SHINYBOW™
MULTIMEDIA AUDIO AND VISUAL

HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

4K|2K
CAPABLE

Instruction Manual

MODEL : SB-5645AK
4x4 HDMI Matrix Switch with Auxiliary Audio I/O

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 throughly before attempting to use 4x4 HDMI Matrix switcher.

SAFETY INFORMATION

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,

DO NOT REMOVE COVER (OR BACK),

NO USER SERVICEABLE PARTS INSIDE,

REFER SERVICING TO QUALIFIED SERVICE PERSONAL.

WARNING!
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK
DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

This symbol is intended to alert the user to the presence of uninsulated of uninsulated "dangerous voltage" within the products enclosure that enclosure tha may be of sufficientmagnitude to constitue a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operational and maintenance (serving) instructions in the literature accompanying the appliance.

Caution: To prevent electric shock do not use this (polarised) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.
To prevent electric shock, match wide blade of plug to wide slot, fully insert.

1. 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.

2. Read all documentation before operating your equipment. Retain all documentation for future reference.

3. Follow all instructions printed on unit chassis for proper operation.

4. Do not spill water or other liquids into or on the unit, or operate the unit while standing in liquid.

5. Make sure power outlets conform to the power requirements listed on the back of the unit.

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. 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.

8. Mains 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.

9. Power down & disconnect unit from mains voltage before making connections.

10. Never hold a power switch in the " ON " position.

11. Do not use the unit near stoves, heat registers, radiators, or other heat Producing devices.

12. 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 matter.

13. Do not remove the cover. Removing the cover will expose you to potentially dangerous voltages. There are no user serviceable parts inside.

14. Do not drive the inputs with a signal level greater than that required to drive equipment to full output.

15. Non-use periods. The power cord of equipment should be unplugged from the outlet when left unused for a long period of time.

16. Service Information Equipment should be serviced by qualifier 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.

IMPORTANT SAFETY INSTRUCTIONS

To insure the best from this product, please read this manual carefully. Keep it in a safe place for future reference.

To reduce the risk of electric shock, do not remove the cover from the unit. No user serviceable parts inside. Refer servicing to qualified personnel.

To reduce the risk of fire, do not expose the unit to rain, water or excessive moisture.

Do not force switched or external connections.

When moving the unit disconnect the serial port connections first then the power cable and finally the interconnecting cables to other devices.

Do not attempt to clean the unit with chemical solvents or aerosol cleaners, as this may damage the unit. Use a clean dry cloth.

Installation of this unit should be in a cool dry place, away from sources of excessive heat, vibration, dust, moisture and cold.

THIS SAFETY INFORMATION IS OF A GENERAL NATURE AND MAY BE SUPERSEDED BY INSTRUCTIONS CONTAINED WITHIN THIS MANUAL

TABLE OF CONTENTS

INTRODUCTION AND PACKAGE CONTENTS

INTRODUCTION

The SB-5645AK is professional 4x4 matrix routing switch. Supporting FOUR (4) HDMI Inputs and (4) Auxiliary Audio Inputs. Output supported (4) HDMI and (4) SPDIF audio. The SB-5645AK is based on the HDMI standard and supports full resolution HDMI Video with embedded EDID, With a signal bandwidth of 340Mhz, there is no signal degradation. High Definition Digital signals can be selected and distributed to any (4) Inputs to (4) outputs. The Switcher is certified as being fully CEC , ARC and HDCP 1.3, HDMI 1.4a, 4K2K HDMI@30Hz, DVI1.0, 3D formats, wide frequency range 25MHz ~ 340MHz. Supports UXGA/WUXGA/DVI 1920x1200 resolution to any HD displays. The SB-5645AK has 1x HDMI and Auxiliary Audio(analog stereo audio) connector for Input, effectively making this an (4) in x (4) out switcher. The EDID management can be selected between seven (7) different modes. Control is provided via Front panel push buttons, IR remote, RS-232 or TCP/IP (not a web-browser). An RS232 Windows GUI interface is provided for matrix routing control (Windows only).

PACKAGE CONTENTS

1. SB-5645AK Matrix Switcher
2. Operating Instructions
3. RS-232 V2.0 Protocol Instructions
4. Ethernet V2.0 Protocol Instructions
5. Master wireless IR Remote Control (SW-HD44AK)
6. 19 inch Ear mount bracket (Part # 1U-440L)
7. SB-100 IR Extender distance ~984 feet (300M) Receiver set.
8. CD Contents : This manual, Windows GUI, ISP V1.0 Windows driver
9. RS232 Cable 6 feet (2M)
10. Power Supply Input : DC12V, 3A, (Worldwide Universal 100~240 VAC, AC 50/60Hz).
11. ISO Screws

IR Extender 300M Receiver	19-inch ear mount	ISO SCREW
SB-100 IR Receiver set	# 1U-440L	ISO SCREW L=5mm/OD=3mm

FEATURES

1. (4)x HDMI with Auxiliary Audio (Analog Audio) source devices matrix switched to (4)x HDMI with S/PDIF output destinations.
2. HDMI digital Video w/embedded HDCP, DVI format and CEC/HDCP 1.3 compliant
3. Worldwide control EDID modes for HDMI full 4K2K (24/30 Hz) HD Video resolutions.
4. Wide frequency range 25MHz ~ 340MHz, Support HDMI 4K2K@30Hz, 1.4a 3D formats.
5. Wide range of HD resolutions from PC XGA to WUXGA 1920x1200 and HDTV/DTV HDMI resolutions 480i/480p, 576i/576p, 720p, 1080i/p & 4K2K (24/30Hz).
6. Compatible with all HDMI source devices, PC monitors, Plasma HD display, HDTV and audio receivers or audio amplifiers.
7. Digital Video TMDS formats Resolution up to 4K2K with Deep color 36-bit.
8. Digital Audio Support : - Dolby TrueHD,
    - Dolby Digital,
    - Dolby Digital Plug/ex,
    - DTS,
    - DTS-HD,
    - DTS-HD Master,
    - DTS-EX
    - PCM, PCM2, LPCM2..
9. Audio Input : Support Auxiliary Audio (Analog stereo audio).
10. Audio Output : Support Digital audio ARC or Digital audio S/PDIF (from HDMI source or Auxiliary Audio)
11. Various User Interface controls:
    · Windows based GUI control via RS232 interface control driver for 2000/XP/WIN7-32/WIN7-64/WIN8.
    · Front Panel push button
    · IR wireless remote controller
    · Ethernet Switch control
    · Third party RS232 controller (via simple ASCII)
12. Support world wide (10)x control function keys:
13. Full function front panel controls: ARC / AUX/ ALL / OFF / EDID / LOCK / RECALL / MEMORY / ENTER
14. Support EDID modes :
    a. Embedded EDID modes :
       FSS/ H24-3D/ H24-3D-M/ H36-3D/ H36-3D-M/ 4K2K-3D / DVI-D 1920x1200-60Hz
    b. External modes : Learning mode.
15. Automatic scanning input & output status via LCM show on front panel.
16. Using the build-in HDMI signal booster function, HDMI output is capable of driving cable lengths 1080p up to 98 feet (30M) & 4K2K up to 66 feet (20M).
17. Support Universal power adaptor 12VDC, 3A, (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.

SPECIFICATIONS

SPECIFICATIONS

Type of HDMI Switcher	4x inputs To 4x Outputs HDMI Matrix Switch with Audio and Extension
HDMI Support	HDMI 4K2K, 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 up to 36bit deep color
Video Inputs Audio Inputs	4x HDMI (HDMI or DVI digital source). 4x AUX Audio (Analog Stereo, AUX port. 3.5mm Jack).

Video Outputs
 	
Audio Outputs
	4x HDMI :With Booster output 1080p up to ~98feet(35M) & 4K2K up to ~66feet(20M).
	
	4x S/PDIF : Multi Audio Formats 5.1 from HDMI or LPCM-2CH from Auxiliary audio.
	4x ARC : TV Return Channel Audio.
	4x 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	1x Select & Function buttons on front panel (Data status via LCM panel show out) 1x IR Remote Controller (switch control) 1x IR External port (switch control via 3.5mm OD Jack) 1x RS 232 series interface (switch control) 1x Ethernet series interface (switch control)

As product improvement is continuous, specifications are subject to change and without notice or liability.

SPECIFICATIONS

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	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	38 Khz
IR External Distance	~984 feet / 300 meters maximum.
HDMI I/O Connector	HDMI Type A - SMD 19pin Female Type
Temperature	Operating Temperature 32$°$F - 100$°$F (0$°$C - 32$°$C)
Dimensions	LxWxH=19 ” x 9.85 ” x 1.73 ” (482mm x 250mm x 44mm)
Rack Mount	1RU High 19 ” Rack Mount #1U-440L (with rack mount)
Power Supply	DC12V, 3A, Powr Input : AC 100~240 VAC 50/60Hz (universal Type Supply)
Safety Approvals	CE, FCC, RoHS, REACH.
Product Weight	2.85 Kgs / 6.06 lb

As product improvement is continuous, specifications are subject to change and without notice or liability.

FRONT PANEL

FRONT PANEL
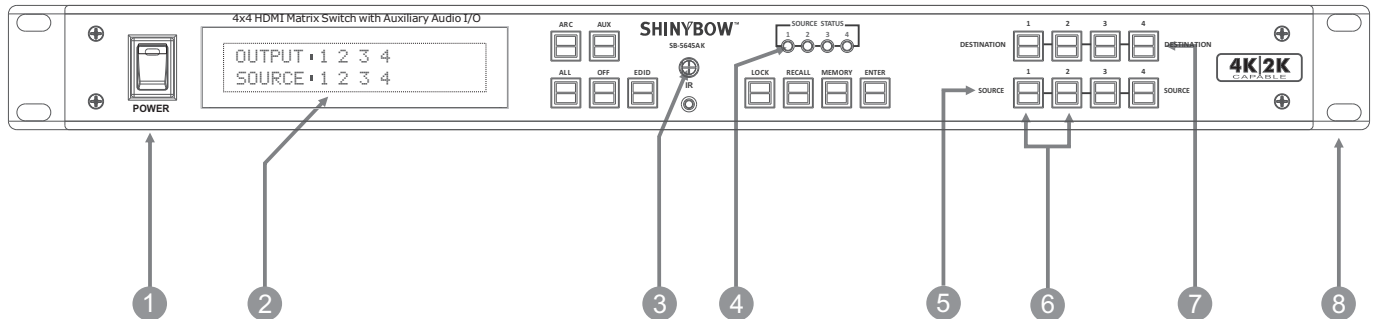
1 POWER SWITCH

The power switch turns the unit on and off. The LED will illuminate red 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 shows which input (source) is assigned.

3 IR SENSOR

The IR sensor receives IR commands from the supplied remote controller 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 each source selection.

6 EDID MODE SELECT BUTTONS

Used to select EDID mode using buttons Source button **#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.
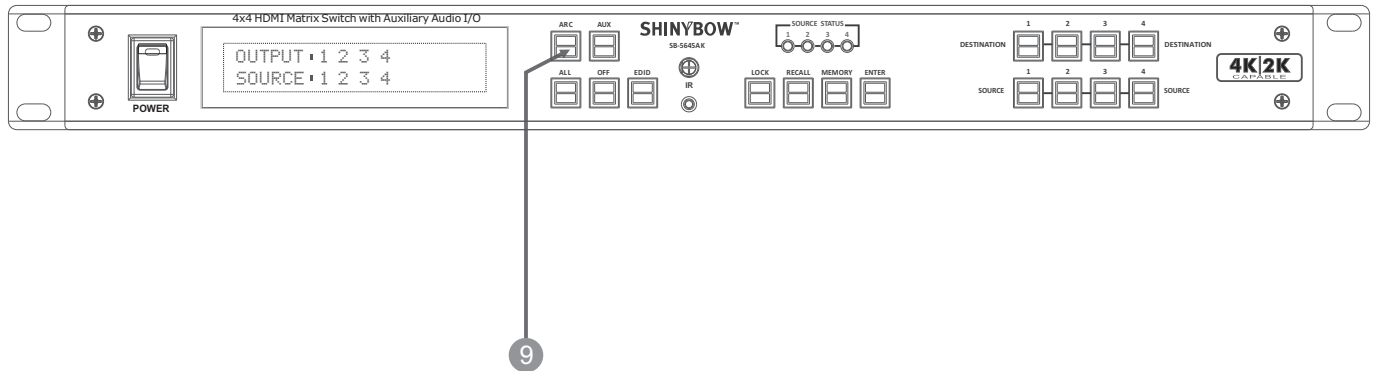Example : Press Destination 1,3,4 then press Source 2 will route Input 2 to Output 1,3,4 respectfully.

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

9 FUNCTION KEY - **ARC**


```
OUTPUT:1 2 3 4
   ARC:A A   A
```

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 three sources.
If the Input Video/Audio Source is HDMI, the audio can 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 follow steps:
- Press the **ARC** button.
- on the **Destination** row, Press 1 thru 4 (the button will illuminate).
- Press **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 operation.

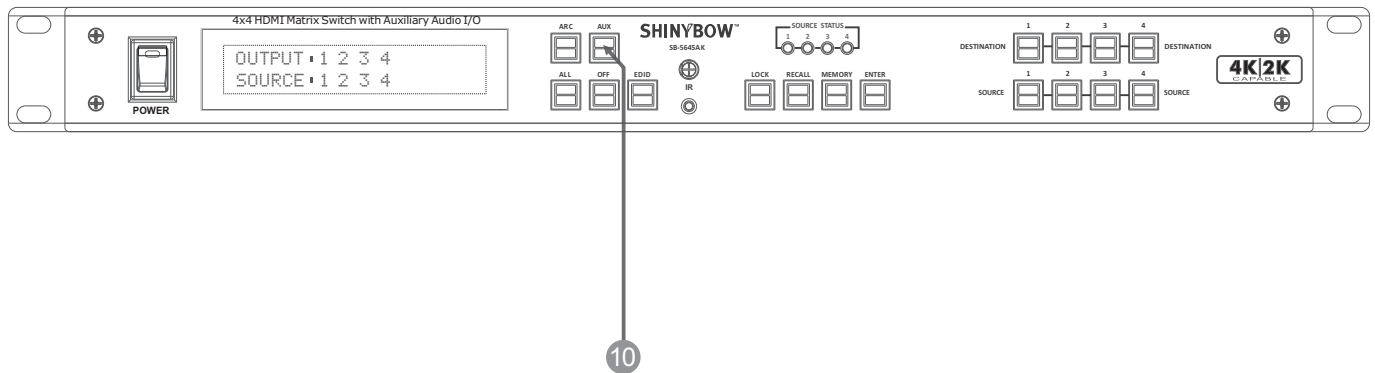To Disable the ARC option on a specific Output, perform the follow steps:
-Press the **ARC** button
-On the **Destination** row, press 1 thru 4 (the button will illuminate).
-Press **ENTER** The pre-set configuration will execute.
The front panel LCD display will be blank under the Output port
- or press **ARC** again to cancel operation.

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

FUNCTION KEY - **AUX**

⑩ FUNCTION KEY - **AUX**   (The audio additional on the " Audio / ARC" port)

```
SOURCE·1 2 3 4
    AUX·X   X
```

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 replaces the audio and does not mix the audio. (Default = AUX Disabled)

To Enable the AUX option on a specific Output, perform the follow steps:

-Press the **AUX** button

-On the **SOURCE** row, press 1 thru 4 (the button 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 operation.

To Disable the AUX option on a specific Output, perform the follow steps:

-Press the **AUX** button

-On the **SOURCE** row, press 1 thru 4 (the button will illuminate).

-Press **ENTER** The pre-set configuration will execute.

The front panel LCD display will be blank under the Output port indicating audio source is that which is embedded on the HDMI cable.
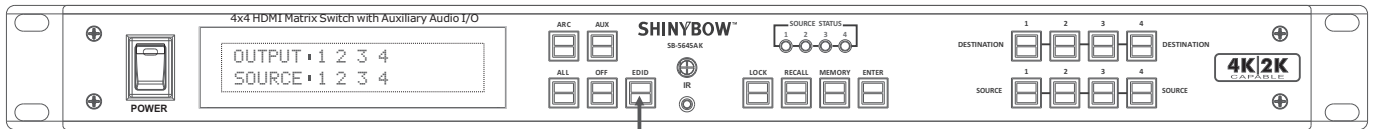
- or press **AUX** again to cancel operation.

Note :

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

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

FRONT PANEL

12 FUNCTION KEY - **EDID**

```
    EDID·
3.H24-3D,MULTI AUDIO
```
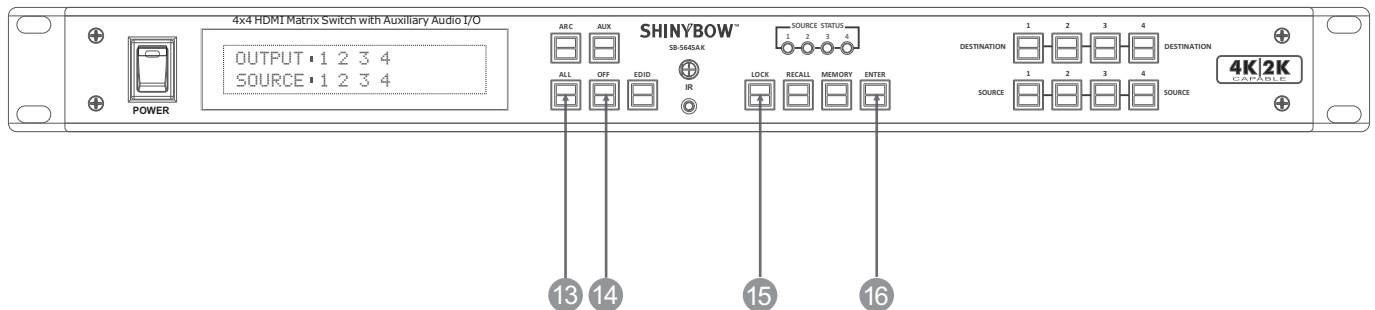
Used to display change current EDID mode.
- press **EDID** to select new EDID mode or select
- press **SOURCE** row #1 or #2 Select EDID modes.
- press **ENTER** to ready memory location.
- or press **EDID** again to cancel operation.

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

FUNCTION KEY - **ALL** - **OFF** - **LOCK** - **ENTER**

FRONT PANEL

13 FUNCTION KEY - **ALL**

```
OUTPUT:1 2 3 4
   ALL:1 1 1 1
```

Disables (mute) video on all destinations OR Selects the same source to all destinations.
Option 1
- Press **ALL** followed by **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 all destinations.

14 FUNCTION KEY - **OFF**

```
OUTPUT:1 2 3 4
   OFF:1 0 3 0
```

Disables (mute) video to selected channels. Either destinations.
- Press **OFF** button followed by any Destination channel.
- Press 1 thru 4 output destination. The display will show " 0 " for the selected
  channel indicating no video selected.

15 FUNCTION KEY - **LOCK**

```
OUTPUT:1 2 3 4
  LOCK:1 2 3 4
```

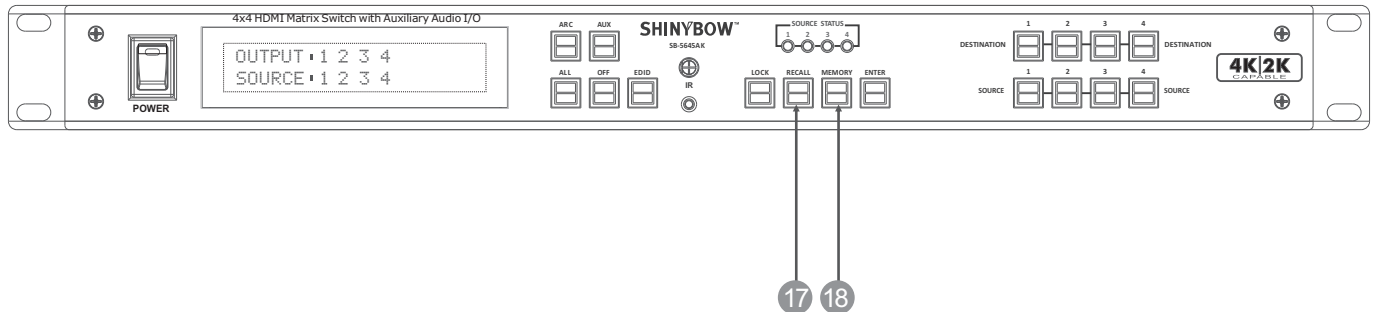- Press and hold **LOCK** button for two seconds lockout the front panel.
- Press and hold **LOCK** button for two seconds to enable the front panel.
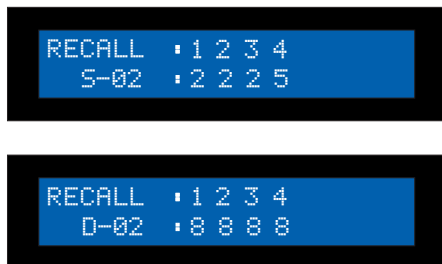
16 FUNCTION KEY - **ENTER**

Press **ENTER** to confirm entries.

FRONT PANEL

17 FUNCTION KEY - **RECALL**

```
RECALL :1 2 3 4
  S-02 :2 2 2 5
```
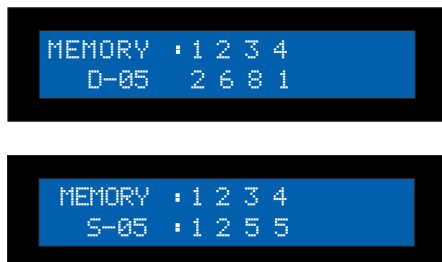
```
RECALL :1 2 3 4
  D-02 :8 8 8 8
```

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 8 on either 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 operation.

18 FUNCTION KEY - **MEMORY**

```
MEMORY :1 2 3 4
  D-05  2 6 8 1
```

```
MEMORY :1 2 3 4
  S-05 :1 2 5 5
```

The system will show store 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 memory location.
- or press **MEMORY** again to cancel operation.

Operation completes.
Note : Operation will abort if no keys are pressed within 5 seconds.
- or press **MEMORY** again to cancel operation.

REAR PANEL - SWITCH CONTROLS

REAR PANEL

4x4 HDMI Matrix Switch with Auxiliary Audio I/O

4K|2K
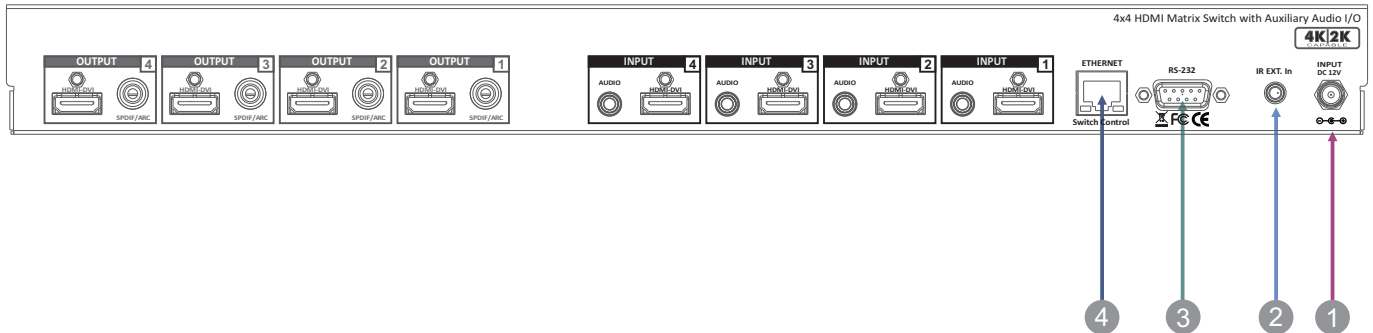
① POWER INLET

The Switcher is fitted with a DC power plug input connector.
Ensure that the 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 3A Max (Center pin positive).

Power Jack:
DC Jack - inner OD $\varnothing$ 2.1mm (+)
                   Outside OD $\varnothing$ 5.5mm (GND)
Power input - 12VDC, 3A

② IR EXTENDER CONTROL

SW IR in

Support one of IR Extender
Extend distance maximum 300Meters / ~984 feet
When you plug the External IR extender into the switcher,
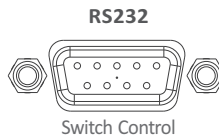the front panel IR receiver remain active.

Switch Control

IR Extender Jack:
Female Jack - inner OD $\varnothing$ 3.5 mm

③ RS 232 CONNECTION

RS232

RS 232 control port to allow for interfacing to a PC,
Such as a computer or touch panel control, to the switcher
via this DB-9pin Female connector for serial RS-232 control.

Switch Control

This port Also for Firmware update.

Remote port :
D-SUB-9pin Female connector

④ ETHERNET CONNECTION

Ethernet

ETHERNET control port to allow for TCP/IP interfacing to a PC,
Such as a computer or touch panel control (not a web-browser),
to the switcher via this RJ-45 Female connector to control switcher.
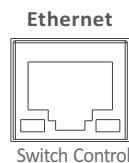
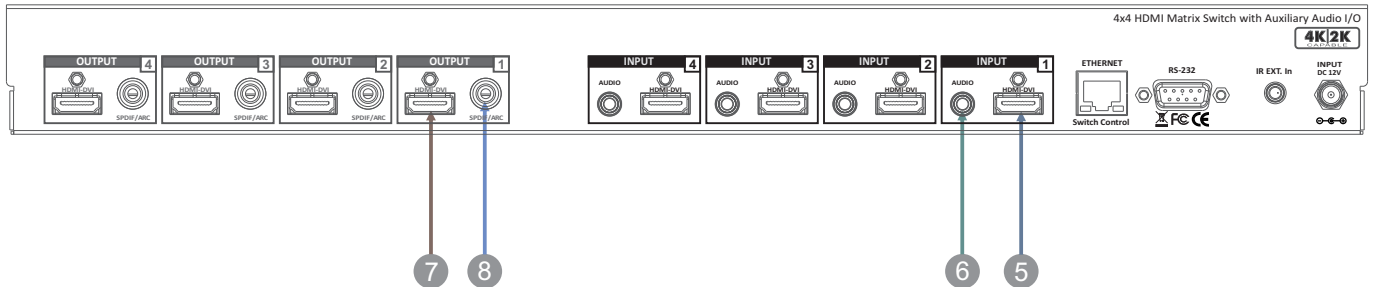Switch Control

Remote port : Control the switcher
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 send to the RS-232 port.

REAR PANEL

4x4 HDMI Matrix Switch with Auxiliary Audio I/O
4K 2K

5 INPUTS - 1,2,3 & 4 HDMI

Connect an HDMI signal source to this Input. This HDMI port supports HDMI with embedded audio and DVI with AUX audio sources.

If you remove the HDMI screw post, you must use the provided IOS screws to keep the internal HDMI jack secure. Removing the HDMI Screws without installing the ISO screws will void your warranty.

HDMI in
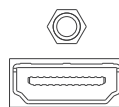
HDMI connector:
HDM Type A SMD 19pin Female socket connector.
Note:
With the proper adapters, the switcher
can be used with DVI digital video signals
HDCP compliant. The DVI support Audio input.

6 INPUTS - 1,2,3 & 4 AUDIO (Auxiliary Audio)

Connect a Auxiliary Audio signal link of AUDIO direct Stereo Audio to this 3.5mm OD Female Jack.
This jack supports DVI audio or Auxiliary Analog Stereo Audio sources.

AUDIO Connector with Input 1 ~ Input 4
Audio: The auxiliary audio (Analog Stereo Audio).

Audio in

AUDIO connector:
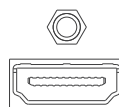3.5mm OD phone jack female socket connector.
Note:
With the proper adapters, the switcher
can be used with Auxiliary Audio signals
and the DVI support Audio input.

7 OUTPUTS - 1,2,3 & 4 HDMI

Connect an HDMI signal source to this Output. This HDMI port supports HDMI with embedded audio and DVI with AUX audio.

If you remove the HDMI screw post, you must use the provided IOS screws to keep the internal HDMI jack secure. Removing the HDMI Screws without installing the ISO screws will void your warranty.

HDMI out

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
HDCP compliant. The DVI Audio supported.

8 OUTPUTS - 1,2,3 & 4 S/PDIF / ARC

Connect a Audio signal output link of the Auxiliary Audio, HDMI digital audio source or ARC TV return channel audio direct to this RCA jack audio connector. This port use ARC digital audio(TV return digital Audio) and S/PDIF digital audio from HDMI or Auxiliary Audio.
Use RCA connector with Output 1 ~ Output 4

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

SPDIF / ARC

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 signals outputs.
The Auxiliary Audio use digital LPCM-2CH output.

EDID FUNCTION

EDID function for HDMI Matrix Switcher

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.	

6.1 RESET	EDID Return To Factory default
How to RESET EDID mode Press EDID > RECALL > ENTER EDID: RESET EDID EDID: 1. FAST SPEED START	RESET To the 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.

6.2 Embedded EDID modes	Total 7 EDID Modes
Embedded EDID setup Press EDID > SOURCE > ENTER 　　　　　**SOURCE** #1 　　　　　　or 　　　　　**SOURCE** #2 Select Embedded EDID : Mode 1 : **FSS** Mode 2 : **H24-3D** Mode 3 : **H24-3D-M** Mode 4 : **H36-3D** Mode 5 : **H36-3D-M** Mode 6 : **4K2K** Mode 7 : **DVI-D 1920x1200**-60Hz	to select Embedded EDID mode or LEARNING mode. Press EDID button : The LCM will show the current EDID status. EDID: 2. H24-3D, PCM 2CH Repeatedly depressing the **source 1** button will cycle **up** thru the options. Repeatedly depressing the **source 2** button will cycle **down** thru the options.

EDID function for HDMI Matrix Switcher

Mode 1 . **FSS**® (Fast Speed Start) EDID： 1.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) EDID： 2.H24-3D,PCM 2CH	Audio Support : PCM 2CH
Mode 3 . H24-3D-M (1080p-24bits) EDID： 3.H24-3D,MULTI AUDIO	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) EDID： 4.H36-3D,PCM 2CH	Audio Support : PCM 2CH
Mode 5 . H36-3D-M (1080p-36 bits) EDID： 5.H36-3D,MULTI AUDIO	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) EDID： 6.4K2K-3D,PCM 2CH	HDMI Support : 4K2K-3D, PCM 2CH (3860x2160-24/30Hz) Audio Support : PCM 2CH
Mode 7 . 1920x1200-60Hz (DVI-D) EDID： 7.DVI-D 1920x1200-60HZ	DVI Support : DVI-D 1920 x 1200 60Hz

EDID FUNCTION

EDID function for HDMI Matrix Switcher

6.3 LEARNING EDID	Learning EDID from Destination to Source

Learning EDID setup

Press
[EDID] > [DESTINATION] > [SOURCE] > [ENTER]

```
EDID:
LEARNING HDMI
```

Press [EDID] > [DESTINATION] Button: The LCM will be show LEARNING.
Switcher will **LEARN** destination HDMI EDID
and pass the selected source.

Learning EDID setup for HDMI
Key Press Sequence:
EDID > DESTINATION # > SOURCE # > ENTER
The EDID for HDMI has been learned

NOTE : The already learned EDID cannot be modified. You can only rebuild a new Learning EDID.

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.
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.

EDID function for HDMI Matrix Switcher

6.3.1 Learning EDID **Single to Single**	Example : Learn Destination #4 EDID To Source #2.
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 #8 button row	Copy the Destination #4 Display EDID.
Step 3 . Press the Source #2 button row	Learning the Destination #4 EDID To Source #2.
Step 4 . Press **ENTER** button	To confirm entries.

6.3.2 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 Destinations #1~4 button row	Copy any 1~4 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.

6.3.3 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 4	Learning anyone 1~4 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.

EDID FUNCTION

EDID function for HDMI Matrix Switcher

6.4 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.

6.5 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 conform entries.
Step 4 . Press EDID button	To select the EDID **FSS**® mode.
Step 5 . Press ENTER button	To conform entries.

6.6 SINGLE **LEARNING** #1 definition	Single Learning EDID from Destination to Source

1. Switcher will **LEARN** destination EDID and pass the selected source.

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.
   Switcher will learn destination EDID to source device.

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**.
   Switcher will learn single destination EDID to many source devices.

4. How to Learning single destinations with all sources.
   Press **EDID** button > Press **ALL** button > Press **ENTER** to confirm.

6.7 MULTIPLE **LEARNING** #2 definition	Multiple Learning EDID from Destination to Source

1. Switcher will multiple **LEARN** destination EDID and pass the selected source.

2. To set up multiple learning between a single destination and single source:
   Press **EDID** button > Press **OFF** button > Press **Destination** 1 thru 4 > Press **ENTER** to confirm.
   Switcher will learn destination EDID to source device.

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.

INSTALLING DIAGRAM

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

HDMI DISPLAY TV

Audio Amplifier

NOTE :
1. Switcher IR External port : Use SB-100 IR signal Receiver.
2. Control HDMI TV ARC: Use SB-5645AK ARC function.
3. Control Switch via a PC RS232.
4. Control Switch via a PC Ethernet.

Audio output :
ARC : TV ARC return channel audio
S/PDIF : - HDMI (Digital Audio source)
          - Auxiliary Audio (LPCM)

HDMI cable in

HDMI cable in

Auxiliary Stereo Audio in

Blu-ray

Ethernet

IR Extender Cable

SB-100
IR-Receiver

HD Satellite Receiver

PC Ethernet To Control Switcher

PC RS232 To Control Switcher

SB-5645AK IR

Application RS-232, IR and Ethernet control the Switcher.

REMOTE CONTROL

Before making any connections to the switcher. Observe the following:

> Ensure the mains 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 1~4 select buttons. The supplied IR remote control.
Or through the RS 232 serial communications port.

> Upon power up the switcher will return to its last used setting before
Powered down.

REMOTE CONTROL

IR REMOTE : SW-HD44AK
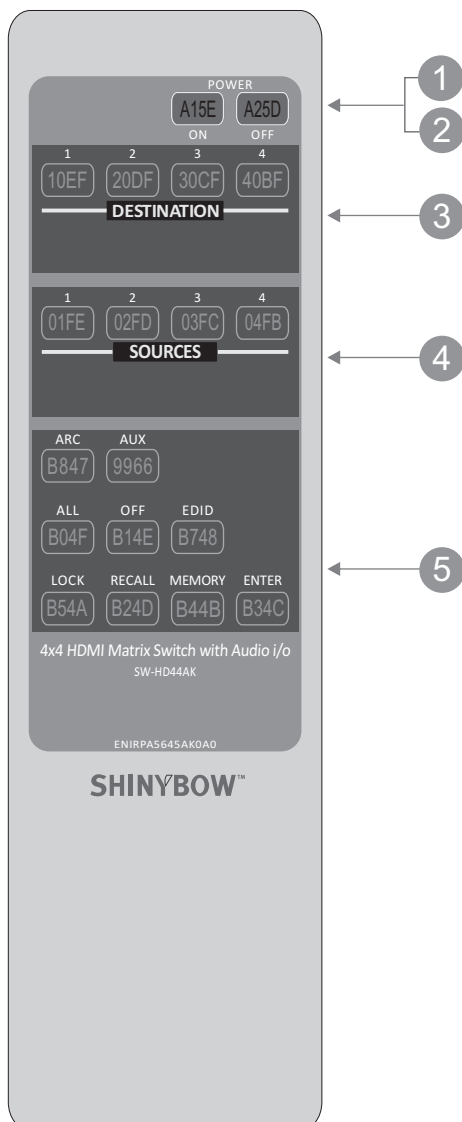
IR REMOTE CONTROL KEY :

① ② SWITCH POWER ON or OFF
Controller with a separate power ON and OFF

③ DESTINATION : 1 thru 4 OUTPUT SELECTION
Press the destination button to select the output
display channel

④ SOURCE : 1 thru 4 INPUT SOURCE SELECTION
Press input 1~4 sources with selection button

⑤ FUNCTION KEY

ARC	-	function selection button
AUX	-	function selection button
ALL	-	function selection button
OFF	-	function selection button
EDID	-	function selection button
RECALL	-	function selection button
MEMORY	-	function selection button
ENTER	-	function selection button
LOCK	-	function selection button

IR REMOTE CUSTOM AND DATA CODES   (NEC Standard)

HOW TO SETUP IR CODES :

CUSTOM CODE : 43BC

POWER ON   : 43BC A15E
POWER OFF : 43BC A25D

FUNCTION KEY CODE LIST:

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

PRESS DESTINATION - # then PRESS SOURCE -

DESTINATION #1 :   43BC 10EF
DESTINATION #2 :   43BC 20DF
DESTINATION #3 :   43BC 30CF
DESTINATION #4 :   43BC 40BF

SOURCE #1 :   43BC 01FE
SOURCE #2 :   43BC 02FD
SOURCE #3 :   43BC 03FC
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

IR EXTENDER

1. SB-100   IR 300M Receiver

SB-100 IR Receiver pack

Switcher IR EXT. In

Cable(3C)
Distance:Max.300M

IR Receiver (SB-100)

IR PN#: SW-HD44AK

SB-100 DISTANCE maximum ~ 984 feet (300 meters)

Control Switcher SB-5645AK

2. SB-100C   IR 2M Receiver

IR Receiver cable 6ft (2M)

SB-100C Receiver Cable

Switcher IR EXT. In

Cable(2C)
Distance: Max.(2M)

IR Receiver (SB-100C)

IR PN#: SW-HD44AK

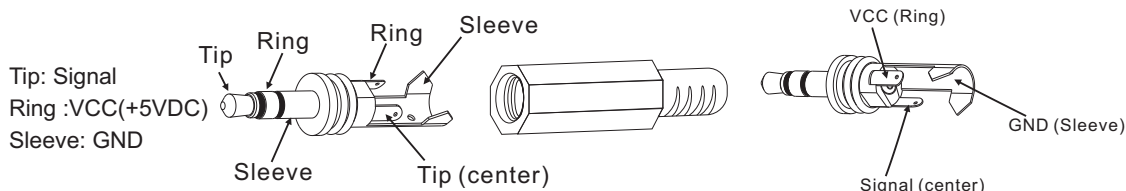SB-100C DISTANCE 6 feet (2 meters)

Control Switcher SB-5645AK
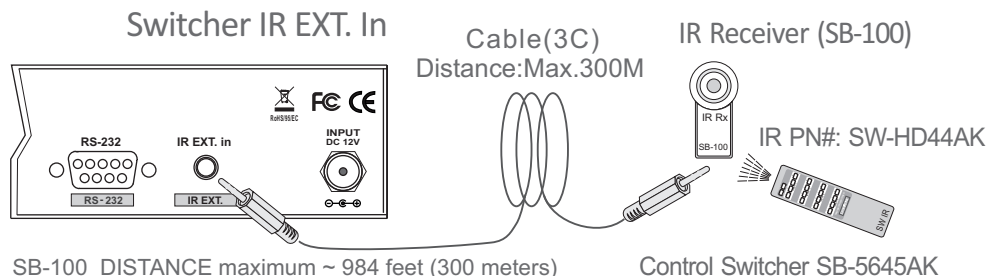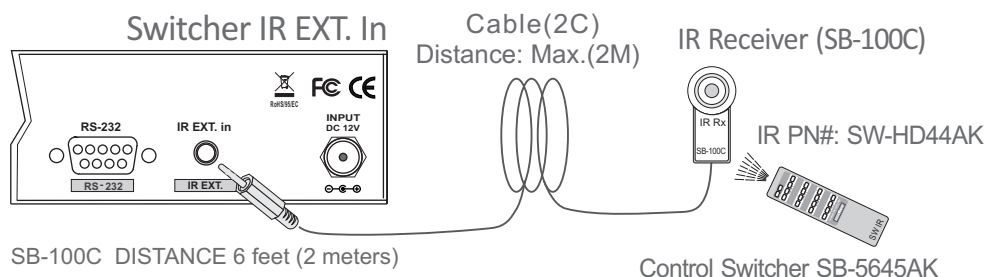
Note: When you plug the External IR extender into the switcher, the front panel IR receiver remains active.
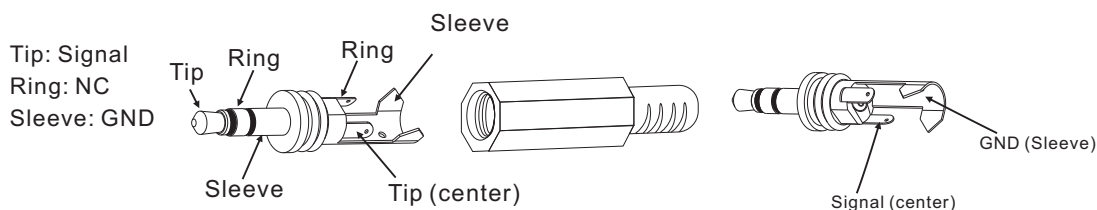
IR EXTENDER PACKAGE :

HOW TO SETUP THE IR EXTENDER RECEIVER COMPONENTS

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

IR Extender 300M Receiver

SB-100 IR Receiver set

Tip: Signal
Ring :VCC(+5VDC)
Sleeve: GND

Tip   Ring   Ring   Sleeve

Sleeve   Tip (center)

VCC (Ring)

GND (Sleeve)

Signal (center)

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

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

IR Receiver cable 6 feet (2M)

SB-100C Receiver Cable

Tip: Signal
Ring: NC
Sleeve: GND

Tip   Ring   Ring   Sleeve

Sleeve   Tip (center)

GND (Sleeve)

Signal (center)

SB-100C Receiver Cable and SB-101C Transmitter Cable The DISTANCE maximum 6 feet (2 meters)

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.

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

For a complete list of commands, please reference external document extended Ethernet 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

Ethernet

1 2 3 4 5 6 7 8

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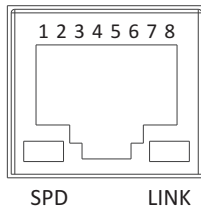
Note :
Control the switcher
SPD : Speed
LINK : Ethernet link
RJ-45 Female 8P-8Cconnector

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 TCP/IP PROTOCOL COMMANDS (Ethernet / RS232 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.****

RS-232 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.
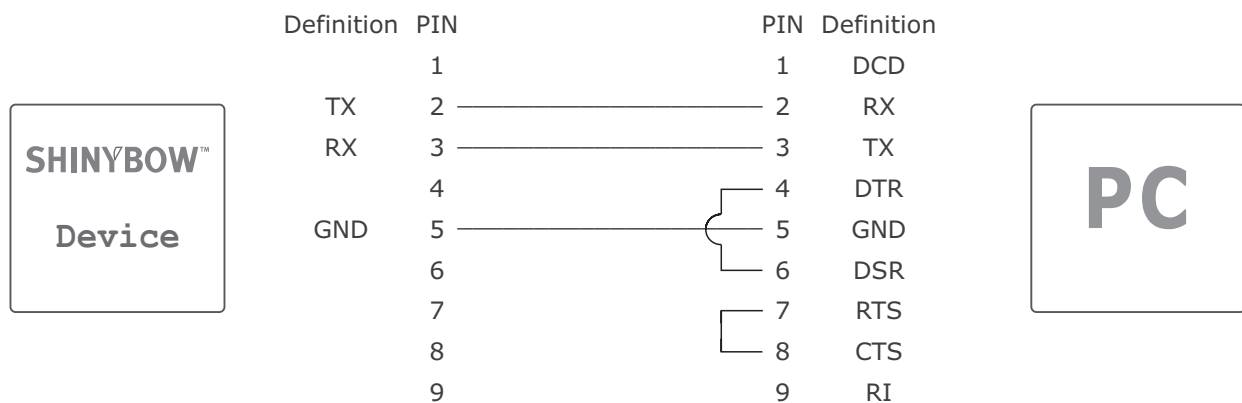
Example of the commanded string to select Inputs:

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 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

SHINYBOW™ Device

PC

RS-232 Pin Diagram

1 2 3 4 5
6 7 8 9
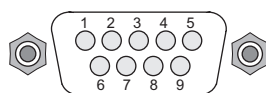
RS-232 SERIAL INTERFACE PROTOCOL COMMANDS (Ethernet / RS232 Control driver V2.0)

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.

LIMITED WARRANTY

SHINYBOW WARRANTY

SHINYBOW Technology warrants this product against defects in materials and workmanship for a period of 1 year from the date of purchase.

Should this product, in SHINYBOW Technology's opinion, prove defective within this warranty period, SHINYBOW Technology, at its option, will repair this product without charge, to whatever extent it shall deem necessary to restore the product to proper operation condition. This does not extend the warranty period.

This warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, and abnormal operating condition or non-SHINYBOW Technology authorized modification to the product.

If repairs are necessary under the warranty policy, the original purchaser must return the product to local distributor, freight prepaid.

After repairs are complete, the product will be returned.

REGULATORY COMPLIANCE

The product complies with the relevant standards for CE, FCC and RoHS approval.
The power Adaptor/Supply has been tested for compliance with UL.CSA and CE standards.

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