INSTRUCTION MANUAL

SB-5616

16x2 HDMI Routing Selector Switch (both outputs mirrored)



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 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.

TABLE OF CONTENTS

HDMI Routing Selector Switch Series

Thank you for purchasing the SB-5616 HDMI Routing Selector Switch. 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 16x2 HDMI Routing Selector Switch.

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INTRODUCTION

The SB-5616 is high-performance 16x2 HDMI routing switcher for HDMI signals. This switcher supports data rates up to 3.75 Gbps, enabling 1080p HDMI formats and UXGA/WUXGA/DVI resolution to any HD display. High Definition Digital signals can be selected and distributed to any 2 outputs simultaneously. The Switcher is certified as being fully HDMI and HDCP compliant, with RoHS,CE,FCC certification. Support high resolution HDMI sources routed to HDMI displays, monitors, projector or audio receivers. Control is provided via Front panel push buttons, IR remote or via RS-232. An RS-232 Windows GUI interface is provided for matrix routing.

PACKAGE CONTENTS

Check that you have the following components;

- Main console unit
- Operating Instructions
- IR Remote Controller (SW-5616)
- 19 inch Ear mount bracket (Part # 1U-440L)
- IR Extender receiver 300M connector (SB-100)
- IR Receiver cable (SB-100C)
- CD Contents: This manual, Windows GUI
- RS-232 Cable
- Power Supply 12VDC, 3A Universal Type 50/60Hz, 100~230 VAC

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

- 16x HDMI digital source devices matrix switched to 2x HDMI devices.
- HDMI digital video w/embedded audio, DVI format and CEC/HDCP 2.0 compliant
- Link speeds of up to 3.75 Gbps (link clock rate of 225Mb Hz), Support HDMI 1.4a 3D formats.
- Wide range of HD resolutions from PC XGA to WUXGA 1920x1200 and HDTV/DTV resolutions 480i/480p, 576i/576p, 720p, 1080i & 1080p
- Compatible with all HDMI source devices, PC monitors, Plasma HD display, HDTV and audio receivers/amplifiers.
- Digital Video TMDS formats Resolution up to 1080p-60 with Deep color 36-bit.
- Digital Audio Support : Dolby TrueHD, Dolby Digital, Dolby Digital Plug/ex, DTS, DTS-HD, DTS-HD Master, DTS-EX, PCM, PCM2, LPCM2.
- Various User Interface control:
    - Windows based GUI control via RS-232 port
    - Front Panel push button
    - IR wireless remote control
    - Third party RS-232 controller (via simple ASCII)
- Automatic scanning output status via LED show on front panel.
- Support output #2 port simultaneously output #1.
- Support IR Remote and IR Extender with distance up to ~ 1000 feet (300M) Maximum.

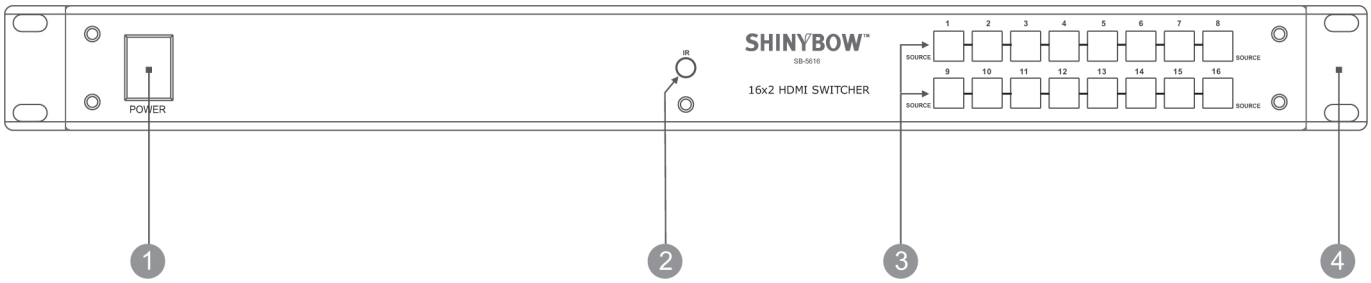
The Switcher will remember that last state during a power cycle.
When power is removed and resorted, the last configuration will be invoked.

SPECIFICATIONS

- **Type of HDMI Switcher:** 16x HDMI inputs To 2x HDMI Outputs Routing Switcher
- **HDMI Support:** HD 1080p-@60Hz, H36-bit Deep color, 3D (1.4a) formats.
- **HDCP / CEC Support:** HDCP 2.0 Compliant, CEC Compliant.
- **Video Bandwidth:** Double Data Rates: 225Mhz, Total 3.75Gbps bandwidth.
- **Digital Video Support:** Full HD resolution : 480i / 480p / 720p / 1080i / 1080p
- **Digital Audio Support:** Multi Audio Formats 5.1 / 7.1, MAT(MLP), Dolby Digital, Dolby TrueHD, Dolby Digital Plus, DTS, DTS-ES 6.1, DTS-HD, DTS-HD-HRA, DTS-HD Master, (PCM-2CH)
- **Controls:**
    - IR Remote Controller
    - IR External port x 1 (OD 3.5mm Ear phone Jack)
    - Select & Function buttons on front panel
    - RS-232 series interface
- **Double Output:** Support output #2 port simultaneously via Output #1
- **Infrared Frequency:** 38 Khz
- **IR External Distance:** ~1000 feet / 300 meters maximum
- **HDMI I/O Connector:** HDMI Type A - SMD 19pin Female Type
- **Temperature:** 32 °F - 100 °F Operation (0 °C - 38 °C)
- **Size (WxDxH):** 19 x 9.85 x 1.75 in (482x250x44mm)
- **Rack Mount:** Rack Mount 1RU High 19 ”Rack Mount (with rack mount)
- **Power Supply:** DC12V / 3A, Universal world wide Type 50/60Hz, 100~230 VAC
- **Power Consumption:** 1850 mA Maximum
- **Safety Approvals:** CE, FCC, RoHS (2002/95/EC).
- **Net Weight:** 2.15 Kgs / 3.58 lbRoHS (2002/95/EC).
- **Net Weight:** 1.85 Kgs / 3.08 lb

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

FRONT PANEL



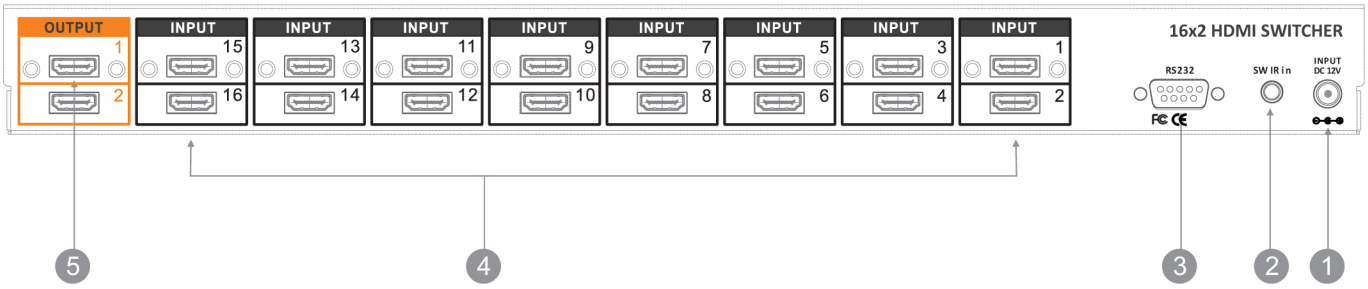
1. POWER ON SWITCH: The power switch turns the unit on and off. The LCM will illuminate red to indicate that the switcher is ON and is receiving power. The Switcher will remember that last state during a power cycle. When power is removed and resorted, the last configuration will be evoked.

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

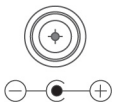
3. SOURCE SELECT BUTTONS: Separate inputs 1 thru 16 select buttons are provided each source selection.

4. 19 INCH EAR MOUNT PAIR: Converts desktop to 19 inch rack mount. Bracket (part # 1U-440L) INCLUDED.
Image shows rack mount bracket attached.

BACK PANEL



1. DC 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 Ø 2.1 mm (+)
Outside OD Ø 5.5mm (GND)
Power input -12VDC, 3A

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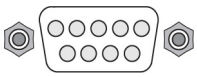
2. IR EXTENDER CONTROL: Support one of IR Extender. Extend distance maximum 300 Meters / ~1000 feet. When you plug the External IR extender into the switcher, the front panel IR receiver remain active.



IR Extender Jack:
Female Jack - inner OD O 3.5 mm

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3. RS-232 CONNECTION: 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.

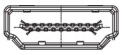


Remote port :
DB-9pin Female connector

---

4. INPUTS- 1, 2, 3, 4, 5, 6, 7, ~ 16 HDMI: Connect a signal link of HDMI direct digital video/audio to HDMI Female connector this Female HDMI connector. This connector supports HDMI digital video/audio and DVI digital video sources.

HDMI Digital Video/Audio, Connector with fix screw Input 1 ~ Input 16

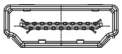


HDMI digital video/audio connector:
HDMI Female connector.
Note: With the proper adapters, the switcher can be used with DVI digital video signals HDCP compliant. DVI does not support audio.

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5. OUTPUTS- 1, 2 HDMI: Connect a signal link of HDMI direct digital video/audio to this Female HDMI connector. This connector supports HDMI digital video/audio and DVI digital video sources.

HDMI Digital Video/Audio, Connector with fix screw Output 1 & Output 2



HDMI digital video/audio connector:
HDMI Female connector.

Note: With the proper adapters, the switcher can be used with DVI digital video signals HDCP compliant.

REMOTE CONTROL

Before making any connections to the SB-5616. 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 1-16 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

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

3. SOURCE : 1 thru 16 INPUT SOURCE SELECTION:
Press input 1~16 sources with selection button



REMOTE PROTOCOL COMMANDS

IR REMOTE CUSTOM AND DATA CODES (NEC Standard)

HOW TO SETUP IR CODES :
CUSTOM CODE : 3CC3
POWER ON: 3CC3 A15E
POWER OFF: 3CC3 A25D

PRESS SOURCE - #

SOURCE #1 :	01FE	SOURCE #9 :	07F8
SOURCE #2 :	02FD	SOURCE #10 :	08F7
SOURCE #3 :	03FC	SOURCE #11 :	09F6
SOURCE #4 :	0CF3	SOURCE #12 :	1DE2
SOURCE #5 :	04FB	SOURCE #13 :	1EE1
SOURCE #6 :	05FA	SOURCE #14 :	00FF
SOURCE #7 :	06F9	SOURCE #15 :	1BE4
SOURCE #8 :	0DF2	SOURCE #16 :	18E7

For example; Select source to show Source #1~16 on display.
The IR Data Code list :

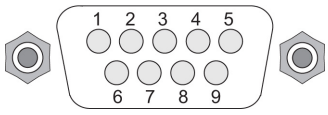
SOURCE #1 :	3CC3	01FE	SOURCE #9 :	3CC3	07F8
SOURCE #2 :	3CC3	02FD	SOURCE #10 :	3CC3	08F7
SOURCE #3 :	3CC3	03FC	SOURCE #11 :	3CC3	09F6
SOURCE #4 :	3CC3	0CF3	SOURCE #12 :	3CC3	1DE2
SOURCE #5 :	3CC3	04FB	SOURCE #13 :	3CC3	1EE1
SOURCE #6 :	3CC3	05FA	SOURCE #14 :	3CC3	00FF
SOURCE #7 :	3CC3	06F9	SOURCE #15 :	3CC3	1BE4
SOURCE #8 :	3CC3	0DF2	SOURCE #16 :	3CC3	18E7

RS-232 SERIAL INTERFACE

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

RS-232 SERIAL INTERFACE

Pin	RS-232	Definition
1	--------	Not used
2	TX	Transmitter
3	RX	Receiver
4	--------	Not used
5	GND	Ground
6	--------	Not used
7	--------	Not used
8	--------	Not used
9	--------	Not used



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

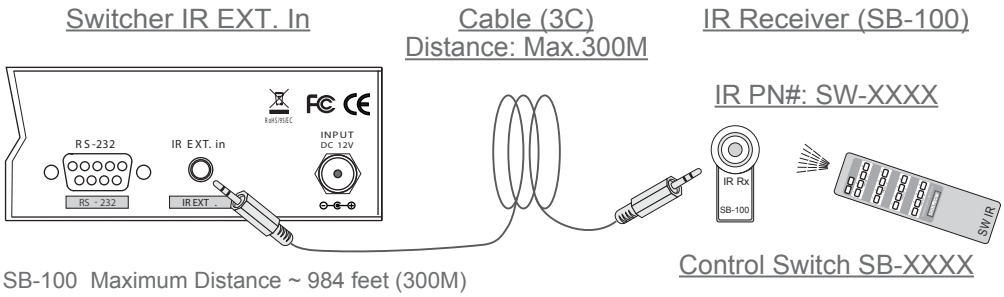
RS-232 PROTOCOL COMMANDS (RS-232 Control driver V2.0.1)
The Shinybow switcher can be controlled via the RS-232 serial control port to allow for interfacing to a PC, or similar third party control system.

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 recognizes a complete command it will perform the requested action - there is no delimiter character required.

IR EXTENDER

1. SB-100 IR 300M Receiver



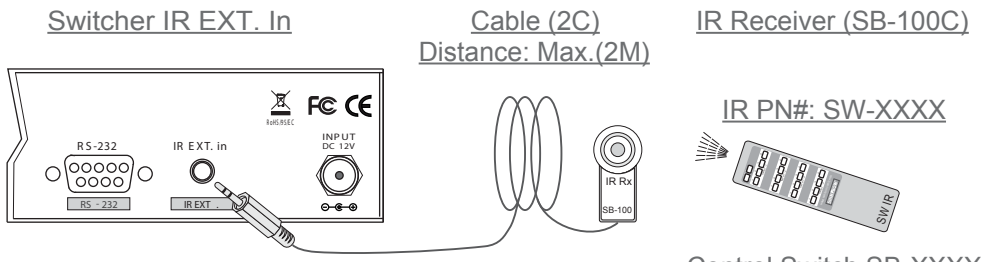


SB-100 Maximum Distance ~ 984 feet (300M)

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

2. SB-100C IR 2M Receiver





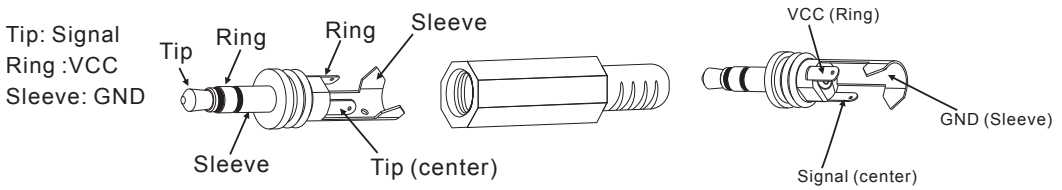
SB-100C Maximum Distance ~ 6 feet (2M)

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

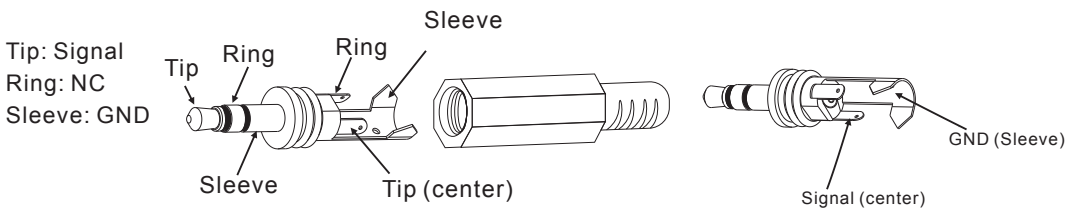




SB-100 Receiver and SB-101 Transmitter The DISTANCE maximum ~ 984 feet (300M)

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)

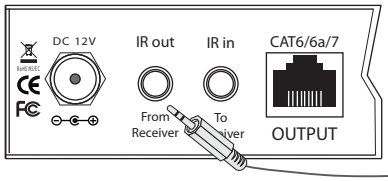
Note: *The External IR jack has voltage on the “Ring” portion of a 3-conductor plug. You must use a 3-conductor plug (aka: stereo plug). Using a 2-conductor plug will short out the power supply. Always make connections with the switcher power off.*

IR EXTENDER

1. SB-101 IR 300M Transmitter

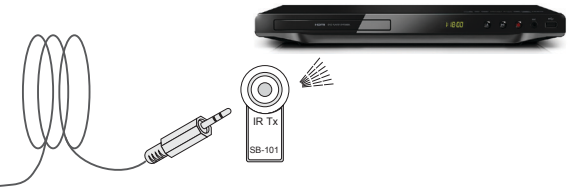


Device



Cable (3C)

IR Transmitter (SB-101)

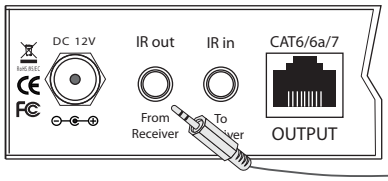


SB-101 Maximum Distance ~ 984 feet (300M)

2. SB-101C IR 2M Transmitter



Device



Cable (3C)

IR Transmitter (SB-101C)



SB-101C Maximum Distance ~ 6 feet (2M)

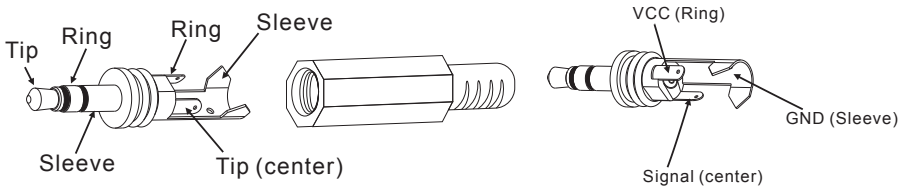
**** When you plug the External IR extender into the switcher, the front panel IR transmitter remains active. ****

PIN CONFIGURATION:

SB-101 and SB-101C Transmitter Pin configuration



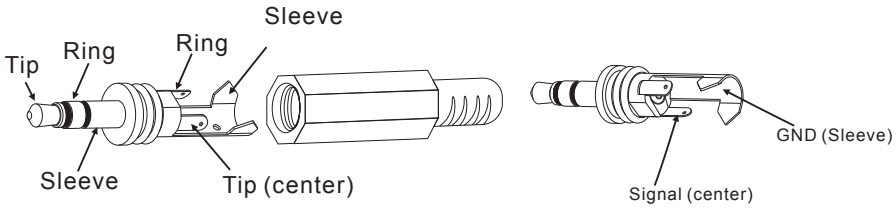
Tip: Signal
Ring :VCC
Sleeve: GND



SB-101 Maximum Distance ~ 984 feet (300M)



Tip: Signal
Ring: NC
Sleeve: GND



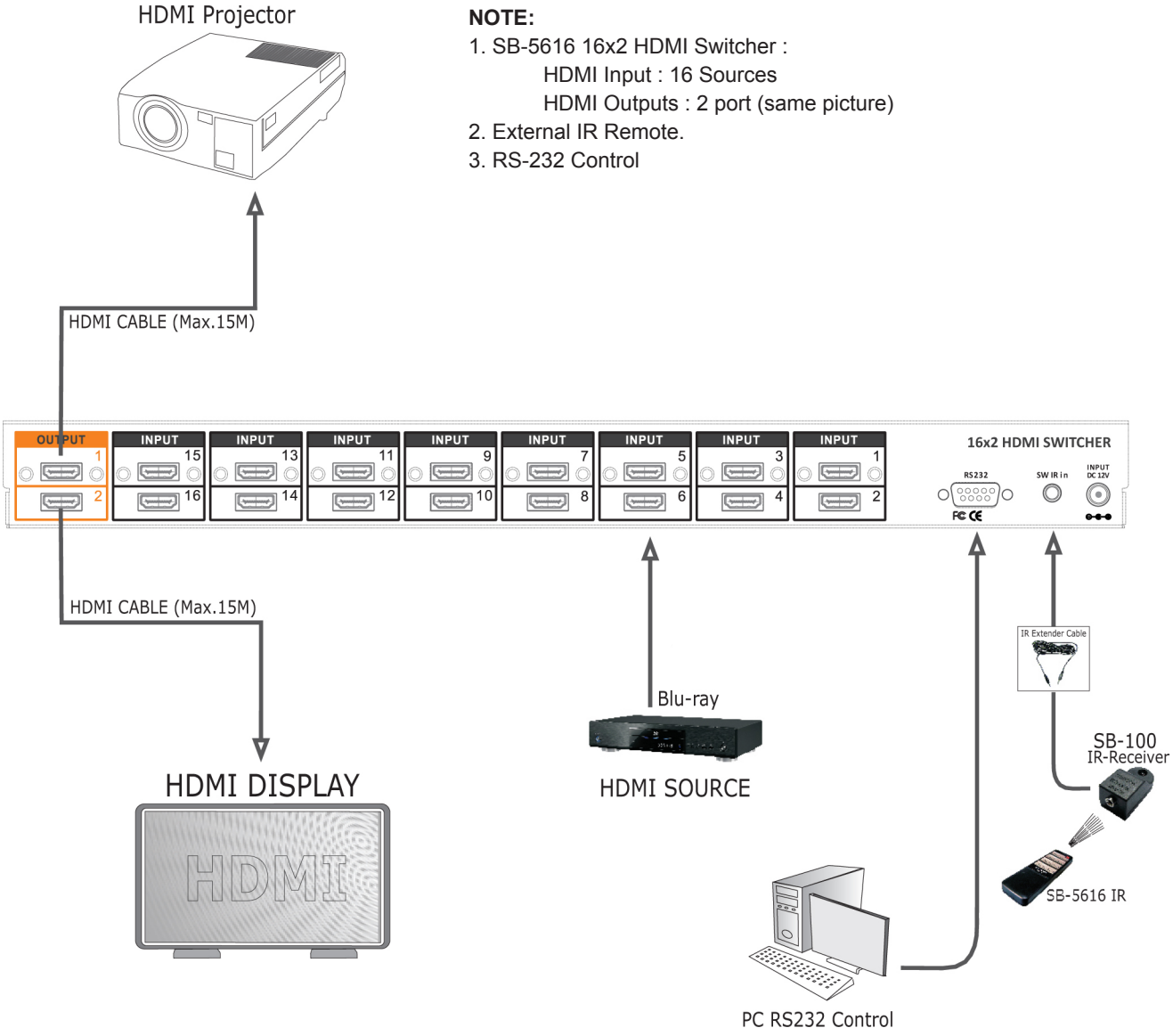
SB-101C Maximum Distance ~ 6 feet (2M)

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

TYPICAL APPLICATION

INSTALLING DIAGRAM

Sample connection using SB-5616 switch 16 sources to 2x display via HDMI signals and to control SB-5616 Switcher via SB-100 IR Receiver. (Max. 300M distance).



NOTE:

1. SB-5616 16x2 HDMI Switcher :
   HDMI Input : 16 Sources
   HDMI Outputs : 2 port (same picture)
2. External IR Remote.
3. RS-232 Control

Support 16 HDMI Sources and 2 outputs (same pictures) control via IR/RS-232/FRONT PANEL

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