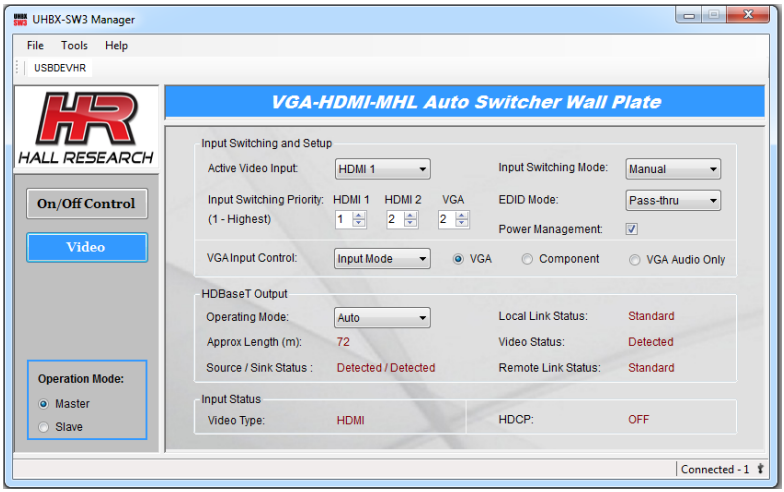


Manager Software for the UHBX-SW3 Auto-Switcher / Extender

Table of Contents

Trademarks

1. Windows™ Software Installation

1.1. General

The UHBX-SW3 graphical user interface (GUI) is a Windows® software used to configure advanced settings of the UHBX-SW3. Use of the software requires USB connection of the PC to the device. For convenience, a USB cable is provided with the switcher.

After configuring the switcher, the user can save the desired configuration as a file on their PC. Configuration files can also be uploaded to switcher.

1.2. Installation Prerequisites

- PC with Windows™ XP™ OS or later
- USB port
- Microsoft™ .NET Framework 2.0 or later (most recent OS including Windows™ 7 and 8 typically include this and no action is required). If .NET Framework 2.0 or later is not installed on your PC, the Microsoft™ website has free downloads available.

1.3. Installing the Software

- Download the GUI from the product's webpage.
- If an earlier version of this software was previously installed, UNINSTALL the program first from either the Add/Remove Programs section of the control panel or by running the previous installation SETUP.EXE and selecting "remove application".
- Install the software by executing the SETUP.EXE program from the installation source directory
- Accept the default settings, but if you want to specify a particular installation directory other than the default, you may do so.
- Once the UHBX-SW3 software installation has completed, either click the desktop icon

  or from the Start Menu:
  Start ⇨ Programs ⇨ Hall Research ⇨ UHBX-SW3

2. Using the Software

2.1. General

The UHBX-SW3 Manager is a Windows™ software that can be used to configure the auto-switching switcher via a USB connection.

It provides the ability to configure power commands using RS232. Additionally a few IR protocols are supported, but since IR codes are not readily available, use of IR power command is not recommended). If an optional SW3-UI-VOL auxiliary control keypad with Volume buttons is used, the GUI also allows definition of Volume UP/Down, Mute, and Unmute commands.

The software allows tweaking of parameters such as: prioritizing the inputs in Auto Source mode, locking or unlocking the Auto modes, and controlling the VGA Scaler's parameters such as underscan (zoom out), aspect ratio, brightness, etc.

The GUI can save and load a configuration file into or from the device, and can be used to easily update firmware in the UHBX-SW3.

2.2. USB Device Detection

The Manager Software automatically configures the USB port after connection to the device. No special USB driver installation is required by the user.

The first time you connect the device to a PC, you may experience a short delay while Windows™ automatically installs the required USB drivers. This only happens once.

Notice

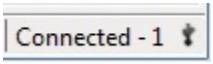
For the PC to communicate with the switcher, the UHBX-SW3-WP needs to be receiving power through its HDBaseT Cat6 cable (POH). So it needs to be connected to a PSE receiver such as UHBX-R-PSE.

If you start the Manager software without the USB port attached, the on-screen fields are disabled (grayed out). The instant you connect the USB cable, the GUI fields will become active.

2.2.1. USB Connection Status

The GUI shows USB connection status and the number of detected SW3 switchers on the bottom right corner of the status bar. If no USB device is detected the Status bar shows a message indicating that the GUI is waiting for a connection as shown below.

GUI is waiting for USB connection to switcher



GUI has detected one device connected

2.2.2. USB Device Name

You can assign a unique USB device name to each switcher. The device names are stored on the switchers. By default all switchers are called USBDEVHR as shipped but if you are going to configure a number of switchers differently, then you may wish to assign different names to them that indicates room number or configuration type.

The USB device name is shown near the top right of the screen under the toolbar. Click to change the name. A maximum of 8 characters can be used.

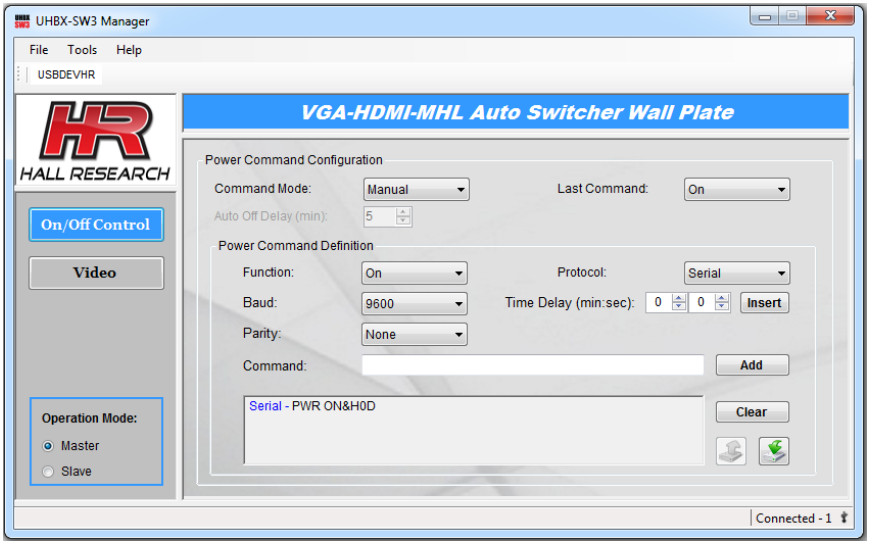
2.3. Configuration Pages

There are 2 configuration pages:

- **On/Off Control** - can be used to:
  - Define RS232 (or simple IR) commands for controlling the power state of the display or the volume (requires SW3-UI-VOL keypad).
  - Define the Auto/Manual mode of Power Command
  - Lock the Power Command in Auto or Manual mode so they cannot be changed from the buttons on the device

- **Video** - can be used to:
  - Assign priorities to the 3 video inputs for Auto Source selection mode
  - Define the Auto/Manual mode of Source Selection
  - Lock the Source Selection in Auto or Manual mode
  - Configure the VGA Scaler for special applications
  - Configure and monitor the HDBaseT® output

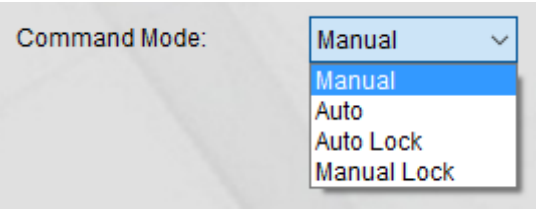
2.3.1. On/Off Control Page



The UHBX-SW3 Manager provides you more control and flexibility of the device than the front panel.

Power Command Mode

For sending on/off power commands to the display, there are two different modes the UHBX-SW3 device can be set to: manual and auto



- **Manual** – In this mode, each Power button press on the physical switcher (or using the Last Command dropdown from GUI) will alternate between sending the *Power On* or the *Power Off* command to the display.
- **Auto** – When the device is set in this mode, it will automatically issue power commands based on detecting video on the selected input. As soon as a video source is plugged in to the selected input, the device will send out the pre-configured power on command, and after video is disconnected, the switcher will wait for some time (typically 5 minutes), and issues the power off command.

- **Auto Lock** – This is the auto mode as mentioned above with lock enabled, which is locking the user from using the wall-plate power button to switch it to the manual power mode. If you want to keep users from being able to inadvertently disabling the Auto mode, you can lock it from the GUI. The only way to exit the lock mode is through using the GUI.
- **Manual Lock** – This is a locked manual mode. When the device is in this mode, the user will not be able to switch to auto power mode using the wall-plate. He or She has to use the GUI to switch it to auto power mode when needed.

Last Command

The last command is only enabled in the manual power mode. It has the same effect as pressing the power button on the switcher. It toggles power on the switcher and causes it to also issue on or off commands to the display.

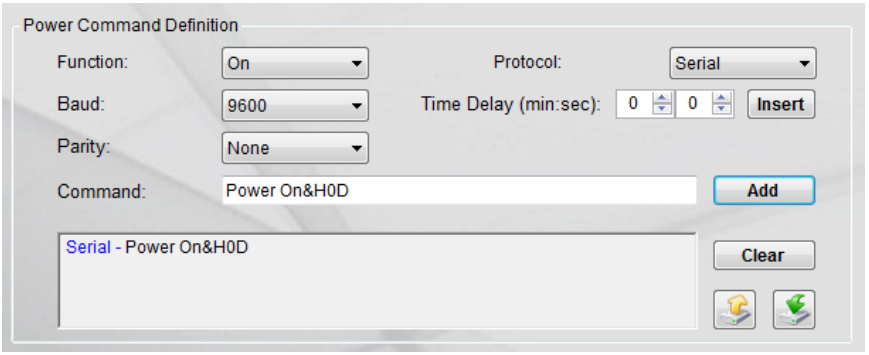
When the device is turned off, all LEDs will be off. When it is turned on, it will return to its previous state before shutdown.

Auto Off Delay

When Power Command mode is set for Auto, and there is no video being detected, the auto off delay is defined as the time the device will wait for video to show up before sending out the pre-configured power off command to the display.

After receiving a Power Off command, some projectors ignore further commands for some period of time (typically 30 seconds to a minute). We recommend that the user test their projector and determine the time it needs to get ready to process commands. Then you can enter a time delay as part of the *Off Command* string. This way, if just after sending the off command the video is reconnected, the switcher will wait for the inserted delay to expire before issuing the On command (without the Delay in the off command, the On command may not be received).

Power Command Definition



The UHBX-SW3 allows the user to configure power ON and OFF commands using either RS232 serial or IR. IR can only be used if the exact protocol of the IR (such as RC5, NEC, etc) and the address and data bytes for the button are known. This information is typically hard to come by! We recommend using IR only if you are 100% certain and verified that you have such information. Furthermore, even if that information is available, if *separate* On and Off IR commands are not available for the TV, it is possible to get the system out of sync with the display. Therefore, it is highly advised to use RS232 whenever possible. Also remember that the switcher provides an IR detector and for simple installations, the user can just point the remote to the switcher and extend it to the display.

A command can be up to 40 bytes long, and it can be a combination of serial, IR, and delay commands.

- **Function** – It is used to select an on or off command to configure.
- **Protocol** – It consists of serial and IR to use for a protocol.

Serial Commands

- A serial command can send data to any standard serial device with selectable baud rate and parity.
- Hexadecimal characters may be entered by using **&h** in front of the 2 digit hexadecimal character (e.g. &hBE&hEF&h00&h00&h01). Hitting Enter on the keyboard will insert &h0D (carriage return).
- Commands are entered in the command text box. When done, you can click the **Add** button to append the command as shown in the figure above.

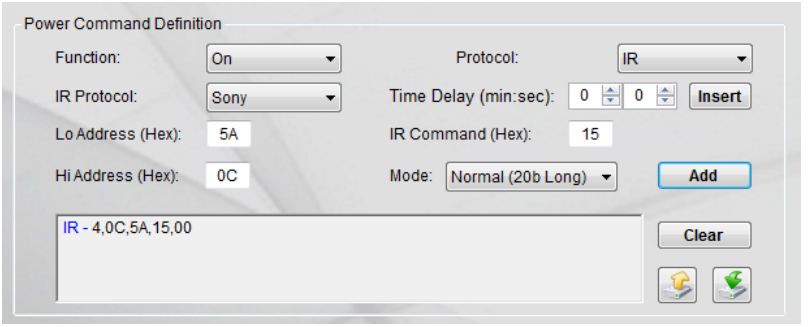
Notice

When you enter a serial command, the software automatically unchecks Power Management box (see section 2.3.2). This is because if power management is on the system will put the HDBaseT link in low power mode. Transitioning to this mode causes a spurious pulse to come out of RS232 TX pin. If the device being controlled is sensitive to this pulse it may not recognize the next valid command. So by default when there are RS-232 commands, the system will try and keep the HDBaseT link active at all times to avoid getting the extra pulse.

IR Codes

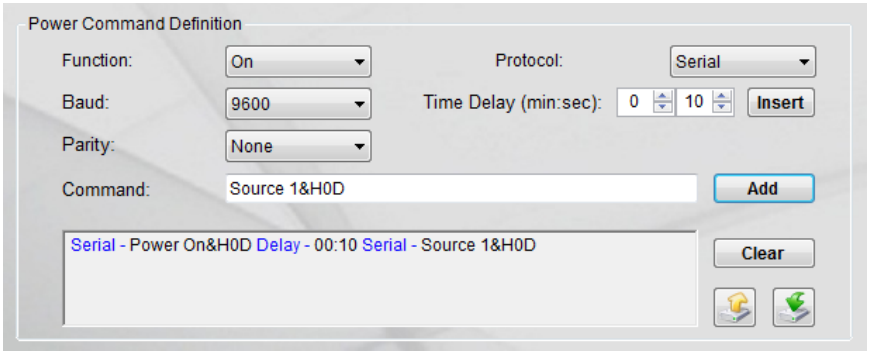
As cautioned above, IR can only be used if the exact protocol of the IR (such as RC5, NEC, etc) and the address and data bytes for the button are known. It is only for the most advanced customers who actually have access to the IR data. ***Hall Research does not provide IR commands***.

- Supported IR formats are: NEC, JVC, RCA, RC5, Sony, Extended NEC, Samsung, and Sharp.
- Select the desired IR protocol and enter address along with command. When done, just click the **Add** button to append the command.



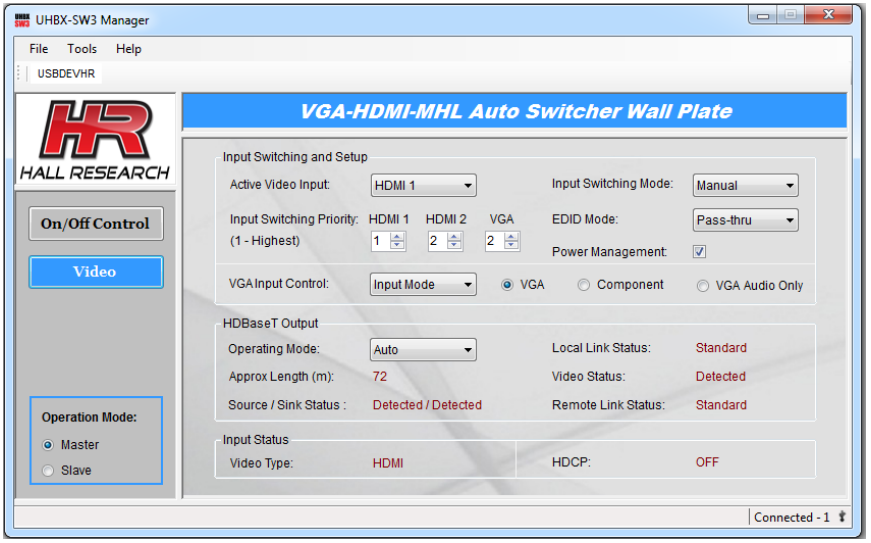
Inserting Delays in Commands

A time delay can be added to a command string between multiple serial or/and IR commands if needed.



In the above example, as part of the Power On command the device also sends a Source selection to the TV after a brief delay (just in case someone had inadvertently switched the TV input away from the HDMI that is connected to the switcher).

2.3.2 Video



Active Video Input

The UHBX-SW3 has a total of three inputs : HDMI1, HDMI2, and VGA.

- **HDMI1 –** This input can be used for either an HDMI or a MHL source.
- **HDMI2 –** This input is only used for HDMI source.
- **VGA** – This input can be configured as VGA, component, or audio only source.

Notice

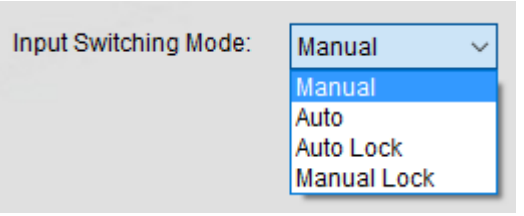
When the VGA input is configured for YPbPr (component video), Auto Source selection will not be able to detect the source. So in this case Auto Source mode is not available and users have to manually select inputs.

Similarly, when the VGA input is configured for Audio Only, (can pass audio input with or without VGA connection), then with just an audio connection (without video), the device will not be able to automatically switch to that input and it has to be selected manually.

Configuring the VGA input for YPbPr or Audio Only, also will increase standby power consumption of the switcher and it will stay warm even if no input is connected. So enable those only when required.

Input Switching Mode

The UHBX-SW3 can select inputs either manually or automatically.



- **Manual** – In this mode, each SOURCE button press will select the next input.
- **Auto** – When the device is set in this mode, it will automatically switch to an input with the highest priority as soon as it detects its presence.
- **Auto Lock** – This is the auto mode as mentioned above with lock enabled, which is locking the user from using the switcher's SOURCE button to switch it out of Auto and in to Manual mode.
- **Manual Lock** – In this mode, the device is locked in the manual mode. The user will not be able to switch to auto input mode from the wall-plate, but it can be done from the GUI or in RS232 slave mode.

Input Switching Priority

Each input can be independently set to any priority level from 1 to 3. Level 1 is the highest priority, and level 3 is the lowest priority. If two inputs have the same priority level, then they cannot interrupt one another (then they will act as first-come-first-serve).

EDID Mode

EDID mode can be set to either pass-thru or emulate.

- **Pass-thru (Default)** – This is a default mode. When set to this mode, the EDID passed to the source comes from a sink TV, LCD monitor, or projector connected to an output.
- **Emulate** – In this mode, the internal default EDID is passed to the source.

Power Management

When it is checked, the UHBX-SW3 always monitors the presence of connected and active source and TV (hot plug detection of display). If neither is detected, the unit will go into low power mode.

When it is not selected, the HDBaseT output of the UHBX-SW3 will always operate either in Auto or Long Reach modes.

By default, the Power Management option will be off automatically when there is a serial command defined initially. If there is no serial command, the Power Management option will be on.

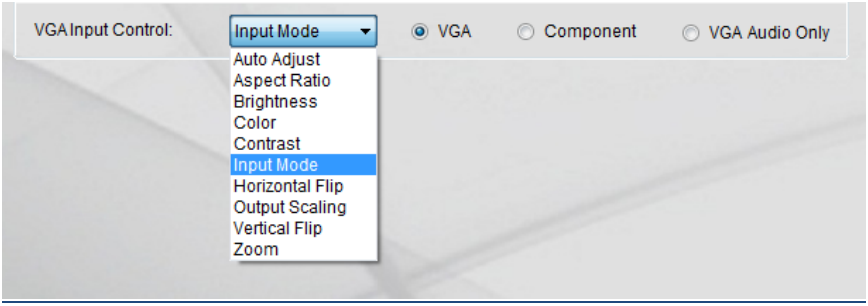
Notice

When Power Management is active and the unit is in low power mode, there is a possibility of a "pulse" generated along the RS232 TX line of the HDBaseT output upon wake up.

If this is a concern, the HDBaseT output of the UHBX-SW3 can be set to stay on all the time by un-checking the Power Management option box.

VGA Input Control

The VGA Input Control has the following selections:



- **Auto Adjust** – It is used to perform an auto adjust of the VGA input source on the display (will try to best fit the video to the output screen).
- **Aspect Ratio** – The VGA input source can have its aspect ratio set to either 4:3 or 16:9

Notice

By default the Aspect Ratio is set for 16:9. This is because most notebooks have a wide screen LCD. So when the user duplicates their notebook's LCD to the VGA output and connects it to the UHBX-SW3, eventually it winds up as a widescreen 1080p HDMI signal on the display. So a 16:9 signal from the PC displayed as a 16:9 TV will have perfect aspect ratio.

However, if the VGA source is a 4:3 format (such as 800x600 or 1024x768), to avoid stretching the width of the image (thereby creating a flattened circle), you can select 4:3 aspect ratio in the GUI. This will instruct the scaler to put black bars on the sides of the output signal to keep the video shown on the HDTV as a 4:3 image.

- **Brightness** – The level of the VGA source brightness can be set between 0-100.
- **Color** – The level of the VGA source color can be set between 0-100.
- **Contrast** – The level of the VGA source contrast can be set between 0-100.
- **Input Mode** – It is used to configure VGA input as VGA, component, or VGA audio only.

- **Horizontal Flip** – The VGA source can have its image displayed in normal or in horizontal flip (good for teleprompting applications).
- **Output Scaling** – The source at the VGA input can be set to either 720p or 1080p.
- **Vertical Flip** – The VGA source can have its image displayed in normal or in vertical flip.
- **Zoom** – This is used to zoom out or zoom in the VGA input source on the display. This is particularly useful if the VGA image's edges are cut off by the bezel of the TV. For example if you don't see the Windows™ Start or Taskbar, you can zoom out to try and get the edge on the screen.

HDBaseT Output

The operating mode of HDBaseT output can be set to either Auto or Long Reach mode.

- **Auto** - When set to Auto, the HDBaseT output will follow the current mode on the receiver. By default, it is the HDBaseT mode.
- **Long Reach** - When set to Long Reach, the HDBaseT output will have the strongest signal from the sender to the receiver. However, this mode does not support deep color or 4K video.

Notice

When used with the recommended UHBX-R-PSE receiver, leave the mode in Auto. It will then follow the mode set on the Receiver.

The UHBX-R-PSE receiver has a Switch under the HDMI output connector that can change its mode between Standard and Long Reach modes.

HDBaseT-Lite receivers (70 meter/ Class B) do not support Long Reach. So if you are using a receiver with Class B HDBaseT, select Auto in GUI.

In addition to setting the HDBaseT operating mode, the GUI displays status such as link, video, and approximate Cat6 cable length.

- **Local Link** – Standard, Long Reach, Low Power, and Disconnected
- **Video** – Detected or None
- **Remote Local Link** – Standard, Long Reach, Low Power, and Disconnected

- **Approximate Length** (m) – The cable length is measured in meters, and it is not applicable when the connection is in Long Reach mode. The calculation may vary according to cable quality.
- **Source / Sink Status** – *Source Connection* / *TV Connection* detected or not

Input Status

The UHBX-SW3 provides status of the detected video signal on the selected input.

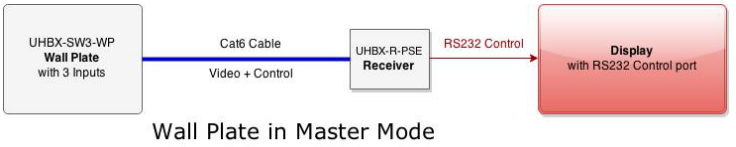
- **Video Type** – The type of video can be HDMI, DVI, MHL, or VGA
- **HDCP** – It will be either on or off depending on presence of HDCP encryption on the input.

2.4 Operation Mode

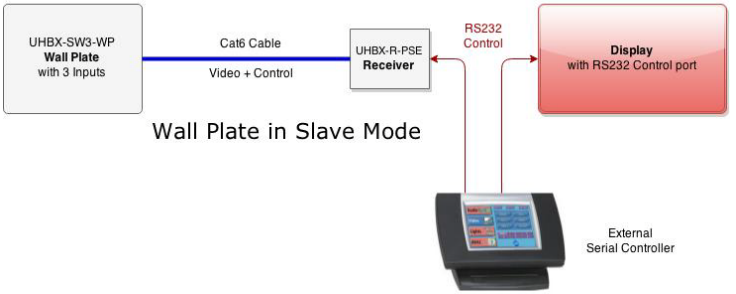
In a typical installation, the UHBX-SW3 is acting as the Master! This means that the switcher can switch between its 3 video inputs either automatically or manually. Additionally the switcher can also be programmed to send Power On/Off commands to the remote display through the RS232 port of the remote receiver.

If RS-232 data is sent back from the display device to the switcher, in Master mode, it is ignored and no action is taken.

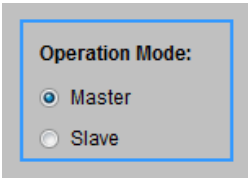
But what if you are planning to use a separate control system and want to control the entire room's AV setup. In that case you can use the RS-232 port on the UHBX-R-PSE Receiver to control the switcher. All operational aspects of the switcher can be controlled if you put the switcher in Slave operation mode. .



Wall Plate in Master Mode



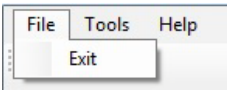
Wall Plate in Slave Mode



- **Master (Default)** – In this mode, the UHBX-SW3 can send programmed serial commands such as Power On, Power Off, Volume UP, Volume Down, Mute On, and Mute Off to a TV or a projector through UHBX-R-PSE, at any specified baud rate from (1200-115,200). A typical button press will trigger the unit to send any corresponding programmed serial commands to the TV or the projector.

- **Slave** – In this mode, the UHBX-SW3 can be controlled by another device through the UHBX-R-PSE receiver. In this mode the baud rate is fixed at 9600. The list of supported commands in Slave mode is shown in Appendix 1.

2.5. Tool Bar Menu



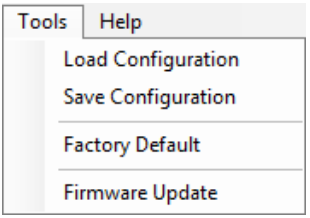
The UHBX-SW3 Manager toolbar consists of three main menus.

File

The **File** menu consists of the Exit selection as shown.

- **Exit** – Exit the UHBX-SW3 Manager.

Tools



- **Load Configuration** – Get an existing configuration file from the PC. Configuration files are text files that contain all user configurations including all the setting parameters except VGA input color, contrast, and brightness.
- **Save Configuration** – Save the current user configuration as a file on PC.
- **Factory Default** – Restore the device to factory default settings.
- **Firmware Update** – Allow you to update any future device firmware.

Help

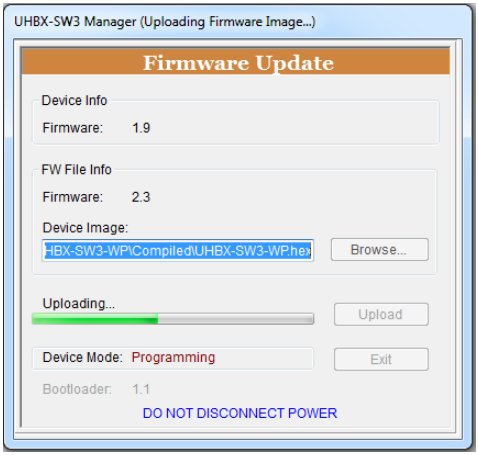
The **Help** menu has the About selection as shown.

- **About**… - Display the current version of UHBX-SW3 Manager, device firmware, USB serial number, and UI

firmware.

2.6. Firmware Update

The firmware update can be found under the **Tools** menu. When the **Firmware Update** is selected, the UHBX-SW3 Manager will open a Firmware Update window as shown. It is recommended to restart the GUI after the firmware update.



Notice

If the SW3 device has a custom configuration programmed (such as RS-232 commands) and if you have not saved the configuration file on your PC, then prior to updating the firmware, you should first download and save the existing configuration to your PC from the SW3. After firmware upgrade to a new version, the unit will perform a "factory default setting" erasing any special configuration that may be in the device.

You can still upload a configuration file even if it was created using previous versions of firmware or GUI to the SW3 with new firmware.

Appendix 1 - Serial Commands in Slave Mode

- *Power:*

Command: PWn <cr> *Stands for Power On*
Response: PWn <cr> Where n = 0 - 1 = Power Off - On

- *Auto Power:*

Command: APn <cr> *Stands for Auto Power*
Response: APn <cr> Where n = 0 - 3 = Auto Power Off (Manual Power) – On – On Lock – Auto Power Off (Manual Power Lock)

- *Input Select:*

Command: ISn <cr> *Stands for Input Select*
Response: ISn <cr> Where n = 1 - 3 = HDMI1 - HDMI2 - VGA

- *Auto Input:*

Command: AIn <cr> *Stands for Auto Input*
Response: AIn <cr> Where n = 0 - 3 = Auto Input Off (Manual Input) – On – On Lock – Auto Input Off (Manual Input Lock)

- *Off Delay:*

Command: ODn <cr> *Stands for auto Off Delay*
Response: ODn <cr> Where n = 0 - 240 (in minutes)

- *Switch Priority:*

Command: SPn,m <cr> *Stands for input Switching Priority*
Query: SPn <cr>
Response: SPn,m <cr> Where n = 1 - 3 = HDMI1 - HDMI2 - VGA
(m = 1 - 3 (highest - lowest priority level)

- *Operation Mode:*

Command: OMn <cr> *Stands for Operation Mode*
Response: OMn <cr> Where n = 0 - 1 = Master – Slave

- *Low Power:*

Command: LP <cr> Stands for Low Power
Response: LPn <cr> Where n = 0 -1 = Normal – Low Power

- *Mute:*

Command: MTn <cr> *Stands for Mute LED*
Response: MTn <cr> Where n = 0 -1 = Off – On

- *VGA Auto Adjust:*

Command: AA <cr> *Stands for VGA Auto Adjust*
Response: AA <cr>

- *VGA Aspect Ratio:*

  Command: ARn <cr> *Stands for VGA Aspect Ratio*
  Response: ARn <cr> Where n = 0 - 1 = (4:3) – (16:9)

- *VGA Brightness:*

  Command: BNn <cr> *Stands for VGA Brightness*
  Response: BNn <cr> Where n = 0 -100

- *VGA Color:*

  Command: CLn <cr> *Stands for VGA Color*
  Response: CLn <cr> Where n = 0 -100

- *VGA Contrast:*

  Command: CTn <cr> *Stands for VGA Contrast*
  Response: CTn <cr> Where n = 0 -100

- *VGA Input Configure (Mode):*

  Command: ICn <cr> *Stands for VGA Input Configure*
  Response: ICn <cr> Where n = 1 - 3 = VGA – Component – Audio only

- *VGA Left to Right (Horizontal Flip):*

  Command: LRn <cr> *Stands for VGA Left to Right*
  Response: LRn <cr> Where n = 0 -1 = Normal - Reversed

- *VGA Output Scale:*

  Command: OSn <cr> *Stands for VGA Output Scaling*
  Response: OSn <cr> Where n = 0 -1 = 720p – 1080p

- *VGA Top to Bottom (Vertical Flip):*

  Command: TBn <cr> *Stands for VGA Top to Bottom*
  Response: TBn <cr> Where n = 0 -1 = Normal - Reversed

- *VGA Underscan (Zoom):*

  Command: USn <cr> *Stands for VGA Underscan*
  Response: USn <cr> Where n = 1 - 6

Notice *If n is not specified in any of the commands above, the command becomes a query command instead of a set command. In response to a query command the system reports the current status of that command.*

- *Status Update:*

  Command: SU <cr> *Stands for get full Status Update*
  Response: PWn <cr> APn <cr> ISn <cr> AIn <cr> ODn <cr> SPn,m <cr> ARn <cr> BNn <cr> CLn <cr> CTn <cr> ICn <cr> LRn <cr> OSn <cr> TBn <cr> USn <cr> FWx.x <cr>

- *Factory Default:*

  Command: FD <cr> *Stands for Factory Default*
  Response: FD <cr>

- *Firmware Version:*

  Command: FW <cr> *Stands for Firmware Version*
  Response: FWx.x <cr> UHBX-SW3 Firmware Version

- *Button:*

  Command: BLn,m <cr> *Stands for Aux keypad Button LED*
  Response: BLn,m <cr> Where n = 1 - 3 = PWR LED – MUTE LED
  m = 0 - 1 = LED Off – LED On

- *Volume Up:*

  Response: UP <cr> *Stands for Volume Up*
  Sent when user pushes the Volume Up button on Aux Kpd

- *Volume Down:*

  Response: DN <cr> *Stands for Volume Down*
  Sent when user pushes the Volume Down button on Aux Kpd

- *Power Management:*

  Command: PM <cr> Stands for Power Management
  Response: PMn <cr> Where n = 0 -1 = Low Power option OFF - ON

Error Commands

ERR0 – UHBX-SW3 power is off.
ERR1 – Invalid command
ERR2 – The VGA scaler board is in low power mode