HighSecLabs
Highest Security Solutions ● ● ● Ltd.

SECURE EAL4+ CERTIFIED COMBINER SWITCHES

Interact with multiple computers on one or two displays simultaneously using a single keyboard and mouse set

When users need to interact with several computers at the same time, typical KVM switches are limit users to view and control only a single computer at a time.

HSL's secure EAL4+ certified Combiner switch improves workflow and situational awareness by interacting with multiple computers and enabling the user to:

- View all computers on one or two displays. The Combiner functions as a KVM switch, a scaler, and a multi-viewer – all in one.
- Switch the mouse and keyboard control freely between all computers.

The Combiner is cost-effective. There is no need to purchase and install dedicated, per-computer peripheral sets.

KVM COMBINER HIGHLIGHTS

- **Secure by Design**

  HSL KVM Combiner switches are designed to meet with the security requirements demanded by government agencies, military installations, financial institutions, and similar security-sensitive customers. The Combiner is certified to Common Criteria EAL4+.

- **Securely share peripherals across different security domains**

  Securely share peripherals between computers belonging to different security-classification levels, while keeping the highest possible data-separation security.

- **Prevent information leaks**

  Block threats arising from the sharing and switching of vulnerable, untrusted, or unauthorized peripheral devices. The Combiner blocks peripheral exploits, information leaks, eavesdropping, signal transmission, computer malware, hardware, and firmware tampering, by enforcing multilayered security mechanisms.

- **View and control multiple computers simultaneously**

  With a single Combiner, view and control up to 16 computers at the same time.

Single Display

Multiple Sources

Single Keyboard & Mouse
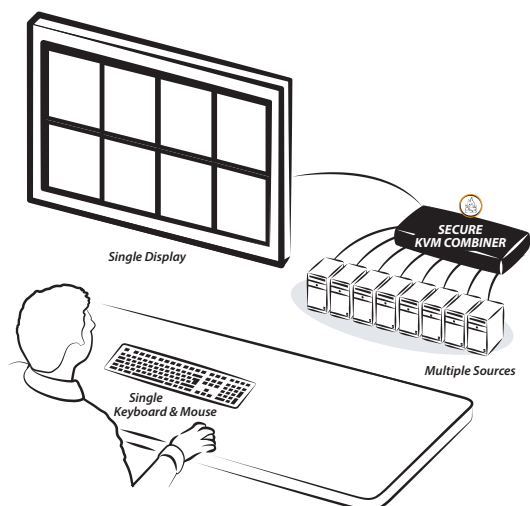
HSL 8-Port Secure Combiner KVM Switch System Diagram

SECURITY FEATURES

- **Video Security**
  - Computer video input interfaces are isolated through the use of different electronic components, power, and ground domains.
  - The display is isolated by a dedicated, read-only, Extended Display Identification Data (EDID) emulator for each computer.
  - Access to the monitor's EDID is blocked.
  - Access to the Monitor Control Command Set (MCCS commands) is blocked.

- **Keyboard and Mouse Security**
  - The keyboard and mouse are isolated by a dedicated USB device emulation for each computer.
  - One-way, peripheral-to-computer data flow is enforced through unidirectional optical data diodes.
  - Communication from computer-to-keyboard/mouse is blocked.
  - Non HID (Human Interface Device) data transaction is blocked.

- **Audio Security**
  - Enforces computer-to-speaker, one-way flow of sound through unidirectional optical data diodes.
  - Prevents eavesdropping and line-in re-tasking by blocking speaker-to-computer communication.

- **Hardware Anti-Tampering**
  - Any attempt to open the product enclosure activates an anti-tamper system, rendering the product inoperable.
  - Blinking LEDs provide a clear indication of a tampering event.
  - Special holographic tamper-evident labels on the product's enclosure provide a clear visual indication if the product has been opened or compromised.

- **Firmware Anti-Tampering**
  - There is no access to the product's firmware or memory through any port.
  - Firmware is permanently stored on non-reprogrammable Read-Only Memory (ROM), preventing any modification.
  - Firmware integrity is verified through a self-test procedure during power-up. Upon detection of a critical failure, the device disables normal operation and provides the user with a clear visual indication of failure.

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OPERATIONAL HIGHLIGHTS

- **Smoothly switch between computers (Virtual Display Technology)**
  Automatically switch control from one computer to another by dragging the mouse cursor over the computer's display border. The peripherals then switch to the next computer without pressing any buttons.

- **View applications in Ultra-High Definition (UHD) 4K video quality**
  Never compromise on video quality. Run graphic-intensive, ultra-high definition applications on all single and dual-monitor KVM models.

- **Native touch-screen support**
  Interact with all the computers connected to the KVM Combiner, using touch-screen gestures. No need to install drivers or software.

- **Flexible screen layout**
  Resize source scaling and aspect ratio, to create tile, scale, and custom display layouts that fit the user's needs. Supports screen-duplication and extended screen-view modes.

- **DisplayPort and HDMI combo connector**
  Connect either DisplayPort or HDMI sources into the same port, with the new combo video connector. No need for adapters and converters.

- **State-of-the-art conversion scaler**
  Rapidly convert any input and output resolution (up to 4K) to optimal display quality on a 4K screen, using the built-in scaler.

- **Extremely low latency viewing**
  View the input channel with extra low latency – below 10ms – using the direct mode feature.

SPECIFICATION

PART NUMBER	TC82PHG-3T	TC162PHG-3T
No. of Sources	8	16
CONSOLE PORTS		
Displays	2 x HDMI 1.4	2 x HDMI 1.4
Mouse and Keyboard	USB Type A	USB Type A
COMPUTER PORTS		
Display Type	DP / HDMI 2.0	DP / HDMI 2.0
Max Resolution	Supports UHD 4K resolutions up to 3840x2160	Supports UHD 4K resolutions up to 3840x2160
Mouse and Keyboard	USB Type B	USB Type B
PHYSICAL		
Dimensions	442.5 x 299.7 x 43.6 mm	442.5 x 299.7 x 77 mm
Weight	3.73 kg	7.00 kg
POWER		
Power Requirements	35W Max	35W Max
AC Input	100 to 240V AC	100 to 240V AC
Power Type	Internal	2 x Internal (Redundant)
ENVIRONMENTAL		
Operating Temperature	32°F to 104°F (0°C to 40°C)	
Storage Temperature	-4°F to 140°F (-20°C to 60°C)	
Humidity	0%-80% RH, non-condensing	
SOFTWARE		
Supported OS	Windows, Linux, Mac	
CERTIFICATION		
Product Certification	CE, RCM, FCC class B, VCCI, TUV US, TUV Canada	
Security Certification	Common Criteria EAL4+	
GENERAL INFO		
Made In	ISRAEL	
Product Life-cycle	10 years	
Warranty	2 Years	

TC82PHG-3T

TC162PHG-3T

Ultra HD
4K