INSTRUCTION MANUAL

SB-5548BNC

8x8 Composite Video Matrix Routing Switcher w/ Stereo Audio (BNC)



SHINYBOW™ USA

MULTIMEDIA AUDIO AND VISUAL

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.

THIS SAFETY INFORMATION IS OF A GENERAL NATURE AND MAY BE SUPERSEDED BY INSTRUCTIONS CONTAINED WITHIN THIS MANUAL.

TABLE OF CONTENTS

Composite Video-Stereo Audio Matrix Switcher Series

Thank you for purchasing the SB-5548BNC 8x8 Composite Video-Audio Matrix Switcher. 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 this switcher.

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INTRODUCTION

Congratulations on your purchase of one of the most innovative 8x8 AV (Composite Video-BNC/Audio) with adjust audio volume & balance matrix switching products on the market today. The SB-5548BNC is a true matrix routing switcher for AV (Composite & Stereo Audio) signals. Full support for NTSC or PAL Composite Video & Stereo Audio TV systems. The SB-5548BNC has (8) individual Composite Video (BNC connector) and Stereo Audio inputs with (8) individual Composite Video (BNC connector) and Stereo Audio outputs. Audio outputs control and adjust volume and AR/AL balance. Because it is a matrix router, any input may be routed to any output; or the same input may be routed to all outputs or any combination. It completely eliminates the need to constantly move around video audio input and output cables. The switcher is useful for matrix signals from composite video and stereo audio source devices (such as: VCRs, Camcorders, Video Game Consoles, Video CDs, DVDs, Satellite Receivers, CAT5 Set Top Boxes, etc.) to composite video/ audio destination devices (such as: LCD TV, HDTV, Plasma displays, Projectors, etc.). Selection of inputs can be made via the front panel push buttons or an infrared remote control or RS-232 control with a computer. A RS-232 Windows GUI interface is provided for matrix routing control (Windows only).

PACKAGE CONTENTS

Check that you have the following components;

- SB-5548BNC 8x8 Matrix Switcher
- RS-232 V2.0 Protocol Instructions
- IR Remote Control (SW-5548BNC)
- 19 inch ear mount bracket (Part # 1U-440L)
- SB-100 IR Extender Receiver Set
- CD Contents: This manual, Windows GUI, ISP V1.0 Windows driver
- RS-232 Cable 6 feet (2M)
- Users Guide
- Power Supply Input: DC12V, 2A, (Worldwide Universal 100~230 VAC, AC 50/60Hz)
- *Optional: SB-100C IR Extender Receiver Cable (6.5ft (2M))*



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

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FEATURES & SPECIFICATIONS

FEATURES

- Supports (8) Inputs to (8) Outputs A/V (Composite Video & Stereo Audio) Matrix Switcher
- Input/Output signals via Composite Video (BNC) & Stereo Audio (AR/AL)
- Higher video bandwidth 450MB each signal path
- Front panel channel selection buttons
- Composite Video supports NTSC or PAL TV systems, via BNC connectors
- Audio Volume control (+/-100 level) and Balance +50-AR / -50-AL
- Compatible with all Composite Video devices, Plasma TV displays and HDTVs
- Supports RS-232 serial interface protocol command list
- PC RS-232 control drive compatible with Win-95/98/2000/XP
- Various User Interface Controls:
  - Windows based GUI control via RS-232 port
  - Front panel push buttons
  - IR wireless remote control
  - Third party RS-232 control (via simple ASCII)
- Supports (7) world wide control function keys: Full function front panel controls: ALL / OFF / VOL-BAL / LOCK / RECALL / MEMORY / ENTER
- Supports desktop with ear mount and 19 inch 1U rack mountable type panel
- Power supply DC12Volt, Universal Switch Type 100~230VAC, 50/60Hz

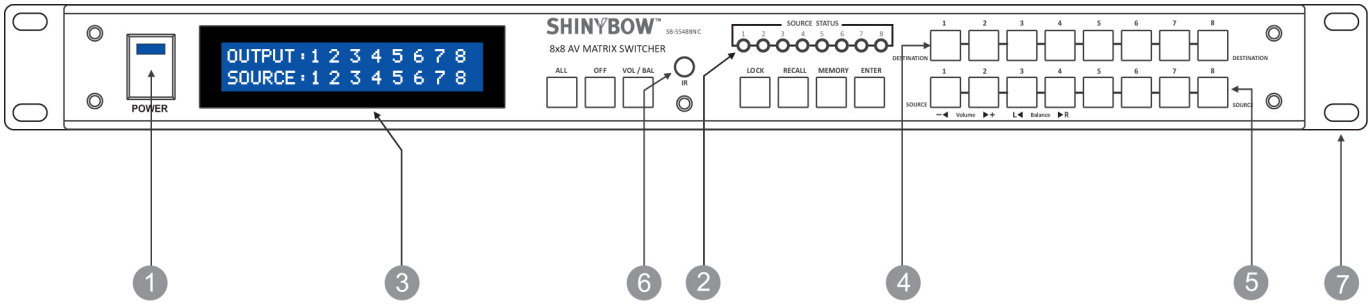
SPECIFICATIONS

- **Type of AV Switcher:** (8) In to (8) Out, A/V (Composite Video-Audio) Matrix Switcher
- **Video Support:** Video: Composite Video 0.5~1.0Vpp, 75Ohms, BNC connector
- **Audio Support:** Stereo Audio (AR/AL), via (2) RCA connectors (color Red/white)
- **Video Bandwidth:** 4450MHz (-3dB), 200mVpp, Higher resolution formats
- **Inputs:**
  - Video: (8) Video (Composite Video) using BNC connectors
  - Audio: (8) Audio (Stereo audio) using RCA connectors
- **Outputs:**
  - Video: (8) Video (Composite Video) using BNC connectors
  - Audio: (8) Audio (Stereo audio) using RCA connectors
- **Audio Volume Control:** Volume Level +0 ~ +100 (+6dB)
- **Audio Balance Control:** Balance AR +51~100, AL 0~+50
- **Low All Hostile Crosstalk:** -83dB@5MHz
- **Gain Control:** 60MHz 0.1dB gain flatness
- **Switch Controls:**
  - Select & Function buttons on front panel (Data status via LCM panel show out)
  - IR Remote Controller (switch control)
  - IR External port (switch control via 3.5mm OD Jack)
  - RS-232 series interface (switch control)
- **Source Status:** Input status LEDs indicates presence of a live signal
- **(23) Function Control Keys:** 1.ALL, 2.OFF, 3.RECALL, 4.ENTER, 5.MEMORY, 6.LOCK, 7.VOL/BAL, 8.Destination button 1 thru 8, 9.Source button 1 thru 8
- **Infrared Frequency:** 38Khz
- **IR External Distance:** SB-100 IR Receiver support ~984 ft / 300M maximum
- **AV I/O Connector:** Video: BNC / Audio: RCA
- **Dimensions (WxDxH):** 17.5 x 8 x 1.75 in
- **Rack Mount:** 1RU High 19 in Rack Mount #1U-440L (with rack mount)
- **Weight:** 5.5 lb (Unit only) / 8.2 lb (Net)
- **Safety Approvals:** CE, FCC, RoHS, REACH
- **Power Supply:** DC12V / 2A (consumption 1750mA), Uses Universal Type 50/60Hz,100~230 VAC

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

FRONT PANEL

FRONT PANEL



1. POWER ON 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. INPUT STATUS DISPLAY: Input sources 1 to 8 LED illuminates blue to indicate that a video source is present on that input.

3. OUTPUT STATUS DISPLAY: Each Output (destination) channel shows which input (source) is assigned.

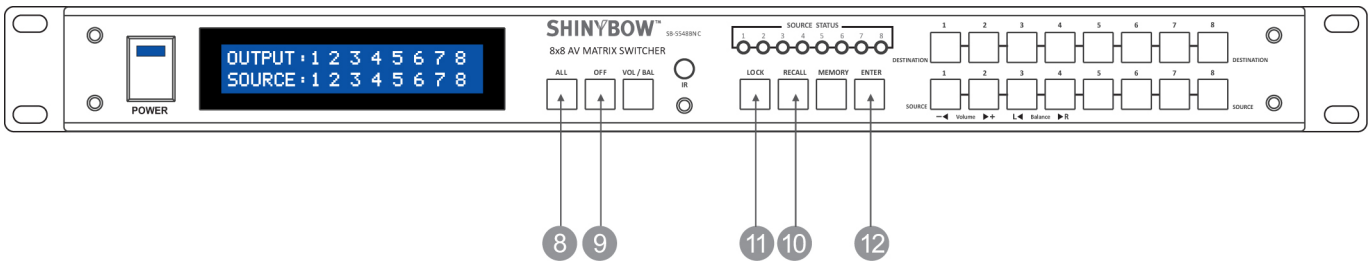
4. DESTINATION SELECT BUTTONS: Separate outputs 1 thru 8 select buttons are provided for each destination assignment. Routing can be Source to Destination or one source to multiple destinations.
Example: Press Destination 1,3,5 then press Source 2 will route Input 2 to Output 1,3,5 respectfully.

5. SOURCE SELECT BUTTONS: Separate inputs 1 thru 8 select buttons are provided each source selection.

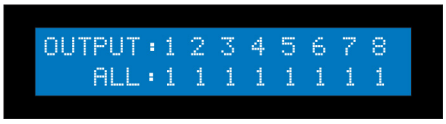
6. IR SENSOR: The IR sensor receives IR commands from the supplied remote controller or third party IR emitter.

7. 19 INCH EAR MOUNT PAIR: Converts desk-top to 19 inch rack mount bracket (part # 1U-440L) INCLUDED. Image shows rack mount bracket attached.

FRONT PANEL



8. FUNCTION KEY - ALL:



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

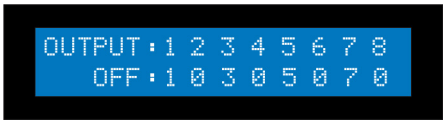
Option 1

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

Option 2

- Press **ALL** followed by Source **1 THRU 8**. The display will show the Source selected.
- Press **ENTER**. The pre-set source selection will be assigned all destinations.

9. FUNCTION KEY - OFF:



Disables (mutes) audio to selected channels. Either destinations.

- Press **OFF** button followed by any Source or Destination channel.
- Press **1 THRU 8** output destination. The display will show “0“ for the selected channel indicating no audio selected.

10. FUNCTION KEY - RECALL:





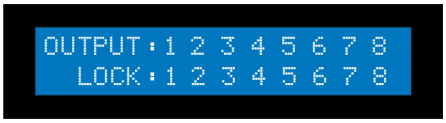
The system will show previously stored presets, up to a total of 16. Presets are stored in local memory using Source keys 1 thru 8 or Destination keys 1 thru 8 as the memory preset location.

- 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.

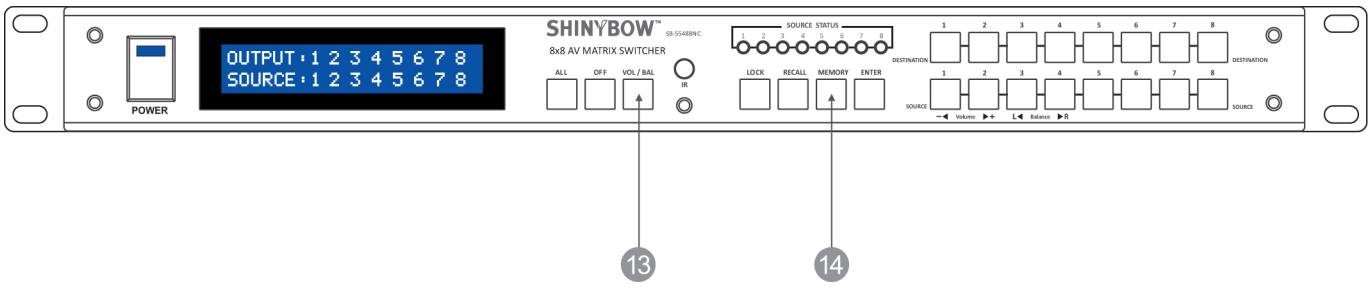
11. FUNCTION KEY - LOCK:



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

12. FUNCTION KEY - ENTER or DEMO: Press **ENTER** to confirm entries.

FRONT PANEL



13. FUNCTION KEY - VOL / BAL (Volume / Balance):



VOLUME: To affect the volume on any Output,

- Press **VOL / BAL** button once.
- Select **1 THRU 8** on the Destination row, for the Output you wish to change.
- Press **VOLUME +** or **–** (Source #1 or #2) button to adjust the audio volume level.
- Press **ENTER** to store the new setting.

Repeatedly pressing the Source 1 button will decrease the volume setting.
Repeatedly pressing the Source 2 button will increase the volume setting.
With each push, the button will flash blue and the display will show the current Audio Volume setting.
The available options are “0” thru “100” in increment of “1”.



BALANCE: To affect the balance on any Output,

- Press **VOL / BAL** button once.
- Select **1 THRU 8** on the Destination row, for the Output you wish to change.
- Press **BALANCE L** or **R** (Source #3 or #4) button to adjust the audio balance.
- Press **ENTER** to store the new setting.

Repeatedly pressing the Source 3 button will increase the Left channel and decrease the Right channel.
Repeatedly pressing the Source 4 button will decrease the Left channel and increase the Right channel.
With each push, the button will flash blue and the display will show the current Audio Volume.
The available options are Audio Left = “0” thru “50” and Audio Right = ”51” thru “100” in increments of “1”.
Operation completes.
Note: Operation will abort if no keys are pressed within 5 seconds.

14. FUNCTION KEY - MEMORY:





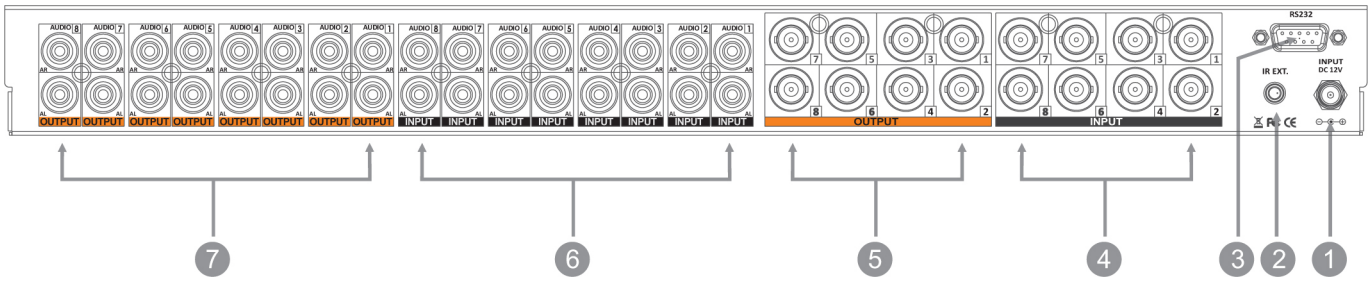
The system will show stored presets, up to a total of 16. Presets are stored in local memory using Source keys 1 thru 8 or Destination keys 1 thru 8 as the memory preset location.

- Configure desired matrices.
- Press **MEMORY** button.
- Press **1 THRU 8** 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.

BACK PANEL

BACK PANEL



1. DC POWER INLET: The switcher is fitted with a DC power plug-park input connector. Please ensure that the plug-park used is of an approved type and is of sufficient current carrying capacity with the correct voltage and connector polarity. 12Volt DC power supply 2A Max.



POWER JACK:
DC Jack - Inner OD Ø 2.1mm (+)
Outside OD Ø 5.5mm (GND)
Power input -12VDC, 2A

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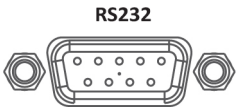
2. IR EXTENDER CONTROL: Supports one IR Extender (IR input). Extends a maximum distance of up to ~1000ft/300M.



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

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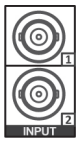
3. RS-232 CONNECTION: RS-232 control port allows for interfacing to a PC, such as a computer or touch panel control, to the switcher via the DB-9pin female connector for serial RS-232 control.



REMOTE PORT: DB-9pin Female connector

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4. INPUTS-1~8 COMPOSITE VIDEO (BNC): Connects a Composite Video signal source device to the 8x8 matrix switcher.
Input 1~8 port source signals:
- Composite Video (BNC), BNC Connector



Composite Video source via BNC In
Note: Input with a BNC female connector.

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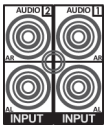
5. OUTPUTS-1~8 COMPOSITE VIDEO (BNC): Connects a Composite Video signal to a display device from the 8x8 matrix switcher.
Output 1~8 port signals:
- Composite Video (BNC), BNC Connector



Composite Video out via BNC Out
Note: Output with a BNC female connector.

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6. INPUTS-1~8 STEREO AUDIO(AR/AL): Connects a Stereo Audio (AR/AL) signal source to the 8x8 matrix switcher via a female RCA connector.
Input 1~8 ports Audio source signals:
- Stereo Audio (AR/AL), (2) RCA Connectors



Stereo Audio (AR/AL) via 2x RCAs
Note: Input with (2) RCA female connectors.

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7. OUTPUTS-1~8 STEREO AUDIO(AR/AL): Connects a Stereo Audio (AR/AL) signal direct to an audio device via a female RCA connector.
Output 1~8 ports Audio source signals:
- Stereo Audio (AR/AL), (2) RCA Connectors



Stereo Audio (AR/AL) via (2) RCAs
Note: Output with (2) RCA female connectors.

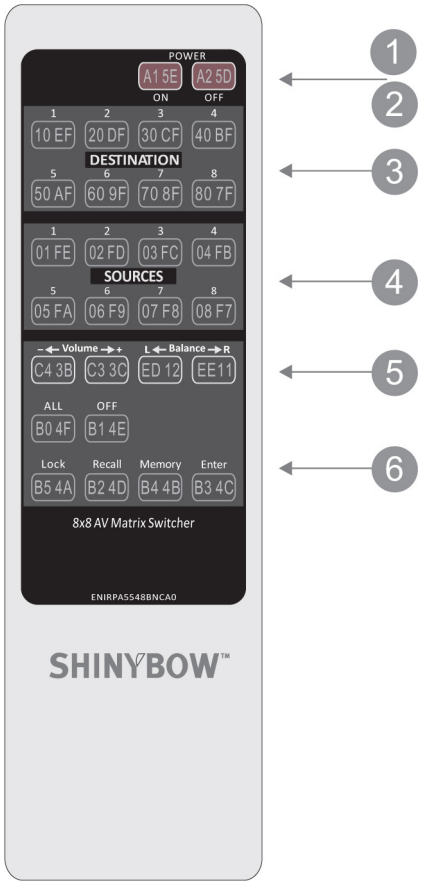
REMOTE CONTROL

Before making any connections to the SB-5548BNC. 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

IR REMOTE CONTROL KEY :
IR REMOTE : SW-5548BNC
IR PCB : RA-02



1. & 2. SWITCH POWER ON or OFF:
Power ON and OFF

3. DESTINATION : 1 thru 8 OUTPUT SELECTION:
Destination button to select the output display channel

4. SOURCE : 1 thru 8 INPUT SOURCE SELECTION:
Input 1~8 source selection buttons

5. AUDIO VOLUME / BALANCE KEY:
Adjust Audio **Volume** from +0 ~ +100 levels
Adjust Audio **Balance** from L=+0 ~ +50 levels
Adjust Audio **Balance** from R=+50 ~ +100 levels

6. FUNCTION KEY: Function selection button

ALL	OFF	VOL/BAL	RECALL
ENTER	MEMORY	LOCK	

REMOTE PROTOCOL COMMANDS

IR REMOTE CUSTOM AND DATA CODES (NEC Standard)

HOW TO SETUP IR CODES : **CUSTOM CODE : 2CD3**

POWER ON:	2CD3	A15E	BALANCE +:	2CD3	EE11
POWER OFF:	2CD3	A25D	BALANCE -:	2CD3	ED12
ALL:	2CD3	B04F	LOCK:	2CD3	B54A
OFF:	2CD3	B14E	RECALL:	2CD3	B24D
VOLUME +:	2CD3	C33C	ENTER:	2CD3	B34C
VOLUME -:	2CD3	C43B	MEMORY:	2CD3	B44B

PRESS TV DESTINATION - # then PRESS SOURCE - #

DESTINATION #1 :	2CD3	10EF	SOURCE #1 :	2CD3	01FE
DESTINATION #2 :	2CD3	20DF	SOURCE #2 :	2CD3	02FD
DESTINATION #3 :	2CD3	30CF	SOURCE #3 :	2CD3	03FC
DESTINATION #4 :	2CD3	40BF	SOURCE #4 :	2CD3	04FB
DESTINATION #5 :	2CD3	50AF	SOURCE #5 :	2CD3	05FA
DESTINATION #6 :	2CD3	609F	SOURCE #6 :	2CD3	06F9
DESTINATION #7 :	2CD3	708F	SOURCE #7 :	2CD3	07F8
DESTINATION #8 :	2CD3	807F	SOURCE #8 :	2CD3	08F7

For Example:

Select Destination # 1 to show Source #1~8,

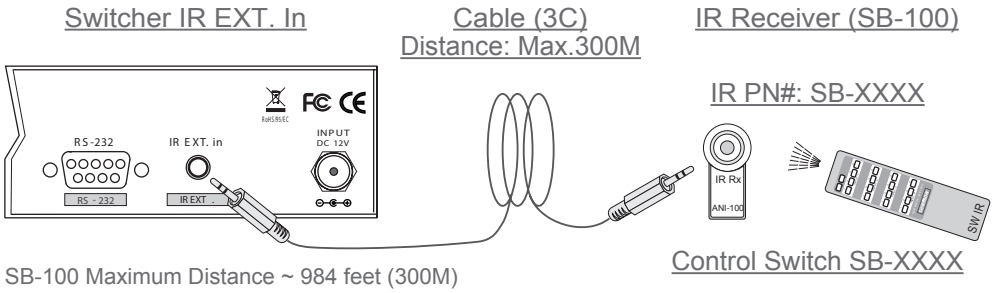
The IR Data Code list when press Destination # then press Source #

Press Destination # 1 & Source #1 2CD3 01FE 2CD3 01FE
Press Destination # 1 & Source #2 2CD3 01FE 2CD3 02FD
Press Destination # 1 & Source #3 2CD3 01FE 2CD3 03FC
Press Destination # 1 & Source #4 2CD3 01FE 2CD3 04FB
Press Destination # 1 & Source #5 2CD3 01FE 2CD3 05FA
Press Destination # 1 & Source #6 2CD3 01FE 2CD3 06F9
Press Destination # 1 & Source #7 2CD3 01FE 2CD3 07F8
Press Destination # 1 & Source #8 2CD3 01FE 2CD3 08F7

IR EXTENDER

1. SB-100 IR 300M Receiver



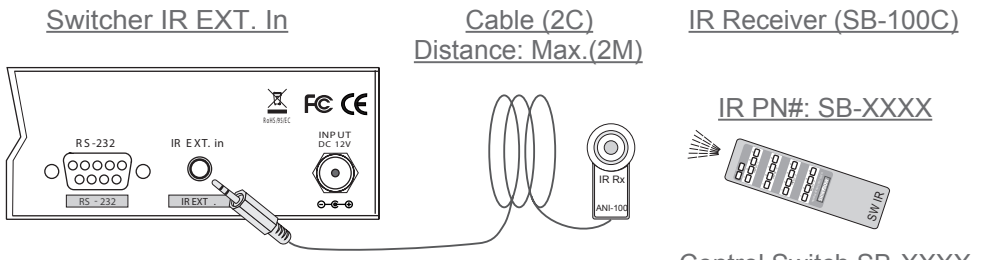


SB-100 Maximum Distance ~ 984 feet (300M)

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

2. SB-100C IR 2M Receiver





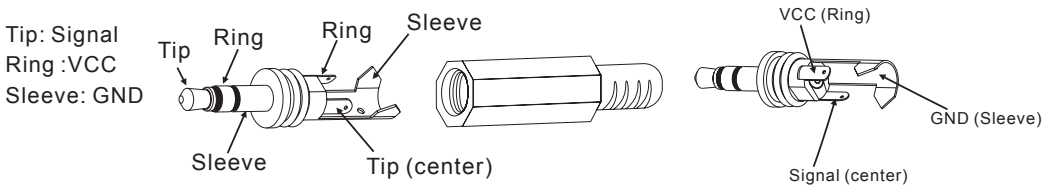
SB-100C Maximum Distance ~ 6 feet (2M)

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

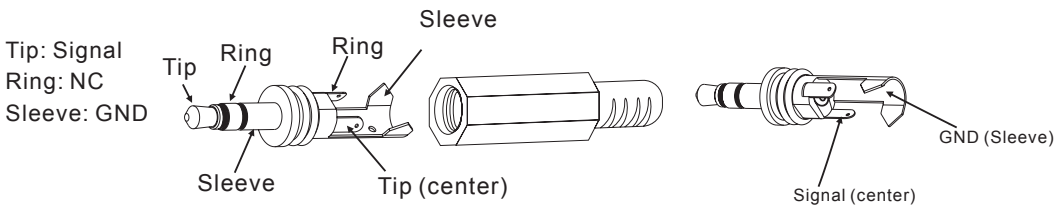




SB-100 Receiver and SB-101 Transmitter The DISTANCE maximum ~ 984 feet (300M)

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.*

The frequency range of the IR emitter and receivers is 38khz.

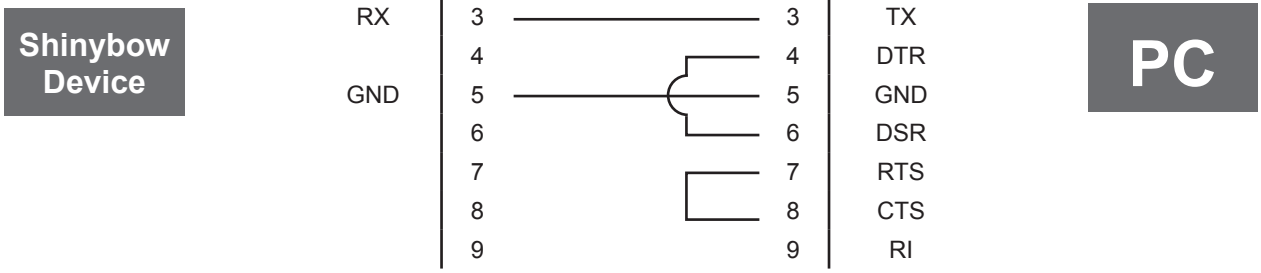
RS-232 SERIAL INTERFACE

RS-232 SERIAL INTERFACE CONNECT a PC or CONTROL SYSTEM. VERSION COMPATIBLE V1.0 & V1.5

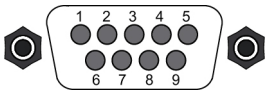
For a complete list of commands, please reference external document extended RS-232 Protocol Instruction Manual.

RS-232 CONFIGURATION

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



RS-232 PIN DIAGRAM

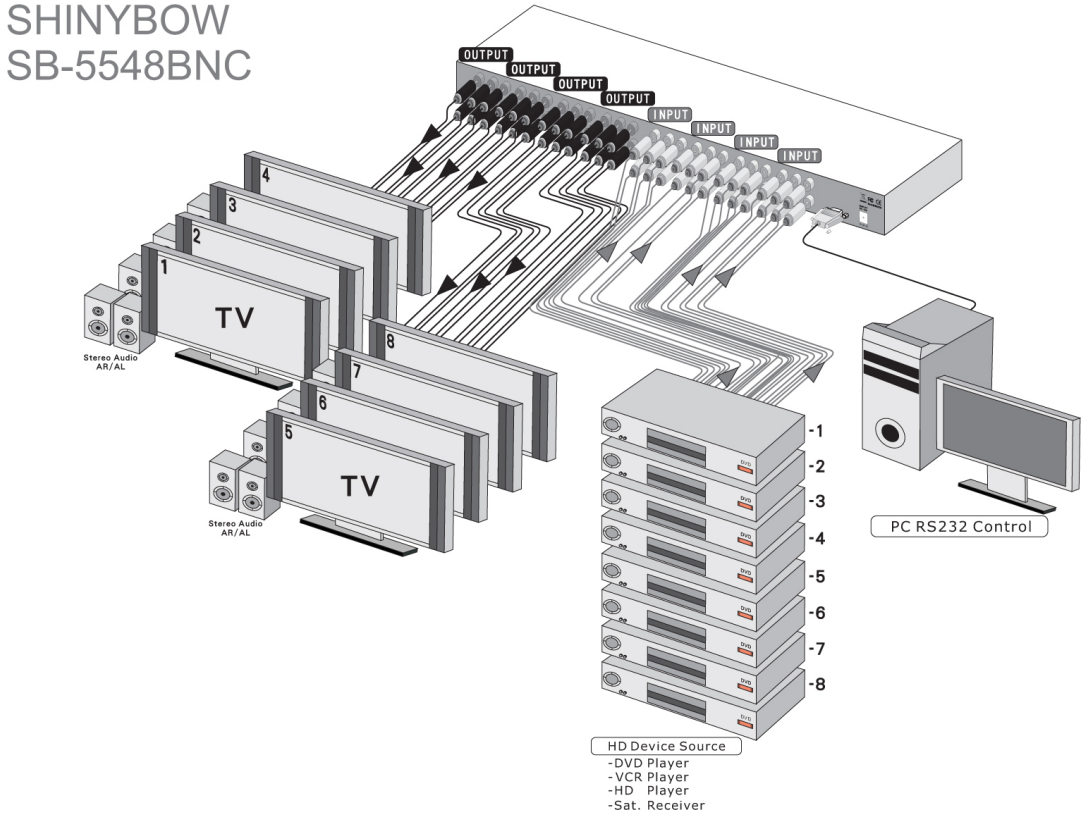


RS-232 SERIAL INTERFACE PROTOCOL COMMANDS (ETHERNET / RS-232 CONTROL DRIVER V2.0)

The Shinybow switcher can be controlled via the RS-232 serial control port to allow for interfacing to a PC, 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 recognizes a complete command it will perform the requested action - there is no delimiter character required.

TYPICAL APPLICATION

8X A/V (COMPOSITE VIDEO) SOURCES TO 8X A/V OUTPUT MATRIX SWITCHER



INSTALLING

CONTROL PORTS:

1. IR REMOTE - IR Remote Controller
2. RS-232 Interface - RS-232 interface system

INPUTS 1 ~ 8 PORT HD SOURCE SIGNALS:

COMPOSITE VIDEO - Composite Video, connector with BNC
AUDIO - Stereo Audio (AR/AL), connector with RCA

OUTPUT 1 ~ 8 PORT HDTV DISPLAY SIGNALS:

COMPOSITE VIDEO - Composite Video, connector with BNC
AUDIO - Stereo Audio (AR/AL), connector with RCA

SB-5548BNC SUPPORTS (8) COMPOSITE VIDEO AND STEREO AUDIO INPUTS TO
(8) COMPOSITE VIDEO AND STEREO AUDIO OUTPUTS.
SUPPORTS CONTROL VIA IR & RS-232.

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