VANCO®
ADVANCING...CONNECTIVITY

8x7 HDBaseT™ Matrix Selector Switch

with Additional HDMI® Output

Vanco Part Number:
HDBT8x7

Technical Support

www.vanco1.com • techsupport@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 HDBT8X7 8x7 Matrix with HDBaseT Technology, wide-band IR, and PoC allows any connected source to be routed to any display providing flexibility for any solution. Features HDBaseT (230ft/70m) technology, which allows for audio, 1080p video, IR, and Power over Cable to be transferred over a single Cat5e/6 cable up to 230ft/70m, or 4K signals up to 131ft/40m. The HDBT8X7 is a quick install kit, which includes (7 qty) HDBaseT receivers in the box! Also features Power over Cable (PoC) Technology, which transmits power over Cat5e/6, allowing for the Receiver units to be powered without the use of a power supply. The result is an easy and complete plug and play solution that allows each HDBaseT output with the ability to extend HDMI over long distances. Also features an additional HDMI output as the 8th output, this gives the flexibility of connecting a local display, or to a zone with an A/V receiver using the analog and digital audio outputs. For control, the HDBT8X7 includes RS-232 connectivity for third party integration and switching, as well as LAN connectivity for IP control and switching remotely, using a smart phone or tablet. The IR system also allows for control of the matrix unit, as well as source control over extension with IR routing. For longer length applications with cost efficiency in mind, the HDBT8X7 is a great solution!

Note: To achieve 4K video quality, all connected displays must be able to handle 4K resolution. Any lower resolution display connected, will affect the overall resolution output to all ports.

8x7 HDBaseT™ Matrix Selector Switch with Additional HDMI® Output

Part # HDBT8x7

- HDBaseT Matrix that features 7 HDBaseT outputs and 1 HDMI output
- Quick install kit includes 7 HDBaseT PoC receivers, 8 IR Emitter and Receiver sets and IR remote control
- Supports HDCP 2.2, and is backwards compatible with previous version of HDCP and HDMI
- Transmits 4Kx2K@ 60Hz 4:2:0 up to 26 ft (8m) via HDMI port and 131 ft (40m) via HDBaseT port
- 7 HDBaseT outputs with distances up to 230 ft (70m) at 1080p and 131 ft (40m) at 4Kx2K on a single Cat5e/6 cable
- HDBaseT Receivers are powered by the matrix using PoC technology
- LED indicators show real-time switching status
- Controllable via front panel, RS232, IR and TCP/IP
- Supports bi-directional IR & RS232 control
- Built-in GUI for TCP/IP control and setup
- Powerful EDID management
- Features Micro USB port for firmware upgrades
- Easy installation with rack-mounting design, mounting hardware included
- Power Supply: Matrix Unit, AC100-240V; Receivers, PoC
- Matrix Dimensions: 17.2" W x 1.7" H x 11.8" D
- Receiver Dimensions: 2.4" W x .9" H x 4.7" D

SPECIFICATIONS

Input	8 HDMI
HDMI Standard	Supports HDMI1.4 & HDCP2.2 and is backward compatible with all previous standards
Output	1 HDMI; 7 HDBaseT
Input and Output Level	T.M.D.S. 2.9V~3.3V
Input and Output Impedance	100Ω (Differential)
HDMI Standard	Supports HDMI1.4 & HDCP1.4 and is backward compatible with all previous standards
Video Signal	HDMI (or DVI-D)
Transmission Distance	1080P@60Hz ≤70m; 4Kx2K@60Hz ≤40m
Resolution Range	Up to 4Kx2K@60Hz
EDID Management	Built-in EDID data and manual EDID management
Gain	0 dB
Bandwidth	10.2Gbit/s
Switching Speed	200ns (Max.)
Output Signal	Stereo audio, Digital audio
Analog Audio Output	Supports PCM
Digital Audio Output	Supports PCM, Dolby, DTS, DTS-HD
Frequency Response	20Hz~20KHz
Output Connector	1 L&R(RCA) 1 SPDIF
Control Ports	8 IR OUT, 7 IR IN, 1 IR EYE, 1 TCP/IP (female RJ45), 1 RS232 (3-pin pluggable terminal block)
Panel Control	Front panel buttons
RS232 Control	3-pin pluggable terminal block
IR	Extended IR receiver
TCP/IP Control	Web-based GUI
Power Supply	Input: 100-240V~, 50/60Hz; Output: DC 24V 2.71A
Power Consumption	35W (Max)
Temperature	0~+50 Degrees C
Reference Humidity	10% ~ 90%
Net weight	2.94Kg

HDBaseT Receiver:

Input	1 HDBaseT; Female RJ45(with LED indicators);
Output	1 HDMI; Female HDMI
Control	1 IR IN, 1 IR OUT; 3.5mm mini jacks
Resolution Range	Up to 4K×2K@60Hz
Transmission Distance	1080P@60Hz ≤70m; 4Kx2K@60Hz ≤40m
Bandwidth	10.2Gbps
HDMI Standard	Supports HDMI1.4 and HDCP1.4
Temperature	0~ +50 Degrees C Humidity:10% ~ 90%
Power Supply	PoC (Power over Cable)
Net Weight	280g

PANEL DESCRIPTIONS

Selector Switch

1. Firmware: Micro USB port for updating firmware
2. Power Indicator: OFF: No power; GREEN: DC power present; RED: Standby Mode
3. 8 input selector buttons & 8 green indicators. num-bered from “1” to “8”.
4. 8 output selector buttons & 8 green indicators, press the buttons to switch input cycle for the outputs
5. HDMI Inputs: 8 x HDMI input ports, type A female HDMI connector, connect the Source with an HDMI cable to any of the HDMI inputs.
6. Outputs:

   - 7 x HDBaseT outputs: The HDBT RJ45 outputs deliver HD video, Audio and PoC to the HDBaseT Receiver up to 70m.

   - 1 x HDMI output: Connect an HDMI cable from the Matrix Switcher to the displayer.

7. IR IN:

   - 7 x IR IN: Connect with IR receiver, fixed IR input for the output, cannot be switched separately. It makes up an IR bi-directional transmission with the IR OUT on the corresponding HDBaseT receiver.

   - 1 x IR EYE: Connect with extended IR receiver, use the IR remote to control the Matrix Switcher.

8. IR OUT:

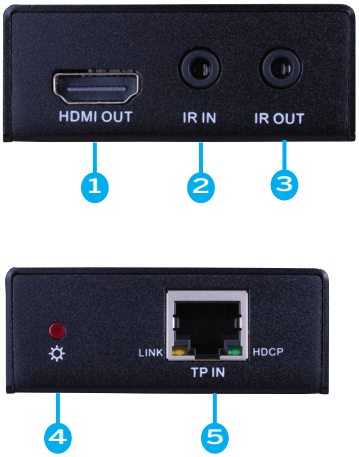
   - 8 x IR OUT: Plug in IR emitters to deliver the IR signal sent from the far-end receivers connected to the HDBaseT ports. These IR OUT sockets make up an IR matrix with the IR IN sockets on the far-end receivers, and all can be switched simultaneously with the AV signal, or separately from switching. In default setting, the 1~7 IR OUT corresponds with the 1~7 IR IN, i.e. IR OUT1 - IR IN1, IR OUT2 - IR IN2, …IR OUT7 - IR IN7.

   - 1 x IR ALL OUT: Plug in IR emitter to deliver the IR signal to control input source device from any of far-end receivers

9. CONTROL: RS232: Serial port for unit control, 3-pin pluggable terminal block, connects with control device (e.g. PC); TCP/IP: RJ45 port. Connect with PC for Web-based GUI control.
10. AUDIO OUTPUTS: SPDIF: Digital audio output connects directly via an optic fibre cable to the Toslink input on a sound bar; RCA (L&R): PCM Analogue audio output sockets connect the de-embedded audio additional speakers.
11. AC100V~240V: Power port, connect with power cord

PANEL DESCRIPTIONS

Receiver



1. HDMI OUT: Connect to HDMI display.
2. IR IN: Plug in the IR receiver, this will receive the IR signals from the RCU and send through to the Matrix Switcher and then control the desired source.
3. IR OUT: Plug in the IR emitter and attached to the fornt of the display, this will send the IR signals form the Matrix Switcher to control the display which is connected to the HDMI OUT port.
4. Power Indicator: RED when DC power present (PoC).
5. TP IN: The RJ45 socket has two LED status indicators. Plug in the Pre-installed CAT cable in to the HDBT RJ45 socket.

    - HDCP: HDCP compliant indicator; OFF: No HDMI traffic (no picture); GREEN: Signals with HDCP; Blinking GREEN: Signal without HDCP.

    - LINK: HDBT Link status indicator; OFF: No Link; YELLOW:Link Successful; Blinking YELLOW: Link Error.

PACKAGE CONTENTS

Please check the packaging and make sure the following items are contained in the shipping carton:

- HDBT8X7 HDBaseT Matrix Switcher
- (7) HDBaseT Receivers
- Power Supply
- (8) IR Receivers
- (8) IR Emitters
- RS-232 cable (phoenix to DB9)
- Mounting ears, hardware and pads for main unit and receivers
- Optical adapter (for SPDIF audio output)
- IR Remote
- Product Manual

CONNECT AND OPERATE

1. Connect HDMI sources (e.g. DVD, STB) to HDMI input ports of the Matrix Switcher using good quality HDMI cables.
2. Connect the CAT5e/CAT 6 cable(s) to Matrix Switcher and HDBaseT receivers via good quality patch leads.
3. Connect HDTV to HDMI output port via HDMI cable.
4. Connect a good quality HDMI cable in to each of HDBaseT Receivers and connect to the local display (HDTV).
5. (OPTIONAL) To extract audio for the HDMI output, connect to an external amplifier or audio video receiver (AVR) using the SPDIF, Toslink optic fibre cable, or analog (RCA) ports
6. (OPTIONAL) For IR control of sources from the displays, plug the IR Receivers 3.5mm jack into the IR IN sockets on HDBaseT Receivers and plug in the IR Emitters to the IR OUT sockets (1~8) on the back of the matrix. (For additional IR options, please see the "IR" section of the product manual)
7. (OPTIONAL) For RS232 control, connect the phoenix connector in to the RS232 socket on the matrix, this will enable the Matrix Switcher to be controlled via a PC or a third party control system
8. (OPTIONAL) For TCP/IP control, plug in a Cat5e/6 from a router or switch into the Ethernet port on Matrix Switcher to control Matrix Switcher by TCP/IP protocol.
9. Plug in the provided power cable and test.

At this point each display connected should display the assigned source (input 1 at default when powered on initially), scroll through each of the sources on each display to ensure everything is in working order. Use included IR remote at each display receiver to test switching functions between sources and IR function itself. If the IR remote function is not responding, check the emitters to ensure they are connected properly.

IR CONTROL

Connect an IR receiver to the IR EYE port of the Matrix Switcher, users can control it through the included IR remote. Here is a brief introduction to the IR remote.

1. Standby button, press it to enter/ exit standby mode.
2. Input channels, for inputs 1-8 to select and send to outputs.
3. Output channels, to select which display to route input to.
4. Menu buttons: ALL, EDID, CLEAR and ENTER. ALL: Select all outputs. EDID management button: Enable input port to manually capture and learn the EDID data of output devices. CLEAR: Withdraw an operation like switching output channel, learning EDID data before it comes into effect. Meanwhile, the matrix will return to the previous status. ENTER: Confirm operation.

Note: With this IR remote, the Matrix Switcher can be controlled by the built-in IR, the extended IR receiver connected to the IR EYE and the IR receiver on the receiving unit.

Switching the Matrix unit

1.Routing an input to an output

Example: Input 1 to Output 3: Press INPUTS 1 + OUTPUTS 3 + ENTER

NOTE: Default status for IR SOURCE ROUTING, on first boot up the matrix assigns the IR outputs to the corresponding HDMI input, IR out 1 is directly associated to HDMI input 1 and so on. When you switch an HDMI input to a different output, the corresponding IR OUT will be switched synchronously to allow the IR commands to be sent from the select zone back through the Matrix Switcher to the source.

2. Routing a single input to mulitple outputs (splitting signal)

Example: Convert Input 2 to Output 3 and 4: Press INPUTS 2 + OUTPUTS 3 + OUTPUTS 4 + ENTER

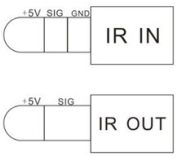
3.To convert an input to all outputs:

Example: Input 1 to all Outputs: Press INPUTS 1 + ALL + ENTER

IR

IR Receiver (RX)

Used to receive IR signal from remote control.



IR Emitter (TX)

Used to emit IR signal to component that is being controlled.

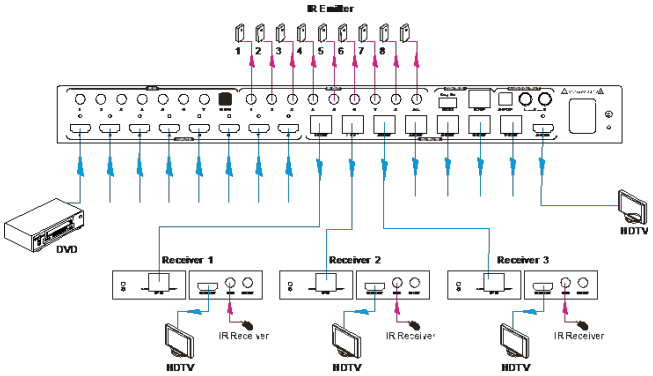
There are mulitple IR functions the HDBT8X7 can handle, and can send IR bi-directionally, however not simultaneously:

1. Control the source(s) from display locations
2. Control the display(s) from the Matrix unit

Controlling the SOURCE(S) from the display locations

1. Connect the IR receiver (RX) into the "IR IN" port of the HDBaseT receiving unit.
2. Connect the IR emitter (TX) into the corresponding "IR OUT" port on the back of the Matrix unit

    a. Note that the IR signal is routed, ensure that the IR emitter is plugged into the corresponding port that the source is plugged into. For example, Bluray player is plugged into "Input 2", plug the IR emitter (TX) for the Bluray into "IR OUT 2".

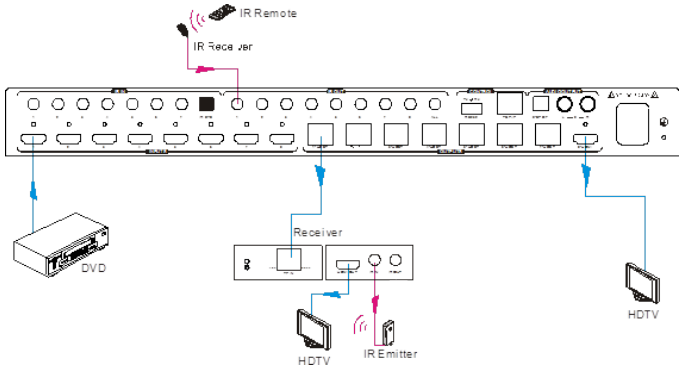


Control the DISPLAY(S) from the Matrix unit location (headend)

This setup is used to control displays from the headend or where the equipment is remotely located. Power, volume, settings, and other commands for a display can be routing through the matrix from a direct IR remote or when connected to a third party control system.

1. Connect the IR receiver (RX) into the "IR IN" of the Matrix unit.
2. Connect the IR emitter (TX) into the "IR OUT" port of the HDBaseT receiving unit.

This setup is used to control displays from the headend or where the equipment is remotely located. Power, volume, settings, and other commands for a display can be routing through the matrix from a direct IR remote or when connected to a third party control system.



Force Carrier

1. If the IR receiver connected to HDBaseT receiver (EVRXHD1) is with IR carrier, the received IR signal can be transferred to the corresponding IR OUT port of the Matrix Switcher.
2. If the IR receiver connected to HDBaseT receiver or the Matrix Switcher is without an IR carrier signal:
   - Connect a computer or control system via RS232 or IP
   - Send the command "%0901." to enter infrared carrier enforcing mode
   - The IR signal can then be transferred to the corresponding IR OUT port.

PLEASE NOTE: While most IR passes without issue, some devices require demodulated IR without carrier. If you have issues and are not sure, please ensure the IR is setup correctly, see "IR" section or contact the device manufacturer for additional IR information.

RS-232 CONTROL

RS-232 connection

Below is the protocol for connecting and communicating with the matrix over RS-232:

Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: non

All and any RS-232 documents will be uploaded within the product page of the HDBT8X7 on www.vanco1.com.

IP CONTROL

The Matrix unit can be controlled via IP. Connect an Ethernet and/or network source such as a network switch or router to the "TCP/IP" port on the back of the Matrix unit.

The default (static) IP settings are:

IP Address: 192.168.0.178

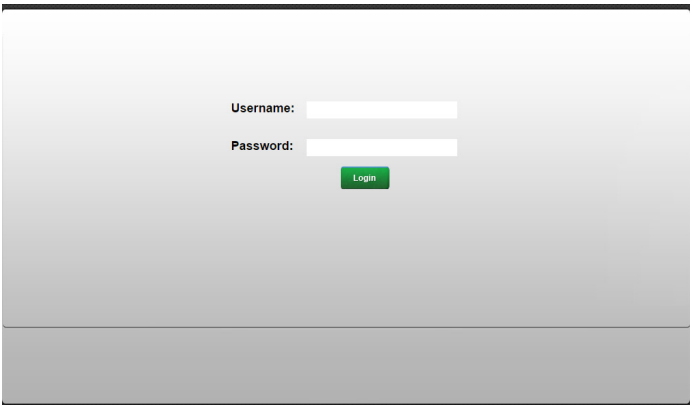
Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

Serial Port: 4001

The Matrix unit can be adjusted for DHCP, see "Network Tab" section.

The settings above can be manually adjusted in case the IP address format, Subnet Mask and Gateway are different from the network being utilized at the site. Once the IP settings are saved, test by accessing the Matrix via IP by entering in the IP address into a mobile or web browser that is on the same network, this will give you access to the UI (User Interface) of the Matrix unit. The login page will display:



Username Access Levels

There are two access levels for the UI of the Matrix unit:

Username: admin

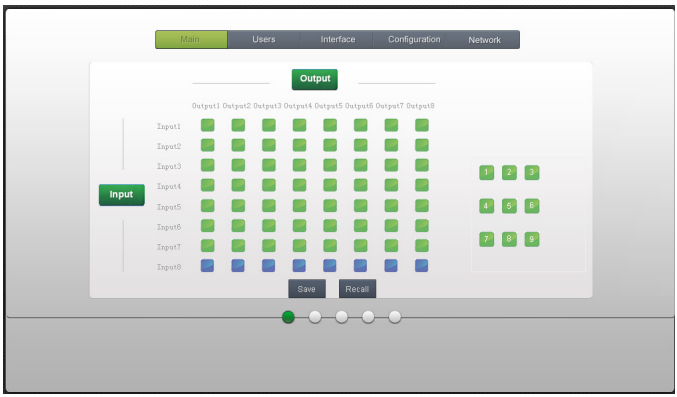
Default password: admin

Username: user

Default password: user

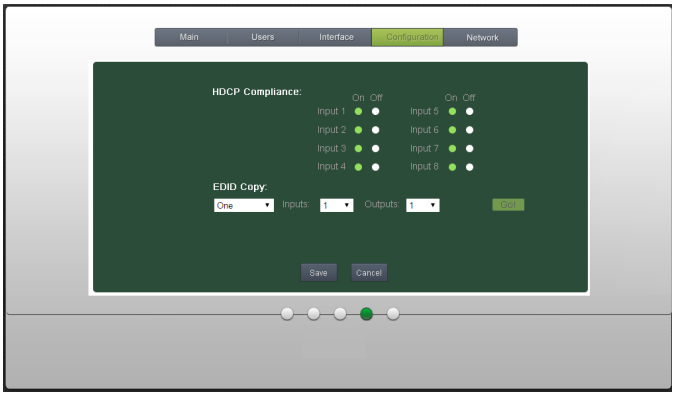
The "admin" username allows for more access and settings than the "user" username. The end user should be given "user" access to limit any changes that may affect different functions of the Matrix unit.

Switching the Matrix unit via IP Control



The "Main" tab is where to route any input to any output. This is setup like a matrix, simply select the button that matches up the desired Input and Output. The keypad on the right hand side are presets, setting the presets will be covered in the "Configuration" section.

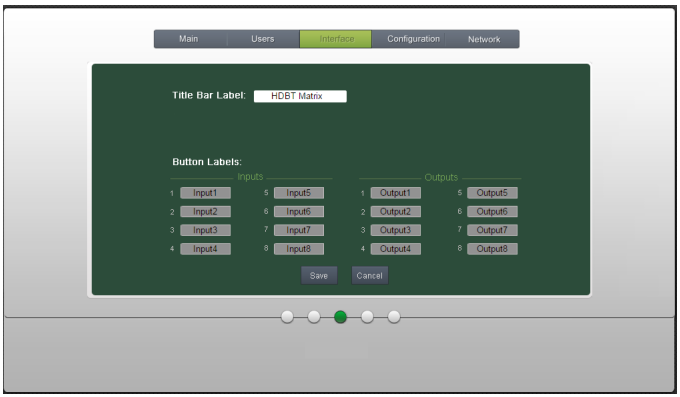
Users Tab



This section allows for password changes, locking the front panel, and tells you which software and firmware version the Matrix unit currently has.

Press "Save" to save any changes.

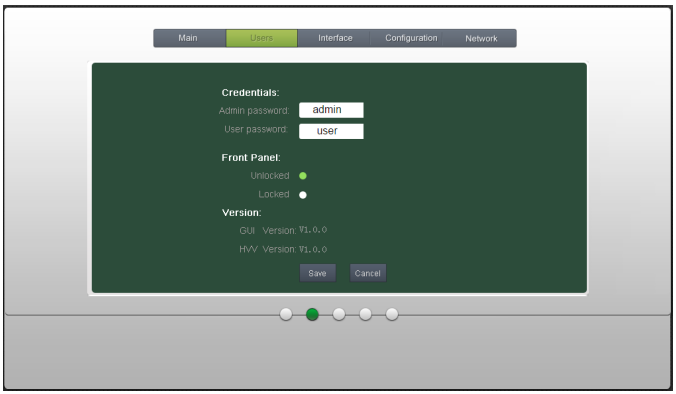
Interface Tab



This section allows for renaming of the Matrix unit, as well as renaming the Inputs and Outputs to make it much easier for switching. Instead of "Input 1", we can now call this "Cable Box" for instance.

Remember to hit "Save" to save any changes.

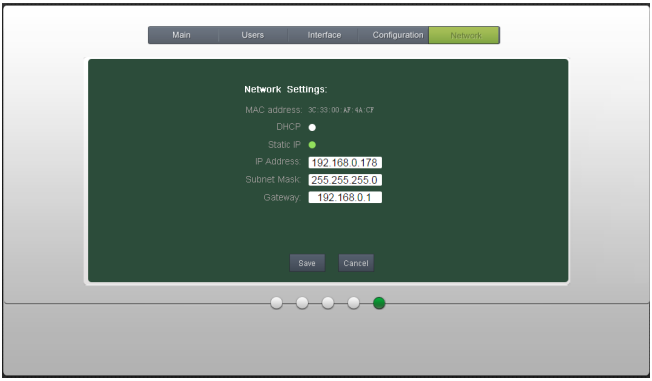
Configuration Tab



The HDCP compliance tab shows the current HDCP status for each input. If a source does not have HDCP such as a PC, it can be set to "Off" to avoid any HDCP issues.

If there are any compatibility issues, there is an option to copy the EDID of the source/display. Click on "Go!" to copy EDID.

Network Tab



This section allows for IP settings to be changed, such as address, Subnet Mask, and Gateway. DHCP can also be selected.

Firmware Updates

Any available firmware updates will be available within the product page of the HDBT8X7 on www.vanco1.com. The HDBT8X7 can be firmware updated via IP or USB located on the front panel. Documentation and instructions on how to conduct firmware updates will be available with the firmware itself.

EDID MANAGEMENT

The HDBT8X7 features EDID management that enables the Matrix Switcher to learn the EDID of all sink (display) devices. The Matrix Switcher can learn the EDID from any device or be programmed to assign an EDID to the mirror port through EDID Invoking.

- EDID Learning (from output) using the included IR remote:
- One input port learns the EDID data of one output port:
- Example: Input 2 learns EDID data from output 4: Press EDID + INPUTS 2 + OUTPUTS 4 + ENTER All input ports learn EDID data from one output port:
- Example: all input ports learn EDID data from output 4: Press: EDID + ALL + OUTPUTS 4 + ENTER
- EDID invoking: There are six types of embedded EDID data. The chart below shows the detailed information of the embedded EDID data:

Number	*EDID Data*
1	1080P 2D 2CH
2	1080P 3D 2CH
3	1080P 2D Multichannel
4	1080P 3D Multichannel
5	3840x2160 2D (30Hz)
6	3840x2160 2D (60Hz)

Clear Operation

When you switch output channel, learn EDID data, or set EDID data, press "Clear" button to EXIT the operation before you press "ENTER" to carry it on. When you press it, the Matrix Switcher will return to the previous status.

TROUBLE-SHOOTING

Problems	*Causes*	*Solutions*
Color loss or no video signal output in HDMI display	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
	Fail or loos connection	Make sure the connection is good.
No output image when switching	No signal at the input/output	Check with oscilloscope or multimeter if there is any signal at the input/output end.
	Fail or loose connection	Make sure the connection is good.
	Input source is with HDCP while the HDCP compliance is switched off.	Send command /%[Y]/[X]:1. or change HDCP compliance status in GUI.
	The display doesn't support the input resolution.	Switch for another input source or enable the display to learn the EDID data of the input.
Cannot control the device via IR remote	The battery has run off.	Change for new battery.
	The IR remote is broken.	Send it to authorized dealer for repairing.
	Beyond the effective range of the IR signal or not pointing at the IR receiver	Adjust the distance and angle and point right at the IR receiver.
	The IR receiver connected to IR IN port is not with carrier	Change for an IR receiver with carrier.
Power Indicator remaind off when powered on	Fail or loose power connection	Check whether the cables are connected correctly.
EDID management does not work normally	The HDMI cable is broken at the output end.	Change for another HDMI cable which is in good working condition.
There is a blank screen on the display when switching	The display does not support the resolution of the video source.	Switch again.
		Manage the EDID data manuall to make the resolution of the video source automatically compliant with the output resolution.
Cannot control the device by control device (e.g. a PC) through RS-232 port	Wrong connection	Check to ensure the connection between the control device and the unit
	Wrong RS-232 communication parameters	Type in correct RS-232 communication parameters: Baud rate: 9600; Data bit: 8; Stop bit: 1; Parity bit: none
Static becomes stronger when connecting the video connectors	Bad grounding	Check the grounding and make sure it is connected well.
Cannot control the device by RS-232/IR remote/ front panel buttons	The device has already been broken.	Send it to authorized dealer for repairing.

SAFETY AND NOTICE

HDBT8X7 has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the HDBT8X7 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.

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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