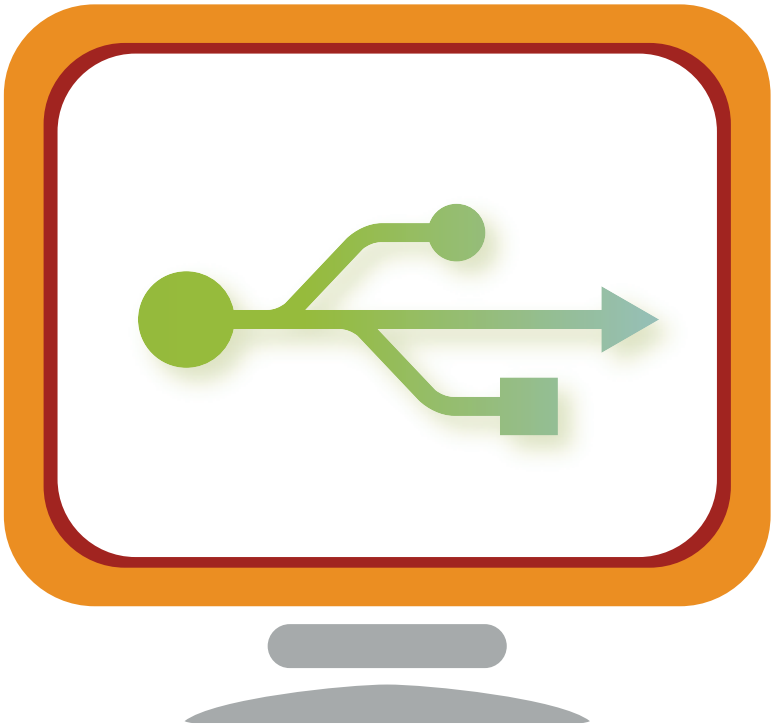

USB Laptop Console
Handheld KVM Access for Laptops

User's Manual

Digital Multitools

Version 1.3

Revision History

Revision	Release Date	Document Status
Version 1.3	Sept/2009	Relative mouse support
Version 1.2	May 15/2009	Add support for 64-bit windows
Version 1.1	May 7/2009	remove Linux
Version 1.0	April 24/2009	add FCC compliance
Draft 2	April 22/2009	Draft Version 2
Draft 1	April 9/2009	First Draft Version 1

This file was formatted:
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Patent Pending

Many concepts, techniques and methods described in this document are covered by patents granted or pending applications in Canada, United States, Taiwan and other countries.

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Figure 1: Photo of the USB Laptop Console main unit, with attached cables.

Chapter 1

Introduction

The USB Laptop Console from Digital Multitools Inc. is a convenient way to control any computer with USB ports and a VGA/DVI-Analog video output using just your laptop.

Using our real-time video compression technology, we stream the video screen over high-speed USB to a special application on your laptop. At the same time, USB keyboard and mouse are emulated. The end result is a window on your laptop that acts as the console and gives you easy and complete control over your server. It works even if the server is in the BIOS or is otherwise damaged. No software is ever installed on the server and the USB Laptop Console can be hot-plugged into a working system at any time.

1.1 Key Features

- View the video produced by a server on your laptop screen, without rebooting the server or changing it in any way.
- USB keyboard and mouse is emulated so that you can interact with the server as a window on your laptop.
- Real-time video scaling allows you to always see the entire screen, even on small laptop displays.
- Software provided for Windows and Mac OS X.
- Supports video up to 1920x1200 and all standard VESA video modes.

Chapter 2

Hardware Usage

2.1 Connections

The USB Laptop Console has captive (non-removable) cables for video input and USB keyboard and mouse. These should both be connected to the server or PC that you wish to control. For DVI video cards, a DVI-A to VGA (HD15) adapter should be used (not provided).

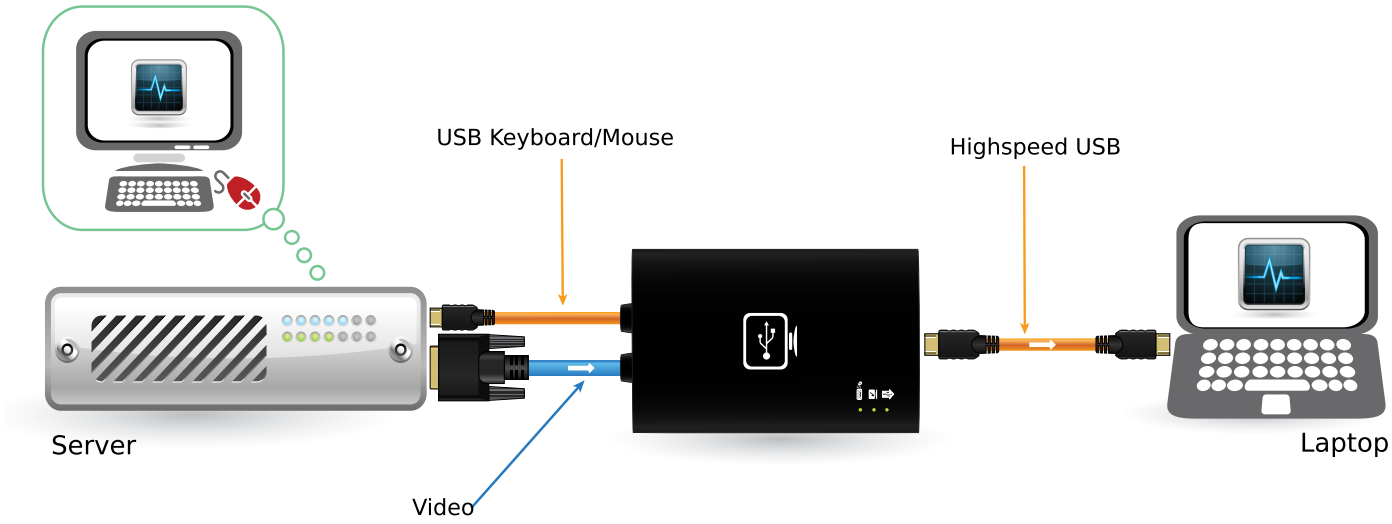


Figure 2.1: Connection diagram

There is a connector for a detachable USB cable that connects to your laptop. This is a standard mini-B to A USB cable. Please use the provided cable or a high-quality USB 2.0 certified cable.

For older systems that are not USB capable, we provide a passive PS/2 to USB adapter. This may be used in place of USB and connected to the PS/2 keyboard connection on the server. The USB Laptop Console will auto-detect the use of PS/2 and switch to that mode once connected. This product does not support the PS/2 mouse because it is not hot-pluggable (in general) and our emulated USB mouse approach better solves most issues with so-called "mouse synchronization".

2.2 Lights

On the USB Laptop Console, there are three lights. From top of bottom, when the product is held with the captive cables upwards, they are:

- **Keyboard/Mouse** This lights when the emulated USB keyboard/mouse is working. It will blink briefly whenever the emulated mouse moves, or emulated key is pressed. Slow flashing indicates some problem with the USB connection to the host. This can happen if disconnected, or if the host's operating system is not enumerating the USB device.
- **Video Good** This indicates a valid VGA video signal is being received. It will be off if nothing is connected (and in some power power savings modes) and may flash if unsupported video mode or other trouble is seen with the video signal. This light will not light, regardless of the video input status, until the the adapter is connected to the application software at least once.
- **High Speed USB** This lights when a good connection to the laptop is established. If slowly flashing, it indicates the USB to the laptop is not connected or being ignored. Blinks briefly when video data is send to the laptop.

If all the lights are off, then this means the USB Laptop Console has no power from either USB port. In normal operation, either USB port can provide enough power to operate. The USB keyboard/mouse emulation is always active, even if the laptop USB is disconnected.

When used in PS/2 mode, the topmost light indicates correct PS/2 keyboard operation, and power is received from the PS/2 as it would be from USB.

Chapter 3

Software Installation

This product requires the use of custom application software, and under Windows, custom device drivers on the laptop side. You must install the provided software to be able to use the USB Laptop Console.

3.1 Mac OS X

You should have received application software for the USB Laptop Console on either CD-ROM or USB flash drive. If you received a CD-ROM, insert the disk. If you received a flash disk, connect it now to a USB port.

Double-click on the `MacOSX-install.dmg` file that you find on the media. (It is a compressed disk image.) After a short delay to verify that disk image, a finder window will open showing the application and a link to `/Applications`. Drag the main application onto the `Applications` link. Click on the eject icon beside first the disk image, and then on the USB drive or CD-ROM to eject them both.

The software is now installed and ready to run. Find it in `/Applications` and double click. If you would like to add this application to the Dock, you can drag and drop it from `/Applications` onto the Dock.

3.2 Windows

Before installing the software on Windows, please disconnect the USB Laptop Console hardware and cancel any dialogs seen regarding "Add new hardware wizard". These dialogs can interfere with the installation process.

3.2.1 Main Software

There is a `setup.exe` program provided on the distribution media. Run this program by double clicking on it.

- The setup program will be extracted. Wait for this to complete.
- A welcome screen is shown for the setup program. Click **Next**.
- The license agreement is shown. Click the **YES - I accept** check-box and then click **Next**.
- Choose a location into which to install the software. Click **Next**.
- Choose a different shortcut to add to the start menu, or disable it if desired. Click **Next**.
- Confirm all the choices you've made and click **Next**.

- The files are copied into place. Click **Finish**.
- An information dialog, reminding you to unplug/reconnect the adapter if it was already connected is shown. Click **Okay**.

At this point, the application software is installed. A copy of the device driver has been copied and it has been installed into the operating system. However, if the USB Laptop Console was already connected before the setup program was started, Windows will not notice the device. Therefore, if the USB Laptop Console is connected, contrary to our instructions above, please disconnect and reconnect it now.

The product is ready to be used now, and the main application may be launched now. There is usually no need to reboot, but due to specific situations and Windows' limitations, sometimes a reboot is called for and you will be directed by the setup software to do so.

The USB Laptop Console itself can be connected or disconnected at any time you wish. The software need not be started first, nor do you need to shut it down before unplugging the USB Laptop Console.

3.2.2 Device Driver Files

Once the software has been installed, the correct USB device driver should be found automatically. However, if Windows does ask for a device driver for some reason, it can be found in the the `Drivers` subdirectory under `C:\Program Files\USB Laptop Console` (assuming the default install location). You may also be able to select the CD-ROM provided as it contains a copy of the device drivers.

Chapter 4

Software Usage

This chapter will introduce the application software. These screen captures are from the Mac OS X version of the software, so they may differ slightly from your screen.

4.1 Basics

Figure 4.1 shows the main window when the adapter is not connected to anything. A large picture is shown illustrating that the user needs to connect the USB port from the USB Laptop Console into the laptop.

Figure 4.1: The main window when no adapter is connected.

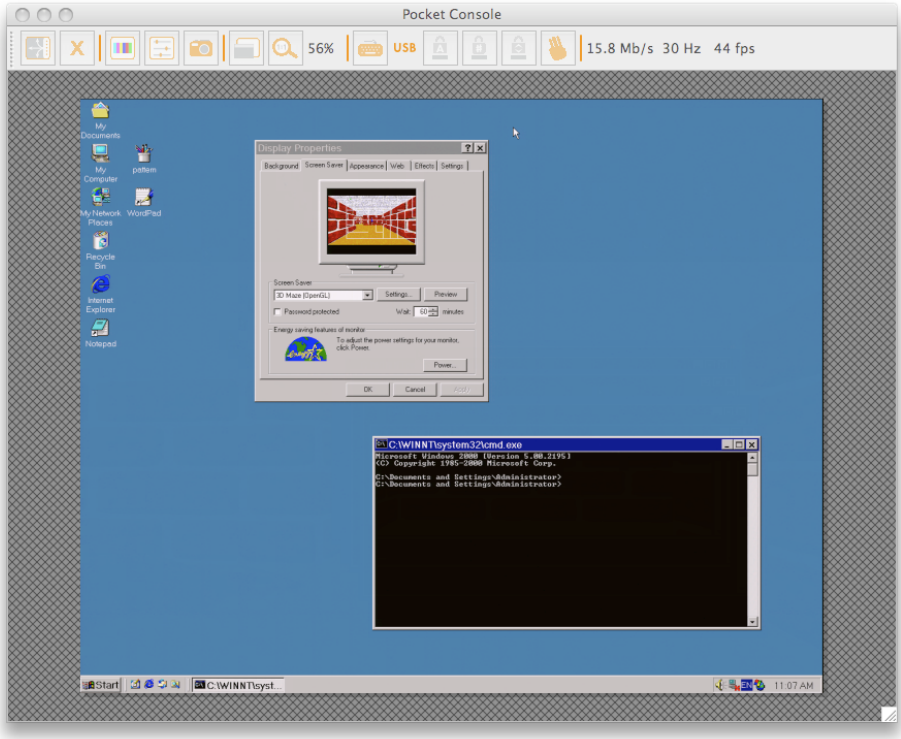


Figure 4.2: The desktop of a Windows machine is shown in real-time.

Once connected, the real-time video from the attached host computer is shown centered in the main window (see Figure 4.2).

4.1.1 Zooming

By design, this program will never show scroll bars. The entire video picture is always completely visible. It is generally scaled down to fit into the available space inside the window. You can make it larger by resizing the main window. Similarly, if you maximize the main window, the size of the video image will be maximized.

In the Zoom menu, we provide a number of buttons which set the zoom factor and resize your window to achieve that zooming factor. For example, if the attached computer is running at XGA resolution (1024 x 768), and you select 50% zoom, the main window will be set to a size of approximately 512 x 384. Please keep in mind that not all zoom factors will be possible; your laptop's screen may be too small for the larger percentages. If so, the software will make it as big as it can.

Since many laptops have smaller screens, you may wish to run this program maximized. That leaves other software on your laptop easily accessible. We also support full-screen mode, where the window decorations are removed and other applications are hidden. Click on the full-screen/window icon on the toolbar or select it from the Zoom menu.

To get out of full screen mode, click the icon again. If the toolbar is disabled when you enter full-screen mode, a smaller toolbar is provided with only the Fullscreen and Quit options. This toolbar floats and may be moved out of your way, but cannot be removed.

Also in the Zoom menu is an option to center the window on the screen. This can be handy when it is off the edge of the screen for some reason. There is also a shortcut for maximize (toggle). This does the same thing a clicking the maximize button in the title bar of the main window.

4.1.2 More Tips

- If your laptop is wide-screen (16:10 aspect, or 1280x800, etc), it may be helpful to locate the toolbar along the left or right vertical edge. This gives more usable screen height, and if the server's screen is square (4:3 aspect) the space used by the vertical toolbar would have been wasted anyway.
- This program does not enlarge video, only shrink it. Therefore, text mode (720x480 or similar) will not be enlarged to fill your screen.
- The toolbar is automatically disabled when you select a Zoom factor below 50%. You need to enable it manually when you return to a larger size.
- Unusable parts of the window are shown in grey. This happens because the video is scaled by an integer factor of $\frac{1}{16}$ and due to other rounding issues.

4.1.3 Toolbar

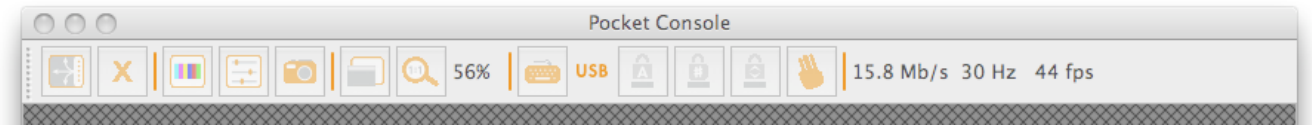
There is an optional toolbar along the top edge of the window. This toolbar may be hidden, detached or dragged onto the other three edges of the window. It provides a number of shortcuts and some status information. All functions are duplicated in the pull down menu system, so it is entirely optional.

Please refer to Figure 4.3 on the following page to learn the meanings of each tool icon and status area.

You can move and/or detach the toolbar by dragging the handle (column of dots) at left/top edge. Once detached, there is red circle that can be used to close it. When dragging or moving the toolbar, you can stick it (dock) to the top/bottom edge, if in horizontal mode, or left/right edges if vertical. Some of these features are available in the **Toolbar** menu as well.

The rightmost status area of the toolbar reports some statistics while the system is running. The first number is the USB bandwidth, in bits per second. This can range from zero to 200 Mbp/s depending on your laptop and the video picture being observed. When no motion is detected by our hardware video compression, no bits are sent. Noisy video cards and ongoing video animations, will cause a constant stream of USB traffic.

The next two numbers, 30Hz and 44fps in this example, report the achieved frame rates for the hardware and software components respectively. The hardware number (Hz) will range from 1 to 85Hz, but is typically 30Hz or 60Hz. The software number is limited to 60 fps (frames per second) maximum and varies depending what other software on your laptop is doing.



From left to right:

1. (arrows) Change orientation of tool bar between horizontal (shown) and vertical.
2. (X) Quit the USB Laptop Console application immediately.
3. (color bars) Fine-tune video picture.
4. (sliders) Open Video-related settings window.
5. (camera) Take a snapshot of screen, save as PNG file.
6. (windows/screen) Toggle full-screen vs. windowed mode.
7. (magnifying glass) Goto 100% zoom, or largest possible.
8. (56%) Shows current zoom factor as a percentage.
9. (keyboard) Keyboard status (red X shown if trouble). Click to open special keys window.
10. USB or PS/2 mode for keyboard (USB shown).
11. (A padlock) Caps lock indicator (green if active, shown inactive). Click to simulate pressing caps lock.
12. (# padlock) Num lock indicator/button.
13. (v̂ padlock) Scroll lock indicator/button.
14. (salute) Send three-finger salute (Ctrl-Alt-Del).
15. (15.8 Mb/s...) Status area. Shows USB bandwidth, hardware and software frame rates.

Figure 4.3: Tool bar icons explained.

4.2 Video Menu

There are three functions available under the Video menu: Auto fine-tune picture, Video related settings and Save PNG snapshot.

4.2.1 Auto fine-tune picture

Use this function to automatically adjust the sampling phase of the video. This makes the picture sharper and reduces USB traffic. This is generally not required since we perform this operation automatically whenever video is applied.

The picture will freeze for about one second while the calibration is performed.

4.2.2 Video Related Settings

For more in-depth video adjustments, the dialog shown in Figure 4.4 is used.

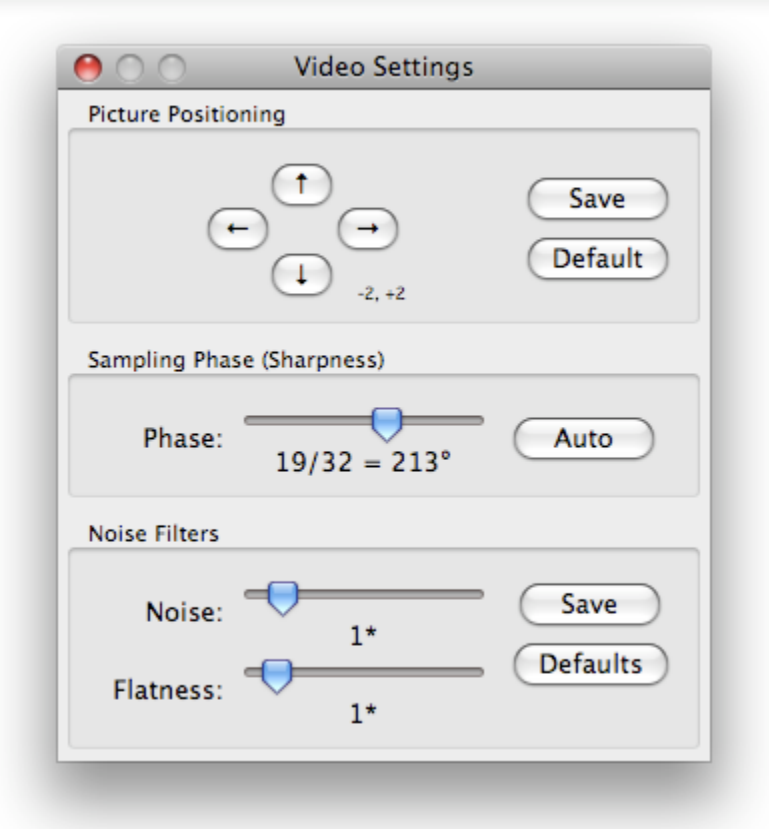


Figure 4.4: This window controls a number of related video fine-tuning settings.

Picture Positioning

These four arrows may be used to fine-tune the position of the video image. These are the same as the centering controls found on video monitors. Save your changes with the Save button. The adjusted values will be used automatically whenever this same video mode is seen again.

Sampling Phase (Sharpness)

This slider allows you to override the automatic phase adjustment. Press Auto to perform auto phase again.

The numbers shown under the slider are the phase (angle) of the control.

Noise Filters

Our hardware implements two filters to reduce USB traffic and improve picture quality. By default they are both enabled and set to one. You may override that here and save your setting (which will apply to all video modes).

The first 'Noise' filter helps to remove speckle noise. There is usually no visual effect to this filter, except that at high values, moving the mouse may leave some pixels behind (mouse droppings).

The second 'Flatness' filter converts regions that are nearly all the same colour into exactly the same colour to aid compression. The picture will become chunky or blocky at high values.

We find there is little reason to change these sliders from the default values.

4.2.3 Save PNG snapshot

Use this function to record a copy of the window contents and save it into a PNG or BMP file. The snapshot happens as soon as the menu item (or toolbar camera) is clicked. You are then given a chance to choose where the image file should be stored. A default filename is provided based on the current time.

Snapshots are always stored at full resolution and contain the whole screen.

4.3 Keyboard Menu

This menu deals with the emulated keyboard.

4.3.1 Special Keys

Most keystrokes are forwarded directly to the host under control. However, some special key combinations, such as Ctrl-Alt-Del, are blocked by the laptop's operating system. Therefore, we have provided a dialog with lots of buttons that can be used to send these sequences manually.

Click on the keyboard icon of the toolbar, or use the menu item **More special keys..**

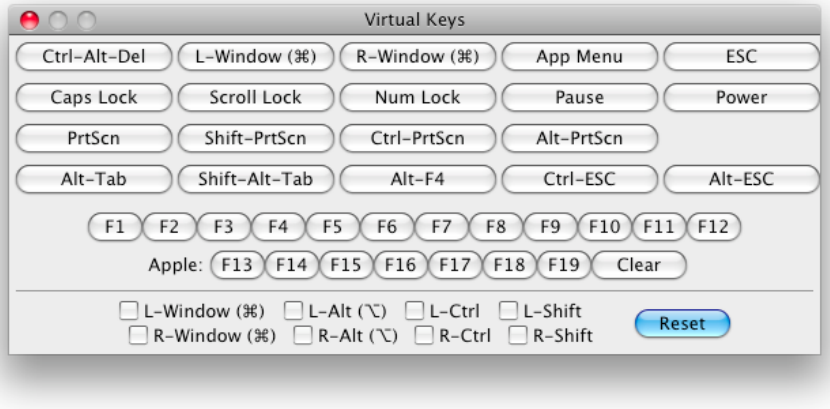


Figure 4.5: This window allows you to send special key sequences to the attached host, without actually typing them.

Please refer to 4.5. All of the buttons in the top part of this window simply send the keystroke listed. Many of them are useful combinations, such as **Alt-F4**, which closes the current window under Windows.

Lower down, there are check-boxes (toggle buttons) for each of the meta keys (both left and right). When you check these boxes, the key-down event is sent. When the check-box is unclicked, the key-up event is sent. This means you can use them to compose complex sequences not shown on this screen. Use the **Reset** button to un-check all boxes. Clicking any of the keys above the line also resets the check-boxes.

To send Left and Right Window F8, for example, check **L-Window** then **R-Window** and then **F8 button**. Similarly, you can press **L-Window** and then use your keyboard to press **E** to send Window+E (which might start Windows Explorer in some versions of Windows) and then click **Reset**.

Please note the **L-Window** button at the top will send both a down and up, whereas the check-box labeled **L-Window**, will do the down when checked, and then the up only when cleared.

4.3.2 Simulate Hotplug (reset)

Clicking on this menu item will 'hotplug' the USB going to the host keyboard and mouse. Hot plugging simulates unplugging the USB cable and immediately reconnecting it. It will reset the USB keyboard and mouse emulation completely. This can be used if the host operating system is confused.

If PS/2 mode, this also simulates a hotplug event with similar effects. Most modern operating systems can handle a PS/2 hotplug event, although this interface was never designed for hotplug.

When hot-plugging, the keyboard and mouse are not available until the host O/S device driver reinitializes the emulated keyboard and mouse. During this period, a red X is shown over the keyboard icon on the toolbar.

4.4 Mouse Menu

Mouse related settings are present in the Mouse menu. They affect the emulated mouse in USB mode and do nothing in PS/2 mode.

4.4.1 Disable mouse entirely

Although we expect most customers to use the laptop's pointing device (touch pad), if you have a standard USB mouse with you, you might want connect it directly into the server instead to the laptop. The laptop's screen and keyboard are still used in this configuration, but the mouse emulation is not needed.

We also recommend this configuration when using the USB Laptop Console with USB KVM switches. These USB KVM products generally cannot understand our USB mouse device because of it's advanced use of the HID standard (Human Interface Device). Consider trying to force relative mouse mode (see **Force relative mode** menu item 4.4.5 on the following page) before going this route though.

You can turn on this toggle to disable our mouse emulation completely. This is helpful because touches to the laptop's mouse pad will not interfere with your full-sized USB mouse. The emulation is completely removed, down to the USB descriptor level, so any possible confusion is removed and we appear to be an utterly standard USB keyboard.

In this mode, the mouse cursor is shown as a circle with a line. This is to remind you that clicks won't be effective in that window. Changes to this setting will cause a USB hotplug event, and this setting is remembered in the USB Laptop Console itself.

4.4.2 Swap buttons (for lefties)

This simple toggle is useful for those who use their left hand to control the mouse. All it does is swap the ordering of the buttons, so that the left and right buttons are swapped.

This setting is remembered on the laptop. Please keep in mind that the operating system may also be swapping buttons to suit your preferences. It's not always clear how many swaps are needed, and which layer is doing the swapping. Experimentation is suggested.

4.4.3 MacOS X scaling

If you are controlling a Mac OS X computer with the USB Laptop Console, you should select this special mode. Without it, you will observe the two mouse pointers are aligned correctly in the center of the screen, but drift apart as you move to any edge of the screen.

By enabling this mode, a scaling factor is applied to reverse this effect and return the mouse pointers to perfect alignment.

This setting is remembered in the memory of USB Laptop Console itself, so it will be in effect regardless of which laptop is used.

When the USB Laptop Console can detect it is connected to a Mac OS X machine (based on what the host does over USB), then this setting is enabled automatically. However, you may still control it directly.

When relative mouse motion mode is in use, this setting has no effect and is disabled. In that mode, you can push windows (or other objects being dragged) against the sides of the of the screen and change the 'Spaces' desktop during the drag. That is not possible in absolute mouse mode.

4.4.4 Background: Relative vs. absolute motion

Conventional mice are very simple devices. When they are moved across a desk, they simply report to the computer how far they have been moved. If you move the mouse left an inch, a relative number (say X=-400, Y=0) is reported to the computer. The host O/S takes this number and applies some user preferences to it and moves the on-screen mouse pointer to the left. Of course if the mouse is already in the top left corner, then the on-screen mouse pointer doesn't move.

This is fine for real mice, however, we are emulating a mouse and it is best if the controlled computer acts like a window on your laptop's screen. For that to happen, you want to direct the on-screen mouse pointer to a specific screen location, so we want to send absolute screen coordinates, not relative motion events to the controlled host.

The USB H.I.D (Human Interface Devices) standard allows us to define a special USB mouse that operates somewhat like a touch screen and simply tells the host where it wants the mouse pointer to be. This works perfectly for modern Windows and Mac OS X systems.

But there are USB KVM systems, USB to PS/2 convertors, DOS programs, simpler operating systems and other situations where a simple USB relative mouse is needed. For this reason, we support operation in relative mode.

In relative mode, this program will 'capture' your mouse into it's control window. This must be done to convert your laptop's mouse events back into relative events and send those to the controlled system. While the mouse is captured, you cannot do anything else with your system except control the attached computer.

4.4.5 Motion reporting mode

The current mouse motion reporting mode is indicated on this submenu. You also have the option of forcing the system into relative mode.

We expect any BIOS system that uses the USB mouse will probably not support absolute mode. Similarly, programs that run in DOS with the BIOS converting USB events into legacy PS/2 mouse events will not be able to understand absolute mouse events.

The USB Laptop Console will drop down to relative mode when the host operating system indicates that it does not support absolute mode (there is a way to do this over USB protocol). But you may force relative mode as well. This causes a USB hotplug event and is remembered internal to the USB Laptop Console itself. This might be needed if the computer doesn't correctly implement the USB HID specification.

4.4.6 To release captured mouse...

In absolute mouse mode, you may simply move the laptop mouse over the window and click as desired. In relative mode, the mouse doesn't do anything until you click once on the desktop. This captures the mouse and

subsequent clicks and motion are sent to the controlled host. A dialog is shown first to remind you how to get back to your laptop desktop.

To release the captured mouse, we offer two methods: make a circle gesture with mouse or press "Alt+Ctrl+Shift" at the same time. The circle gesture is disabled by default.

The gesture method is helpful for systems that may not have a keyboard. Simply move the mouse in circle (with no mouse buttons pressed). It can be clockwise or counter-clockwise. If it doesn't work at first, just keep circling.

One or both of these methods must be selected at all times.

4.5 Toolbar Menu

This menu provides a more direct way to control the toolbar. You can easily 'dock' or 'float' the toolbar, as well as hide or show it. The current status of the toolbar is shown as check marks beside these choices.

The detailed state of the toolbar (floating, docked, vertical, horizontal position if floating and so on) is preserved when this program is closed and reopened. However, if you wish to return to the default layout, use the **Restore default window layout**.

Appendix A

Detailed Specifications

A.1 Connections

- Inputs: Analog VGA video, USB keyboard and mouse (single connector). Captive cables.
- Outputs: High-speed USB video (480Mbps) to laptop. Female Mini-B connector. Detachable cable.
- Indicators: High speed USB link activity, Video good, USB keyboard/mouse link activity.
- Power: Shares USB power from laptop and/or host.
- Included passive PS/2 to USB adapter which provides PS/2 keyboard access to older systems. Does not support PS/2 mouse.

A.2 Software Features

- Max video resolution: 1920x1200 @ 60Hz or 1600x1200 @ 75Hz.
- Video scaling modes: any scale from 6% to 100% (in 6.25% steps), full screen mode (uses all pixels of your laptop), maximized mode (laptop task bar is still accessible).
- Resize video just by resizing window. Entire video picture is always visible—no scroll bars ever.
- Video adjustments: fine position control (image centering), sample phase (sharpness), video noise filtering controls.
- Special keys: easily send Alt+F4, Ctrl-Alt-Del and other key sequences that would otherwise affect the laptop instead of the server.
- Grab snapshot of screen into PNG or JPEG file.
- Handy toolbar with common functions. Horizontal or vertical, detachable and removable as well.
- Required software is included with product. Package includes copy of the latest version at time of manufacture, and latest version is always available on the Internet.

A.3 Laptop Requirements

- Windows 2000, XP, Vista or Windows 7.
- Mac OS X 10.5 (Leopard) or 10.6 (Snow Leopard). Intel only.

- One available high-speed USB port on laptop. 100mA current.
- 20 Megabytes available disk space for install. 24-bit colour display.

A.4 Server Requirements

- One USB port (full speed) for keyboard, mouse. 500mA current.
- Analog VGA graphics output. DVI can be used with adapter.
- Operating system which supports USB mouse: Windows 2000 and up, Mac OS, Linux, etc.

A.5 Mechanical

- Size w/d/h: 74mm x 115mm x 15mm
- Weight: 170g
- Power: max 500mA at 5v DC.
- FCC Class A, CE Approved, RoHS

A.6 Approvals

- FCC Class A (office use), CE Approved,
- VCCI and C-Tick approved.
- RoHS Compliant.

A.7 Environmental

- Operating: 0C to 40C/32F to 104F, 80% rh, nc
- Storage: -40C to 70C/-40F to 158F

A.8 Orderable Part Numbers

ULC100A	USB Laptop Console
ULC100A-10	USB Laptop Console – ten pack

Appendix B

End User Licence Agreement

This End User Licence Agreement (the "Agreement") is a legal agreement between you (either an individual or an entity) and Digital Multitools Inc. ("Company") regarding the use of Company's software and service entitled USB Laptop Console, which may include user documentation provided in "online" or electronic form (the "Software"). BEFORE YOU CLICK ON THE "I AGREE" BUTTON AT THE END OF THIS DOCUMENT, CAREFULLY READ THE TERMS AND CONDITIONS OF This agreement. BY CLICKING ON THE "ACCEPT" BUTTON, YOU ARE CONSENTING TO BE BOUND BY AND ARE BECOMING A PARTY TO This agreement. IF YOU DO NOT AGREE TO ALL OF THE TERMS OF This agreement, CLICK THE "DO NOT ACCEPT" BUTTON AND THE SOFTWARE WILL NOT BE INSTALLED ON YOUR COMPUTER.

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Contact Information: Should you have any questions concerning this Agreement, or if you desire to contact Company for any reason, please contact Company.

Appendix C

Menu Reference

Here is the complete menu structure for your reference. There may be minor variations based on your platform.

```
File
    Quit

Zoom
    Fullscreen mode
    Maximize window
    Center on screen
    ----
    100%
    87%
    75%
    50%
    25%
    12%
    ----
    Current zoom: 100%

Video
    Auto fine-tune picture
    Settings...
    Save PNG snapshot...
    Reset video processing
    Advanced
        Capture video timing...
        Set DDC2B reported max resolution...
            1024x768
            1280x1024 (default)
            1920x1200

Keyboard
    Send: Ctrl-Alt-Del
    More special keys...
    ----
    Simulate Hotplug (reset)
    ----
    Active emulation type
        USB
        PS/2
    Emulated keyboard lights
        Caps Lock
        Num Lock
        Scroll Lock

Mouse
    Disable mouse entirely
    Swap buttons (for lefties)
    To release captured mouse...
        Circle gesture with mouse
        Press Alt+Ctrl+Shift together
        ----
        Show reminder window
    MacOS X scaling
    Motion reporting mode
        Absolute (default)
        Relative (compatiblity)
        Force relative mode

Toolbar
    Show toolbar
    Horizontal toolbar (else vertical)
    Dock the toolbar (else float it)
    ----
    Restore default window layout

Help
    Online manual
    Get latest version...
    License
    About...
```

Appendix D

Notes

D.1 Warnings

- If control over the mouse is lost due to an ESD event, please use the **Simulate Hotplug (reset)** found on the **Keyboard** menu. This will cause the host O/S to reprobe the USB keyboard and mouse.
- Recommended maximum cable length for USB (A to mini B) cable is 3 meters (9 feet).
- Although this product can function over a full-speed (12 Mbps) USB connection, a warning is shown and it is too slow to be very useful. Please use only a high-speed (480 Mbps) USB port.

D.2 FCC Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference and
2. This device must accept any in interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Appendix E

Trouble-shooting

Symptoms	Problem or Suggested course of action
No lights	Adapter has no power from either USB connection. Try other USB ports.
Black bar on left/top of image	Use the **Picture Positioning** arrows on the Video Settings dialog to shift the image leftwards/upwards until no black can be seen. Be sure to save your change.
USB Out flashing, says not connected	Verify the device drivers are correctly installed (Windows only): Unplug the adapter. Reboot. Plug in the adapter. No dialog from Windows about 'found new hardware' should be seen.
Red X over keyboard in toolbar	The emulated USB keyboard and/or mouse is not being handled by the attached computer. It might be disconnected, powered down, or the O/S may be halted. When in this state, the keyboard and mouse will not do anything. Try using the (**Simulate Hotplug (reset)** command in the **Keyboard** menu, 4.3.2 on page 18).
KVM switch doesn't work	When using a USB KVM switch, rather than a direct connection to a server, we recommend disabling the USB mouse emulation (see the **Mouse** menu 4.4.1 on page 18) or forcing relative mouse motion mode (see the **Force relative mode** 4.4.5 on page 19). Disabling the USB mouse emulation simplifies the USB profile we present to the KVM switch, and even the most basic USB implementation should be able to understand and support our keyboard and mouse in relative mode.
Toolbar is gone / Always fullscreen / Window stuck too big or small	Use the menu item: **Toolbar** > **Restore default window layout** to restore window positions and toolbar state.