INSTRUCTION MANUAL

SB-5658K

1x8 HDMI 4K2K Distribution Amplifier with Scaler

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.

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

HDMI-4K2K Distribution Amplifier series

Thank you for purchasing the SB-5658K HDMI Distribution Amplifier with Scaler. 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 the 1x8 HDMI 4K2K Distribution Amplifier.

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INTRODUCTION

The SB-5658K is a professional 1x8 4K2K HDMI Distribution Amplifier with Scaler. Supporting (1) HDMI Input and (8) HDMI 4K2K Outputs. This unit is based on HDMI standards and supports full UHD 4K2K resolution HDMI video with (3) embedded EDID modes. With a video signal bandwidth of 340Mhz, there is no signal degradation. High Definition Digital signals can be distributed from the (1) Input to (8) Outputs. The distributor is certified as being fully CEC and HDCP 1.4 compliant, full UHD 4K2K HDMI V1.4a 3D formats. 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 up to 66 feet (20M). Supports UXGA/WUXGA DVI 1920x1200 resolution to any HD DVI displays. The EDID management can be selected between (3) different modes 1080p-2ch/1080-bitstream/4K2K-bitstream and (2) mode scaler management for scaling up to 4K2K (24Hz) and scaling down to 1080p (24Hz). Control is provided via front panel push buttons.

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.

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

- (1) HDMI UHD 4K2K Input to (8) HDMI UHD 4K2K Output Distribution Amplifier
- HDMI digital video w/ embedded HDCP, DVI format and CEC/HDCP 1.4 compliant
- Build-in (3) worldwide embedded EDID modes control HDMI full UHD 4K2K (24/25/30Hz) resolutions
- Supports TMDS clock rate up to 300MHz
- Wide range of HD DVI resolutions from PC XGA to WUXGA 1920x1200 and HDTV/DTV
- Supports HDMI resolutions 480i/480p, 576i/576p, 720p, 1080i/p & 4K2K (24/25/30Hz)
- Digital Video TMDS formats for resolutions up to 4K2K with Deep color 36-bit
- Scaling up to 4K2K@30Hz Mode: Supports Input 1080p@30Hz resolution only
- Scaling down to 1080p@30Hz Mode: Supports Input 4K2K@30Hz resolution only
- Digital Multi-Channel Audio Support: Dolby TrueHD, Dolby Digital, Dolby Digital Plug/ex, DTS, DTS-HD, DTS-HD Master, DTS-EX, PCM, PCM2, LPCM2
- Various User Interface controls via front panel push button
- Supports (2) worldwide control function keys via front panel controls: Select / Enter
- Supports (3) embedded EDID Modes: 1080p-2ch / 1080 bitstream / 4K2K-bitstream
- Supports (2) Scaling Up / Down Modes: Down to 1080p (24Hz) / Up to 4K2K-(24Hz)
- HDMI Signal Booster: For 1080p distance of 98 feet (30M) and 4K2K distance of 65 feet (20M)
- Automatic LED show out via press the select function button
- Supports universal switch power adaptor AC100V~AC240V, 50/60Hz

The Distributor 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:

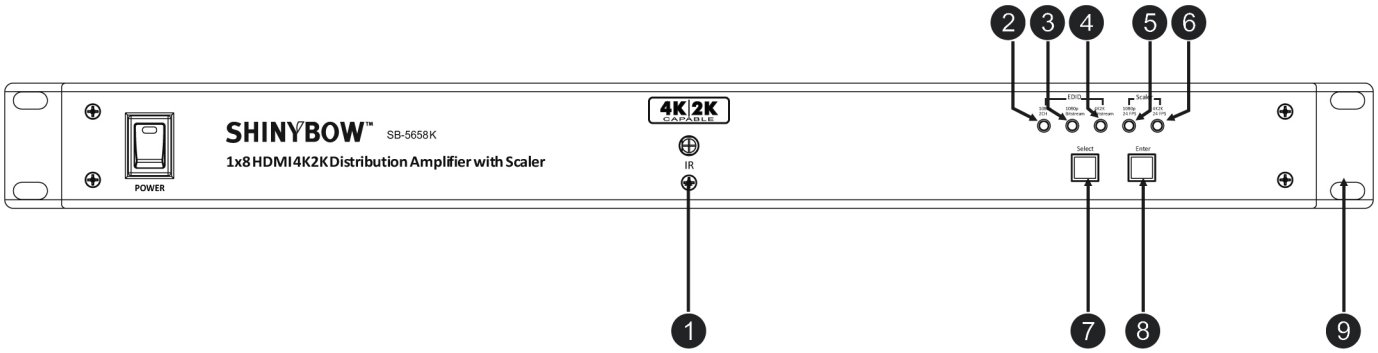
- SB-5658K Matrix Switcher
- RS-232 V2.0 Protocol Instructions
- IR Remote Control (SW-5658K)
- 19 inch Ear mount bracket (Part # 1U-440L)
- SB-100 IR Extender Receiver Set
- HDMI Locking Post Replacement Screws
- Users Guide
- Power Supply Input: Worldwide Universal 100~240VAC, AC 50/60Hz
- *Optional: SB-100C IR Extender Receiver Cable (6.5ft (2M))*

SPECIFICATIONS

- **Type of HDMI DA:** (1) Input to (8) Outputs HDMI Matrix Switcher
- **HDMI Support:** HDMI 4K2K, 1080p-@60Hz, H36-bit Deep color, 3D of HDMI V1.4 formats
- **HDCP / CEC Support:** HDCP 2.2 Compliant, CEC Compliant
- **Video Bandwidth:** Clock Data Rates: 300Mhz
- **Digital Video Support:** HD: 480i/ 480p/ 720p/ 1080i/p and 4K2K up to 36bit deep color
- **HDMI Input:** (1) HDMI (HDMI or DVI digital source)
- **HDMI Outputs:** (8) HDMI (to Destination)
- **Audio Outputs:** Multi-channel 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)
- **Controls:**
  - Select Function button on front panel (Data status via LED panel show out)
  - Enter function button (confirms entries)
- **EDID-Scaling Status:** EDID & Scaling status LEDs indicates presence of a live signal
- **Control Status:** Control status LEDs indicates presence of a live signal
- **(2) Function Control Keys:**
  - 1. Select button
  - 2. Enter button
- **(3) EDID Management:** Select Embedded EDID Modes:
  - Mode1: 1080p60Hz-2ch
  - Mode2: 1080p@60Hz-Bitstream
  - Mode3: 4K2K-2160p@30H-Bitstream
- **(2) Scaling Function Mode:** Select Scaling down or scaling up
  - Mode1: Down-Scaling to 1080p@24Hz mode requires a source Input signal of 4K2K@24Hz
  - Mode2: Up-Scaling to 4K2K-2160p@24H mode requires a source Input signal of 1080p-24Hz
- **Infrared Frequency:** 38Khz
- **HDMI Signal Booster:** Signal for 1080p distance of 98 ft/30M max / Signal for 4K2K distance of 65 ft/20M max
- **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 8 x 1.75 in
- **Rack Mount:** 19 inch 1U High Rack Mount bracket (P/N: 1U-440L)
- **Power Supply:** AC 100~240VAC 50/60Hz (universal type supply)
- **Safety Approvals:** CE, FCC, RoHS, REACH
- **Weight:** 5.3 lb (Unit only) / 7.5 lb (Net)

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

FRONT PANEL



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

2. INPUT STATUS DISPLAY: Input source LEDs illuminate blue to indicate that a video source is present on that input

3. OUTPUT STATUS DISPLAY: Output Destination 1 to 8 LEDs illuminate blue to indicate that a video source is present on that output

4. EDID MODE 1: 1080P-2CH: Digital video 1080p (1920x1080) @60Hz
Digital Audio Multi-Channel Audio 2CH

5. EDID MODE 2: 1080P-BITSTREAM: Digital video 1080p (1920x1080) @60Hz
Digital Audio Multi-Channel Audio: 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)

6. EDID MODE 3 : 4K2K-BITSTREAM: Digital video 4K2K (3860x2160) @24/25/30Hz
Digital Audio Multi-Channel Audio: 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)

7. SCALER MODE 1: 1080P-24HZ: Digital video 1080p (1920x1080) @24Hz
Digital Audio Multi-Channel Audio: 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)

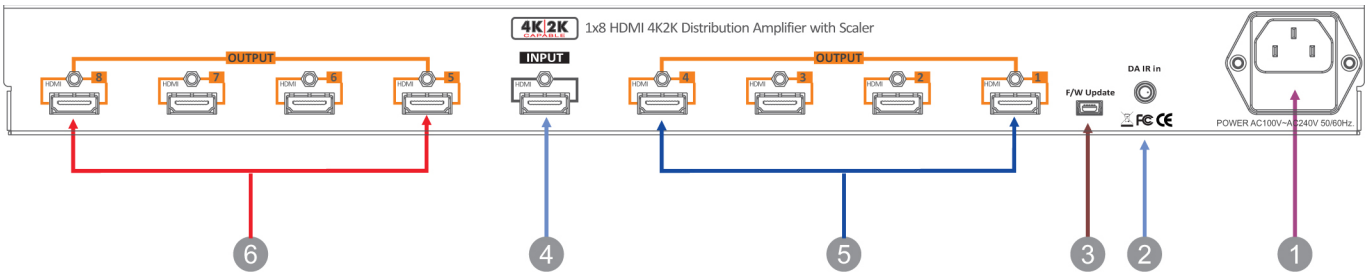
8. SCALER MODE 2: 4K2K-24HZ: Digital video 4K2K (3860x2160) @24Hz
Digital Audio Multi-Channel Audio: Multi Audio Formats 5.1 / 7.1, MAT(MLP), Dolby Digital, Dolby TrueHD, Dolby Digital Plus, DTS, DTS-ES 6CH, DTS-HD, DTS-HD-HRA, DTS-HD Master, (PCM-2CH)

9. SELECT BUTTON: Used to select EDID modes.

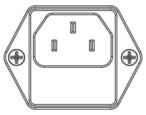
10. ENTER BUTTON: Press ENTER to confirm entries.

11. 19 INCH EAR MOUNT PAIR: Converts desktop to 19 inch rack mount. Bracket (part number: 1U-440L) INCLUDED. Image shows rack mount bracket attached

BACK PANEL



1. DC POWER INLET: The switcher is fitted with a AC 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. 100~240Volt AC, 50/60Hz power supply.



POWER SOCKET:
Connector Type: IEC 60320 C13

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2. IR EXTENDER CONTROL: Supports one IR extender. Extends a maximum distance ~984 ft/300M. When you plug the external IR extender into the distributor, the front panel IR receiver remains active.

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.

This port also for Firmware updates.
REMOTE PORT: D-SUB-9pin female connector

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4. HDMI INPUT - (1) PORT: Connects a HDMI source signal to this Input. This HDMI port supports HDMI with embedded digital multi-channel audio and DVI 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 distributor can be used with DVI digital video signals.

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5. HDMI OUTPUTS - 1~4 PORTS: Connects a HDMI source signal to this Output. This HDMI port supports HDMI with embedded digital multi-channel audio and DVI 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 distributor can be used with DVI digital video signals.

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6. HDMI OUTPUTS - 5~8 PORTS: Connects a HDMI source signal to this Output. This HDMI port supports HDMI with embedded digital multi-channel audio and DVI 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 distributor can be used with DVI digital video signals.

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: Controller with a power ON and OFF

3. 1080P-24 FPS

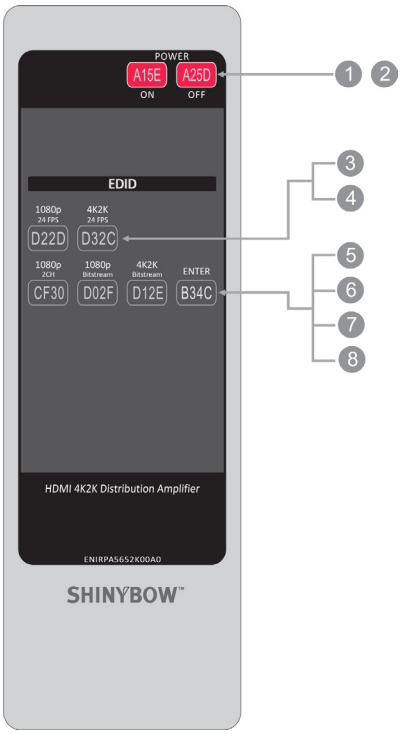
4. 4K2K-24 FPS

5. 1080P-2CH

6. 1080P-BITSTREAM

7. 4K2K-BITSTREAM

8. ENTER



IR REMOTE CUSTOM AND DATA CODES (NEC Standard)

HOW TO SETUP IR CODES : CUSTOM CODE : 59A6

POWER ON : 59A6 A15E
POWER OFF : 59A6 A25D
1080p-24 fps : 59A6 D22D
4K2K-24 fps : 59A6 D32C
1080p-2CH : 59A6 CF30
1080p-BitStream : 59A6 D02F
4K2K-BitStream : 59A6 D12E
ENTER : 59A6 B34C

EDID FUNCTION

EMBEDDED EDID & SCALER MODES FOR HDMI DISTRIBUTION AMPLIFIER

EDID / SCALER SETUP	To Change The EDID & Scaler Modes
	The display will show the currently selected EDID mode
Step 1. Press **SELECT** button	The button will flash blue and the display will show the current **Embedded EDID & Scaler** Status.
Step 2. Press the **ENTER** button	To set **EDID & Scaler** mode: The switcher will return to operation mode.
Operation will abort if no keys are pressed within 5 seconds.	
EMBEDDED EDID & SCALER MODES	**To Select Embedded EDID Mode Or Scaler Mode**
Embedded EDID setup Press **SELECT > ENTER** button **Select Embedded EDID:** Mode 1 : 1080p-2ch Mode 2 : 1080p-Bitstream Mode 3 : 4K2K-Bitstream **Select Scaler Modes:** Mode 1 : 1080p-24Hz Mode 2 : 4K2K-24Hz	The button will flash blue and the display will show the current **Embedded EDID & Scaler** Status. Press **SELECT** button: The LED will show the current **EDID & Scaler** status. Repeatedly pressing the **SELECT** button will cycle modes thru the options.
RESET	**(EDID Return To Factory Default)**
How to RESET EDID mode Press **ENTER** button	Operation will abort if keep pressed the **ENTER** button after 5 seconds. RESET to the FACTORY DEFAULT. Mode-1: The EDID will return to 1080p-2CH.

EDID FUNCTION

EDID MODE RESOLUTION & MULTI-CHANNEL AUDIO FORMATS:

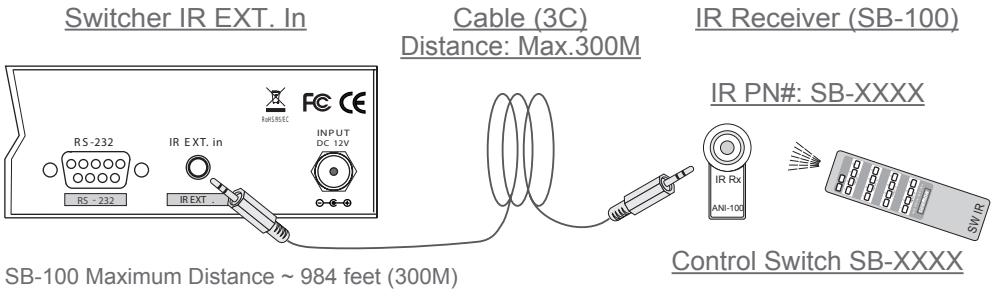
EDID MODES:	RESOLUTIONS:	MULTI-CHANNEL FORMATS:
Mode # 1	1080p@60Hz (NATIVE), 1080p@50Hz, 1080p@30Hz, 1080p@25Hz,1080p@24Hz, 1080i@60Hz, 1280x720@60Hz, 720p@60Hz, 720i@60, 480p@60	LPCM-2ch, 32kHz ~ 48kHz, 16/20/24 bits
Mode # 2	1080p@60Hz (NATIVE), 1080p@50Hz, 1080p@30Hz, 1080p@25Hz, 1080p@24Hz, 1080i@60Hz, 1280x720@60Hz, 720p@60Hz,720i@60, 480p@60	LPCM-8ch, 32kHz ~ 192kHz, 16/20/24 bits AC-3 6ch, 32kHz ~ 192kHz, 640kHz DTS 6ch, 32kHz ~ 192kHz, 1536kHz Dolby+-8ch, 32kHz ~ 192kHz DTS-HD 8ch, 32kHz ~ 192kHz
Mode # 3	2160p@24Hz (3860x2160p) 4K2K	LPCM-8ch, 32kHz ~ 192kHz, 16/20/24bits AC-3 6ch, 32kHz ~ 192kHz, 640kHz DTS 6ch, 32kHz ~ 192kHz, 1536kHz Dolby+-8ch, 32kHz ~ 192kHz DTS-HD 8ch, 32kHz ~ 192kHz

SCALER MODE RESOLUTION & MULTI-CHANNEL AUDIO FORMATS:

EDID MODES:	RESOLUTIONS:	MULTI-CHANNEL FORMATS:
Mode # 1	1080p@60Hz 1920x1080p	LPCM-8ch, 32kHz ~ 192kHz, 16/20/24bits AC-3 6ch, 32kHz ~ 192kHz, 640kHz DTS 6ch, 32kHz ~ 192kHz, 1536kHz Dolby+-8ch, 32kHz ~ 192kHz DTS-HD 8ch, 32kHz ~ 192kHz
Mode # 2	2160p@24Hz (NATIVE) 2160p@25Hz 2160p@30Hz 4K2K (3860x2160)	LPCM-8ch, 32kHz ~ 192kHz, 16/20/24bits AC-3 6ch, 32kHz ~ 192kHz, 640kHz DTS 6ch, 32kHz ~ 192kHz, 1536kHz Dolby+-8ch, 32kHz ~ 192kHz DTS-HD 8ch, 32kHz ~ 192kHz

IR EXTENDER

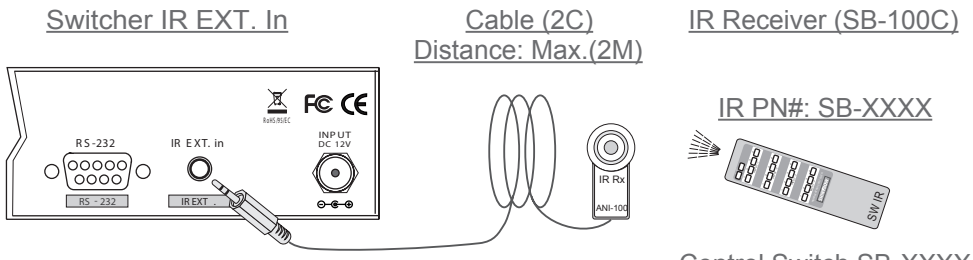
1. SB-100 IR 300M Receiver



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

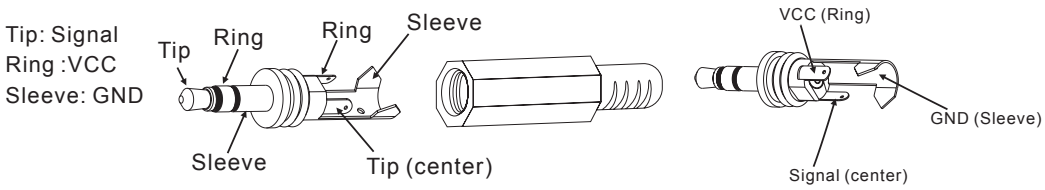


SB-100C Maximum Distance ~ 6 feet (2M)

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

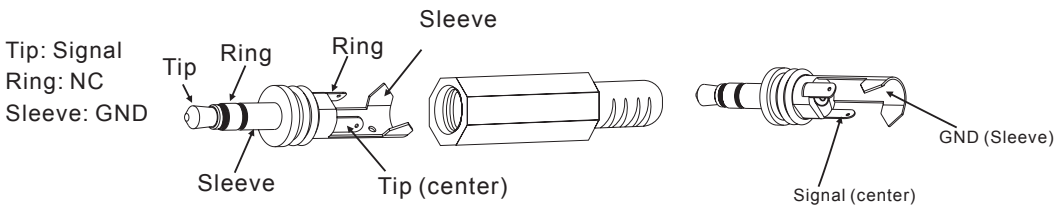
*** When you plug the External IR extender into the switcher, the front panel IR receiver remains active. ***

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.

TYPICAL APPLICATION

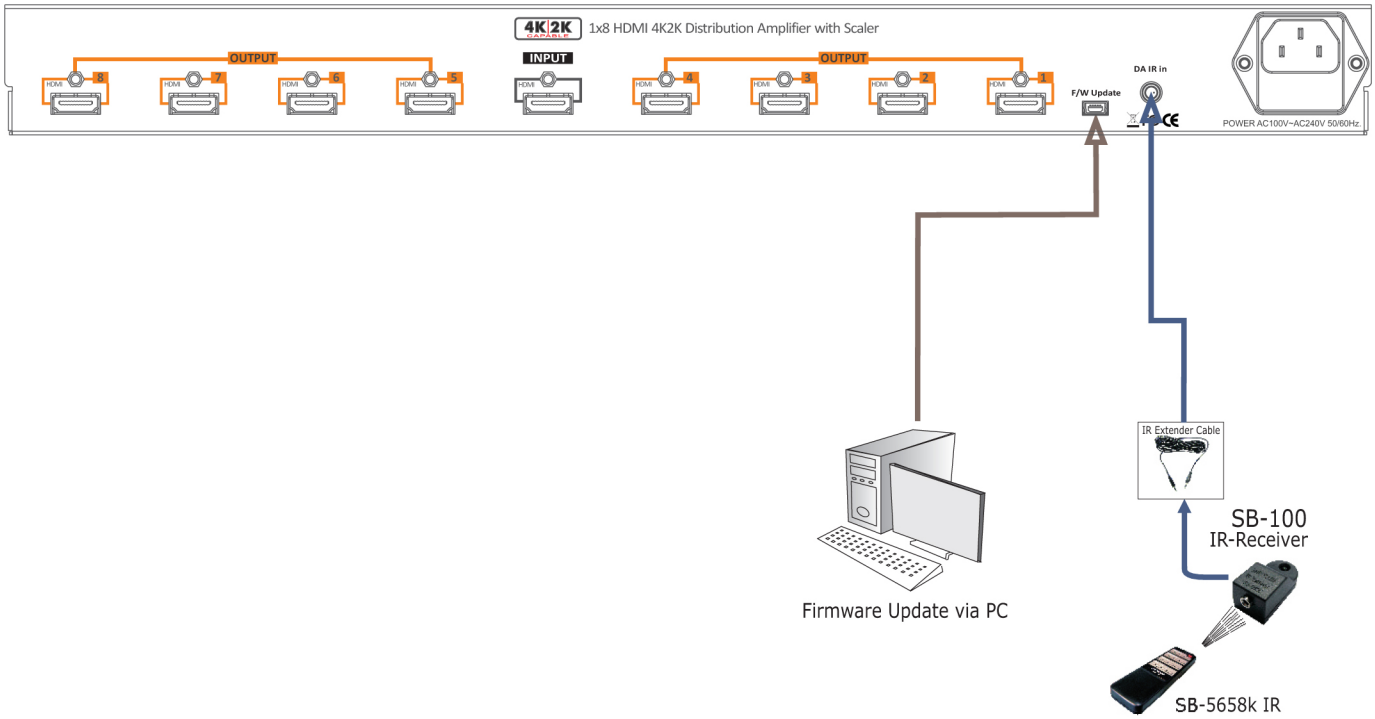
INSTALLING DIAGRAM

Samples Connection:

1. Using the external IR to control the SB-5658K distributor via PC and SB-100 IR receiver to transmit the SB-5658K's IR signal.
2. Using a Mini-USB update to update the distributor via a PC.
3. Using the press buttons to select the Embedded EDID modes or Scaler modes to control the HDMI distribution amplifier SB-5658K via **SELECT** and **ENTER** press buttons.

NOTE:

1. Distributor IR External Port: Use SB-100 IR signal Receiver
2. Update TX/RX chip Firmware via a PC USB
3. Scaling Up 4K2K@24Hz Mode: Supports 1080p@24Hz Input resolution only
4. Scaling Down 1080p@24Hz Mode: Supports 4K2K@24Hz Input resolution only



Application uses 1080p or 4K2K HDTV via 1x8 Distribution Amplifier with Scaler.

RS-232 SERIAL INTERFACE PROTOCOL AND COMMAND

RS-232 SERIAL INTERFACE CONNECT

RS-232 CONFIGURATION

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

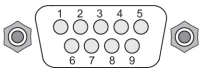
SB Device

Definition	Pin
	1
TX	2
RX	3
	4
GND	5
	6
	7
	8
	9

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

PC

RS-232 Pin Diagram



BAUD RATE: 9600, 8, n, 1

FORMAT: [Command] [ ] [Data] [;]

1. Command
2. Space
3. Data
4. ;

Leave a space between Command and Data. Terminate each command with a semi-colon " **;** " All codes are simple text (ASCLL)
If the command sent is correctly, the system will return **"SB5658K 00;"**
If the command sent is incorrect or out of range, the system will return **"SB5658K 01;"**

Example of the commanded string to select Inputs:

COMMANDS:

ITEM	COMMAND	DESCRIPTION
1	POWER	Set/Check the status of Power
2	EDID	SET/CHECK EDID

1. POWER

FUNCTION	COMMAND	RESPONSE	DESCRIPTION
Power OFF	Power 00;	SB5658K 00;	Power OFF
Power ON	Power 01;	SB5658K 00;	Power ON
Check the Status of Condition	Power ?;	Power 00;	Power OFF
		Power 01;	Power ON

2. EDID

FUNCTION	COMMAND	RESPONSE	DESCRIPTION
Select EDID	EDID [ii];	SB5658K 00;	"ii" is EDID Mode. 01-1080p 2CH 02-1080p Bitstream 03-4K2K Bitstream 04-Down-Scaling to 1080p 05-Up-Scaling to 4K2K
Check the Status of Condition	EDID ?;	EDID 01;	Set EDID to 1080p 2CH

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.

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