

Simplifying Complex Simulator Control with Freedom II KM Switching

Overview

An Indian developer of indigenous training simulators needed a more intuitive way to operate multi-computer combat and vehicle simulation environments. By integrating Black Box Freedom II KV0004A and KV0008A keyboard-and-mouse (KM) switches, the organization streamlined control across multi-screen consoles. Glide-and-Switch operation enabled instructors and trainees to move between connected systems using a single keyboard and mouse, reducing physical clutter and simplifying navigation during demanding training exercises.

Challenges

Fragmented operator workstations: Complex simulator installations can require multiple independent computers for visual generation, ballistics, monitoring, scenario management and related functions. Operators previously faced as many as eight keyboard-and-mouse sets at a single console.

Higher cognitive demands: Identifying the correct input device and switching attention between systems added avoidable steps in time-sensitive training sessions. Crowded work surfaces also constrained cockpit and instructor-console ergonomics.

Need for dependable cross-platform control: The solution had to maintain consistent keyboard and mouse connectivity across independent PCs, including environments with different operating systems, while making the currently controlled system easy to identify.

Solution

Consolidated keyboard and mouse access: Freedom II KM switches allow multiple connected computers to be controlled from a common keyboard-and-mouse set, without requiring the underlying simulator applications to be combined.

Cursor-driven Glide-and-Switch workflow: Instead of locating another physical mouse or invoking a manual switching sequence, operators can transition control by moving the pointer across configured display boundaries.

Hardware-based peripheral management: USB emulation helps maintain a stable peripheral connection to connected computers and reduces dependence on operating-system-level switching software.

Visible channel identification: Bezel-mounted LED indicators provide a clear visual cue for the active channel, supporting operator confidence when moving among displays.

Key Outcomes

Up to 87.5% fewer input-device sets: The original deployment summary describes consolidation from eight keyboard-and-mouse sets to one, equivalent to an 87.5% reduction in sets at the console.

Fast transitions between systems: The source case study reports switching in less than 0.1 second, supporting rapid movement among simulation functions without repeated manual device changes.

Simplified multi-OS operation: Hardware-level USB emulation supports consistent interaction with connected Windows, Linux and real-time operating-system environments, as described in the source.

Clearer control awareness: LED channel indication helps operators verify the active computer before issuing commands, an important safeguard in high-pressure training workflows.

More responsive instruction: Instructors can access scenario controls, weather adjustments, target scoring and supporting displays from a more consolidated workstation.

