



Quad Screen Video Processor



Model #: DVI-SPLITPRO-4



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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-4 Quad Image 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-4 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-4 Quad Screen Video Processor** 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 10 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.

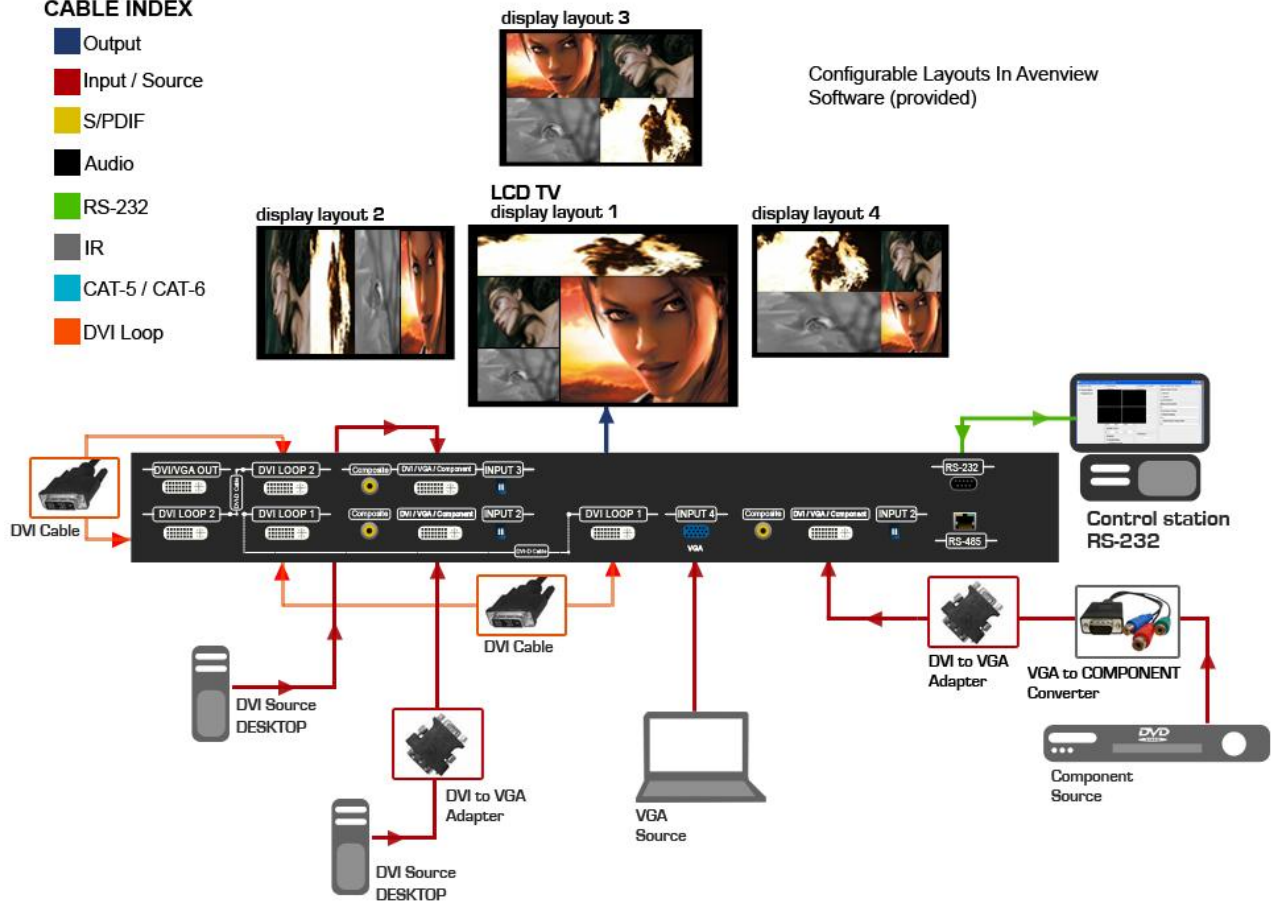
The embedded scalar converts signals from input sources to match the native resolution of monitors, flat panel displays, projectors as well as user-selectable output settings up to WUXGA (1920x1200). Dual outputs are provided in both analog (VGA) and digital (DVI) format, one is connected to remote display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

- Four VGA, three DVI, three component and three composite inputs, from 640x480 to 1920x1200, interlaced or progressive.
- Dual outputs (DVI / VGA), 640x480 to 1920x1200.
- Adjustable size& position through software.
- Titles, borders and colored backgrounds.
- Resize, position, flip, zoom& pan and blend output video.
- Can be cascaded to obtain more images.
- 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.
- Perfectly as a video screen splitter, a video converter and a video switcher.
- Firmware upgradable for support of new features and technology enhancements.
- Software control through RS-232/RS-485 over Cat-5.
- 1U size.

DVI-SPLITPRO-4

CABLE INDEX

- Output
- Input / Source
- S/PDIF
- Audio
- RS-232
- IR
- CAT-5 / CAT-6
- DVI Loop



1.5 Package Contents

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

- | | |
|-----------------------------------|-----|
| - DVI-SPLITPRO-4 | x 1 |
| - DVI – DVI & VGA breakout Cable | x 4 |
| - VGA to Component breakout Cable | x 3 |
| - DVI to VGA Adapter | x 3 |
| - DVI to DVI Cable | x 2 |
| - Rack Mounting Kit | x 1 |
| - RS232 to USB Adapter | x 1 |
| - Software CD | x 1 |
| - AC Power Supply | x 1 |
| - User's Manual | x 1 |

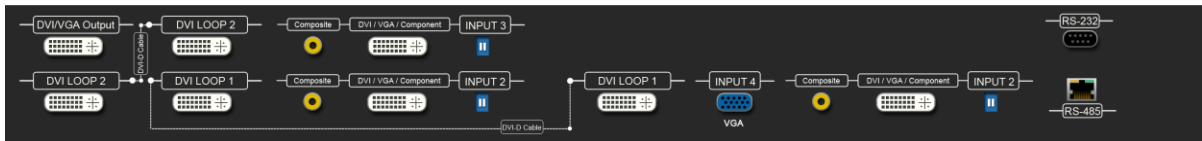
1.6 Before Installation

- 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

The Avenview DVI-SPLITPRO-4 has 4 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. Following figure shows the rear panel connectors of a DVI-SPLITPRO-4.

1.7.1 DVI-SPLITPRO-4 Rear Panel



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

1.7.2 DVI-SPLITPRO-4 I/O Connectors

Connectors		Video Source
Input Connectors	DVI, Component, VGA	DVI
		VGA (DVI to VGA Adapter)
		Component (YPbPr) (DVI to VGA Adapter and VGA to Component Adapter)
		1 x DVI 1 x VGA (DVI to DVI/VGA Y Cable)
		1 x DVI 1 x Component (DVI to DVI/VGA Y Cable and VGA to Component Adapter)
	VGA	VGA
	Composite	Composite with a RCA Cable
	Loop Connectors	2 x DVI
Output Connectors	DVI-I OUT	Display
		DVI Display
		VGA Display (DVI to VGA Adapter)
		1 x DVI Display 1 x VGA Display (DVI to DVI/VGA Y Cable)



1.8 Installation

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

It is critical to have the DVI male-male cable (provided) connected to DVI LOOP 1 – DVI LOOP 1 and DVI-LOOP 2 – DVI-LOOP 2 connectors on the DVI-SPLITPRO-4.

It is imperative that you have these cables connected at all times for normal operation.

1. Mount or fix the DVI-SPLITPRO-4 safely
2. While DVI-SPLITPRO-4 switched off, connect CONN1 & CONN1, CONN2 & CONN2 by DVI – DVI cables
3. Connect a monitor, projector, other displays that come with DVI / VGA inputs by using 1 male – male DVI (VGA) cable to DVI-SPLITPRO-4 DVI output. (you can connect 2 displays equipped with DVI and VGA respectively by DVI – DVI/VGA breakout 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-4
8. Connected a device with Composite video output to composite input of DVI-SPLITPRO-4
9. Connect your computer to DVI-SPLITPRO-4 via RS232 cable and then install the software
10. Turn ON DVI-SPLITPRO-4
11. Run the Control Software and establish the connection between PC and DVI-SPLITPRO-4
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-4 provides a software control program which runs under Microsoft Windows 98, 2000, XP 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-4.
3. The DVI-SPLITPRO-4 provides software control. To make sure all information shown in the software is synchronized with those in the device, please click "Update" button to acquire the latest data from the DVI-SPLITPRO-4 after you press any key on the remote control.

1.9.2 Software Connection

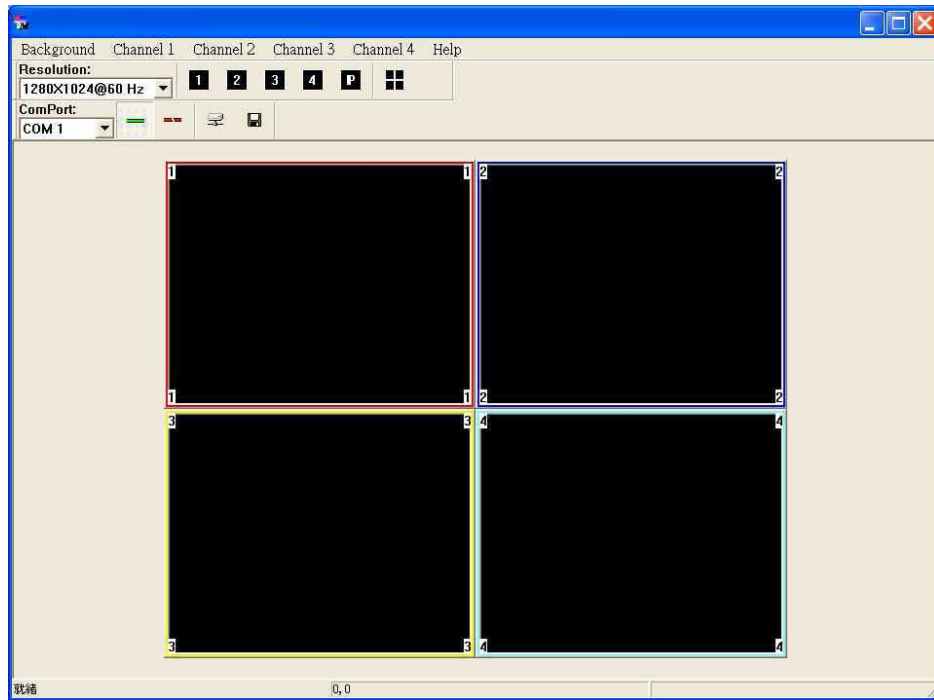
1. Power up the DVI-SPLITPRO-4 and you can see both Red and Green LEDs on the front panel blink. Ensure that Serial RS232 connection is secure.
2. The first step after running the software is to automatically detect if the device responds correctly through RS-232 port. The process takes 5-15 seconds. If the device is not connected, a warning window will show up. First of all, choose 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-4 is powered on.*
- *Please ensure that serial cable (RS232) is connected properly and available serial port is free to be used by DVI-SPLITPRO-4*

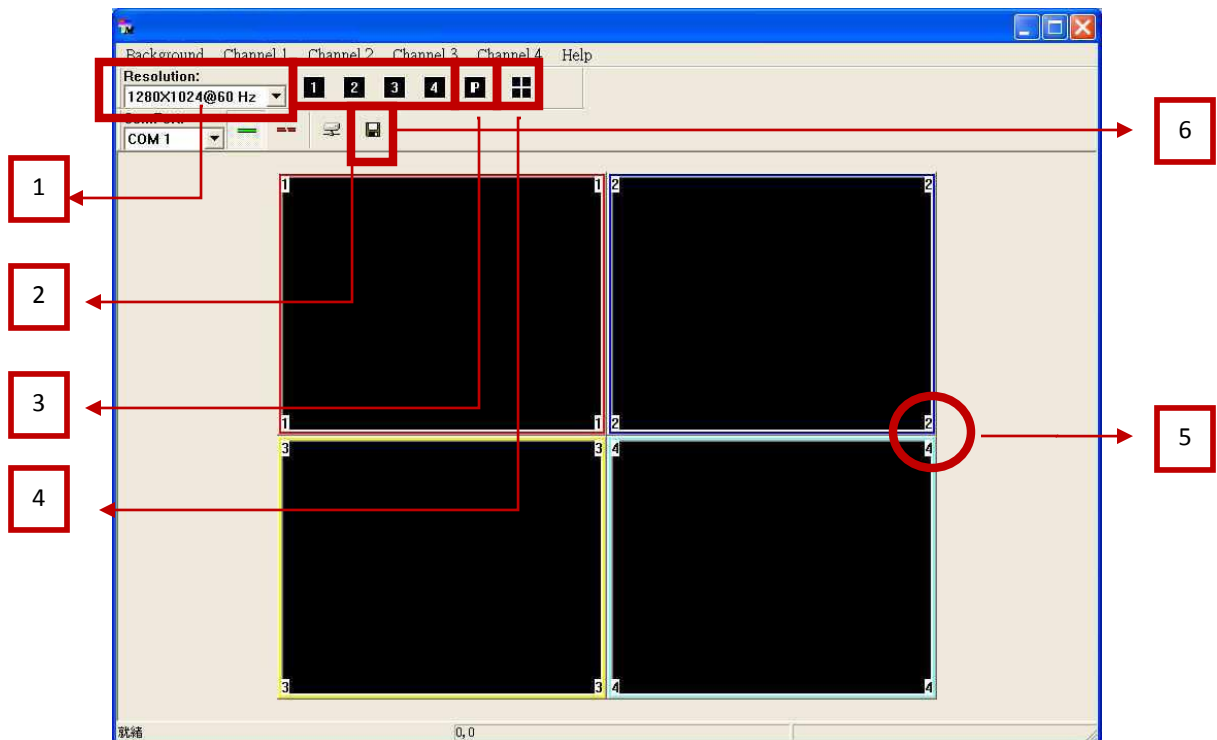


3. If the serial connection is established, you will see a Windows as shown below:



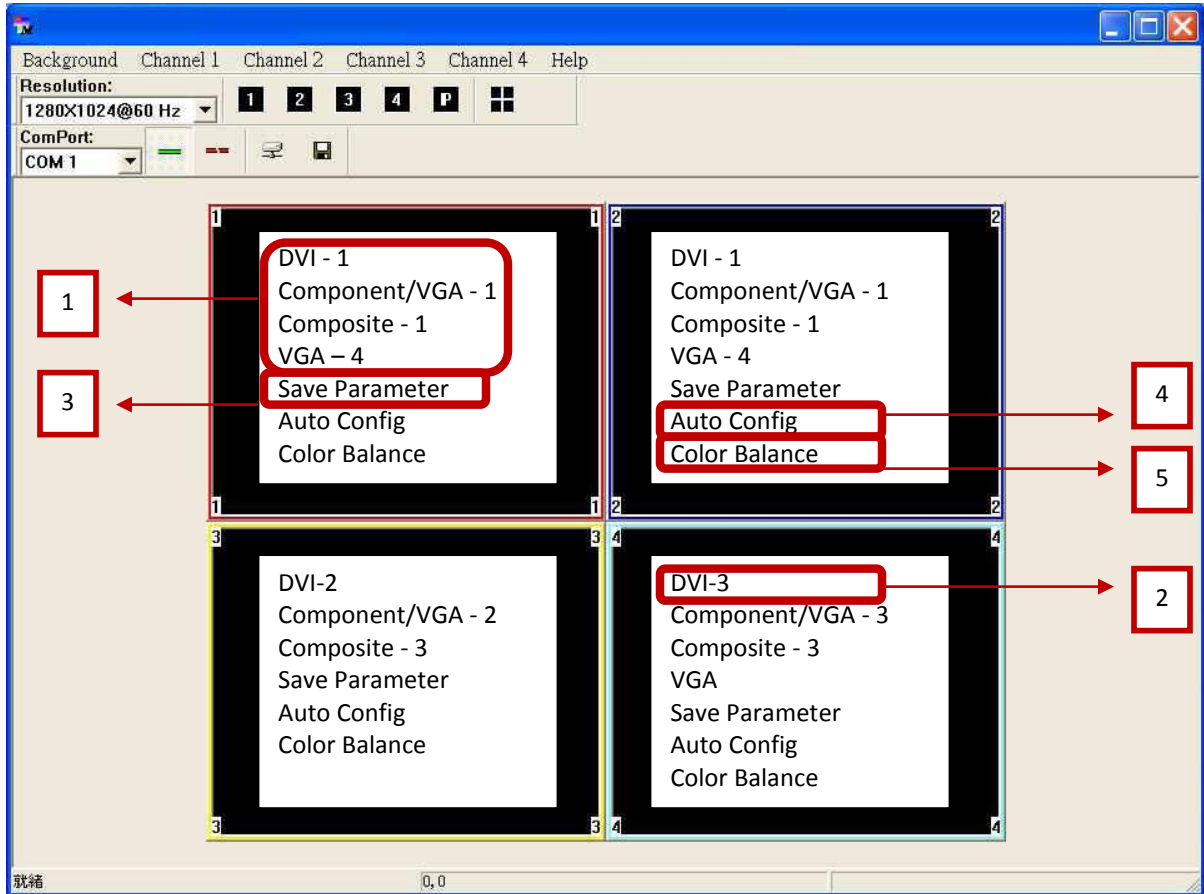
1.9.3 Software Operation

The software has following menu options available:



1. Output Resolution	640x480 – 1920x1200
2. Quick Setup for Full Screen Display	Click on this button will make the desired display area be displayed as Full Screen
3. Quick Setup for PAP Mode	This button will bring full screen back to PAP (Picture Aside Picture) mode
4. Quad Display Mode	The functionality of this button is to expedite the default quad display. Please note that the input sources will not change. Only positions and sizes will be affected
5. Display Area Number	There are totally 4 display areas (1, 2, 3, 4)
6. Save Parameters for all Channels	Quartet will NOT automatically save the parameters regarding size, position, and color adjustments etc. Users MUST save all the related coefficients after the desired setup is finished. This will keep the same display layout after the MX-1004 is rebooted.

1.9.4 Software Display Setup



Each display area has associated pop window to accelerate the selection of the input sources. Note: Each display may not have same choices of the input sources due to the hardware structure. On each display, clicking on the right button of the mouse will bring the control window as shown above.

1.	The available input sources for the corresponding display area.
2.	The chosen input will become blue to indicate current selection.
3.	Saves parameters for each channel.
4.	Auto configuration for VGA inputs
5.	Color balance for VGA and YPbPr inputs.

Section 2: Specifications

Model	DVI-SPLITPRO-4
Description	Quad Screen Video Image Processor
Dual Output Support	Yes (DVI & VGA)
Video Bandwidth	DVI 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 - $\pm 15\text{kV}$ (air gap discharge) & $\pm 8\text{kV}$ (contact discharge)
Input	1 x VGA
	3 x DVI
	3 x Composite
	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	75 Ω
RJ45 Connector	WE/SS 8P8C with 2 LED indicators
Dimensions	9.1" x 17.3" 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]

2.1 Supported Resolutions

2.1.1 DVI / Component / VGA

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

2.1.2 VGA

Supported Mode	Resolution
VESA	640x480 @60Hz
VESA	800x600 @60Hz
VESA	1024x768 @60Hz
VESA	1280x1024 @60Hz
VESA	1600x1200 @60Hz
VESA	1920x1200 @60Hz

2.1.3 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		

2.2 General Troubleshooting

Problem	Possible Solution
No Power	<ul style="list-style-type: none"> Ensure that DVI-SPLITPRO-2B is plugged in 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	<ul style="list-style-type: none"> Make sure all cables are in good working condition and properly connected to the DVI-SPLITPRO-2B and displays. Configure the output video resolution so that it doesn't exceed the native resolution of the display. (in this case, the message of "out of range" is usually showed on your screen)
Poor Quality	<ul style="list-style-type: none"> 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. Make sure the video source is not compressed and maintains the highest native resolution.
Image Position Shifted	<ul style="list-style-type: none"> Press "Auto" key on the remote control <p>Auto color configuration only works at VGA and Component inputs</p>
Wrong Color	<ul style="list-style-type: none"> Press "Color Balance" key for auto configuration. <p>Auto color configuration only works at VGA and Component inputs.</p>

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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