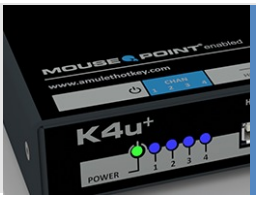
AMULET HOTKEY®
solutions you can bank on



K4u+ Manual

Revision 2.5
October 2014

Caution

To reduce the risk of electric shock, do not remove any circuit board or power supply covers. There are no user serviceable parts inside; refer to qualified personnel.

Warning

To reduce the risk of fire or electric shock, do not expose this appliance to rain, moisture, dripping or splashing. Do not place objects filled with liquid on or near the appliance.

Detailed safety instructions

Read and keep these instructions. Also:

1. Take notice of our warnings.
2. Follow the instructions.
3. Clean the product only with a dry cloth.
4. Keep the product away from liquids.
5. Install in accordance with these instructions.
6. Do not install near significant sources of heat.
7. Ensure the product is properly grounded.
8. Only use attachments and accessories approved by Amulet Hotkey.
9. Refer all servicing to qualified personnel.

Shipment

Your K4u+ and cables were carefully packed prior to despatch to guarantee safe transit. However, we recommend that you thoroughly examine all packaging and contents for signs of physical damage before use.

If any damage has occurred, please notify the shipping company and your supplier immediately otherwise claims for damage or replacement may not be granted.

Retain the original packaging for use in the event that the equipment has to be stored, shipped or returned for service.

If you choose to dispose of the packaging, please do so in an environmentally friendly fashion.

Technical support

This manual includes an overview of the Amulet Hotkey K4u+ plus detailed explanations on how to install, configure and use it. If you have further questions, please do not hesitate to contact technical support at Amulet Hotkey for expert assistance.

You can do this by phone or by email:

UK: +44 (0)20 7960 2400

US: +1 (212) 269 9600

European Tech. Support:
eurosupport@amulethotkey.com

US Tech. Support:
ussupport@amulethotkey.com

Asia Tech. Support:
apsupport@amulethotkey.com

Thank you

Thank you from everyone at Amulet Hotkey for purchasing this product. Much time and energy has gone into making this the best and most reliable solution available.

With over 20 years' experience working around the world in a variety of installations, we are confident we have provided a state-of-the-art unit that will provide you with long and reliable service regardless of the application.

To get the best from this product, please take time to study this manual carefully, even if you are familiar with other Amulet Hotkey products.

Contents

1

1. Introduction

The K4u⁺ is a four channel keyboard, mouse and stereo audio switch. It enables up to four computers to be controlled from a single keyboard and mouse. The stereo audio outputs of the four hosted computers can also be switched or mixed through to a single set of speakers.

Any combination of USB, legacy Sun™ or PS/2 compatible computers can be connected and controlled from a USB or PS/2 compatible keyboard and a USB mouse.

In addition, the K4u⁺ has a 'hot-plug' port for connecting un-hosted USB devices. You can also connect a K4u⁺ to other K4u⁺ switches to increase the number of channels available or allow channel sharing. These features are described later in this manual.

The K4u⁺ is configured by two banks of DIP switches on the underside of the case. For more information on DIP switches, see section 3.

1. 1 Terminology

This manual uses 'KVM switch' as a generic term when referring to keyboard and mouse switches, regardless of whether they support video and audio switching.

This manual often refers to *keyboard and mouse focus*. When several computers are attached to the channels on a K4u⁺ switch, the *focus* identifies the computer currently being used by a user. Similarly, the terms *active channel* or *selected channel* also refers to the currently selected computer.

1. 2 KVM switches must be secure

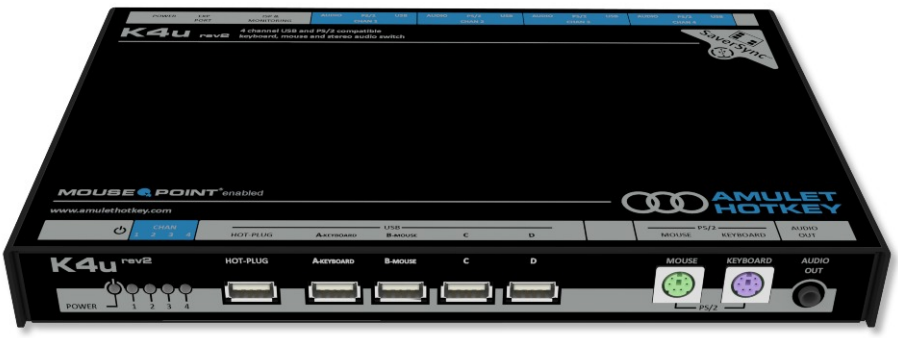
The Amulet Hotkey K4u⁺ switch is designed for use in mission- and business-critical environments such as trading floors, command and control centres, and government. Security is essential in these environments, especially when a KVM switch is used with sensitive or secure workstations. In particular:

- It must not be possible for a password destined for one hosted computer to be sent through the KVM switch to another hosted computer.
- It must not be possible for data to be exchanged from hosted computers using the KVM switch as a conduit.
- The switch must not log sensitive data such as passwords for later unauthorised use.
- A switch must not stop working if someone inadvertently pulls out the power.
- Key codes passing through a KVM switch must not be corrupted or misread; the firmware must be completely accurate and error free.

The Amulet Hotkey K4u⁺ is designed to meet and exceed these requirements.

1. 3 TEMPEST versions of the K4u⁺

TEMPEST level B versions of the K4u⁺ are available by special arrangement. These K4u⁺ versions are TEMPEST modified and tested by our partner, OSPL Nederland B.V., who operate and maintain a NATO- and NSA-certified TEMPEST test and production facility.



K4u⁺ KVM Switch

2

2. Your K4u+ at a glance

The K4u+ has various LEDs and connections on the front and rear panels. These are described below.

2. 1 Front panel

1 Power LED

This LED illuminates when power is applied to the unit. Power can be drawn from the supplied PSU or from any of the connected computers. For best performance, especially when using USB peripherals with a high power requirement, or the Bloomberg Keyboard 4 (STB100), always use the external PSU. It is also good practice to power a KVM switch from a UPS.

2 Channel status LEDs

These are multi-coloured LEDs. If a channel LED is:

Blue	The computer on this channel is connected using the USB protocol.
Green	The computer on this channel is connected using the PS/2 protocol.
Red	The computer on this channel is connected using the legacy Sun™ protocol.
Pink	The computer on this channel is powered off, or No computer is attached to this channel, or The computer on this channel is using an unknown protocol, or No protocol has been detected yet on this channel.
Flashing	The audio feed from this channel is muted.

3 Hot-plug port

Use this port to connect un-hosted USB devices (such as a printer or memory stick) to an attached computer. This connection passes through the K4u+ to the rear panel USB socket for the selected channel, where it is merged with any keyboard and mouse data present. Support for the hot-plugged device is provided directly by the attached computer, which loads the appropriate drivers when the device is detected and identified. You can configure the hot-plug port for automatic or manual channel switching. For example, you can set it up to automatically follow the keyboard and mouse focus.

Note: *The hot-plug port can only connect to one K4u+ channel at a time.*

4 **USB keyboard socket**

Use this socket to connect a USB keyboard. Most types are supported but be aware that some devices have unusual special function keys that only work with custom drivers. These devices are not fully supported. Always test the keyboards you intend to use during the POC stage.

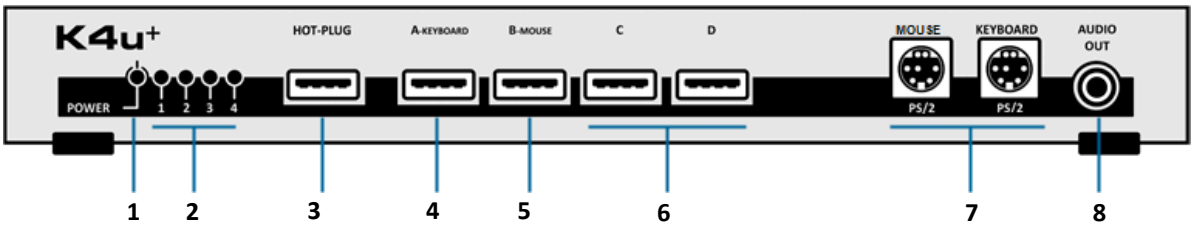
Note: *This socket is switched to a selected channel. It can never connect to more than one channel at a time.*

5 USB mouse socket

Use this socket to connect a USB mouse. Most types are supported but be aware that some devices have unusual special buttons that only work with custom drivers. These are not fully supported. Always test the mice you intend to use during the POC stage.

Note: *This socket is switched to a selected channel. It can never connect to more than one channel at a time.*

K4u+ Front Panel



6 General purpose USB sockets

These two sockets can support other USB devices, such as hubs or a DXR2. These sockets follow the keyboard and mouse focus and can never connect to more than one channel at a time.

7 **PS/2 keyboard and mouse sockets**

Use the keyboard socket to connect a PS/2 keyboard. You can use a PS/2 keyboard with a USB mouse.

The PS/2 mouse socket is inactive in the current version of the K4u+, but it may be re-activated in future versions.

Note: *If you connect both PS/2 and USB keyboards, the K4u+ only references the USB keyboard.*

8 **Audio output**

Use this socket to connect desktop speakers or headphones. The K4u+ can take the audio output of the attached computers and either switch or mix it through to this socket.

When switched, only audio from the current channel is routed to this socket. When mixed, audio inputs from all channels are mixed and fed to this socket.

You specify audio switching or mixing by setting a DIP switch A4; for details, see section 3. You can also mute a selected audio feed by using a hot-key combination; for details, see section 7. 3.

2. 2 Rear panel

1 Channel 4 connections

USB, legacy and audio connections for channel 4:

1a USB type B output: This socket connects a computer to channel 4 on the K4u+. It carries USB keyboard and mouse data sent to this channel. Data from the hot-plug port is also merged if the port is switched to this channel.

1b PS/2 & legacy Sun® output: This socket is provided for support of legacy systems, including PS/2 computers and Sun computers.

For connection to PS/2 computers, a splitter cable is available (CL-XX01-4021) that connects this port to the PS/2 keyboard and mouse sockets of the computer.

For connection to legacy Sun computers, a cable is available (CL-XX01-0011) to connect this port to the keyboard and mouse socket of the Sun computer.

The K4u+ automatically detects which protocol is present and translates keyboard and mouse data accordingly.

1c Audio input: This 3.5mm stereo jack socket connects to the audio output of the computer on channel 4.

2 Channel 3 connections

USB, legacy and audio connections for channel 3. For descriptions, see *Channel 4 connections* above.

3 Channel 2 connections

USB, legacy and audio connections for channel 2. For descriptions, see *Channel 4 connections* above.

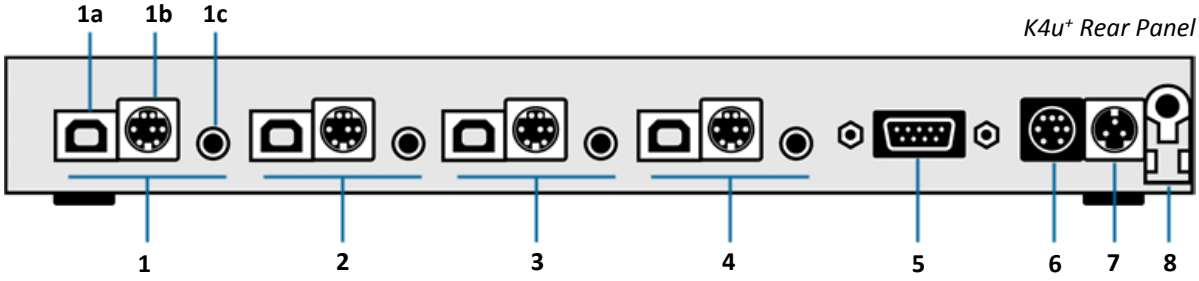
4 Channel 1 connections

USB, legacy and audio connections for channel 1. For descriptions, see *Channel 4 connections* above.

5 Serial Connection

This RS232 port provides a method for updating firmware on the K4u+. Amulet Hotkey provide a utility to manage firmware updates. You can run this utility on any Windows computer with an appropriate serial port. See section 8. 5 for details about serial updating.

Note: *You can also update the K4u+ firmware using a USB port connected to one of the attached computers. This method is more suited to enterprises with a large number of switches because the update process can be managed centrally. See section 8. 1.*



K4u+ Rear Panel

6 **Feature connector**

This socket supports the following features:

- **K4 Controller (CA-HKCT-0004)**

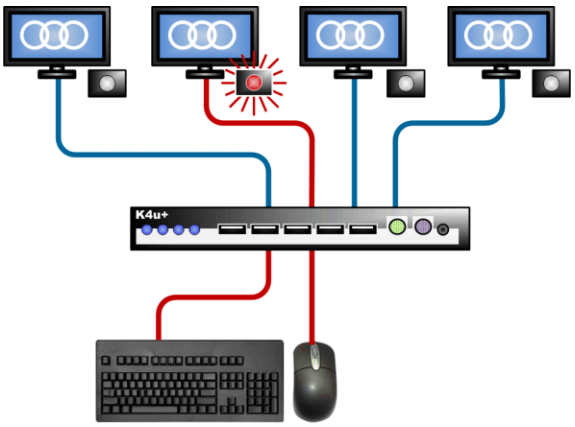
  The K4 Controller provides an alternative method for changing channels. It comprises four illuminated push-buttons in a compact case that can be placed next to a keyboard. It allows you to locate the K4u+ out of reach under a desk while still being able to see which channel has focus.

K4 Controller

- **Focus indicator LEDs (CL-HK04-0001)**

  The K4u+ is a keyboard and mouse switch; it does not switch video. Screens for each attached computer remain connected directly to the associated computer.

  Focus indicator LEDs show which screen is currently the focus of keyboard and mouse activity. The focus indicator attaches to a screen and illuminates when the associated computer is being used:



LEDs identify the computer and screen currently being addressed by the keyboard and mouse.

Note: *Focus indicator LEDs are only available to special order. Four LEDs are combined in a single pack. Minimum quantities apply.*

- **Sharing indicator LEDs**

  When a computer is shared between two K4u+ switches, sharing LEDs can indicate to both users the status of the shared channel. See section 7.7.2 for details.

Note: *You cannot use sharing LEDs and focus LEDs together. Because both LEDs plug into the Feature Connector port, the K4u+ can only support one set of LEDs at a time.*

7 **Power socket**

Use this socket to connect power to the K4u+. This is a DC inlet and relies on a supply from the PSU (CA-XX01-0002) packaged with the product. This power supply is auto-sensing and provided with an appropriate IEC lead for the region.

Important! *Use only this PSU with the K4u+.*

8 **Power cable clip**

A clip is provided to help secure the power supply cable to the K4u+ if necessary.

3. DIP switches

The K4u+ has a two sets of DIP switches fitted to the underside of the case. A label alongside these switches indicates the function of each switch. This section describes the individual switches.

A1 and A2: Set Hot-key Combination

Factory default: A1=OFF, A2=OFF

These switches define the *hot-key combination*. This is two pre-assigned keys which, when held down together with a third key, activate a special feature of the K4u+ switch. The factory default hot-key combination is Alt + Space. Three alternative combinations are listed on the configuration label on the underside of the unit.

Hot keys are described in section 4.

A3: Mouse Channel Changing

Factory default: A3=ON

When A3 is ON, users can change channel focus by clicking the mouse buttons.

To change channels, hold down the centre mouse button. Then click the left or right mouse buttons to scroll around the channels. See section 7.1.3.

A4: Audio Mix / Switch

Factory default: A4=ON

When A4 is ON, the K4u+ mixes all four stereo audio inputs through to the single output on the front of the unit, regardless of the focused channel. When A4 is OFF, the audio output follows the keyboard and mouse focus, switching channels when the focus changes.

Audio switching and mixing are described in section 7. 3.

A5: Active Sensing

Factory default: A5=ON

When A5 is ON, the K4u+ only switches to channels that have an active computer attached (ie, connected and powered). It will not switch to empty channels and skips them when a user changes channels using the mouse.

A6: Confirmation Beeps

Factory default: A6=ON

When A6 is ON, the K4u+ gives a confirmation beep whenever there is a change of state (eg, a channel change or some other hot-key function has been invoked).

Even when A6 is OFF and confirmation beeps are disabled, the switch still gives warning beeps eg, when the unit resets or when a new keyboard is plugged into the front of the K4u+.

A7 and A8: Sun™ / USB Keyboard Country Layout

Factory default is country specific.

For users with a Sun workstation but a non-country layout reporting keyboard (this includes PS/2 and most USB keyboards), these switches inform the Sun workstation of the layout of the attached keyboard.

B1 and B2: Shared Channel Selection

Factory default: B1=OFF, B2=OFF

If a computer is shared between two K4u+ switches, use B1 and B2 to specify which channel is shared.

When a K4u+ (with keyboard and mouse attached) detects that a second K4u+ has been connected to one of its front panel USB ports (A to D), it automatically enables sharing mode. This allows two users to share the computer on the channel specified by B1 and B2.

Channel sharing is described in section 7. 7.

B3 and B4: Sharing Timeout

Factory default: B3=OFF, B4=ON

If a computer is shared between two K4u+ switches, use B3 and B4 to specify the sharing timeout. The timeout can be from zero to 10 seconds.

When a shared computer is being controlled by a user, the other user is automatically blocked from accessing it. If the shared computer is left unused, it remains locked to the controlling user until the timeout expires. The shared computer then becomes available to either user. See section 7. 7 for details.

B5: Focus or Sharing Indicator Selection

Factory default: B5=OFF

The K4u+ can be fitted with two types of optional indicator. These are fixed in position near the users' monitors. The choice of indicator depends on user preference and operating mode.

- Focus Indicators give a visual indication of which channel has the keyboard and mouse focus.
- Sharing Indicators show the current status of the shared channel, regardless of the keyboard and mouse focus.

Contact your local Amulet Hotkey sales team for more information about sharing indicators. See item 6 in section 2. 2 for details.

B6: Reserved for future use

B7: Hot-Plug Device Switching Mode

Factory default: B7=OFF

A *hot-plug device* can be any un-hosted USB device (such as a printer or memory stick) connected to the hot-plug port. DIP switch B7 controls how the hot-plug device follows the channel focus.

- When B7 is ON, the hot-plug device follows the keyboard and mouse focus after a three second delay. (This delay allows the K4u+ to ignore quickly retracted changes to the 'wrong' channel.)
- When B7 is OFF, the USB hot-plug device remains switched to one channel, regardless of keyboard and mouse focus, until the user explicitly switches the hot-plug port to the active channel by pressing the hot-keys + U.

Note: *For a description of hot-key operations and options, see section 4. Hot plugging is described in section 7. 2.*

B8: Force In-System-Programming (ISP)

Factory default: B8=OFF

(Only needed in the unlikely event of a failed switch firmware update.) The K4u+ is fully flash programmable. When B8 is ON, the K4u+ is forced into programming mode.

4. Hot Keys

The K4u+ uses *hot-key combinations* to invoke various functions. Typically, you hold down two predefined hot-keys and then press a third key ie, you press all three keys together. For example, you can switch channels on the K4u+ by holding down the two hot-keys, then pressing 1, 2, 3 or 4.

The default hot-key combination is Alt + Space. But you can specify a different combination with DIP switches A1 and A2; for details, see section 3.

4. 1 General hot keys

Press and hold down the hot keys. Then press:

1 (QWERTY only) Selects channel 1.

2 (QWERTY only) Selects channel 2.

3 (QWERTY only) Selects channel 3.

4 (QWERTY only) Selects channel 4.

4 (NUMPAD only) Switches down to the next channel.

6 (NUMPAD only) Switches up to the next channel.

C Emulates smart card removal and insertion on the active channel.

U Switches the hot-plug port to the active channel.

* (NUMPAD only) Toggles exclusive mode when a computer is shared between two K4u+ switches.

0 (QWERTY only) Toggles 'mute all audio'. Use this combination to mute all audio output.

Backspace
Toggles mixed audio mode for the selected channel. Use this combination to mute a single channel.

Scroll-Lock
Disables channel changing with the Scroll Lock key. (When enabled, two quick key presses switches up to the next channel.)

Esc
(Sun USB keyboards only) Disables channel changing with the single 'channel' keys. See section 7.1.5.
Note: *You must apply this hot-key combination every time the switch is reset or power cycled.*

S Re-reads DIP switch settings and reconfigures the K4u+.

I Initiates the serial port In System Programming mode. You must press I twice; see the note below.

H (Available for USB and legacy Sun computers only) Transmits 'Stop-A'. Press H twice; see the note below.

R Resets the main processor and warm boots the switch. You must press R twice; see the note below.

Note: *For I, R and H hot-key combinations, press the third hot-key twice. This means you must hold down the hot keys, then press and release the third key twice while still holding down the hot keys. Do not press any other keys during the sequence. For example, to reset the main processor, the hot-key combination is Alt+Space+R, R.*

4. 2 Hot keys for legacy Sun computers

P Toggles the channel's keyboard power line.

Q Transmits LH shift & keyboard power key.

N Emulates holding down 'Stop-N' as part of a Basic Assurance Test (BAT) while the keyboard is booting up.

F Transmits 'Front' key.

T Transmits 'Stop' key.

G Transmits 'Again' key.

5

5. Installing Mouse Point

The Mouse Point utility enables users to switch channels on the K4u+ using their mouse. For convenience and ease of maintenance, Mouse Point also incorporates features for updating the firmware on K4u+ switches and managing screensavers on attached computers. (Administrators can specify which features are available to ordinary users.)

5. 1 Requirements for host PC

You must install Mouse Point on at least one PC attached to the K4u+. This your *host PC*. You can then run the Mouse Point Configuration utility on the host PC to create a configuration file that you upload to the K4u+.

Note the following requirements:

- **Operating System:** For Mouse Point 2.10, the host PC must be running Windows XP or later. 32-bit and 64-bit systems are both supported.
- **Attaching and removing the host PC:** The Mouse Point host PC does not need to be permanently attached to the K4u+. You can remove the host PC after uploading the Mouse Point configuration file to the K4u+. For example, you may find it convenient to use a laptop as your host PC, temporarily attaching it to K4u+ units as required.

5. 2 Run the Mouse Point installer

1 Download the zip file containing the Mouse Point installer. The zip file is available on the Support > Downloads page of the Amulet Hotkey website, www.amulethotkey.com.

2 Extract the Mouse Point installer from the zip file. The installer is contained in an executable:
`Mouse_Point_2_10.exe`

3 Copy the Mouse Point installer to the host PC.

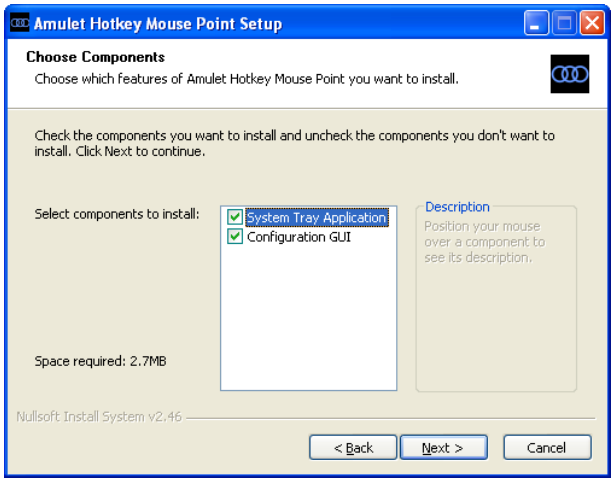
4 On the host PC, run Mouse_Point_2_10.exe.

5 Step through the various installer screens.

6 In the Choose Components screen, confirm that the following components are selected:

- **System Tray Application:** *You must install this component.* It enables you to configure Mouse Point features, including channel changing with a mouse, firmware updates, and screen saver management.
- **Configuration GUI:** This component installs the Mouse Point Configuration utility. Use this utility to specify how a user's screens are arranged in relation to each other.

  This utility also allows you to enable SaverSync, a screen saver management feature, and the Remember Last Channel feature, which enables the K4u+ to remember the last active channel and the hot-plug focus after the unit is reset or power cycled.



Mouse Point installer, Choose Components screen

7 In the Choose Registry and Service Options screen, verify that the following options are selected:

- **Ignore K4u serial numbers…**

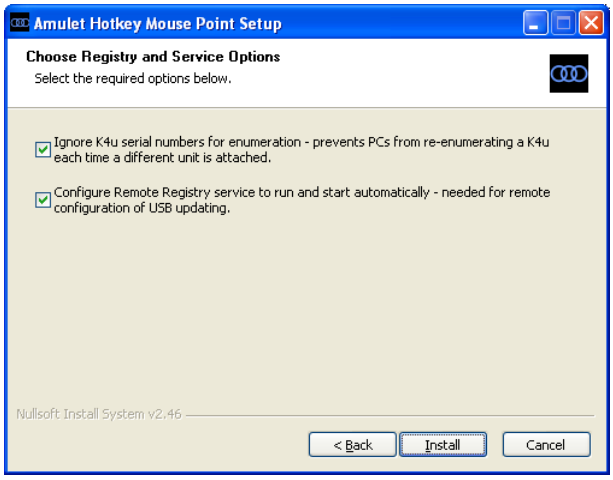
  You do not normally need to change this setting. Unless instructed otherwise, keep this check box selected.

  By default, Mouse Point host PCs do not check K4u+ identifiers. This allows users to reattach computers to K4u+ units without triggering unnecessary mouse and keyboard driver operations. This check box cancels the

default Mouse Point behaviour and switches on K4u+ identifier checking.

- **Configure the Remote Registry service…**

  This service enables remote users to modify registry values on the host computer. If you intend to run remote firmware updates to the K4u+, ensure this check box is selected. See section 8. 3.



Mouse Point installer, Registry and Service Options screen

5. 3 Command line installations with install.cfg

For scheduled, unattended installations, you can run the following command:

```
Mouse_Point_2_10.exe /S
```

This command reads a configuration file, install.cfg, for firmware update settings.

Note: *The /S option must be an upper case 'S'.*

5.3.1 About install.cfg

The Mouse Point installer reads values from a configuration file, install.cfg, when you run a command line installation. This file must be in the same folder as Mouse_Point_2_10.exe.

Each setting in install.cfg takes an optional value. Use a single space to separate settings and their value. Values are not case sensitive. If no value is assigned to a setting, a default value is used.

Typically, your Amulet Hotkey contact will provide a template install.cfg file that you can edit as required. An example file is shown in section 5.3.3.

5.3.2 Supported settings for install.cfg

Install.cfg supports the following settings and values:

`UsbStatusUploadDisabled <Yes or No>`

Default value is to No. If set to Yes, this setting disables the *Read Switch Status via USB* item in the Mouse Point menu. See section 5. 5.

`usbPackageDownloadDisabled <Yes or No>`

Default value is to No. If set to Yes, this setting disables the *Update Switch Firmware and FPGA via USB* item in the Mouse Point menu. See section 5. 5.

`remoteLogFilePath <folder path>`

This setting specifies a UNC path to the remote folder where you want to save K4u+ log files. For example:

\\UNX-NY-01\AmuletHotkey\switches\logs

Log files are described in section 6. 7.

`forceFocusForUpdates <Yes or No>`

Defaults to No. If set to Yes, this setting forces the K4u+ to switch channels to the Mouse Point host computer before running a scheduled firmware update. See section 8. 4.

`oneShotUpdateFilename <file name>`

Specifies the full UNC path and file name of the firmware package for the next *one-shot* firmware update. For example:

\\UNX-NY-01\Amulet Hotkey\Test\k4u0P333.pkg

Remote manual 'one-shot' firmware updates are described in section 8. 3.

`enableScheduledUpdates <Yes or No>`

Defaults to No. If set to Yes, this setting enables scheduled firmware updates; Mouse Point runs a daily firmware update at the time specified by `ScheduledUpdateTime`. See section 8. 4.

`scheduledUpdateTime <time>`

Specifies the time (in 24 hour format) for scheduled firmware updates. Leading zeroes for hours and a colon separator between hours and minutes are both optional. Valid examples are:

01:45, 1:45, 0145 and 145.

See section 8. 4 for details.

`remoteUpdatePath <file path>`

Specifies the full UNC path of the folder containing the package file for *scheduled* firmware updates. For example:

\\UNX-NY-01\Amulet Hotkey\Switch Firmware

See section 8. 4 for details.

`installPath <folder path>`
Specifies a default installation folder when the Mouse Point installer runs (see section 5. 2). This setting defaults to : `$PROGRAMFILES\Amulet Hotkey\Mouse Point`

`noConfigApp <Any non-zero value>`
Defaults to *no value*. If you set this setting to any non-zero value (such as '1' or 'True'), the 'Configuration GUI' check box in the Mouse Point installer is clear (unchecked) by default when the installer runs. See section 5. 2).

`noTrayApp <Any non-zero value>`
Defaults to *no value*. If you set this setting to any non-zero value (such as '1' or 'True'), the 'System Tray Application' check box in the Mouse Point installer is clear (unchecked) by default when the installer runs. See section 5. 2.

`doNotIgnoreK4uSerialNumbers <Any non-zero value>`
Defaults to *no value*. If you set this setting to any non-zero value (such as '1' or 'True'), the 'Ignore K4u serial numbers…' check box in the Mouse Point installer is clear (unchecked) by default when the installer runs. See section 5. 2).

`doNotConfigureRemoteRegistryService <Any non-zero value>`
Defaults to *no value*. If you set this setting to any non-zero value (such as '1' or 'True'), the 'Configure the Remote Registry service…' check box in the Mouse Point installer is clear (unchecked) by default when the installer runs. See section 5. 2).

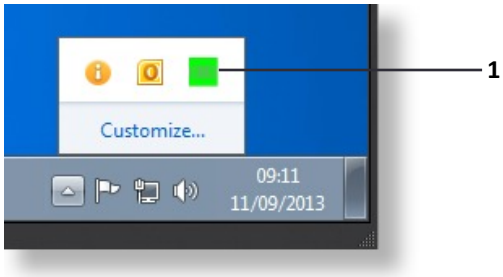
5.3.3 Example install.cfg file

The following example shows a typical installer setup. For example, scheduled firmware updates run at 3 a.m. and, because the relevant Mouse Point menu item is disabled, the end user is not allowed to run local manual firmware updates:

```
usbStatusUploadDisabled no
usbPackageDownloadDisabled yes
remoteLogFilePath \\MyServer\AHK\logs
forceFocusForUpdates yes
enableScheduledUpdates yes
scheduledUpdateTime 0300
remoteUpdatePath \\MyServer\AHK\updates
installPath c:\AHK\mousepoint
noConfigApp yes
noTrayApp
doNotIgnoreK4uSerialNumbers
doNotConfigureRemoteRegistryService
```

5. 4 Mouse Point menu

After installing Mouse Point, a Mouse Point icon is displayed in the system tray (Windows XP) or taskbar notification area (Windows 7) of the host PC. Right-click this icon to display the Mouse point menu.



Mouse Point icon (**1**) *in taskbar notification area*

5.4.1 Menu items

The Mouse Point menu gives you access to various configuration and firmware update options. It includes the following items:

About

Displays the About dialog. See section 6. 6.

Read Switch Status via USB

Displays the Status dialog. See section 6. 6.

To optionally disable this menu item, see section 5. 5.

Update Switch Firmware and FPGA via USB

Manually updates the K4u⁺ firmware. See section 8. 2.

To optionally disable this menu item, see section 5. 5.

Launch Mouse Point Configuration

Opens the Configuration utility. Use this utility to set up channel changing with your mouse pointer and to enable SaverSync. See section 6. 2 and section 6. 3.

Customize Monitor Arrangement

Allows administrators to specify non-standard screen arrangements. *Only choose this menu item under the guidance of Amulet Hotkey technical staff.*

Update Mouse Point Configuration

Uploads a Mouse Point configuration file from the host PC to the K4u⁺. See step 4 in section 6. 2.

Read Mouse Point Configuration

Downloads the current Mouse Point settings from the K4u⁺ to a .k4c configuration file. You can then edit the settings using the Configuration utility or, if required, upload the configuration file to a different K4u⁺.

Close

Closes the Mouse Point application in the system tray (Windows XP) or taskbar notification area (Windows 7).

5.4.2 Icon colour

The Mouse Point icon colour indicates its status:

Green: This PC has the K4u⁺ focus.

Gray: This PC does not have the K4u⁺ focus. Or this PC is not attached to a K4u⁺.

Red: There is a major problem with the USB connection to the attached K4u⁺.

Blue: A manual firmware update (initiated on this PC) is underway on the K4u⁺. See step 8. 2.

Cyan: A remote firmware update is underway on the K4u⁺. This may be a manual update (step 8. 3) or a scheduled update (step 8. 4).

5. 5 Disable Mouse Point menu items

The Mouse Point menu includes items for launching firmware updates on the attached K4u⁺. However, ordinary users can access this menu, so you may prefer to disable the following menu items:

- **Read Switch Status via USB**
  This menu item displays the Status dialog. This dialog shows status and firmware details for the attached K4u⁺. This data is primarily of interest to administrators.
- **Update Switch Firmware and FPGA via USB**
  This menu item allows users to manually update the K4u⁺ firmware. However, you can disable this item to ensure that any firmware updates are managed in a controlled and co-ordinated manner.

You can configure the Mouse Point installer to disable these menu items automatically. Alternatively, you edit the registry on the host PC to manually disable these menu items after installing Mouse Point.

5.5.1 Configure the Mouse Point installer to disable menu items automatically

To configure the Mouse Point installer to disable these menu items automatically, add the following lines to install.cfg. Then run the installer from a command line:

```
usbStatusUploadDisabled Yes
usbPackageDownloadDisabled Yes
```

5.5.2 Manually disable menu items on the host PC

To disable the Mouse Point menu items:

1 Log on to the Mouse Point host computer as an administrator.

2 Locate the following registry key:
`HKLM\SOFTWARE\Amulet Hotkey\USB updating config`

3 Within this registry key, set the following values to Yes:

`usbStatusUploadDisabled=Yes`
Disables the *Read Switch Status via USB* menu item.

`usbPackageDownloadDisabled=Yes`
Disables the *Update Switch Firmware and FPGA via USB* menu item.

Note: *Set these values to No to re-enable the menu items.*

5. 6 Mouse Point registry values

The Mouse Point installer creates the following registry values on the host PC.

Note: *Administrator permissions are needed to modify these registry values.*

5.6.1 Firmware updates and monitoring

Locate the following registry key:

`HKLM\SOFTWARE\Amulet Hotkey\USB updating config`

Within this key, the following registry values configure Mouse Point operations, including firmware updates.

`enableScheduledUpdates=Yes or No`
Defaults to No. Specifies whether scheduled firmware updates are enabled. If this registry value is set to Yes, Mouse Point runs a daily scheduled update at the time specified by `ScheduledUpdateTime`. See section 8. 4.

`forceFocusForUpdates=Yes or No`
Defaults to No. Specifies whether to force the K4u+ to switch channels to the Mouse Point host computer before running a scheduled firmware update. See section 8. 4.

`oneShotUpdateFilename=<file name>`
Specifies the full UNC path and file name of the firmware package for the next *one-shot* firmware update. For example:
\\UNX-NY-01\Amulet Hotkey\Test\k4u0P333.pkg
One-shot firmware updates are described in section 8. 3.

`remoteLogFilePath=<file path>`
Specifies specifies a UNC path to the remote folder where you want to save K4u+ log files. For example:
\\UNX-NY-01\AmuletHotkey\switches\logs
Log files are described in section 6. 7.

`remoteUpdatePath=<file path>`
Specifies the full UNC path of the folder containing the package file for *scheduled* firmware updates. For example:
\\UNX-NY-01\Amulet Hotkey\Switch Firmware
See section 8. 4 for details.

`scheduledUpdateTime=<time>`
Specifies the time (in 24 hour format) for scheduled firmware updates. Leading zeroes for hours and a colon separator between hours and minutes are both optional. Valid examples are 01:45, 1:45, 0145 and 145.
See section 8. 4 for details.

`usbPackageDownloadDisabled=Yes or No`
Defaults to No. Specifies whether to disable the *Update Switch Firmware and FPGA via USB* item in the Mouse Point menu. See section 5. 5 for details.

`usbStatusUploadDisabled=Yes or No`
Defaults to No. Specifies whether to disable the *Read Switch Status via USB* item in the Mouse Point menu. See section 5. 5 for details.

5.6.2 Firmware update results

Locate the following registry key:

`HKLM\SOFTWARE\Amulet Hotkey\USB updating results`

Within this key, the following registry values indicate the results of the recent firmware updates.

`OneShotUpdateResult=<result>`
Indicates the result of the most recent one-shot firmware update. You also use this registry value to trigger a firmware update. Possible values are:
0 No firmware update performed yet
1 Triggers a one-shot firmware update. See section 8. 3 for details.
2 Firmware update not needed
3 Firmware update successful
4 Firmware update failed
5 User cancelled firmware update before it started

`scheduledUpdateResult=<result>`
Indicates the result of the last scheduled firmware update. Possible values are:
0 No firmware update performed yet
2 Firmware update not needed
3 Firmware update successful
4 Firmware update failed
5 User cancelled firmware update before it started

6. Setting up the K4u+

This section describes how to set up the K4u+. In particular, it explains how to:

- Set up channel changing with a mouse pointer
- Synchronize screen savers on attached computers
- Cascade K4u+ switches to control additional computers
- Share a computer between two K4u+ switches
- Check the K4u+ status

6. 1 Attach computers to the K4u+

You can attach up to four computers to the connection sockets on the rear of the K4u+. Each channel (1 to 4) supports a USB type B port socket and a PS/2 & legacy Sun socket. Note that only one socket can be active per channel at one time. See section 2. 2 for socket details. Follow these steps:

1 Before attaching any computers to the K4u+, check that the DIP switches are set correctly. See section 3.

2 Connect a keyboard and mouse to appropriate front panel ports. See section 2. 1 for details.

3 Unless you intend that the K4u+ will draw its power from the attached computers, connect the K4u+ to its power supply and power it on.

After a short delay, the front panel LEDs illuminate.

4 Connect computers to appropriate ports on the rear panel of the K4u+. (You do not need to power down the computers while connecting them.)

6. 2 Set up channel changing by mouse pointer

Mouse Point enables you to change channels on the K4u+ by dragging your mouse pointer. See section 7. 1.

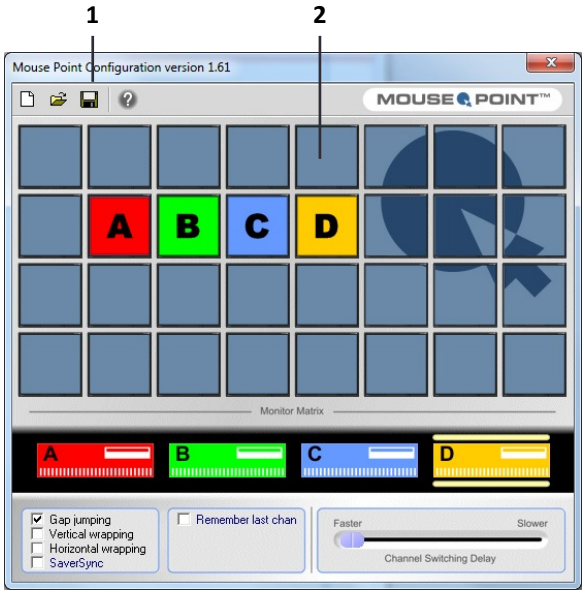
Use the Mouse Point Configuration utility to set up channel changing with a mouse pointer. This utility saves a graphical representation of how your computer screens are arranged in relation to each other. The K4u+ uses this information to determine when and how to switch channels when you drag the mouse pointer from one screen to another.

Follow these steps:

1 Right-click the Mouse Point icon in the system tray (Windows XP) or taskbar notification area (Windows 7) and choose **Launch Mouse Point Configuration**.

Mouse Point icon (**1**) *in taskbar notification area*

2 When the Configuration utility starts, use the monitor matrix to define the relative position of the screens associated with channels A, B, C and D.
In the example below, the screens are arranged in a simple row. Dragging your mouse pointer across screen A onto screen B triggers a corresponding K4u+ focus switch from A to B, and so on.



Mouse Point Configuration utility with Save button (**1**) *and monitor matrix* (**2**)

3 Click the Save button to save the Mouse Point configuration to a .k4c file. This file records how your screens are arranged. It is saved on the computer hosting the Configuration utility.

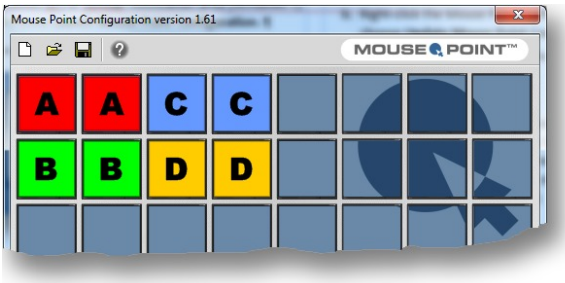
4 Now upload the configuration file to the K4u+.

   a. Ensure that the computer where you saved the .k4c configuration file is the live channel on the K4u+.

   b. Right-click the Mouse Point button (see step 1) and choose **Update Mouse Point Configuration**.

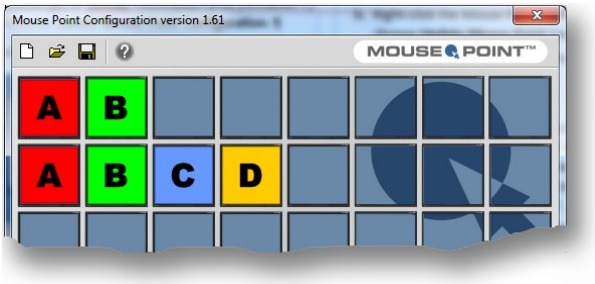
   c. Select the .k4c configuration file that you created in the previous step.

If required, you can specify any alternative screen arrangement. For example, if your four screens are arranged in a 2x2 grid, you can save a Mouse Point configuration like the one below. Here, you trigger a focus switch when you drag the mouse *down* from screen A to B, or *down* from screen C to D. In fact, you can switch focus by dragging the mouse up, down, left or right between screens.



Note: *In the monitor matrix, two or more adjacent cells for the same channel represent a single computer screen.*

Likewise, if screens A and B are arranged vertically in portrait mode but screens C and D are in conventional landscape mode, you can save a Mouse Point configuration like this. Here, a B-to-C focus switch is only triggered if you drag your mouse from *the lower half* of screen B across to screen C.



If horizontal wrapping is enabled in the above example, you can trigger an A-to-D focus switch by dragging your mouse left from screen. The focus wraps automatically back to D.

Note: *Mouse Point also supports vertical wrapping.*

6. 3 Set up SaverSync™ and Remember Last Channel

The SaverSync feature prevents screen savers on all attached USB computers from activating until *all* keyboard and mouse activity through the K4u+ has stopped. For details, see section 7. 4.

The Remember Last Channel feature enables the K4u+ to remember the last active channel after the unit is reset or power cycled. This feature also enables the K4u+ to remember which channel the hot-plug port is connected to.

Note: *SaverSync and Remember Last Channel are not Mouse Point features, but you must use the Mouse Point Configuration utility to configure these features on a K4u+.*

6.3.1 Requirements

Note the following requirements:

- **Mouse Point version:** SaverSync and Remember Last Channel require Mouse Point v1.61 or above. You can download the Mouse Point applet from the Support > Downloads page of the Amulet Hotkey website, www.amulethotkey.com.
- **Host PC:** Verify that Mouse Point is installed on a computer attached to the K4u+. The Mouse Point host PC does not need to be permanently attached to the K4u+. You can remove the host PC after uploading the Mouse Point configuration file to the K4u+. For example, you can use a laptop as your host PC, temporarily attaching it to K4u+ units as required.

6.3.2 Activate SaverSync and Remember Last Channel

You activate SaverSync and Remember Last Channel by selecting check boxes in the Mouse Point Configuration utility.

1 Change channels on the K4u+ to the Mouse Point host PC.

2 Right-click the Mouse Point icon in the system tray (Windows XP) or taskbar notification area (Windows 7) and choose **Launch Mouse Point Configuration**.

3 When the Configuration utility starts:

- Select the SaverSync check box.
- Select the 'Remember last chan' check box.

4 Click Save to save the updated Mouse Point configuration to a .k4c file.

5 Close the Configuration utility.

6 Right-click the Mouse Point button (see step 1) and choose **Update Mouse Point Configuration**.

7 Select the .k4c file that you saved in step 4.

8 When the update is complete, SaverSync and Remember Last Channel are active.

6. 4 Set up a cascade of multiple switches

Cascading two or more K4u+ switches allows you to increase the number of computers that you can control with a single keyboard and mouse.

In fact, you can even combine a K4u+ with K4u or K4vu switches in a single cascade. For simplicity, this guide only refers to K4u+ switches when describing cascade deployments.

Note: *When you cascade K4u+ units, you must use hot keys or a keyboard with dedicated channel keys (such as the Amulet Hotkey AHK3000E) to change channels. You cannot use Mouse Point or mouse buttons to change channels.*

6.4.1 Cascades with two switches

You can daisy-chain a secondary K4u+ to a master K4u+ with a USB cable, allowing you to control up to 7 computers from a single keyboard and mouse:

- Three computers are attached to channels 2, 3 and 4 respectively on the master K4u+.
- Four computers are attached to channels 1, 2, 3 and 4 respectively on the secondary K4u+.
- Channel 1 on the master K4u+ gives access to channels on the secondary K4u+.

To set up the cascade:

1 Plug a USB cable into the channel 1 USB port on the rear of your master K4u+ and into any hosted front panel USB port (A to D) on the secondary K4u+.

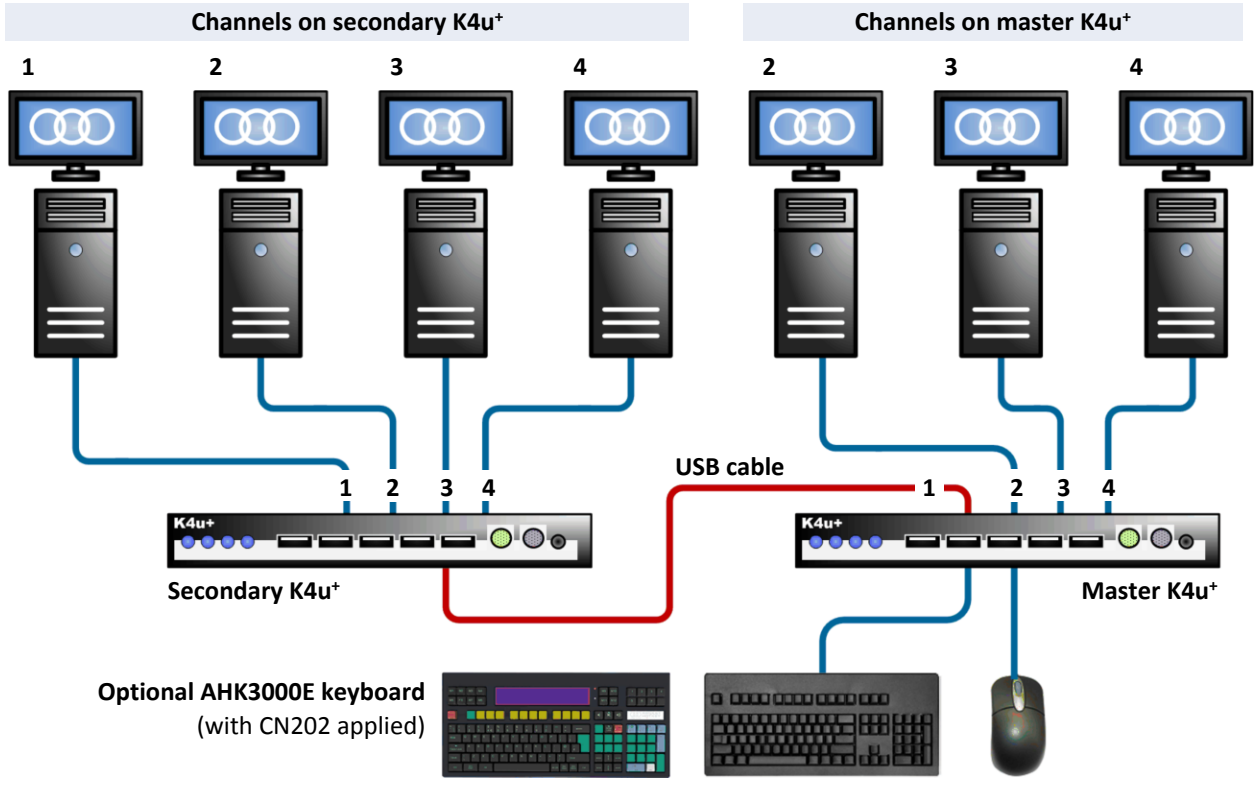
2 Disable channel changing with a mouse. To do this, set DIP switch A3 to OFF on both K4u+ units.

3 Specify different hot-key combinations on the master and secondary K4u+ units. For example, if the master K4u+ uses Alt + Space, set the secondary K4u+ to use Caps Lock + Alt.

To change channels using hot keys:

- For channels 2, 3 or 4 on the master K4u+, press Alt+Space plus 2, 3 or 4 as required. (Hold down all three keys together.)
- For channel 1, 2, 3 or 4 on the secondary K4u+, press Alt+Space plus 1. Then press Caps Lock + Alt plus 1, 2, 3, or 4 as required.

For example, to connect to channel 2 on the secondary K4u+, press Alt+Space+1 followed by Caps Lock+Alt+2.



Cascading two K4u+ units: *Channels 2, 3 and 4 on the master K4u+ are accessible directly. Channels 1, 2, 3 and 4 on the secondary K4u+ are accessible indirectly through channel 1 on the master K4u+.*

6.4.2 Cascades with multiple switches

You can connect up to four secondary K4u⁺ switches to a master K4u⁺ (five switches in total), allowing a user to control up to 16 computers from a single keyboard and mouse.

Note: *When cascading multiple K4u⁺ units, we strongly recommend that you use a keyboard with dedicated channel keys (such as the Amulet Hotkey AHK3000E) to change channels.*

In the example below, a master K4u⁺ connects to three secondary K4u⁺ units (A, B and C), giving access to 13 channels in total. To set up the cascade:

1 Using USB cables, connect:

- The channel 1 port on the rear of the master K4u⁺ to any hosted front panel USB port (A to D) on K4u⁺ A.
- The channel 2 port to any hosted front panel USB port (A to D) on K4u⁺ B.
- The channel 3 port to any hosted front panel USB port (A to D) on K4u⁺ C.
- The channel 4 port directly to a computer

2 Disable channel changing with a mouse. To do this, set DIP switch A3 to OFF on all the K4u⁺ units.

3 Specify different hot-key combinations on the master and secondary K4u⁺ units. Use the same hot-key combination on all secondary K4u⁺ units. For example, if the master K4u⁺ uses Alt+Space, set all secondary K4u⁺ switches to use Caps Lock + Alt.

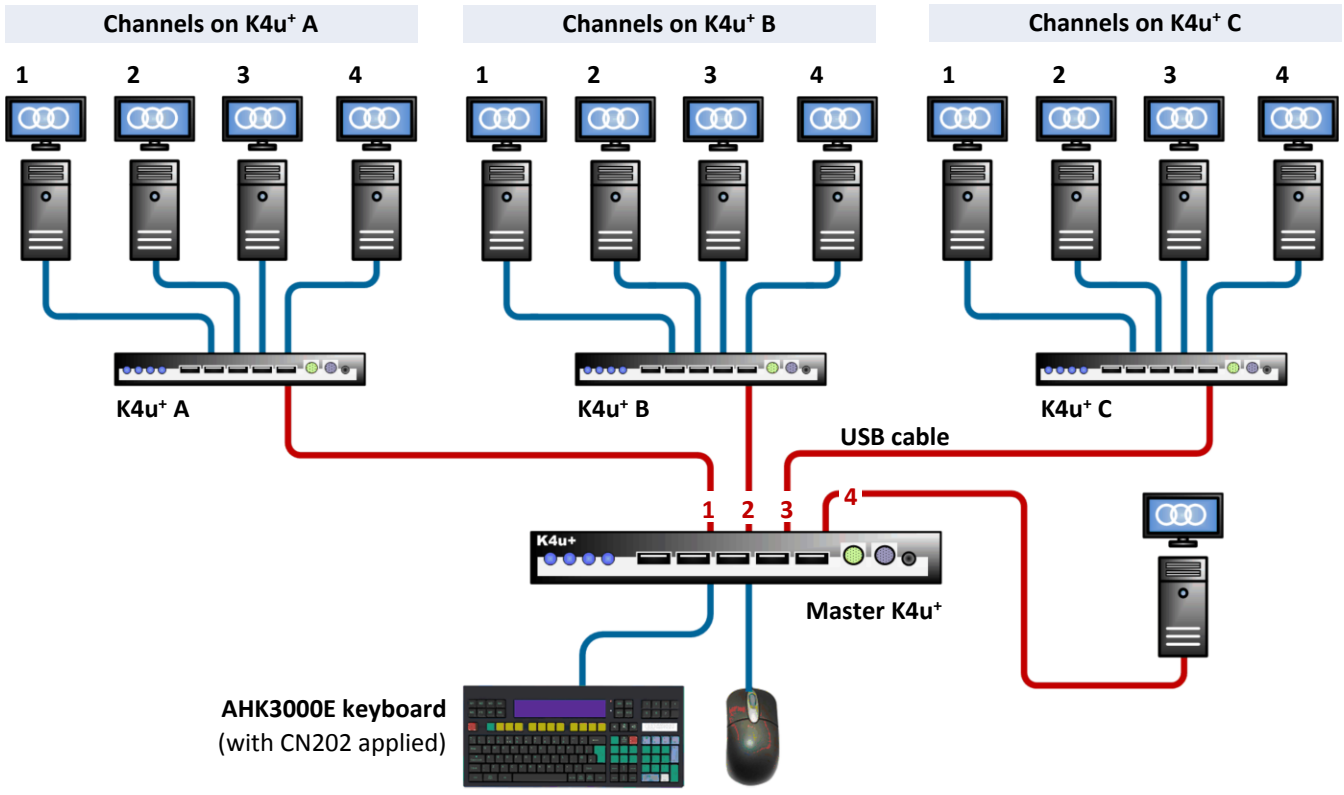
If you need to change channels using hot keys:

1 Connect to the required secondary K4u⁺ switch:

- Press Alt+Space plus 1 to connect to K4u⁺ A.
- Press Alt+Space plus 2 to connect to K4u⁺ B.
- Press Alt+Space plus 3 to connect to K4u⁺ C.

2 Press Caps Lock + Alt plus 1, 2, 3 or 4 to connect to the required channel on the secondary K4u⁺.

For example, to connect to channel 3 on K4u⁺ B press Alt+Space+2 followed by Caps Lock+Alt+3.



Cascading multiple K4u⁺ units: *On the Master K4u⁺, channel* **1** *connects to channels on K4u⁺ A; channel* **2** *connects to channels on K4u⁺ B; channel* **3** *connects to channels on K4u⁺ C; channel* **4** *connects directly to a single PC.*

6. 5 Set up channel sharing

You can connect two K4u+ switches to allow two users to control a single shared computer. You can share any supported computer type (USB, legacy Sun or PS/2).

In fact, you can even share a computer between a K4u+ switch and a K4u or K4vu switch. For simplicity, this guide only refers to K4u+ switches when describing how to share a channel.

Access to the shared computer is restricted on first-come, first-served basis. Only one user can control the shared computer at any time.

To take control of the shared computer, a user simply switches channels as normal. The computer remains assigned to that user until they relinquish control.

A user relinquishes control of the shared computer automatically when they stop using it and the K4u+ detects no further mouse or keyboard activity.

A pair of optional LEDs can indicate which user has control of the shared computer; see section 6.5.2.

6.5.1 Share a computer

In these instructions, the *master* K4u+ is attached directly to the computer that you want to share. The *secondary* K4u+ is attached to a hosted front panel USB port (A to D) on the master K4u+.

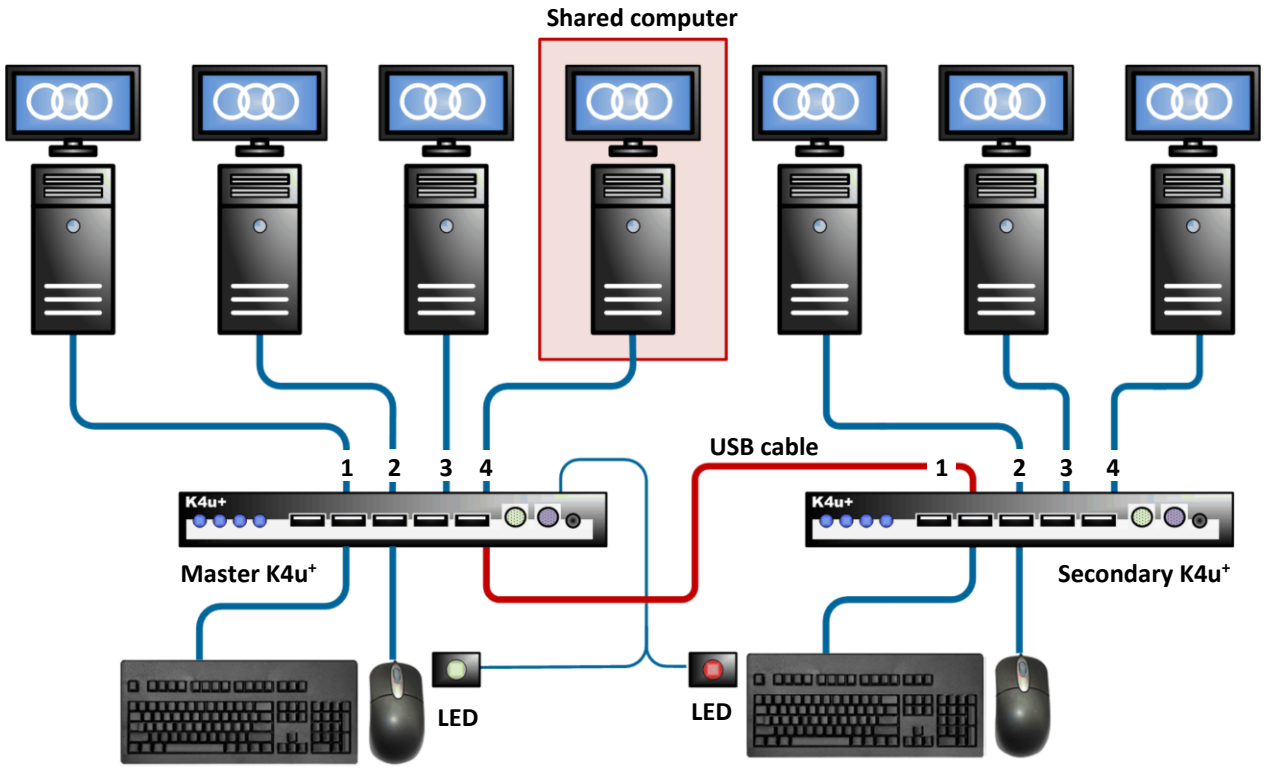
Follow these steps:

1 Attach the computer that you want to share to any channel port on the rear of the master K4u+. This channel becomes the *shared channel*.

2 Use DIP switches B1 and B2 on the master K4u+ to specify the shared channel:

To share	B1	B2
Channel 1	OFF	OFF
Channel 2	ON	OFF
Channel 3	OFF	ON
Channel 4	ON	ON

For DIP switch details, see section 3.



Sharing one computer between two K4u+ units: *In this example, channel 4 on the master K4u+ connects to the shared computer. Channel 1 on the secondary K4u+ connects to the master K4u+ and enables sharing mode. Indicator LEDs show that, in this example, the user connected to the master K4u+ currently has control of the shared computer.*

3 Plug a USB cable into any hosted USB port (A to D) on the front of your master K4u+ and into any rear panel USB port on the secondary K4u+ (channel 1 in this example).

The master K4u+ automatically enters sharing mode. Now set the inactivity timeout.

4 The shared computer becomes available to either user when the mouse and keyboard 'inactivity timeout' expires. You can set this timeout to 0, 2, 5 or 10 seconds.

Use DIP switches B3 and B4 on the master K4u+ to specify the inactivity timeout:

Inactivity timeout	B3	B4
0 seconds	OFF	OFF
2 seconds	ON	OFF
5 seconds	OFF	ON
10 seconds	ON	ON

6.5.2 Sharing indicator LEDs

Optional indicator LEDs are available to order. A pair of LEDs indicate to both users the status of the shared channel. If used, you must plug the sharing LEDs into the master K4u+ that is attached to the shared computer.

See section 7.7.2 for further details.

6. 6 Check the K4u+ status

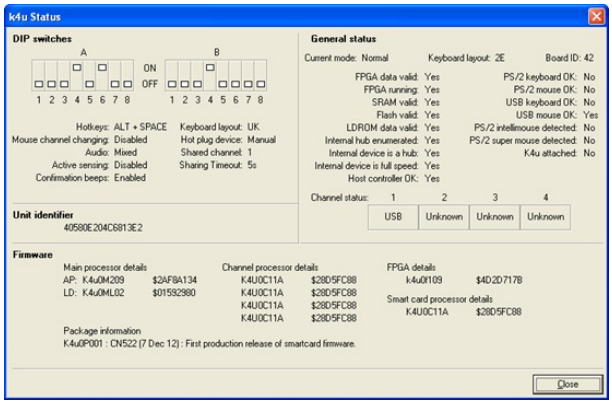
The Status dialog and About dialog, both launched from the Mouse Point menu, display useful details about the current status of the K4u+.

6.6.1 Status dialog

The Status dialog shows status, DIP switch and firmware version details for the attached K4u+. This allows you to determine, for example, whether a firmware update is required.

To display the Status dialog, right-click the Mouse Point icon and choose Read Switch Status via USB.

Note: *Administrators can optionally disable this menu item. See section 5. 5 for details.*



Status dialog

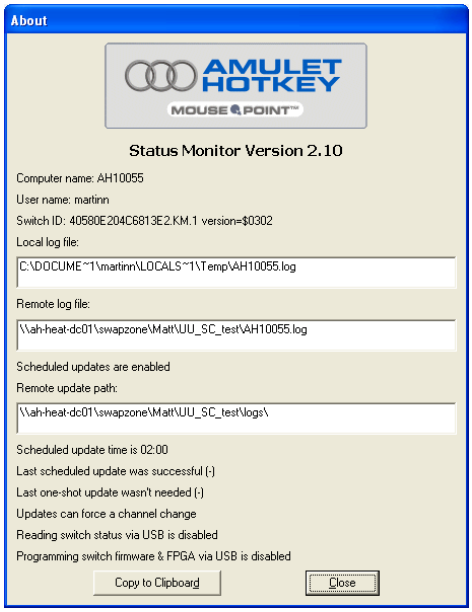
After viewing the Status dialog, the displayed details are written to local and, optionally, remote status files. These files are named <*computer name*>.k4u_info, where <*computer name*> is the Mouse Point host computer.

These status files are saved in the same folders as the local and remote log files. See section 6. 7 for details about log file locations.

6.6.2 About dialog

The About dialog contains status details for Mouse Point, including details about log file locations and recent and scheduled firmware updates.

To display the About dialog, right-click the Mouse Point button and choose About.



About dialog

6. 7 Log files

Details about the firmware updates are written to local and, optionally, remote log files. Log files are named <*computer name*>.log, where <*computer name*> is the source computer for the firmware update.

6.7.1 Local log files

A log file is saved on the source computer in the current user's \Temp folder. Specifically, the log file is saved to the folder identified by the $TEMP environment variable.

- **Windows 7 computers:** By default, $TEMP identifies the following folder within the current user's profile:
  %USERPROFILE%\AppData\Local\Temp

  For example, if user frankschaeffer is logged on to the source computer when the firmware updates, the log file is written to:

  C:\Users\frankschaeffer\AppData\Local\Temp

- **Windows XP computers:** By default, $TEMP identifies the following folder within the current user's profile:
  %USERPROFILE%\Local Settings\Temp

  For example, if the user *timsmith* is logged on to the source computer when the firmware updates, the log file is written to:

  C:\Documents and Settings\timsmith\Local Settings\Temp

6.7.2 Remote log files

You can optionally configure Mouse Point to write details to an additional remote log file. To do this, you must edit the registry on the source computer.

1 Locate the following registry key on the source computer:

```
HKLM\Software\Amulet Hotkey
  \USB updating config
```

2 In this registry key, edit the following registry value:

`remoteLogFilePath`

Set this value to the UNC path of the target folder where you want to save remote log files. For example:

\\UNX-NY-01\AmuletHotkey\switches\logs

By default, this registry value is blank and no remote log file is created.

Note: *The user logged on to the source computer when the update runs must have Write permission to the target folder.*

7. Using the K4u+

This section explains the key operations that end users need to know when using computers attached to a K4u+. These include:

- Changing channels
- Hot plugging a USB device to an attached computer
- Setting up audio
- Using smart cards
- Cascading K4u+ switches to control up to 16 computers
- Sharing a computer between two users

7. 1 How to change channels

The primary function of the K4u+ is to switch a single mouse and keyboard between several attached computers. The K4u+ provides several simple methods for users to select which computer is the focus of keyboard and mouse activity. These methods are covered in the following sections.

Optional focus LEDs are available to visually indicate which channel has mouse and keyboard focus. For details, see item 6 in section 2. 2.

Note: *The K4u+ can directly support up to four computers, each attached to a channel on the K4u+. When this manual refers to changing channels or changing the focus of keyboard and mouse activity, these are equivalent terms that mean the same. They both refer to switching the K4u+ from one attached computer to another.*

7.1.1 Hot keys

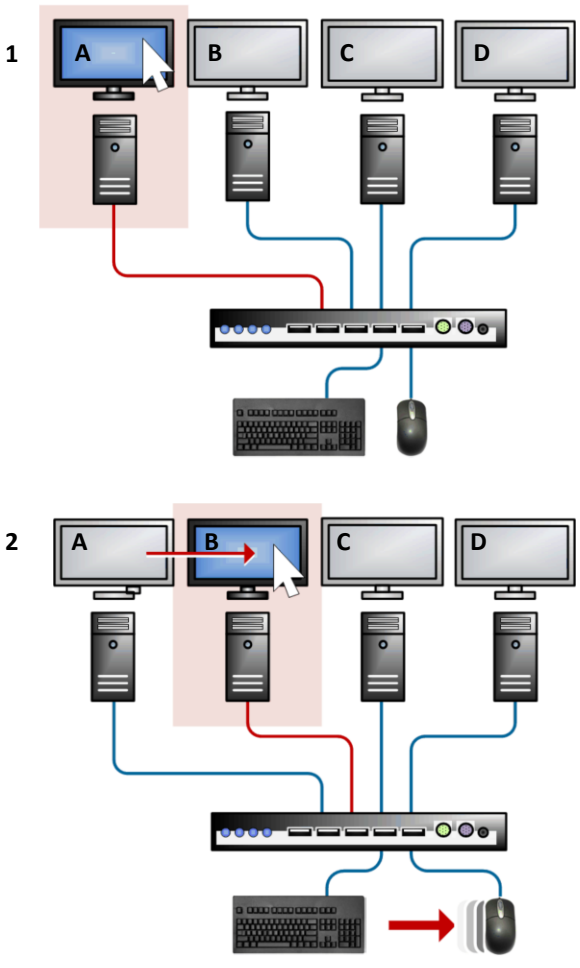
To change channels with hot keys, do one of the following:

- Hold down the hot keys and press 1, 2, 3, or 4 on the QWERTY section of the keyboard to change directly to a channel.
- Hold down the hot keys and press 4 or 6 on the numeric keypad to cycle around the channels.
- Press the Scroll Lock key twice in quick succession to change up a channel. (You do not need to hold down the hot keys.)

  Hot keys are described in section 4.

7.1.2 Mouse Point

Mouse Point® is an intuitive secure system for changing channels on the K4u+ using your mouse. The location of the mouse pointer on the active screen acts as a trigger for channel changes. It allows you to drag your mouse pointer from one screen to another, causing the mouse and keyboard focus to follow your mouse pointer. Setting up channel changing by mouse pointer is described in section 6. 2.



*Changing channels with Mouse Point. In this example, a user drags the mouse pointer from screen **A** to **B**, so changing the focus from computer A to B.*

Mouse Point operates over the USB connection from the K4u+ to the attached computers and requires an application to be running on each computer.

Mouse Point periodically reports the cursor screen position to the K4u+ periodically. When a user moves the mouse pointer off the side of the screen, the keyboard and mouse focus switches to the computer attached to the adjacent monitor. To accomplish this, Mouse Point stores a graphical representation of the monitor locations in a database on the K4u+.

7.1.3 Mouse buttons

To change channels by pressing mouse buttons:

1 Hold down the centre mouse button.

2 Click the right or left mouse buttons to cycle around the channels.

To use the centre mouse button in an application on an attached computer, hold down the centre mouse button. Then move the mouse a few pixels. This causes the mouse buttons to operate normally. Alternatively, disable channel changing with mouse buttons (set DIP switch A3 to OFF). Then use one of the other supported methods to change channel.

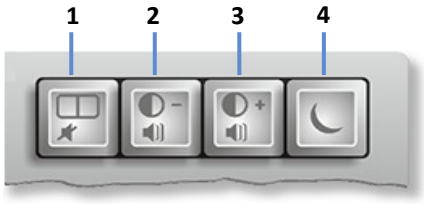
7.1.4 K4 Controller

You can connect an optional K4 Controller to the K4u+ for single button channel selection with focus indication. The K4 Controller comprises four illuminated push-buttons in a compact case. It can be placed alongside a keyboard and allows the K4u+ to be located out of reach under a desk.

K4 Controller

7.1.5 Channel keys on Sun USB keyboards

(Applies to Sun® USB keyboards only) Press the keys below to select channel 1, 2, 3 or 4 directly:



Channel keys on Sun USB keyboard

7.1.6 Skip unused channels (active sensing)

With active sensing enabled when you switch channels, the K4u+ skips any channel that *appears* to have nothing connected to it (the computer on that channel is either switched off or an unknown type).

Active sensing is enabled by default. Set DIP switch A5 to disable or re-enable it. For DIP switch details, see section 3.

7. 2 Hot plugging USB devices

The hot-plug port on the K4u+ front panel (see section 2. 1) enables you to connect a compatible USB device such as a printer or memory stick to any computer attached to the K4u+.

You can attach a USB hub to the hot-plug port to support multiple devices, but you must use a self-powered hub in this situation ie, a hub with its own power supply.

You can switch the hot-plugged device to a specific channel using hot keys or you can configure the hot-plug port to automatically follow the keyboard and mouse focus (see below). The computer attached to the selected channel detects the device as being hot-plugged and, if supported, loads the appropriate drivers.

There are two ways to switch the hot-plug port, plus any attached USB devices, to a specific channel:

- **Hot-plug follows the keyboard and mouse focus**
  When DIP switch B7 is ON, the hot-plug port switches automatically to the current channel.
- **Hot-plug switched manually with hot keys + U**
  When DIP switch B7 is OFF, press the hot keys + U combination to manually switch the hot-plug port to the current channel. The hot-plug port remains on this channel until you manually switch again, even if the keyboard and mouse focus changes to a different channel. For hot key details, see section 4.

7. 3 Audio switching and mixing

You can set up the K4u+ to *switch* or *mix* the stereo audio output from each attached computer through to the common audio output on the K4u+ front panel.

When audio is *mixed*, the user hears sounds originating from any of the attached computers, regardless of which channel has keyboard and mouse focus. To set up audio mixing, set DIP switch A4 to ON.

When audio is *switched*, the user only hears sounds from the computer that has keyboard and mouse focus. To set up audio switching , set DIP switch A4 to OFF.

You can also mute (or unmute) audio using hot keys:

- **To mute a single channel**

  (Available in mixed audio mode only.) You can mute a channel to prevent its audio signal mixing into the K4u+ audio output. You can mute as many channels as you want.

  a. Switch to the channel you want to mute.

  b. Press the hot keys + Backspace.

  To unmute a channel, simply repeat the procedure.

- **Mute all audio output from the K4u+**

  To turn off or mute *all* audio, press the hot keys + 0 (zero on the QWERTY section of the keyboard).

  When the K4u+ is muted, the focus LED on the front of the unit will flash.

  To re-enable audio, press the hot keys + 0 again; the focus LED stops flashing.

For DIP switch details, see section 3. For hot key details, see section 4.

Note: *Audio settings made with hot-keys are lost during a power cycle of the unit. Also, the 'mute all' option does not affect the internal beeper on the K4u+.*

7. 4 Synchronize screen savers

By activating the SaverSync™ feature, you can synchronize screen savers on attached USB computers so they only activate when *all* keyboard and mouse activity through the K4u+ has stopped.

Instructions for activating SaverSync are in section 6. 3.

7.4.1 Why is SaverSync needed?

When multiple computers are attached to a K4u+ switch, the screens for these computers remain connected and visible. The user can therefore see at least four video displays at any time. Typically, the user needs these video displays to be constantly visible and not blanked by a screen saver. Therefore the screen savers on computers attached to a K4u+ are often disabled.

However, some organisations have a security policy that insists screen savers remain active. This can adversely affect employees using a K4u+ if vital data is suddenly hidden. For example, if a user works on a single attached computer for a long period, other computers attached to the K4u+ are left idle. Consequently, the screen savers will activate on these idle computers so their video displays are no longer visible, even though the user is still working at their desk. SaverSync fixes this problem.

7.4.2 How does SaverSync work?

When SaverSync is enabled, it monitors keyboard and mouse activity through the K4u+. While it detects activity, SaverSync continually signals all attached computers to reset their screen saver timeout counters. This prevents the screen saver from activating.

When keyboard and mouse activity stops and data is no longer passing through the K4u+, the screen savers operate as normal, activating after the associated timeout expires.

Note that screen saver activation occurs at the operating system level and has no impact on applications running on attached computers. Also, SaverSync does not compromise K4u+ security in any way. The user's key press codes and mouse movement data are sent only to the computer attached to the active channel.

Note: *SaverSync only operates with computers using USB connections to the K4u+.*

7. 5 Support for smart cards

The K4u+ supports smart cards, including stand-alone readers and readers built into a USB keyboard. This allows a user to securely log on to all PCs connected to the K4u+ using a single smart card.

The K4u+ can accept a USB smart card reader on any hosted front panel USB port (A to D); see section 2. 1 for port details.

Note: *The K4u+ does not support multiple card readers concurrently attached to a single unit.*

7.5.1 Switching the smart card focus to a different PC

The K4u+ automatically switches the smart card focus to the current PC (that is, the PC with keyboard and mouse focus) *only when the current PC requests access to the smart card*.

The smart card focus does not immediately follow the keyboard and mouse focus to the current PC. If the PC with keyboard and mouse focus does not request access to the smart card, the smart focus remains on the previous channel. The K4u+ therefore allows the previous channel continued access to the smart card.

When the current PC requests access to the smart card, the K4u+ pauses before switching the smart card focus. Specifically, it waits until no smart card activity has been detected on the previous channel for three seconds. This delay allows any smart card activity on the previous channel to complete before the focus is switched and the smart card is reset.

Example A: Smart card focus switches to different PC

The PC attached to channel 1 has keyboard and mouse focus *and* smart card focus. The user then switches to the computer attached to channel 2. Initially, the smart card focus remains on channel 1. Some minutes later, the user attempts to authenticate and send an email from the channel 2 computer. Channel 2 therefore requests access to the smart card. If the K4u+ detects no further mouse and keyboard activity on channel 1, it switches the smart card focus to channel 2.

Example B: Smart card focus does not switch

The PC attached to channel 1 has keyboard and mouse focus *and* smart card focus. The user then switches to the channel 2 computer. As in example A, the smart card focus remains on channel 1. This time, however, none of the user's activity on channel 2 requires authentication and so channel 2 never requests access to the smart card. Instead, channel 1 keeps the smart card focus, allowing it to run background authentication tasks (such as periodically validating access to a secure web site).

7.5.2 Security

Note the following:

- A user must log into each attached PC individually ie, they must switch to each PC in turn and enter their PIN. The K4u+ does not log the user into all attached PCs automatically.
- When the smart card focus switches to a different PC, the K4u+ resets the smart card. Other PCs attached to the K4u+ can no longer access smart card-controlled resources.
- The K4u+ immediately locks all computers on smart card-enabled USB channels when the card is removed (if the computers are configured to do so).
- To unlock a computer, a user can press the hot keys + C to emulate removing and re-inserting a smart card.

  This frees the user from needing to remove and re-insert the physical card. (It also eliminates the need to lock all PCs - by removing the smart card - simply to unlock a single PC.)

  For hot key details, see section 4.

7.5.3 Keyboard support

The K4u+ correctly operates with:

- Dell SK-3205 USB keyboard with inbuilt card reader
- Gemalto PC USB-TR standalone card reader

Other card readers are also supported. A full list is available on request.

Note: *The K4u+ does not support HP KUS0133 USB keyboards with integral card reader with a spares part number ending in -032.*

7. 6 Control extra computers by cascading multiple K4u+ switches

Cascading two or more K4u+ switches allows you to increase the number of computers that you can control with a single keyboard and mouse.

For example, you can connect a secondary K4u+ to a master K4u+ with a USB cable, allowing you to control up to seven computers from a single keyboard and mouse. In fact, you can connect up to four secondary K4u+ switches to a master K4u+ (five switches in total), allowing a user to control up to 16 computers. See section 6. 4 for details about setting up a cascade and example diagrams.

Note: *When you cascade K4u+ switches, you must use hot keys or a keyboard with dedicated channel keys (such as the Amulet Hotkey AHK3000E) to change channels. You cannot use Mouse Point or mouse buttons to change channels.*

7.6.1 Change channels by using hot keys

To change channels on cascading K4u+ switches, you must specify different hot-key combinations on the master and secondary K4u+ units.

For example, if the master K4u+ uses Alt +Space, set the secondary K4u+ to use Caps Lock + Alt. To change channels using these hot keys:

- For channels 2, 3 or 4 on the master K4u+, press Alt+Space plus 2, 3 or 4 as required. (Hold down all three keys together.)
- For channels 1, 2, 3 or 4 on the secondary K4u+, press Alt+Space plus 1. Then press Caps Lock + Alt plus 1, 2, 3 or 4.

For example, to connect to channel 2 on the secondary K4u+, press Alt+Space+1 followed by Caps Lock+Alt+2.

7.6.2 Changing channels when Active Sensing is enabled

If active sensing is enabled (see section 7.1.6) when two K4u+ switches are deployed in a cascade, the channel changing sequence is potentially confusing. Be aware of the ordinal position of each channel in the sequence:

Switch	Channel	Ordinal position
Master K4u+	1	n/a
Master K4u+	2	2nd
Master K4u+	3	3rd
Master K4u+	4	4th
Secondary K4u+	1	1st
Secondary K4u+	2	5th
Secondary K4u+	3	6th
Secondary K4u+	4	7th

7. 7 Share a computer between two K4u+ switches

Connecting two K4u+ switches allows two users to control a single shared computer. You can share any supported computer type (USB, legacy Sun or PS/2). See section 6. 5 for setup details and example diagram.

Access to the shared computer is restricted on first-come, first-served basis. Only one user can control the shared computer at any time.

- To take control of the shared computer, a user simply switches channels as normal and then presses a key or uses the mouse. The computer remains assigned to that user until they relinquish control.
- Control is relinquished automatically when a user stops using a shared computer and no further mouse or keyboard activity is detected. Specifically, control is relinquished when the sharing timeout expires. This timeout is set by DIP switches B3 and B4. See section 3.

7.7.1 Exclusive mode

Normally when you stop using the shared computer, it automatically becomes available to either user after the mouse and keyboard 'inactivity timeout' expires (between 0 and 10 seconds). However, you can keep control of the shared computer after this timeout expires by invoking *exclusive mode*.

To invoke exclusive mode, press the hot-keys plus '*' on the numeric keypad. To cancel exclusive mode, press the hot keys plus '*' again.

Note: *Exclusive mode is cancelled automatically if the keyboard is removed or fails, or if the cable connecting the two K4u+ units is removed.*

7.7.2 Sharing indicator LEDs

Optional indicator LEDs are available to order. A pair of LEDs indicates to both users the status of the shared channel.

The LEDs are attached to a 2.5m or 5m cable that plugs into the rear Feature Connector port on the master K4u+ that is attached to the shared computer.

The LEDs display amber, green or red:

Amber	The shared computer is available. It is not currently being used.
Green	You have control of the shared computer.
Red	Your colleague has control of the shared computer. It is not available to you.

Note: *You cannot use sharing LEDs and focus LEDs together. Because both LEDs plug into the Feature Connector port, the K4u+ can only support one set of LEDs at a time. For port details, see item 6 in section 2. 2.*

8

8. Updating the firmware

Amulet Hotkey periodically releases firmware updates for the K4u⁺ to add new compatibility or new features and to fix issues reported by customers.

If you register on the Amulet Hotkey website, you can choose to be notified about these updates and decide whether or not you want to install them.

You typically update the K4u⁺ firmware using a USB connection. However, updates using a serial connection are also supported. Both methods are simple and safe.

Important! *End-users must not switch channels while a firmware update is underway because this will cause the update to stop. This may leave the K4u⁺ in an unstable state; see section 8. 6.*

8. 1 Firmware updates over a USB connection

You can install packages containing firmware updates from any USB computer attached to the K4u⁺. In the following sections, this is your *'source computer'*.

Three update methods are supported:

- **Local manual updates:** Any user with access to the desktop on the source computer can directly update the K4u⁺ firmware by clicking *Update Switch Firmware and FPGA via USB* in the Mouse Point menu. See section 8.2.
- **Remote manual updates:** Administrators can update the firmware for a specific K4u⁺ by remotely editing the registry on a remote source computer and invoking a 'one-shot' update. See section 8. 3.
- **Remote scheduled updates:** Administrators can schedule a firmware update on multiple K4u⁺ units by pre-editing the registry on each source computer. See section 8. 4.

Note the following requirements:

- **OS:** Firmware updates over a USB connection are launched from a source computer attached to the K4u⁺. Firmware updates are only supported from source computers running Windows XP or Windows 7.
- **Update package:** For each update method, the firmware update package can be in a local folder on the source computer or on a network share that is accessible to Mouse Point from the source computer.
- **Mouse Point:** Firmware updates are driven by the Mouse Point utility; see section 5. The source computer must therefore be running the Mouse Point tray application 2.10 or later.

  You can download Mouse Point from the Support > Downloads page of the Amulet Hotkey website, www.amulethotkey.com.

8. 2 Local manual updates (USB)

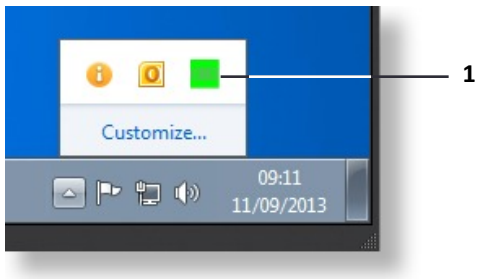
This section describes how to update the K4u⁺ firmware directly from the desktop on the source computer.

1 Save the .pkg file containing the firmware update to a convenient location. This can be a folder on the source computer or a network share.

2 On the source computer, right-click the Mouse Point icon in the taskbar notification area (Windows 7) or system tray (Windows XP).

3 (Optional) Click **Read Switch Status via USB**. The resulting Status dialog shows the firmware version currently on the K4u⁺.

4 Click **Update Switch Firmware and FPGA via USB**.



Mouse Point icon (**1**) *in taskbar notification area*

5 In the Locate Package dialog, select the .pkg file containing the firmware package.

6 In the resulting 'Auto-Switch' dialog, confirm the package details. If the details are correct, click Yes to start the update.

7 When the update completes, the results are written to the local and remote log files. See section 6. 7.

8 (Optional) Confirm that the firmware version has been updated on the K4u+. To do this, click **Read Switch Status via USB** to display the Status dialog.

8. 3 Remote manual updates (USB)

This section describes how to run a one-shot firmware update for a specific K4u+ by remotely configuring the source computer. One-shot updates are useful if, say, you want to test a new firmware release before rolling it out across your organization.

Note: *When applying a firmware update, Mouse Point does not check the firmware version being overwritten. Therefore, we recommend that you temporarily disable scheduled firmware updates on the source computer before applying a one-shot firmware update. If you do not, there is a risk that the next scheduled update will overwrite the one-shot update with the previous version of firmware.*

To run a remote manual update:

1 Verify that the Remote Registry service is running on the remote source computer.

2 Save the .pkg file containing the firmware update to a convenient location. This can be a folder on the source computer or a network share.

Note: *Do not save this one-shot update file in the same folder as your scheduled update package files.*

3 Connect to the registry on the remote source computer. For example, you can use the Connect Network Registry feature in the Registry Editor.

4 In the remote registry, locate this registry key:

```
HKLM\Software\Amulet Hotkey
  \USB updating config
```

5 In this registry key, edit the following registry value:

`OneShotUpdateFilename`

Set this value to the full UNC path and file name of the .pkg file containing the firmware update. For example:

\\UNX-NY-01\Amulet Hotkey\Test\k4u0P333.pkg

6 In the remote registry, locate this registry key:

```
HKLM\Software\Amulet Hotkey
  \USB updating results
```

7 In this registry key, edit the following registry value:

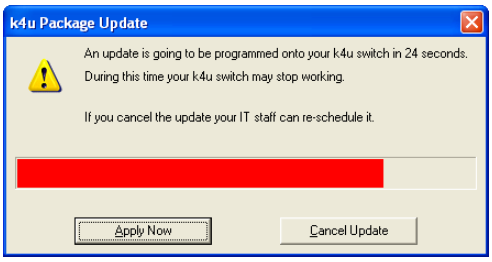
`oneShotUpdateResult`

Set this registry value to 1. This registry change alerts Mouse Point on the source computer that a firmware update is required.

8 Click away from the `oneShotUpdateResult` registry value. For example, you can close the Registry Editor.

The firmware update starts in around 10 seconds.

9 When the update starts, a warning dialog displays a 30 second countdown. This allows any user currently working on the source computer to cancel the firmware update.

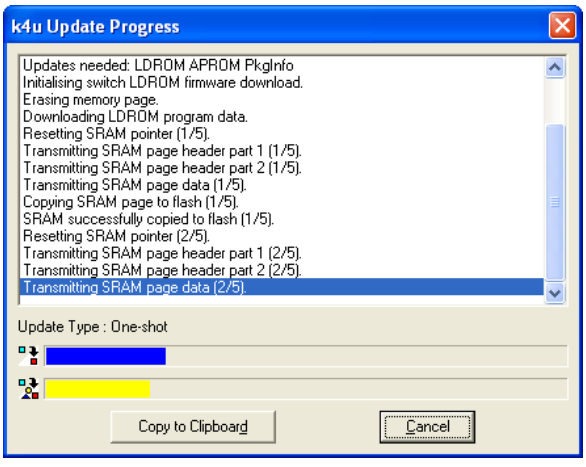


Package Update warning dialog

10 After the update starts, the Update Progress dialog displays. When the update completes, the final message reads "Package copied successfully".

Note: *Users can optionally copy the progress messages to the clipboard, for example, for diagnostic purposes.*

Important! *Users can also optionally cancel the update while it is in progress. However, doing so may leave the K4u+ in an unstable state.*



Update Progress dialog

11 When the update completes, the results are written to the local and remote log files. See section 6. 7.

Also, the `oneShotUpdateResult` registry value (see step 7) now indicates the update outcome. Possible values are:

0 No firmware update performed yet
2 Firmware update not needed
3 Firmware update successful
4 Firmware update failed
5 User cancelled firmware update before it started

8. 4 Remote scheduled firmware updates (USB)

This section describes how to schedule a firmware update for multiple K4u+ units. These updates require you to pre-edit registry values on each source computer.

Note: *For any individual K4u+, you must only use one instance of Mouse Point for scheduled firmware updates. If a user has multiple Mouse Point instances running (one on each computer attached to their K4u+), we recommend that you only enable scheduled updates for one of these instances.*

Important! *A user must be logged on to the source computer when a scheduled update runs. If you want to update multiple K4u+ units outside of office hours, you need to manage this requirement. For example, if users lock their source computers without logging off before they go home, the firmware update will run successfully.*

1 Designate a network folder to store the .pkg files containing firmware updates. This folder must be accessible from each remote source computer.

Notes

- *Do not save multiple firmware packages in this folder. If Mouse Point detects multiple packages, it only installs the first package that it finds, which may not be the package containing the latest firmware.*
- *Similarly, do not save one-shot update files in this folder. Any one-shot firmware update installed from this folder will be overwritten when the next scheduled update runs.*

2 Using your preferred deployment method, make the following registry changes on each remote source computer.

3 Locate the following registry key:

```
HKLM\Software\Amulet Hotkey
  \USB updating config
```

4 In this registry key, edit the following registry values:

`enableScheduledUpdates`

Set this value to Yes to enable scheduled firmware updates. Set it to No to disable scheduled updates.

If Mouse Point is installed on multiple computers attached to a K4u+, you must only enable scheduled updates on *one* attached computer. For example, set this registry value to Yes on one computer; set it to No on all other attached computers.

`forceFocusForUpdates`

Note: *Firmware updates can only run if the source computer has focus when the update starts.*

Set this value to Yes to enable the source computer to acquire the K4u+ focus, if required. You need to do this if there is a risk that another computer attached to the K4u+ has focus when the update is due to start.

When this registry value is set to Yes, the K4u+ changes focus automatically to the source computer if no mouse or keyboard activity is detected on other attached computers. After the update has been applied, the K4u+ reverts to the original channel.

If the K4u+ cannot change focus to the source computer, or if this registry value is set to No, the scheduled update times out and fails.

`RemoteUpdatePath`

Set this value to the full UNC path of the folder you chose in step 1. This folder contains the .pkg files for scheduled firmware updates. For example:

\\UNX-NY-01\Amulet Hotkey\Switch Firmware

`scheduledUpdateTime`

Set this value to the time (in 24 hour format) when you want firmware updates to run each day.

Leading zeroes for hours and a colon separator between hours and minutes are both optional. Valid examples are 01:45, 1:45, 0145 and 145.

Note: *A random delay of between 1 and 10 minutes is applied to the start time to alleviate network congestion in environments where many K4u+ units need to be updated at the same time.*

5 At the scheduled update time, the firmware update runs automatically.

A warning dialog displays a 30 second countdown. This allows any user working on the source computer at that time to cancel the firmware update.

6 After the update starts, the Update Progress dialog displays. When the update completes, the final message reads "Package copied successfully".

Important! *Any user working on the source computer at that time can also optionally cancel the update while it is in progress. However, doing so may leave the K4u+ in an unstable state.*

7 When the update completes, the K4u+ automatically restarts. Mouse Point notifies the user and validates the K4u+ when it restarts. If it detects a problem, it stops the firmware update; this may leave the K4u+ in an unstable state.

8 Finally, the update results are written to the local and remote log files. See section 6. 7.

Also, the `scheduledUpdateResult` registry value indicates the update outcome. Possible values are:

0 No firmware update performed yet
2 Firmware update not needed
3 Firmware update successful
4 Firmware update failed
5 User cancelled firmware update before it started

Find this value in the following registry key on the source computer:

```
HKLM\Software\Amulet Hotkey
  \USB updating results
```

8. 5 Firmware updates over a serial connection

(This method has been largely superseded by firmware updates over a USB connection.)

The K4u+ has a rear panel serial port that connects to the serial port on the computer that you will use to drive the firmware update (this is your *source computer*). Typically, your source computer is a laptop which holds copies of the required configuration utility and firmware files. You then connect the laptop to your K4u+ using a serial cable.

8.5.1 Update requirements

Before updating the K4u+ firmware over a serial connection:

- Save a copy of the configuration utility (k4u2.exe) on your source computer. You can download this utility from the Amulet Hotkey website:
  a. Log in to the Support > Downloads page of the Amulet Hotkey website, www.amulethotkey.com
  b. Expand the Legacy products link
  c. Download the following K4u zip:
  K4u-K4vu_Test_Configuration_Application.zip
  This zip contains the k4u2.exe configuration utility.

  Note: *This utility is used to upgrade firmware on the K4u, K4vu and K4u+ products.*
- Connect your source computer to the K4u+ rear panel serial port using a direct M-F serial cable. If required, a suitable cable is available from Amulet Hotkey Technical Support (part no. CL-XX01-2014). See section 2. 2 for port details.
- Verify that you have correct versions of the firmware upgrade files. These files have .DLD and .K4U extensions. They are typically listed in the ECN or CN document associated with the firmware update. Contact Amulet Hotkey technical support if in doubt.

  You can save the firmware files directly onto your source computer or in an accessible network folder.

8.5.2 Updating the K4u+ firmware

Ensure that the K4u+ is powered up with an external PSU (power supply).

1 Run the configuration utility, k4u2.exe, on your source computer.

2 Click the Find K4u/K4vu button.

The utility confirms whether it has found a K4u+.

3 Click the View Status button and note the existing firmware versions on your K4u+.

4 Now run the firmware update. Depending on the type of update required, you may need to run one, two or three separate updates:

- If you need to update the bootloader firmware, go to step 6 (These updates are rarely needed.)
- To update the processor firmware, go to step 7.
- To update the FPGA configuration, go to step 8.

5 Update the bootloader firmware:

a. Click the Update Firmware button in the K4u section.

b. In the Load Firmware dialog, browse to the required .DLD file.

c. In the Confirm dialog, confirm the firmware details in the LDROM file and click Yes to start the update.

The configuration utility shows update progress. The update is typically very fast (just a few seconds). When the update is complete, the left pane displays "ISP completed successfully".

d. Continue to step 7 to update the main processor firmware.

Important! *If the update failed, the left pane displays "ISP Failed". Click the Exit button to quit the configuration utility. Then retry the update process. If the update continues to fail, contact Amulet Hotkey technical support. Have the following information ready: unit serial number, production version number, ECN and CN numbers.*

6 Update the main processor firmware:

a. Click the Update Firmware button in the K4u section.

b. In the Load Firmware dialog, browse to the required .DLD file.

c. In the Confirm dialog, confirm the firmware details for the Main Processor and Channel Processor. Then click Yes to start the update.

d. The left pane of the configuration utility shows update progress. The update typically takes a couple of minutes.

e. When the update is complete, the left pane displays "ISP completed successfully".

While the update is running, the power LED flashes amber and magenta. When update is complete, each channel LED briefly displays green.

f. Continue to step 8 to update the FPGA configuration.

Important! *If the update failed, the left pane displays "ISP Failed" and the channel LEDs display red. See the warning in step 6 for instructions.*

7 Update the FPGA configuration:

a. Click the Update FPGA Configuration button in the K4u section.

b. In the Load FPGA Configuration dialog, browse to the required .K4U file.

c. In the Confirm dialog, confirm the FPGA file details and click Yes to start the update.

d. The left pane of the configuration utility shows update progress. The update typically takes slightly longer than the processor firmware update.

e. When the update is complete, the left pane displays "Data transmitted successfully".

Important! *If the update failed, see the warning in step 6 for instructions.*

8 Click the View Status button to confirm that the new firmware versions have been installed on your K4u+.

9 On the configuration label on the underside of the K4u+, write the ECN or CN number associated with the firmware update.

8. 6 Firmware update failures

If a user changes channels away from the source computer while an update is underway, or if the K4u+ switch is removed or reset unexpectedly, the firmware update stops. This may leave the K4u+ in an unstable state.

Note that even if you cannot access a K4u+ over a USB connection, you can always recover it using its serial interface.

9. Using the K4u+ with trading keyboards

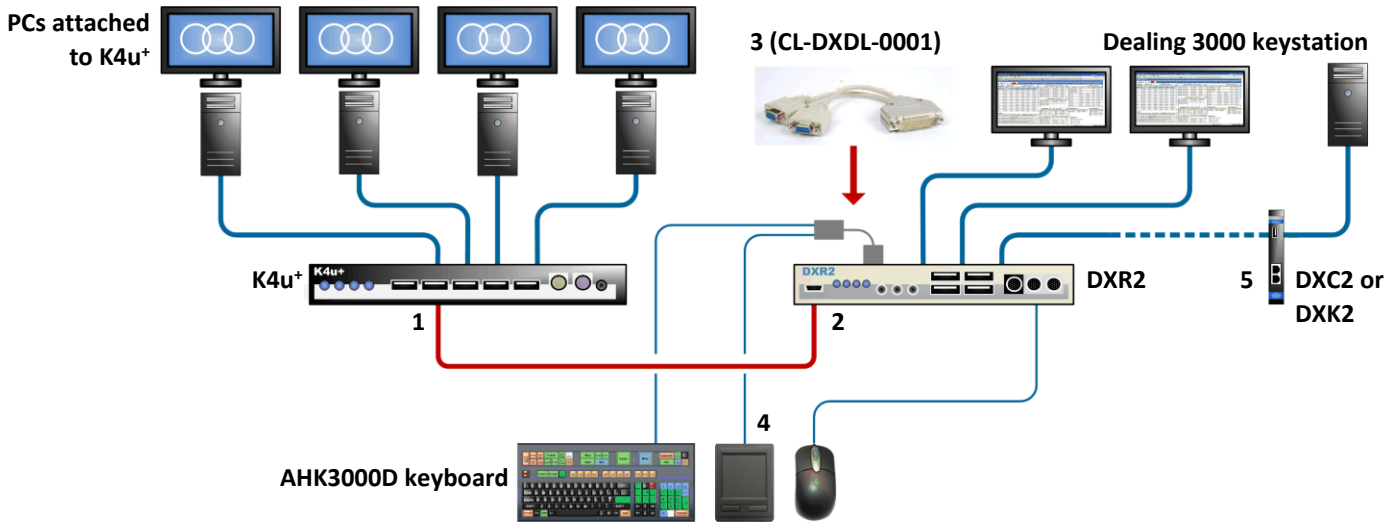
The K4u+ works with the Amulet Hotkey AHK3000D™ and Bloomberg® trading keyboards. This section describes how to set up the K4u+ to support these keyboards.

9. 1 Amulet Hotkey AHK3000D keyboard

The AHK3000D trading keyboard supports the Thomson Reuters® Dealing 3000™ (D3k) protocol and is approved for use with the D3k service by Thomson Reuters.

If you want to use the AHK3000D keyboard to control a remote Dealing 3000 keystation and up to four computers attached to the K4u+, you must use an extender such as the Amulet Hotkey DXR2. The DXR2 extender provides the necessary power and connections for the AHK3000D keyboard. You connect the K4u+ to the DXR2 with a mini USB-B cable. See the diagram below for an example setup.

Note: *You can also use the Amulet Hotkey KMD3 break-out box in conjunction with the K4u+ for a similar deployment. Details are in Application Note 024, available from Amulet Hotkey technical support.*



K4u+ connected to a AHK3000D keyboard and DXR2:
*The AHK3000D is connected to a Dealing 3000 keystation plus four computers attached to the K4u+. A mini USB-B cable connects a hosted front panel USB port (A to D) (**1**) on the K4u+ to the flash port (**2**) on the DXR2 extender. A Dealing Adaptor (**3**) routes keyboard input from the AHK3000D and, optionally, another serial input device (**4**) to the DXR2. Finally, the DXR2 connects to the Dealing 3000 keystation through an Amulet Hotkey DXC2 or DXK2 rack card (**5**).*

9.1.1 Connecting a K4u+ to an AHK3000D and DXR2 system

1 Set the DXR2 DIP switch 8 to ON before you power up the DXR2 or connect the mini USB-B cable.

2 Power up the DXR2.

3 Plug the mini USB-B cable (CL-USBM-0001) into the *flash port* on the front of the DXR2 and into a front panel USB port (A, B, C or D) on the K4u+ (see section 2. 1).

Do *not* plug the cable into the K4u+ hot-plug port!

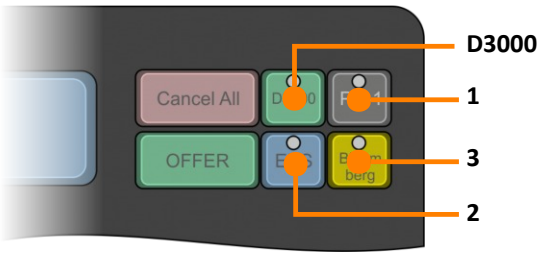
4 Connect a USB mouse to the K4u+ or, as shown previously, connect a PS/2 mouse to the DXR2. You cannot connect and use both mice at the same time.

Note: *Although computers attached to the K4u+ will support a mouse with 4 or 5 buttons and a wheel, the Dealing 3000 keystation ignores buttons 4, 5 and the wheel.*

See the *DXR2 Manual* or *Application Note 026* for full connection instructions. These are available on the Support > Downloads page of the Amulet Hotkey website, www.amulethotkey.com

9.1.2 Channel selection keys

Dedicated keys on the AHK3000D keyboard allow users to directly select which service or attached computer is the focus of keyboard and mouse activity. (Available on kit versions KT-KB02-0007 and -0008 only.)



Channel selection keys on AHK3000D:

D3000. *Selects Dealing 3000 keystation*

1. *Selects computer attached to K4u+ channel 1*

Note: *If you use a Bloomberg PC, which is typically connected to channel 1, we recommend that you physically swap the key caps on channels 1 and 3.*

2. *Selects computer attached to K4u+ channel 2*

3. *Selects computer attached to K4u+ channel 3.*

By default, the AHK3000D has a Bloomberg key cap attached to the channel 3 key plunger.

9.1.3 Dealing selection keys

To select Dealing mode, press:

- The D3000 key, or
- Any key on an attached Dealing keypad, or
- A dealing mode change key. Depending on the keyboard layout, these can include: Cancel All/Cancel Orders, Mine, Yours, Bid, Offer, I Buy, I Sell, Contact or Accept

Note: *The AHK3000D keyboard layout can be customized. Contact your local Amulet Hotkey sales office for more information.*

9. 2 Bloomberg keyboards

These keyboards have a built-in thumb print reader and work seamlessly with the K4u+.

9.2.1 Requirements

The K4u+ includes built-in support for the SEA100 and FRE100 Bloomberg keyboards.

To use the recent Bloomberg Keyboard 4 (model STB100), the K4u+ must have Amulet Hotkey concession CN661 note applied; contact Amulet Hotkey technical support for details.

9.2.2 Connecting a Bloomberg keyboard to the K4u+

Follow these steps:

1 Switch off all attached PCs.

2 Set the K4u+ DIP Switch B7 to OFF.

This prevents the hot-plug port from automatically following the mouse and keyboard focus. (DIP switches are described in section 3.)

3 Connect the Bloomberg PC to the **channel 1** USB port on the K4u+ rear panel.

4 Connect the keyboard to the switch.

For STB100 keyboards

a. Connect the 'PC' mini-USB socket on the underside of the Bloomberg keyboard to the USB hot-plug port on the front of the K4u+.

b. Connect the 'KVM' mini-USB socket on the underside of the Bloomberg keyboard to the USB keyboard port on the front of the K4u+.

For SEA100 and FRE100 keyboards

a. Plug the USB connector of the Bloomberg keyboard into the USB hot-plug port on the front of the K4u+.

b. Plug the PS/2 connector of the Bloomberg keyboard into the PS/2 keyboard port on the front of the K4u+.

Note: *K4u+ front panel ports are described in section 2. 1.*

5 Connect a mouse to the USB 'Mouse' port on the front of the K4u+.

6 Attach other computers to K4u+ channels 2, 3 and 4, as required.

7 Power up the K4u+. Then power up all attached computers.

This completes the setup for your Bloomberg keyboard.

Note: *In order to use the fingerprint sensor and audio features on the Bloomberg keyboard, the hot-plug port on the K4u+ must be assigned to channel 1 (the Bloomberg channel; see step 3 above). The hot plug port is set to channel 1 by default, but if you experience problems with these features (for example, the fingerprint sensor does not work or you are unable to hear streamed audio), verify that the hot-plug port is switched to the Bloomberg channel. To do this, switch the K4u+ to the Bloomberg channel and then press the hot keys + U. For hot key details, see section 4.*

Models SEA100 and FRE100: *Bloomberg keyboard connected to USB hot-plug port* (**1**) *and PS/2 keyboard socket* (**2**) *on the K4u+.*

Model STB100: *Bloomberg keyboard connected to USB hot-plug port* (**1**) *and USB keyboard socket* (**2**) *on the K4u+.*

10. Specifications

Power supply	12V 1.25A external supply
Power consumption (switch only)	Less than 5 W
Dimensions (W x H x D)	250 x 31 x 155 mm (9.8 x 1.2 x 6.1 inches)
Unit weight:	1.38 Kg (3.03 lbs)
Channel PS/2 & legacy Sun keyboard and mouse input	4 x 6-pin Mini-DIN socket
Channel USB input	4 x USB type B socket
Channel audio input	4 x 3.5mm stereo audio socket
PS/2 front panel keyboard and mouse	2 x 6-pin mini-DIN socket **Note:** *The PS/2 mouse socket is inactive in the current version of the K4u+. See item 7 in section 2. 1.*
Hosted front panel USB	4 x USB type A socket
Non-hosted hot-plug USB	1 x USB type A socket
Audio output	1 x 3.5mm stereo audio socket
Flash program (serial)	1 x D9 socket
Flash program (USB)	Via hosted application through any single rear panel USB type B socket
Operating temperature range	10 to 35 °C (50 to 95 °F)
Storage temperature range	-10 to 60 °C (14 to 140 °F)
Humidity	20 to 80% (condensing), 10 to 90% (non-condensing)
Certifications	RoHS compliant, CE, WEEE, EN55024, EN55022 and FCC Part 15b
Warranty	3 years