

User Guide

AV-PC-DVI to PC-DVI Converter / Scaler

DVI-3331a



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WARNING – Product Safety

1. Do not dismantle the product housing or modify the printed circuit board module as this may result in electrical shock or burn.
2. Do not attempt to service this product yourself as opening or removing the product housing may expose you to dangerous voltages or other hazards. Refer all servicing to qualified service personnel.
3. Keep this product away from liquids. Spills into the product housing may result in fire, electrical shock, or equipment damage. If liquid spills into the housing, unplug the product immediately. Have the product checked by a qualified service engineer before using it again.
4. Place the product in an even and stable location. If the product falls or is dropped, it may cause an injury and/or malfunction.
5. Avoid exposing the product to extreme temperatures or to high humidity levels as this may result in damage to the product.
6. Only use the supplied External AC Power Adapter. The use of other power adapters may cause this product to fail or may cause a fire.
7. Do not twist or exert excessive force on the ends of the connected cables as this can cause them to malfunction. Take care to ensure that all connected cables are not forced to bend more than their minimum bend radius.

Product Liability Statement

Every effort has been made to ensure that this product is free of defects. DVI Gear cannot be held liable for the use of this product or for any direct or indirect consequential damages arising from its use. It is the responsibility of the users of this product to check that it is suitable for their requirements and that it is installed correctly. 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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1.0 INTRODUCTION

The model DVI-3331a is a versatile Converter / Scaler that provides selection of three input signal formats: Component Video, Analog RGB and DVI (or HDMI). The selected input signal is converted to both an analog RGB output and a digital DVI output signal, which allows the unit to function simultaneously as a VGA to DVI and DVI to VGA converter.

The DVI-3331a accepts a wide range of input signal resolutions and supports pixel clock rates up to 165 MHz. Two high performance scaling engines provide user-selectable output resolutions up to 1080p and 1920x1200. The unit is controlled via intuitive on-screen menus, which can be accessed via front panel controls or by an included IR remote control unit. These features make this unit an ideal solution for applications where legacy analog video sources and displays must be integrated into digital HDMI / DVI systems.

Our digital video distribution products have been serving the professional AV industry for more than fifteen (15) years. Today, DVI Gear® offers a full range of high performance products including: scalable AV-Over-10GbE Systems, Switchers, Splitters, Scalers, Up/Down/Cross-Converters, Format Converters, as well as a wide range of long-reach Digital Cables, Extenders, and Fiber Optic Transmission systems.

1.1 Features

The model DVI-3331a has several unique and innovative features:

- Supports HDTV inputs up to 1080p and PC inputs up to 1920x1200 resolution
- User-selectable output resolutions up to 1080p and 1920x1200 / 60Hz
- Supports HDMI / DVI input signals with or without HDCP encryption
- Supports RGB analog, YPbPr and YCbCr Component Video inputs
- Dual Output Converter, simultaneous analog RGB and digital DVI outputs
- Equipped with 3D Motion-Adaptive De-Interlacing and Digital Noise Reduction
- Supports 3:2 Pull-Down with 2:2 Pull-Down Recovery
- Controllable via front panel and IR remote
- Locking DC power connector for added security
- Auto-Power Recovery and Auto-Memory Restore
- Intuitive On-Screen Display menus make setup quick and easy
- Rugged low-profile metal enclosure



2.0 SPECIFICATIONS

| Performance | |
|--|---|
| Format Compliance | DVI v1.0 and HDCP v1.1 |
| Video Input Formats | Component Video: YPbPr / YCbCr; DVI-D: RGB,H,V; HD-15: RGB,H,V |
| Maximum Pixel Clock Frequency | 165 MHz |
| Maximum Video Bit Rate | 1.65 Gbps (single-link) |
| Supported Color Depth | 8-bit |
| Input Connections | |
| Component Video Input | 1x 3x RCA female connectors |
| Analog RGB Input | 1x HD15 (VGA) female connector |
| HDMI / DVI Input | 1x DVI 29-pin female connector |
| Power Input | 1x 5.5 / 2.5 mm locking connector |
| Output Connections | |
| Analog RGB Output | 1x HD15 (VGA) female connector |
| DVI Output | 1x DVI 29-pin female connector |
| Scaling Engine | |
| Phase Lock Loops | 8-bit, Triple-Analog-to-Digital Converter |
| De-Interlacing | 3D Motion-Adaptive De-Interlacing |
| Pull-Down | 3:2 with 2:2 recovery |
| Noise Reduction | 3D |
| Display Settings | Contrast, Brightness, Hue, Sharpness, Saturation, R-G-B Levels, Aspect Ratio, Noise Reduction |
| Control | |
| Front Panel | 4x Buttons with On-Screen Display navigation |
| IR Remote Control | IR Remote Control with On-Screen Display navigation |
| Mechanical | |
| Dimensions (H-W-D) | 1.0" x 7.1" x 5.3" (26.0 mm x 180.1 mm x 135.3 mm) |
| Weight | 17.3 oz (490 g) |
| Construction | Rugged low-profile metal enclosure with jet black finish |
| Environmental | |
| Operating Temperature | +32° to +122° F (0° to +50° C) |
| Storage Temperature | +14° to +158° F (-10° to +70° C) |
| Humidity (storage / operating) | 10% to 90% (non-condensing) |
| Power Requirements | |
| External AC Power Adapter | Input: 100~240VAC / 50-60Hz, Output: 5VDC, 2.6A |
| Power Consumption | 5 VDC, 1.2 Amps, 6 Watts |
| Regulatory Approvals | |
| Converter / Scaler unit | FCC, CE, RoHS |
| AC Power Adapter | FCC, CE, UL, C-UL, CEC, GS, PSE, RoHS |
| Warranty | |
| Limited Warranty | 3 Years Parts and Labor |
| Model Number | |
| DVI-3331a | AV-PC-DVI to PC-DVI Converter / Scaler |
| Accessories Included | |
| 1x External AC Power Adapter, 1x IR Remote Control Unit, 1x User Guide | |
| Optional Accessories | |
| International AC Power Adapter (Euro, UK, Australia) | |



2.1 Supported Input Formats and Resolutions

The DVI-3331a accepts digital DVI or HDMI (using an adapter cable), as well as analog RGB and analog Component Video via separate input connections. The table below lists the supported input formats and resolutions:

| Input Resolution | | Vertical Rate (Hz) | Scan Format | Signal Format / Connectors |
|------------------|-----------|--------------------|-------------|--|
| 480i | 720x480 | 60 (NTSC) | Interlaced | YCbCr via 3x RCA |
| 576i | 720x576 | 50 (PAL) | Interlaced | |
| 480p | 720x480 | 60 | Progressive | YPbPr via 3x RCA RGB,H,V via HD15 and DVI |
| 576p | 720x576 | 50 | Progressive | |
| 720p | 1280x720 | 50,60 | Progressive | |
| 1080p | 1920x1080 | 50,60 | Progressive | |
| 1080i | 1920x1080 | 50, 60 | Interlaced | YPbPr via 3x RCA RGB,H,V via DVI |
| VGA | 640x480 | 60, 72, 75, 85 | Progressive | RGB,H,V via HD15 and DVI |
| SVGA | 800x600 | 56, 60, 72, 75, 85 | Progressive | |
| XGA | 1024x768 | 60, 70, 75, 85 | Progressive | |
| SXGA | 1280x1024 | 60, 75, 85 | Progressive | |
| UXGA | 1600x1200 | 60 | Progressive | |
| WXGA | 1280x800 | 60 | Progressive | |
| WSXGA | 1680x1050 | 60 | Progressive | |
| WUXGA | 1920x1200 | 60 | Progressive | |

2.2 Supported Output Formats and Resolutions

The DVI-3331a provides several output resolutions in DVI and RGB,H,V formats:

| Output Resolution | | Vertical Rate (Hz) | Scan Format | Signal Format / Connectors |
|-------------------|-----------|--------------------|-------------|----------------------------|
| 480i | 720x480 | 60 | Interlaced | RGB,H,V via HD15 and DVI |
| 576i | 720x576 | 50 | Interlaced | |
| 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 | |
| SXGA+ | 1400x1050 | 60 | Progressive | |
| UXGA | 1600x1200 | 60 | Progressive | |
| WXGA | 1280x800 | 60 | Progressive | |
| WXGA+ | 1440x900 | 60 | Progressive | |
| WSXGA | 1680x1050 | 60 | Progressive | |
| WUXGA | 1920x1200 | 60 | Progressive | |

3.0 PACKAGE CONTENTS

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

- 1x DVI-3331a AV-PC-DVI to PC-DVI Converter / Scaler
- 1x External AC Power Adapter
- 1x IR Remote Control
- 1x User Guide

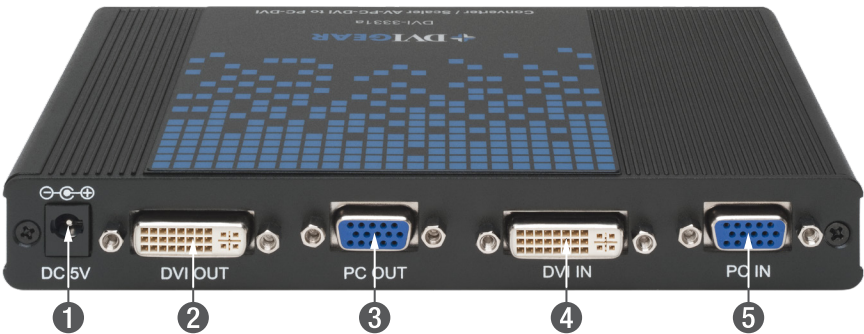
Note: Please retain the original packing material in case you need to return the unit. If you find any items are missing, contact your reseller or DVI Gear immediately. Please have the Model Number, Serial Number, and Invoice Number available for reference when you call.

4.0 CONNECTING THE HARDWARE

Please study the following front panel and back panel drawings in order to become familiar with connector locations and control functions:



- 1 Component Video Input: supports YPbPr and YCbCr formats
- 2 Infrared Receiver
- 3 Status LEDs: indicates selected source type
- 4 MENU / ENTER: press to access OSD Menus; also acts as “ENTER” key
- 5 Multi-function Keys: see note at the top of page 7
- 6 Power ON/OFF: press to power the unit on or off



- 1 DC Power Input: locking female connector for AC Power Adapter
- 2 DVI Output: female connector; connect to a DVI or HDMI display
- 3 PC Output: HD-15 pin female; connect to an analog RGBHV display
- 4 DVI Input: female connector; connect to a DVI or HDMI source
- 5 PC Input: HD-15 pin female; connect to an analog RGBHV source



Note: The functions of the “+” and “-” keys change depending on whether or not the OSD Menus are present. When the OSD Menus are present (activated by pressing the Menu control button), the “+” and “-” keys allow navigation through the various menu parameters.

When the Menus are not present, the “-” key will automatically adjust the picture centering, color, etc. for the analog input signals (Component Video or PC). The “+” will sequentially step through the different inputs of the Converter / Scaler.

This Converter / Scaler uses advanced signal processing that will automatically accept, identify, and scale (when required), a wide array of input formats and resolutions. Since the output resolution of this Converter / Scaler is user-selectable, it is advisable to set the scaler unit’s output resolution to match the native resolution of the connected display. Please consult your owner’s manual in order to determine your display’s native resolution.

When using the DVI-D output signal (digital only), you must use a display or other destination device that has a compatible DVI or HDMI input. You can connect the output of this unit to a DVI destination device (e.g. PC display) using a DVI cable or to an HDMI destination device (e.g. HDTV display) using a DVI to HDMI cable. Please consult DVI Gear for assistance in cable selection.

Note: This product accepts HDMI signals on the DVI input port. However, it does not transmit any embedded audio on the output.

Remove power from the source and destination devices. Referring to the product images on page 6, connect the appropriate cables to all inputs and outputs, taking care to use high quality cables. Note that low quality cables can cause serious image quality degradation, as well as limit the maximum possible distance between the Converter / Scaler and the source and destination devices. Cable selection is especially important for long DVI and HDMI cables due to the high bit rates of these digital signals. For best results use DVI Gear’s **Super High Resolution™** (SHR™) DVI and HDMI cables.

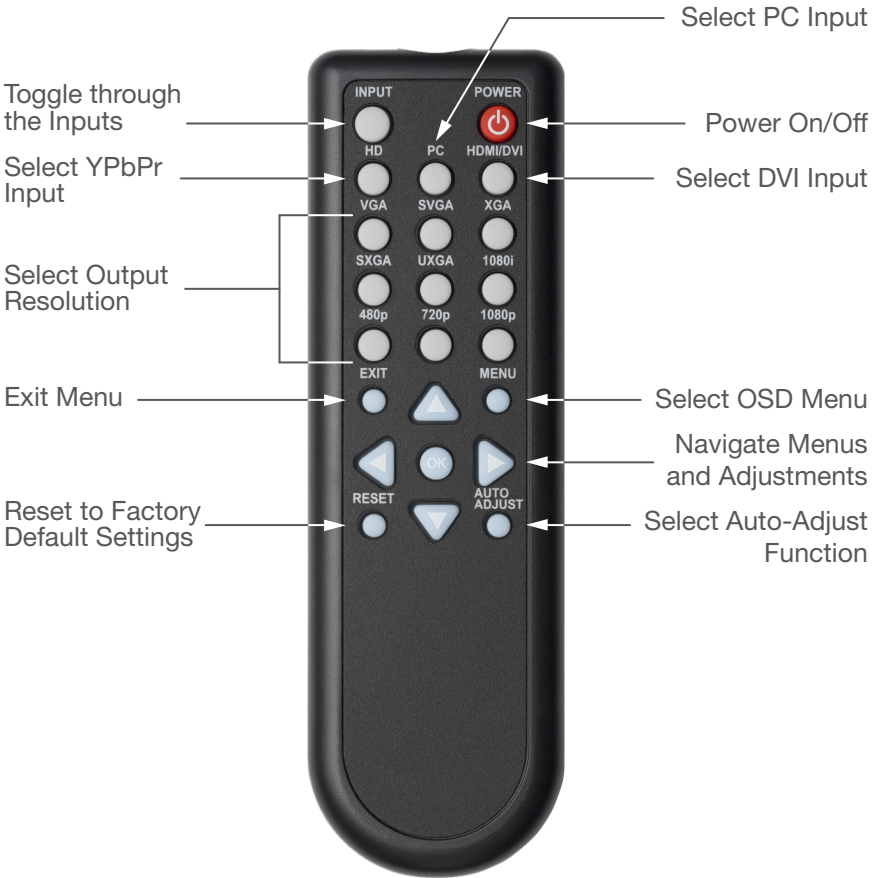
After the cables are connected, connect the supplied AC Power Adapter to the DVI-3331a. Use only the furnished power adapter to avoid the possibility of equipment damage.

Plug the AC Power Adapter into the unit and into an AC wall outlet and press the Power button to activate the unit. Verify that one of the red Status LEDs lights up, indicating that power has been applied to the unit. Lastly, supply power to the source and destination devices. Press the Power button on the DVI-3331a to turn the unit OFF / ON again as needed. In the event of a power outage, this unit will automatically power ON and restore the last used settings as soon as power is reapplied to the unit.

Note: This product utilizes a “Twist-Lock” DC power connector to prevent the power cable from coming loose. Insert the DC plug into the power input jack on the rear panel, then gently twist the plug a quarter turn in the clockwise direction to lock it in place. To remove the power connection, simply rotate the DC plug a quarter turn counter-clockwise and then extract the power cable.

5.0 OPERATING THE UNIT

The DVI-3331a can be operated either from the front panel controls or via the supplied IR Remote Control unit. Since IR is the control method preferred by most users, please take a moment to familiarize yourself with the location and function of the control buttons on the IR Remote Control unit.



Note: Please use the OSD menu for resolutions not directly accessible from the IR remote.

Regardless of whether you operate the scaler from the front panel or with the IR Remote Control unit, it is important to become familiar with the On-Screen Display (OSD) Menu structure in order to take full advantage of the capabilities this product has to offer.

5.1 Menu Structure

The OSD Menu structure is as follows:

| High Level | Secondary Level | Adjustment |
|--|-----------------------------|--|
| VIDEO (Component In) | Picture Mode ⁽¹⁾ | User / Standard / Movie / Vivid |
| | Contrast | 0-100 Relative Contrast Adjustment |
| | Brightness | 0-100 Relative Brightness Adjustment |
| | Hue | 0-100 Relative Hue Adjustment |
| | Saturation | 0-100 Relative Saturation Adjustment |
| | Sharpness | 0-100 Relative Sharpness Adjustment |
| | Scale | Full / Overscan / Underscan / Letter Box / Pan Scan |
| | Noise Reduction | Low / Middle / High / Off |
| | Exit | Return to High Level Menu |
| PC MENU ⁽²⁾ (DVI or HD15 In) | Contrast | 0-100 Relative Contrast Adjustment |
| | Brightness | 0-100 Relative Brightness Adjustment |
| | H-Position | 0-100 Relative Horizontal Position Adjustment |
| | V-Position | 0-100 Relative Vertical Position Adjustment |
| | Clock | 0-100 Relative Clock Adjustment |
| | Phase | 0-100 Relative Phase Adjustment |
| | Scale | Full / Overscan / Underscan / Letter Box / Pan Scan |
| | Exit | Return to High Level Menu |
| COLOR | User | 0-100 Relative Red / Green / Blue Color Level |
| | Normal | Picture has a calibrated color temperature |
| | Warm | Picture has a slightly reddish appearance |
| | Cool | Picture has a slightly Bluish appearance |
| | Exit | Return to High Level Menu |
| OUTPUT | | NATIVE / VGA / SVGA / XGA / SXGA / UXGA / 480i / 480p / 720p@60Hz / 1080i@60Hz / 1080p@60Hz / 576i / 576p / 720p@50Hz / 1080i@50Hz / 1080p@50Hz / WXGA / WSXGA / WUXGA / WXGA+ / SXGA+ |
| OSD | H-Position | 0-100 OSD Horizontal Position |
| | V-Position | 0-100 OSD Vertical Position |
| | Timer | 0-100 OSD Menu Timeout (seconds) |
| | Background | 0-100 OSD Menu Transparent Level |
| | Display | OFF / ON / Info |
| INFORMATION | | Source (Input Interface) |
| | | Input (Input Resolution) |
| | | Output (Output Resolution) |
| | | Version (Firmware Version) |

Note: To exit the Menu, navigate to the information screen and press Menu.

Note 1: In any preset Picture Mode, only Scale and Noise Reduction is available in the Video Menu.

Note 2: H-Position and V-Position adjustments are only available on the HD15 input.



The selection of the **Video Menu** or **PC Menu** is made automatically based on the selected input signal. The **Video Menu** offers additional functions, including Picture Mode and NR (Noise Reduction).

The **Picture Mode Function** has four settings: User, Standard, Movie and Vivid. When the Picture Mode is set to Standard, Movie or Vivid, the Brightness, Contrast, Hue, Saturation and Sharpness adjustments are set to fixed values in order to optimize the appearance of the image. To change these settings, select User in the Picture Mode menu. Changes made to these settings will be saved to the unit's memory and can be recalled at any time by selecting User in the Picture Mode.

The **Scale Function** has five user selections: Letterbox, Overscan, Panscan, Underscan, and Full. The Scale function is used to alter the Aspect Ratio of the output signal in order to achieve a desired format on the display or destination device. The following are the menu selections for the Scale function and their effects:

| | |
|------------------|---|
| Letterbox | Remaps the picture content to a letterbox format within the new resolution. Best used to remap source content from 4:3 aspect ratio to 16:9. |
| Overscan | Remaps the picture content larger than the original image in order to reduce the black bars at the top and bottom of a 16:9 letterbox source. |
| Panscan | Remaps the picture content to a smaller size than the output resolution and centers the content in the middle of the image. Best used to remap source content from letterbox or 16:9 aspect ratio to 4:3. |
| Underscan | Remaps the picture content to a smaller size than the output resolution. |
| Full | Remaps the picture content to full output resolution. This setting should be used with high resolution data to maximize clarity. |

The **NR (Noise Reduction) Function** has four choices: Low, Middle, High and Off. For most applications it is recommend that this setting be left in the Off position.

The **Color Menu** allows selection of four color temperature presets:

| | |
|---------------|--|
| Warm | Picture has a slightly reddish appearance |
| Cool | Picture has a slightly bluish appearance |
| Normal | Picture has a calibrated color temperature |
| User | User-definable color temperature |

The **Output Menu** allows user selection of the desired output resolution. For best results, it is usually recommended to set the unit's output resolution to match the native resolution of the connected display. Please consult your owner's manual in order to determine your display's native resolution. Keep in mind that selecting an output resolution that is not supported by your display can cause an apparent malfunction.

The **OSD Menu** allows you to customize the way the On-Screen Display appears when it has been accessed.

The **Info Menu** contains technical information. If you have problems with this unit and require assistance, a technician may ask you to read information from this menu as part of the troubleshooting process.



5.2 Menu Navigation

Press the MENU / ENTER button to display the OSD menu. Once the menus are displayed, use the “+” and “-” keys to navigate through the menu structure. The “+” key will move the cursor to the right or down. The “-” key will move the cursor to the left or up. Once the desired function has been highlighted, press the MENU / ENTER key to select the function. Once the function has been selected, use the “+” and “-” keys to increase or decrease the desired value, then press the MENU / ENTER key to save the adjustment. To escape the OSD menus, use the “+” or “-” keys to highlight the EXIT selection, and then press the MENU / ENTER key, or simply press the MENU / ENTER key repeatedly.

For remote control access, press the MENU key on the IR Remote Control unit to display the OSD menus. Use the arrow keys to navigate through the OSD menus. Once the function has been highlighted, press the OK key to select it, and then use the arrow keys to make the desired adjustment. Press the OK key to save the adjustment. Press the EXIT key to escape from the OSD menus.

6.0 TROUBLESHOOTING

In the event that the DVI-3331a Converter / Scaler does not appear to be functioning properly, make certain that the source and all other devices connected to the unit are functioning correctly by connecting each source device directly to a compatible display using a short cable. This will aid in the elimination of a source being the issue. If the signal is present under these conditions, make certain that the External AC Power Adapter is plugged in and delivering power to the scaler.

The cables should be undamaged and as short as possible and of premium quality (such as DVI Gear’s Super High Resolution™ cables) as discussed in Section 4.

As a final step, return the unit to the factory default settings by pressing the RESET key on the IR Remote Control unit.

If the problem persists after trying the above suggestions, please contact your dealer for additional assistance. If the dealer’s technical personnel are unable to assist you, please contact DVI Gear via telephone at 1.888.463.9927 (toll-free for United States and Canada) or 1.770.421.6699. You may contact DVI Gear by e-mail at support@dvi-gear.com.



7.0 LIMITED WARRANTY

LIMITED WARRANTY – Subject to the limitations stated below, DVI Gear warrants that this product will be free from defects in materials and workmanship for a period of three (3) years from the date of purchase.

Should the product, in DVI Gear’s opinion, prove defective within the warranty period stated above, DVI Gear, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of DVI Gear. This warranty does not apply to products that 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 intended.

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

The foregoing warranty is the sole and exclusive warranty given by DVI Gear, express or implied, and DVI Gear disclaims all implied warranties, including but not limited to implied warranties of merchantability or fitness for a particular use.

LIMITATIONS – The liability of DVI Gear with respect to any defective products will be limited to the repair or replacement of such products. In no event shall DVI Gear be responsible or liable for any damage arising from the use of such defective products, including but not limited to loss of use, revenue or profit, whether such damages are direct, indirect, consequential or otherwise and whether such damages are incurred by the reseller, end-user, or any third-party.

8.0 REGULATORY COMPLIANCE

This product is compliant with appropriate FCC, CE and RoHS rules and regulations. The supplied AC Power Adapter is compliant with FCC, CE, UL, C-UL, CEC, GS, PSE and RoHS rules and regulations.



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