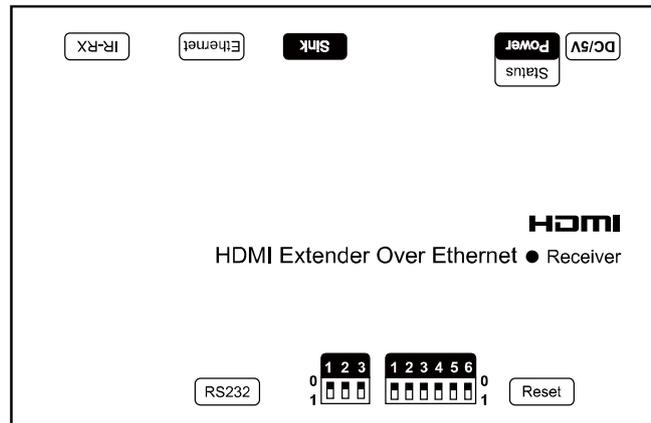
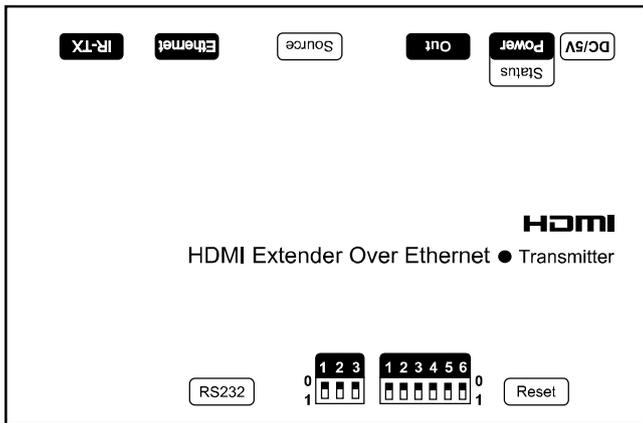


120m HDMI Extender over IP with H.264 encoder
Support IR, RS232, POE

Operating Instruction



Introduction

This HDMI over IP Extender use the advanced H.264 as the compression type, which makes it occupy lower bandwidth and transmit over the LAN more smoothly. It supports 120m over single cat5e/6 cable at point to point, as well as point to many and many to many over Ethernet switch. The over IP solution is widely used in various locations, like meeting room, class room, metro, airport, home, mall advertisement...etc.

1. Features

- 1). Use H.264 as compression type
- 2). Support resolution up to 1080p @ 60HZ, data transmission speed is 2.25 Gbps
- 3). Support LPCM audio format, sample rate is 48 KHZ
- 4). Comply with TCP/IP protocol for transmission, streaming bit rate is upto 15Mbps.
- 5). Compliant HDCP
- 6). Support RS232 pass through
- 7). Support Wide-band IR (38k ~ 56khz)
- 8). Support point to point, point to many, many to point, many to many broadcasting network configuration
- 9). Support DHCP, switch assign IP for the Transmitter and Receiver automatically
- 10). With 3 Bit DIP to choose baud rate
- 11). With 6 Bit DIP to manage group ID
- 12). Support DIP to switch the sources
- 13). With HDMI output for local display on Transmitter
- 14). Dual power input: 802.3af compliant POE & DC 5V

2. Specifications

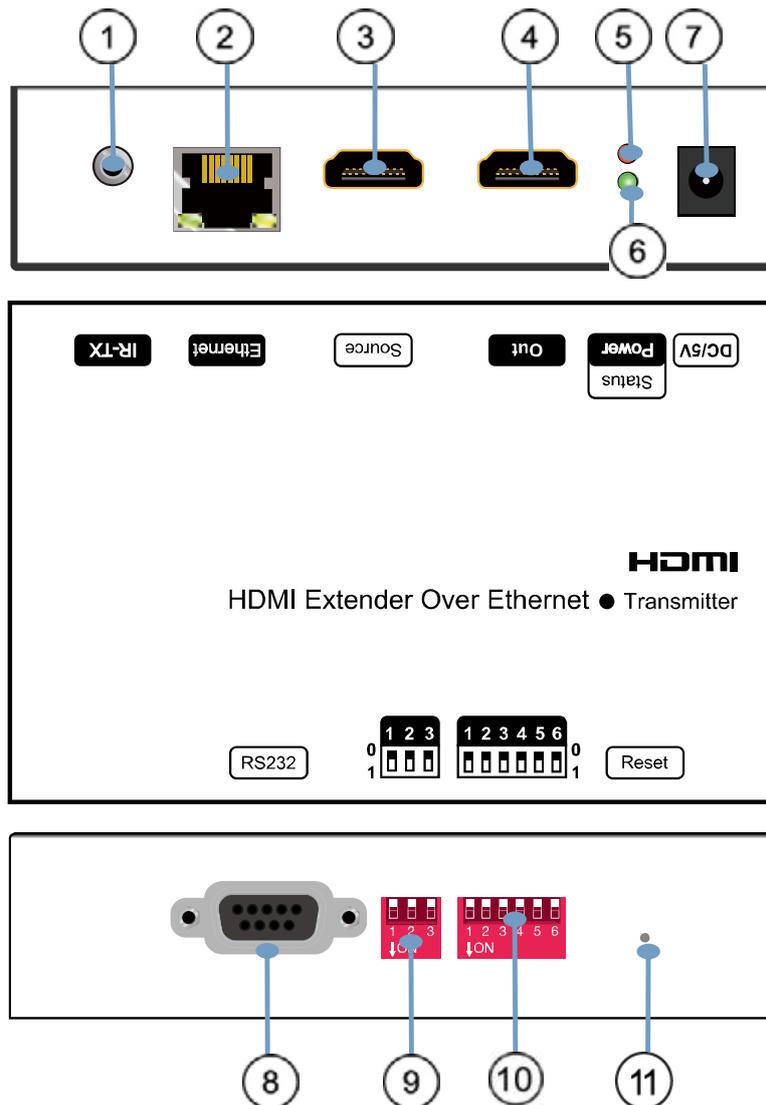
Performance	
Protocol	H.264 encoder over TCP/IP
Support Video format	480i/480p/576i/576p/720p/1080i/1080p@60HZ
Support Audio format	LPCM, Audio sampling rate 48KHZ
Streaming Bit Rate	15Mbps
HDCP	Compliant
IR Frequency	38 -56 KHZ
RS232 Baud rate	Default 2400bps, total 8 kinds optional
IP setting &Group ID setting	
Default IP	TX: 192.168.1.11 ; RX: 192.168.1.12
Group ID	Group 00 ~ group 63
Request for Switch/Router	Support IGMP, support DHCP
Connectors on Transmitter	
Input	1xHDMI Female port
Output	1x RJ45 output , 1x HDMI local output
RS232	DB9 Female port
IR	IR TX port
Connectors on Receiver	
Input	1xRJ45 input
Output	1x HDMI Female port
RS232	DB9 Male port
IR	IR RX port
Environmental & Power Requirements	
Operating temperature	-5 to +35 °C (+23 to +95°F)
Operating Humidity Range	5 to 90%RH (No Condensation)
Dual Power input	802.3af compliant POE & DC 5V
Power consumption	Max 3 watt
Physical	
Dimension	120.2x78.6x29 mm
Net Weight	TX: 0.28KG : RX:0.28KG

3. Packing content

- 1). 1x Transmitter
- 2). 1x Receiver
- 3). 1x IR-TX
- 4). 1x IR-RX
- 5). 1x Manual
- 6). 2x Power adapter 5V 2A

4. Panel description

- 1). TX

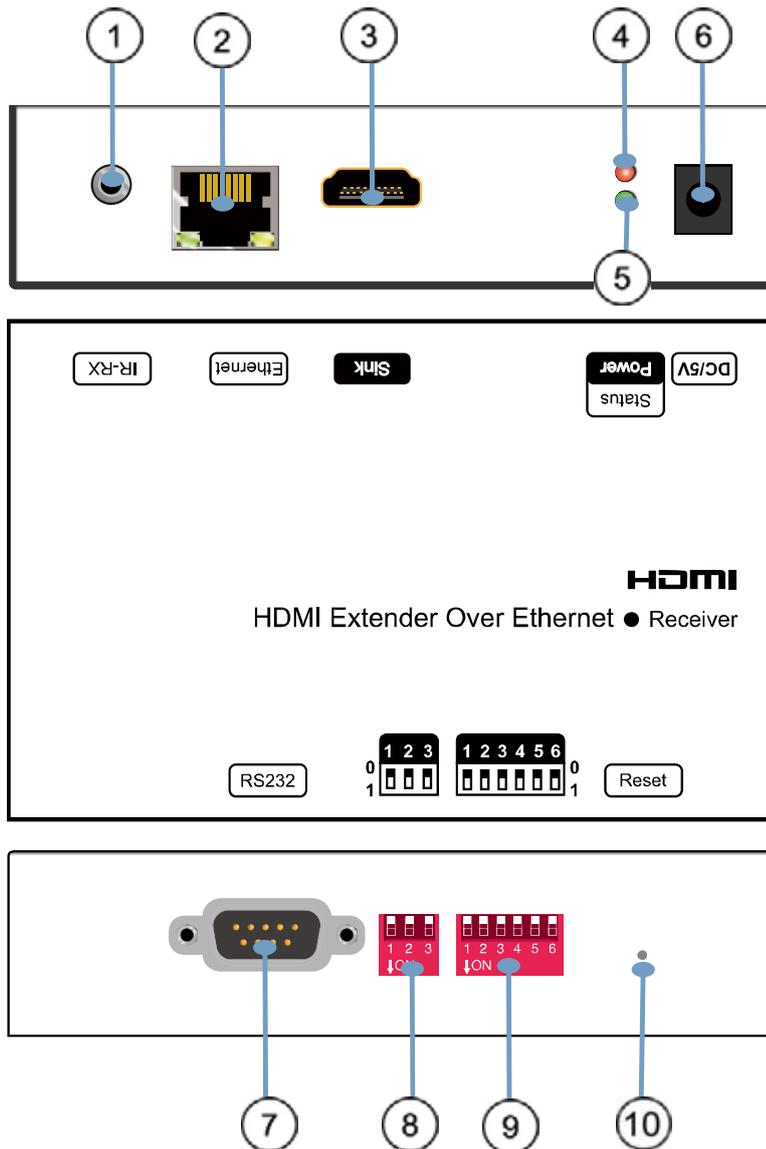


- | | | |
|-------------------------------------|-----------------------------------|---------------|
| 1) IR-TX | 2) CAT5e/6 output | 3) HDMI input |
| 4) HDMI output for local display | 5) Red indicator of power input ① | |
| 6) Green indicator of data status ② | 7) DC 5V 2A power input | |
| 8) RS232 female | 9) 3 Bit DIP for baud rate | |
| 10) 6 Bit DIP for group ID | 11) reset button | |



Note ① The LED indicator will glow bright red once the power supply is connected.
 ② The green LED will blink once the unit is working.

2). RX



- 1) IR-RX
- 2) CAT5e/6 input
- 3) HDMI output
- 4) Red indicator of power input ①
- 5) Green indicator of data status ②
- 6) DC 5V 2A input
- 7) RS232 male
- 8) 3 Bit DIP for baud rate
- 9) 6 Bit DIP for group ID
- 10) reset button



Note ① The LED indicator will glow bright red once the power supply is connected.
 ② The green LED will blink once the unit is working.

5. Installation and Configuration

5.1 Setup HDMI TX and RX

When connecting point to point, no need to configure TX and RX,

When connecting point to many, many to point and many to many, please make sure every TX and RX has unique IP and MAC address, every TX has unique group ID (DIP switch).

Our this over IP Extender has been assigned unique default MAC address for every TX and RX, so you don't have to set the MAC for the units.

You just need to set the IP address and Group ID following below steps.

5.1.1 Setting the IP address

A). DHCP (Dynamic host configuration protocol)

If you are using a Switch that supports DHCP, please enable DHCP so that the Switch will assign an unique IP for TX and RX, and you don't need to change the IP for the units manually.

Ethernet :

Use DHCP

Default IP address: 192 . 168 . 1 . 2

Default Netmask: 255 . 255 . 255 . 0

Default Gateway: 192 . 168 . 1 . 254

Submit

Use DHCP

Default IP address: 192 . 168 . 1 . 1

Default Netmask: 255 . 255 . 255 . 0

Default Gateway: 192 . 168 . 1 . 254

Update DHCP

B) .Set the IP via web browser

If you are using a Switch that doesn't not support DHCP, please change the default IP for TX (192.168.1.11) and RX (192.168.1.12) manually.

A HTTP server is embedded in each TX and RX. You can set up IP address for HDMI Extender via web browser

The default IP address of the **TX** is **192.168.1.11**, **user** name: admin, password: admin

The default IP address of the **RX** is **192.168.1.12**

Step 1: Access the Network Setting Control Panel in Windows and locate your Lan connection. Under Windows 7, this can be done by clicking Start > Control Panel >Network Sharing center>Change adapter settings >Properties >Internet Protocol Version4 (TCP/IPv4). Change the IP address field to 192.168.1.1(0-255). After that press "OK" to save the configuration.



Note ※ The PC and TX/RX should be in the same domain.

※ The IP address of PC should be different from the IP address of TX and RX.

Step 2: Use an Ethernet Cable to connect the PC (or laptop) and the extender. the power LED for the extender is red and the green status is blinking.

Step 3: Login in IE: 192.168.1.11 (default IP for TX) or 192.168.1.12(default IP for RX), You can setup IP address for the TX and RX. TX requires user name: admin and password: admin
Please set IP address for each TX and each RX, IP: 192.168.1.XX (XX:1-255. all IP address for TX and RX must be different and can't be same as the PC's address.)

Step 4: Click "Submit"(transmitter) or "Update DHCP" (receiver).

Step 5: Click "reboot".

Ethernet :

Use DHCP
 Default IP address: 192 . 168 . 1 . 2
 Default Netmask: 255 . 255 . 255 . 0
 Default Gateway: 192 . 168 . 1 . 254

Use DHCP
 Default IP address: 192 . 168 . 1 . 1
 Default Netmask: 255 . 255 . 255 . 0
 Default Gateway: 192 . 168 . 1 . 254

5.1.2 Set up Group ID for TX and RX

When connecting point to many and many to many, it require the TX has unique group ID, RX can have the same group ID in which case many RX will match one TX.

When TX and RX are with same group ID, they get matched in the same group and the RX will display the source from the TX in this group.

We can use a 6 -Bit DIP switch or web browser to set up he group ID.

A) . Set the Group ID by 6-Bit DIP Switch



It is a 6 Bit binary switch, when the pin is pull up, its value is "0" ; when pull down, its value is '1". Its default setting is "000000" when you firstly received the units, we mark as group 00 in order to remember easily.

Bellow is the group number and DIP setting matching list.

Group ## = DIP setting

Group 00 = 000000

Group 01 = 000001

Group 02 = 000010

Group 03 = 000011

Group 04 = 000100

.
.

.

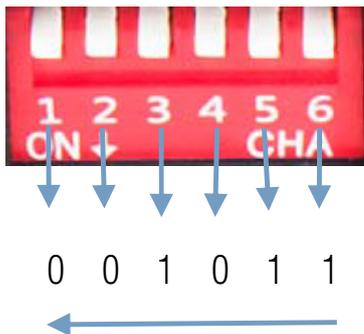
Group 60 = 111100

Group 61 = 111101

Group 62 = 111110

Group 63 = 111111

The DIP setting order is 654321, if want to set 110100, the first number "1" follows the sixth Bit, the sixth number "0" follows the first Bit, so on the DIP switch it will be 001011



B).Set the group ID for TX and RX via web browser

Step 1: Assign the PC (or laptop) IP address on the computer : "Control Panel" → " Network Connections" → "Local Area Connections Status" → "Properties" → "Internet Protocol (TCP/IP)", Type the IP address field with 192.168.1.1 (0-255) . After that press OK to save the configuration.

Step 2: Use an Ethernet Cable to connect the PC (or laptop) and the Extender. the power LED for the extender is red and the green status LED is blinking.

Step 3: Power on the TX or RX with 5V 2A power supply.

Step 4: Login in IE: 192.168.1.11 (default IP for TX) or 192.168.1.12(default IP for RX), TX requires user name: admin and password: admin.

Step5: Change the group ID at “Stream setting”, “00” means group “00” here **which can be chosen from 00 to 63.**

Step 6: Click “Submit” (transmitter) or update (receiver).

Stream Setting:

Transfer: Multicast
 Multicast IP: Port: 5004

Multicast Group: Port: 5004



Note ※ When you change the group ID on both Web browser and 6 Bit DIP switch, the units will follow the latest one.

5.2 Preparing the switch

When doing point to many and many to many, it requires a switch to distribute the sources. We suggest you use the Switch that supports IGMP and DHCP. IGMP feature help to manage the group ID which is related to switch the sources; DHCP allow the switch to assign an IP for TX and RX automatically, please enable DHCP of the switch.

5.3 Connection



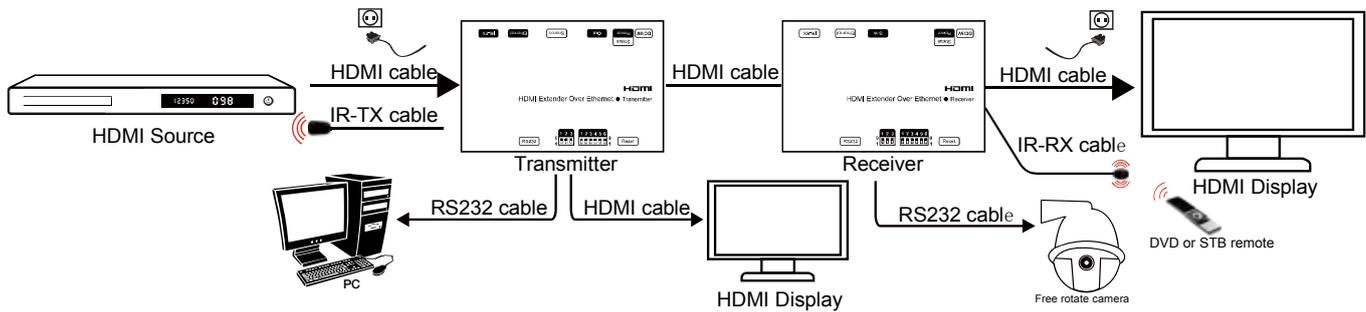
Note ※ **Please don't insert into or pull out HDMI cable when power on. Please connect cable only when power is off.**

5.3.1 Point to point

(No need power adapter for TX & RX when connecting with POE Switch.)

1. Connect the source device and the Transmitter unit with HDMI Cable.
2. Connect the HDMI looping output of the Transmitter to the local HDMI display.
3. Connect another HDMI display and the HDMI Receiver unit with HDMI Cable.
4. Connect the Transmitter and Receiver with Cat5e/6 cable
5. Connect the IR TX cable into “IR TX” port of the transmitter; Connect the IR RX cable into “IR RX” port of the receiver. Then you can control the source at the RX side with IR.
6. Connect one RS-232 Cable from the PC or automation system to the RS-232 port on the Transmitter ; Connect one RS-232 cable from the Receiver to the RS-232 device to be controlled.
7. Power on Transmitter and Receiver with adapter 5V 2A.

NOTE: Insert/Extract cables gently.



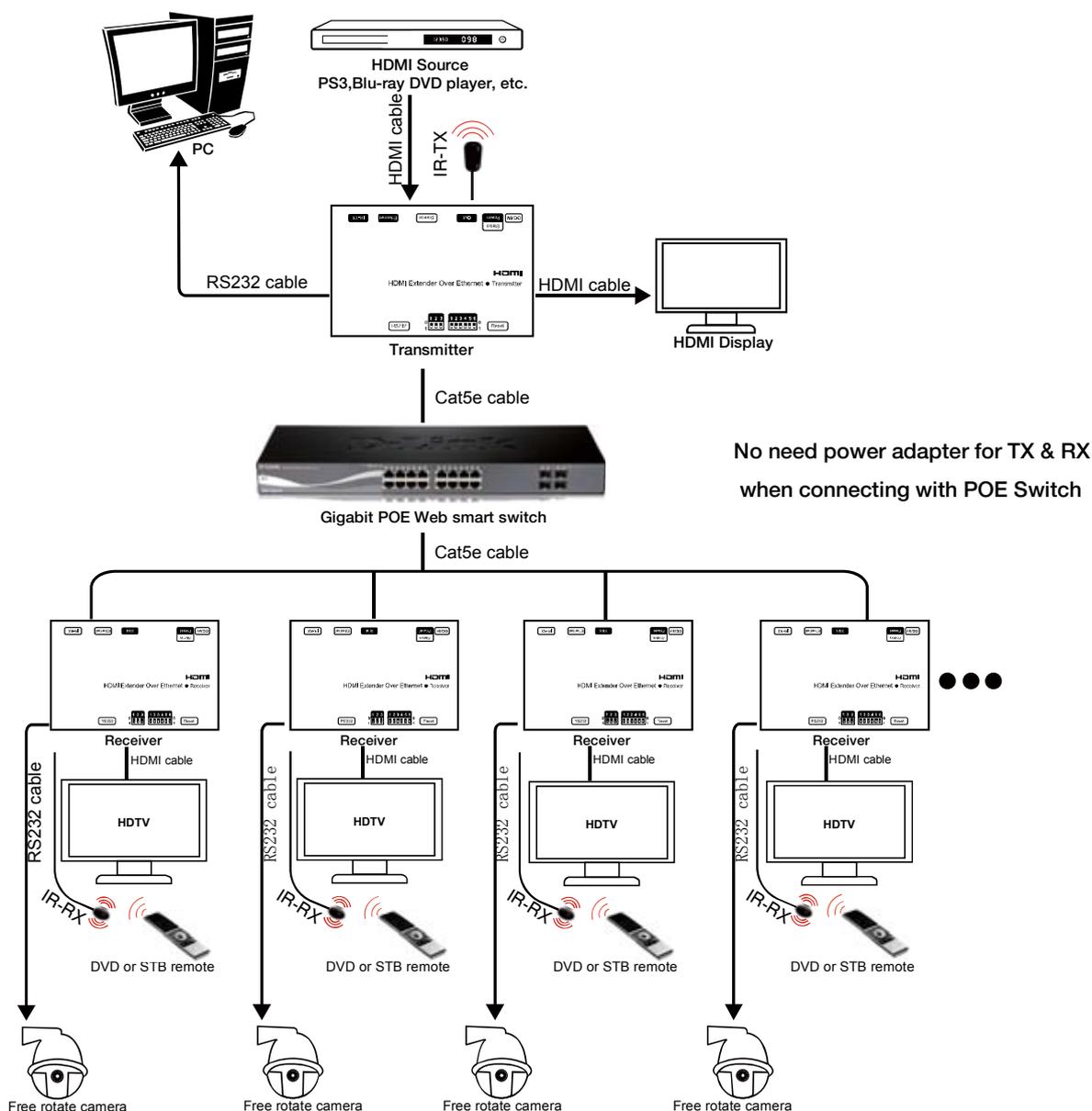
5.3.2 Point to many

(No need power adapter for TX & RX when connecting with POE Switch.)

1. Setting the IP address for Transmitter & Receiver and preparing the switch following the steps as instructed above (5.1.1&5.2)
2. Connect the source device and the Transmitter unit with HDMI Cable.
3. Connect the HDMI looping output of the Transmitter to the local HDMI Display.
4. Connect the transmitter and the switch/router with cat5e or cat6 cable.
5. Connect all the Receivers and the switch/ router with Cat5e/6 cable.
6. Connect the HDMI displays and the HDMI Receiver units with HDMI Cable.
7. Connect the IR TX cable into "IR TX" port of the transmitter; Connect the IR RX cable into "IR RX" port of the receiver. Then you can control the source at the RX side with IR.
8. Connect one RS-232 Cable from the PC or automation system to the RS-232 port on the Transmitter ; Connect one RS-232 cable from the Receiver to the RS-232 device to be controlled.
9. Power on Transmitter and Receiver with adapter 5V2A, power on the switch with its adapter



- Note** ※ Daisy chain the switch if its RJ45 port is not enough.
 ※ The quantity of Receiver is no more than 255pcs.



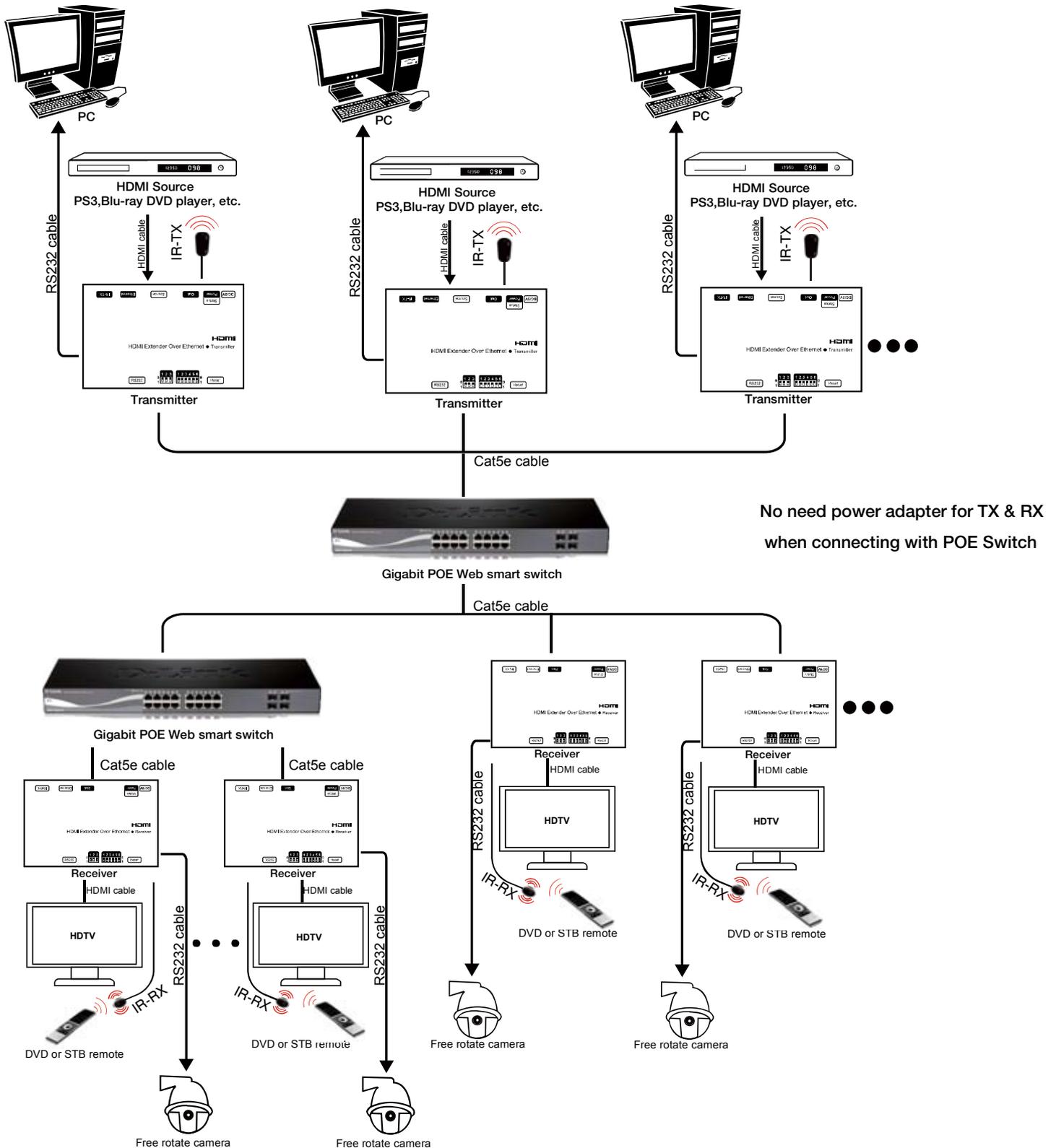
5.3.3 Many to many

(No need power adapter for TX & RX when connecting with POE Switch.)

1. Setting the IP address for Transmitter & Receiver and preparing the switch following the steps as instructed above (5.1.1&5.2)
2. Connect the source device and the Transmitter unit with HDMI Cable.
3. Connect the HDMI looping output of the Transmitter to the local HDMI Display.
4. Connect the transmitters and the switch/router with cat5e or cat6 cable
5. Connect the Receivers and the switch/ router with Cat5e/6 cable
6. Connect the HDMI displays and the HDMI Receiver units with HDMI Cable.
7. Connect the IR TX cable into “IR TX” port of the transmitter; Connect the IR RX cable into “IR RX” port of the receiver. Then you can control the source at the RX side with IR.
8. Connect one RS-232 Cable from the PC or automation system to the RS-232 port on the Transmitter ; Connect one RS-232 cable from the Receiver to the RS-232 device to be controlled.
9. Power on Transmitter and Receiver with adapter 5V2A, power on the switch with its adapter.
10. Choose the source by DIP switch or Web browser as instructed above (5.1.2)



- Note**
- ※ Daisy chain the switch if its RJ45 port is not enough.
 - ※ The quantity of Transmitter is no more than 64 pcs according to the 6-bit DIP switch.
 - ※ The total quantity of Transmitter and Receiver is no more than 256 pcs.



6. RS232 and Baud rate

The unit provides a path to pass through the RS232 signal, RS232 passes from TX to RX or from RX to TX, connect to your RS232 devices, such as PC, IP Camera, Creston control panel, Smart Matrix, printer and Scanner and so on. It works when TX, RX and your RS232 devices baud rate is the same.

The default baud rate of TX and RX is 2400 which is frequently used for most devices.

6.1 RS232 Connector

The TX and RX are with DB-9 connector, TX: Female connector; RX: Male connector.

DB-9 Male (Pin Side)

```

-----
\ 1 2 3 4 5 /
 \ 6 7 8 9 /
-----
    
```

DB-9 Female (Pin Side)

```

-----
\ 5 4 3 2 1 /
 \ 9 8 7 6 /
-----
    
```

RS-232 Pin Definition

TX PIN Definition PIN Definition

- 1 NC
- 2 TxD
- 3 RxD
- 4 NC
- 5 GND
- 6 NC
- 7 NC
- 8 NC
- 9 NC

RX PIN Definition PIN Definition

- 1 NC
- 2 RxD
- 3 TxD
- 4 NC
- 5 GND
- 6 NC
- 7 NC
- 8 NC
- 9 NC

Baud Rate: 2400 (Default)

Data Bit: 8 bits

Parity: None

Stop Bit: 1 bit

Flow Control: None



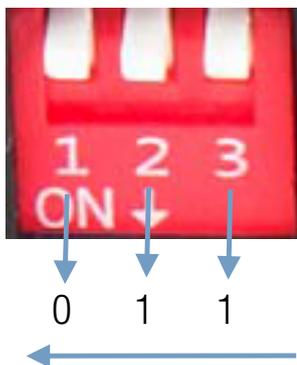
6.2 Baud rate setting

6.2.1 Use 3-Bit DIP Switch to select other baud rate.

The 3 Bit switch is binary as well, when pull up its value is “0”; when pull down, its value is “1”. So it comes with 000, 001, 010...111, total 8 kinds, they match some baud rate as bellow

000 = 2400 (default)
 001 = 4800
 010 = 9600
 011 = 19200
 100 = 28800
 101 = 38400
 110 = 57600
 111 = 115200

Change the baud rate according to your RS232 devices' baud rate. the DIP setting order is 321, for example DIP setting 110 the first number “1” follows the 3rd Bit, the 3rd number “0” follows the first Bit, it will be 011 on the DIP switch



6.2.2 Setting the Baud rate via Web Browser

Login TX and RX with their default IP (TX: 192.168.1.11; RX: 192.168.1.12) to modify the Baud Rate which range from default 2400 to 115200.

Uart Setting:

Baud Rate:



- Note** ※ When you change the Baud rate on both Web browser and 6 Bit DIP switch, the units will follow the latest one.
 ※ Please send the data in the same group ID.

7. Firmware update

We provide the firmware to upgrade the units when it is necessary. Please follow up bellowing steps to update the firmware.

Step1: Connect TX / RX to the PC with a short Cat5e cable

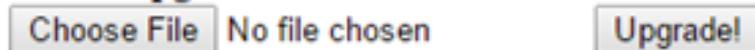
Step2: Power on TX/ RX with power adapter 5V2A.

Step3: Login TX or RX with their default IP (TX: 192.168.1.11; RX: 192.168.1.12) on web browser, TX requires user name: admin and password: admin

Step4: Click "choose File" on the interface and find out the latest version firmware

Step5: Click "Upgrade", the process will takes seconds, please DO NOT interrupt or power off the units during the time.

File to Upgrade Firmware:



8. One key recovery to default setting

It is available to recover the setting to factory setting, use a tiny pin to insert the reset hole and hold about 10 seconds, when the unit is connected.



9. After sale Service and Warranty

WARRANTY

If your product does not work properly because of a defect in materials or workmanship, our Company (referred to as "the warrantor") will, for the length of the period indicated as below, **(Parts(2)Year, Labor(90) Days)** which starts with the date of original purchase ("Limited Warranty period"), at its option either(a) repair your product with new or refurbished parts, or (b) replace it with a new of a refurbished product. The decision to repair or replace will be made by the warrantor.

During the "Labor" Limited Warranty period there will be no charge for labor.

During the "Parts" warranty period, there will be no charge for parts. You must mail-in your product during the warranty period. This Limited Warranty is extended only to the

original purchaser and only covers product purchased as new. A purchase receipt or other proof of original purchase date is required for Limited Warranty service.

MAIL-IN SERVICE

When shipping the unit carefully pack and send it prepaid, adequately insured and preferably in the original carton. Include a letter detailing the complaint and provide a day time phone and/or email address where you can be reached.

LIMITED WARRANTY LIMITS AND EXCLUSIONS

(a) This Limited Warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage.

The Limited Warranty ALSO DOES NOT COVER damages which occurred in shipment,

or failures which are caused by products not supplied by warrantor, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, or service by anyone other than a Factory Service center or other Authorized Server, or damage that is attributable to acts of God.

(b) THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER "LIMITED WARRANTY COVERAGE". THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY.

(As examples, this excludes damages for lost time, cost of having someone remove or re-install an installed unit if applicable,

travel to and from the service, loss of or damage to media or images, data or other recorded content.

The items listed are not exclusive, but are for illustration only.)

(c) PARTS AND SERVICE, WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY, ARE YOUR RESPONSIBILITY.