

K600 Modular Secure KVM Combiner

User's Manual

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Record of Revisions

<i>Rev</i>	<i>Date</i>	<i>Description of changes</i>
A	May 27, 2009	Initial release
B	July 12, 2010	Updated Nano-blade functions
C	Jan 21, 2011	Front panel changes. Added Restore Factory Default PB.
D	Nov 20, 2011	Common Criteria Review changes
2.2	Feb 4, 2012	Added HSL Security procedures text

About

This manual intended for use by system administrators setting up user desktops based on HSL K600 Modular KVM Combiner. Parts of this manual may also used by end-users as needed.

1. Safety Precautions

Please read the following safety precautions carefully before using the product:

- Before cleaning, disconnect the product from DC power.
- Be sure not to expose the product to excessive humidity.
- Be sure to install the product on a clean secure surface.
- Do not place the DC power cord in a path of foot traffic.
- If the product is not used for a long period of time, remove the product's wall-mount power supply from the mains jack.
- If one of the following situations occurs, get the product checked by a qualified service technician:
 - a. The product's power supply is overheated, damaged, broken, causes smoke or shortens the mains power socket.
 - b. Liquid penetrates the product's case.
 - c. The product is exposed to excessive moisture or water.
 - d. The product is not working well even after carefully following the instructions in this user's manual.
 - e. The product has been dropped or is physically damaged.
 - f. The product has obvious signs of breakage or loose internal parts.
- The product should be stored and used only in temperature and humidity controlled environments as defined in the product's environmental specifications.
- The wall-mount power supply used with this product should be the model supplied by the manufacturer or an approved equivalent provided by HSL or an authorized service provider. The use of improper power source will void product warranty.

2. Introduction

The KVM Combiner is a peripheral device designed to enable users to natively work in windowing environment across different security levels without exposing the organization to the risks of information leakage. The KVM Combiner device uses advanced video processing to draw a high-resolution dynamic “mosaic” of images generated by different computer sources. Built-in video sources isolation forces unidirectional flow of data through the USB and DVI ports. HSL KVM combiners are TEMPEST certified for the highest isolation gaps. Unlike conventional KVMs, the KVM combiner enables simultaneous windowing work in four different computers.

HSL took the KVM Combiner one step forward developing the K600 - 4 channels Modular KVM Combiner. This new product offer users similar experience with added operational flexibility. Four identical bays enable integration of any combination of the offered modules (called Nano-Blades):

- Linux based thin-client Nano-blade with copper LAN,
- Linux based thin-client Nano-blade with fibre LAN
- PC DVI AUX module
- PC Analog / Composite video AUX Nano-blade
- Intel Atom based PC Nano-blade with copper LAN
- Blank Nano-blade

3. Parts needed

The K600 Modular KVM Combiner system requires the following components:

- a. K600 Modular KVM Combiner chassis
- b. Supplied 12V brick power supply
- c. DVI to DVI (or DVI to HDMI) cable to connect the KVM Combiner to the display
- d. USB or PS/2 mouse (refer to Appendix A – Mouse selection)
- e. USB or PS/2 keyboard
- f. Administrator key (2 supplied with the product)
- g. High resolution display (refer to Appendix B – Display selection)
- h. Audio headset or amplified speakers (if needed).

3.1. AUX DVI Nano-Blades

These Nano-Blades enable connection of external PCs or lap-top computers to the Modular KVM Combiner.

- a. Required number of AUX DVI Nano-Blades (1 to 4).

- b. Matching number of PCs / workstations / docking stations (1 to 4) having DVI or HDMI display output.
- c. Matching number of DVI to DVI cables to connect the PCs to the KVM Combiner (supplied with each AUX DVI Nano-Blade). Alternatively DVI to HDMI cables can be ordered.
- d. Matching number of USB Type-A to USB Type-B cables to connect the PCs to the KVM Combiner (supplied with each AUX DVI Nano-Blade).
- e. Matching number of audio cables (3.5 mm stereo plug to 3.5 mm stereo plug) to connect PCs audio output to the KVM Combiner audio input.

3.2. LNB Thin-client Nano-Blades

These Nano-Blades are self-contained thin-clients enable connection to intranet, internet, virtual desktops or presentation servers through copper LAN (100 Base-T).

- a. Required number of LNB Nano-Blades (1 to 4)
- b. Matching number of LAN patch cables (supplied with each LNB Nano-Blade).

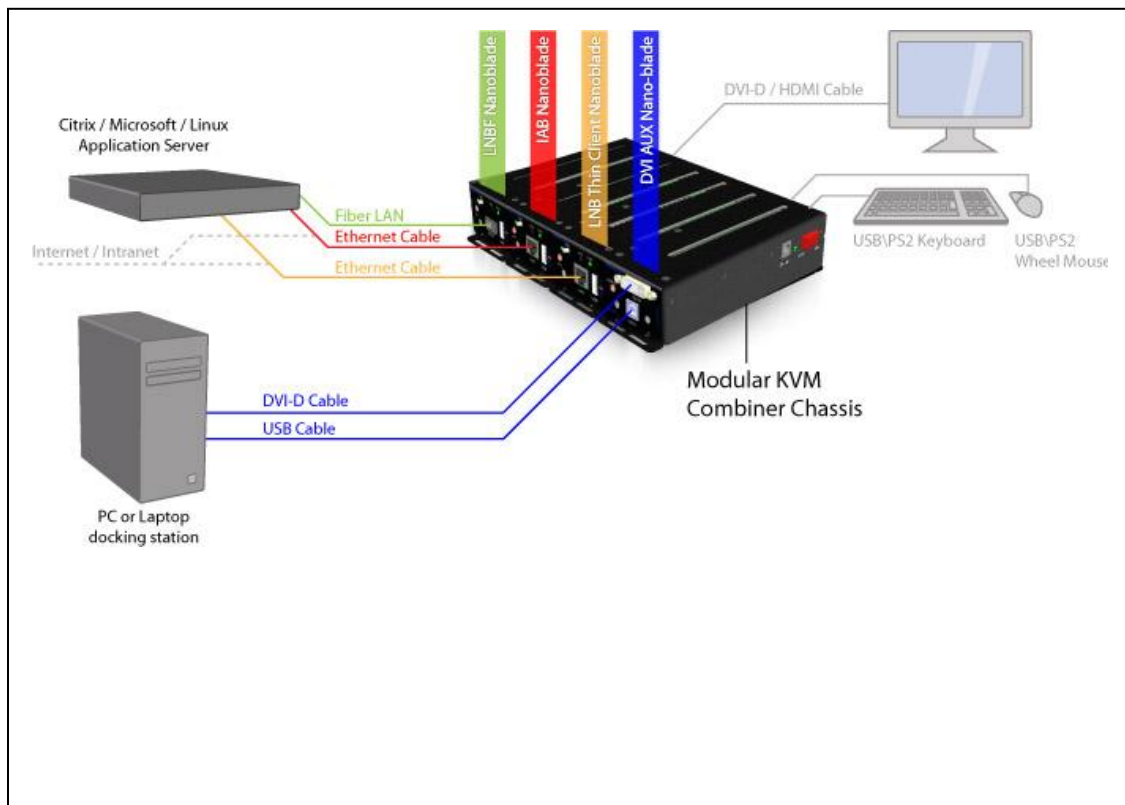


Figure 1 – K600 Typical system diagram

3.3. LNB Fiber Thin-client Nano-Blades

These Nano-Blades are self-contained thin-clients enable connection to intranet or presentation servers through fiber LAN (100 Base-FL).

- a. Required number of LNBF Nano-Blades (1 to 4)
- b. Matching number of Fiber patch cables (not supplied).

4. Initial Installation

The following steps should be followed in order to install a user desktop using the K600 Modular KVM Combiner:

4.1. Nano Blades assembly

1. Insert required Nano-Blades into the bays in the chassis. If only 2-3 blades are used, plug unused bays with Blank Nano-Blades.
2. Secure each Nano-Blade with 4 screws (supplied with each Nano-Blade). Always fasten two front screws first!

Note:

Do not apply excessive force to secure screws. Permanent damage to the chassis or Nano-Blade may be resulted! Remove Nano-Blade and try to reinsert before fastening screws again.

4.2. Setting up desktop interfaces

1. Position the K600 Modular KVM Combiner device on the user's desktop. Do not power up the unit yet. Typically device orientation is with front panel facing the user to enable easier access to the hosts or LAN jacks attached at the back with cable routed under the table.
2. Position the display on the user desktop and power it up.
3. Connect DVI to DVI (or DVI to HDMI) cable from the display digital input to KVM Combiner DVI output connector.

Note:

The K600 Modular KVM Combiner supports only digital displays through DVI-D or HDMI interface. Do not use converters to convert DVI to VGA as it would not be supported!

4. Connect supplied USB mouse to USB mouse jack. Alternatively – connect compatible PS/2 mouse.

Notes:

- If USB mouse connected to the USB keyboard jack mouse would not work! The K600 Modular KVM Combiner authenticates the connected peripheral.

- Do not use other mouse. Use only supplied keyboard and mouse; The K600 supports most types of peripheral devices, but due to security reasons only specific types will be enabled.

5. Connect the supplied USB keyboard or other compatible PS/2 keyboard to the K600 Modular KVM Combiner PS/2 or USB keyboard jack.

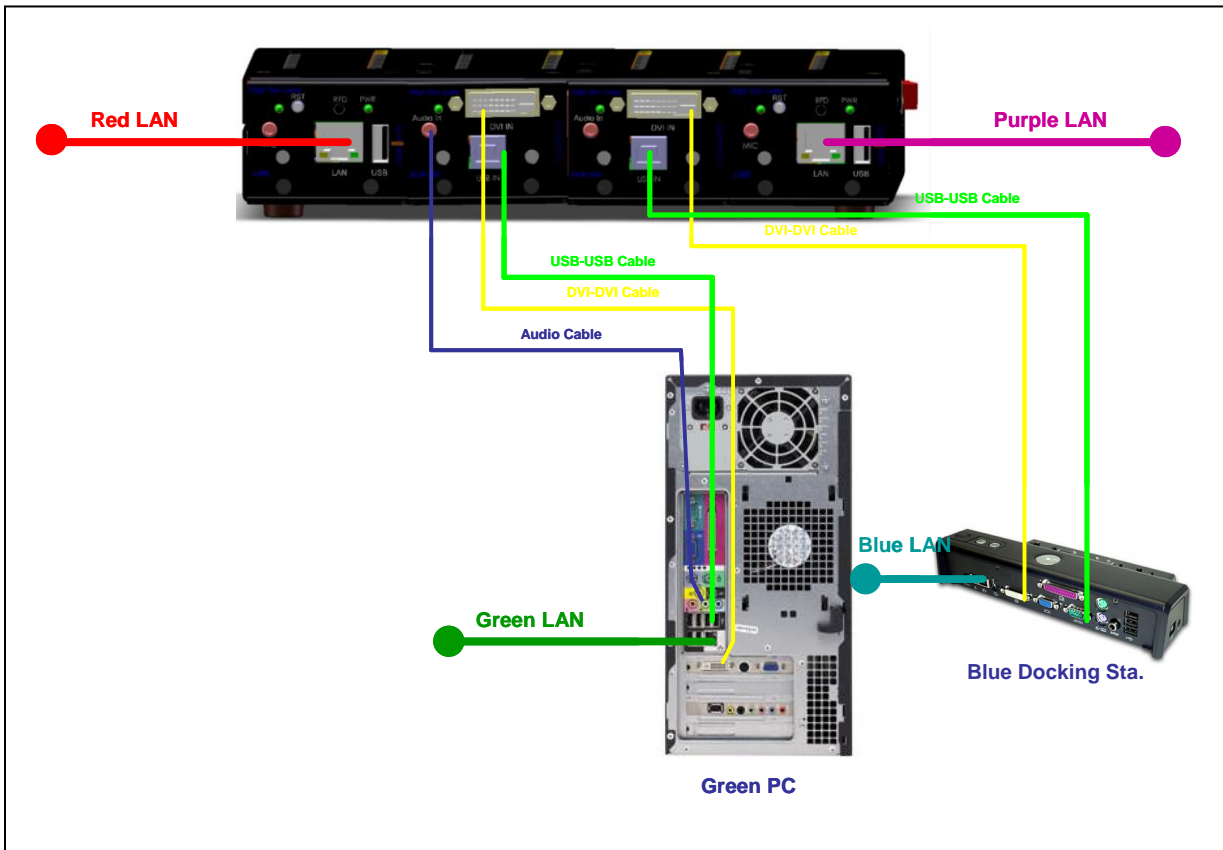


Figure 2 – K600 Back panel connections

6. Connect the audio cable to the K600 Modular KVM Combiner audio output jack. Connect other side of the audio cable to the user amplified speakers or use a headset if needed.

4.3. Setting up AUX DVI Nano-Blade interfaces

Repeat Steps for each installed AUX DVI Nano-Blade

1. Connect the Supplied DVI cable to AUX DVI Nano-Blade DVI input connector. Connect the other cable side to host DVI-D video output connector.

Notes

- VGA to DVI converter will not be supported on K600 Modular KVM Combiner uses only digital video source from PC or Laptop.
- To connect a laptop with HDMI output to the system use any DVI to HDMI converter plug or DVI to HDMI cable.
- Be sure that PC is turned off before connecting it to the K600 Modular KVM Combiner (Laptops that supports Hot plug detection do not need to be shut down).

2. Connect supplied USB cable to the AUX DVI USB jack. Connect other side of cable to any free USB port on the attached host.
3. Connect a stereo audio cable to the AUX DVI Nano-Blade Audio In jack. Connect the other side of the cable to the attached PC host audio output or line out jack (typically light green colored jack).

4.4. Setting up LNB / LNBF Nano-Blades interfaces

1. Connect a LAN cable (or fiber patch cables in LNBF) between the LNB/LNBF LAN jack and the appropriate network wall jack.
2. Connect a microphone to the LNB/LNBF front panel jack (optional).

4.5. Starting up and initial configuration

1. Connect supplied power adaptor 5VDC/5A to K600 Modular KVM Combiner DC jack.
2. Secure with screws and recheck all connected cables.
3. Turn on the K600 Modular KVM Combiner using power switch. Verify that green power LED illuminated. If not – check power cord and mains plug.
4. Within few seconds display should show KVM combiner image. If image not shown – check if display is on and if the specific digital input is selected. If image still not shown – refer to troubleshooting information in Appendix C of this manual.
5. When image is shown – start up all connected hosts. If no image is shown on display – see troubleshooting information in Appendix C of this manual.
6. Continue to initial administrator settings.

5. K600 Features

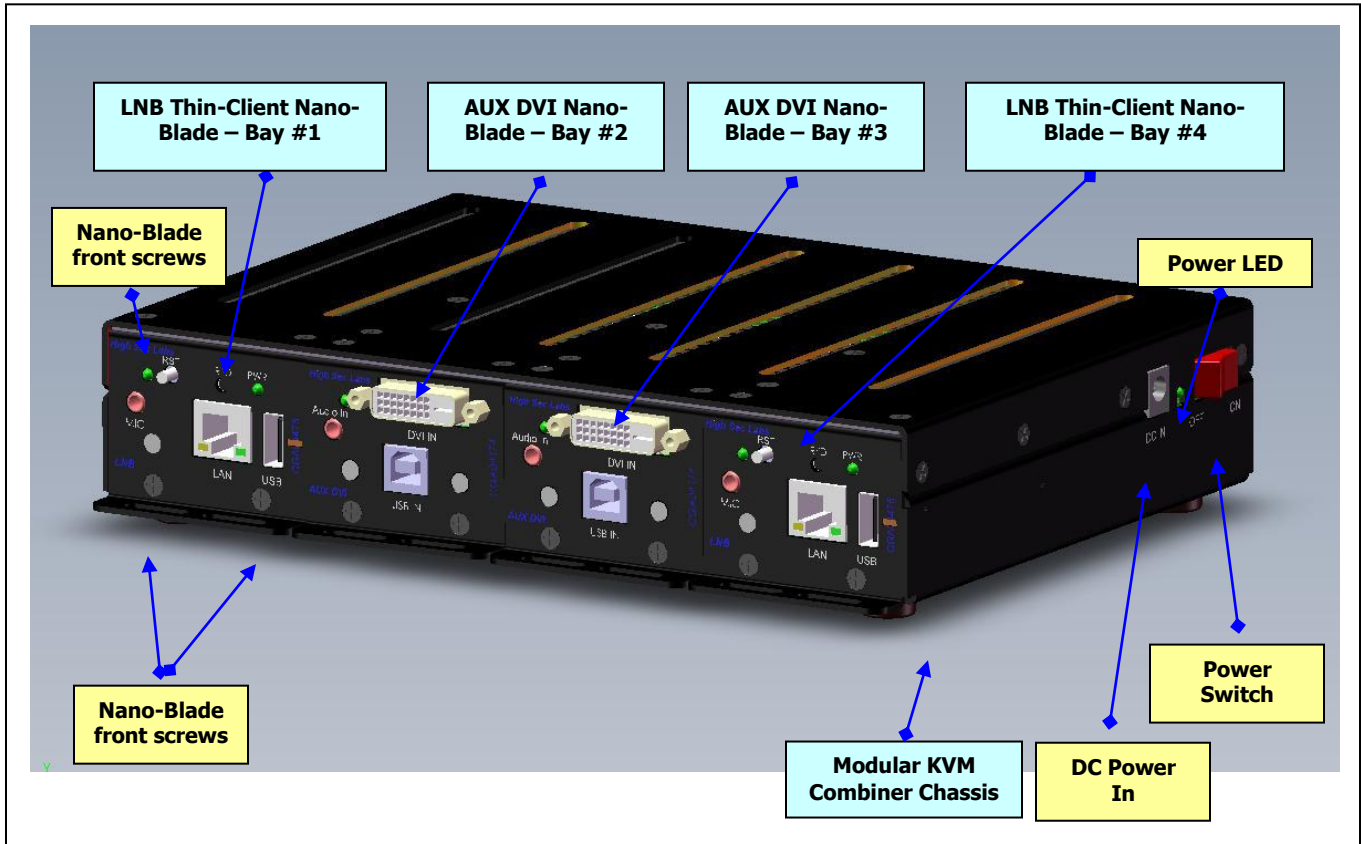


Figure 3 – K600 Modular KVM Combiner assembly features

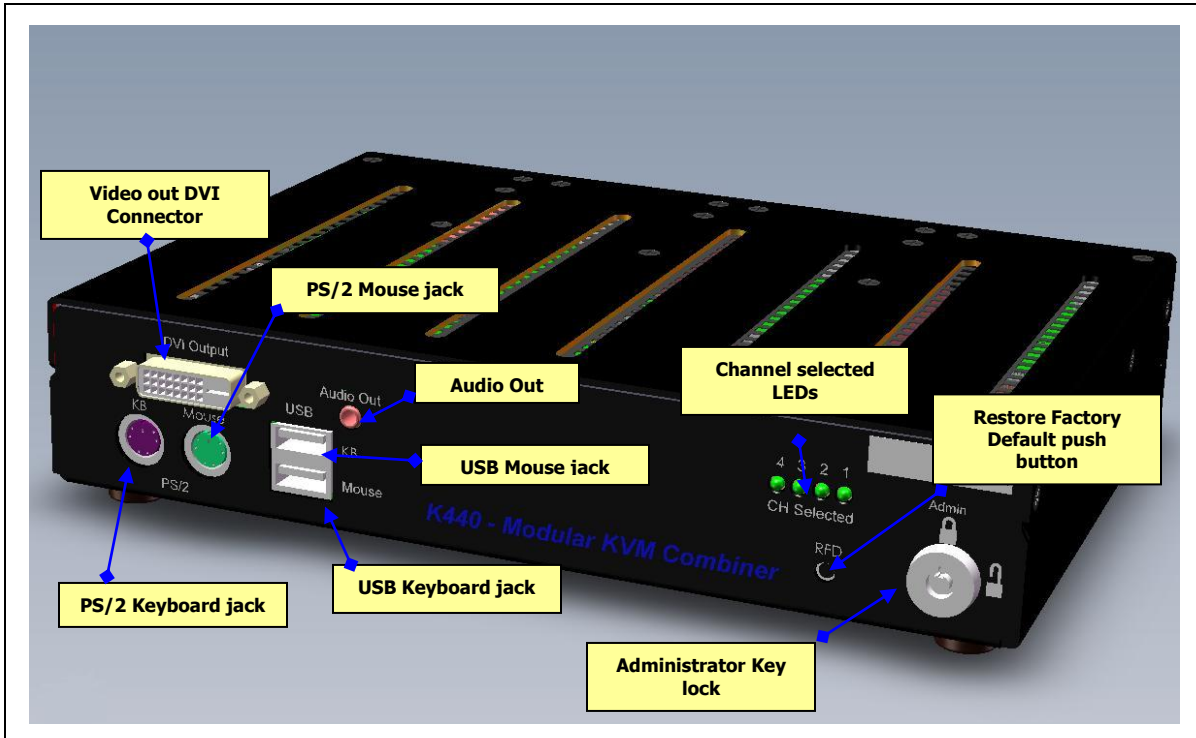


Figure 4 - K600 Modular KVM Combiner front panel features

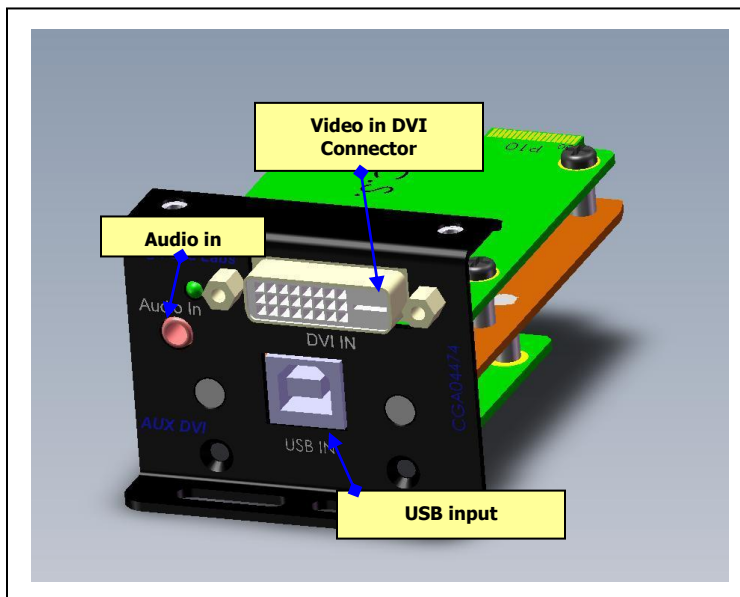


Figure 5 – AUX DVI Nano Blade front panel features

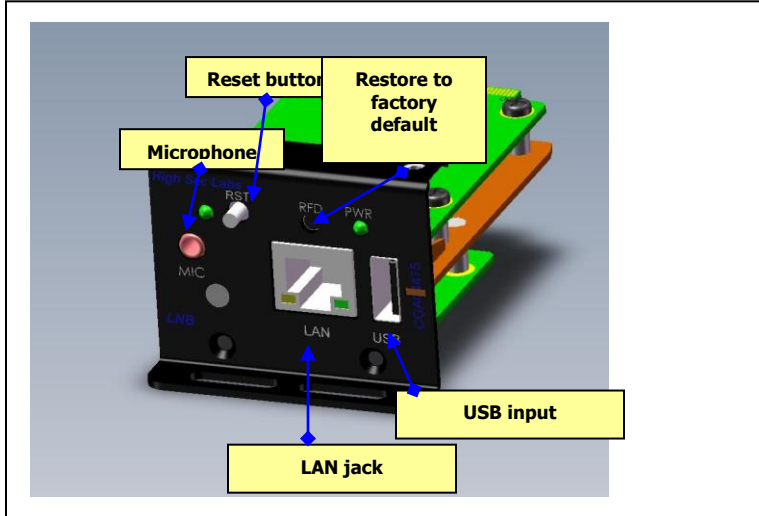


Figure 6 – LNB Nano Blade front panel features

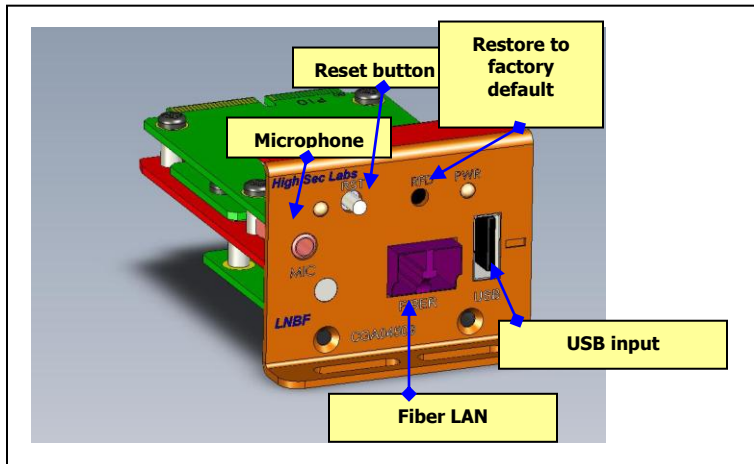


Figure 7 – LNBF Nano Blade front panel features

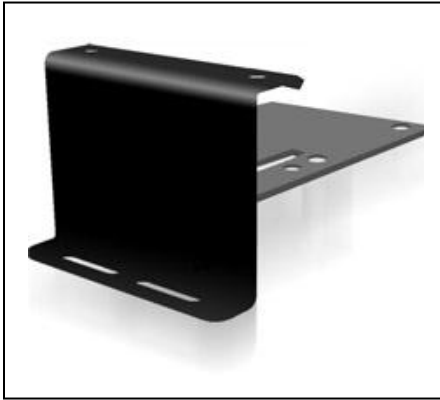


Figure 8 – Blank panel

Display Features

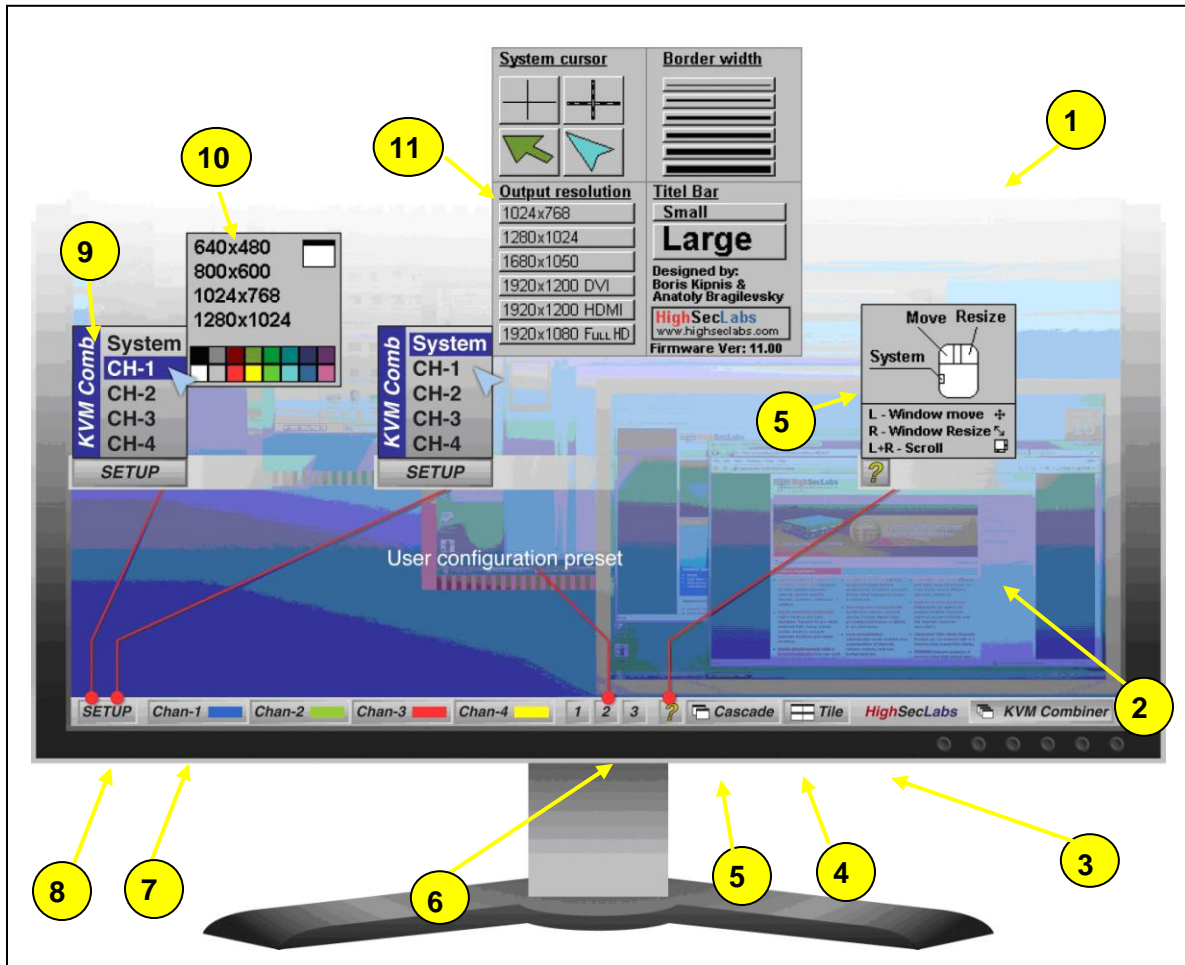


Figure 9 – K600 Display features

- 1** **Display area** - This area defined by the output resolution setting in Administrator Mode – Setup - System. Typically it is larger (higher resolution) than the input windows resolution.
- 2** **Window** – An area in the display area representing one input channel. A window will have channel number according to the port number where its input host (PC) connected. Window border is colored based on the color defined in Administrator Mode – Setup – CH#.
- 3** **Task bar** – An area at the bottom of the display area that enables the user / administrator management of the KVM Combiner functions. Task bar is visible only in system mode. The size of the task bar can be set in: Administrator Mode – Setup – System – Title Bar.
- 4**

Tile key – Arranges the 4 windows together in tiles.

5

Cascade key – Arranges the 4 windows one on top of the other.

6

Preset keys (1-3) – User defined preset windows arrangement. The user can save current windows configuration (up to 3 presets) by entering system mode and clicking on these keys and holding the key pressed until save completed. Configuration can be recalled by entering system mode and clicking on these keys. **Preset keys are disabled and erased by administrator mode.**

7

Channel keys – Each key represents an input channel. Color inside the key represents the configured border color for that specific channel. The active channel is designated by darker key. Entering system mode and clicking of a channel key will bring that window to the front and make it active channel. If red X appears on a channel key – that channel is deactivated (not shown).

8

Setup key – Accessible only in administrator mode (upon rotating the key-lock to horizontal position). Enable administrator access to channels and system settings.

9

Setup menu – Available only in administrator mode. Enable selection of one of the 4 channels or system setup.

1

Channel menu – Enable selection of input resolution and border color for each specific channel.

1

System menu – Enable system level settings. Administrator can select output resolution, border width, task bar size and system cursor type.

6. Initial Administrator Setup

The following steps should be followed in order to setup a user desktop using the K600 Modular KVM Combiner. Note that LNB and LNBF Nano-Blades setup described in other documents covering Chip PC Images and Xcalibur management system.

6.1. Restore Factory Defaults

- a. The K600 Modular KVM Combiner usually supplied with initial factory set configuration programmed to the minimum resolution supported by most displays. However it is recommended that before initial use, the Restore to Factory Default process will be activated. To restore factory default settings: Press the Restore Factory Default switch located at the front panel using a pen or paper clip. The K600 Modular KVM Combiner should reset and boot again at default settings. This will delete all administrator and users settings.

Factory Default Settings:

Output display resolution – 1024 x 768

Title bar – Small icons

System cursor – Thin cross cursor

- b. Access administrator mode by inserting supplied administrator key and rotation it to the unlocked position (3 O'clock). SETUP Key on at the left side of the taskbar should be active.

6.2. General System Settings

- a. Change to system mode by clicking on the mouse + or – side keys (see figure 13)
- b. Using the mouse click on SETUP -> System and select the required output resolution matching the connected display **native** resolution.

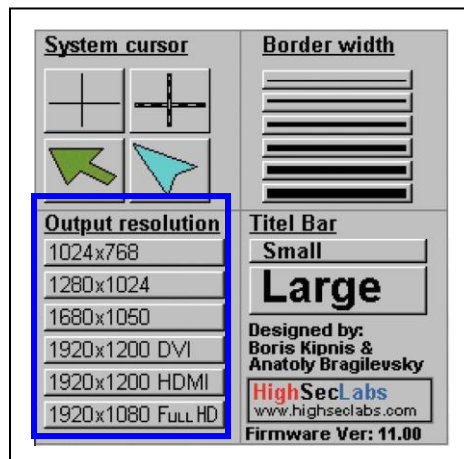


Figure10 – Display resolution selection

Notes:- Selection of resolution higher or lower than resolution range of connected display may result image loss! In this case you can change display to different type or restore factory defaults.

- Use 1920 x 1200 DVI if DVI cable connecting to the display
- Use 1920 x 1200 HDMI if HDMI cable connecting to the display
- The KVM Combiner always shows actual (native) resolution of input source. To avoid quality degradation, the K600 does not rescale windows.

- c. Using the mouse click on SETUP -> System and select one of the 4 system cursor options.

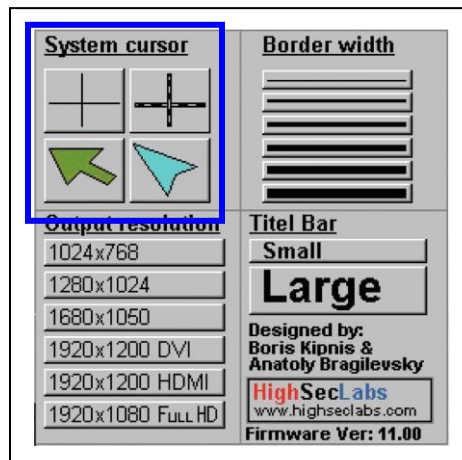


Figure 8 – System cursor selection

- d. Using the mouse click on SETUP -> System and select one of the 6 windows border widths.

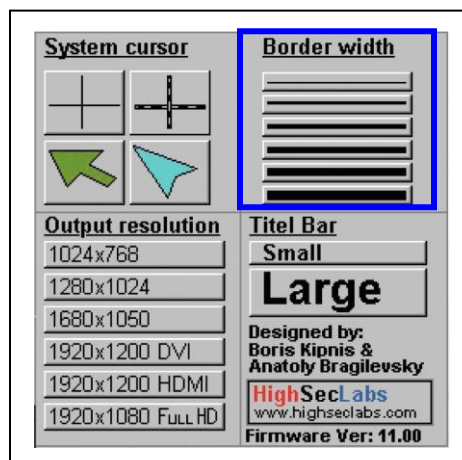


Figure 12 – Windows border width selection

- e. Using the mouse click on SETUP -> System and select one of the two title bar / task bar sizes.

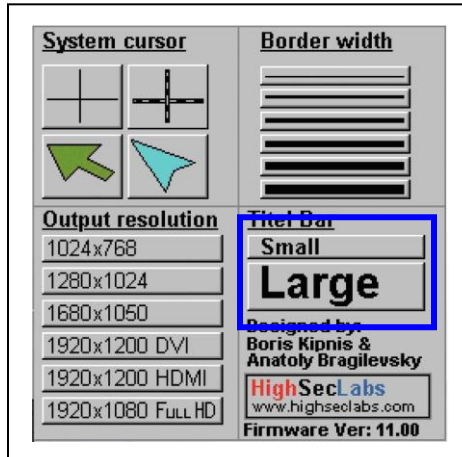


Figure 13 – Title bar / task bar size selection

6.3. Channel Specific System Settings

- a. Enter channel specific settings by clicking on the channel number.

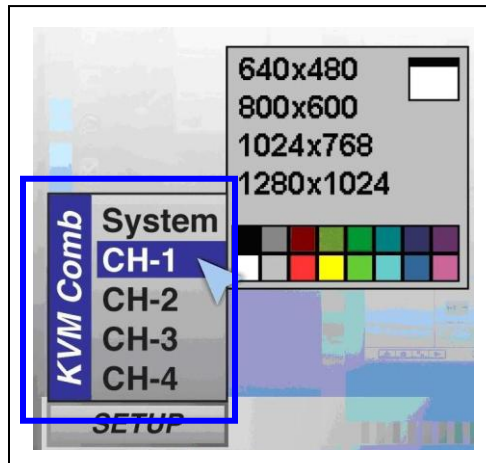


Figure 14 – Channel specific selection

- b. For each specific channel – define input resolution matching the settings of the connected host at that channel.

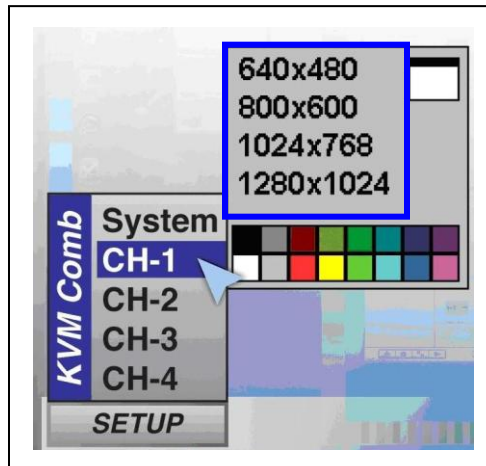


Figure 15 – Channel specific input resolution selection

Note:
Selection of input resolution that does not match the attached host (PC) will result unreadable image at that window. This may be fixed by entering administrator mode and change input resolution setting or by changing host resolution.

- c. For each specific channel – define border color as required.

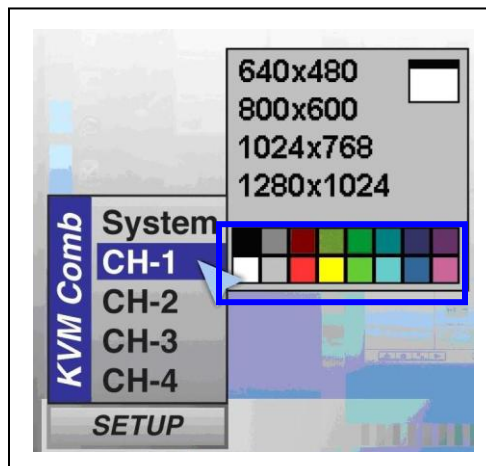


Figure 16 – Channel specific border color selection

- d. After initial configuration of all used channels, administrator mode should be disabled by rotating administrator key back to the vertical (12 O'clock) position.

6.4. Customized Background Image

The K600 KVM may be loaded with customer specific background images. Contact HSL support to assist in this option.

6.5. Audio functions

The K600 Modular KVM Combiner may be used to control audio out functions. Microphone inputs of hosts should be connected directly to the hosts as audio in may cause security vulnerabilities. Audio out or line of each host may be connected to the appropriate audio input jack on the right side of the KVM enclosure.

Audio out may function in one of the two audio modes:

- Mode A – selected channel – 100% volume, all other channels 0% volume.
- Mode B - selected channel – 100% volume, all other channels 25% volume.

Mode B is useful to enable user monitoring of background applications running at background windows.

Selection between modes is currently pre-programmed at factory.

7. Mouse Functions

The K600 Modular KVM Combiner uses 5 keys mouse to control host applications as well as system control applications (managing the KVM Combiner).

The use of 5 keys mouse enables the user to fully use all standard wheel mouse keys for application specific tasks and still operate KVM Combiner specific functions using the 2 extra side keys.

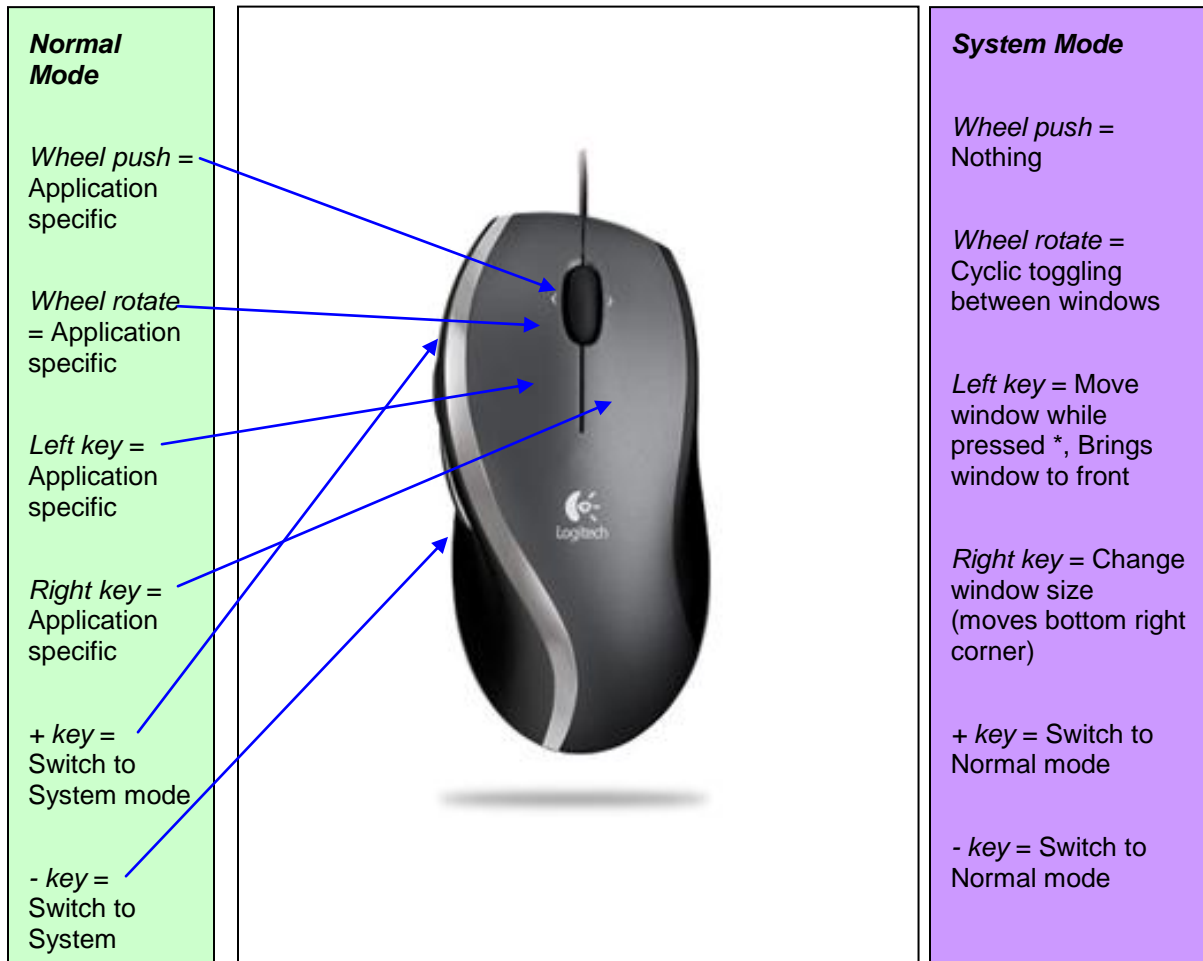


Figure 17 – Mouse functions

The user may easily toggle between normal and system mode by pressing one of the +/- side keys.

Note:

The K600 recognizes and authenticates the connected mouse. Only supplied mouse will work properly with the K600. If other mouse type of mouse is needed - please consult HSL support.

8. User Operation

This section explains the normal functions of the K600 Modular KVM Combiner offered to the user.

8.1. Normal Mode

The K600 Modular KVM Combiner enable simultaneous interaction with 4 different hosts (PCs) using single display keyboard and mouse. When the user interacts with application at a specific window that channel is active and the mouse and keyboard affecting only that channel.

The user may move to a different channel by switching first to system mode. While in system mode the cursor will change to the selected system mode cursor and will enable free movement throughout the display area.

When the KVM Combiner is in Normal Mode:

- Mouse cursor is controlled by the system mouse.
- Mouse cursor is generated / controlled by the host OS / Application.
- Mouse movement is limited to the active window area.
- All mouse keys (and wheel) will function based on the host specific application.
- Keyboard connected to the active window host.
- Audio output of active channel will be heard at 100% volume, other channels will be attenuated to 25% or muted.
- Active window will always be on top of all other windows.
- Title bar / task bar not shown, keys are not accessible.
- Pressing + / - keys will change to System Mode.

8.2. System Mode

The K600 system mode enables the user to manage his/her combined desktop and customize it for the job being done. This mode also enables the user to move between windows and to maximize windows as needed.

When the KVM Combiner is in System Mode:

- Mouse cursor is controlled by the system mouse
- Mouse cursor is generated / controlled by the KVM Combiner
- Mouse movement is unlimited in all display area
- Keyboard is routed to the active window (active window is always in front)
- Audio output is routed to the active window
- Title bar / task bar visible keys are accessible

- Pressing + / - keys will change to Normal Mode and the active window will be the window where the system cursor was last positioned.
- Left clicking on a window will bring it to the front and make it active window.
- Pressing left mouse key and holding – will drag the window under it.
- Double clicking on a window will maximize that window.

8.3. Toggling between Normal and System modes

The mouse +/- side keys triggers cyclic toggling between modes. System mode can be easily identified by the appearance of the task bar at the bottom of the display.

8.4. Switch between windows

To move between windows, the user should switch to system mode by pressing the mouse + or – side keys and the using system cursor to touch another window. Changing back to normal mode will make the new window an active window.

Another option to switch between windows in system mode is by using the wheel in the mouse. Windows will move to the front at a cyclic sequence.

8.5. Cascade / Tiles Modes

Pressing the Tile key located at the task bar (see figure 15) arranges all 4 windows on the display.

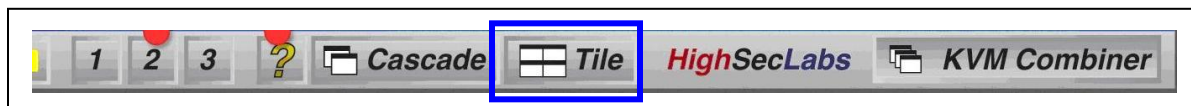


Figure 18 – Tile key

Pressing the cascade key located at the task bar (see figure 16) arranges all 4 windows one on top of the other.



Figure 19 – Cascade key



Figure 20 – Cascade (left) and tile (right) windows arrangement

8.6. Moving a Window

In order to move a window user should first switch to system mode by pressing + or – mouse side keys. In system mode, hold the left mouse key when the system cursor located on the desired window and the window will move. Release left mouse key to drop window in place.

Window movement on the left side is limited by the display boundary.

Window movement on the right side is unlimited (window may be pushed out of the display area).

8.7. Window resizing

In order to resize a window user should first switch to system mode by pressing + or – mouse side keys. In system mode, hold the right mouse key when the system cursor located on the desired window and the window will start resizing moving the lower right window corner. Release right mouse key to freeze window size.

8.8. Window internal scroll

When window size is smaller than input image size, scroll bars will be shown in border. To move internal image inside smaller window, enter system mode and click on both left and right mouse keys together. Then internal image can be dragged inside window.

Note:

Currently this feature is supported only by PS/2 mouse.

8.9. Help key

The ? key located at the task bar (see figure 18) show mouse functionality bitmap (see figure 19).



Figure 21 – Help key

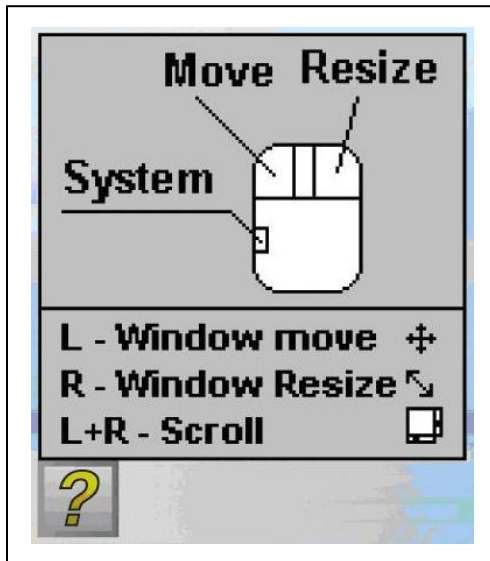


Figure 22 – Help bitmap

8.10. Preset keys

Preset keys located at the task bar marked as 1, 2, and 3 (see figure 20) enable window arrangement saving and loading. Preset keys are useful to store user specific settings for specific job environments.

To save a setting the user should enter system mode and then click on one of three preset keys. As the save process starts the key will show a small progress bar. After loading, clicking the preset key will load preset KVM configuration.



Figure 23 – Preset keys

Important Note

Rotation of the key lock to Administrator mode also affects the following:

1. User preset keys becoming inaccessible
2. All 3 user presets are erased

This is normal system behavior that designed to avoid configuration conflicts.

8.11. Maximizing a window

To maximize a window to its full size – enter System Mode by pressing + or – mouse side keys then bring the system cursor to the window that should be maximized and then double click on that window.

The selected window will maximize to its native input resolution. If that resolution is identical to output resolution – window frame would not be shown.

To leave maximize mode – change back to system mode and re arrange windows as needed.

Note:

When the K600 Modular KVM Combiner maximizes a window it will change output display resolution to the input resolution. The reaction of this change on the display may change according to the display design. Some display may automatically adjust to new resolution and rescale (showing full image), while other may not and will show black borders around image.

8.12. Deactivating / Activating channels

The user can remove from the KVM Combiner display inactive channels. In order to deactivate a channel the user should enter system mode and then move the system cursor to the desired channel key at the task bar and double-click on it. Red X should appear on that channel (see figure 21).

In some cases the user may want to deactivate a live channel for operational reasons. The K600 will display instead on that channel a background color.

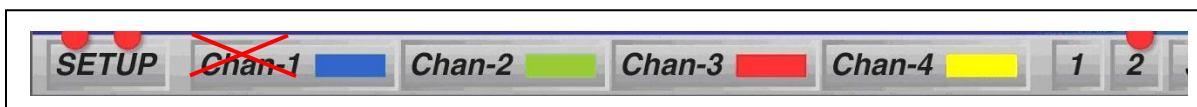


Figure 24 – Channel 1 deactivated

Repeating this process will cancel this status and reactivate that channel.

Once a channel had been deactivated it would not participate in cyclic toggling between windows.

8.13. Failsafe mode

This mode is available only in airborne derivative of the K600.

If power is lost to the K600 Modular KVM Combiner or device detected internal failure, Channel 1 will be selected and maximized.

9. Appendix A – Product Specification

K600 Modular KVM Combiner Specification	
Input Ports	<ul style="list-style-type: none"> ▪ 4 input ports to connect various hosts (PCs, thin-clients, docking stations) ▪ 4 x DVI-D Female connectors, 4 x 3ft DVI-D to DVI-D cables included ▪ 4 x USB Type-B jacks, 4 x 3ft USB Type-B to USB Type-A cables included ▪ 4 x Audio out 3.5 mm stereo jacks [Optional] ▪ Galvanic ports isolation through opto-isolators and isolated power supplies [Optional] ▪ Plug & Play DDC support - 4 channels identified as standard Dell displays
Output ports (to display, keyboard and mouse)	<ul style="list-style-type: none"> ▪ 1 set of output ports to display, keyboard, mouse ▪ DVI-D display jack ▪ PS/2 keyboard jack (DIN-5) ▪ PS/2 mouse jack (DIN-5) ▪ 2 x USB Type-A jacks ▪ Audio out 3.5 mm stereo jack ▪ Channels isolation – optical data-diode and 4 separate host emulators
User Functions	<ul style="list-style-type: none"> • Windows can be moved and resized • Toggling between normal mode and system modes by mouse side keys click (5 keys mouse) • Toggling between normal mode and system modes by mouse side keys click (5 keys mouse) • Cascading key arranges all 4 windows one on top of the other • Tile key arranges all 4 windows in a mosaic • Help key presents basic usage guidance • Vertical and horizontal scroll bars • Minimize window to task-bar • Colored Task-bar and window border indicating channel • Mouse wheel cyclic toggling between active windows in system mode • Double click to maximize window • Legacy mode – toggling between windows by Control + Func. keys [Optional] • 3 User defined preset keys to save or load user settings
Administrator settings	<ul style="list-style-type: none"> ▪ Access secured by a key-lock ▪ 4 Selectable system cursor pointers ▪ 6 Selectable window border widths

	<ul style="list-style-type: none"> 16 Selectable window border colors 2 Selectable task-bar sizes 6 Selectable video output resolutions Customer defined background bitmap [Optional]
Output video modes supported	<ul style="list-style-type: none"> 1024 x 768 (4:3) 1280 x 1024 (4:3) 1680 x 1050 (16:10) 1920 x 1080 (16:9) 1920 x 1200 (16:10)
Power	<ul style="list-style-type: none"> DC input 5V / 3A maximum Rocker type power switch Wall-mounted power supply included 90-240V AC, DC to 400 Hz
Physical Characteristics	<ul style="list-style-type: none"> Dimensions: 80(W)x158(D)x34(H) mm / 3.15(W)x6.22(D)x1.34(H) inch Device weight: 2 Kg. (4.4 lbs.) Shipping Weight: 5.85 Kg. (12.9 lbs.)
Environmental	<ul style="list-style-type: none"> Temperature range: Operating - 0°C to 40°C (32°F to 104°F); Storage - -20°C to 60°C (-4°F to 140°F) Humidity: Operating - 20 to 80% non condensing; Storage – 10 to 90% non condensing Altitude: 0 to 20,000 ft Acoustic emissions 0dB
Regulatory Compliance	<ul style="list-style-type: none"> Safety: UL/cUL60950,EN60 950 EMI/EMC: FCC Class B, CE Mark, EN55022B, VCCI ROHS
Security Accreditations	<ul style="list-style-type: none"> TEMPEST Level 1 [Optional]
Warranty	2 years, Warranty extension to up to 7 years available at cost

ADM100 Nano-blade Specification

Input ports	<ul style="list-style-type: none"> 1 x Video input DVI-D Female connector to connect host video 1 x USB Type-B receptacle to connect host computer 1 x Audio input 3.5 mm stereo jack to connect host computer audio output
Other features	<ul style="list-style-type: none"> Channel selected green LED Full galvanic optical isolation [Optional] Isolated power supply [Optional] Programmable isolated Plug and Play (DDC) EEPROM
Host video modes	<ul style="list-style-type: none"> 800 x 600

supported	<ul style="list-style-type: none"> ▪ 1024 x 768 ▪ 1280 x 1024
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AVM110 Nano-blade Specification

Input ports	<ul style="list-style-type: none"> ▪ 1 x Video input VGA DB-15HD Female connector to connect host video ▪ 1 x USB Type-B receptacle to connect host computer ▪ 1 x Audio input 3.5 mm stereo jack to connect host computer audio output ▪ Composite video input [Optional]
Other features	<ul style="list-style-type: none"> ▪ Channel selected green LED ▪ Programmable isolated Plug and Play (DDC) EEPROM

LNB120 / LNBF120 Nano-blade Specification

Input ports	<ul style="list-style-type: none"> ▪ 1 x USB Type-A receptacle to connect peripherals directly to thin-client ▪ 1 x Microphone input 3.5 mm stereo jack to connect a microphone or headset to the thin-client ▪ 1 x RJ-45 jack for LAN connectivity supporting 10 / 100 Base-T Ethernet (LNB120) ▪ Wake on LAN support ▪ 1 x SC Fibre LAN interface supporting 100 Base-FL (LNBF120)
Other panel features	<ul style="list-style-type: none"> ▪ Channel selected green LED ▪ Power / Fail green / red LED ▪ Restore Factory defaults push-button switch (recessed) ▪ Reset push-button switch
Core	<ul style="list-style-type: none"> ▪ CPU - RMI Au 1250, 600 MHz RISC, equivalent to x86 1.8 GHz ▪ Memory - 256 MB DDR2 [512 MB optional] ▪ Storage - 256 MB Disk-On-Chip with FFS. 10 Years data retention ▪ Crypto accelerator, AES128
Video	<ul style="list-style-type: none"> ▪ Maximum resolution supported: Up to 1920x1200 Pixels @ 64k (16 bit) ▪ Local Video Player ▪ DivX HD CODEC (hardware accelerated) ▪ MPEG4
Operating system and firmware	<ul style="list-style-type: none"> ▪ Security enhanced Linux based kernel ▪ ICA 10 client ▪ RDP (RDesktop 1.6) ▪ MPlayer ▪ X-Windows 7.2 server ▪ Secured Copy-Paste support [Optional] ▪ Anti-tampering support [Optional]
Power	<ul style="list-style-type: none"> ▪ Isolated power supply (internal) ▪ 6W power consumption maximum
Management solution	<ul style="list-style-type: none"> ▪ Chip PC Xcalibur Global ▪ Policy based management using Microsoft AD ▪ Secured software deployment ▪ Pass through user authentication ▪ Smart-card and biometric reader support [Optional] ▪ VMware VDI support ▪ Secured protocols with selectable encryption

10. Appendix B - Display selection considerations

Proper selection of user display is critical for the success of any KVM Combiner deployment. The information provided here represents the information gained in HSL during evaluation and deployment projects.

- Avoid using old CRT displays.
- Some projects invested significant resources in the overall project design and implementation but neglected the display and peripherals. Users may reject the new system if proper display not used with the system. As large LCD cost going down daily, it become easier and cheaper to retrofit the user desktop completely during these project.
- Proper size of the display is critical. To enable simultaneous work with several windows LCD panels larger than 22" diagonal are recommended.
- Try to use the larger LCD size possible (taking the user workstation / table size into consideration).
- Check if the display adjusts automatically to resolution changes. This feature is essential to support window maximization.
- Native resolution of the display should match output resolutions supported by the KVM combiner. Recommended resolutions are 1920 x 1080 or 1680 x 1050.
- It is recommended to select display aspect ratio of 16:9 or 16:10. Try to avoid 4:3 displays.
- Display should support DVI input. HDMI can be used with proper DVI to HDMI cable or adapter. In this case check audio out channels cannot be routed through HDMI.
- It is recommended to involve the users in the display selection process during evaluation and initial deployments.
- Consult HSL support with specific display models and technical specifications.
- DVI-I to VGA converters cannot be used with the KVM combiner as it does not support analog video.

11. Appendix C – Troubleshooting Guide

This section provides guidance to troubleshoot the K600 KVM Combiner system

Problem	Solutions
No video output	<ul style="list-style-type: none"> • Check that power supply connected to the mains jack • Check that DC plug is fully inserted into the KVM combiner jack • Check that power switch is in ON position • Enter administrator mode and change output resolution to lower setting matching the connected display. • Check that the device is powered by using optical mouse with visible red light. If power not available – change power supply. • Check that DVI cable is properly secured at both sides • Check at the display source menu that the connected DVI port selected • Try to change display with another type • Restore Factory defaults • Apply for RMA
Window showing smaller image with black borders or bad image	<p>Channel connected to a source that is set to lower resolution than the KVM setting.</p> <ul style="list-style-type: none"> • Adjust source (PC) resolution to match KVM combiner channel resolution. • Change channel input resolution in KVM to lower resolution using administrator mode.
Window showing background color (no image)	<ul style="list-style-type: none"> • Check that the channel is not deactivated by user • Check that video cable connected properly between the KVM Combiner and the attached host. • Check that connected host is powered on / not in display power saving mode
Mouse and keyboard not functioning (all channels)	<ul style="list-style-type: none"> • Check that mouse and keyboard are not switched (USB and PS/2 jacks are marked). • Use supplied mouse only
Keyboard does not functioning (all channels)	<ul style="list-style-type: none"> • Use PS/2 keyboard (some USB keyboards are not supported).

Keyboard and mouse not functioning (one channel)	<ul style="list-style-type: none">• Check the USB-USB cable connected to that channel
Keyboard and mouse not working (two channels)	<ul style="list-style-type: none">• USB or video cables of these two channels are crossed
Keyboard Caps lock and Num lock and scroll lock LEDs not functioning	This is normal behavior. Due to security reasons no feedback from host to keyboard allowed. Caps lock, scroll lock and Num lock will work normally though.
Bad video quality, bad image	<ul style="list-style-type: none">• Check that video cable to display attached correctly• Perform display auto adjustment• Check that KVM Combiner output resolution matches the display native resolution

12. High Sec Labs Warranty Programs

Hardware Service Coverage

All HSL hardware comes with a two-year, return-to-depot warranty at no extra charge. This limited warranty covers 100% of parts and workmanship on any required repairs. However, repair turnaround times average two weeks, so the purchase of enhanced hardware service coverage is highly recommended for all mission-critical applications. The PREMIUM program provides next day replacement service and 24x7 telephone support. Both of these programs are available in US, Canada and in Europe.

Program	Service Level	Technical Hours	Support
STANDARD	Return-to-Depot Repair	Email 24/7, phone 9 am - 5:30 pm , Eastern, Monday to Friday	
PREMIUM	Next Day Advance Replacement	24x7	

All HSL hardware are designed and tested for at least 10 years of maintenance-free operation. HSL will be pleased to extend your STANDARD warranty for up to 7 years after purchase and to extend PREMIUM warranty for up to 10 years after purchase.

It is beneficial to purchase enhanced coverage at the same time as the hardware. Doing so ensures that the hardware is continuously protected. Although it is possible to obtain enhanced coverage at a later date, such contracts are subject to a blackout period which delays the start of any coverage by 60 days.

High Sec Labs Limited Warranty Terms and Conditions

High Sec Labs warrants that the product you have purchased from High Sec Labs or from an authorized High Sec Labs reseller is free from defects in material and workmanship under normal use during the Limited Warranty period. The warranty period commences on the date of purchase. Your sales receipt showing the date of purchase of the High Sec Labs product is your proof of the date of purchase. This warranty is not transferable to anyone who subsequently purchases the product from you. This Limited Warranty does not include expandable parts.

Never open the product's enclosure and never attempt to replace or fix any internal part! Any attempt to repair the product, install or replace components by an unauthorized person could expose that person to risk electrical shock and will cause the product warranty to be void immediately. Should the product require service during the term of the Limited Warranty, High Sec Labs would provide either mail-in or carry-in service.

High Sec Labs will repair or replace according to its own discretion the defective products or parts with new products or parts. All exchanged parts and products replaced under this warranty will become the property of High Sec Labs.

TO OBTAIN SERVICE UNDER THIS LIMITED WARRANTY for mail-in or carry-in you must return the product, freight prepaid and insured (or assume the risk of loss or damage during shipment) in the original container or an equivalent, to a High Sec Labs Service Center. If the unit was not registered, you should enclose a written receipt for the product, showing the date of purchase, distributor's or dealer's name from whom you purchased the product, and both the model and serial number of the product. High Sec Labs will pay the return ground shipping charge within the continental United States, Canada and Europe.

Limitations of Remedy

THIS LIMITED WARRANTY COVERS repair or replacement at the discretion of High Sec Labs of the High Sec Labs product device purchased from High Sec Labs. THIS LIMITED WARRANTY DOES NOT COVER losses or damages that occurred as a result of shipping; improper installation or maintenance by anyone other than an authorized representative of High Sec Labs; acts of God or accident; misuse, neglect, or misapplication of the product; installation of options or parts by anyone other than High Sec Labs; exposure to extremes of temperature or humidity; or improper electrical power. Products returned to High Sec Labs for service, in warranty and post warranty that are diagnosed as No Fault Found will be subject to a diagnostic fee.

The Limited Warranty will be void in case of mechanical damage to the product, High voltage electrical pulse or lightning induced damage.

Product may have special Tampering Evident Labels that will provide clear indications if removed or tampered with. This will void High Sec Labs product warranty. Product may also have battery powered active anti-tampering function. Any attempt to remove enclosure screws or to open product enclosure may trigger this function and void product warranty.

This warranty excludes power supply, cables, mouse and adapters purchased with the device.

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Some states do not allow limitations on how long an implied warranty lasts, or allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

Limited Warranty Types

Mail-In Coverage

The Customer will make the initial service request to the High Sec Labs Customer Service. If High Sec Labs determines that a repair is required, the Customer will receive instructions on returning the Product to High Sec Labs. The customer will return the product in its original package or an equivalent. The Customer will pay incoming freight charges and is responsible for any loss or damage to the Product while it is in transit. Upon completion of the repair, High Sec Labs will return the Product to the Customer, freight prepaid. A copy of your Warranty Certificate must accompany the Product. All non-High Sec Labs Product, accessories, attachments, modifications and all programs, data, and storage media must be removed from the Product before it is mailed in for service. High Sec Labs shall not be responsible for items that are not removed.

Carry-In Coverage

The Customer will make the initial service request to the High Sec Labs Customer Service depending on the product covered. If High Sec Labs determines that a repair is required, the Customer must deliver the Product to a High Sec Labs Authorized Service Provider, make arrangements and pay for the transport of Product to Customer after its repair. A copy of the Customer's Warranty Certificate must accompany the Product. All non-High Sec Labs Product, accessories, attachments, modifications and all programs, data, and storage media must be removed from the Product prior to taking Product to the High Sec Labs Authorized Service Provider. High Sec Labs or High Sec Labs Authorized Service Provider shall not be responsible for items that are not removed or that are damaged before they are received by High Sec Labs or the Service Provider.

Upgrade Commitment on behalf of Customer

In case High Sec Labs discovers some failure in its Software (e.g. Firmware, Operating System, Management Software, Plug-Ins or any other aspect of its Software), the customer might be required to upgrade his software to a specific software version within a reasonable period of time. After the specified time has passed, High Sec Labs will not be held obligated to support the product under its Warranty or Extended Warranty terms and conditions.

13. High Sec Labs Security Procedures

Reporting HSL Product Vulnerability

If you are aware of potential security vulnerability with any HSL product, we encourage you to contact us immediately at the following email address: security@highseclabs.com or fill out a support form at: http://www.highseclabs.com/support_form.html

After your communication is received, HSL personnel will contact you to follow up. To ensure confidentiality, HSL encourages you to use our PGP encryption key.

The security@highseclabs.com email address is not intended to reach technical support on HSL products or services. Any support inquiries should be directed to support@highseclabs.com or support web-form indicated above.

Responsible Disclosure

Notifying a vendor prior to releasing information publicly about vulnerability is standard practice in the security industry and is known as “responsible disclosure.” This advance notice allows vendors to research and fix vulnerabilities before potential attackers are notified of their existence – keeping the product install base secure. We appreciate your assistance in ensuring that HSL products and services are secure.

Receiving a notification about Product Vulnerability / Solution

HSL security policy and internal system provides quick response in case that product security vulnerability is found. Once product vulnerability is found and confirmed by HSL QA, HSL provides an email to the following list of users based on affected product:

1. All users who registered their product and provided a valid email address.
2. All users who registered for Premium product warranty coverage.
3. All users that reported same security vulnerability.
4. Users that requested information about specific product vulnerability.

Once a solution is found – HSL will send an email to the same distribution list within 24 hours.

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