

**Control Your Video** 

VIDEO WALLS VIDEO PROCESSORS VIDEO MATRIX SWITCHES EXTENDERS SPLITTERS WIRELESS CABLES & ACCESSORIES

# 4 Display Videowall Processor with Audio Support and Rotation





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# **Product Application & Market Sectors**



Corporate



House Of Worship



Military



Residential



Education



Industrial



Medical



Aviation



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## SECTION I: GETTING STARTED

## I.I 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.

## **I.2 SAFETY INSTRUCTIONS**

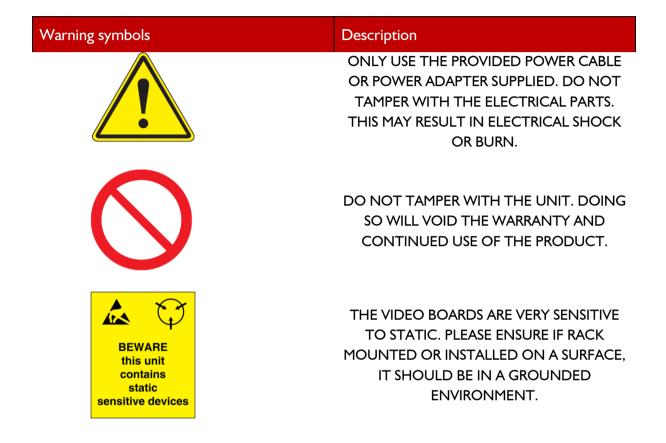
The **DVI-PROWALL-4X** Display Videowall Processor has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the DVI-PROWALL-4X should be used with care. Read the following safety instructions to protect 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.
- A 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.
- $\triangle$  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.



#### **I.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.







# 2. INTRODUCTION

The **DVI-PROWALL-4X** aka (**DVI-VIDEOWALL-4HD**) 4-Display Video Wall Processor was designed to perform the dedicated function of a one input to 4 displays in differnt layouts. Enhanced with real time data/video Thru digital transmission processing chips for displaying content on your flat panel displays or projectors.

Bundled with its own control software the user can simply configure different layouts for any solution such as 1x1, 1x3, 1x4, 2x2 and mosiac. The **DVI-PROWALL-4X** can accept both DVI/HDMI source inputs/outputs, made with the embedded scaler that converts signals from either DVI/HDMI source to match the native resolution of monitors, flat panel displays, projectors connected to the 4 outputs connectors. Each output resolution can be selected for each display, also settings up to PC resolutions WUXGA (1920x1200).

The **DVI-PROWALL-4X** sends the input source video thru DVI/HDMI interface to the connected monitors/ projectors based on the display layout and configured in the software. Recommended applications include retail digital signage, commercial applications and broadcasting/education/ surveillance systems etc.

## FEATURES

- Four DVI/HDMI outputs from 640x480 to 1920x1080, 1920x1200;
- Supports HDMI/DVI input, from 640x480 to 1920x1080@60,1920x1200@60, interlaced or progressive;
- Supports video resolution up to Full HD1080p;
- -Supports PC resolution up to WUXGA;
- HDCP compliant;
- Several image parameters and layouts can be saved in computers and can be loaded for later use
- Firmware upgradable for new features and technology enhancements;
- Supports IR remote control;
- Supports input rotation;
- Software control through USB and Ethernet;
- Resize, position, zoom output video;
- User-selectable output settings, up to 1920x1080,1920x1200;
- Each DVI/HDMI output has an independent controllable display area;
- Supports remote control to switch 1x1, 2x2, 1x3 rotate, and 1x4 rotate mode;
- Each output can support OSD control for edge correction;
- Compact size;



# 2.1 PACKAGE CONTENTS

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

I	I x DVI-PROWALL-4X (DVI-VIDEOWALL-4HD)	Constant of the line in
3	Installation Software	
4	IR REMOTE	
5	Ix Power Adapter (12V 5A)	
6	Power Cord	
7	I x Right and Left Ear Rack Sets	
8	User's Manual	



## 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 and supplied with the unit. If improper power supply is used the unit may malfunction and cause a fire.
- Do not twist or pull by force ends of the video cable. It can cause malfunction.

## 2.2 CABLE SPECIFICATIONS





To achieve best results with our DVI-PROWALL-4X we highly recommend a premium quality 26 or 24 AWG HDMI cable with the below specifications to maintain signal integrity and distances.

#### **FEATURES:**

- Length: 5m (16ft) to 15m (50ft)
- Bandwidth: 10.2 Gbps data transfer rate
- Supports Resolution: Up to 3840x2160 @ 24Hz and 4096x2160 @ 24Hz, 1080p @ 24Hz / 50/60Hz/3D
- Conductor gauge: 26 / 24 AWG
- Deep Color
- 3D Capable
- CEC
- Ethernet Channel
- Audio Return Channel
- Connector I: HDMI (Type A) Male
- Connector 2: HDMI (Type A) Male



# 3. INSTALLATION (DVI-PROWALL-4X)

- I. Connect your source device such as digital signage player to DVI/HDMI Inputs on the DVI-PROWALL-4X.
- 2. Connect all 4 displays/screens to DVI/HDMI Outputs on the DVI-PROWALL-4X.
- 3. Connect the +12V 5A DC power supply to the DVI-PROWALL-4X.

#### **GENERAL INSTRUCTIONS**

- Before you begin the software installation from the CD provided or latest CS from the website, please ensure the DVI-PROWALL-4X is connected to AC power and your PC via USB or connected to the same network as the DVI-PROWALL-4X
- 2. PC Requirements-Windows® XP/Windows Vista®/Windows® 7
- 3. Ensure your Laptop or desktop is plugged in to AC power during the update process. It is not recommended to use only battery power during the installation. Do not remove power at any time during the process as this could lead to incomplete results. See Section 5 Operation Method B Software control for more info.

#### LAYOUT - MIXED VIDEOWALL (Portrait and Landscape mixed screens)

#### Supports Image Rotation



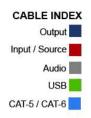






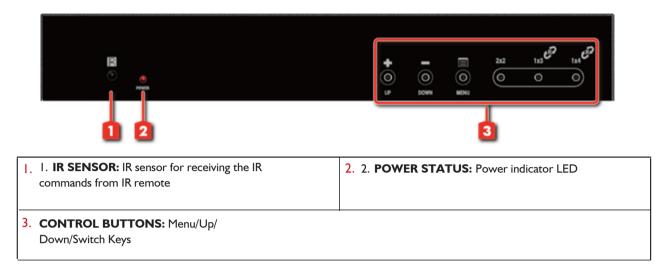




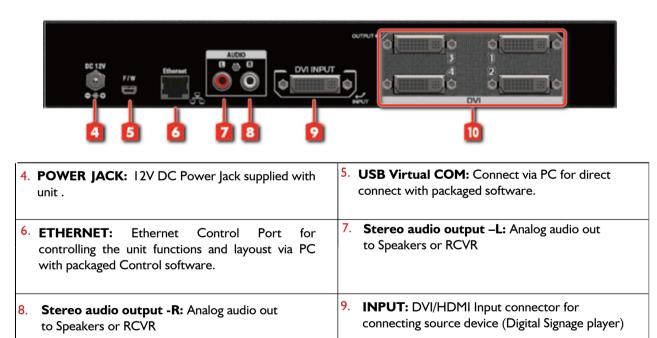




# 3.2.1 FRONT PANEL (DVI-PROWALL-4X)



# 3.2.2 REAR PANEL (DVI-PROWALL-4X)



10. OUTPUT 1-4: DVI/HDMI Output connector for connecting 4 display/screens or projector.

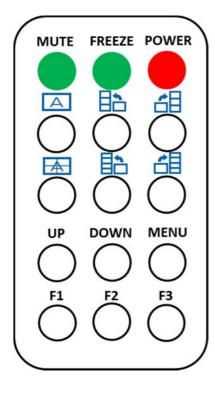


# 4. SUPPORTED RESOLUTION

Input	Output
640x480	640x480@60H
720×480	720x480@60Hz
720x576	720x576@60Hz
800×600	800x600@60Hz
1024x768	1024x768@60Hz
I I 52x864	l 280x720@60Hz
I 280×720	l 280x768@60Hz
I 280×768	l 280x960@60Hz
I 280×800	1280x1024@60Hz
I 280×960	l 366x768@60Hz
1280×1024	1440x900@60Hz
I 360×768	1680x1050@60Hz
I 366x768	1920x1080@60Hz
1400×1050	1920x1200@60Hz
1440x240	1600x1200@60Hz
I 440x288(576i)	
1440×900	
1600×900	
1600×1200	
1680×1050	
l 920x540( l 080i)	
1920×1080	
1920×1200	



## Method A: IR Remote Control



Button	Function
POWER	Power On/Off the video wall processor
FREEZE	Pause the output's video and audio
MUTE	Mute the output audio
A	Fast switch to Full Screen 1x1
	Fast switch to VW3x1 (+90°)
<b>6</b> 8	Fast switch to VW3x1 (-90°)
	Fast switch to VW2x2
	Fast switch to VW4x1 (+90°)
<b>1</b>	Fast switch to VW4x1 (-90°)
UP	Up key
DOWN	Down key
MENU	Call OSD menu and confirm
FI	Reserved
F2	Reserved
F3	Reserved



#### **Method B: Software Operation**

## **System Requirement and Precautions**

- 1. When power cycling or powering off the unit, please wait at least 5 to 10 seconds delay to allow power capacitors to discharge. Then power on device
- 2. The DVI-PROWALL-4X packaged software control program is compatible with Microsoft Windows 98, 2000, XP, 7 through the interface of USB virtual com control.
- 3. Before double clicking on the icon of the software, make sure you have secured the connection between your computer USB port and the DVI-PROWALL-4X.

### Start the software control program

STEP I: Click on the executable file, the following dialog box show on screen;

STEP 2: Please ensure under Microsoft Windows 7, run as administrator;

STEP 3: Please ensure your method of control either -

**USB Mode:** Use USB to connect the port on device and computer. Select correct virtual Com port and click the OK button.

**Ethernet Mode:** Enter the device IP address and click the OK button.

Software Control		B
USB		
Com Port:	•	
Ethernet     Ethernet	_	
IP: 192	. 168 . 1 . 223 🛛 📿	

After the software control setting is accomplished, it will enter directly to control interface.



🖳 MainForm	5 6 7 <del>- ×</del>
	🚔 IP CONFIGURE 🚺 INFO 🎾 REFRESH
2 3 4	
EDID 🔅	
▼ Step1	the second se
▼ Step2	and the second
Step2_1	
Step2_2	
Step2_3	
▼ Step3	
	and the second second
	Start End
	Horizontal 0 to 1920
	Vertical 0 to 1080
L <u></u>	

# **Control Interface**

1. Connection Status:

Show the current information and status. USB control Mode selected icon will show



Ethernet control Mode selected icon will show



2. Quick Selection:

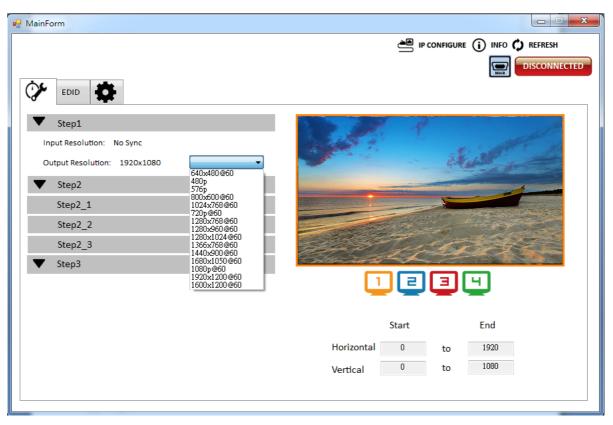
The user can select the screen resolution, screen management and split screen. Step I select the Main window picture and proceed to set up the corresponding function or layout. The different colored frames represents the different displays/screen outputs. The H/V information shows the position of output on display/screens.



(I) Step I

Set the output resolution. You can choose the design display icon to select the output port and setup resolution. When setting the different resolution, the H/V numbers will change to match the selection.





#### (2) Step 2

Three modes available - set the output TV resolution, position, size and split screen. The details of different mode are described in step 2-1, 2-2 and 2-3.

\* Notice Changing another mode, you need to revert to step 2 to make the desired selection

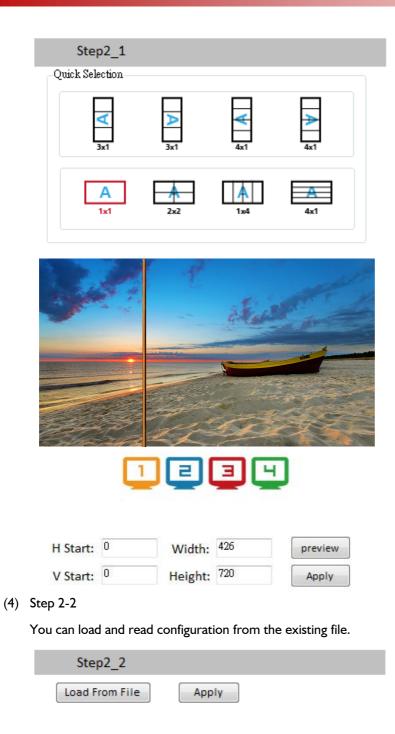
- **Quick Selection**
- **From file**
- **Custom defin**e
- (3) Step 2-1

**Quick Selection mode** in step 2, this window will automatically pop-up. In this mode, you can select default screen split and rotate screen (rotate screen only supports of 720p or 1080p resolution).

- □ 3x1: This mode will divide the screen into 3 parts and rotate the image. The last section shows the full screen.
- $\Box$  4x1: The mode will divide the screen into 4 parts and rotate the image.

When the 3xI or 4xI mode is selected, the picture in the right part of control interface will show a white circle. You can slide this white circle to resize the output screen. In addition, directly input the number to adjust the coordinate.





(5) Step 2-3

**Custom define mode** the user can define how to divide the image in both directions, also the part you want to show on output display/screens. To acurately create sections select the Grid button to show grid lines. When completed and the layout is created, click Apply button.

Also another option is the 🞍 SAVE AS button to save the configuration for future use.

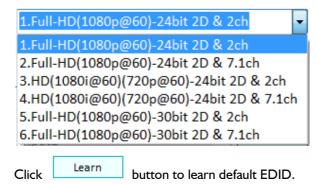


Step2_3		
Horizontal cut: Vertical cut: Number:	1     ▼     Grid     None       1     ▼     Apply     ↓ SAVE AS	
Coordinate Horizontal:	start	end
Vertical:	0	720

- (6) Step 3
  - **Zoom In/Out:** You can increase/decrease a pixel from the edge of image by clicking **button** (the edge of image has four directions). After adjusting the image, the final image will be auto-scaled to fill the screen.
  - □ Horizontal shift/ Vertical shift: You can arbitrarily move the image on each screen in horizontal direction or vertical direction. Move one pixel at a time.



- 3. EDID (Extended Display Identification Data)
  - (I) Learn EDID From Default
    - □ Select Default EDID (1-6 default EDID).



(2) Learn EDID From Display



	Select the Output.				
	Click Learn button to learn display EDID.				
(3) Le	arn EDID From File				
	Click Load button to select the EDID file and write it into input.				
(4) Vie	ew EDID content				
	Select the EDID input source (Input, Output or From File).				
	Click View button to read the EDID description and analysis.				
	Click Save as button to save the EDID as a file in the connected computer.				
ſ	P MainForm				
	EDID ECONFIGURE () INFO () REFRESH DISCONNECTED EDID From Default 1.Full-HD(1080p@60)-24bit 2D & 2ch To input1 From Display 1.Output1 To input1 Earn From Display 1.Output1 Earn From Final Earn From Final Earn				
	From File To Input1   Load				

- 4. Advanced Setting
  - (1) Firmware Update
    - Please ensure USB is connected and the connecting status is shown



- Click Load File button to select the firmware file with the latest version update.
   Click Break button.
- **Recycle** power.
- Click Start button and the firmware will start to update.



(2) Machine Name

You can set up your machine name in here. Please take a closer look at the length of string (Max Length:

button to write this graph into device.

(3) Change Graph

You can change the default graph on this machine.

- Click Load Graph button to select the graph.
- □ After loading the graph step, please click
- (4) Factory Reset
  - Click Click Control Click Control Control Click Control Control Control Click Control Control
  - This default reset process will take about 10 seconds.

Confirm	×
?	Are you sure you want to perform Factory-Reset command? (The process will take about 10 seconds!)
	確定 取消

After pop-up a dialog indicates complete, please restart this machine.

When power cycling or powering off the unit, please wait at least 5 to 10 seconds delay to allow power capacitors to discharge. Then power on device





1ainForm	
	🚔 IP CONFIGURE 🚺 INFO 🗘 REFRESH
EDID 🔅	
Firmware Update	
Load File	Break Start Abort
File Size : 0	
Status :	
Machine Name	
Host Name:	
New Host Name: (Max lenght: 8)	
(	
Change Graph	
Load Graph	
	$\checkmark$

#### 5. IP Configure

Ethernet control within an esiting network (LAN) easily access the control software program. Click the **IP CONFIGURE** button to setup network IP settings. Next read the Ethernet setting from device or manually set to device. After the IP configuration setup is completed, please restart the machine.

NetWork				
NetWork				
IP		•		
Mask		•	•	
Gateway		•		
DNS1		•		
DNS2				
Read from device	Write to de	evice		



6. Info

Read the software and firmware version.

Version	×
Software version: 1x4C_SW_01 Firmware version: 1X4_FW_00_0	01
	ŧ

#### 7. Refresh

This function not only can refresh the information settings but also can reconnect the device. Click the **REFRESH** button to update the control method. After you click this button, pop-up dialog box appears "ReConnectForm", please select the method of connection you prefer.

ReConnectForm	ß
USB	
Com Port:	
© Ethernet IP: 192 . 168 . 1 . 223	



#### 6. EDID LEARNING

The EDID learning function is only necessary whenever the user/installer encounter problems with video/ audio from the DVI/HDMI output port. HDMI sources and displays may have various levels of capability in playing audio and displaying video. The source will output the most common standard audio format and video resolutions to the connected HDMI displays. Example a 720p stereo HDMI signal output is the best choice when having audio or video problems. The user can force the DVI-PROWALL-4X to learn the EDID from the standard or common HDMI display within the set of 4 to ensure all displays are compatible to display the HDMI signals normally.

EDID Learning as below:

Software Control: Please refer to the Operation Approach Method B: Software Control

There are six embedded default EDIDs formats in this device, please see below,

- I. Full-HD(1080p@60)-24bit 2D & 2ch
- 2. Full-HD(1080p@60)-24bit 2D & 7.1ch
- 3. HD(1080i@60)(720p@60)-24bit 2D & 2ch
- 4. HD(1080i@60)(720p@60)-24bit 2D & 7.1ch
- 5. Full-HD(1080p@60)-30bit 2D & 2ch
- 6. Full-HD(1080p@60)-30bit 2D & 7.1ch



## **SECTION 7: SPECIFICATIONS**

Model Name		DVI-PROWALL-4X			
Technical					
Role of usage		Video Wall Processor			
HDCP compliance		Yes			
Video bandwidth		DVI [Single-link 4.95Gbps] HDMI[2.25G to 6.75Gbps]			
Video support		Up to 1920x1200@60 / 1600x1200@60			
Video Format Support		HDMI/DVI			
Video loop-out		Νο			
Audio support		Yes only when using HDMI source device			
ESD protection		Human body model — $\pm 19$ kV [air-gap discharge] & $\pm 12$ kV [contact discharge]			
PCB stack-up		8-layer board [impedance control — differential 100 $\Omega$ ; single 50 $\Omega$ ]			
Input		Ix DVI-D + Ix USB + IxRJ45			
Output		4x DVI-D + 1x L/R RCA Stereo			
Control		IR remote control / Ethernet / USB (virtual com) / Front Panel			
Input TMDS signal		I.2 Volts [peak-to-peak]			
DVI connector		DVI-D [29-pin female, digital only]			
USB connector		Туре А			
RJ-45 connector		WE/SS 8P8C			
Enclosure		Metal case			
	Model	288mm x 180 x 42mm [11.3" x 7" x 1.7"]			
Dimensions (L x W x H)	Package	494 x 225 x 70mm [1'6" x 8.9" x 2.8"]			
、 、 、	Carton	510 x 380 x 252mm [1'7" x 1'2" x 10"]			
Weight	Model	1450g [ 3.2lbs]			
weight	Package	2.6kg [ 5.733lbs]			
Fixedness		IU rack-mount with ears and Wall hanging holes			
Power supply		12V 5A DC			
Power Consumption		7.6W			
Operation temperature		0~40°C [32~104°F]			
Storage temperature		-20~60°C [-4~140°F]			
Relative humidity		20~90% RH [no condensation]			

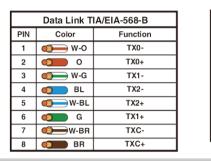


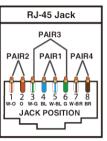


**NOTE:** Incorrect placement of IR Blaster and IR Extender into the extender may result in the failure of the IR extenders.

Please check carefully before plugging in the IR extender to the respective IR sockets. It is clearly marked and IR 1: IR EXTENDER /IR 2: IR BLASTER

#### WARRANTY WILL NOT COVER THE DAMAGE





#### NOTE

The QUALITY and TRANSMISSION of the video signals depends on the characteristics and quality of the UTP cables. Higher resolutions and longer transmission distances require low skew cables (<25ns/upto 300m) for best performance.



Unshielded CAT6 with metal RJ-45 connectors is recommended.



## NOTICE

- 1. All HDMI over UTP transmission distances are measured using Belden CAT6A (625MHz), 4-Pair, U/ UTP-Unshielded, Riser-CMR, Premise Horizontal Cable, 23 AWG Solid Bare Copper Conductors, Polyolefin Insulation, Patented Double-H spline, Ripcord, PVC Jacket using Quantum 980 signal HDMI Video Generator Module Video Pattern Testing.
- 2. The transmission length is largely affected by the type of category cables, also the type of HDMI sources, and the type of HDMI display. The testing result shows solid UTP cables (usually in the form of 300m or 1000ft bulk cable) can transmit a lot longer signals than stranded UTP cables (usually in the form of patch cords). Shielded STP connectors are better suit than unshielded UTP connectors. A solid UTP CAT5e cable shows longer transmission length than stranded STP CAT6 cable. For long extension users, solid cables are your only choice.
- 3. EIA/TIA-568-B termination (T568B) for category cables is recommended for better performance.
- 4. To reduce the interference among the unshielded twisted pairs of wires in category cable, you can use shielded STP cables with shielded connector to improve EMI problems, which occurs in long transmission.
- 5. Because the quality of the category cables has the major effects in how long transmission distance will be made and how good is the received display, the actual transmission length is subject to your category cables. For resolution greater than 1080i or 1280x1024, a solid CAT6 cable is the only viable choice.

#### PERFORMANCE GUIDE FOR HDMI OVER CATEGORY CABLE TRANSMISSION

PERFORMANCE RATING		TYPE OF CATEGORY CABLE		
WIRING	SHIELDING	CAT5e	CAT6	<b>CAT6A</b> /7
SOLID	UNSHIELDED (UTP)	****	****	****
	SHIELDED (STP)	***	****	****
STRANDED	UNSHIELDED (UTP)	*	**	**
	SHIELDED (STP)	**	*	**
TERMINATION		PLEASE USE <b>EIA/TIA-568-B</b> TERMINATION ( <b>T568B</b> ) AT ANY TIME		







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# TECHNICAL SUPPORT



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