Quick Start Guide

AutoPatch RGBHV to DVI-D Converter

Overview

This guide contains complete information for the RGBHV to DVI-D Converter when it is used as a standalone unit. For additional information on using the converter in conjunction with an AMX AutoPatch Distribution Matrix, see the Instruction Manual for the router on the *AMX AutoPatch Software & Documentation CD* or at **www.amx.com**.

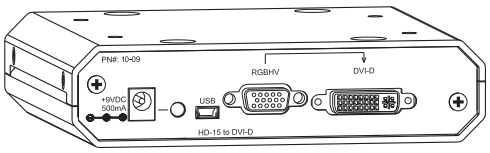


FIG. 1 RGBHV to DVI-D Converter FG1010-09

Specifications

General Specifications	
Approvals	CE, UL, cUL
Maximum Resolution	1600x1200 @ 60 Hz
Supported Cable Types	HD-15, DVI-D
Power Consumption (max.)	+9 VDC @ 5 Watts
Power Connector	2.1 mm DC power jack
Humidity	0 to 90% non-condensing
Operational Temperature	32° - 110° F (0° - 43° C)
Dimensions	5.22 in. (13.26 cm) depth 5.82 in. (14.78 cm) width 1.42 in. (3.61 cm) height w/out feet
Weight	Approximately 1.5 lb. (0.68 kg)
DVI Output Specification	DVI-D 1.0 (single link)

Video Specifications	
RGB Input Level	1 Vpp (max.)
HV Sync Input Level	TTL compatible
RGB Input Impedance	75 ohms
DDC/EDID Support	Provided by converter

System Setup

A typical setup using an RGBHV to DVI-D Converter as a standalone unit is illustrated in FIG. 2.

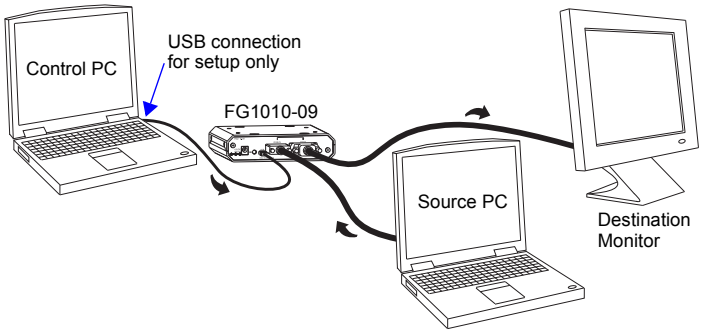


FIG. 2 Typical setup for an RGBHV to DVI-D Converter

Converter Installation

Before installing in a permanent location, we suggest placing the equipment close together so the Control PC and the Destination Monitor can be seen simultaneously during fine tuning.

Important: *Always use a UL approved power source. Check the power source's documentation for information specific to that power source.*

To attach connectors & power to the converter:

1. Plug the power cord into the power jack on the converter and into the power source (FIG. 3).
2. Attach one end of the USB (Mini-B) cable to the running Control PC (see the "Equipment & Requirements" section in the next column) and the other end to the converter (FIG. 3). Windows should recognize the new device as an HID device and install default drivers.

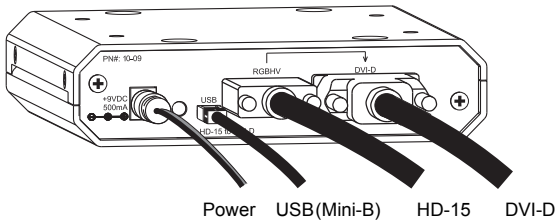
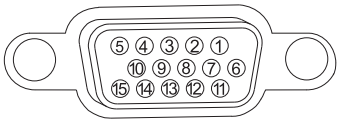


FIG. 3 Attach connectors & power to converter

3. Attach one end of the HD-15 cable (pinout in FIG. 4) to the Source PC and the other end to the converter.
4. Attach one end of the DVI-D cable (pinout in FIG. 5) to the Destination Monitor and the other end to the converter.

Converter's HD-15 Pinout

The HD-15 connector on the converter uses the pinout in FIG. 4.



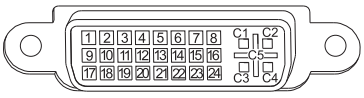
Input (VESA DDC Compliant)

1. Red	6. Red GND	11. ID Bit
2. Green	7. Green GND	12. DDC SDA
3. Blue	8. BlueGND	13. Horizontal Sync
4. ID Bit	9. +5 V in DDC	14. Vertical Sync
5. GND	10. GND	15. DDC SCL

FIG. 4 HD-15 input pinout for converter

Converter's DVI-D Pinout

The DVI-D connector on the converter uses the pinout in FIG. 5.



1. Data 2-	9. Data 1-	17. Data 0-	C1. No connect
2. Data 2+	10. Data 1+	18. Data 0+	C2. No connect
3. Ground	11. Ground	19. Ground	C3. No connect
4. No connect	12. No connect	20. No connect	C4. No connect
5. No connect	13. No connect	21. No connect	C5. No connect
6. DDC-CLK	14. +5 V*	22. Ground	
7. DDC-Data	15. Ground	23. CLK+	
8. No connect	16. Hot-Detect	24. CLK-	

FIG. 5 DVI-D output pinout for converter

* The +5 V on pin 14 will supply a maximum of 55 mA.

Equipment & Requirements for Video Adjustment with Wizard

The RGB-DVI Wizard software (provided on CD) must be used to configure RGBHV to DVI-D converters. One of the provided preset configuration files can be downloaded or a custom one can be created and downloaded. The factory default configuration is 1024x768 at 60 Hz. Once a new configuration is selected or is created and saved, it becomes the default.

Control PC with Monitor (for installation only)

- Windows 2000® or Windows XP®, 2 MB free disk space, 15 MB RAM, USB 1.1 controller and port
- Runs RGB-DVI Wizard, which adjusts configuration of display settings

Source PC (or any other RGB video source)

Equipped with a video card that supplies analog RGBHV at one of the EDID supported resolutions listed (determine which resolution *before* attempting to adjust video display; see the reverse for directions).

Supported Resolutions & Refresh Rates	
Resolution	**Refresh Rate**
640x480	60 - 85 Hz
800x600	60 - 85 Hz
1024x768 (factory default)	60 - 85 Hz
1152x864	60 - 85 Hz
1280x768	60 - 85 Hz
1280x960	60 - 85 Hz
1280x1024	60 - 75 Hz max.
1600x1200	60 Hz max.

Note: *Other resolutions may be supported; try the directions for "Specialized Resolution Adjustments" and for "Fine Tune Adjustments" on the reverse.*

Destination Monitor or Device

- Adjustments made with the Wizard are seen on the destination monitor or device.

RGB-DVI Wizard (with Help file)

- Install on the Control PC (see Step 2 of "To adjust the video display").

Optional – Adobe Acrobat

- Use to view supplied test images (<installation folder>\Test Patterns) for checking resolution, color, and phase timing.

To determine Source PC's video card resolution/refresh settings on Windows® operating systems:

1. Minimize all applications on the Source PC.
2. Right click on the desktop.
3. Select Properties from the Shortcut menu.
4. Select the Settings tab in the Display Properties dialog box.
5. Check the Screen area setting (resolution).
6. Click Advanced, and select the Monitor tab.
7. Check the Refresh Frequency, expressed in Hz (try other tabs if not visible).
8. Click Cancel on each dialog box to exit.

Video Display Adjustment

Tips for Working with Video Displays

- CRT monitors seem more sensitive to losing sync when changing vertical position.
- "ReSync Monitor" (CTRL-R on the Control PC) can be useful when closing in on final settings. Sometimes re-syncing clears up small irregularities in display. As long as the adjustments are in the acceptable range for the Destination Monitor, the sync light will shine constant a few seconds before the image reappears. If the sync light does not shine constant, return to the previous settings.
- Watch the sync / no sync light on the Destination Monitor. Dramatic movements in a setting can cause the monitor to go blank temporarily because it loses sync.

Test Image Files

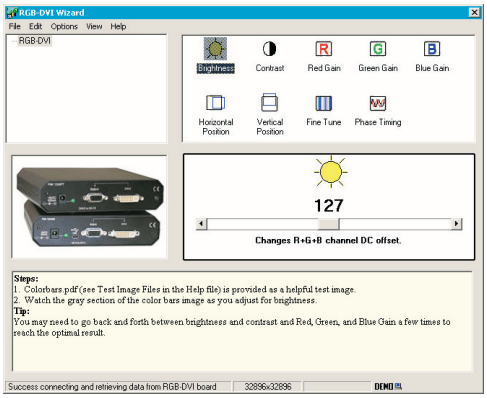
Test image files (for checking resolution, color, and phase timing) are provided on the *AMX AutoPatch CD*. The test image files are copied to <installation folder>\Test Patterns on the Control PC when the Wizard is installed (Step 1 below).

We recommend the following sequence for using the Wizard to adjust the video display on Destination Monitor and save the settings as a User Configurable Preset.

Note: *The Destination Monitor controls may need adjusting during this procedure.*

To adjust the video display:

1. Using the Control PC – on the *AMX AutoPatch CD*, run the BoardConfig.exe file located at CDRDrive:\Configuration\BoardConfig.



2. On the Wizard, use the File / Open menu and select the supplied resolution test image file that matches or closely matches the Source PC's settings. The default resolution is 60 Hertz if not indicated. (The settings display along the bottom of the Wizard dialog box.)

When an image appears on the Destination Monitor:

Proceed to Step 3.

If an image does not appear:

See "Specialized Resolution Adjustments" to the right before continuing.

3. Transfer the test image files from the Control PC to the Source PC, if you want to use them.
4. On the Source PC, open the file Colorbars.pdf to display the color bars test image (for use in Steps 6 and 7).
5. On the Source PC, in Acrobat Reader under the view menu, select Actual Size.
6. On the Wizard, select Brightness and then Contrast, adjusting each respectively as you watch the Destination Monitor.

Tip: *You may need to go back and forth a few times between Steps 6 and 7 to reach your desired result.*

7. On the Wizard, select Red Gain, Green Gain, and Blue Gain, adjusting each respectively as you watch the Destination Monitor.
8. On the Source PC, open the PDF of the test image that matches your resolution setting.
9. On the Wizard, select Horizontal Position and then Vertical Position, adjusting each respectively as you watch the Destination Monitor. (Under the Options menu, Horizontal Pulse Width may help with this adjustment.)

If the image is not satisfactory:

See "Fine Tune Adjustments" below.

If the image is satisfactory:

Go to Step 10.

10. Select Save As from the File menu.
11. Enter a file name and click Save.
12. Repeat Step 2 through 11 for each converter that needs adjustment.

Time Saving Tip: *The file saved in Step 11 can be opened in Step 2 for other converters if they are connected to the same type of equipment.*

13. When satisfied, disconnect the Control PC.
14. On the converter, cycle power to verify that the file was saved correctly.

Options Menu Adjustment Items (also see Shortcut Keys in Help file)

- Horizontal Pulse Width – increases or decreases the pulse width to shift the entire picture if the Horizontal Position element cannot move screen far enough.
- Fine Tune Shift – bumps the fine tune configuration element up or down a notch resetting the Fine Tune, which allows continued adjustments in same direction.
- ReSync Monitor – resyncs the monitor to clear up distortion. Resyncing is useful as you close in on your final settings.

Specialized Resolution Adjustments

Do not use this section unless the supplied resolution files do not provide an image.

To use specialized adjustments:

1. With the closest resolution file open, increase and decrease Fine Tune Shift* (under Options menu) several times in each direction until an image appears. Repeat with all close resolution files if necessary.

If an image does not appear:

2. Repeat the process in Step 1, selecting one of the resolution files from the sample video card files found at <installation folder>\presets\samples.

If an image still does not appear:

3. Change the Source PC's video card settings to match one of the supplied resolution files and adjust the image accordingly.

   Or

   On the Wizard (under Options menu), set the resolution and refresh rate to match the video card settings on the Source PC.

When an image appears:

Resume adjusting the video display at Step 3 in the adjustment procedure in the column to the left.

* Fine Tune Shift – bumps the fine tune configuration element up or down a notch resetting the Fine Tune, allowing continued adjustments in the same direction. CTRL-I (increase) and CTRL-D (decrease) also change the setting.

Fine Tune Adjustments

Use this section if the image requires further adjustment after normal adjustments have been made.

To fine tune the image:

1. On the Wizard, select and adjust Fine Tune one step at time (click the scroll bar), watching the vertical noise lines on the Destination Monitor move farther apart. Stop when the bands disappear. (The picture may still be slightly distorted; however, the next step should clear any distortion).
2. Under the Options menu, select ReSync Monitor.**
3. Select Phase Timing. As you watch the Destination Monitor, try adjusting it.
   If the image does not change, adjustment is not needed.
   If the image changed and adjustment is needed, open the PhaseTest.pdf on the Source PC. Watching the image, adjust until the transitions from dark to light are even.
4. Resume at Step 10 in the adjustment procedure at the top of this column.

** ReSync Monitor – resyncs the monitor to clear up distortion. Resyncing is useful as you close in on your final settings. CTRL-R also resyncs the monitor.

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