

User Guide

DVI 1x2 Splitter / DVI 1x4 Splitter

DVI-5312b / DVI-5314b

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1.0 INTRODUCTION

Thank you for purchasing this DVI Splitter from DVI Gear. The DVI-5300b Series Splitters allow the distribution of up to 4 DVI signals to other DVI and HDMI compliant devices without signal degradation or loss of encryption. Each product in this series is compatible with HDMI v1.3 specifications with a bandwidth capacity of 2.25Gbps; which includes the cutting edge technology of Deep Color in 10 bit and 12 bit distribution and Lossless digital audio in formats such as Dolby TrueHD, Dolby Digital Plus, and DTS-HD Master Audio. Our professional video conversion products have been serving the industry for several years. DVI Gear offers a full line of high quality Video Scalers, Scan Converters, Analog-Digital Converters and DVI/HDMI Converters, as well as Signal Switchers and Distribution Amplifiers.

1.1 Liability Statement

Every effort has been made to ensure that this product is free of errors. DVI Gear 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 of the hardware to check that it is suitable for his/her requirements and that it is installed correctly. All rights 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.

DVI Gear 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.

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1.2 Features

The DVI-5300b series of HDMI Splitters have many features that enable them to perform in a superior manner. Among these features you will find:

- HDMI v1.3, HDCP 1.1 and DVI 1.0 Compliant
- Support 10-bit and 12-bit Deep Color
- Supports Lossless digital audio formats: Dolby Digital, Dolby Digital Plus, True-HD and DTS-HD
- Accommodates 2 channel or 4 channel distribution
- Supports 480i, 576i, 480p, 720p, 1080i and 1080p resolution
- Supports PC resolutions up to 1920x1200
- Support longer input cable lengths with input signal equalization up to -10Db correction.
- Support Automatic EDID discovery of displays
- Supports common SDTV, HDTV and PC resolution up 1920x1200 with an On-Board EDID memory chip.
- FCC, CE and RoHS approvals

1.3 Getting the Best Results

There are many factors affecting the quality of results when distributing DVI or HDMI type signals. Some basic precautions will ensure the best possible performance from your new HDMI Splitter.

- **Output display device_** – The quality of the output signal will depend largely upon the type and quality of the DVI or HDMI display device used. For instance, some video projectors just look better than others.
- **Distance between the Splitter sources and the display** – This plays a major role in the final result. Long distances are possible, but special measures should be taken in order to avoid cable losses. These include using high quality cables. Line amplifiers may also be necessary for the longest runs.
- **Input/Output connection cables** – Low quality cables are susceptible to interference. They degrade signal quality due to poor matching and can cause elevated noise levels. Cables should be of the best quality.
- **Interference from nearby electrical devices** – These can have an adverse effect on signal quality. For example, an older computer monitor often emits very high electromagnetic fields that can interfere with the performance of video equipment in its proximity.

2.0 SPECIFICATIONS

Model Numbers	
DVI-5312b	Splitter DVI / HDMI (v1.3) 1x2
DVI-5314b	Splitter DVI / HDMI (v1.3) 1x4
Performance	
Compliance	HDMI v1.3, HDCP v1.1 and DVI v1.0
Maximum Bandwidth	2.25 Gbps (HDMI single-link)
Color Depth	10-bit or 12-bit Color Depth
Digital Audio Support	Dolby Digital Plus, Dolby True HD and DTS-HD Master Audio
Support HDTV Formats	480i, 480p, 576i, 576p, 720p, 1080i and 1080p
Support PC Resolutions	Up to 1920x1200
Maximum Input Cable Length	12.5 meters DViGear SHR™ Series
Maximum Output Cable Length	10 meters DViGear SHR™ Series
I/O Connectors	
Inputs	1x DVI-D
Output	DVI-5312b: DVI-D x2 DVI-5314b: DVI-D x4
Mechanical	
Dimensions (H-W-D)	1.6 x 8.6 x 5.8" (41.5 x 218 x 147mm)
Weight	1.88 lbs. (0.85kg)
Environmental	
Operating Temperature	0 to 50° C (32° to 122° F)
Operating Humidity	15% to 90% (Non-condensing)
Storage Temperature	0° to 50°C (32° to 122° F)
Storage Humidity	10% to 90% (Non-condensing)
Warranty	
Limited Warranty	1 Years Parts and Labor
Power Requirements	
External AC Power Adaptor	100-240 VAC@50-60Hz - 5VDC@2A
Regulatory Approvals	
Splitter Unit	FCC, CE, RoHS, HDMI ATC
Power Supplies	UL, CE, CSA, CEC, RoHS
Accessories Included	
1x AC Power Adapter	US Type, International Type is optional
1x User Guide	
Optional Accessories	
DVI-5300-RM	Rack Mount Kit for DVI-5300 Series Splitters

3.0 CHECKING PACKAGE CONTENTS

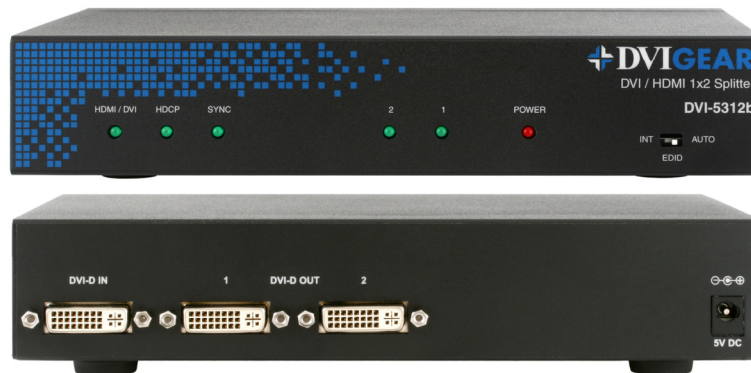
Before attempting to use this unit, please check the packaging and make certain the following items are contained in the shipping carton:

- DVI 1x2 or 1x4 Splitter
- External AC Power Adapter
- User Guide

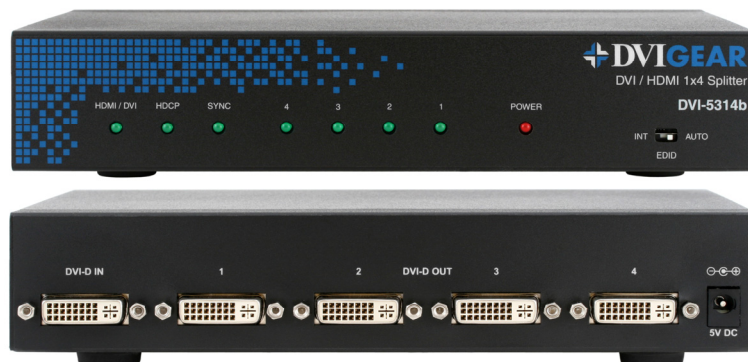
Note: Please retain the original packing material should the need ever arise to return the unit. If you find any items are missing, contact your reseller or DViGear immediately. Please have the Model Number, Serial Number and Invoice Number available for reference when you call.

4.0 CONNECTING THE HARDWARE

The physical sizes of the two units vary according to number of inputs. For reference purposes, the units are depicted below in relative scale. Please study the drawings below and become familiar with the location of the controls, status LEDs, signal inputs, signal output and the power input.



DVI-5312b Splitter DVI / HDMI (v1.3) 1x2



DVI-5314b Splitter DVI / HDMI (v1.3) 1x4

The DVI-5300b series Splitters are functionally identical with the exception of the number of outputs. All have a single DVI-D input and a +5 VDC power input socket. These connectors as well as the outputs connectors are arrayed on the rear panel. There are no controls or switches on any of the units however all units have LEDs that indicate type of signal distributed, HDCP encryption detection and source synchronization and LEDs to indicate the connection to a compliant device. Finally, there is no power switch.

4.1 Connecting the Input to the Distribution Amplifier

You can connect any DVI-D or HDMI compliant device's output to the DVI input mark with the designation of "DVI-D IN". Make certain that the DVI or HDMI to DVI cable is securely plugged into the source device as well as the DVI Splitter. Always use high quality cable, as short a length as possible for the best results.

4.2 Connecting the Output to the Destination Devices

Using a high quality DVI or HDMI to DVI cables, connect the DVI-D outputs grouped and mark with a number and designated as "DVI-D OUT" to a DVI or HDMI compliant display devices. Make certain that the cables securely plugged in to the Splitter and at the display. Always use the shortest cable length as possible.

4.3 Connecting the Power

All units are shipped with an External Power Adaptor to convert 100 to 240VAC at 50 or 60Hz to 5VDC 5A maximum. Connect the DC output Cable from the External Power Adaptor to the back of the unit and then plug the Power Adaptor into an AC receptacle. There is no power switch. The unit begins functioning as soon as it is plugged into AC power source.

5.0 OPERATING THE UNIT

To use any of the DVI-5300b series DVI Splitters, connect a DVI-D or a HDMI to DVI cable, no more than 41 feet (12.5 meters) in length, from the DVI or HDMI source to the input of the splitter. Next, connect the outputs of the splitter to their destination devices using DVI cables no more than 32.8 feet long (10 meters).^{*} Once the Input and Outputs and External Power Adaptor are connected, plug the AC adaptor into a receptacle and the splitter will begin to function. A Power LED on the front of the unit will confirm power is present. Other than connecting cables and applying power, there are no other operator interventions required with the possible exception of the EDID switch to the rear of the unit.

**Note: Proper operation of DVI Splitter depends on the use of the highest quality cables available. DVIgear's SHR DVI or HDMI to DVI cables provide low loss, high bandwidth signal handling and are the recommended cables for use with all DVI and HDMI products. The distance specification cannot be guaranteed unless SHR cables are used throughout the system.*

5.1 EDID Operation

On the rear of the unit you will find an EDID switch. This switch controls what EDID information the splitter will report back to the source. This EDID information will be from an on-board memory chip of the most commonly used resolutions up to 1920x1200 or retrieved from the actual displays. This switch will have two options, INT (internal) and AUTO.

The INT position will draw the EDID information from an on-board memory chip contain such resolutions as listed in the following table.

Resolution		V. Rate/Hz	Scan
480p	720x480	60	Progressive
576p	720x576	50	Progressive
720p	1280x720	50,60	Progressive
1080i	1920x1080	50,60	Interlaced
1080p	1920x1080	50,60	Progressive
VGA	640x480	60	Progressive
SVGA	800x600	60	Progressive
XGA	1024x768	60	Progressive
SXGA	1280x1024	60	Progressive
UXGA	1600x1200	60	Progressive
WXGA	1280x800	60	Progressive
WXGA+	1440x900	60	Progressive
WSXGA	1680x1050	60	Progressive
WUXGA	1920x1200	60	Progressive

The AUTO position, the splitter will automatically retrieve the EDID information from the display connected to Output #1 of the splitter. In the AUTO EDID mode the EDID hierarchy (preference) is first HDMI v1.3, then HDMI v1.2 and then DVI. For example, if the display connected to Output #1 is a DVI monitor, or if no display is connected, the splitter will search for EDID information from Output #2, then Output #3, ...Output #4, until it finds a display with valid HDMI EDID information. In the event none of the outputs has a HDMI display connected, the splitter will report (to the source) the EDID block of the first DVI display that is present.

The default factory setting for the EDID switch setting is AUTO. This setting should be left in the AUTO mode unless you have one or more displays are not operating properly in that there is no image or the image maybe too small or too large for the display. At this point it is recommended that the switch be moved to the INT position and the power recycled forcing the source and the displays to renegotiate the EDID information. With PC's, this may require for the PC to be re-booted to recognize the EDID information.

The EDID or Extended Display Identification Data is a structure of data that a display will describe its capabilities. This information allows for the DVI splitter to know what type of display is connected to its output. The EDID is defined bay a standard published by the Video Electronics Standards Association (VESA). The EDID includes such information as the manufactures name, product type, phosphor type, filter type and most import for the splitter is the timings supported by the display along with other detail information.

5.2 LED Operation

In addition to the Power LED, there are two sets of status LEDs which indicate the operation of the splitter. These LEDs can be broken down into two groups, Input LEDs and Output LEDs.

Input LEDs – Power, HDMI/DVI, HDCP and SYNC

Power – will be illuminated when the External Power Supply is connected to both the unit and a live AC power outlet.

HDMI/DVI LED – will be illuminated when the source is HDMI. The LED will be out if the source is DVI.

HDCP LED – HDCP (High-Bandwidth Content Protection) will be illuminated if the in-bound signal requires authentication keys for decoding.

SYNC LED – will be illuminated if the source is providing a signal.

Output LEDs – Will be identified with a number from 1 to 8 depending upon the splitter. The numbers correspond to the splitter's outputs. These LEDs will be illuminated if the output of the splitter is successfully connected to an operating compliant device.

6.0 TROUBLESHOOTING

In the event of problems, first make certain that the input and output cables are no more than 32.8 feet (10 meters) long (for signals to 1080p resolution) and are of the highest possible quality. Next, make certain that the Splitter is receiving power.

Next, make certain that the Splitter is receiving power by looking at the power LED. It should be illuminated and not flickering or intermittently going on and off. Intermittent operation generally means a problem with the DC adapter or low AC voltage being applied to the DC adapter's input.

If all is well in these areas, remember that DVI and HDMI devices communicate with one another so the source device and all destination devices must be fully HDMI capable. In addition, HDCP encryption requires additional processing which also is dependent on the equipment you have connected to both the source and destination devices. If you experience problems using the Splitters, you should attempt to determine what is wrong by first attaching the source device directly to each of the destination devices in turn using the same cables you are using with the expanded system. This is a way of determining if the problem is due to bad cables or a problem with the other devices. If you are unable to obtain a signal using this simplified path, suspect the cables, the source device or the destination device.

After trying the above suggestions should the problem still persist, contact your dealer for additional suggestions. Should the dealer's technical personnel be unable to assist you, please contact DVIgear via telephone at (888) 463-9927 (United States and Canada); international callers may dial (770) 421-6699, or through e-mail at support@dvgear.com.

7.0 LIMITED WARRANTY

LIMITED WARRANTY – With the exceptions noted in the next paragraph, DVIGear, Inc. warrants the original purchaser that the equipment it manufactures or sells will be free from defects in materials and workmanship for a period of one year from the date of purchase. Should this product, in DVIGear's opinion, prove defective within this warranty period, DVIGear, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of DVIGear. 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.

If repairs are necessary under this warranty policy, the original purchaser must obtain a Return Authorization Number from DVIGear and return the product freight prepaid to a location designated by DVIGear. After repairs are complete, the product will be returned, freight prepaid.

LIMITATIONS - All products sold are "as is" and the above Limited Warranty is in lieu of all other warranties for this product, expressed or implied, and is strictly limited to two years from the date of purchase. DVIGear assumes no liability to distributors, resellers or end-users or any third parties for any loss of use, revenue or profit.

DVIGear makes no other representation of warranty as to fitness for the purpose or merchantability or otherwise in respect of any of the products sold. The liability of DVIGear with respect to any defective products will be limited to the repair or replacement of such products. In no event shall DVIGear be responsible or liable for any damage arising from the use of such defective products whether such damages be direct, indirect, consequential or otherwise, and whether such damages are incurred by the reseller, end-user or any third party.

8.0 REGULATORY COMPLIANCE

The DVI-5300b Series DVI Splitters have been tested for compliance with appropriate FCC and CE rules and regulations and are also RoHS compliant.

The Power Adaptor/Supplies have been tested for compliance with UL, CE, CEC and CSA rules and regulations and are also RoHS compliant.



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