. By combining dynamic display configuration, distributed IP-based routing, centralized DSP-managed audio control, and seamless third-party integration within a simplified unicast network architecture, the system ensures long-term adaptability, ease of management, and dependable performance in mission-critical environments.

ALF-IPK1HD – Overview

The Alfatron ALF-IPK1HD is a 4K AVoIP decoder designed for professional video wall applications. It receives unicast streams from ALF-4K encoders and provides advanced video wall processing, including cropping, scaling, and positioning, allowing the creation of custom layouts such as 2x2 arrays or independent displays. The unit is controlled via an intuitive PC application or integrated into third-party control systems for automated layout and source management. It also supports serial-over-IP for direct display control, enabling power, input, and basic functions to be managed through the network. Operating over a standard unmanaged switch, the IPK1HD delivers flexible, scalable, and low-latency video wall deployment without complex network configuration.

ALF-IPK1HE – Overview

The Alfatron ALF-IPK1HE is a 4K AVoIP encoder designed for high-quality, low-latency video distribution across standard network infrastructure. It converts HDMI video and audio into unicast AVoIP streams, enabling reliable and flexible routing to any compatible Alfatron decoder, including the ALF-IPK1HD for video wall applications. The IPK1HE supports 4K UHD video, embedded audio, and network-based control, making it ideal for scalable multi-display environments. Because it operates entirely on unicast, the encoder works seamlessly on a standard unmanaged network switch, allowing fast and straightforward deployment with no specialized networking configuration required. Fully compatible with third-party control systems, the ALF-IPK1HE provides complete source routing, switching, and control integration, making it a robust and efficient solution for modern AV distribution systems.

ALF-DSP1616-UD – Overview

The Alfatron DSP1616-UD is a professional 16x16 digital signal processor designed for flexible multi-zone audio distribution. It offers comprehensive routing, mixing, and DSP functions—including EQ, compression, delay, and filtering—allowing precise tuning and independent audio control across all zones. The DSP1616-UD integrates seamlessly with Alfatron AVoIP systems, enabling de-embedded audio from encoders to be processed and distributed as needed.

Control is available through Alfatron's PC software or via third-party automation, and the DSP slots naturally into user-friendly environments through native support for ALF-CP1L wall panels, providing local control for volume, source selection, and preset recall. With PoE support, flexible I/O, and a robust, installation-friendly design, the DSP1616-UD delivers reliable, scalable, and accurate audio management for a wide range of commercial AV applications.

ALF-CP1L – Key Overview

The Alfatron ALF-CP1L is a compact wall-mounted control panel that provides simple, user-friendly control of Alfatron DSP-based audio systems. Its two-line OLED display and customizable menus allow quick access to volume control, source selection, and preset recall. Configured through Alfatron DSP software and powered over a single CAT cable via PoE, the CP1L offers an easy, efficient solution for local zone audio control in multi-zone AV installations.

Solution Bill of Quantities

- 8 x ALF-IPK1HE AVoIP encoders
- 11 x ALF-IPK1HD AVoIP decoders
- 1 x ALF-DSP1616-UD digital signal processor
- 2 x ALF-MA15075D amplifiers
- 10 x ALFC-606 ceiling loudspeakers
- 2 x ALF-CP1L wall mounted control panels
- 8 x ALF-HDMI 6 HDMI Cable
- 11 x ALF-HDMI 2ft HDMI cables

Third Party Equipment

- 11 x Video wall displays
- 11 x Display mounting brackets
- 1 x 1G Unmanaged PoE network switch
- PC to run Windows video wall control software
- Optional: Third party control system for video wall control and management.
- Third party paging microphone

Use Case Scenarios

1. Network Operations Centre (NOC) / Security Operations Centre (SOC)

In a NOC or SOC environment, the ALF-4K encoders and ALF-IPK1HD decoders allow operators to monitor multiple live feeds—network dashboards, CCTV streams, analytic tools, and incident reporting platforms—on a large video wall. The ability to create and recall different 2x2 layouts enables rapid situational adjustments during high-priority events. Each display can show a unique source, or operators can combine sources into a consolidated wall for collaborative review. Using the PC control application or a third-party control system, operators can instantly switch layouts or assign critical feeds to the main wall. The DSP1616-UD routes alert tones or prioritized audio notifications to specific operational zones, while CP1L control panels offer local audio adjustments for focused incident response areas.

2. Sports Bar / Hospitality Venue

A sports bar benefits greatly from the flexible video routing of the ALF-4K encoders and decoders, allowing each screen to show different sports channels while the main 2x2 wall creates an immersive feature display. Bar staff can switch content layouts on the fly—showing four games independently, turning the wall into a unified 2x2 highlight screen, or mixing sources based on demand. Audio for each room or seating area is managed through the DSP1616-UD, enabling independent audio selection so patrons in one zone can enjoy a specific match without affecting others. The ALF-CP1L panels installed in each zone provide simple volume and source control, ensuring staff can manage the environment quickly without needing a full control system.

3. Corporate Command / Operations Hub

Corporate command centres often monitor live dashboards such as logistics, financial performance, IT health systems, and real-time operations. The ALF-IPK1HD enables the creation of multiple video wall layouts so teams can easily adapt space usage depending on the operational state. During normal operation, each display might show a separate KPI dashboard; during incident escalation, the team may switch to a dominant 2x2 view for deep-dive analysis. Audio routing allows important announcement streams, meeting feeds, or alert tones to be directed to specific work zones. Third-party integration ensures seamless automation—source switches, wall mode changes, and display power cycles can all be controlled from a central UI.

4. Retail Experience Centre / Showroom

In a retail experience centre or technology showroom, the ALF-4K encoders distribute promotional content, product showcases, or live demonstration feeds to multiple displays and feature walls. The ALF-IPK1HD enables dynamic visual arrangements—such as splitting the wall into independent product zones or combining screens to create a high-impact branding moment. Staff can use the PC application or a control system to shift layouts based on events, promotions, or client walkthroughs. With the DSP1616-UD, audio can follow the corresponding display area or play zone-specific messaging. The CP1L panels provide staff with quick control over background music levels and content selection, without requiring technical training.