



HDMI® over Single Cat5e/Cat6 Cable Extender

Vanco Part Number:
280592

Technical Support

www.vanco1.com • info@vanco1.com • 800-626-6445

DEAR CUSTOMER

Thank you for purchasing this product.
For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

This product is 100% inspected and tested in the United States to verify HDMI performance parameters.

WARNING

1. Do not expose this unit to water, moisture, or excessive humidity.
2. Do not install or place this unit in a built-in cabinet, or other confined space without adequate ventilation.
3. To prevent risk of electrical shock or fire hazard, due to overheating, do not obstruct unit's ventilation openings.
4. Do not install near any source of heat, including other units that may produce heat.
5. Do not place unit near flames.
6. Only clean unit with a dry cloth.
7. Unplug unit during lightening storms, or when not used for an extended period of time. A surge protector is strongly recommended.
8. Protect the power cord from being walked on or pinched, particularly at the plugs.
9. Use unit only with accessories specified by the manufacturer.
10. Refer all servicing to qualified personnel.

CAUTION

HDMI is a very complex technology requiring continuous authentication of the signal and the same video resolution and audio settings on all electronic equipment in the system. When there are multiple sources and displays, the video resolution and audio setting on all connected units must be adjusted to correspond with that of the display having the lowest video and audio capability.

FEATURES

The Vanco 280592 HDMI Extender over Single Cat5e/6 with Bi-directional IR and Audio Return Channel extends high definition video and audio signals and IR, at a distance of up to 164ft/50m over a single Cat5e/6 cable. Features EDID management, which allows and encourages source and display "handshake" for seamless integration. Equipped with ARC (Audio Return Channel) functionality, which allows the connected ARC equipped display to send audio data "upstream" to an ARC equipped A/V receiver or surround audio controller via a coaxial output. The result is an easy and flexible installation eliminating the need for any separate S/PDIF audio connection. Also features a coaxial audio breakout to extract audio, as well as an HDMI loop out for an additional HDMI output. With only one cost effective Cat5e/6 cable, high definition sources with HDMI outputs can be connected to high definition displays with HDMI inputs over long distances. Deep color video, DTS-HD or Dolby TrueHD audio, and HDCP is supported and compatible with the 280592. In addition, 280592 is also equipped with bi-directional IR pass-through which allows for source or display control.

The 280592 includes two units: transmitting unit (280592-TX) and receiving unit (280592-RX). The transmitting unit is used to capture the HDMI input with IR signals and carries 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 280592 offers the most convenient solution for HDMI extension over a single Cat5e/6 with long distance capability, and is the perfect solution for any application.

HDMI® over Single Cat5e/Cat6 Cable Extender

Part # 280592

- Allows HDMI Audio/Video and IR signals to be transmitted over a single Cat5e/6 cable
- Bi-directional IR system allowing for control of source or display (IR accessories included)
- Features EDID management which supports default HDMI EDID and has the ability to learn the EDID of display equipment
- Features EQ distance adjustment switch for perfect transmission and reception of HDMI signals
- Features ARC for two way communication between ARC equipped display and ARC equipped A/V receiver
- Features coaxial break out to extract audio
- Allows for cascading or connecting a local display via additional HDMI loop out port
- Transmission Range: Extends 1080p resolution up to 164ft/50m over a single Cat5e or Cat6 cable
- Works with HDMI and HDCP compliant devices
- Supports up to 1080p High Definition resolution
- Compact design for an easy and flexible installation
- Dimensions 4" W x 1" H x 2.5" D

SPECIFICATIONS

HDCP Compliance	Yes
Video Bandwidth	Single-link 165Mhz [4.95Gbps]
Video Support	480i/480p/720p/1080i/1080p @60
Audio Support	Surround Sound (up to 7.1 ch) or stereo digital audio
Transmission Range	HD [1080p 24-bit color] – up to 50m [164ft]
HDMI Equalization	Auto
Input TMDS Signal	3.3 volts
Input DDC Signal	5.0 volts/P-P
ESD Protection: Human Body model	+/- 8 kV (air-gap discharge)
	+/- 4 kV (contact discharge)
PCB stack-up	4 layouts
Input	(TX) 1xHDMI; (RX) 1xRJ45 + 2x3.5mm
Output	(TX) 1xHDMI + 1xRJ45 + 2x3.5mm; (RX) 1xHDMI
HDMI connector	Type A 19 pin female
RJ-45 connector	WE/SS 8P8C
3.5mm connector	(TX and RX) IR Receiver/IR Blaster

MECHANICAL SPECS

Housing	Metal enclosure
Power Supply	(2) 5V1A DC
Power consumption	3.2 watts (TX); 2.2 watts (RX)
Operation temperature	32~104 °F
Storage temperature	-4 ~140 °F
Relative humidity	20~90 % RH (no condensation)

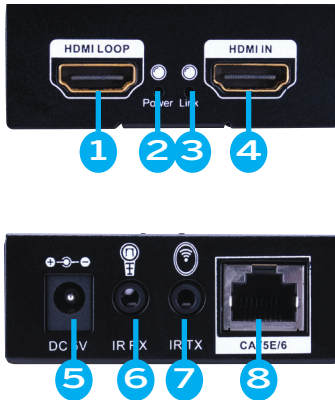
PACKAGE CONTENTS

Before attempting to use this unit, please check the packaging and make sure the following items are contained in the shipping carton:

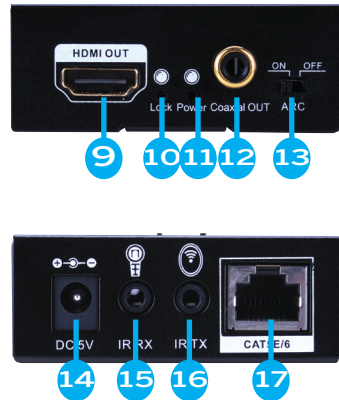
- (1) 280592 (TX & RX)
- (2) IR Blaster (TX)
- (2) IR Receiver (RX)
- (2) DC 5V in line power supply
- (1) Rack-mounting ear set
- (1) User Manual

PANEL DESCRIPTIONS

Transmitting Unit



Receiving Unit



1. HDMI LOOPOUT: Connect a local display using this HDMI output
2. Power LED: Illuminates on when power is on
3. Link LED: Illuminates when the device is connected to an HDMI source
4. HDMI IN: Connects to an HDMI source with an HDMI male-male cable
5. 5V DC: Connect to 5V DC power supply
6. IR Receiver: Infrared 3.5mm socket for plugging in the extension cable of IR receiver
7. IR Blaster: Infrared 3.5mm socket for plugging in the extension cable of IR blaster
8. RJ45 (HDMI Signal Out): Plug in a Cat5e/6 cable that needs to be linked to the transmitting unit
9. HDMI OUT: Connect to an HDMI display with an HDMI male-male cable
10. LOCK LED: Illuminates when the HDMI signal from the transmitter is stable
11. Power LED: Illuminates on when power is on
12. Coaxial OUT: Utilized to extract audio to an A/V receiver
13. ARC : Switch to activate or de-activate Audio Return Channel (See NOTE below)
14. 5V DC: Connect to 5V DC power supply
15. IR Receiver: Infrared 3.5mm socket for plugging in the extension cable of IR receiver
16. IR Blaster: Infrared 3.5mm socket for plugging in the extension cable of IR blaster
17. RJ45 (HDMI Signal In): Plug in a Cat5e/6 cable that needs to be linked to the receiving unit
18. EQ Adjustment: located on right side of the receiver, see EQ section on page #7

Note: ARC function: The connected display must support this function for ARC to function correctly. When ARC is activated, the Coaxial output of the receiver unit will output the display's content audio signal. When ARC is de-activated, the Coaxial output of the receiver unit will output the source's audio signal.

EDID

The EDID switch (located on the side of the Transmitter unit) allows for EDID learning or to pre-set an EDID to encourage a "handshake" between the display and source.

Under normal circumstances, a source device (digital and analog) will require information about a connected device/display to assess what resolutions and features are available. The source can then cater its output to send only resolutions and features that are compatible with the attached device/display. This information is called EDID (Extended Display Information Data) and a source device can only accept and read one EDID from a connected device/display. Likewise, the source can only output one resolution for use by a connected device/display. The EDID switch allows for EDID learning or to pre-set an EDID to encourage a "handshake" between the display and source.

Manual EDID Learning Mode

See below for EDID table, when any of the EDID position selections are made, the Transmitter will set a fixed EDID to the source.



Auto EDID Learning Mode

1. Power off all components; unplug power supply to both transmitter and receiver
2. Unplug HDMI cables connected to transmitter and receiver
3. Set "EDID" on the transmitting unit 280592-TX at position A to copy EDID of display connected to the receiver; Set at position 9 to copy EDID of display connected to the HDMI Loop Out port on the transmitter
4. Connect HDMI Cables
5. Power on the 280592 Transmitter, followed by the 280592 Receiver
6. Power on all components from source to display

Attention: Confirm the extender is displaying audio and video correctly after each selection. Each time the EDID is modified, the transmitter must be unplugged from power. Toggle the EDID switcher to the corresponding number first, then plug the Transmitter into power again, the extender will send the new EDID data to the source.

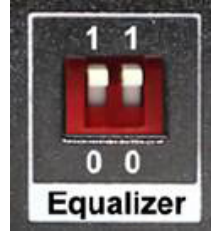
EDID TABLE:

POSITION	EDID DESCRIPTION
0	1080P, 2CH AUDIO
1	1080P, DOLBY/DTS 5.1
2	1080P, HD AUDIO
3	1080I, 2CH AUDIO
4	1080I, DOLBY/DTS 5.1
5	1080I, HD AUDIO
6	3D, 1080P, 2CH AUDIO
7	3D, 1080P, DOLBY/DTS 5.1
8	3D, 1080P, HD AUDIO
9	COPY EDID FROM THE TRANSMITTER HDMI LOOP OUT
A	COPY EDID FROM THE RECEIVER HDMI OUT
B	1080P, 2CH AUDIO
C	1080P, 2CH AUDIO
D	1080P, 2CH AUDIO
E	1080P, 2CH AUDIO
F	1080P, 2CH AUDIO

EQ

If you see flickering or blinking image on the display, adjust the EQ switch to improve the cable skew. See table below for different adjustments based on cable length. Adjust the signal level from MIN to MAX until desired video quality is displayed.

Recommended EQ settings	
Position	Cable Length
0 0	Up to 50 ft.
0 1	Up to 66 ft.
1 0	Up to 99 ft.
1 1	Up to 165 ft.



AUDIO RETURN CHANNEL

The connected display must support this function for ARC to function correctly. When ARC is activated, the Coaxial output of the receiver unit will output the display's content audio signal. When ARC is de-activated, the Coaxial output of the receiver unit will output the source's audio signal..

IR

IR BLASTER (TX)

To control the source: Plug IR Blaster into IR TX port of transmitter unit (280592-TX); place blaster in front of the IR eye of the source.

To control the display: Plug IR Blaster into IR TX port of receiver unit (280592-RX); place blaster in front of the IR eye of the display.

IR RECEIVER (RX)

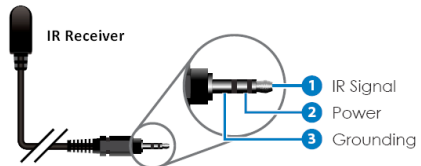
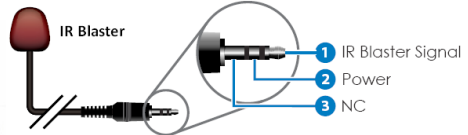
To control the source: Plug IR Receiver into IR RX port of receiver unit (280592-RX); place receiver at or near display.

To control the display: Plug IR Receiver into IR RX port of transmitter unit (280592-TX); place receiver in position where it is able to receive remote signals.

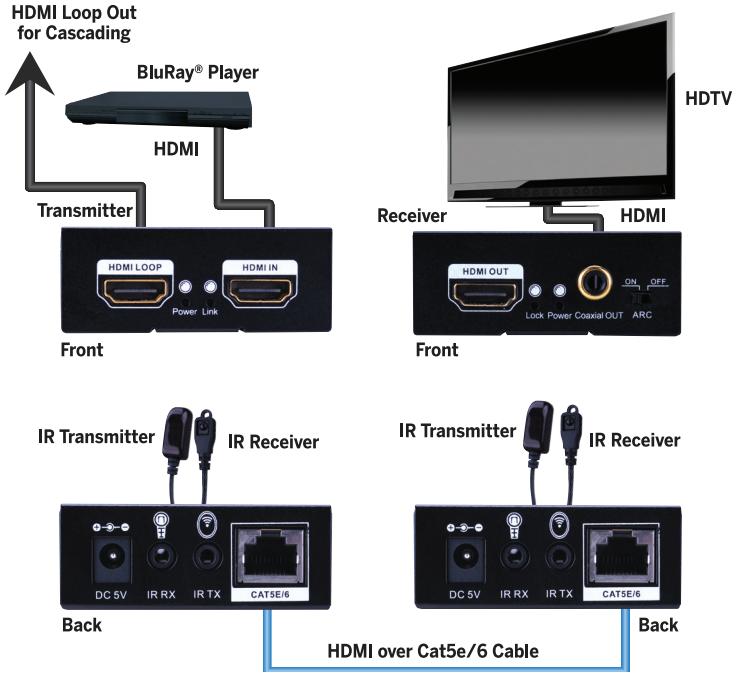
IR RECEIVER



IR BLASTER



CONNECT AND OPERATE



1. Connect a source such as a Blu-Ray Player, game console, A/V Receiver, Cable or Satellite Receiver, etc. to the HDMI input on the Transmitting unit.
2. Connect a display such as an HDTV or HD Projector to the HDMI output on the Receiving unit.
3. Connect a single Category 5e/6 up to 164ft/50m to the output of the Transmitting unit, and the other end to the input of the Receiving unit.
4. For power, plug both the Transmitting unit and Receiving unit with the included power supplies.
5. Power on each device in the same sequence (receiver and transmitter will already be powered when either unit is plugged in.)

At this point the display connected should display the source signal connected to the extender set. If no signal is being displayed, connect a shorter Cat5e/6 cable (jumper or patch cable). If a display is having difficulty receiving a signal, see EDID section and perform EDID learning or access the display's menu and adjust the resolution (lowest to highest until signal is displayed). A 24 Hz vertical refresh rate may work better than 60 Hz or higher. Use the source remote at the receiver emitter to test IR functionality. If the IR remote function is not responding, check the emitters to ensure they are placed correctly and are plugged into the correct IR jacks on the Extender set receiving and transmitting units.

NOTICE

1. Vanco HDMI and Cat5e/6 cables are strongly recommended for use with this product to ensure best results.
2. Incorrect placement of IR Blaster and Receiver may result in the failure of the IR extenders. Please check carefully before plugging in the IR extender to the respective IR sockets.
3. The transmission length is largely affected by the type of Cat5e/6 cables utilized, 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 Cat5e/6 cable shows longer transmission range than stranded STP Cat-6 cable. For long extension applications, use solid UTP/STP category cables.
4. EIA/TIA-568-B termination (T568B) for Cat5e/6 cables is recommended for better performance.
5. To reduce the interference among the unshielded twisted pairs of wires in Cat5e/6 cables, one can use shielded STP cables to improve EMI problems, which worsens in long cable transmission.
6. The quality of Cat5e/6 cables can have a major effect on how long the transmission limit can achieve and quality of picture, the actual transmission range is subject to the Cat5e/6 cable utilized. For the best results, Cat6 is recommended.
7. 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.



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		

TROUBLE-SHOOTING

1. Best results are usually achieved when the source and display resolutions are the same. If resolutions differ, the extenders will try to adjust the signal to match the resolution of the HDTV with the lowest resolution. This will result in a picture with a lower resolution on the other HDTV sets.
2. If you do not get audio and video, access the "setup" menu on the TV to adjust the audio and video settings. If the HDMI control circuit cannot establish a handshake, then there usually will be no audio or video in addition to a blue or black screen with a statement similar to "this protocol not supported" or "weak signal".
3. If the above mentioned messages display, reset the receiver by disconnecting the power supply. You can also disconnect all of the HDMI and power cables, wait 15 minutes for any voltages to decay and then reconnect all of the cables.
4. If you are still encountering issues, attempt the "hot-plug concept. With all of the HDMI cables disconnected, turn on the source and plug in the HDMI cable into its output, then power up the Vanco unit and plug the HDMI cable into its input, finally turn on the display and plug the HDMI cable from the receiver into it. This activates all of the devices in corresponding order and results in a signal being plugged into a device that is on and will attempt to connect the signal.
5. Most of the major source and display manufacturers employ a proprietary control channel to communicate between devices from the same manufacturer. Sometimes this can interfere with the HDMI control circuit or the authentication of the signal. Call the manufacturer if you experience this issue. Sometimes a player, an audio/video receiver, or a cable/satellite box may not have the latest software update, usually this can be downloaded from the manufacturer's website.
6. If you have problems with the IR control circuit, make sure that the IR RX pigtail is plugged into extender receiver and pointed at the display, and the IR TX pigtail is attached to the extender sender and pointed at the source.

SAFETY AND NOTICE

The 280592 has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the 280592 should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit.
- Always unplug the power to the device before cleaning.

LIMITED WARRANTY

With the exceptions noted in the next paragraph, Vanco warrants to the original purchaser that the equipment it manufactures or sells will be free from defects in materials and workmanship for a period of two years from the date of purchase. Should this product, in Vanco's opinion, prove defective within this warranty period, Vanco, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of Vanco. This warranty does not apply to those products which have been damaged due to accident, unauthorized alterations, improper repair, modifications, inadequate maintenance and care, or use in any manner for which the product was not originally intended.

Items integrated into Vanco products that are made by other manufacturers, notably computer hard drives and liquid crystal display panels, are limited to the term of the warranty offered by the respective manufacturers. Such specific warranties are available upon request to Vanco. A surge protector, power conditioner unit, or an uninterruptible power supply must be installed in the electrical circuit to protect against power surges.

If repairs are needed during the warranty period the purchaser will be required to provide a sales receipt/sales invoice or other acceptable proof of purchase to the seller of this equipment. The seller will then contact Vanco regarding warranty repair or replacement.

LIABILITY STATEMENT

Every effort has been made to ensure that this product is free of defects. The manufacturer of this product cannot be held liable for the use of this hardware or any direct or indirect consequential damages arising from its use. It is the responsibility of the user and installer of the hardware to check that it is suitable for their requirements and that it is installed correctly. All rights are reserved. No parts of this manual may be reproduced or transmitted by any form or means electronic or mechanical, including photocopying, recording or by any information storage or retrieval system without the written consent of the publisher.

Manufacturer reserves the right to revise any of its hardware and software following its policy to modify and/or improve its products where necessary or desirable. This statement does not affect the legal rights of the user in any way.

TECHNICAL SUPPORT

In case of problems, please contact Vanco Technical Support by dialing 1-800-626-6445. You can also email technical support issues to techsupport@vanco1.com.

When calling, please have the Model Number, Serial Number (affixed to the bottom of the unit) and Invoice available for reference during the call.

Please read this Instruction Manual prior to calling or installing this unit, since it will familiarize you with the capabilities of this product and its proper installation.

All active electronic products are 100% inspected and tested to insure highest product quality and trouble-free installation and operation. The testing process utilizes the types of high-definition sources and displays typically installed for entertainment and home theater applications.

For additional information, such as helpful installation videos, glossary of terms, etc. please visit vanco1.com

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