

SB-5645AK

4x4 HDMI Matrix Switch with Auxiliary Audio I/O



IMPORTANT WARRANTY INFORMATION.

If you remove the HDMI screw posts, you must use the provided HDMI Locking Post replacement screws to keep the internal HDMI jack secure. Removing the HDMI screws without installing the HDMI Locking Post replacement screws will void your warranty.



SAFETY INFORMATION



1. To ensure the best results from this product, please read this manual and all other documentation before operating your equipment. Retain all documentation for future reference.
2. Follow all instructions printed on unit chassis for proper operation.
3. To reduce the risk of fire, do not spill water or other liquids into or on the unit, or operate the unit while standing in liquid.
4. Make sure power outlets conform to the power requirements listed on the back of the unit. Keep unit protected from rain, water and excessive moisture.
5. Do not attempt to clean the unit with chemical solvents or aerosol cleaners, as this may damage the unit. Dust with a clean dry cloth.
6. Do not use the unit if the electrical power cord is frayed or broken. The power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.
7. Do not force switched or external connections in any way. They should all connect easily, without needing to be forced.
8. Always operate the unit with the AC ground wire connected to the electrical system ground. Precautions should be taken so that the means of grounding of a piece of equipment is not defeated.
9. AC voltage must be correct and the same as that printed on the rear of the unit. Damage caused by connection to improper AC voltage is not covered by any warranty.
10. Turn power off and disconnect unit from AC current before making connections.
11. Never hold a power switch in the "ON" position.
12. This unit should be installed in a cool dry place, away from sources of excessive heat, vibration, dust, moisture and cold. Do not use the unit near stoves, heat registers, radiators, or other heat producing devices.
13. Do not block fan intake or exhaust ports. Do not operate equipment on a surface or in an environment which may impede the normal flow of air around the unit, such as a bed, rug, carpet, or completely enclosed rack. If the unit is used in an extremely dusty or smoky environment, the unit should be periodically "blown free" of foreign dust and matter.
14. To reduce the risk of electric shock, do not remove the cover. There are no user serviceable parts inside. Refer all servicing to qualified service personnel. There are no user serviceable parts inside.
15. When moving the unit, disconnect input ports first, then remove the power cable; finally, disconnect the interconnecting cables to other devices.
16. Do not drive the inputs with a signal level greater than that required to drive equipment to full output.
17. The equipment power cord should be unplugged from the outlet when left unused for a long period of time.
18. Save the carton and packing material even if the equipment has arrived in good condition. Should you ever need to ship the unit, use only the original factory packing.
19. Service Information Equipment should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged.
 - B. Objects have fallen, or liquid has been spilled into the equipment.
 - C. The equipment has been exposed to rain.
 - D. The equipment does not appear to operate normally, or exhibits a marked change in performance.
 - E. The equipment has been dropped, or the enclosure damaged.

TABLE OF CONTENTS

HDMI-AUDIO MATRIX SWITCHER SERIES

Thank you for purchasing the SB-5645AK HDMI Matrix Switch with Auxiliary. You will find this unit easy to install and highly reliable but it is essential that you read this manual thoroughly before attempting to use 4x4 HDMI Matrix switcher.

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INTRODUCTION

The SB-5645AK is a professional 4x4 matrix routing switch. Supporting (4) HDMI Inputs and (4) Auxiliary Audio Inputs and (4) HDMI Outputs and (4) SPDIF audio Outputs. The SB-5645AK is based on HDMI standards and supports full resolution HDMI video with embedded EDID, with a signal bandwidth of 340Mhz, so there is no signal degradation. High Definition Digital signals can be selected and distributed to any of the (4) Inputs to the (4) outputs. The switcher is certified as being fully CEC, ARC and HDCP 1.3 compliant with HDMI 1.4a, 4K2K@30Hz, DVI 1.0 and 3D formats with a wide frequency range 25MHz~340MHz. Using the built-in HDMI signal booster function, the HDMI output is capable of driving cable lengths for 1080p up to 98 feet (30M) & 4K2K@30Hz up to 66 feet (20M). Supports UXGA/WUXGA/DVI 1920x1200 resolutions to any HD displays. The EDID management can be selected between (7) different modes. Control is provided via front panel push buttons, IR remote, RS-232 or TCP/IP (not a web-browser). A RS-232 Windows GUI interface is also provided for matrix routing control (Windows only).

SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply. Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

DISCLAIMERS

The information in this manual has been carefully checked and is believed to be accurate. We assume no responsibility for any infringements of patents or other rights of third parties which may result from its use.

We assume no responsibility for any inaccuracies that may be contained in this document. We make no commitment to update or to keep current the information contained in this document.

We reserve the right to make improvements to this document and/or product at any time and without notice.

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Version 1.4 JULY 2015

5645AK-20150630-001

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LOOK A PUPPY!! NOW READ THIS!!



IMPORTANT WARRANTY INFORMATION.

If you remove the HDMI screw posts, you must use the provided HDMI Locking Post replacement screws to keep the internal HDMI jack secure. Removing the HDMI screws without installing the HDMI Locking Post replacement screws will void your warranty.

FEATURES

FEATURES

- (4) HDMI with Auxiliary Audio (Analog Audio) Inputs to (4) HDMI with S/PDIF Output destinations
- HDMI digital video w/ embedded HDCP, DVI formats and CEC/HDCP 1.3 compliant
- Worldwide EDID control modes for HDMI full 4K2K@30Hz HD Video resolutions
- Wide frequency range: 25MHz ~ 340MHz, Supports HDMI 4K2K@30Hz, 1.4a 3D formats
- Wide range of HD resolutions from PC XGA to WUXGA 1920x1200 and HDTV/DTV HDMI resolutions 480i/480p, 576i/576p, 720p, 1080i/p & 4K2K@30Hz
- Compatible with all HDMI source devices, PC monitors, Plasma HD display, HDTV and audio receivers or audio amplifiers
- Digital Video TMDS formats resolutions up to 4K2K@30Hz with Deep color 36-bit
- Digital Audio supports Dolby TrueHD, Dolby Digital, Dolby Digital Plug/ex, DTS, DTS-HD, DTS-HD Master, DTS-EX, PCM, PCM2, LPCM2
- Audio Input supports Auxiliary Audio (Analog stereo audio)
- Audio Output supports digital audio ARC or digital audio S/PDIF (from a HDMI source or Auxiliary Audio)
- Various User Interface Control:
 - Windows based GUI control via RS-232 interface control driver for 2000/XP/WIN7-32/WIN7-64/WIN8
 - Front panel push button
 - IR remote control
 - Ethernet switch control
 - Third party RS-232 control (via simple ASCII)
- Supports world wide (9) control function keys: Full function front panel controls: ARC / AUX/ ALL / OFF / EDID / LOCK / RECALL / MEMORY / ENTER
- Supports (7) EDID Modes:
 - Embedded EDID modes: FSS/ H24-3D/ H24-3D-M/ H36-3D/ H36-3D-M/ 4K2K-3D / DVI-D 1920x1200-60Hz
 - External modes: Learning mode
- Automatic scanning of input & output status via LCM display on the front panel
- Using the build-in HDMI signal booster function, the HDMI output is capable of driving cable lengths for 1080p up to 98 feet (30M) & 4K2K@30Hz up to 66 feet (20M)
- Supports Universal power adaptor 12VDC, 5A, (AC100V~AC240V, 50/60Hz)

The switcher will remember that last state during a power cycle. When power is removed and resorted, the last configuration will be invoked.

PACKAGE CONTENTS

Check that you have the following components:

- SB-5645AK Matrix Switcher
- RS-232 V2.0 / Ethernet V2.0 Protocol Instructions
- IR Remote Control (SW-HD44AK)
- 19 inch Ear mount bracket (Part # 1U-440L)
- SB-100 IR Extender Receiver Set
- CD Contents: Manual, Windows GUI, ISP V1.0 Windows driver
- RS-232 Cable 6 feet (2M)
- HDMI Locking Post Replacement Screws
- Users Guide
- Power Supply Input: DC12V, 5A, (Worldwide Universal 100~240VAC, AC 50/60Hz)
- *Optional: SB-100C IR Extender Receiver Cable (6.5ft (2M))*



SPECIFICATIONS

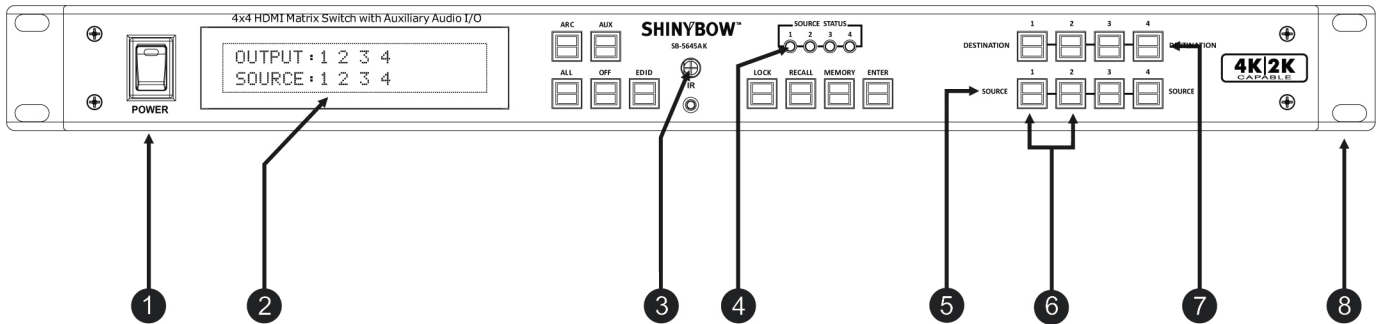
SPECIFICATIONS

- **Type of HDMI Switcher:** (4) Inputs to (4) Outputs HDMI Matrix with Audio and Extension
- **HDMI Support:** HDMI 4K2K@30Hz, 1080p@60Hz, H36-bit Deep color, 3D of HDMI V1.4 formats
- **HDCP / CEC Support:** HDCP 1.3 Compliant, CEC Compliant
- **Video Bandwidth:** Wide frequency 25MHz ~ 340Mhz
- **Digital Video Support:** HD: 480i/ 480p/ 720p/ 1080i/p and 4K2K@30Hz up to 36bit deep color
- **Video Inputs:** (4) HDMI (HDMI or DVI digital source)
- **Audio Inputs:** (4) AUX Audio (Analog Stereo, AUX port. 3.5mm Jack)
- **Video Outputs:** (4) HDMI: With Booster Output for 1080p up to ~98 ft (30M) & 4K2K@30Hz up to ~66 ft (20M)
- **Audio Outputs:**
 - (4) S/PDIF: Multi Audio Formats 5.1 from HDMI or LPCM-2CH from Auxiliary audio
 - (4) ARC: TV Return Channel Audio
 - (4) HDMI: Multi Audio Formats 5.1 / 7.1, MAT(MLP), Dolby Digital, Dolby TrueHD, Dolby Digital Plus, DTS, DTS-ES 6CH, DTS-HD, DTS-HD-HRA, DTS-HD Master, (PCM-2CH)
- **Switch Controls:**
 - Select & Function buttons on front panel (Data status via LCM panel display)
 - IR Remote Control (switch control)
 - IR External port (switch control via 3.5mm OD Jack)
 - RS-232 series interface (switch control)
 - Ethernet series interface (switch control)
- **Source Status:** Input status LEDs indicates presence of a live signal
- **(17) Function Control Keys:** 1. ARC, 2. AUX, 3. ALL, 4. OFF, 5. RECALL, 6. ENTER, 7. MEMORY, 8. LOCK, 9. EDID, 10. Destination button 1 thru 4, 11. Source button 1 thru 4
- **(7) EDID Management Modes:**
 - 1. Select Embedded EDID Modes: Mode1: FSS, Mode2: H24-3D, Mode3: H24-3D-M, Mode4: H36-3D, Mode5: H36-3D-M, Mode6: 4K2K-3D, PCM-2CH, Mode7: DVI-D 1920x1200-60Hz
 - 2. Select LEARNING Mode: Learning Destination EDID to Link Source
- **Infrared Frequency:** 38Khz
- **IR External Distance:** ~984 feet / 300M maximum
- **HDMI I/O Connector:** HDMI Type A - SMD 19pin female type
- **Temperature:** 32°F - 100°F Operation (0°C - 38°C)
- **Dimensions (LxWxH):** 17.5 x 10 x 1.75 in
- **Rack Mount:** 1RU High 19in Rack Mount #1U-440L (with rack mount)
- **Power Supply:** DC12V, 5A, Power Input: AC 100~240VAC 50/60Hz (universal type)
- **Safety Approvals:** CE, FCC, RoHS, REACH
- **Weight:** 6.8 lb (Unit only) / 9.8 lb (Net)

As product improvements are continuous, specifications are subject to change and without notice.

FRONT PANEL

FRONT PANEL



1. POWER SWITCH: The power switch turns the unit on and off. The LED will illuminate blue to indicate that the switcher is ON and is receiving power. The switcher will remember that last state during a power cycle. When power is removed and resorted, the last configuration will be evoked.

2. STATUS DISPLAY: Front panel status display shows current matrix routing configuration. This same display also shows particular configuration settings depending on your current function. In run mode (as shown above), the display shows each Output (destination) channel to which Input (source) it is assigned.

3. IR SENSOR: The IR sensor receives IR commands from the supplied remote control or third party IR emitter.

4. INPUT STATUS DISPLAY: Input sources 1 to 4 LED illuminates blue to indicate that a video source is present on that input.

5. SOURCE SELECT BUTTONS: Separate inputs 1 thru 4 select buttons are provided for each source selection.

6. EDID MODE SELECT BUTTONS: Used to select EDID mode using Source buttons #1 or #2.

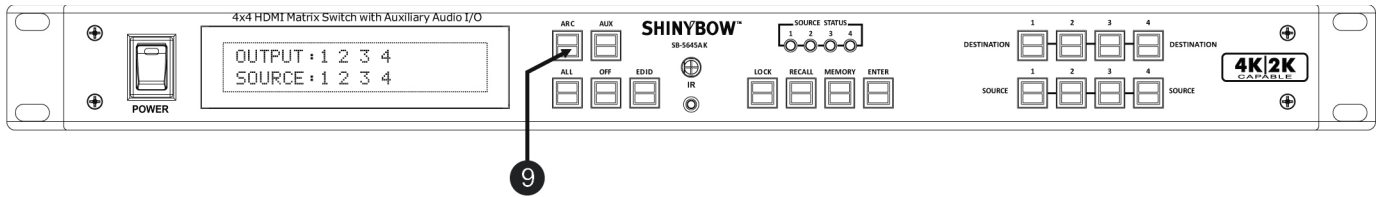
7. DESTINATION SELECT BUTTONS: Separate outputs 1 thru 4 select buttons are provided for each destination assignment. Routing can be source to destination or one source to multiple destinations.

Example: Press Destination 1,3,4. Then press Source 2, it will route Input 2 to Output 1,3,4 respectively.

8. 19 INCH EAR MOUNT PAIR: Converts desktop to 19 inch rack mount. Bracket (part number: 1U-440L) INCLUDED. Image shows rack mount bracket attached.

FRONT PANEL

FRONT PANEL



9. FUNCTION KEY - ARC:



Audio Return Channel (ARC) is a feature that sends audio from the TV back down the HDMI cable to its source device, in this case, the switcher. Not all displays support ARC, check your Users Guide for additional information. (Default = ARC Disabled)

The “Audio & ARC” port can support audio from either of (3) sources.

If the Input Video/Audio Source is HDMI, the audio can be extracted from the embedded signal.

If the Input Audio Source is connected to the external Audio Input, this same audio will be present on the Audio & ARC jack.

If ARC is selected, the audio will be from the destination device (**ex:** TV).

To enable the ARC option on a specific Output, perform the following steps:

- Press the **ARC** button.
- On the Destination row, Press **1 THRU 4** (the buttons will illuminate).
- Press the **ENTER** button. The new configuration will be stored.

The front panel LCD display will now show an “A” under the Output port.

- Or press **ARC** again to cancel the operation.

To disable the ARC option on a specific Output, perform the following steps:

- Press the **ARC** button
- On the Destination row, press **1 THRU 4** (the buttons will illuminate).
- Press **ENTER**. The pre-set configuration will execute.

The front panel LCD display will be blank under the Output port.

- Or press **ARC** again to cancel the operation.

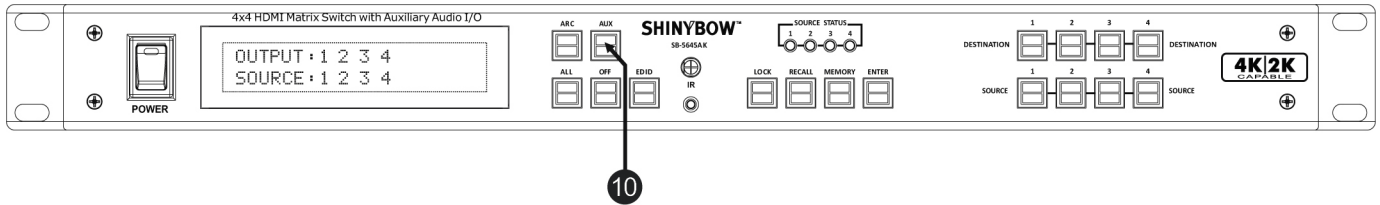
Note:

1. Operation will abort if no keys are pressed within 5 seconds.

2. The AUX Audio input only functions when a valid HDMI / DVI video signal is present. Without video, the AUX audio will not operate.

FRONT PANEL

FRONT PANEL



10. FUNCTION KEY - AUX (The audio additional on the “Audio / ARC” Port):



The AUX FUNCTION feature allows you to replace the embedded HDMI audio signal with an audio signal that is connected to the switchers Audio AUX Input. Using the AUX function, this replaces the audio and does not mix the audio. (Default = AUX Disabled)

To enable the AUX option on a specific Output, perform the following steps:

- Press the **AUX** button.
- On the Source row, press **1 THRU 4** (the buttons will illuminate).
- Press **ENTER**. The new configuration will be stored.

The front panel LCD display will show an “X” under the Source port.

- Or press **AUX** again to cancel the operation.

To disable the AUX option on a specific Output, perform the following steps:

- Press the **AUX** button.
- On the Source row, press **1 THRU 4** (the buttons will illuminate).
- Press **ENTER**. The pre-set configuration will execute.

The front panel LCD display will be blank under the Output port indicating the audio source is not embedded on the HDMI cable.

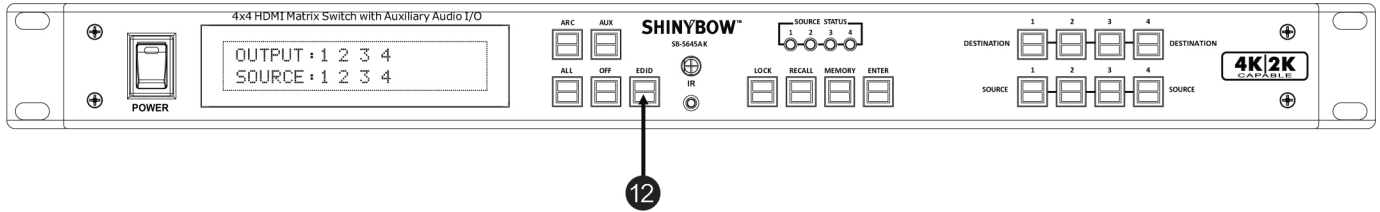
- Or press **AUX** again to cancel the operation.

Note:

1. Operation will abort if no keys are pressed within 5 seconds.
2. The AUX Audio input only functions when a valid HDMI / DVI video signal is present. Without video, the AUX audio will not operate.

FRONT PANEL

FRONT PANEL



12. FUNCTION KEY - EDID:



Used to display change current EDID mode.

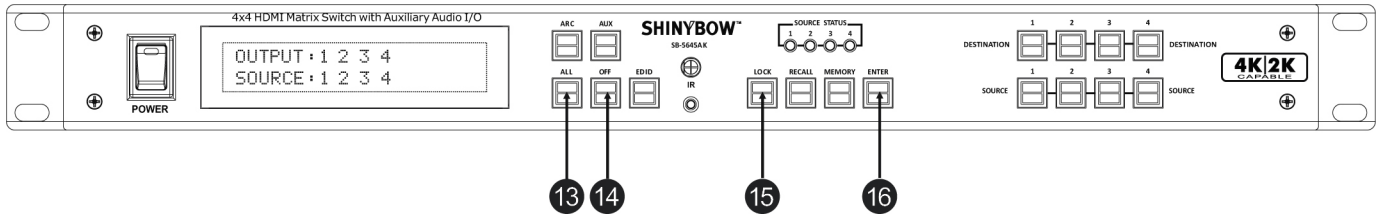
- Press **EDID** to select the new EDID mode or selection.
- Press Source row **#1** or **#2** to select EDID modes.
- Press **ENTER** to ready memory location.
- Or press **EDID** again to cancel the operation.

Operation completes.

Note: Operation will abort if no keys are pressed within 5 seconds.

FRONT PANEL

FRONT PANEL



13. FUNCTION KEY - ALL:



Disables (mutes) video on all destinations OR Selects the same source to all destinations.

Option 1

- Press **ALL** followed by the **OFF** button. The display will show "0" indicating all destinations have no video selected.

Option 2

- Press **ALL** followed by Source **1 THRU 4**. The display will show the Source selected.
- Press **ENTER**. The pre-set source selection will be assigned to all destinations.

14. FUNCTION KEY - OFF:



Disables (mutes) video to the selected channels or either destination.

- Press **OFF** button followed by any Destination channel.
- Press **1 THRU 4** output destinations. The display will show "0" for the selected channel indicating no video selected.

15. FUNCTION KEY - LOCK:

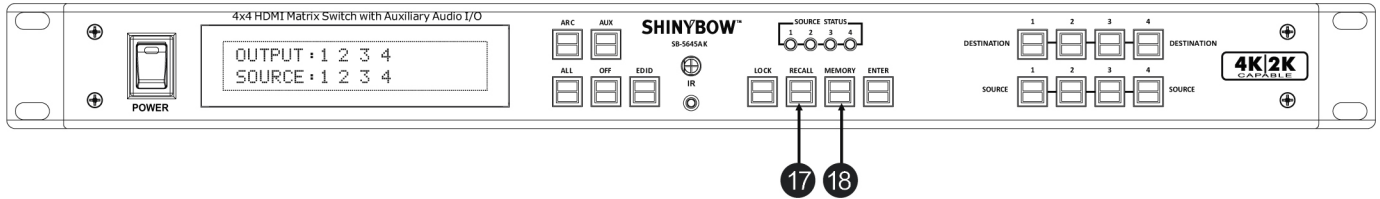


- Press and hold **LOCK** button for two seconds lockout the front panel.
- Press and hold **LOCK** button for two seconds to enable the front panel.

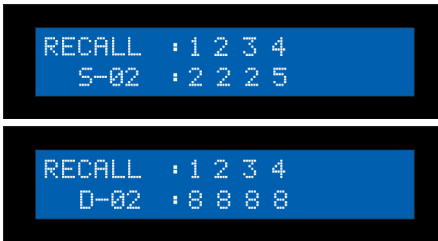
16. FUNCTION KEY - ENTER: Press **ENTER** to confirm entries.

FRONT PANEL

FRONT PANEL



17. FUNCTION KEY - RECALL:



The system will show previously stored presets, up to a total of (8). Presets are stored in local memory using Source keys 1 thru 4 or Destination keys 1 thru 4 as the memory preset location.

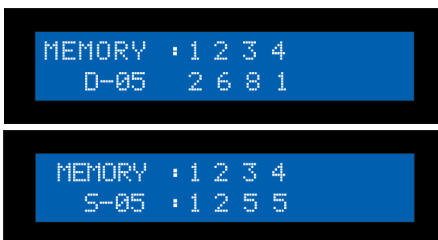
- Press **RECALL** button.
- Press **1 THRU 4** on either the Source or Destination row.
- Press **ENTER**. The pre-set configuration will execute.

Operation completes.

Note: Operation will abort if no keys are pressed within 5 seconds.

- Or press **RECALL** again to cancel the operation.

18. FUNCTION KEY - MEMORY:



The system will show stored presets, up to a total of (8). Presets are stored in local memory using Source keys 1 thru 4 or Destination keys 1 thru 4 as the memory preset location.

- Configure desired matrices.
- Press **MEMORY** button.
- Press **1 THRU 4** on either Source or Destination row.
- Press **ENTER** to ready the memory location.
- Or press **MEMORY** again to cancel the operation.

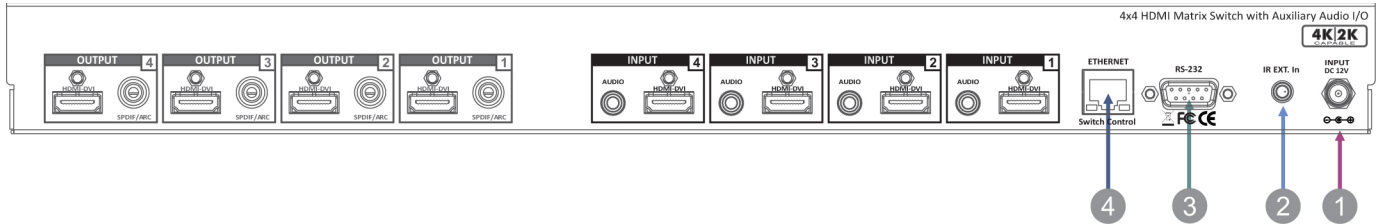
Operation completes.

Note: Operation will abort if no keys are pressed within 5 seconds.

- Or press **MEMORY** again to cancel the operation.

BACK PANEL

BACK PANEL



1. DC POWER INLET: The switcher is fitted with a DC power plug input connector. Ensure that the plug used is of an approved type and is of sufficient current carrying connector capacity with the correct voltage and connector polarity. 12Volt DC power supply 5A Max (Center pin positive).



POWER JACK:

DC Jack - Inner OD Ø 2.1mm (+)
Outside OD Ø 5.5mm (GND)
Power Input - 12VDC, 5A

2. IR EXTENDER CONTROL: Supports one IR extender. Extends a maximum distance ~1000 feet/300M. When you plug the external IR extender into the switcher, the front panel IR receiver remains active.

SW IR in

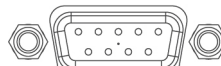


Switch Control

IR EXTENDER JACK: Female Jack - inner OD Ø 3.5 mm

3. RS-232 CONNECTION: RS-232 control port allows for interfacing to a PC, such as a computer or touch panel control, to the switcher via the DB-9pin female connector for serial RS-232 control.

RS232



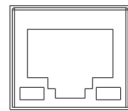
Switch Control

This port is also for firmware updates

REMOTE PORT: D-SUB-9pin female connector

4. ETHERNET CONNECTION: ETHERNET control port allows for TCP/IP interfacing to a PC, such as a computer or touch panel control (not a web-browser), to the switcher via the RJ-45 female connector to control the switcher.

Ethernet



Switch Control

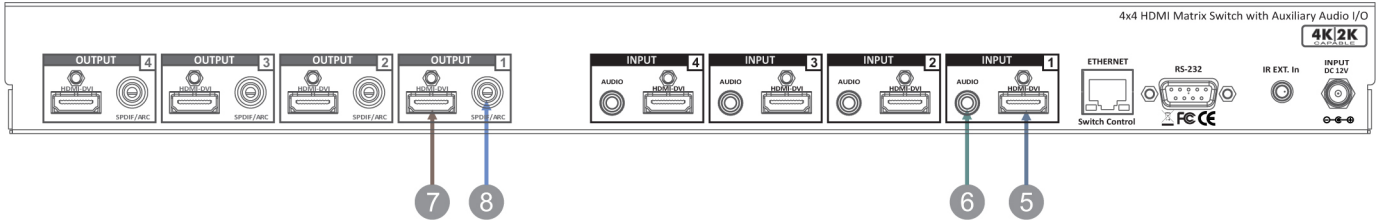
REMOTE PORT: Controls the switcher via a RJ-45 female connector

ETHERNET PORT:

Note: The Ethernet port and RS-232 port cannot be used simultaneously. Any connection to the Ethernet port will disable serial commands sent to the RS-232 port.

BACK PANEL

BACK PANEL



5. INPUTS - 1, 2, 3 & 4 HDMI: Connects a HDMI digital video/audio signal link direct to the female HDMI connector. This connector supports HDMI with embedded audio and DVI with AUX audio sources. If you remove the HDMI screw posts, you must use the provided HDMI Locking Post replacement screws to keep the internal HDMI jack secure. Removing the HDMI screws without installing the HDMI Locking Post replacement screws will void your warranty.



HDMI CONNECTOR: HDM Type A SMD 19pin female socket connector

Note: With the proper adapters, the switcher can be used with DVI digital video signals, as it is HDCP compliant. Audio input supports DVI.

6. INPUTS - 1, 2, 3 & 4 AUDIO (Auxiliary Audio): Connect an Auxiliary Audio / Stereo Audio signal link direct to the OD 3.5mm female jack. This jack supports DVI audio or Auxiliary Analog Stereo Audio sources.



AUDIO CONNECTOR: OD Ø 3.5mm phone jack female socket connector

Note: With the proper adapters, the switcher can be used with Auxiliary Audio signals and the audio input supports DVI.

Audio Connector for Inputs 1~4

Audio: The auxiliary audio (Analog Stereo Audio)

7. OUTPUTS - 1, 2, 3 & 4 HDMI: Connects a HDMI source to this Output. This HDMI port supports HDMI with embedded audio and DVI with AUX audio. If you remove the HDMI screw posts, you must use the provided HDMI Locking Post replacement screws to keep the internal HDMI jack secure. Removing the HDMI screws without installing the HDMI Locking Post replacement screws will void your warranty.



HDMI CONNECTOR: HDM Type A SMD 19pin female socket connector

Note: With the proper adapters, the switcher can be used with DVI digital video signals, as it is HDCP compliant. Audio input supports DVI.

8. OUTPUTS - 1,2,3 & 4 S/PDIF / ARC: Connect an Auxiliary Audio, HDMI digital audio source or ARC TV return channel audio output direct to this RCA jack audio connector. This port uses ARC digital audio (TV return digital audio) and S/PDIF digital audio from the HDMI or Auxiliary Audio.



ARC & SPDIF AUDIO CONNECTOR: RCA female connector

Note: With the proper adapters, the Audio can be used with HDMI Audio, DVI Audio and Auxiliary Audio signal outputs. The Auxiliary Audio uses the digital LPCM-2CH output.

Use RCA connectors for Output 1~4 Audio Output signals:

- ARC Audio (HDTV ARC Turn On)
- S/PDIF (HDMI/DVI Source Audio or Auxiliary Audio LPCM-2CH)

REMOTE CONTROL

BEFORE MAKING ANY CONNECTIONS OBSERVE THE FOLLOWING:

- Ensure the main voltage supply matches the label on the supplied plug-pack (+/-10%).
- Ensure that the power switch is OFF.
- Ensure that all system grounds (earth) are connected to a common point.
- Avoid powering equipment within a system from multiple power sources that may be separated by large distances.
- Connect all audio video sources and destination equipment.
- Power up all source and destination audio-visual sources.
- For each destination output select the appropriate input source by using the front panel input select buttons. The supplied IR remote control. Or through the RS-232 serial communications port.
- Upon powering up the switcher, it will return to its last used setting before being powered down.

REMOTE CONTROL

1. & 2. SWITCH POWER ON or OFF:

Power ON and OFF

3. DESTINATION: 1 THRU 4 OUTPUT SELECTION:

Destination button to select the output display channel

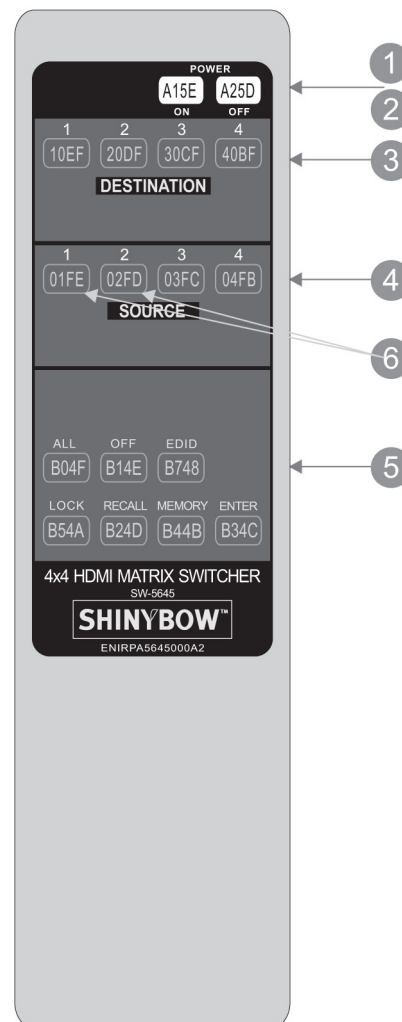
4. SOURCE: 1 THRU 4 INPUT SOURCE SELECTION:

Input 1~4 source selection buttons

5. FUNCTION KEY: Function selection buttons

ARC	AUX	ALL
OFF	EDID	RECALL
MEMORY	ENTER	LOCK

IR REMOTE : SW-5645



REMOTE PROTOCOL COMMANDS

IR REMOTE CUSTOM AND DATA CODES (NEC Standard)

HOW TO SETUP IR CODES :

CUSTOM CODE : 43BC

DATA CODE :

POWER ON:	43BC	A15E	LOCK:	43BC	B54A	AUX:	43BC	9966
POWER OFF:	43BC	A25D	RECALL:	43BC	B24D			
ALL:	43BC	B04F	MEMORY:	43BC	B44B			
OFF:	43BC	B14E	ENTER:	43BC	B34C			
EDID:	43BC	B748	ARC:	43BC	B847			

PRESS TV DESTINATION - # then PRES AV SOURCE -

DESTINATION #1 : 43BC 10EF	SOURCE #1 : 43BC 01FE
DESTINATION #2 : 43BC 20DF	SOURCE #2 : 43BC 02FD
DESTINATION #3 : 43BC 30EF	SOURCE #3 : 43BC 03FC
DESTINATION #4 : 43BC 40DF	SOURCE #4 : 43BC 04FB

For Example:

Select Destination # 1 to show Source #1~4

The IR Data Code list :

Destination # 1, Source #1	43BC 10EF 43BC 01FE
Destination # 1, Source #2	43BC 10EF 43BC 02FD
Destination # 1, Source #3	43BC 10EF 43BC 03FC
Destination # 1, Source #4	43BC 10EF 43BC 04FB

RS-232 & ETHERNET SERIAL INTERFACE

RS-232 SERIAL INTERFACE CONNECT a PC or CONTROL SYSTEM. VERSION COMPATIBLE V2.0

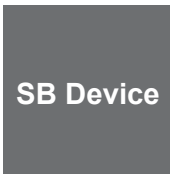
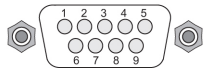
For a complete list of commands, please reference external document extended RS-232 Protocol Instruction Manual.

Example of the commanded string to select Inputs:

Function	Command	Variables
Select source	Source xxx;	xxx = Input Channel (001=Source1, 002=Source2.etc)

Command	Example	Response Description
Source 001;	Source 001#ok;	Select source number 1

RS-232 Pin Diagram



RS-232 CONFIGURATION

RS-232 cable is a straight thru cable and not null-modem

Definition	Pin		Pin	Definition
	1		1	DCD
TX	2	=====	2	RX
RX	3	=====	3	TX
	4		4	DTR
GND	5	=====	5	GND
	6		6	DSR
	7		7	RTS
	8		8	CTS
	9		9	RI



RS-232 SERIAL INTERFACE PROTOCOL COMMANDS (Ethernet / RS-232 Control driver V2.0)

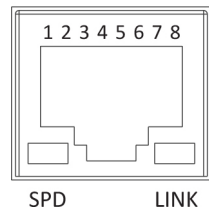
The Shinybow switcher can be controlled via the RS-232 serial control port to allow for interfacing to a PC, or similar third party control system. The serial communication parameters are 9600 baud, 8 bit, No Parity and 1 stop bit - this is often referred to as 9600 8N1. When the unit recognises a complete command it will perform the requested action - there is no delimiter character required.

ETHERNET SERIAL INTERFACE CONNECT a PC or CONTROL SYSTEM. VERSION COMPATIBLE V2.0

ETHERNET SERIAL INTERFACE

Pin	Ethernet	Reference
1	TXOP	TX +
2	TXON	TX -
3	RXIP	RX +
4	NC	
5	NC	
6	RXIN	RX -
7	NC	
8	GND	

Ethernet



Note :
Control the switcher
SPD : Speed
LINK : Ethernet link
RJ-45 Female 8P-8 Connector


For a complete list of commands, please reference external document extended Ethernet Protocol Instruction Manual.

ETHERNET TCP/IP PROTOCOL COMMANDS (Ethernet / RS-232 Control driver V2.0)



*** The Ethernet port and RS-232 port cannot be used simultaneously. Any connection to the Ethernet Control port will disable serial commands send to the RS-232 port. ***

EDID FUNCTION

EDID FUNCTION SETUP








EDID SETUP	To Change The EDID Setup
Step 1. Press the EDID button	The display will show the currently selected EDID mode.
Step 2. Press SOURCE #1 OR #2 button row	The button will flash blue and the display will show the current Embedded EDID Status.
Step 3. Press the ENTER button	To set EDID mode. The switcher will return to operation mode.
Operation will abort if no keys are pressed within 5 seconds.	
EMBEDDED EDID MODES	Total 7 EDID Modes
Embedded EDID Setup Press EDID > SOURCE > ENTER SOURCE #1 or SOURCE #2 	To select EDID mode. Repeatedly pressing the SOURCE 1 button will cycle up thru the options. Repeatedly pressing the SOURCE 2 button will cycle down thru the options. Embedded EDID: Mode 1 : FSS® Mode 2 : H24-3D Mode 3 : H24M-3D Mode 4 : H36-3D Mode 5 : H36-3D-M (1080p-36 bits) Mode 6 : 4K2K (24/30Hz) Mode 7 : 1920x1200-60Hz (DVI-D)

EDID FUNCTION FOR HDMI MATRIX SWITCHER

RESET	EDID Return To Factory Default
How to RESET EDID mode Press EDID > RECALL > ENTER  	To RESET to FACTORY DEFAULT (1080p-2CH). Press EDID button: The LCM will show the current EDID status. Press RECALL button: The LCM will show the RESET EDID . Press ENTER to confirm entries. The EDID will return to FSS® mode and resolution 1080p-2CH.
EDID STATUS	To View The Current EDID Status
Step 1. Press EDID button	The button will flash blue and the display will show the current Embedded EDID Status.
Step 2. Press EDID button	To exit.
HOW TO SETUP FSS® FUNCTION	Fast Speed Start®
Step 1. Press the DESTINATION #1-4 button row Then Press the SOURCE #1-4 button row	To setup and Install all devices.
Step 2. Press EDID button	Select a optimum status of Embedded EDID mode.
Step 3. Press ENTER button	To confirm entries.
Step 4. Press EDID button	To select the EDID FSS® mode.
Step 5. Press ENTER button	To confirm entries.


EDID FUNCTION

EDID FUNCTION: (7) EMBEDDED EDID MODES

EDID FUNCTION: (7) EMBEDDED EDID MODES	
Mode 1. FSS® (Fast Speed Start®) 	Fast Speed Start® mode shortens the startup time of the switcher. Selecting this mode does not force the EDID setup to be cancelled. Users may first select one EDID mode from mode 2 to 3, and then select mode 1 for fast speed start®.
Mode 2. H24-3D (1080p-24 bits) 	Audio Support: PCM 2CH
Mode 3. H24-3D-M (1080p-24bits) 	Audio Support: MAT(MLP) 7.1CH, PCM 2CH, One Bit Audio 2CH, AC-3 5.1CH, DTS 5.1CH, PCM 7.1CH, Dolby Digital + 7.1CH, DTS-HD 7.1CH
Mode 4. H36-3D (1080p-36 bits) 	Audio Support: PCM 2CH
Mode 5. H36-3D-M (1080p-36 bits) 	Audio Support: MAT(MLP) 7.1CH, PCM 2CH, One Bit Audio 2CH, AC-3 5.1CH, DTS 5.1CH, PCM 7.1CH, Dolby Digital + 7.1CH, DTS-HD 7.1CH
Mode 6. 4K2K (24/30Hz) 	HDMI Support: 4K2K-3D, PCM 2CH (3860x2160-24/30Hz) Audio Support: PCM 2CH
Mode 7. 1920x1200-60Hz (DVI-D) 	DVI Support: DVI-D 1920 x 1200 60Hz

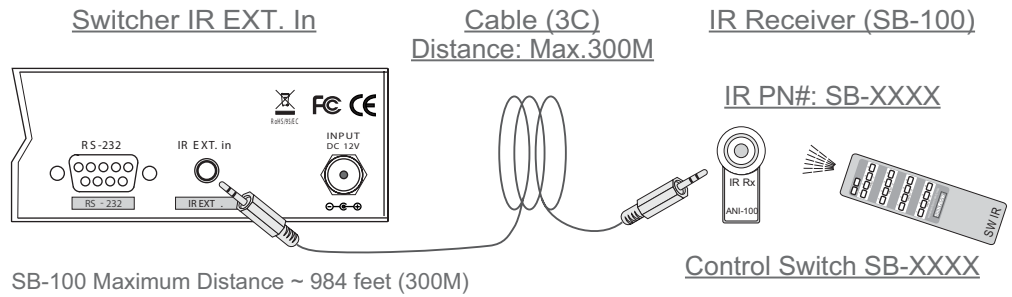
EDID FUNCTION

EDID FUNCTION FOR HDMI MATRIX SWITCHER

LEARNING EDID	Learning EDID From Destination To Source
<p>Learning EDID setup Press EDID > DESTINATION > SOURCE > ENTER</p> 	<p>Press EDID > DESTINATION Button The LCM will be show LEARNING. The switcher will LEARN destination HDMI EDID and pass the selected source. Learning EDID setup for HDMI Key Sequence: EDID > DESTINATION # > SOURCE # > ENTER The EDID for HDMI has been learned</p>
<p>NOTE: The already learned EDID cannot be modified. You can only rebuild a new Learning EDID.</p> <p>For Example: When the Source has “Learned” the EDID data from a destination, It will save that EDID information into EPROM and the EDID data cannot change.</p> <p>Please select new learning destination to sources or change to one of the embedded EDID modes when you want to remove the learning EDID memory from EPROM.</p>	
LEARNING EDID SINGLE TO SINGLE	Learning Destination #2 EDID To Source #3
Step 1. Press EDID button	The button will flash blue and the display will show the current Embedded EDID Status.
Step 2. Press the DESTINATION #2 button row	Copy the Destination #2 Display EDID.
Step 3. Press the SOURCE #3 button row	Learning the Destination #2 EDID To Source # 3.
Step 4. Press ENTER button	To confirm entries.
LEARNING EDID SINGLE TO MULTIPLE	Learning Destination EDID Link To The Majority Sources
Step 1. Press EDID button	The button will flash blue and the display will show the current Embedded EDID Status.
Step 2. Press the DESTINATION #2 button row	Copy any 1~2 Destinations EDID.
Step 3. Press the SOURCE #1, #3, #4 button row	Learning the Destination EDID link to source #1, #3, #4.
Step 4. Press ENTER button	To confirm entries.
LEARNING EDID SINGLE TO ALL	Learning Destination EDID Link To All Sources
Step 1. Press EDID button	The button will flash blue and the display will show the current Embedded EDID Status.
Step 2. Press destination button 1 THRU 2	Learning anyone 1~2 Destination EDID to all sources.
Step 3. Press ALL button	Learning selected destination EDID to all sources.
Step 4. Press ENTER button	To confirm entries.
SINGLE LEARNING #1 DEFINITION	Single Learning EDID From Destination To Source
<p>1. The switcher will LEARN the destination EDID and pass to the selected source.</p> <p>2. To set up learning between a single destination and single source: Press EDID button > Press DESTINATION 1 THRU 4 > Press SOURCE 1 THRU 4 > Press ENTER to confirm. The switcher will learn the destination EDID for the source device.</p> <p>3. To set up learning between a single destination and multiple sources: Press EDID button > Press DESTINATION 1 THRU 4 > Press the majority SOURCES 1 THRU 4 > Press ENTER. The switcher will learn the single destination EDID to many source devices.</p> <p>4. How to Learn single destinations with all sources. Press EDID button > Press ALL button > Press ENTER to confirm.</p>	
MULTIPLE LEARNING #2 DEFINITION	Multiple Learning EDID From Destination To Source
<p>1. The switcher will LEARN multiple destination EDID and pass to the selected source.</p> <p>2. To set up multiple learning between a multiple destinations and multiple source: Press EDID button > Press OFF button > Press Destination 1 THRU 4 > Press ENTER to confirm. Switcher will learn destination EDIDs to the source devices.</p> <p>3. When the Source has “Learned” the EDID data from a destination, it will save that EDID information into EPROM and the EDID data will not change. To change a saved HDMI EDID information, you have to select a new LEARNING destination to source or Disable the LEARNING.</p>	

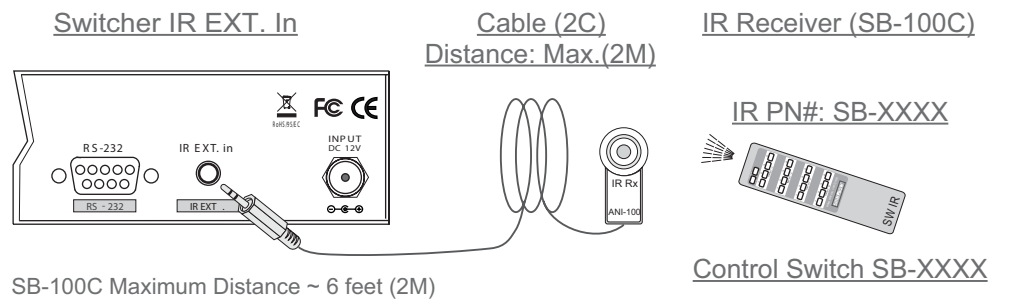
IR EXTENDER

1. SB-100 IR 300M Receiver



The SB-100 IR Receiver is required when using the port "ALL in" Jack.

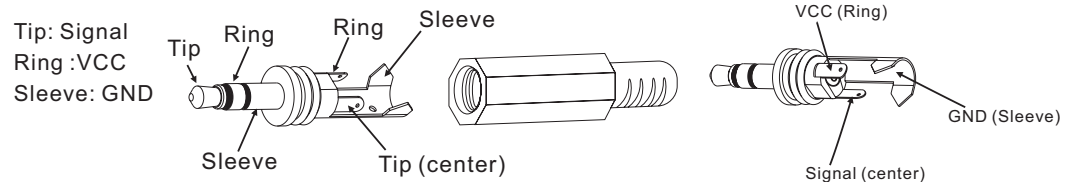
2. SB-100C IR 2M Receiver



The SB-100C IR Receiver will not function on the port "ALL in" Jack.

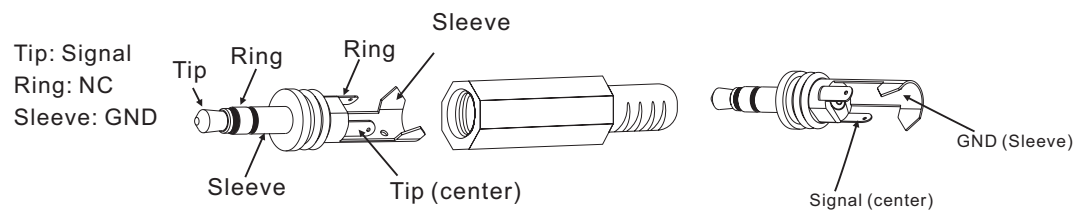
*** When you plug the External IR extender into the switcher, the front panel IR receiver remains active. ***

Pin configuration for IR 984 feet (300M) Extender Receiver such as SB-100 compatible



SB-100 Receiver and SB-101 Transmitter The DISTANCE maximum ~ 984 feet (300M)

Pin configuration for IR Receiver 6 feet (2M) cable such as SB-100C compatible



SB-100 Receiver and SB-101C Transmitter The DISTANCE maximum ~ 984 feet (300M)

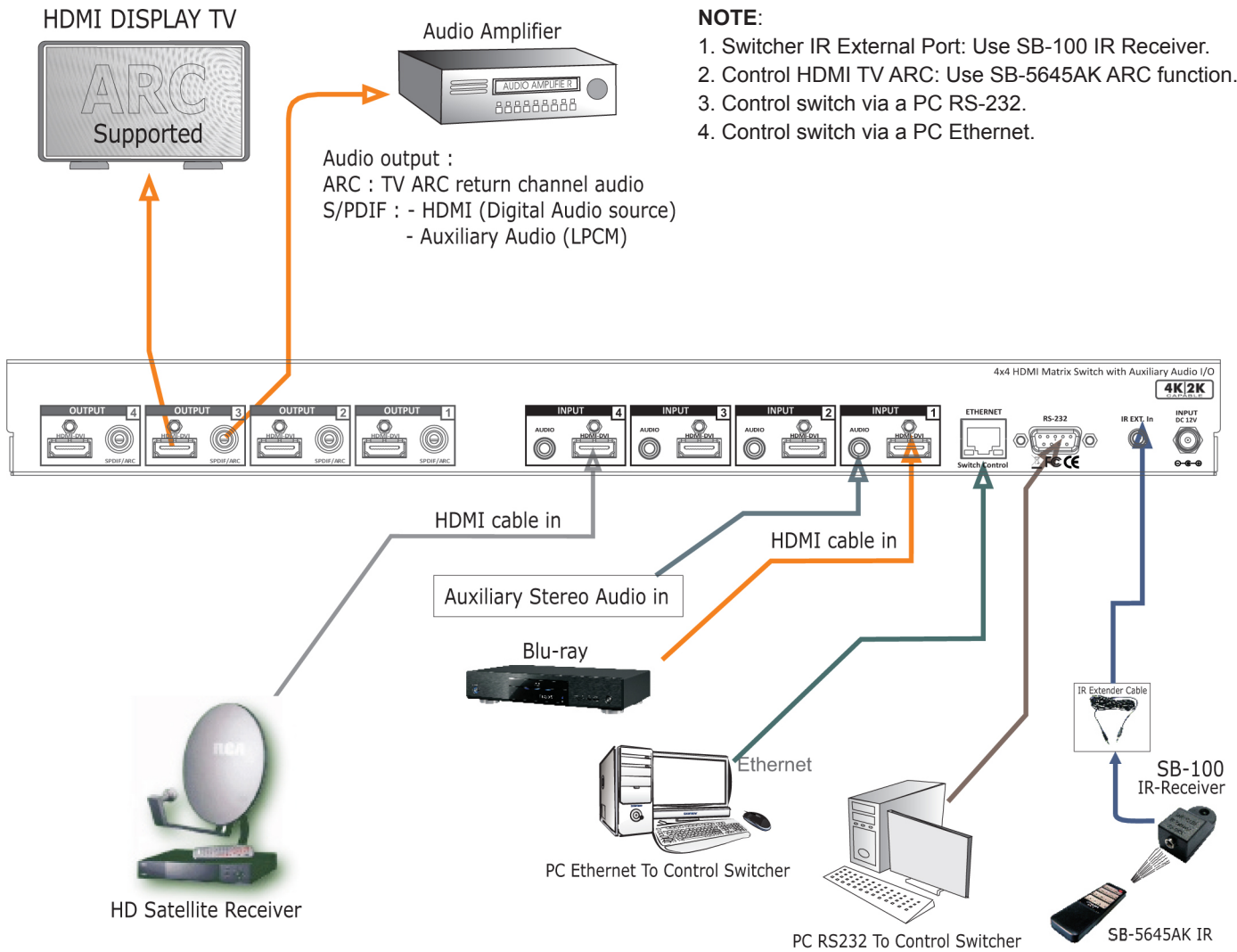
Note: The External IR jack has voltage on the "Ring" portion of a 3-conductor plug. You must use a 3-conductor plug (aka: stereo plug). Using a 2-conductor plug will short out the power supply. Always make connections with the switcher power off.

TYPICAL APPLICATION

INSTALLING DIAGRAM

Samples Connection:

1. Using an IR External, RS-232 or Ethernet command to control the switcher SB-5645AK via a PC or the SB-100 IR receiver to transmit the SB-5645AK's IR signal.
2. Audio ARC output link from a TV return channel, HDMI audio source or mixing Auxiliary audio.



Application RS-232, IR and Ethernet to control the switcher.

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