

# HDMI-C5 Series

## User's Guide

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## Getting Started

The Cat5 HDMI Extender system consists of Transmitter, Transceiver and Receiver. The system can extend HDMI signals over Cat 5 / 5e / 6 FTP cable. By cascading Transceivers, it is possible to extend the HDMI signals to almost any length.

The Cat5 HDMI Extender system is *a great solution* for digital signage, public information display, and large scale demonstration, where crystal-clear, High-Definition digital video needs to be shown.

By taking the advantage of *cost efficient* Cat 5 / 5e / 6 cable, the Cat5 HDMI Extender can simplify installation. With its unlimited cascading capacity, you can extend digital video displays almost anywhere. The Transmitter and Transceiver units are fitted with *magnetic pads*, enabling them to be quickly attached to metal surfaces. A screw fixing plate is also included for permanent installations.

## Key Features

- Unlimited cascading of HDMI over Cat 5 / 5e / 6 cable.
- The system consists of Transmitter, Transceiver and Receiver.
  - a. Transmitter has a HDMI local connection and extends the HDMI signal over Cat 5 / 5e / 6 cable.
- Transceiver has a HDMI input port (RJ45 or HDMI type), 4/8 HDMI RJ45 output ports and cascading function to extend the HDMI signal over Cat 5 / 5e / 6 cable.
- Video Amplifier Bandwidth: 1.65GHz
- Maximum distance between Transmitter and Transceivers:
  - a. 480p = 80m (275 ft)
  - b. 720p / 1080i = 70m (230 ft)
  - c. 1080p = 30m (100 ft)
- Maximum distance between Transceiver and HDMI-C5-R Receiver:
  - a. 480p / 720p / 1080i = 30m (100 ft)
  - b. 1080p = 15m (50 ft)
- HDMI Input / Output Connector: HDMI Digital Signal
- EQ control to adjust the video quality
- LED Status to indicate HDMI signal activity
- All devices are equipped with magnetic pad and metal plate for easy installation

## System Devices and Functions

### Transmitter HDMI-C5-S and Transceiver HDMI-C5-SR

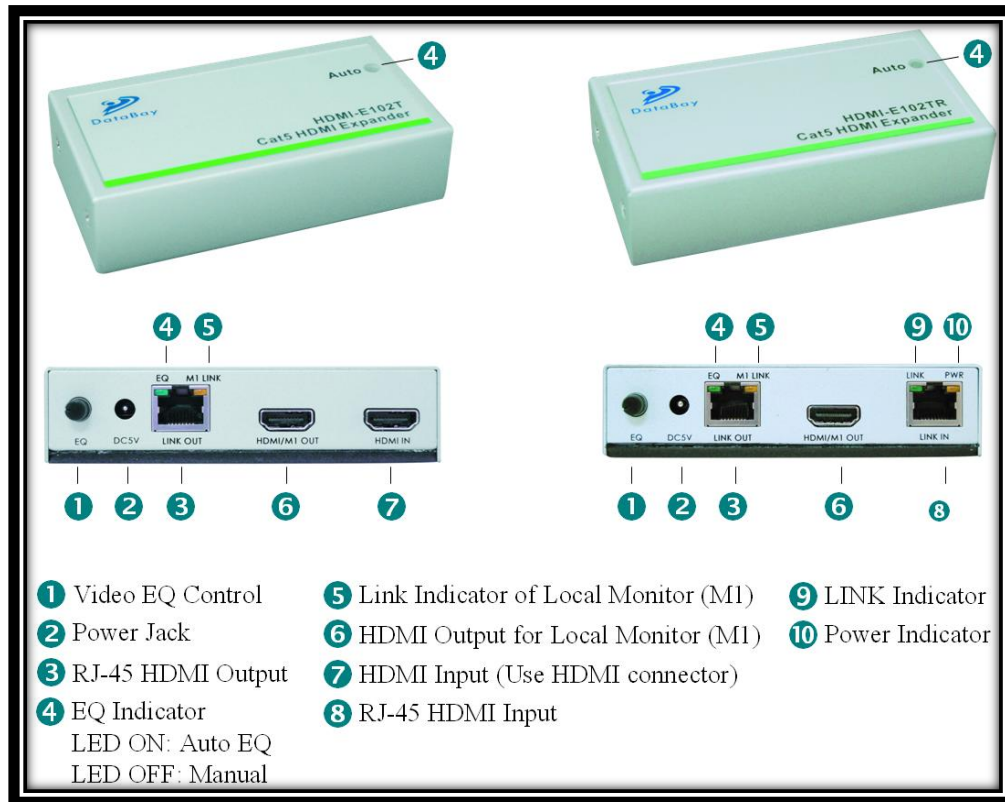
- a. Built-in one HDMI input
- b. Built-in one HDMI output for Local Monitor
- c. Built-in one RJ45 port for system output which can be connected by Cat 5 / 5e / 6 cable and send signal to System Receiver

### 4 / 8-Port Transmitter HDMI-C5-4, HDMI-C5-8

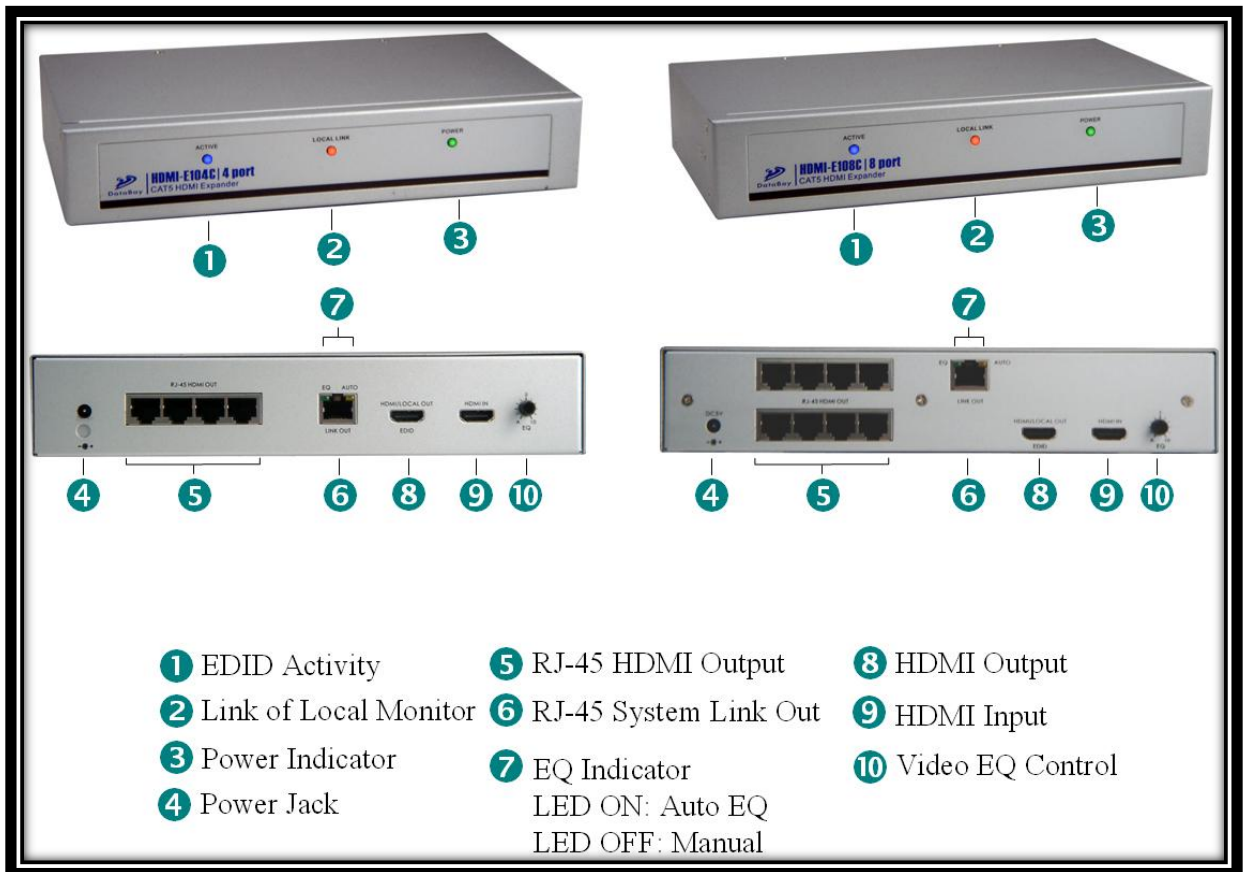
- d. Built-in one HDMI input
- e. Maximum HD resolution of up to 1080p@30m (100 ft)
- f. Built in one HDMI output to monitor the signal broadcast
- g. Built-in 4 / 8 RJ45 ports for system output which can be connected by Cat 5 / 5e / 6 cable and send signal to 4 / 8 of System Receiver or Transceiver.

## Panel Description

### Transmitter HDMI-C5-S and Transceiver HDMI-C5-SR



## HDMI-C5-4 / HDMI-C5-8 Multi-Port HDMI Transmitter



## HDMI Cable and Cat 5 HDMI Receiver

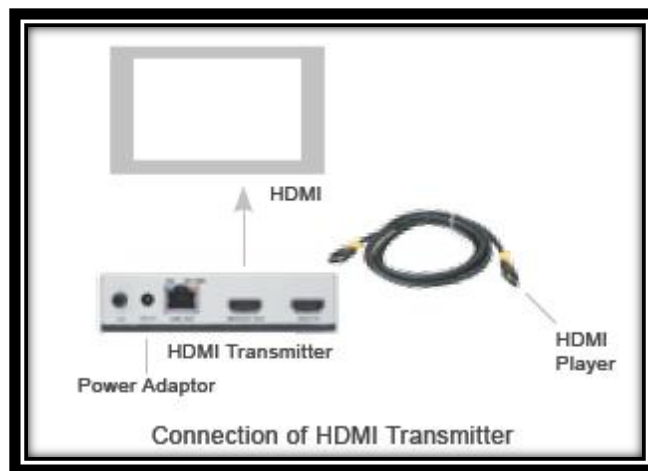




## Installation and Operation

### Transmitter HDMI-C5-S Single-Port Installation

- a. **First Time Setup:** Turn off the HDMI output device and monitors.
- b. **Device Connection:** Connect local HDMI monitor (M1) to the “HDMI/M1 OUT” of the transmitter. Take the HDMI cable, plug one end to “HDMI IN” port of transmitter and the other end of the cable to “HDMI OUT” of HDMI output device. Connect the Connect the power adaptor to the “DC 5V” and plug it into the power outlet.



Installation Diagram of System Transmitter HDMI-C5-S

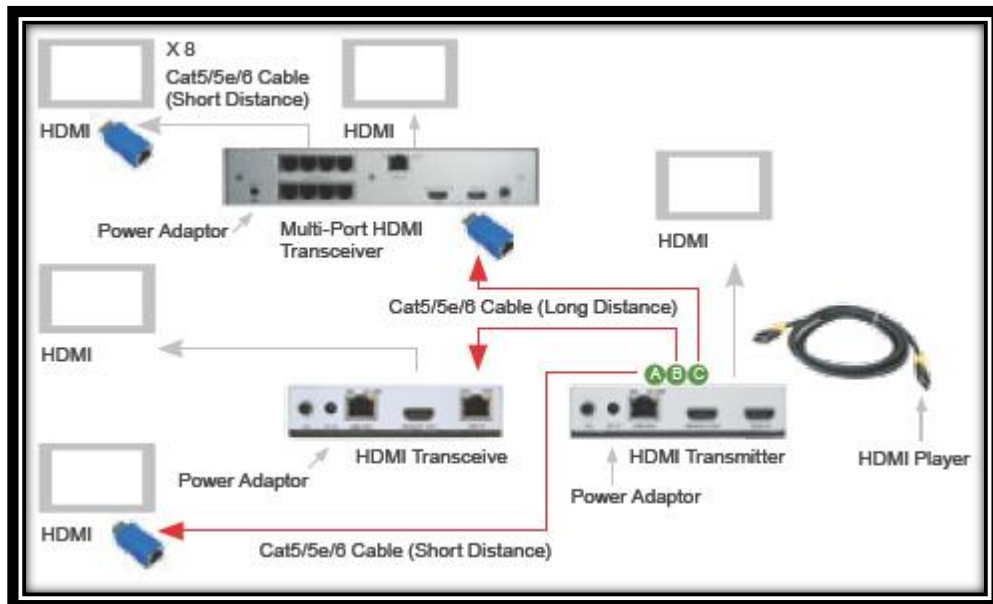
- c. **System Turn On:** Turn on your HDMI Output device and monitor to confirm the functionality of the display. The “M1 LINK” LED of the Transmitter should display orange LED to confirm the connection of a local HDMI monitor.
- d. **Remote Monitors:** Make sure the remote monitor(s) connected the Transceiver and Receiver can display the broadcast video resolution.



- e. **EQ Adjustment:** You can adjust the EQ control to Auto Mode by rotating the EQ control anti-clockwise. The “EQ” and “Auto” LEDs will display blue.

*If noise or an unstable image is seen on the local HDMI monitor, adjust the EQ control for best image display quality.*

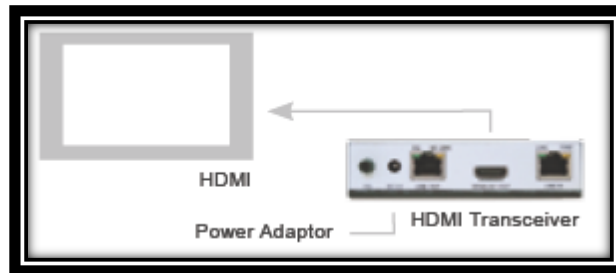
- f. **LINK OUT:** HDMI signal can be extended/cascaded over “LINK OUT” port by Cat 5 / 5e / 6 cable. The signal can be received by:
- **HDMI-C5-R:** The maximum HDMI distance is: < 30m (100 ft) for 480 / 720p / 1080i or <15m for 1080p.
  - **LINK IN of HDMI-C5-SR:** Maximum cascading distance is: <80m (275 ft) for 480p, 70m (230 ft) for 720p / 1080i or <30m (100 ft) for 1080p.
  - **HDMI IN of HDMI-C5-4/HDMI-C5-8:** To connect to the HDMI connector, a HDMI-C5-R Receiver is required. Maximum cascading distance is: <80m (275 ft) for 480p, 70m (230 ft) for 720p / 1080i or <30m (100 ft) for 1080p.



Three ways of extending HDMI signal from Transmitter HDMI-C5-S

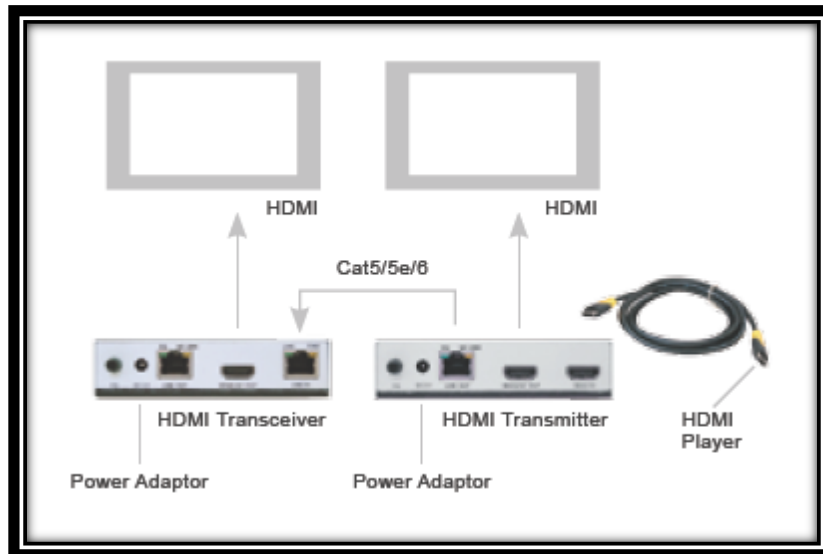
## Transceiver HDMI-C5-SR Installation

- a. **Monitor Connection:** Connect HDMI monitor's HDMI cable to Transceiver and turn on the monitor.
- b. **Device Connection:** Plug power adaptor to HDMI-C5-SR, the "PWR" LED and "M1 LINK" will turn ON. The "LINK IN" LED should turn off since there is no input of video signal from "LINK IN" port.



Connection of HDMI Transceiver

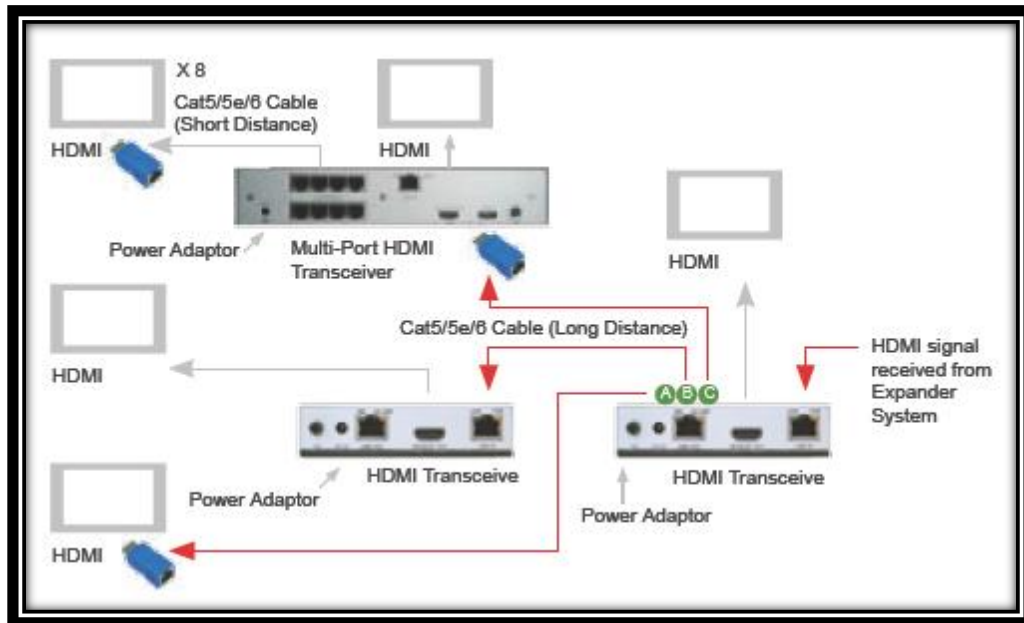
- c. **HDMI Cascading:** The RJ45 "LINK IN" port is designed to receive the HDMI signal from Transmitter over Cat 5 / 5e / 6 cable. Follow "HDMI-C5-S Single Port Transmitter Installation" to install Transmitter and extend the HDMI signal.



- d. **EQ Adjustment:** You can adjust the EQ control to Auto Mode by rotating the EQ control anti-clockwise. The “EQ” and “Auto” LEDs will display blue.

*After connecting the extender system, if you see dynamic dots or unclear image on the HDMI monitor, adjust the signal on HDMI Transmitter.*

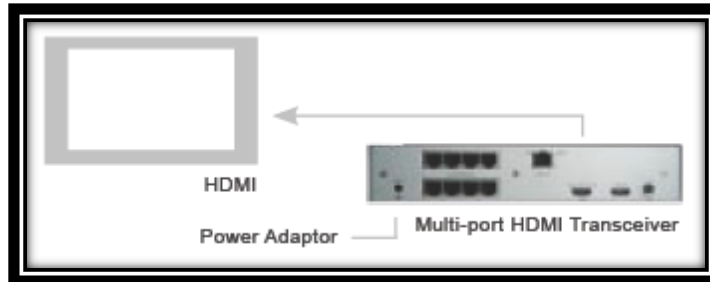
- e. **LINK OUT:** The function of “LINK OUT” port on Transceiver will act the same as Transmitter’s. It can extend/cascade HDMI signal to HDMI-C5-R, HDMI-C5-SR, HDMI-C5-4, or HDMI-C5-8.



Three ways of extending HDMI signal from Transmitter HDMI-C5-S

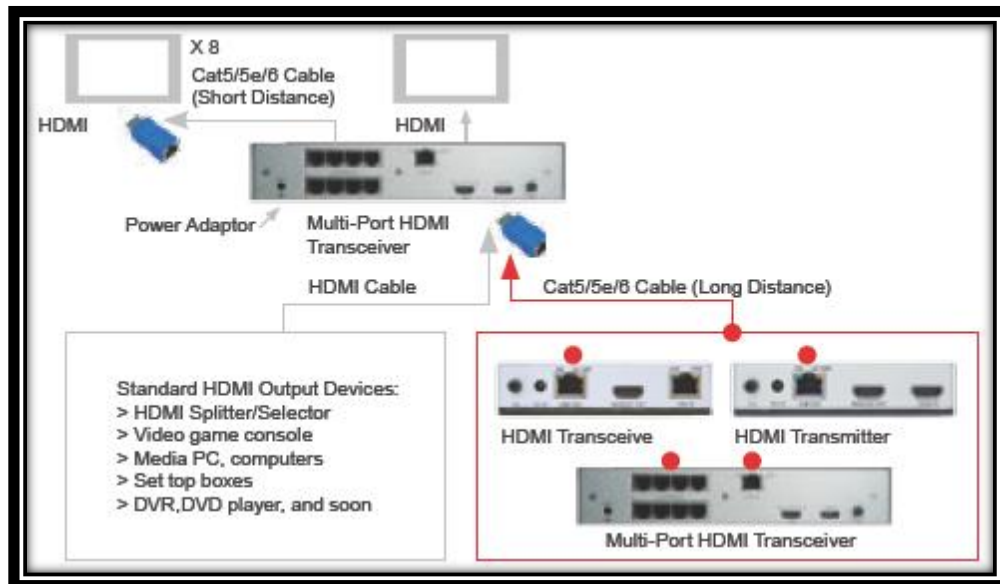
## HDMI-C5-4 / HDMI-C5-8 Multiport Transceiver Installation

- a. **Monitor Connection:** Connect HDMI monitor's HDMI cable to Multi-Port Transceiver's "HDMI/LOCAL OUT" port and turn the monitor ON.
- b. **Device Connection:** Plug power adaptor to Multi-Port Transceiver, the Front Panel's "POWER" LED and "LOCAL LINK" will turn ON. The "ACTIVE" LED will turn ON till Transceiver has received active HDMI signal.



Connection of Multi-Port Transceiver

- c. **HDMI Sources:** The "HDMI IN" can receive HDMI signal from a Standard HDMI Output Device or HDMI-C5-S / HDMI-C5-SR / HDMI-C5-4 / HDMI-C5-8 by using HDMI-C5-R HDMI-RJ45 Receiver.

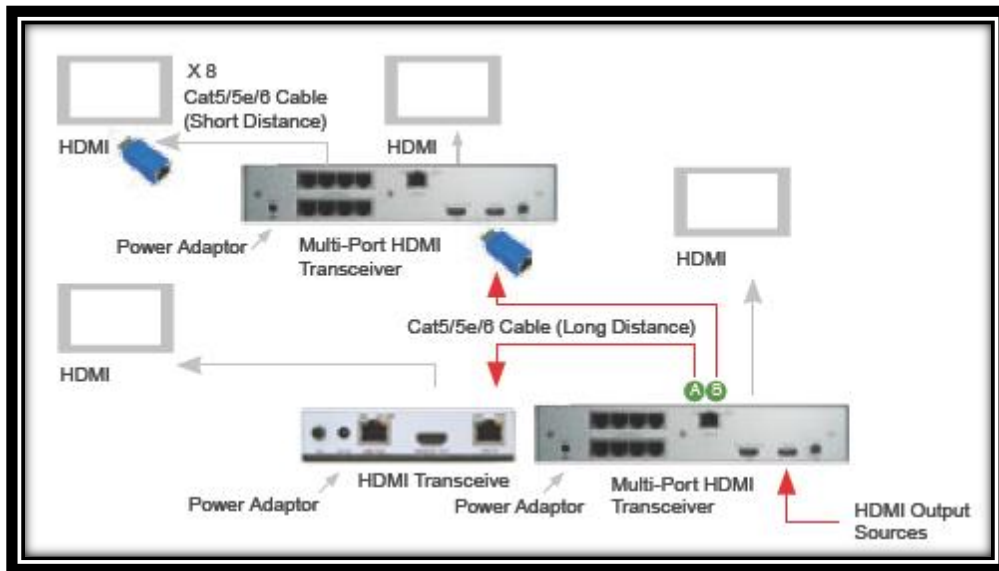


Connecting HDMI Sources

- d. **EQ Adjustment:** You can adjust the EQ control to Auto Mode by rotating the EQ control anti-clockwise. The “EQ” and “Auto” LEDs will display blue.

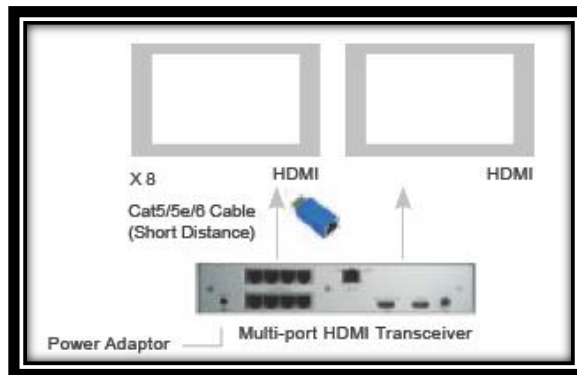
*After connecting the extender system, if you see dynamic dots or unclear image on the HDMI monitor, adjust the signal on HDMI Transmitter.*

- e. **LINK OUT:** The function of “LINK OUT” port on Multi-Port Transceiver is to cascade HDMI signal to one-port HDMI Transceiver or another 4 / 8 port HDMI Transceiver;



Two ways of cascading HDMI signal by Multi-Port HDMI Transmitter

- f. **Connecting Monitors:** 4 / 8 HDMI monitors can be connected to the “RJ-45 HDMI OUT” ports by HDMI-C5-R Receiver.



Connecting 8 HDMI Monitors

- g. **Addition System Expansion:** The “RJ-45 HDMI OUT” port can also be used as link out port for more system expansions.

## Selection of Cable

- a. **Selection:** Most makes and versions of Cat 5/5e/6 cables will work with DVI-C5-S Transmitter and DVI-C5-R Transceivers. However, since the quality and characteristics of Cat 5/5e/6 cables varies it has been found that some perform better than others. The major factor influencing the transmitting distance is the skew property of the cables. Skew represents the difference in propagation delay between the fastest and slowest set of wire pairs. A lower skew will mean a longer video transmitting distance.

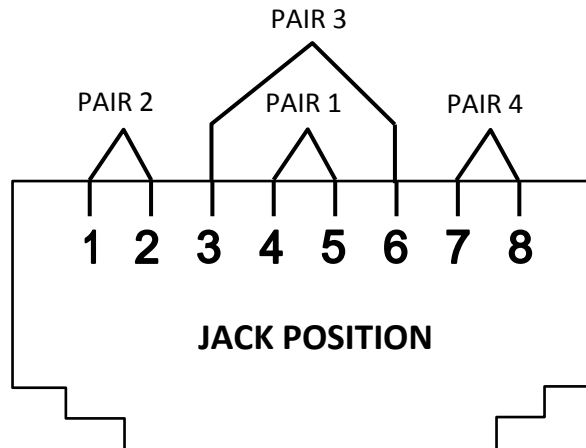
*Cat 5/5e/6 cable with a skew of lower than 15ns/100m should enable a cascading length of:*

- < 80m (275ft) @ 480p*
- < 70m (230ft) @ 72p / 1080i*
- < 30m (100ft) @ 1080p*

- b. **Skew Property:** A Cat 5 / 5e / 6 cable with a skew lower than 15ns/100m should enable a cascading length of <80m (275 ft) at 480p, <70m (230 ft) at 720p / 1080i and <30m (100 ft) at 1080p.
- c. **Termination:** The RJ45 terminations to the Cat 5/5e/6 cable must be made to the EIA 568B specification.

1. Orange White	2. Orange	3. Green White	4. Blue
5. Blue White	6. Green	7. Brown White	8. Brown

The EIA/TIA definition of 568B in the pin assignment

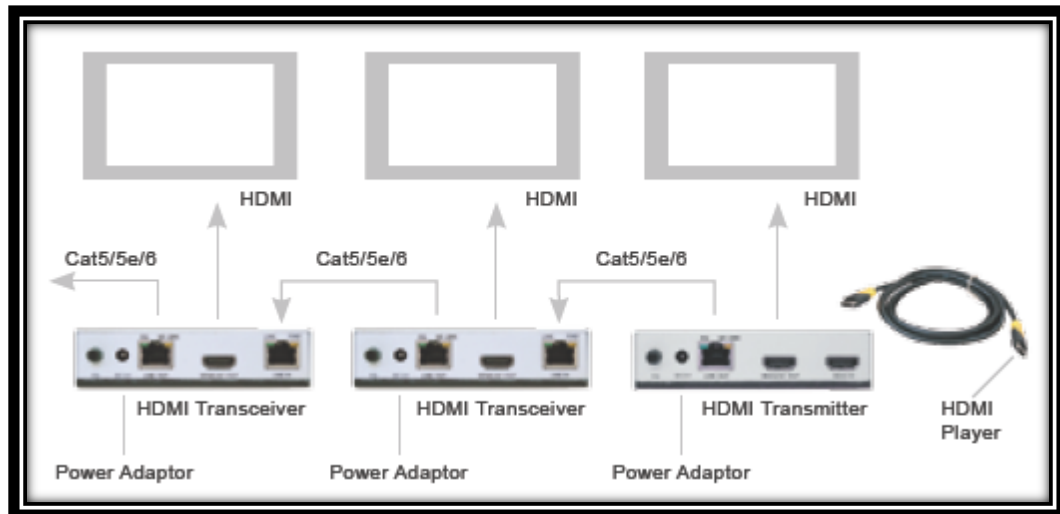


- d. **Connect UTP Cable:** Plug one end of the cable to Transmitter’s “LINK IN/OUT” port and the other end to the Transceiver’s RJ45 “LINK IN/OUR” port. The monitor connected to the Transceiver should now display and the “LINK” or “ACTIVE” LED should turn *Green* to indicate the HDMI signal activation. Adjust the “EQ” control for best quality HDMI display.

### Installation of Multiple Transceivers and Displays

- a. **Multiple Transceivers:** By using additional HDMI-C5-SR Transceivers, it is possible to extend the system almost indefinitely to remote HDMI displays.

*Ensure that common grounding is maintained to minimize ground loops and interference for larger group of cascaded Transceivers.*



Connection Diagram of HDMI Extender

- e. **Function Test:** After above installation, you will be able to broadcast the HDMI signal to Receiver's connected monitor.

<b>General Troubleshooting</b>	
<b>Problem</b>	<b>Possible Solution</b>
<b>Screen Defects Appear</b>	<ul style="list-style-type: none"> <li>• Check your current resolution, refresh rate and color depth settings in the <b>Settings</b> and Monitor tabs in your <b>Display Properties</b> dialog.</li> </ul>
<b>Off-Center Screen Image, Odd Colors or No Picture</b>	<ul style="list-style-type: none"> <li>• Try adjusting the brightness, sharpness, contrast, and color balance controls of your monitor.</li> <li>• Try adjusting the centering and positioning controls of your monitor to position the picture on the screen.</li> </ul>
<b>No Image</b>	<ul style="list-style-type: none"> <li>• Ensure that the monitor cable is securely fastened to the HDMI and Monitor port.</li> <li>• Try to connect monitor directly to a PC to ensure basic functionality of these devices.</li> </ul>



## Specifications

Model	HDMI-C5-S	HDMI-C5-SR	HDMI-C5-4	HDMI-C5-8
<b>Description</b>	1 Port HDMI Transmitter	1 Port HDMI Transceiver	4 Port HDMI Transceiver	8 Port HDMI Transceiver
<b>Input</b>	HDMI Female x 1	RJ45 x 1	HDMI Female x 1	HDMI Female x 1
<b>Output</b>	HDMI Female x 1 RJ45 x 1	HDMI Female x 1 RJ45 LINK Out x 1	HDMI Female x 1 RJ45 HDMI Out x 4 RJ45 Link Out x 1	HDMI Female x 1 RJ45 HDMI Out x 8 RJ45 Link Out x 1
<b>Max Distance and Resolution</b>	With each cascading length: < 80m (275ft) @ 480p < 70m (230ft) @ 720p / 1080i < 30m (100ft) @ 1080p			
<b>Video Control</b>	EQ x 1			
<b>Signal Type</b>	HDMI			
<b>Power Consumption</b>	DC 5V 750mA	DC 5V 750mA	DC 5V 1.8A	DC 5V 2.5A
<b>Dimensions (LxWxH)</b>	Compact Size 62 x 113 x 29		1U, 240 x 180 x 44	

