SB-3691

2x1 HDMI PiP/PoP Selector Switch Scaler

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

MultiVideo Digital Converter Series
Thank you for purchasing the SB-3691 2x1 HDMI PiP/PoP Select 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 Selector switcher.

CONTENTS

INTRODUCTION

The SB-3691 is the professional 2x1 HDMI PiP PoP Selector Switch Scaler. Supporting (2) HDMI Inputs and (1) HDMI Output with Picture in Picture (PiP) and Picture of Picture (PoP) features that can be easily configured and controlled. Supports video resolutions up to 1080p with a signal bandwidth of 165MHz and data rate up to 4.95Gbps with no signal degradation. The SB-3691 is HDMI 1.3 and HDCP 1.2 compliant, with CE and FCC certifications. Zoom management can be selected between (5) levels. Input resolutions can be scaled up to 1080p or down to 480p. Supports menu for controlling brightness, contrast and saturation. Control is provided via front panel buttons, RS-232 or wireless IR remote control (included).

PACKAGE CONTENTS

Check that you have the following components;
- SB-3691 Select Switcher
- Operating Instructions
- RS-232 V.36.01 Protocol Instructions
- Master wireless IR Remote Control (SW-3691)
- Wall mount bracket (Part # 1INCH-130MM)
- Power Supply Input : DC12V, 1.25A, (Worldwide Universal 100~240 VAC, AC 50/60Hz)

1 inch Wall mount

Ear Rack: #WM-1INCH-130MM

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.

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FEATURES & SPECIFICATIONS

FEATURES

- (2) HDMI Inputs and (1) HDMI Output Scaler Switch Box
- Supports Picture in Picture (PiP) and Picture of Picture (PoP)
- Link speeds up to 4.95Gbps (link clock rate of 165MHz), HDMI 1.3 and HDCP 1.2 compliant
- Digital video TMDS formats resolutions up to 1080p with Deep color 36bit
- Supports (2) HDMI (480i/p to 1080p) Inputs
- Outputs supports:
  - 1x HDMI 1080p-60Hz
  - 1x S/PDIF
  - 1x Stereo audio (AR/AL), Audio output supports PCM 2ch
- Zoom management can be selected between (5) modes
- (16) Control Buttons : SW1/ SW2/ PiP/ PoP/ A/ B/ MENU/ ENTER/ RESOLUTION/LOCK/ RESET/ ZOOM/ Up/ Down/ Right/ Left
- Menu control for color, brightness, contrast and saturation
- Scaler supports :
  - Scaling down to 480p
  - Scaling up to 1080p
- HDMI cable distance for 1080p-60Hz up to 98 feet (30M)
- Provided IR remote control - Frequency (38KHz)
- Various User Interface Control:
  - Front panel push buttons
  - IR wireless remote control
  - RS-232 interface control driver for WIN2000/xp/WIN7-32/WIN7-32/WIN8
- Power supply DC12Volt, Universal type switch 100~240VAC, 50/60Hz

SPECIFICATIONS

- **Type of Switcher:** 2x HDMI Inputs and 1x HDMI Output Selector Switch Scaler Box
- **HDMI Support:** HDMI 1080p-@60Hz, H36-bit Deep color
- **HDCP / HDMI Support:** HDCP 1.2 Compliant, HDMI 1.3 version
- **Video Bandwidth:** Double Data Rates: 165Mhz, Total 4.95Gbps bandwidth
- **Digital Video Support:** HD: 480i/ 480p/ 720p and up to 1080i/p
- **Input:** 2x HDMI (HDMI or DVI digital source)
- **Output:** 1x HDMI (To Destination)
- **Switch Controls:**
  - 1x Select & Function buttons on front panel
  - 1x IR Remote Control (switch control)
  - 1x RS-232
- **Scaling Mode:**
  - Scaler down to 480p
  - Scaler up to 1080p
- **HDMI Signal Booster:** Distance for 1080p cable up to 98 feet (30M)
- **Infrared Frequency:** 38Khz
- **Firmware Update:** Firmware update via RS-232
- **HDMI I/O Connector:** HDMI Type A - SMD 19pin Female Type
- **Temperature:** Operating Temperature 32°F - 100°F (0°C - 32°C)
- **Wall Mount:** 1 inch High Wall Mount pairs (P/N: WM-1INCH-80mm)
- **Dimensions (LxWxH):** 6.69 x 5.71 x 1.14 in (170x145x29mm)
- **Power Supply:** DC12V, Power Input : AC 100~240 VAC 50/60Hz (universal type supply)
- **Safety Approvals:** CE, FCC, REACH
- **Product Weight:** 0.677 Kgs / 1.5 lb

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

FRONT PANEL

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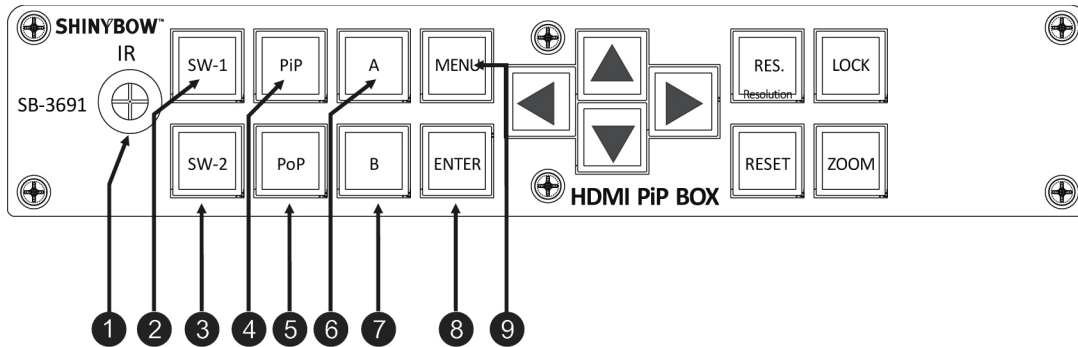
1. IR SENSOR: The IR sensor receives IR commands from the supplied remote controller or third party IR emitter.

2. SW1 BUTTON : SOURCE (1) SELECT BUTTON: Source input #1 select button is provided for HDMI source #1 selection.

3. SW2 BUTTON : SOURCE (2) SELECT BUTTON: Source input #2 select button is provided for HDMI source #2 selection.

4. PiP BUTTON: PiP button is provided for Source #1 (A) & Source #2 (B) Picture in Picture function.

5. PoP BUTTON: PoP button is provided for Source #1 (A) & Source #2 (B) Picture of Picture function.

**6. "A" BUTTON:** "A" button is provided for Source #1 (A) instead of Source #2 (B) picture on screen.

7. "B" BUTTON: "B" button is provided for Source #1 (B) instead of Source #2 (A) picture on screen.

8. ENTER BUTTON: Press **ENTER** to confirm entries.

9. MENU BUTTON: Press **MENU** button to open the On-Screen display interface. Press again to exit Menu. To adjust the color brightness, contract and saturation. Press "**LEFT**" or "**RIGHT**" to do the adjustment and "**ENTER**" to change the setting.
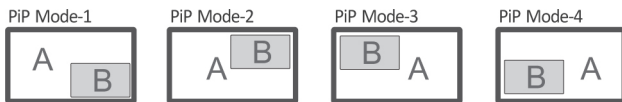
FRONT PANEL
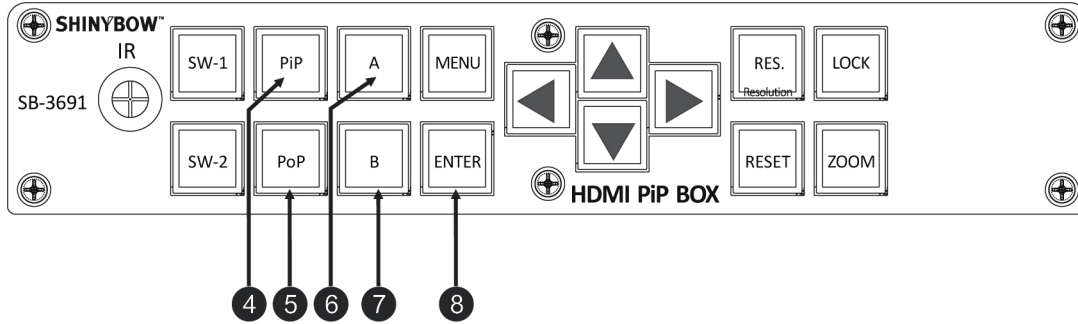
4. FUNCTION KEY : PIP (PICTURE IN PICTURE):

A/B button (**A** and **B** position)

To enable the PiP option on a specific Output, perform the follow steps:
- Press the **PiP** button. The screen will return to PiP mode status.
- Press the **PiP** button again, to cycle thru the PiP (4) modes.

PiP Mode-1   PiP Mode-2   PiP Mode-3   PiP Mode-4

- Press the **ZOOM** button repeatedly, to cycle thru the PiP picture will reduce screen size from 1 thru 5 levels.

Size-1   Size-2   Size-3   Size-4   Size-5

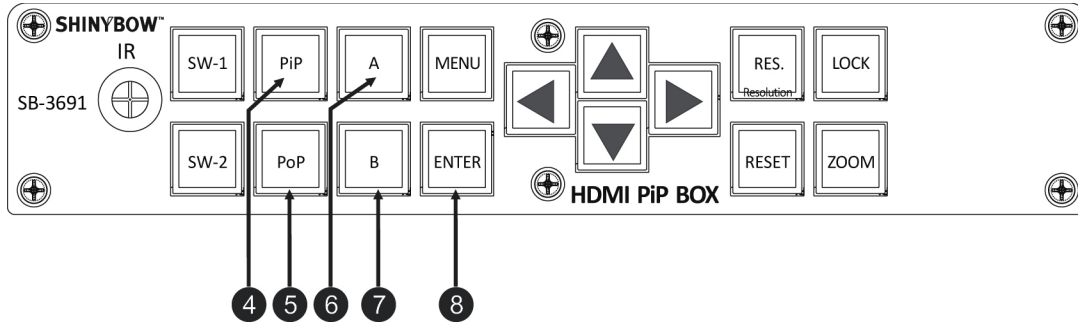- Press the **A** or **B** button, to setup the A, B position. (the button will illuminate).
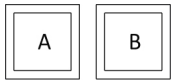
PIP A, B POSITION TABLE :
Type-1 : Position A, B Source #1/Source #2
Type-2 : Position B, A Source #2/Source #1

The new configuration will be stored.

FRONT PANEL

5. FUNCTION KEY : POP (PICTURE OF PICTURE):

A/B button (**A** and **B** position)

To enable the PoP option on a specific Output, perform the follow steps
- Press the **PoP** button. The Screen will return to PoP mode status.
- Press the **PoP** button again, to cycle thru the PoP (2) modes.

PoP Mode-1   PoP Mode-2

- Press the **ZOOM** button repeatedly, PoP picture will cycle thru from zoom 1 to zoom 5 levels.

Level-1   Level-2   Level-3   Level-4   Level-5

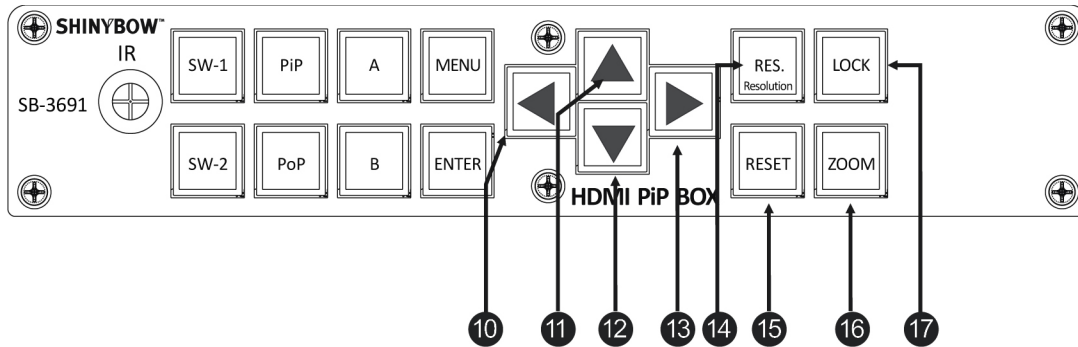- Press the **A** or **B** button, to setup the A,B position. (the button will illuminate).
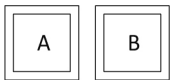
POP A, B POSITION TABLE :
Type-1 : Position A, B Source #1/Source #2
Type-2 : Position B, A Source #2/Source #1

The new configuration will be stored.

FRONT PANEL

10. LEFT BUTTON: Press the **LEFT** button to move to the left of the screen when the SCN-ADJ function is enabled.

11. UP BUTTON: Press the **UP** button to move up the screen when the SCN-ADJ function is enabled.

12. DOWN BUTTON: Press the **DOWN** button to move down the screen when the SCN-ADJ function is enabled.

13. RIGHT BUTTON: Press the **RIGHT** button to move to the right of the screen when the SCN-ADJ function is enabled.

14. SELECT OUTPUT RESOLUTION BUTTON: Press the **RES** Resolution's button to select the embedded output resolutions.

15. RESET BUTTON: Press the **RESET** button to disable the SCN-ADJ screen function.
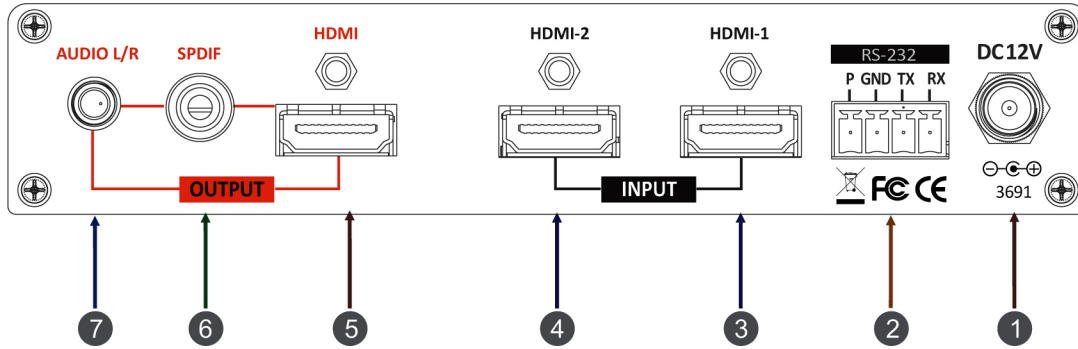
16. LOCK BUTTON:
   - Press and hold **LOCK** button for three seconds lockout the front panel and LED display show out.
   - Press and hold **LOCK** button for three seconds to enable the front panel.

17. ZOOM BUTTON: Press the **ZOOM** button to zoom out the screen when the SCN-ADJ function is enabled.

BACK PANEL

1. DC POWER INLET: The converter suits a DC power plug-pack input connector. Please ensure the plug-pack used is of an approved type and of correct current, voltage output, and connector polarity. DV 12 Volt, power supply 1.25A.
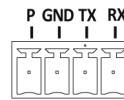
DC-12V IN

POWER JACK:
DC Jack - Inner OD Ø 2.1 mm (+)
Outside OD Ø 5.5mm (GND)
Power Input: 12VDC, 1.25A

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2. RS-232 CONNECTION: Connects a serial cable to the RS-232 port for control of the converter or update the firmware via a computer. *Firmware procedure is included in a separate document and utilizes the pin marked "P".*

P GND TX RX

This port also supports Firmware updates.
REMOTE CONTROL PORT: Terminal Block female socket (pitch=3.5mm)

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3. HDMI INPUT-1: Connects a HDMI signal to the HDMI female connector, which supports HDMI digital video and audio to the HDMI display.

HDMI-1
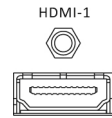
HDMI digital video and audio female connector

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4. HDMI INPUT-2: Connects a HDMI signal to the HDMI female connector, which supports HDMI digital video and audio to the HDMI display.

HDMI-2
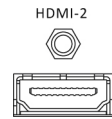
HDMI digital video and audio female connector

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5. HDMI OUTPUT: Connects a HDMI digital video/audio signal link direct to the female HDMI connector, which supports HDMI digital video/audio and DVI digital video sources.
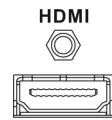
HDMI

HDMI female connetor
Note: With proper adapters, the scaler can be used with DVI digital video signals.

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6. SPDIF OUTPUT: Connects the digital audio output from the digital audio source.

SPDIF

Female RCA connector

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7. AUDIO OUTPUT: Connects the stereo audio output port of your source audio device to the stereo audio (AR/AL) inputs.

AUDIO

Stereo Audio (AR/AL) via 1x OD3.5mm jack connector

REMOTE CONTROL & REMOTE PROTOCOL COMMANDS

BEFORE MAKING ANY CONNECTIONS 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.
- To yield video/audio to an output, select the input source by using the front panel input buttons, the supplied IR remote control, or through the RS-232 serial communication port.
- Upon power up the switcher will return to its last used setting before Powered down.

REMOTE CONTROL

IR REMOTE CONTROL KEY :
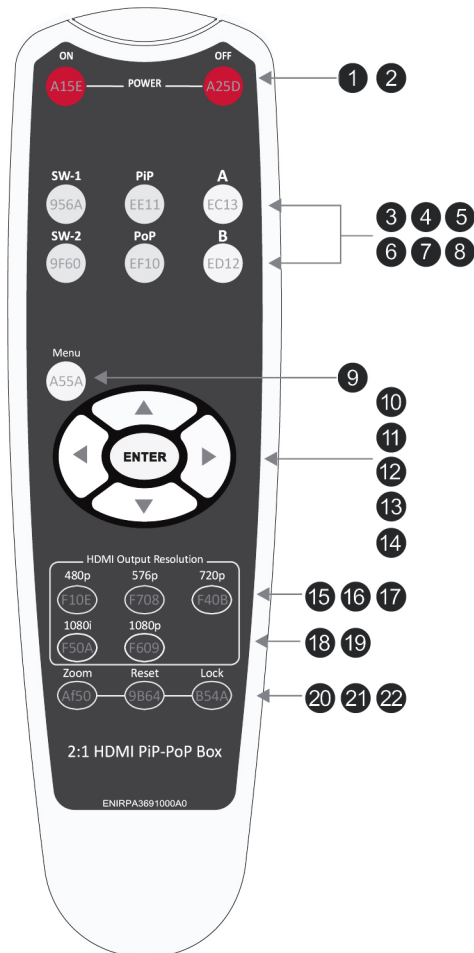
1. / 2. POWER ON AND OFF: Turna on or off the scaler.

3. SW-1 : Selects HDMI #1 source signal.

4. PIP: Picture in Picture (PiP) function.

5. "A" : Change to the "A" via others source signal.

6. SW-2 : Select HDMI #2 source signal.

7. POP: Picture of Picture (PoP) function.

8. "B": Changes to the B via others source.

9. MENU: Open & setup OSD options.

10. / 11. / 12. / 13. ARROW KEYS: Move up, down, left or right between the OSD options. Uses left and right keys to adjust the value of a parameter. Uses down key to enter the next layer of options and up key to move back.

14. ENTER: Confirms your selection/enter the next layer of OSD options

15. HDMI OUTPUT RESOLUTION : 480p

16. HDMI OUTPUT RESOLUTION : 576p

17. HDMI OUTPUT RESOLUTION : 720p

18. HDMI OUTPUT RESOLUTION : 1080i

19. HDMI OUTPUT RESOLUTION : 1080p

20. ZOOM: Opens SCN-ADJ zoom out function.

21. RESET : Opens SCN-ADJ to RESET SCN-ADJ configuration.

22. LOCK:

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

IR DATA CODE LIST

IR REMOTE CUSTOM AND DATA CODES (NEC Standard)

HOW TO SETUP IR CODES :

POWER ON: 5A69 A15E
POWER OFF: 5A69 A25D
MENU: 5A69 A55A
ENTER: 5A69 AB54

CUSTOM CODE : 5A69

AV SOURCE: BB44
   HDMI: 926D

RESOLUTIONS:
   HDMI: 956A

SCN-ADJ.:
   ENTER: AB54
   UP: A758
   RIGHT: AA55
   LEFT: A956
   DOWN: A857

SCN-ADJ.:
   ZOOM: AF50
   RESET: 9B64
   LOCK: B54A

EXAMPLE 1:

Select input VGA and output HDMI

The IR Data Code: 5A69   0AF5   5A69   07F8

EXAMPLE 2:

Video -> move right -> move down to next layer -> enter to confirm selection

The IR Data Code: 5A69   BB44   5A69   AA55   5A69   AB54

RS-232 SERIAL INTERFACE

RS-232 SERIAL INTERFACE CONNECT a PC or CONTROL SYSTEM. VERSION COMPATIBLE V.36.01

For a complete list of commands, please reference external document extended RS-232 Protocol Instruction Manual.
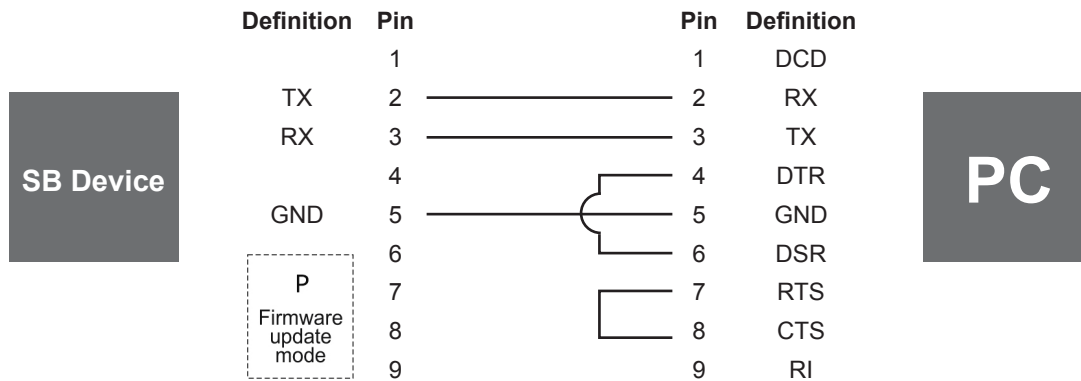
Example of the commanded string to select Inputs:

FUNCTION	COMMAND	COMMAND VARIABLES
Select source	Source xxx,	xxx = Input Channel (001=Source1, 002=Source2)

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
P (Firmware update mode)	7		7	RTS
	8		8	CTS
	9		9	RI

SB Device

PC

RS-232 Pin Diagram

P GND TX RX
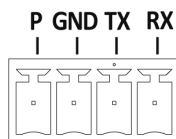
RS-232 Pin Diagram
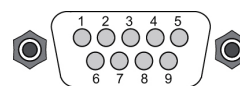
This port also for Firmware update
RS-232 control
Terminal Block female socket (pitch=3.5mm)

RS-232 SERIAL INTERFACE PROTOCOL COMMANDS
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.

TYPICAL APPLICATION

INSTALLING DIAGRAM

Sample Connection:

1. Using RS-232 command to control Selector Switcher (SB-3691) for PiP-PoP function via PC.

2. Input supports : 2x HDMI source devices.

3. Output support : 1x HDMI to displays.
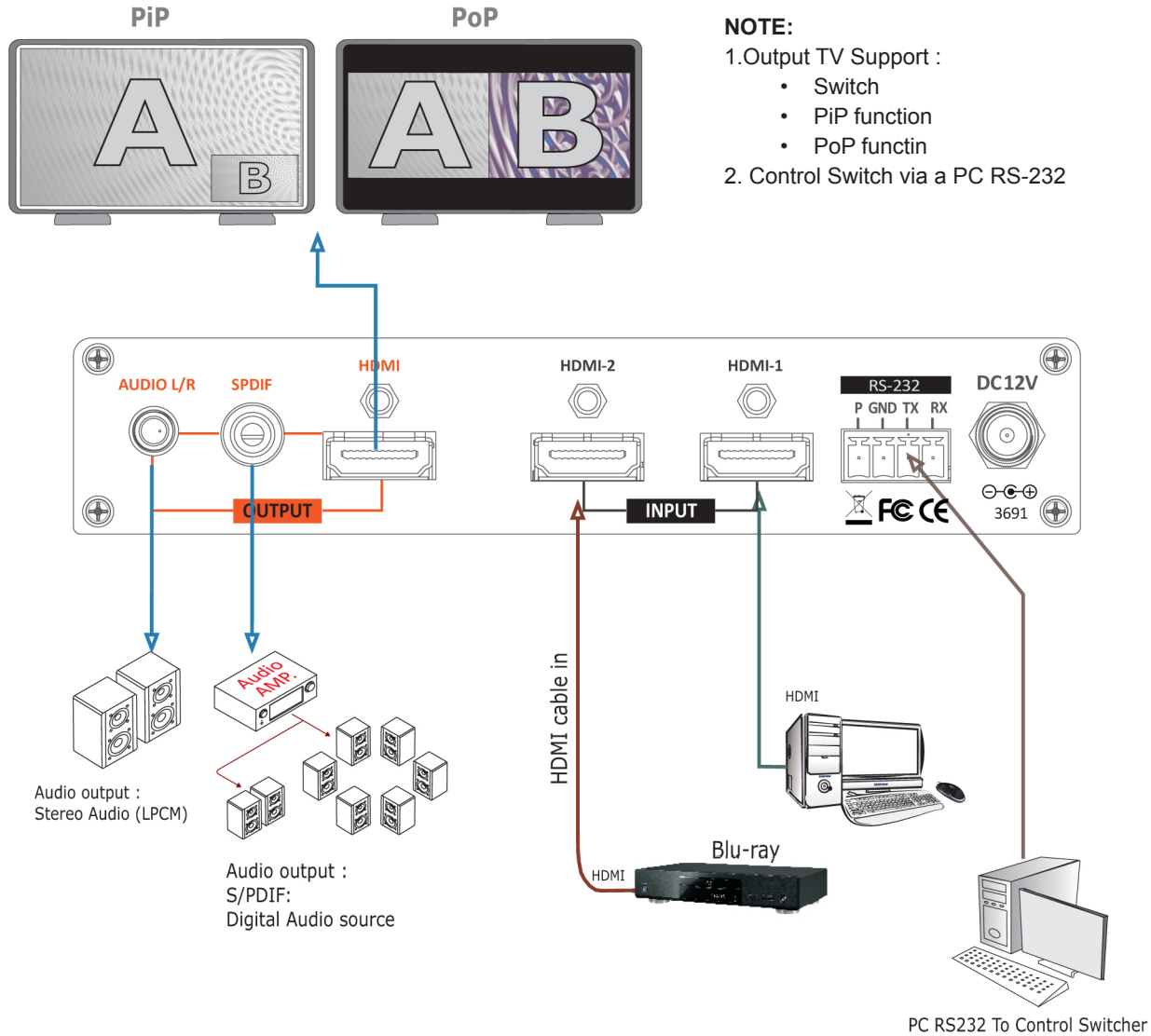
NOTE:
1.Output TV Support :
- Switch
- PiP function
- PoP functin

2. Control Switch via a PC RS-232

Application RS-232 series controls the Selector Switcher.

HDMI INPUT & OUTPUT RESOLUTIONS

HDMI (PC) INPUT RESOLUTIONS

640x480@60Hz	1280x768@60Hz	1400x1050@75Hz	1856x1392@75Hz
640x480@75Hz	1280x800@60Hz	1440x900@60Hz	1152x864@75Hz
800x600@60Hz	1280x800@75Hz	1440x900@75Hz	1920x1080@60Hz
800x600@75Hz	1280x960@60Hz	1600x1200@60Hz	1920x1200@75Hz
848x480@75Hz	1280x1024@60Hz	1600x1200@75Hz	832x6248@75Hz
852x480@60Hz	1280x1024@75Hz	1680x1050@60Hz	1152x870@75Hz
1024x768@60Hz	1366x768@60Hz	1680x1050@75Hz	
1024x768@75Hz	1365x1024@60Hz	1792x1344@60Hz	
1152x864@75Hz	1400x788@60Hz	1792x1344@75Hz	
1280x720@60Hz	1400x1050@60Hz	1856x1392@60Hz	

All of the above PC Input Resolutions work with the following HDMI Output Resolutions.

VGA 640x480	SVGA 800x600	480p 720x480	576p 720x576	720p 1080x720	1080i 1920x1080	1080p 1920x1080

HDMI INPUT RESOLUTION

480i	720p
480p	1080i
576i	1080p
576p	

All of the above HDMI Input Resolutions work with the following HDMI Output Resolutions.

VGA 640x480	SVGA 800x600	480p 720x480	576p 720x576	720p 1080x720	1080i 1920x1080	1080p 1920x1080

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