

# MONOPRICE

## Blackbird 4K HDBaseT Wall Plate Scaler Transmitter



P/N 21816

**User's Manual**

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## SAFETY WARNINGS AND GUIDELINES

Please read this entire manual before using this device, paying extra attention to these safety warnings and guidelines. Please keep this manual in a safe place for future reference.

- This device is intended for indoor use only.
- Do not expose this device to water or moisture of any kind. Do not place drinks or other containers with moisture on or near the device. If moisture does get in or on the device, immediately unplug it from the power outlet and allow it to fully dry before reapplying power.
- Do not touch the device, the power cord, or any other connected cables with wet hands.
- Do not expose this device to excessively high temperatures. Do not place it in, on, or near heat sources, such as a fireplace, stove, radiator, etc. Do not leave it in direct sunlight.
- Ensure that power is turned off and disconnected before making any electrical connections.
- Clean using a soft, dry cloth only. Do not use chemical cleaners, solvents, or detergents. For stubborn deposits, moisten the cloth with warm water.
- This device has no user serviceable parts. Do not attempt to open, service, or modify this device.

## INTRODUCTION

Thank you for purchasing this HDBaseT Wall Plate Transmitter! This device mounts into a double-ganged wall box and features both HDMI® and VGA video, plus analog audio for the VGA. It can transmit video at resolutions up to 4K@30Hz, including 1080p 3D video. It can extend video, audio, and RS232 data to distances up to 196 feet (60 meters) over a single Cat6 Ethernet cable. It features a 10.2Gbps bandwidth and supports the Power over Cable (PoC) feature, which allows it to be powered by a receiver over the Cat6 cable.

## FEATURES

- Selectable between HDMI® and VGA with analog audio inputs
- Auto selection option between HDMI and VGA inputs
- Provides up to 10.2Gbps bandwidth
- Supports HDMI resolutions up to 4K@30Hz, including 1080p 3D video and VGA resolutions up to 1920x1200
- Built-in scaler allows the video to match the native resolution of a connected display
- Fully compliant with the HDMI version 1.4 specification
- Supports the Power over Cable (PoC) feature, allowing it to be powered by the receiver
- HDCP compliant
- USB port for firmware updates

## CUSTOMER SERVICE

The Monoprice Customer Service department is dedicated to ensuring that your ordering, purchasing, and delivery experience is second to none. If you have any problem with your order, please give us an opportunity to make it right. You can contact a Monoprice Customer Service representative through the Live Chat link on our website [www.monoprice.com](http://www.monoprice.com) during normal business hours (Mon-Fri: 5am-7pm PT, Sat-Sun: 9am-6pm PT) or via email at [support@monoprice.com](mailto:support@monoprice.com)

## PACKAGE CONTENTS

Please take an inventory of the package contents to ensure you have all the items listed below. If anything is missing or damaged, please contact Monoprice Customer Service for a replacement.

1x Wall plate HDBaseT transmitter

1x Faceplate

4x Faceplate screws

4x Mounting screws

1x 2-pin pluggable terminal block

1x 3-pin pluggable terminal block

1x 4-pin pluggable terminal block

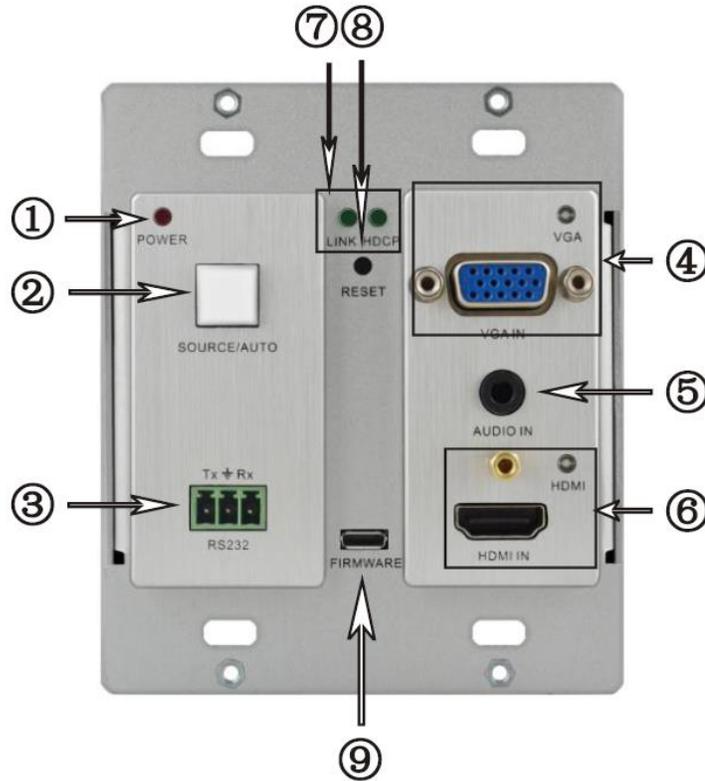
1x AC power adapter (12 VDC, 2A)

1x User's manual

# PRODUCT OVERVIEW

## Front Panel

1. **POWER LED:** The LED illuminates red when power is applied.
2. **SOURCE/AUTO Button:** Press momentarily to toggle between the HDMI® and VGA inputs. Press and hold for about 3 seconds to toggle Auto-Switching mode on or off. When Auto-Switching mode is toggled on, the button illuminates green.



3. **RS232 Connector:** 3-pin terminal block for connecting a PC for RS232 control.
4. **VGA IN Connector and LED Indicator:** 15-pin VGA port for connecting a VGA video source. The LED indicator illuminates yellow when a VGA signal is present, but not selected. It glows green when the VGA input is selected and it is off when there is no VGA input signal.
5. **AUDIO IN Jack:** 3.5mm stereo audio jack for connecting an analog video source for use with the VGA input.
6. **HDMI IN Connector and LED Indicator:** HDMI port for connecting an HDMI video source. The LED indicator illuminates yellow when an HDMI signal is present, but not selected. It glows green when the HDMI input is selected and it is off when there is no HDMI input signal.

7. **LINK and HDCP LED Indicators:** The LINK LED illuminates green when a valid connection exists between the transmitter and receiver. The HDCP LED illuminates green when video with HDCP is present. It blinks green if the video has no HDCP data and is off when there is no source signal.
8. **RESET Button:** Press the **Reset** button to reboot the transmitter.
9. **FIRMWARE Port:** USB port for performing firmware updates. To update, insert a flash drive with the update file (MERGE.bin) and send the command **50698%** to perform the update.

## Side Panel

1. **HDBASET OUT Jack:** RJ45 jack for connecting a Cat6 Ethernet cable to connect to the receiver (not included). Note that the transmitter supports the PoC feature, allowing it to be powered by the receiver. It cannot provide power to the receiver.



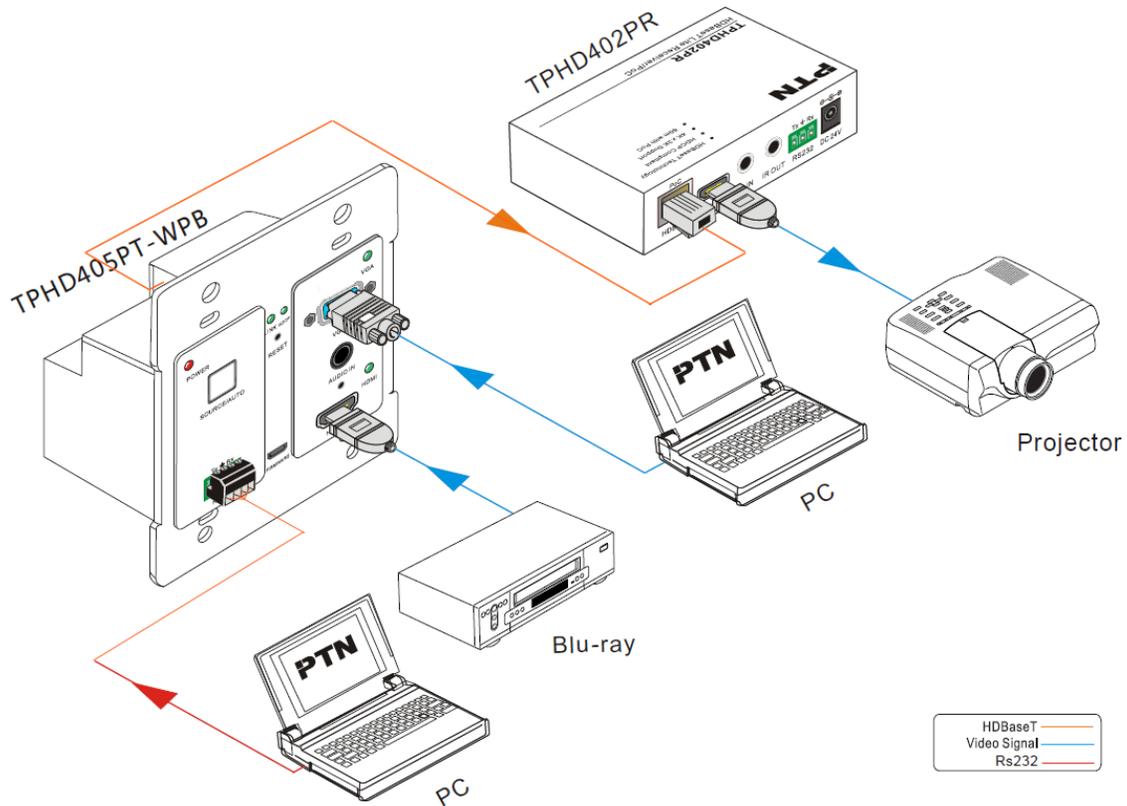
## Rear Panel

1. **12V IN Terminal:** 2-pin terminal block for connecting the included AC power adapter.
2. **12V OUT Terminal:** 2-pin terminal block for powering a connected receiver.
3. **RS232 Terminal:** 3-pin terminal block for bidirectional RS232 control.



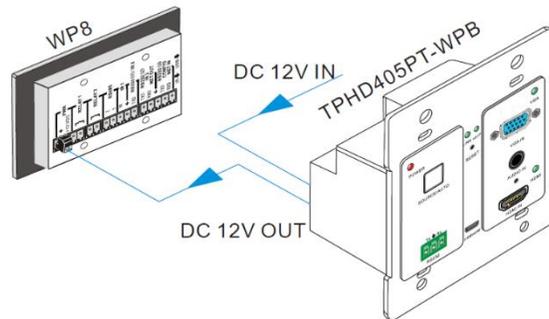
# INSTALLATION

Perform the following steps to install the Wall Plate Transmitter.

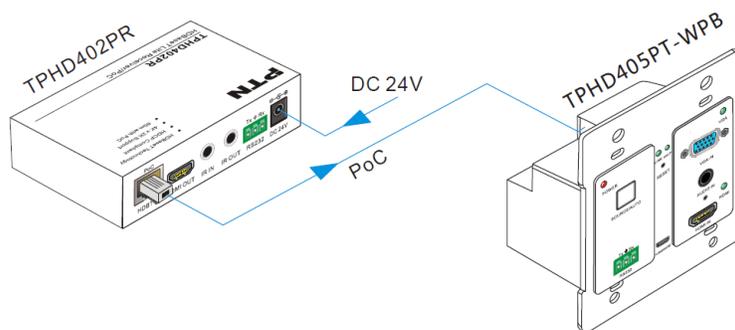


1. Using a High Speed HDMI® Cable (not included), plug one end into the HDMI input on your projector or remote display, then plug the other end into the HDMI output on the receiver (not included).
2. Plug one end of a VGA cable (not included) into the **VGA IN** port on the transmitter, then plug the other end into the VGA output on your PC or laptop.
3. Plug one end of a 3.5mm stereo audio cable (not included) into the **AUDIO IN** jack on the transmitter, then plug the other end into the audio output on your PC or laptop.
4. Using a High Speed HDMI Cable (not included), plug one end into the **HDMI IN** port on the Transmitter, then plug the other end into the HDMI output port on your HDMI video source device (e.g., Blu-ray Disc™ player).

5. (Optional) Using the included 3-pin pluggable terminal block, construct a serial cable to connect to your PC, then plug the 3-pin terminal block into either the transmitter or receiver (not included) and into the serial port on your PC or laptop.
6. Using an in-wall rated Cat6 Ethernet cable (not included), plug one end into the **HDBaseT OUT** jack on the transmitter, then plug the other end into the HDBaseT input jack on the receiver (not included).
7. Perform one of the following two steps to provide power to the transmitter.
  - a. Using the included 12 VDC AC power adapter, plug one end into the **12V IN** terminal on the rear panel, then plug the adapter into a nearby AC power outlet.



- b. Plug a 24 VDC power adapter (not included) into the DC IN jack on the receiver (not included), then plug the power adapter into a nearby AC power outlet. The receiver will provide power to the transmitter over the HDBaseT cable using the Power over Cable (PoC) feature.

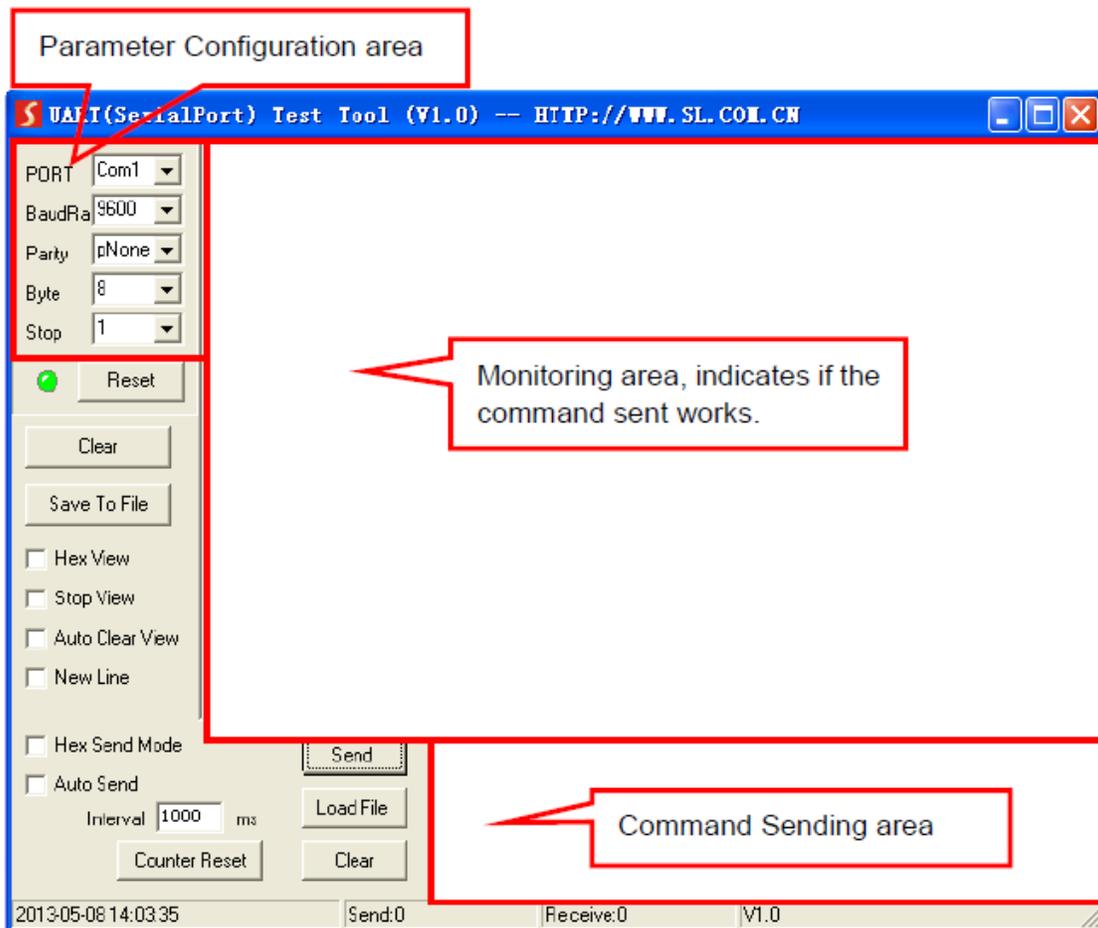


## OPERATION

- Momentarily press the **SOURCE/AUTO** button to toggle between the HDMI® and VGA video inputs.
- Press and hold the **SOURCE/AUTO** button for about 3 seconds to toggle Auto-Switching mode on or off. When Auto-Switching mode is active, the button illuminates green.

## RS232 CONTROL

The transmitter supports bidirectional RS232 control, allowing you to control the transmitter and a connected receiver using your PC or laptop. To control the system, you will need to use a third-party RS232 control software, such as CommWatch.



Set the communications parameters as shown in the following table:

Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1

The system will respond to the following RS232 commands. Note that commands with gray background are for VGA sources only, while the EDID commands are for HDMI® only.

Command	Function	Feedback Example
<b>Switch Commands</b>		
50701%	Switch to HDMI® input	Switch to HDMI
50704%	Switch to VGA input	Switch to VGA
50705%	Change horizontal polarity	Hpolarity: 0/1
50706%	Change the vertical polarity	Vpolarity: 0/1
50707%	Check the current resolution and polarity	1920x1080 Hpolarity: 1 Vpolarity: 0
50770%	Enable auto-switching	Auto switching
50771%	Disable auto-switching	Manual switching
<b>Resolution Commands</b>		
50619%	Change the resolution to 1360x768 HD	Resolution: 1360x768
50626%	Change the resolution to 1024x768 XGA	Resolution: 1024x768
50627%	Change the resolution to 1280x720 720p	Resolution: 1280x720
50628%	Change the resolution to 1280x800 WXGA	Resolution: 1280x800

50629%	Change the resolution to 1920x1080 1080p	Resolution: 1920x1080
50620%	Change the resolution to 1920x1200 WUXGA	Resolution: 1920x1200
50621%	Change the resolution to 1600x1200 UXGA	Resolution: 1600x1200
<b>Setup Commands</b>		
502xx%	Set the brightness to xx, where xx is a numeric value from 00 to 99	Brightness: xx
503xx%	Set the contrast to xx, where xx is a numeric value from 00 to 99	Contrast: xx
504xx%	Set the saturation to xx, where xx is a numeric value from 00 to 99	Saturation: xx
505xx%	Set the sharpness to xx, where xx is a numeric value from 00 to 99	Sharpness: xx
50606%	Auto-adjust the input parameter	VGA Input Auto
50607%	Adjust the color temperature	Color Temperature: xx where xx can be medium, warm, user, or cool
50608%	Set the aspect ratio	Aspect Ratio: xx where xx can be 16:9, 4:3, or auto
50614%	Set the picture mode	Picture Mode: xx where xx can be dynamic, standard, mild, or user
50699%	Check the system version	Version Vx.x.x
50779%	Switch to RS232 mode 1, which enables to scaler to control the remote devices (default)	RS232 Mode 1: RS232 Control Scaler & Remote

50780%	Switch to RS232 mode 2, which enables to scaler to control the remote devices (default)	RS232 Mode 2: RS232 Control Scaler & Remote
50790%	Set the HDCP status of the HDMI output to Active	HDCP Active
50791%	Set the HDCP status of the HDMI output to On	HDCP On
50792%	Set the HDCP status of the HDMI output to Off	HDCP Off
50698%	Software update	
50617%	Reset to factory default	
<b>Inquire Commands</b>		
50632%	Check the output resolution	Resolution: xx
50633%	Check the picture mode	Picture Mode: xx
50793%	Check HDCP status	HDCP Off HDCP On HDCP Active
50635%	Check the image aspect ratio	Aspect Ratio: xx
50636%	Check the brightness	Brightness: xx
50637%	Check the contrast	Contrast: xx
50638%	Check the saturation	Saturation: xx
50639%	Check sharpness	Sharpness: xx
50640%	Check the color temperature	Color Temperature: xx

Adjustment Commands		
50678%	Enable screen output adjusting	Enter Output Position Adjust
50679%	Disable screen output adjusting	Exit Output Position Adjust
50670%	Move the image to the left	Output Position Adjust X xx
50671%	Move the image to the right	Output Position Adjust X xx
50672%	Move the image up	Output Position Adjust Y xx
50673%	Move the image down	Output Position Adjust Y xx
50674%	Pull left from the right side (decrease image width)	Output Width Adjust xx
50675%	Stretch right from the right side (increase image width)	Output Width Adjust xx
50676%	Stretch upwards from the bottom (decrease image height)	Output Height Adjust xx
50677%	Stretch downwards from the bottom (increase image side)	Output Height Adjust xx
50772%	EDID pass-through	EDID: bypass mode
50773%	Set EDID data to 1080p with 2-channel PCM audio	EDID:1080P&PCM 2ch
50774%	Set EDID data to 1080p with Dolby 5.1-channel audio	EDID:1080P&5.1ch
50775%	Set EDID data to 1080p 3D with Dolby 5.1-channel audio	EDID:1080P3d&5.1ch
50776%	Set EDID data to 1080i with 2-channel PCM audio	EDID:1080i&PCM 2ch
50777%	Set EDID data to 4K with 2-channel PCM audio	EDID:4K&PCM 2ch

50778%	Check EDID data	EDID:1080P&PCM 2ch EDID:1080P&5.1ch EDID:1080P3d&5.1ch EDID:4K&PCM 2ch
50799%	Program EDID file, send EDID data within 10 seconds	Waiting for edid within 10 secs!

**Notes:**

1. Commands with a gray background apply to VGA sources only.
2. EDID commands apply to HDMI sources only.

**TECHNICAL SUPPORT**

Monoprice is pleased to provide free, live, online technical support to assist you with any questions you may have about installation, setup, troubleshooting, or product recommendations. If you ever need assistance with your new product, please come online to talk to one of our friendly and knowledgeable Tech Support Associates. Technical support is available through the online chat button on our website [www.monoprice.com](http://www.monoprice.com) during regular business hours, 7 days a week. You can also get assistance through email by sending a message to [tech@monoprice.com](mailto:tech@monoprice.com)

## SPECIFICATIONS

Model	21816
Transmission Protocol	HDBaseT™
Video Inputs	1x HDMI®, 1x VGA
Audio Input	3.5mm TRS stereo
Maximum Transmission Distance	1080p: up to 196 feet (60 meters) 4K: up to 131 feet (40 meters)
Maximum Video Resolution	VGA: up to 1920x1200 HDMI®: up to 4K@30Hz
Maximum Bandwidth	10.2 Gbps
HDMI Version	version 1.4 with HDCP support
Audio Frequency Response	20 Hz ~ 20 kHz
Audio Impedance	> 10Ω
Signal-to-Noise Ratio	> 85dB @ 20 Hz ~ 20 kHz
Power Source	12 VDC, 2A, 9.6 watts or PoC
Operating Temperature	+14 ~ +104°F (-10 ~ +40°C)
Operating Humidity	10 ~ 90% RH, non-condensing
Dimensions	4.1" x 3.5" x 1.7" (105 x 89 x 44 mm)
Weight	10.2 oz. (290g)

# REGULATORY COMPLIANCE

## Notice for FCC



This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Modifying the equipment without Monoprice's authorization may result in the equipment no longer complying with FCC requirements for Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## Notice for Industry Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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