Avenview

USER GUIDE

# Advanced Quad Screen Video Processor


Model #: DVI-SPLITPRO-4X

HD ready 1080p WUXGA 1920x1200 dvi digital visual interface HDCP

# Table of Contents

# Section 1: Getting Started

## 1.1 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.

## 1.2 Safety Instructions

The Avenview DVI-SPLITPRO-4X Quad Screen Video Processor has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipment's, the DVI-SPLITPRO-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.
- 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.
- 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.

## 1.3 Regulatory Notices Federal Communications Commission (FCC)

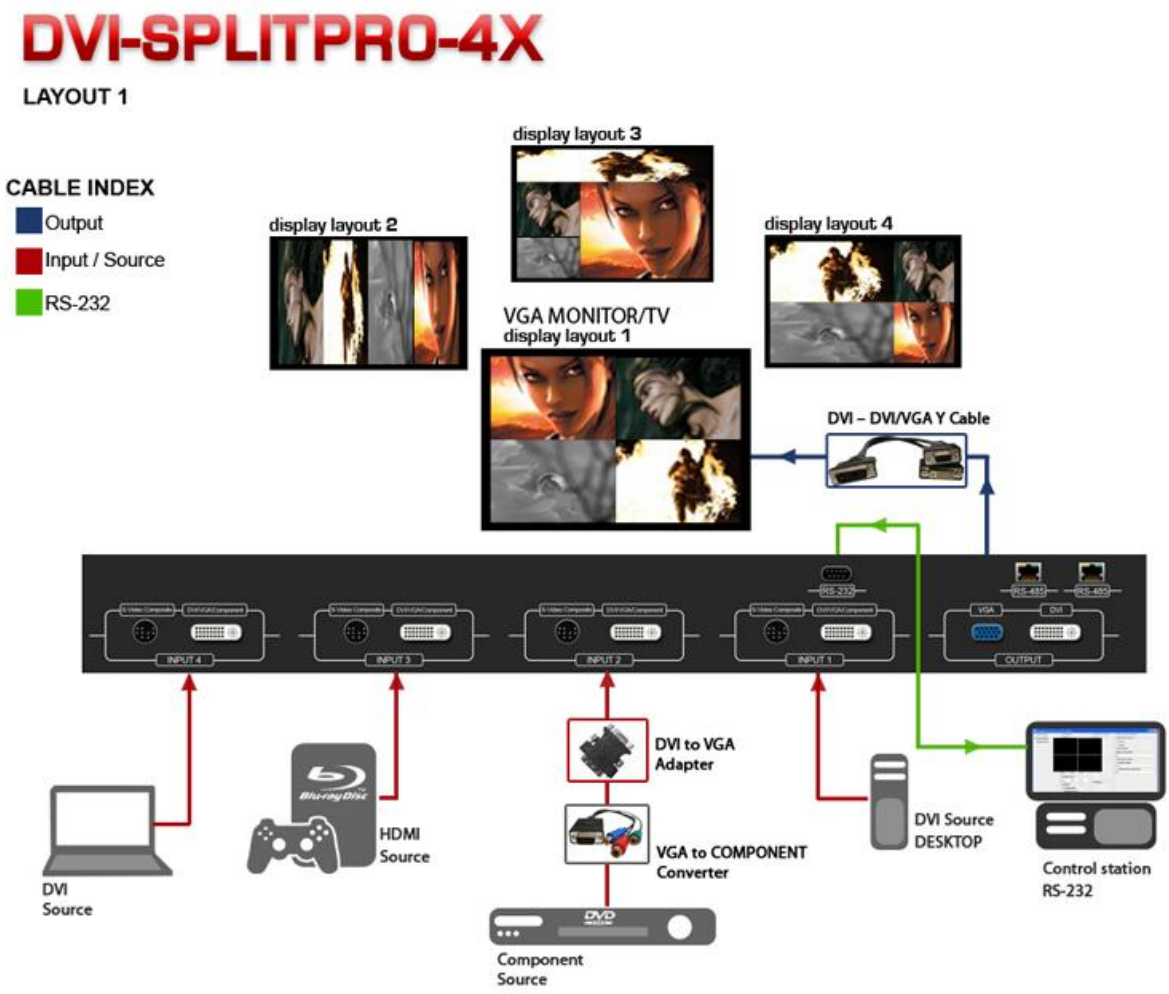
This equipment has been tested and found to comply with Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

## 1.4 Introduction

The **DVI-SPLITPRO-4X Quad Screen Video Processor with IR Remote Control** is an advanced video processor for multimedia presentations. It is an ideal solution for applications where up to four video signals must be displayed on a single display. It supports up to 16 video inputs, of which four can be outputted simultaneously with the desired display layout through software control. The advanced video processor allows you to manipulate output images, wherever positions and whatever sizes you want for viewing two computers or two video signals or a combination.

The embedded scalar converts signals from input sources to match the native resolution of monitors, flat panel displays, projectors as well as user-selectable output settings up to WUXGA (1920x1200). Dual outputs are provided in both analog (VGA) and digital (DVI) format, one is connected to remote display and the other is connected to on-site display for real time monitoring.

- Support six most popular video formats: four VGA, four DVI/HDMI, four component, four S-Video and four composite inputs
- Input resolution support from 640x480 to 1920x1200, interlaced or progressive.
- DVI 1.0 & HDMI 1.2
- Support HDCP 1.1
- Dual outputs (DVI / VGA), 640x480 to 1920x1200.
- Video background available.
- Adjustable size & position through software.
- Dynamic transition for video sizing and positioning
- Titles, borders and colored backgrounds.
- Resize, position, zoom & pan and blend output video.
- Image parameters and layouts are automatically saved in flash memory and can be recalled for later use.
- Several Image parameters and layouts can be saved in computers and can be loaded for later use.
- Video parameters adjustable (brightness, contrast, color temperature, etc.).
- User-selectable output settings, up to 1920x1200.
- Use as a Video Splitter, a Video Converter and a Video Switcher.
- Firmware upgradable for support of new features and technology enhancements.
- Control through RS-232/RS-485 over Cat-5 and IR Remote Control
- Can be cascaded to obtain more images using RS-485 control path
- Control protocol available for customer proprietary design
- 1RU Size




## 1.5 Package Contents

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

- DVI-SPLITPRO-4X x 1
- DVI – DVI & VGA breakout Cable x 4
- VGA to Component breakout Cable x 4
- DVI to VGA Adapter x 4
- S-Video & Composite breakout Cable x 4
- Rack Mounting Kit x 1
- RS232 to USB Adapter x 1
- IR Remote Control x 1
- Software CD x 1
- AC Power Supply x 1

  User's Manual x 1

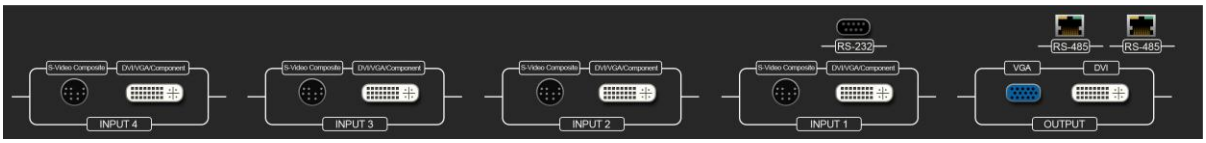
## 1.6 Before Installation

- 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. If inappropriate power supply is used then it may cause a fire.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.

## 1.7 Panel Description

Avenview Advanced Quad Screen Video Processor (DVI-SPLITPRO-4X) has 16 inputs and accepts both graphics and video signals, which come from computers (DVI or VGA), composite, and component video sources respectively. You can pick up four of the ten inputs and then display four of them simultaneously on the same screen.

### 1.7.1 DVI-SPLITPRO-4X Rear Panel




*To reset the DVI-SPLITPRO-4X to factory default settings: Turn on the DVI-SPLITPRO-4X then switch both DIP Switches simultaneously up and down to reset the unit to factory default settings*

### 1.7.2 DVI-SPLITPRO-4X I/O Connectors

Avenview DVI-SPLITPRO-4X has 16 inputs and accepts both graphics and video signals, which come from computers (DVI or VGA), composite, and component video sources respectively. You can pick up four of the ten inputs and then display four of them simultaneously on the same screen.

| Connectors | | Video Source |
|---|---|---|
| **Input** | **DVI, Component, VGA, Composite, S-Video** | DVI |
| | | VGA<br>(DVI to VGA Adapter) |
| | | Component (YPbPr)<br>(DVI to VGA Adapter and VGA to Component Adapter) |
| | | Composite |
| | | S-Video |
| **Output** | | **Display** |
| | **DVI-I OUT** | 1 x DVI Display |
| | | VGA Display<br>(DVI to VGA Adapter) |
| | | 1 x DVI Display & 1 x VGA Display<br>(through DVI to DVI/VGA Y Cable) |

## 1.8 Installation

To setup Avenview DVI-SPLITPRO-4X follow these steps for connecting to a device:

1. Mount or fix the DVI-SPLITPRO-4X safely
2. Switch off DVI-SPLITPRO-4X and all source devices and displays that will be connected
3. Connect a monitor, projector, other displays that come with DVI / VGA inputs by using 1 male – male DVI cable to DVI-SPLITPRO-4X DVI output. (you can connect 2 displays equipped with DVI and VGA respectively by DVI – DVI/VGA Y cable
4. Plug-in DVI to DVI/VGA breakout cable to DVI-Component-VGA and plug in VGA to Component adapter to VGA connector of the breakout cable
5. Connect a device equipped with DVI output (such as PC) to the DVI connector of the breakout cable
6. Connect a device equipped with the component video output to 3-RCA jack of the Component video adapter
7. Connect a device with VGA output (such as laptop) to VGA connector of DVI-SPLITPRO-4X
8. Connected a device with Composite or S-Video video output to composite input of DVI-SPLITPRO-4X through S-Video / Composite Y cable.
9. Connect your computer to DVI-SPLITPRO-4X via RS232 cable and then install the software
10. Turn ON DVI-SPLITPRO-4X
11. Run the Control Software and establish the connection between PC and DVI-SPLITPRO-4X
12. Turn ON all connected devices and then control the display output thru RS232 and included software

## 1.9 Software Installation and Setup

### 1.9.1 System Requirements

1. The DVI-SPLITPRO-4X provides a software control program which runs under Microsoft Windows 98, 2000, XP, Vista, 7 through the interface of RS-232 serial control.
2. Before you click on the icon of the software, make sure you have secured the connection between your computer COM port and the DVI-SPLITPRO-4X.
3. Install driver for RS232 to USB adapter
4. Once DVI-SPLITPRO-4X is turned on, it display green LED light

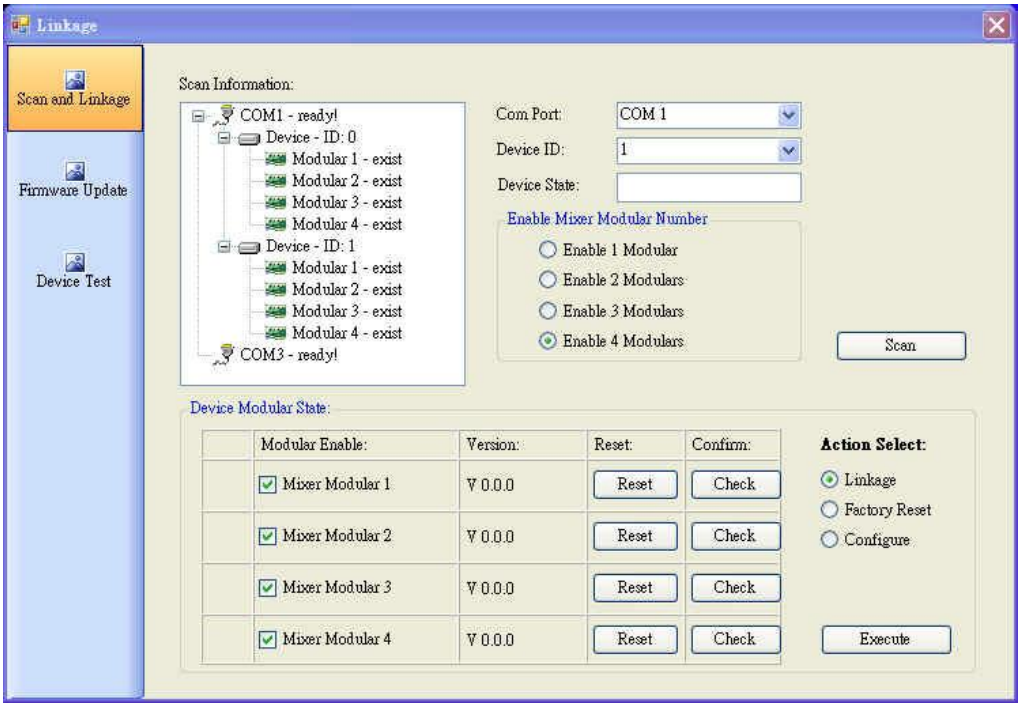
### 1.9.2 Software Connection

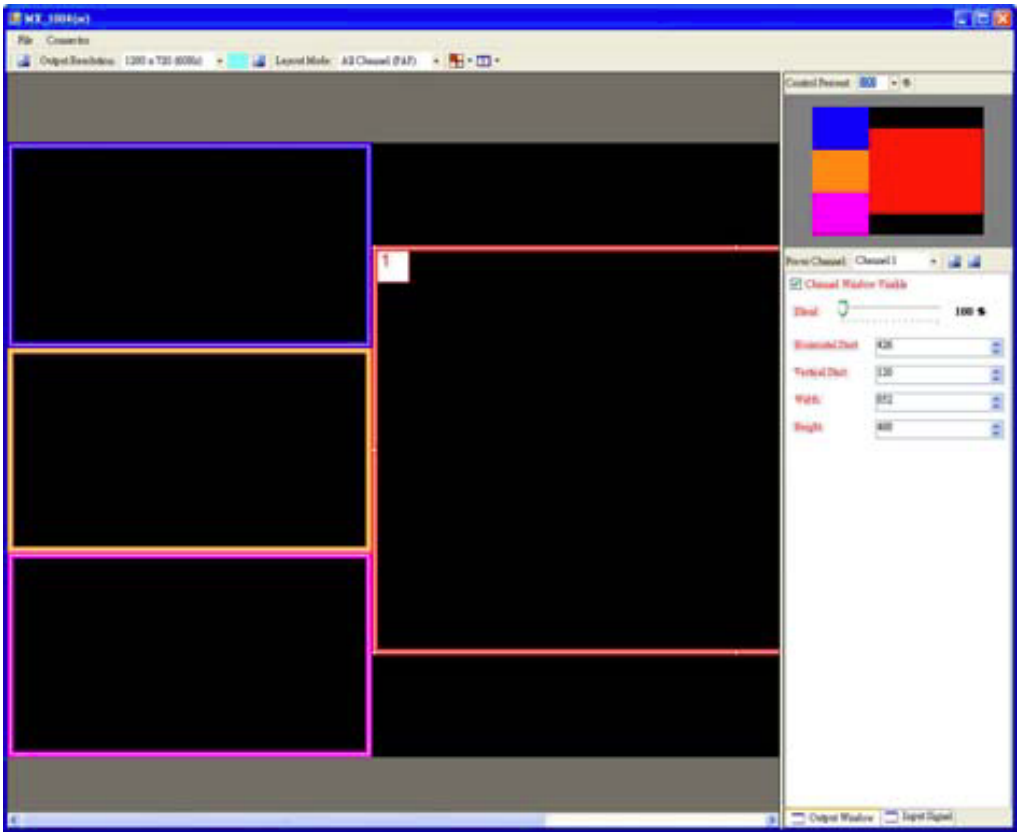
1. Power up the MX-1004P and you can see VFD on the front panel blink. Make sure the serial port mode is right for your setting. RS-232 mode: , RS-485 mode or .
2. The first step after running the software is to automatically detect if the device responses correctly through RS-232 port. The process takes 5-15 seconds. If the device is not connected, a warning window will show up. Click "SCAN" button to get detailed information on which COM PORT are available. Select the correct COM port from the Com Port selection list. Then, click on the linkage button to open the COM port. If the specified COM port is not available, the "Device is not ready. Do you want to try again?" error message will pop up. Please check the availability of COM Port. After the COM port is accurately established, please click on status update button.

*If" device is not ready" error pops up then:*

- *Ensure that DVI-SPLITPRO-4X is powered on.*
- *Please ensure that serial cable (RS232) is connected properly and available serial port is free to be used by DVI-SPLITPRO-4X*

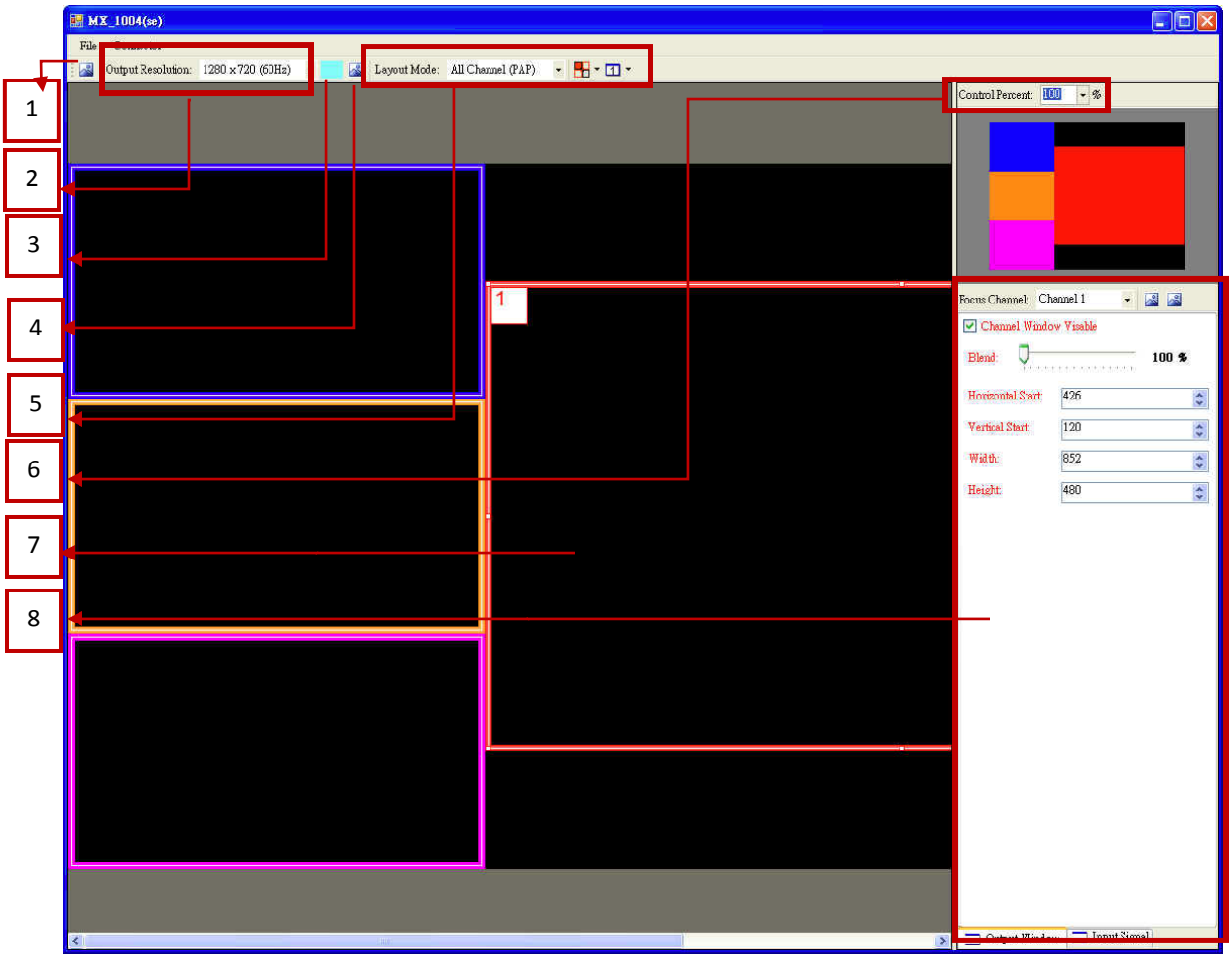

3. If the serial connection is established, you will see a Windows as shown below:


Linkage
Scan and Linkage
Firmware Update
Device Test
Scan Information:
COM1 - ready!
Device - ID: 0
Modular 1 - exist
Modular 2 - exist
Modular 3 - exist
Modular 4 - exist
Device - ID: 1
Modular 1 - exist
Modular 2 - exist
Modular 3 - exist
Modular 4 - exist
COM3 - ready!
Com Port:
COM 1
Device ID:
1
Device State:
Enable Mixer Modular Number
Enable 1 Modular
Enable 2 Modulars
Enable 3 Modulars
Enable 4 Modulars
Scan
Device Modular State:
Modular Enable:
Version:
Reset:
Confirm:
Mixer Modular 1
V 0.0.0
Reset
Check
Mixer Modular 2
V 0.0.0
Reset
Check
Mixer Modular 3
V 0.0.0
Reset
Check
Mixer Modular 4
V 0.0.0
Reset
Check
Action Select:
Linkage
Factory Reset
Configure
Execute



### 1.9.3 Software Operation

The software has following menu options available:




1 **Fast Linkage**

This button will update software GUI for device state

2 **Output Resolution**

| Supported Mode | Resolution | Supported Mode | Resolution |
|---|---|---|---|
| HDTV 720p | 1280x720 @ 60Hz | VESA | 1280x768 @ 60Hz |
| HDTV 1080p | 1920x1080 @ 60Hz | VESA | 1366x768 @ 60Hz |
| VESA | 800x600 @ 60Hz | VESA | 1400x1050 @ 60Hz |
| VESA | 1024x768 @ 60Hz | VESA | 1600x1200 @ 60Hz |
| VESA | 1280x1024 @ 60Hz | VESA | 1920x1200 @ 60Hz |

3

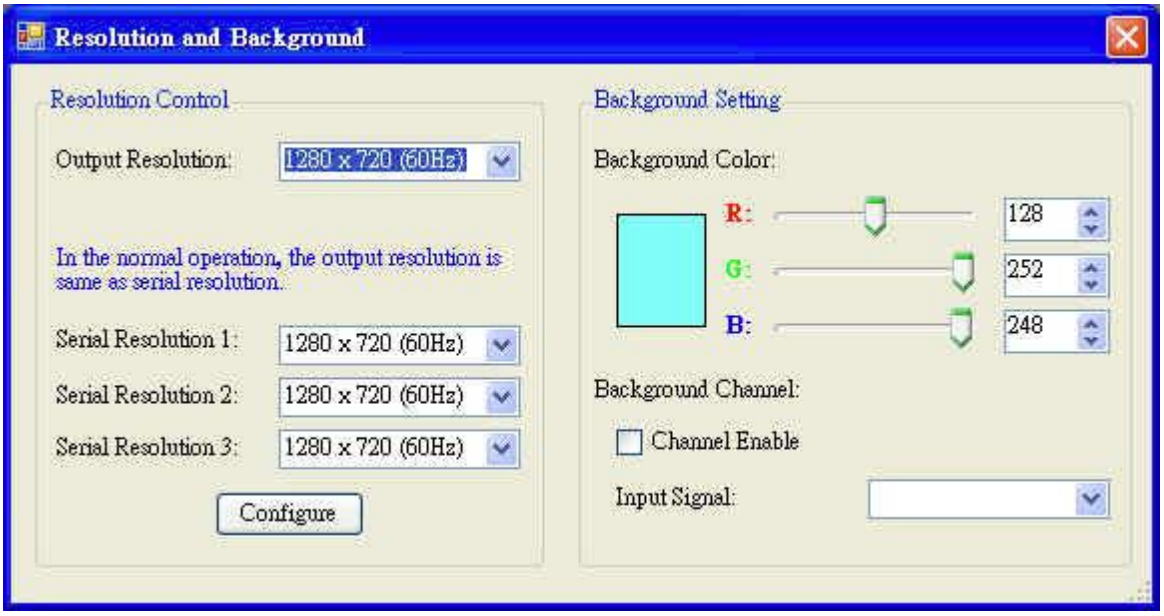
### Background Color

Click on this button will show the color dialog for background color adjustment.

4

### Background Setting

DVI-SPLITPRO-4X offers the video background to make this advanced unit actually working like 5 channel video mixer! The default background video must work as full screen! Users can choose between color and video background through the following control window. Click on this button will show the dialog for output resolution, background color and background channel setting.




5

### Display / Layout Mode

Set signal channel full screen or all channel Notice that the input sources will not be changed. Only positions and sizes will be affected.

6

### Layout Control Size

Set layout control size by percent.

7

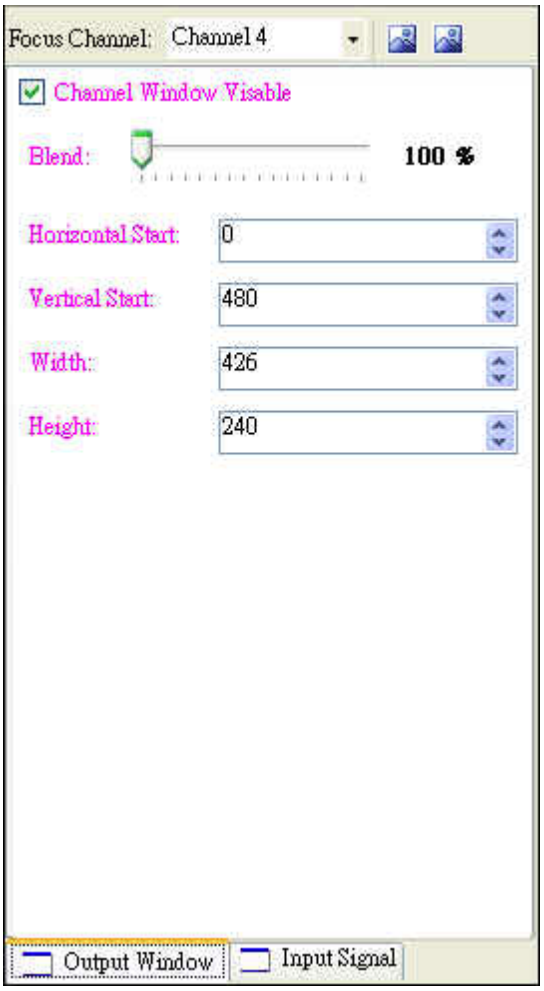
### Layout Control

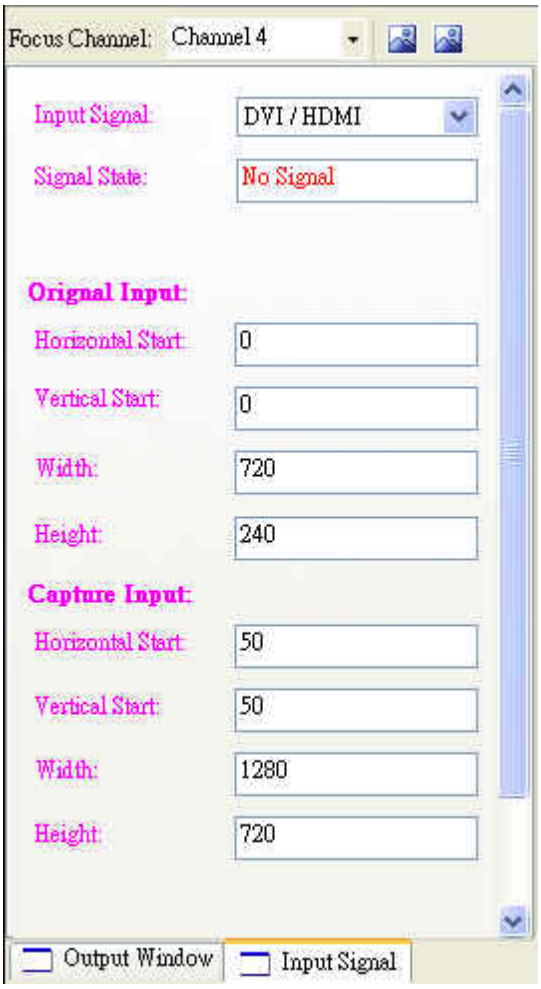
Set Channel size and position.

8

## Background Color

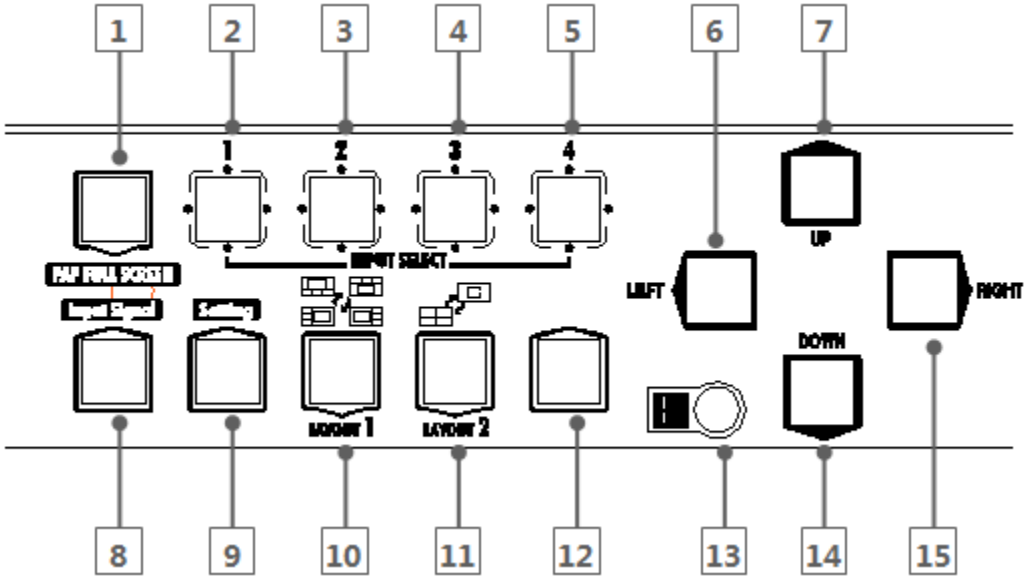
Output Window Panel: Channel visible, blend, size, position
Input Signal Panel: Input signal type selection, signal stable, input format.



# Section 2: Front Panel Controls

## 2.1 Front Panel Push Buttons Description



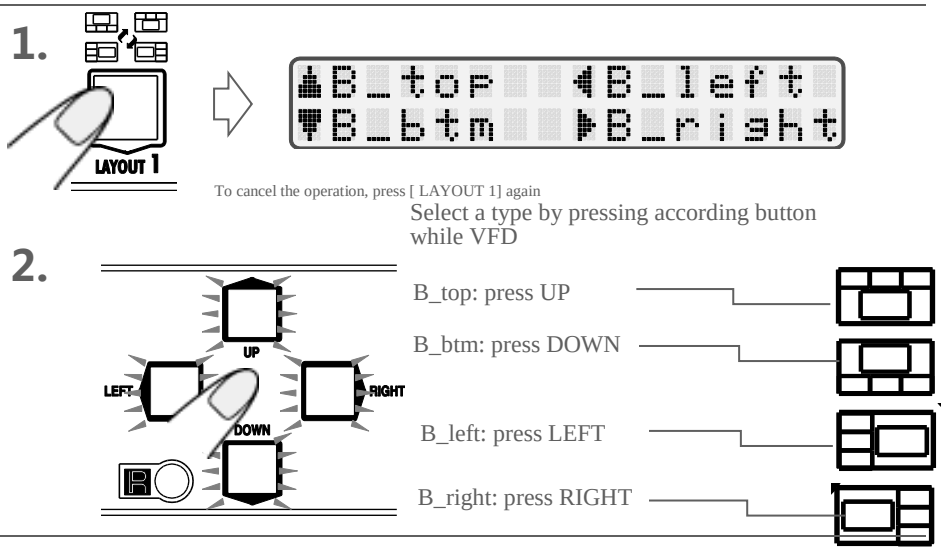

| | | | |
|---|---|---|---|
| 1 | PAP Full Screen | 11 | Function key: Layout 2 |
| 2 3 4 5 | Input Select | 12 | N/A |
| 8 | Function key: Input Signal | 13 | Infrared Sensor |
| 9 | Function key: Setting | 6 7 14 15 | Navigation |
| 10 | Function key: Layout 1 | | |

## 2.2 Front Panel Push Buttons Functions

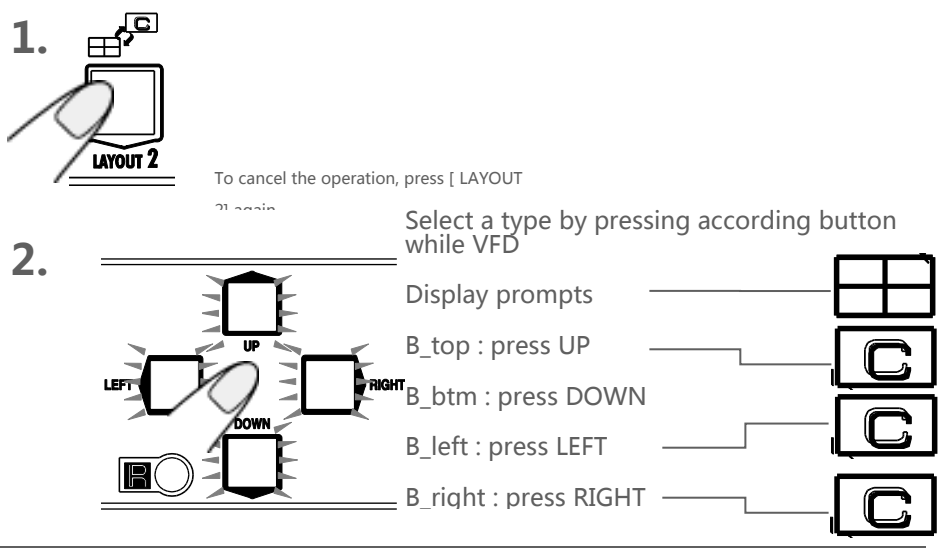
### 2.2.1 Selecting PIP Window Arrangement

**Main Window with 3 triple sub-windows aside**

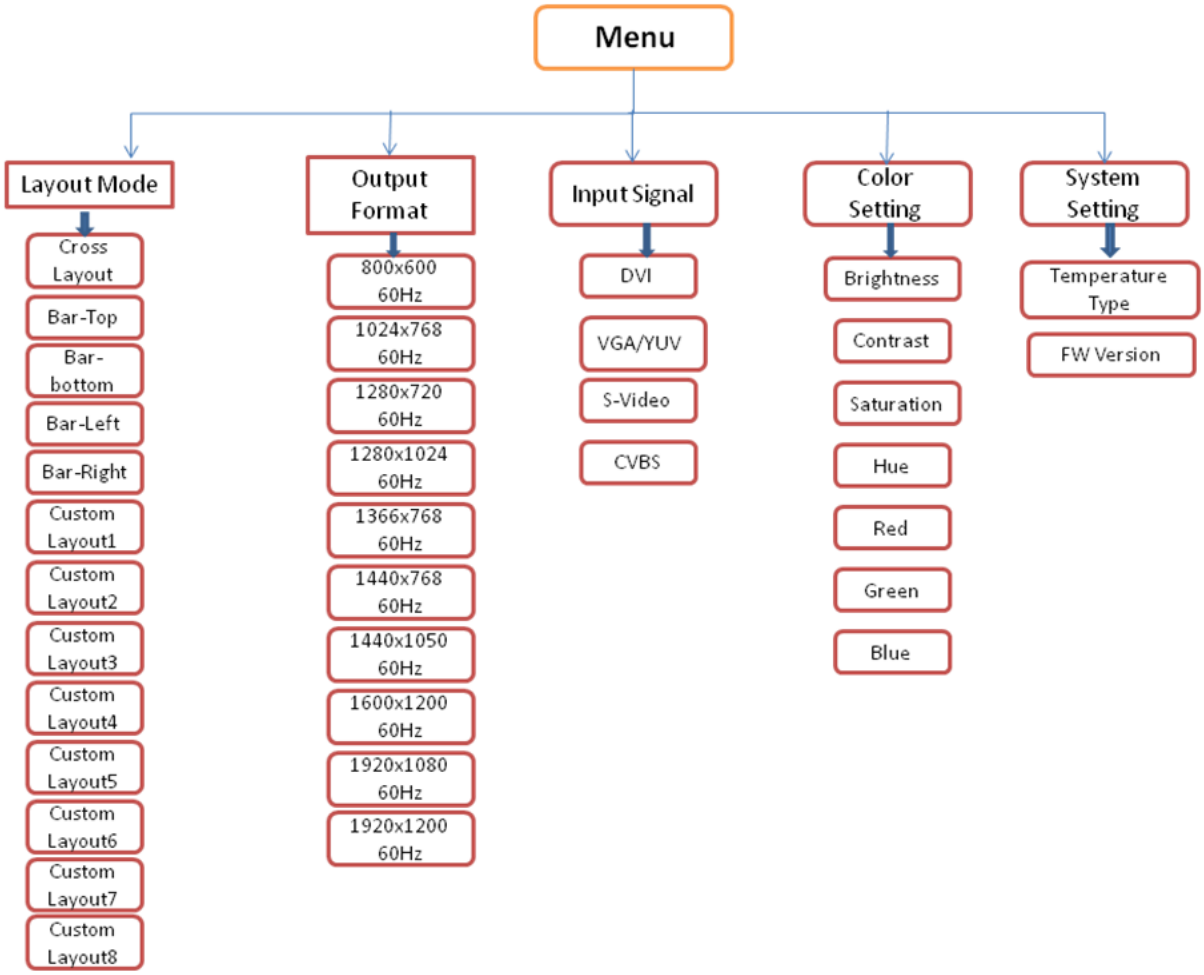
You may choose one of the following layouts from 4 presets:




**Quad Windows in crisscross + 3 user-defined custom Layout**

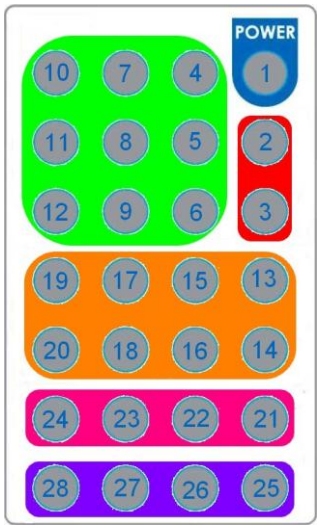


## 2.3 On Screen Display Menu



## 2.4 IR Remote Control

Avenview DVI-SPLITPRO-4X, Advanced Quad Screen Processor ships with a compact IR Remote Control that allows for direct access to most commands used to control the video processor.

| IR Remote Button Define | | |
|---|---|---|
| **1. Power Button** | Power ON/OFF the device |  |
| **2. Cross-Layout** | Set PAP layout to default layout (cross type ) | |
| **3. Side-Bar Layout** | Set PAP layout to default layout (Side-Bar type ) | |
| **4. Input CH2** | Set channel 2 to be focus channel | |
| **5. Right Button** | Menu button | |
| **6. Input CH4** | Set channel 4 to be focus channel | |
| **7. Up Button** | Menu button | |
| **8. PAP Full Screen** | Move to the left titles | |
| **9. Down Button** | Menu button | |
| **10. Input CH1** | Set channel 1 to be focus channel | |
| **11. Left Button** | Menu button | |
| **12. Input CH3** | Set channel 3 to be focus channel | |
| **13. Custom Layout4** | Set PAP layout to custom position and size | |
| **14. Custom Layout8** | Set PAP layout to custom position and size | |
| **15. Custom Layout3** | Set PAP layout to custom position and size | |
| **16. Custom Layout7** | Set PAP layout to custom position and size | |
| **17. Custom Layout2** | Set PAP layout to custom position and size | |
| **18. Custom Layout6** | Set PAP layout to custom position and size | |
| **19. Custom Layout1** | Set PAP layout to custom position and size | |
| **20. Custom Layout5** | Set PAP layout to custom position and size | |
| **21. CH4 Source** | Change channel 4 input source | |
| **22. CH3 Source** | Change channel 3 input source | |
| **23. CH2 Source** | Change channel 2 input source | |
| **24. CH1 Source** | Change channel 1 input source | |
| **25. D Button** | Reserve | |
| **26. C Button** | Reserve | |
| **27. B Button** | Reserve | |
| **28. A Button** | Reserve | |

## Section 3: Specifications

| Model | DVI-SPLITPRO-4X |
|---|---|
| Description | Advanced Quad Screen Video Processor |
| Dual Output Support | Yes (DVI & VGA) |
| Background Video Input | Yes |
| HDCP Compliance | Yes |
| Video Bandwidth | DVI/HDMI Single Link - 4.95Gbps |
| | VGA - 165 MHz |
| | Component - 30 MHz |
| | S-Video – 13.5 MHz |
| | Composite – 13.5 MHz |
| Supported Resolutions | 480i / 480p / 720p / 1080i / 1080p (60) / 1920x1200@75 / 1600x1200@60 |
| Audio Support | No |
| Control | RS232 / RS485 |
| Embedded Video Mixer | Yes |
| Ability to Cascade | Yes |
| Input TMDS Signal | 1.2 Volts (peak – peak) |
| ESD Protection | Human body model - ± 15kV (air gap discharge) & ±8kV (contact discharge |
| Input | 4 x VGA (through included DVI to VGA Adapter) |
| | 4 x DVI |
| | 4 x Component (through included adapter) |
| | 4 x Composite (through included cable) |
| | 4 x S-Video (through included cable) |
| | 1 x RS232 |
| | 1 x RS485 |
| Output | 1 x DVI |
| DVI Connector Type | DVI-I (29-Pin female) |
| VGA Connector Type | HD-15 (15-pin D-sub female) |
| S-Video Connector | 9 Pin |
| RS232 Connector | DE-9 (9-pin D-sub female) |
| RCA Connector | 75Ω |
| RJ45 Connector | WE/SS 8P8C with 2 LED indicators |
| Dimensions | 11.8" x 15.3" x 1.7" (L x W x H) |
| Size | 1U Rack-mount with ears |
| Power Supply | AC 100-240V |
| Power Consumption | 35 Watts (max) |
| Operating Temperature | 0~40°C [32~104°F] |
| Storage Temperature | -20~60°C [-4~140°F] |
| Relative Humidity | 20~90% RH [no condensation] |

## 3.1 Supported Resolutions

### 3.1.1 DVI / Component / VGA

| Supported Mode | Resolution | Supported Mode | Resolution |
|---|---|---|---|
| NTSC/480i/525i | 720x240 @60Hz | VESA | 800x600 @75Hz |
| PAL/576i/625i | 720x288 @50Hz | VESA | 800x600 @85Hz |
| 480p/525p | 720x483 @60Hz | MAC | 832x624 @75Hz |
| 480p (16:9) | 960x483 @60Hz | VESA | 1024x768 @60Hz |
| 576p/625p | 720x756 @50Hz | MAC | 1024x768 @60Hz |
| (HDTV) 720p | 1280x720 @50Hz | VESA | 1024x768 @70Hz |
| (HDTV) 720p | 1280x720 @60Hz | IBM | 1024x768 @72Hz |
| (HDTV) 1080i | 1920x1080 @50Hz | VESA | 1024x768 @75Hz |
| (HDTV) 1080i | 1920x1080 @60Hz | MAC | 1024x768 @75Hz |
| (HDTV) 1080p | 1920x1080 @30Hz | VESA | 1024x768 @85Hz |
| VESA | 720x400 @85Hz | VESA | 1152x864 @75Hz |
| VESA | 640x350 @85Hz | MAC | 1152x870 @75Hz |
| VESA | 640x400 @85Hz | SUN | 1152x900 @66Hz |
| IBM | 720x400 @70Hz | SUN | 1152x900 @76Hz |
| IBM | 720x350 @70Hz | VESA | 1280x960 @60Hz |
| IBM | 640x350 @70Hz | VESA | 1280x960 @85Hz |
| IBM | 640x400 @70Hz | VESA | 1280x1024 @60Hz |
| VESA | 640x480 @60Hz | HP | 1280x1024 @60Hz |
| MAC | 640x480 @67Hz | IBM | 1280x1024 @67Hz |
| VESA | 640x480 @72Hz | HP | 1280x1024 @72Hz |
| VESA | 640x480 @75Hz | VESA | 1280x1024 @75Hz |
| VESA | 640x480 @85Hz | SUN | 1280x1024 @76Hz |
| VESA | 800x600 @56Hz | VESA | 1600x1200 @60Hz |
| VESA | 800x600 @60Hz | VESA | 1920x1200 @60Hz |
| VESA | 800x600 @72Hz | | |

### 3.1.2 DVI-OUT

| Supported Mode | Resolution | Supported Mode | Resolution |
|---|---|---|---|
| (HDTV) 720p | 1280x720 @50Hz | VESA | 1366x768 @60Hz |
| (HDTV) 720p | 1280x720 @60Hz | VESA | 1400x1050 @60Hz |
| (HDTV) 1080p | 1920x1080 @60Hz | VESA | 1400x1050 @50Hz |
| VESA | 640x480 @60Hz | VESA | 1152x864 @75Hz |
| VESA | 800x600 @60Hz | VESA | 1600x1200 @60Hz |
| VESA | 1024x768 @60Hz | VESA | 1920x1200 @50Hz |
| VESA | 1152x864 @75Hz | VESA | 1920x1200 @60Hz |
| VESA | 1280x1024 @60Hz | | |

## 3.2 General Troubleshooting

| Problem | Possible Solution |
|---|---|
| **No Power** | • Ensure that DVI-SPLITPRO-4X is plugged in<br>• If you are recovering from power outage, accidentally unplug the adapter or other power surge conditions, leave the device off for a while and then power it on again. |
| **No or Distorted Image** | • Make sure all cables are in good working condition and properly connected to the DVI-SPLITPRO-2B and displays.<br>• Configure the output video resolution so that it doesn't excess the native resolution of the display. ( in this case, the message of "out of range" is usually showed on your screen) |
| **Poor Quality** | • We suggest that don't use T-connectors to split your video source into to images displayed on two different screens. That will lower output video quality. Use a distribution amplifier instead of T-connectors.<br>• Make sure the video source is not compressed and maintains the highest native resolution. |
| **Wrong Color** | • Press "Color Balance" key for auto configuration.<br>Auto color configuration only works at VGA and Component inputs. |

## Notice

1. *If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI/HDMI EDID information.*
2. *All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz LAN cable and ASTRODESIGN Video Signal Generator VG-859C.3*
3. *The transmission length is largely affected by the type of LAN cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid LAN cables (usually in bulk cable 300m or 1000ft form) can transmit a lot longer signals than stranded LAN cables (usually in patch cord form). Shielded STP cables are better suit than unshielded UTP cables. A solid UTP CAT5e cable shows longer transmission length than stranded STP CAT6 cable. For long extension users, solid LAN cables are your only choice.*
4. *EIA/TIA-568-B termination (T568B) for LAN cables is recommended for better performance.*
5. *To reduce the interference among the unshielded twisted pairs of wires in LAN cable, you can use shielded LAN cables to improve EMI problems, which is worsen in long transmission.*
6. *Because the quality of the LAN 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 LAN cables. For resolution greater than 1080i or 1280x1024, a CAT6 cable 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.*

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