

HDMI® 4x4 MATRIX SELECTOR SWITCH



Vanco Part Number
EVMX4444

HDMI® 4x4 Matrix
Selector Switch



www.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

INTRODUCTION

The Evolution by Vanco EVMX4444 HDMI 4x4 Matrix Selector Switch allows 4 HDMI sources to be distributed to up to 4 displays simultaneously. Have multiple sources displayed simultaneously on any display or have a single source duplicated on multiple displays, flexibility for the perfect solution. With an output bandwidth of 6.75 Gbps over HDMI, the EVMX4444 is capable of full 1080p HD video and HD multi-channel audio distribution with simple control using the front panel or remotely via IR Receivers at display locations. Also features EDID management, which allows and encourages source and display "handshake" for seamless integration. In addition, EVMX4444 is also equipped with RS-232 and LAN connectivity which allows for firmware updates and third party integration. For reliable, no-nonsense HDMI distribution and control on a budget, over short distances, the EVMX4444 Matrix Selector Switch is a great choice for any application.

HDMI® 4x4 Matrix Selector Switch

Part # EVMX4444

- Allows up to 4 HDMI sources to be distributed simultaneously to up to 4 displays
- 1080p HD Matrix Switcher providing a perfect solution for Home or Retail AV as well as Commercial and Hospitality installations on a budget
- Features EDID management which supports default HDMI EDID and has the ability to learn the EDID of display equipment for any "handshake" issues
- HDCP Compliant
- Supports HDMI Deep Color and 3D
- Supports 7.1 channel digital audio
- Wideband bi-directional IR pass-through (20 to 60 kHz)
- Choose from 5 switching modes – front panel buttons, Local remote control, RS232 control, IR call-back (dedicated IR extension cable connected to IR extension port, and IR emitters on sources required), and Ethernet control
- Easy installation mounting ear hardware set included
- Dimensions: 14.6"(371mm)Wx1.57"(40mm)Hx4.65"(118mm)D





SPECIFICATIONS

TECHNICAL SPECS

HDCP Compliance.....	Yes
Video Bandwidth.....	Single-link 225Mhz (6.75 Gbps)
Video Support.....	480i/480p/720p/1080i/1080p @60 36-bit color
Audio Support.....	Surround Sound (up to 7.1 ch) or stereo digital audio
ESD Protection.....	[1] Human body model — $\pm 19\text{kV}$ [air-gap discharge] & $\pm 12\text{kV}$ [contact discharge] [2] Core chipset — $\pm 8\text{kV}$
PCB stack-up.....	4-layer board (impedance control — differential 100 Ω ; single 50 Ω)
Input.....	4x HDMI / 1x RS-232 / 1x Ethernet / 1x IR socket for IR receiver
Output.....	4x HDMI
HDMI connector.....	Type A 19 pin female
RJ-45 connector.....	WE/SS 8P8C with 2 LED indicators
RS-232 connector.....	DE-9 (9-pin D-sub female)
3.5mm connector.....	[System IR] Receives IR commands from remote control

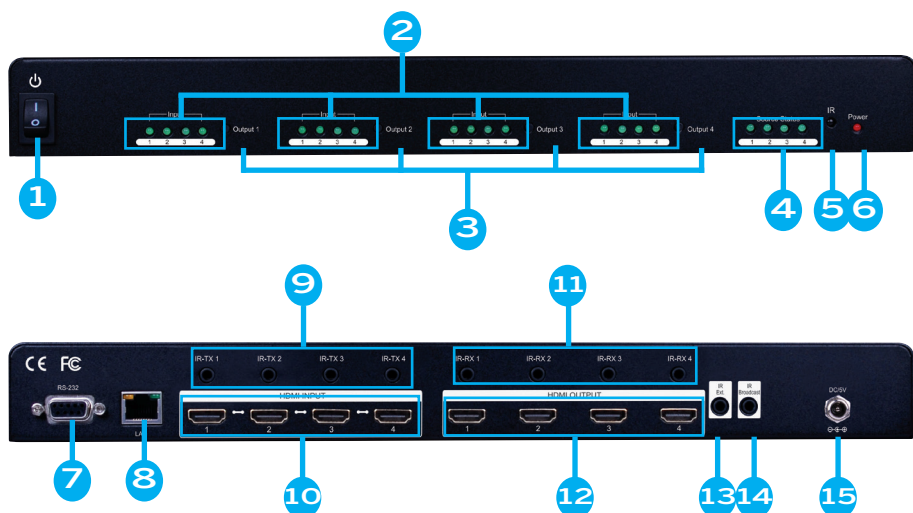
MECHANICAL SPECS

Housing.....	Metal enclosure
Fixedness.....	1RU rack-mount with ears
Power supply.....	5V 4A DC
Power consumption.....	20 Watts [max]
Operation temperature.....	32-104 degrees F
Storage temperature.....	-4 - 140 degrees F
Relative humidity.....	20-90% RH (no condensation)

PACKAGE CONTENTS

- (1) EVMX4444 HDMI 4x4 Matrix Selector Switch
- (5) IR Receiver (RX)
- (4) IR Blaster (TX)
- (1) DC 5V4A in-line with C7 power cord
- (1) Mounting Hardware
- (1) IR remote control
- (1) Installation software CD
- (1) User Manual

PANEL DESCRIPTIONS



1. Power Switch:
2. Port 1-4: Input source channels mapping LED for each output channel
3. Port 1-4 Select: Push button for selecting input channels
4. Source Status: Input source indicator LED
5. IR SENSOR: IR sensor for receiving the IR commands from IR remote
6. LED: Power indicator
7. RS-232: RS-232 control port
8. Ethernet: Ethernet control port
9. IR Blaster 1-4: 3.5mm IR blaster socket for individual HDMI source contro
10. INPUT 1-4: HDMI inputs
11. IR Receiver 1-4: Infrared 3.5mm socket for plugging in the extension cable of IR receiver
12. OUTPUT 1-4: HDMI outputs
13. System IR Receiver: Ext. IR receiver
14. All IR Output: 3.5mm IR blaster socket for HDMI source control on all 4 inputs
15. +5V DC: 5V DC power jack



EDID

The EDID switch allows for EDID learning or to pre-set an EDID to encourage a “handshake” between the display and source.

The EDID learning function is only necessary whenever any display on the HDMI output port is not outputting audio and video properly. Because the HDMI source devices and displays may have various level of capability in playing audio and video, the general principle is that the source device will output the lowest standards in audio format and video resolutions to be acceptable among all HDMI displays connected. In this case, a 720p stereo HDMI signal output would be probably the safest choice. The EDID function can also force the matrix to learn the EDID of the lowest capable HDMI display among others to make sure all displays are capable to play the HDMI signals normally.

There are two methods for EDID Learning as shown below:

1. IR Remote Control: Please refer to the Operation Control – IR Remote Control section
2. Software Control: Please refer to the Operation Control – EDID section

EDID Settings:

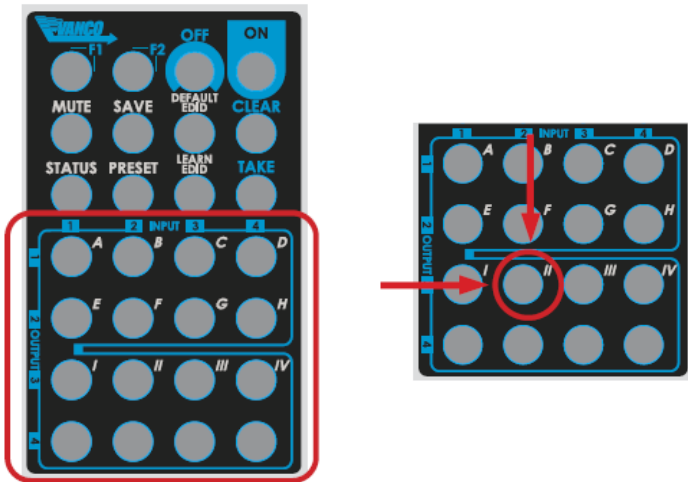
There are eight embedded default EDID settings as shown below,

1. Full-HD(1080p@60)-24bit 2D & 2ch
2. Full-HD(1080p@60)-24bit 2D & 7.1ch
3. Full-HD(1080p@60)-24bit 3D & 2ch
4. Full-HD(1080p@60)-24bit 3D & 7.1ch
5. HD(1080i@60)(720p@60)-24bit 2D & 2ch
6. HD(1080i@60)(720p@60)-24bit 2D & 7.1ch
7. Full-HD(1080p@60)-36bit 2D & 2ch
8. Full-HD(1080p@60)-36bit 2D & 7.1ch

OPERATION CONTROL - IR REMOTE CONTROL

1. INPUT/OUTPUT Switch - Push the corresponding button on the remote to select Input & Output port.

Ex: Select Input 2 to Output 3 - The button highlighted in the red circle button shown below to select Input 2 to Output 3



2. Function Key

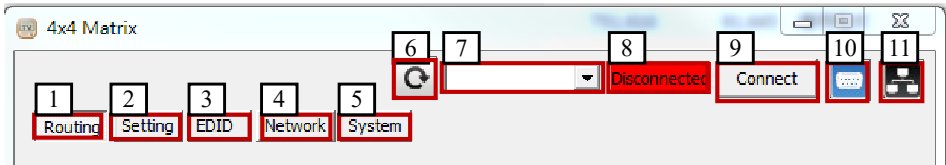
Button	Function
OFF	Standby mode
ON	Power on the matrix switcher
STATUS	Preset output status
SAVE	Save current mapping mode
PRESET	Preset mapping mode
DEFAULT EDID	Begin default EDID selection
LEARN EDID	Begin EDID learning from one output
CLEAR	Clear the previous IR operation procedure
TAKE	Trigger the previous setting
F1	Reserved
F2	Reserved

Operation	Procedure	7-Segment LED
Output Status	Status + A~D(Output 1~4) + Take	
Ex: Output 4 (Input 2)	1.Press "STATUS" button 2.Press number key "D" to select Output 4 3.Press "TAKE" button	-- 4 - 4
Save Current Mapping	Save + A~H(1-8 storage site) + Take	
Ex: Save current mapping to 5	1.Press "SAVE" button 2.Press number key "E" to select the storage site 5 3.Press "TAKE" button	d - d 5
Preset Mapping	Preset + A~H(1-8 storage site) + Take	
Ex: Preset saved mapping from 5	1.Press "PRESET" button 2.Press number key "E" to select the storage site 5 3.Press "TAKE" button	P - P 5
Learn default EDID	Default EDID + A~H(1-8 default EDID) + □~□(input 1~4) + Take	
Ex: Default EDID 2 Input 3	1.Press "DEFAULT EDID" button 2.Press number key "B" to select default EDID 2 3.Press number key "□" to select Input 3 4.Press "TAKE" button	E d 2 d 2 3 0 0 (success) F F(fail)
Learn EDID Port EDID	Learn + D(EDID Port) + □~□(input 1~4) + Take	
Ex: Learn EDID Port Input 3	1.Press "LEARN" button 2.Press number key "D" to select EDID Port 3. Press number key "□" to select Input 3 4.Press "TAKE" button	E L 4 L 4 3 0 0 (success) F F(fail)

OPERATION CONTROL - SOFTWARE CONTROL THROUGH RS-232 AND ETHERNET PORT

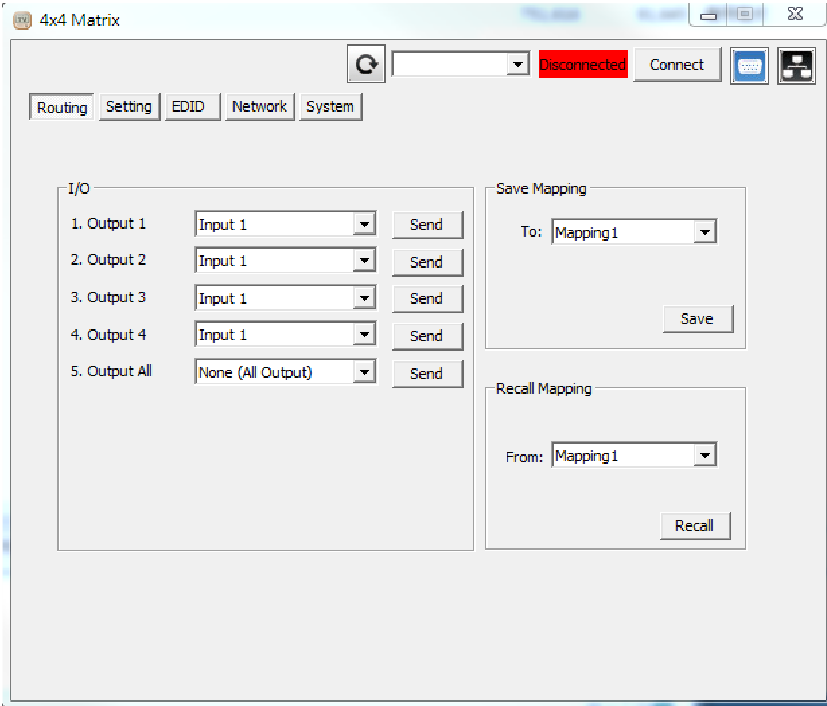
- 1. System Requirement
 - 1) OS Information: MS WinXP/7
 - 2) Baud rates: 9600
 - 3) Software size: 3 MB
 - 4) Minimum RAM requirement: 256 MB

OPERATION CONTROL – Software control through RS-232



- 1. I/O Routing Button
- 2. Rename I/O Button
- 3. EDID Button
- 4. Network Button
- 5. F/W Update & Default Reset Button
- 6. Refresh COM Port
- 7. COM Port Selection
- 8. Connection Status
- 9. Connect/Disconnect Button
- 10. Control SW via RS-232
- 11. Control SW via Network

1. I/O Routing Button



I/O:

Select the input

Click "Send" to change the I/O setting

Save Mapping:

Select Mapping(1-8)

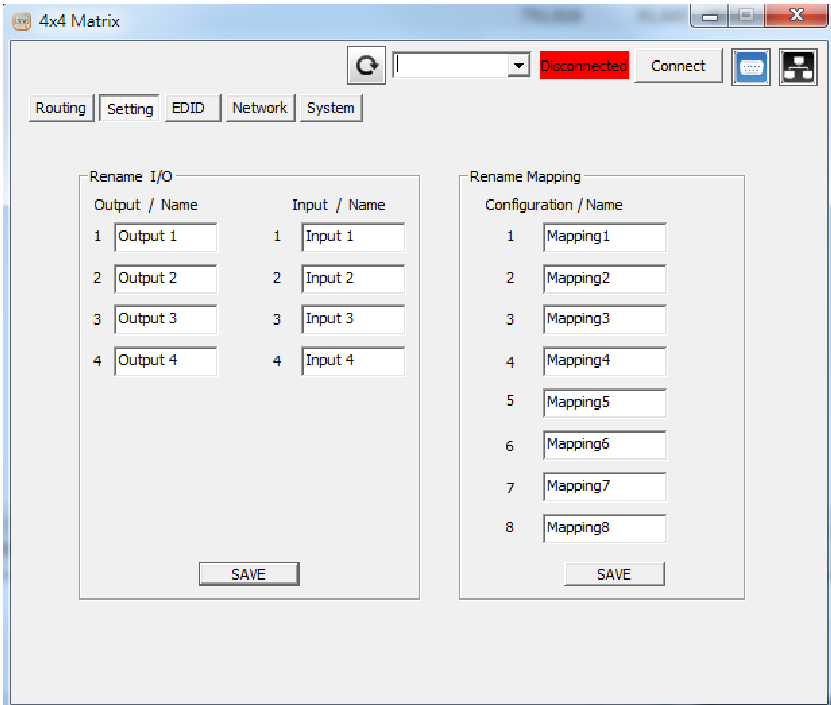
Click "Save" button to save current mapping

Preset Mapping:

Select Mapping(1-8)

Click "Recall" button to recall previous mapping which are saved

2. Rename I/O Button



Rename I/O:

- Rename output name

- Rename input name

Rename Mapping:

- Rename Mapping name

3. EDID BUTTON

Learn EDID from Default

Select Default EDID(1-8 Default EDID)

Select Input

Click "Send" button to learn default EDID

Learn EDID From Display

Select output

Select Input

Click "Send" button to learn display EDID

Load EDID File to Input

Select Input

Click "Load" button to select the EDID file

View EDID

Select Input or HDMI output

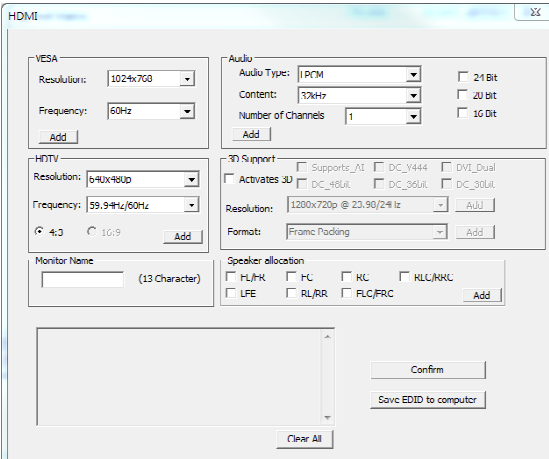
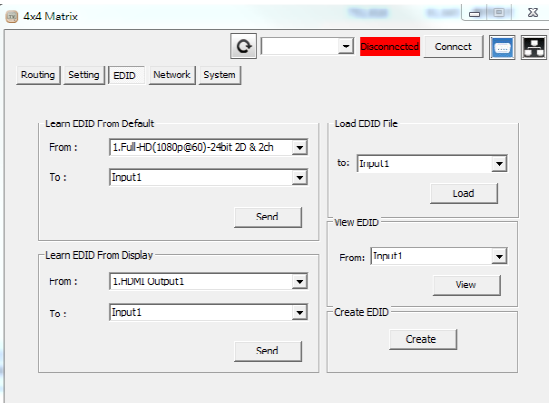
Click "View" button to read the EDID and analysis

Create EDID

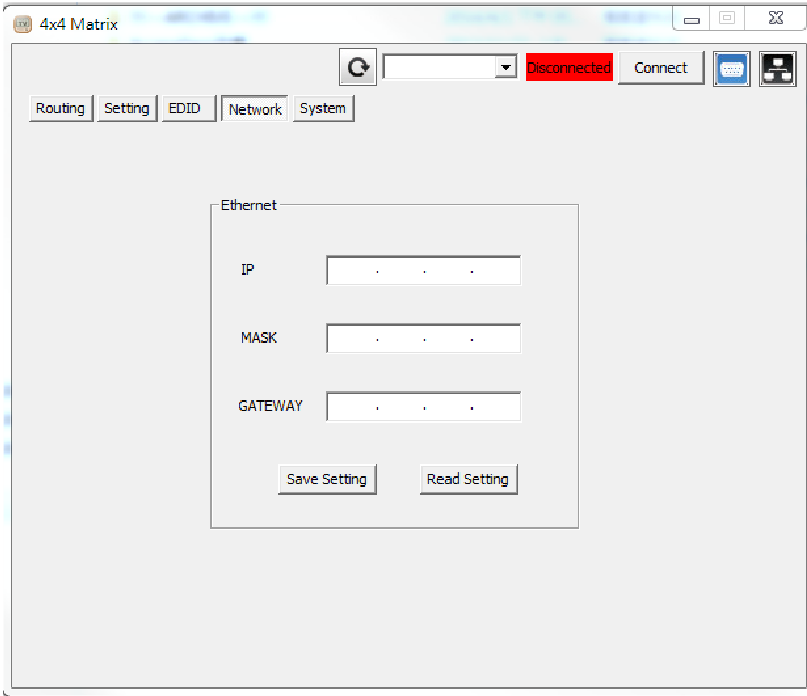
Click "Create" button to create EDID file

Select the EDID content

Click "Save EDID on Computer" to save the generated EDID as a file



4. NETWORK



Save Setting

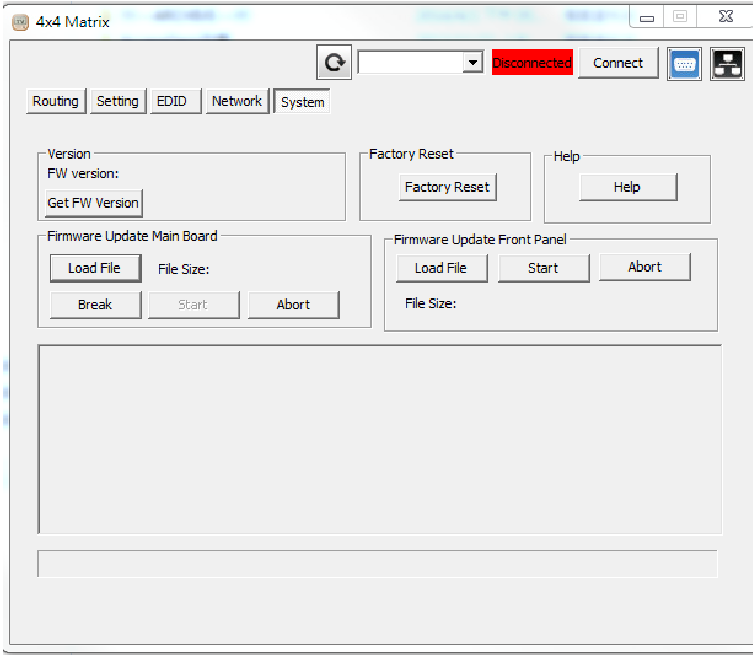
Save the IP address which is manually entered

Read Setting:

Read the IP address from the device

** The default IP address is 192.168.1.111

5. SYSTEM BUTTON



Firmware Update

Version:

To get the F/W version information

Factory Reset

6. COM PORT SELECTION

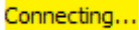
Click “

7. CONNECTION STATUS

Connected Status:

Connect


Connecting Status:

Connecting...

Disconnected Status:


Disconnected

8. CONNECT/DISCONNECT

Click this button “


800.626.6445

9. RS-232

Click "  " button to switch to RS-232 function.

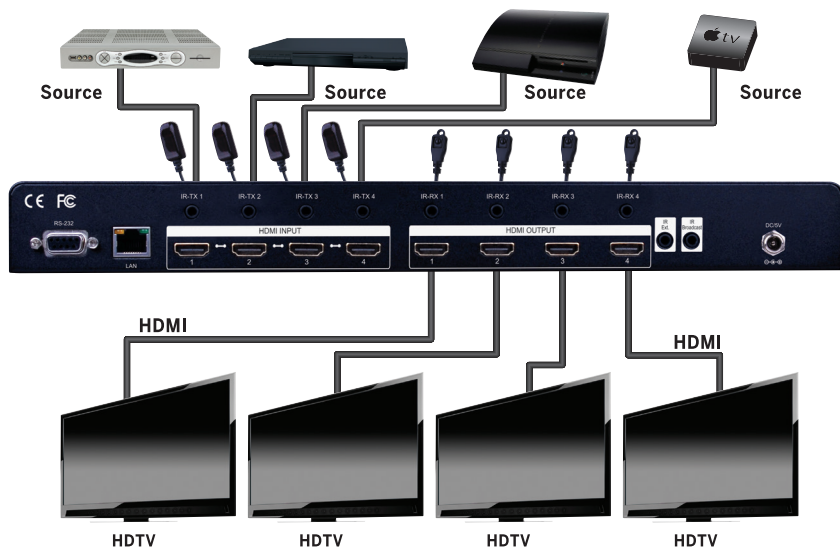
If RS-232 is connected, the button will show the sign image to let you know

10. ETHERNET

Click "  " button to switch to Ethernet function

If Ethernet is connected, the button will show the sign image to let you know.

CONNECTION DIAGRAM



CONNECT AND OPERATE

1. Connect up to 4 sources such as a Blu-Ray Player, game console, A/V Receiver, Cable or Satellite Receiver, etc. to the HDMI inputs on the unit.
2. Connect the output HDMI ports, starting with output 1, to high-definition displays such as an HDTV or HD projector that use HDMI inputs. Note that high-speed HDMI cables are recommended for the distances that are required for each connection.
3. For power, plug in the source first, followed by the Matrix Selector Switcher (power supply included), followed by each output connected.
4. Power on each device in the same sequence.

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 function between sources and IR function itself. If a display is having difficulty receiving a signal, 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. 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 Matrix Selector Switcher unit.

IR PASS-THROUGH



IR Blaster TX



IR Receiver RX

IR BLASTER (EV-IRTX)

Plug IR Blaster into IR TX port of matrix unit (EVMX4444); place blaster in front of the IR eye of the corresponding source.

IR RECEIVER (EV-IRRX)

Plug IR Receiver into IR RX port of matrix unit (EVMX4444); place receiver at or near corresponding display.

1. IR Signal
2. Grounding



IR Blaster TX



1. IR Signal 20-60 kHz
2. Grounding
3. Power



IR Receiver RX



NOTICE

1. Vanco High Speed HDMI 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 unit. Please check carefully before plugging in the IR accessories into the respective IR sockets.
3. 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 it's output, then power up the Vanco unit and plug the HDMI cable into it's 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 EVMX4444 has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the EVMX4444 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.

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 info@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.

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.

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