



HDMI 1.3 Extender over Signal CAT5E/6 Cable with 3D, IR & RS232 bi-directional Control



Model #: HDM3D-C5IR-SET

3D
FULL HD

IR

HD
ready
1080p

HDMI
HDCP

7.1CH
Audio

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Section 1: Getting Started

1.1 Important Safeguards

Please read all of these instructions carefully before you use the device. Save this manual for future reference.

What the warranty does not cover

- Any product, on which the serial number has been defaced, modified or removed.
- Damage, deterioration or malfunction resulting from:
 - Accident, misuse, neglect, fire, water, lightning, or other acts of nature, unauthorized product modification, or failure to follow instructions supplied with the product.
 - Repair or attempted repair by anyone not authorized by us.
 - Any damage of the product due to shipment.
 - Removal or installation of the product.
 - Causes external to the product, such as electric power fluctuation or failure.
 - Use of supplies or parts not meeting our specifications.
 - Normal wear and tear.
 - Any other causes which does not relate to a product defect.
 - Removal, installation, and set-up service charges.

1.2 Safety Instructions

The HDM3D-C5IR-SET, HDMI 1.3a Extender over Signal CAT5 with 3D, IR and RS232 Control has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipment, the HDM3D-C5IR-SET should be used with care. Read the following safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Do not dismantle the housing or modify the module.
- Dismantling the housing or modifying the module may result in electrical shock or burn.
- Refer all servicing to qualified service personnel.
- Do not attempt to service this product yourself as opening or removing housing may expose you to dangerous voltage or other hazards
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Have the module checked by a qualified service engineer before using it again.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

1.3 Regulatory Notices Federal Communications Commission (FCC)

This equipment has been tested and found to comply with Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

Section 2: Introduction

The Avenview **HDM3D-C5IR-SET HDMI extender over single CAT5E/6 with 3D, IR and RS232 bi-directional control as well as Auto EDID Learning** extends your video/audio transmission distance up to 60m (200ft) in HDTV 1080i format, 40m (130ft) in HDTV 1080p format, and 20m (65ft) in HDTV 1080p with 36-bit color depth. **HDM3D-C5IR-SET** also supports the most advanced 3D video format and therefore guarantees the highest 3D video compatibility on the market. With only one cost effective Cat.5/5e/6 cable, users can readily extend HDTV sources from DVD players, Blu-ray Disc player, PS3, PC, and any other kinds of sources compliant with TMDS to distant display monitors including HDMI or DVI enabled TV sets or LCD PC monitors. With the advanced design for the latest HDMI technology, deep color video, DTS-HD Master Audio or Dolby TrueHD audio, and HDCP supports and compatibility are all supported. This flexibility makes HDCP compliant DVD players or PS3 transmit utmost high quality video and audio with a greater distance at the minimal cost, when integrating several components apart.

These bonus features allows users to boost IR control distance up to 100m (330 ft) and makes IR control possible through only single Cat.5/5e/6 cable including HDMI signals. In addition, serial port offers the convenient path for interactive application, such as touch panels.

The **HDM3D-C5IR-SET** includes two units: transmitting unit **HDM3D-C5IR-S** and receiving unit **HDM3D-C5IR-R**. The transmitting unit is used to capture the input HDMI / DVI signals with IR control packets and carry the signals via one cost effective Cat5e/6 cable. The receiving unit is responsible for equalizing the transmitted HDMI signal and reconstructing IR and serial control signals. The transmission distance between the sending and receiving units can be up to 60m (200ft) at HD 720p or 1080i; or 40m (130ft) at Full HD 1080p. With a Min/Max equalization rotary control on the receiving unit, users can adjust the equalization strength to the received HDMI signals accordingly, and therefore optimize the transmission distance between source and destination.

- Support HDMI Deep Color & full 3D
- Extends the transmission up to **60m** (200ft) from the HDMI source at **HD 1080i or 720p 24-bit**
- Extends the transmission up to **40m** (130ft) from the HDMI source at **Full HD 1080p 24-bit**
- Extends the transmission up to **20m** (65ft) from the HDMI source at **Full HD 1080p 36-bit**
- HDCP 1.1 compliant
- Auto EDID feature
- Minimizes the cable skew by adjustable Min/Max equalization control
- Pure unaltered uncompressed 7.1ch digital HDMI over Cat.5/5e/6 cable transmission
- DTS-HD and Dolby TrueHD high bit rate audio support
- Supports full frequency IR signal from 20KHz to 60KHz
- Bi-directional IR path
- Full Duplex RS-232 control up to 115,200 bps through connector
- Allows cascading
- Wall mounting housing design for easy and robust installation
- Perfectly integrated with other HDMI over CAT5 series products

The claimed transmission distance here is subject to the grade of installed cable(s), source device and display. For over CAT5/6 transmission, the cable(s) has to be solid, not stranded. Any keystone jack along the transmission path will kill the transmission performance significantly! The IR and RS-232 function can NOT be used at the same time.

HDM3D-C5-3-SET

HDM3D-C5IR-R

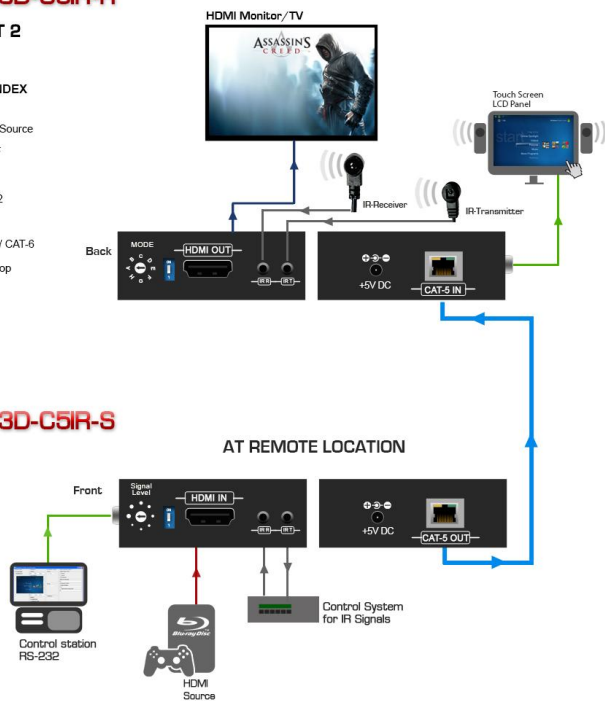
LAYOUT 2

CABLE INDEX

■	Output
■	Input / Source
■	S/PDIF
■	Audio
■	RS-232
■	IR
■	CAT-5 / CAT-6
■	DVI Loop

HDM3D-C5IR-S

AT REMOTE LOCATION



720p/1080i = 50m (165 feet) CAT5
 720p/1080i = 60m (200 feet) CAT6
 1080p = 40m (130 feet) CAT5
 1080p = 50m (165 feet) CAT6

2.1 Package Contents

Before you start the installation of the converter, please check the package contents.

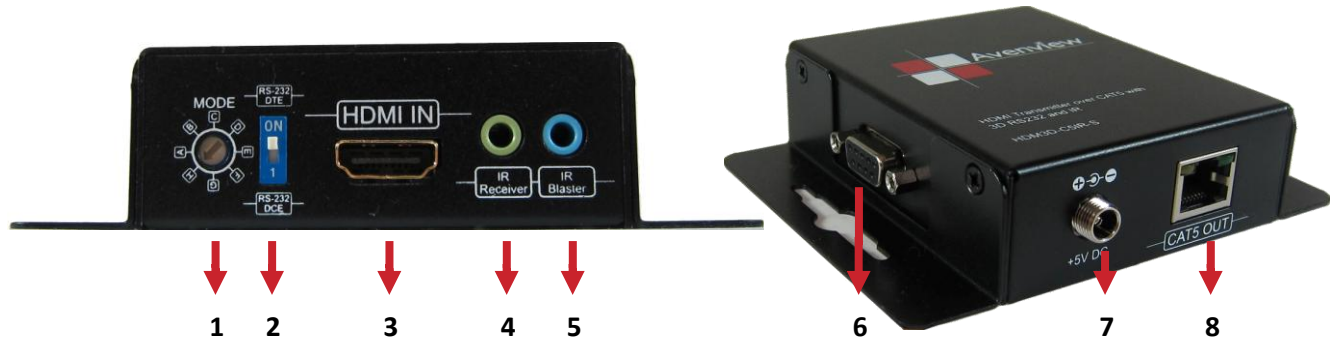
- HDM3D-C5IR-S	x 1
- HDM3D-C5IR-R	x 1
- Power Adapter	x 2
- User's Manual	x 1
- IR Blaster	x 1
- IR Receiver	x 1

2.2 Before Installation

- Put the product in an even and stable location. If the product falls down or drops, it may cause an injury or malfunction.
- Don't place the product in too high temperature (over 50°C), too low temperature (under 0°C) or high humidity.
- Use the DC power adapter with correct specifications (DC5V 2A). If inappropriate power supply is used then it may cause a fire.
- Do not twist or pull by force ends of the UTP cable. It can cause malfunction.

2.3 Panel Description

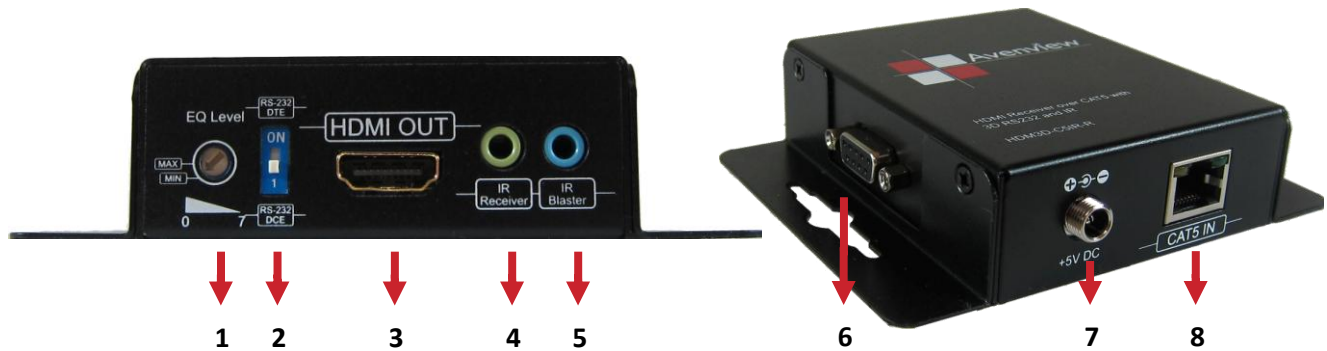
FRONT PANEL & REAR PANEL (Transmitter, HDM3D-C5IR-S)



1. MODE: Rotary dial A-H for video transmission (See Table Below)	5. IR BLASTER: Infrared 3.5mm socket for plugging in the extension cable of IR blaster
2. DIP SWITCH: Setup the RS-232 mode for serial communication channel	6. RS-232: Connect to PC Serial Port with a D-SUB-9 male-male cable here
3. HDMI IN: Connects to a HDMI source with a HDMI male-male cable	7. +5V DC: Connect to 5V DC power supply.
4. IR RECEIVER: Infrared 3.5mm socket for plugging in the extension cable of IR receiver	8. HDMI SIGNAL OUT: Plug in a Cat-5E/6 cable that needs to be linked to the receiving unit

MODE on Transmitter				
A	VIDEO	EDID Full-HD(1080p@60) - 24bit 2D video	AUDIO	Supports up to 7.1 Channel Output
B	VIDEO	EDID Full-HD(1080p@60) - 24bit 2D video	AUDIO	Locks to Stereo Audio Output
C	VIDEO	EDID Full-HD(1080p@60) - 24bit 3D video	AUDIO	Supports up to 7.1 Channel Output
D	VIDEO	EDID Full-HD(1080p@60) - 24bit 3D video	AUDIO	Locks to Stereo Audio Output
E	VIDEO	EDID HD(1080p@30)(1080i@60) (720p@60) - 24bit 2D video	AUDIO	Supports up to 7.1 Channel Output
F	VIDEO	EDID HD(1080p@30)(1080i@60) (720p@60) - 24bit 2D video	AUDIO	Locks to Stereo Audio Output
G	VIDEO	EDID Full-HD(1080p@60) - 36bit 2D video	AUDIO	Locks to 7.1 Channel Audio Output
H	EDID Learning	Auto EDID learning		

FRONT PANEL & REAR PANEL (Receiver- HDM3D-C5IR-R)



<p>1. Signal Level: Adjust the Min/Max equalization control to the received HDMI signals</p>	<p>5. IR BLASTER: Infrared 3.5mm socket for plugging in the extension cable of IR blaster</p>
<p>2. DIP SWITCH: Setup the RS-232 mode for serial communication channel</p>	<p>6. RS-232: Connect to PC Serial Port with a D-SUB-9 male-male cable here</p>
<p>3. HDMI OUT: Connects to a HDMI display with a HDMI male-male cable</p>	<p>7. +5V DC: Connect to 5V DC power supply.</p>
<p>4. IR RECEIVER: Infrared 3.5mm socket for plugging in the extension cable of IR receiver</p>	<p>8. HDMI SIGNAL IN: Plug in a Cat-5E/6 cable that needs to be linked to the receiving unit</p>

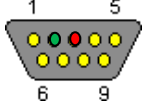
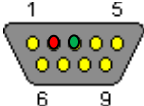
SIGNAL LEVEL on the HDM3D-C5IR-R (Receiver)

*SIGNAL LEVEL:

Adjust the Min/Max equalization control to the received HDMI signals. The HDMI signal level varies from MIN (weakest) and Max (strongest) for respective transmission length from longest possible range to short distance. Please adjust the signal level from MIN to MAX and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issue that would shorten the product life significantly!

If a flickering or a blinking image is seen, try to adjust the rotational switch to improve the cable skew. Max stands for the strongest EQ while MIN stands for the weakest. Try adjusting the EQ from MIN to MAX

DIP SWITCH (Straight or Crossover Mode)

DIP Switch Position	Description	
TX & RX		
ON [↑]	<i>TxD: The 2nd pin of RS-232, which is in charge of (receiving data ●)</i> <i>RxD: The 3rd pin of RS-232, which is in charge of (sending data ●)</i>	
OFF [↓]	<i>TxD: The 3rd pin of RS-232, which is in charge of (receiving data ●)</i> <i>RxD: The 2nd pin of RS-232, which is in charge of (sending data ●)</i>	



2.4 Installation

To setup Avenview HDM3D-C5IR-SET follow these steps for connecting to a device:

1. Connect your HDMI/DVI source (such as a Blu-ray Disc player) to Transmitter (HDM3D-C5IR-S).
2. Connect your HDMI/DVI display (such as a LCD TV) to the receiving unit HDM3D-C5IR-R.
3. Connect your CAT-5E/6 LAN cable between the transmitting and receiving units.
4. Make sure CAT-5E/6 LAN cable is tightly connected and not loose.
5. Plug in 5V DC power cord to the power jack of the receiving unit HDM3D-C5IR-R.
6. Plug in 5V DC power cord to the power jack of the transmitting unit HDM3D-C5IR-S.

2.5 Auto EDID Learning

To learn EDID from the monitor/TV following these steps

1. Connect HDM3D-C5IR-R and the desired display through a HDMI cable and then connect HDM3D-C5IR-S and the video source through a HDMI cable as well.
2. Turn on both the HDM3D-C5IR-S and the HDM3D-C5IR-R.
3. Set the Mode of HDM3D-C5IR-S to "H," and wait for 3-5 seconds.
4. The device could learn the EDID of the desired display via HDM3D-C5IR-R after the step "3,"and enjoy the experience; the users DO NOT need to power cycle again or even twice while plugging on different displays.

*When adjusting the **EQ level** on the receiver unit. Please dial the rotary control switch from MIN to MAX and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate EQ level setting may cause overpowering issue that would shorten the product life significantly!*

Section 3: General Troubleshooting

Problem	Possible Solution
No Image	<ul style="list-style-type: none">• Check if connection to the source and the display are correct.• Ensure that display device supports 480p, 720p and 1080p resolution
Screen Defects Appear	<ul style="list-style-type: none">• This product supports up to 1080p (1920x1200) resolution.• Check the DVI and HDMI connection• If outputting from a PC. Check the maximum resolution range of the graphics card.

3.1 General Troubleshooting

- Wrongly inserting the IR blaster and IR receiver to wrong 3.5mm infrared sockets may result in the failure of the IR extenders. Please check carefully before plugging in the IR extender to the respective IR sockets.
- If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI or HDMI display EDID information.
- All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C & VG-870B.
- The transmission length is largely affected by the type of Cat-5E/6 cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid UTP cables (usually in the form of 300m [1,000ft] bulk cables) can transmit a lot longer signals than stranded UTP cables (usually in the form of fixed length patch cords). Shielded STP cables are better suited than unshielded UTP cables. A solid UTP Cat-5e cable shows longer transmission range than stranded STP Cat-6 cable. For long extension applications, solid UTP/STP cables are the only viable choice.
- EIA/TIA-568-B termination (T568B) for Cat-5E/6 cables is recommended for better performance.
- To reduce the interference among the unshielded twisted pairs of wires in Cat-5E/6 cable, one can use shielded STP cables to improve EMI problems, which is worsen in long transmission.
- Because the quality of the CAT5/6 cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of Cat-5E/6 cables. For desired resolutions greater than **1080i or 1280x1024**, a Cat-6 cable is recommended.
- If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input [HDMI input #1] generally can produce better transmission performance among all HDMI inputs

Section 4: Specifications

Item	Description	
Units	HDM3D-C5IR-S	HDM3D-C5IR-R
Unit Description	HDMI 1.3a with 3D Transmitter	HDMI 1.3a with 3D Receiver
HDMI Compliance	High Speed HDMI Deep Colour & Full 3D Support	
HDCP Compliance	Yes	
Video Bandwidth	Single Link 225 MHz (6.75Gbps)	
Supported Resolutions	480i / 480p / 720p / 1080i / 1080p60	
Resolution and Distance (24-bit)	Full HD: (1080p)-40meter (130feet) (CAT5e) / 50meter (165feet) (CAT6) HD: (720p/1080i)-50meter (165feet) (CAT5e) / 60meter (200feet) (CAT6)	
Audio Support	Surround Sound (up to 7.1 Ch) or Stereo Digital Audio	
Equalization	Min/Max Rotary Control at Rx	
Input TMDS Signal	1.2 Volts (peak-to-peak)	
Input DDC Signal	5 Volts (peak-to-peak, TTL)	
ESD Protection	<ul style="list-style-type: none"> - Human body model — ±15kV (air-gap discharge) & ±8kV (contact discharge) - Core chipset — ±8kV 	
IR Pass-thru	Full-duplex bi-directional	
RS-232 Support	Yes	
Input	1x HDMI + 1x 3.5mm	1x RJ45 + 1x 3.5mm
Output	1x RJ45 + 1x 3.5mm	1x HDMI + 1x 3.5mm
IN/OUT	1x DIN9	1x DIN9
HDMI Connector	Type A (19 pin female)	
HDMI Source Control	Controllable via IR pass-through from RX to TX and from TX to RX with IR extenders	
IR Remote Control	Electro-optical characteristics: $\tau = 25^\circ$ / Carrier frequency: 20-60kHz	
RJ45 Connector	WE/SS 8P8C with 2 LED indicators	
3.5mm Connector	IR blaster & IR receiver	
Rotary Switch	EDID Mode selection	Min/Max Signal level Equalization

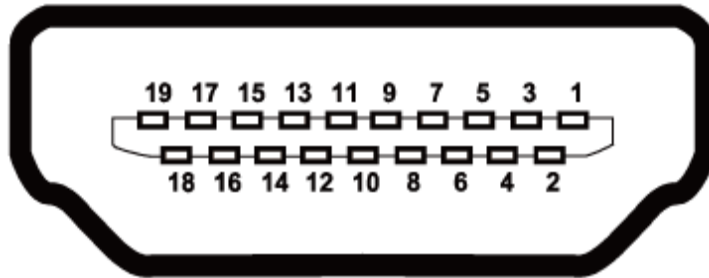
Environmental

Operating Temperature		32° ~ 104°F (0° to 40°C)
Storage Temperature		-4° ~ 140°F (-20° ~ 60°C)
Relative Humidity		20~90% RH (no condensation)
Housing		Metal enclosure
Dimensions [L x W x H]	Model	(Tx: 3" Rx: 3") x (Tx: 3.6" Rx: 3.6") x (Tx: 1.4" Rx: 1.4")
	Package	270 x 175 x 80mm [10.6" x 6.9" x 3.1"]
	Carton	450 x 370 x 300mm [1'6" x 1'3" x 11.8"]
Weight	Model	239g [8.4oz]
	Package	1000g [2.2 lbs]
Fixedness		Wall-mounting case with screws
Power supply		5V 2A DC
Power consumption		1.5 Watts
Operation temperature		0~40°C [32~104°F]
Storage temperature		-20~60°C [-4~140°F]
Relative humidity		20~90% RH [no condensation]

Performance Guide for HDMI over Category Cable Transmission

Performance rating		Type of category cable		
Wiring	Shielding	CAT5	CAT5e	CAT6
Solid	Unshielded (UTP)	★★★	★★★★	★★★★★
	Shielded (STP)	★★★	★★★	★★★★
Stranded	Unshielded (UTP)	★	★★	★★
	Shielded (STP)	★	★	★★
Termination		Please use EIA/TIA-568-B termination (T568B) at any time		

4.1 PIN & Wiring Standard Definition

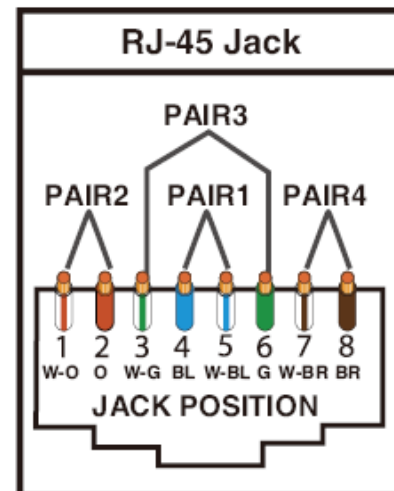


Type A (Receptacle) HDMI

Pin 1	TMDS Data2+	Pin 11	TMDS Clock Shield
Pin 2	TMDS Data2 Shield	Pin 12	TMDS Clock-
Pin 3	TMDS Data2-	Pin 13	CEC
Pin 4	TMDS Data1+	Pin 14	Reserved (N.C. on device)
Pin 5	TMDS Data1 Shield	Pin 15	SCL
Pin 6	TMDS Data1-	Pin 16	SDA
Pin 7	TMDS Data0+	Pin 17	DDC/CEC Ground
Pin 8	TMDS Data0 Shield	Pin 18	+5V Power
Pin 9	TMDS Data0-	Pin 19	Hot Plug Detect
Pin 10	TMDS Clock+		

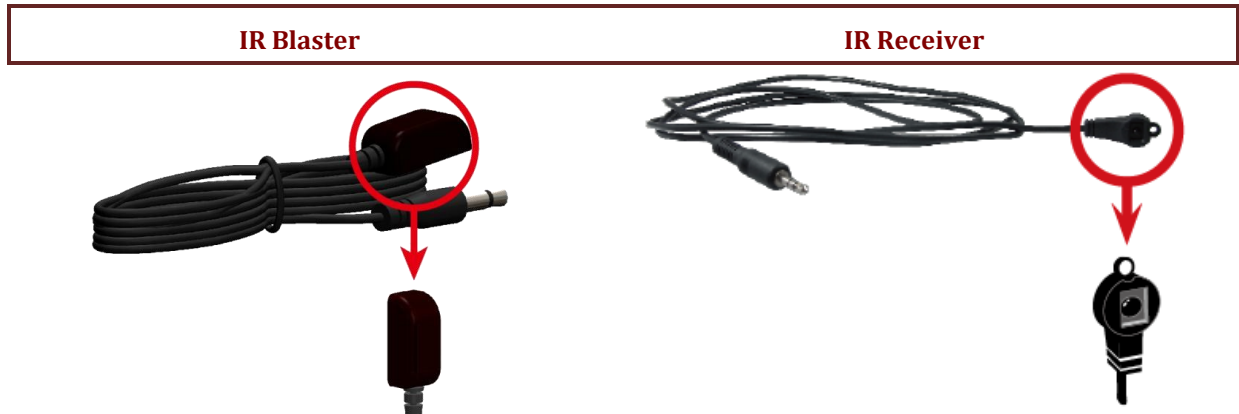
4.2 PIN & Wiring Standard Definition

Data Link TIA/EIA-568-B		
PIN	Color	Function
1	W-O	TX0-
2	O	TX0+
3	W-G	TX1-
4	BL	TX2-
5	W-BL	TX2+
6	G	TX1+
7	W-BR	TXC-
8	BR	TXC+



4.3 Accessories

IR Extenders

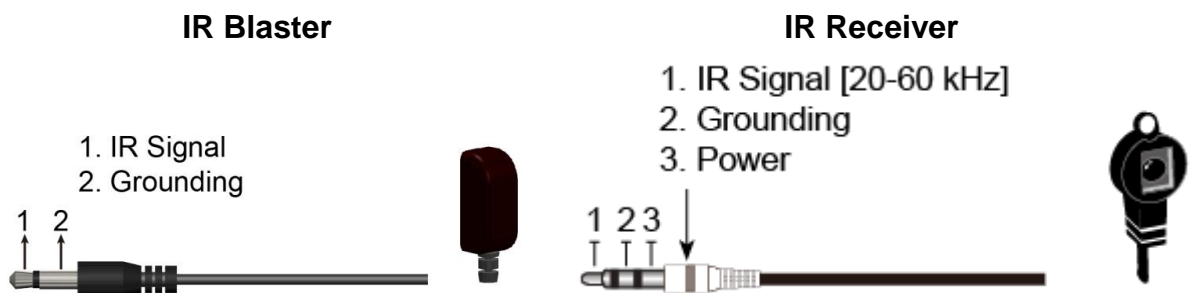


IR Sockets

IR BLASTER: plug in the IR blaster to emit all IR command signals received from the IR receiver from the other end to control the devices corresponding to the IR signals.

IR RECEIVER: plug in the IR receiver to receive all IR command signals from the IR remote controls of the corresponding devices.

Definition of IR 3.5mm Jack



Generic IR cables that are available in the market place can be used only if they are compatible to the definition of the IR sockets for the matrix if necessary for replacement use. However, IR cables longer than 2m (6-ft) may not work



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