TC1600 Transcoder Users Manual

Introduction

The **Crescendo-Systems TC1600** transcoder is a highly flexible device to convert a RGBHV (VGA) signal into a YPrPb component signal. The **TC1600** has been tested for 480p, 540p, 720p and 1080i but will support any other resolution up to and including UXGA (1600 x 1200 @75Hz).

The **TC1600** supports both color conversions for 480p (SD) and 720p/1080i (HD) in order to provide optimum color fidelity. Although the required conversions are nearly identical, the difference cannot be ignored when optimum quality is pursued. The selection is automatically made based on line frequency.

The user has full manual control over the horizontal sync delay including a right shift mode and the horizontal and vertical sync widths in case the standard settings are not satisfactory. Additionally the low-level gamma curve of the **TC1600** is user adjustable, an indispensable feature for optimum picture quality.

Warning! Using incorrect scan-frequencies can seriously damage your TV or front projector, Crescendo-Systems takes no responsibly implied or otherwise and Crescendo-Systems' total liability to any customer for any and all claims relating to the use of the

TC1600 shall not exceed the total amount paid by such user to Crescendo-Systems for obtaining this product.

Specifications

The **TC1600** offers the user total flexibility and has the following specifications and features:

- High-Bandwidth VGA (RGBHV) to component (YPrPb) transcoder
- Automatic color conversion selection for SD and HD color space
- Transparent timing supports most video formats, interlaced or progressive
- Adjustable low-level gamma
- Automatic or manual setting of H-delay, H-width and V-width
- Drives cables of up to 50 feet (16m)
- High bandwidth (>130MHz) signal processing
- Input on a female VGA connector
- Component (YPrPb) output on three color-coded RCA connectors. Vout=1Vp-p when driving 75 Ohm and at no gamma correction

Included in this package are one **TC1600** and one external power supply. The manual with warrantee statement will be sent by email and optionally can be directly downloaded from the Crescendo-Systems website.

Setup

In order to successfully use your **TC1600** in just follow the simple steps outlined below.

1. Make sure that your source device has the ability to correctly set the timing needed by your display. **If this is not the case, do not use the TC1600.**
2. Connect the RGBHV (VGA) output of your source to the VGA input of the **TC1600**.
3. Connect the **TC1600** to your display using the YPrPb component output connector.
4. Connect the power supply to the transcoder. Use only the supplied unit or an exact equivalent.
5. First use the **TC1600** transcoder in the automatic sync mode as it is shipped and correct any picture shift using the controls on the display if available. The automatic mode is also preferable if the user has full control over the sync timing of the source. This is for example the case when a HTPC is used together with PowerStrip™ to set the desired picture parameters.

Additional features

The **TC1600** is shipped in full automatic mode with the following features:

- The color space is automatically selected based on the line frequency of the incoming signal.
- When shipped the gamma correction is adjusted to off. To increase low level gamma, rotate the 25-turn potmeter on the back labeled GAMMA clockwise. Figure 1 below shows the response of the minimum and maximum gamma setting. As can be seen, the amplitude of the video signal increases from 700mVpp at minimum gamma setting to about 800mVpp at maximum gamma setting. After dialing in the gamma the contrast setting of the display may have to be adjusted to compensate for this.
- The horizontal sync width and position and the vertical sync position are transparently passed through from the input and inserted onto the component output.
- The vertical sync width potmeter labeled V-WIDTH is always active and turning it clockwise will increase the width of the vertical sync. This control will rarely have to be touched. In some cases it may be possible for the picture to jump up and down a bit, in that case rotate the V-WIDTH potmeter slightly either way until the jumping disappears.
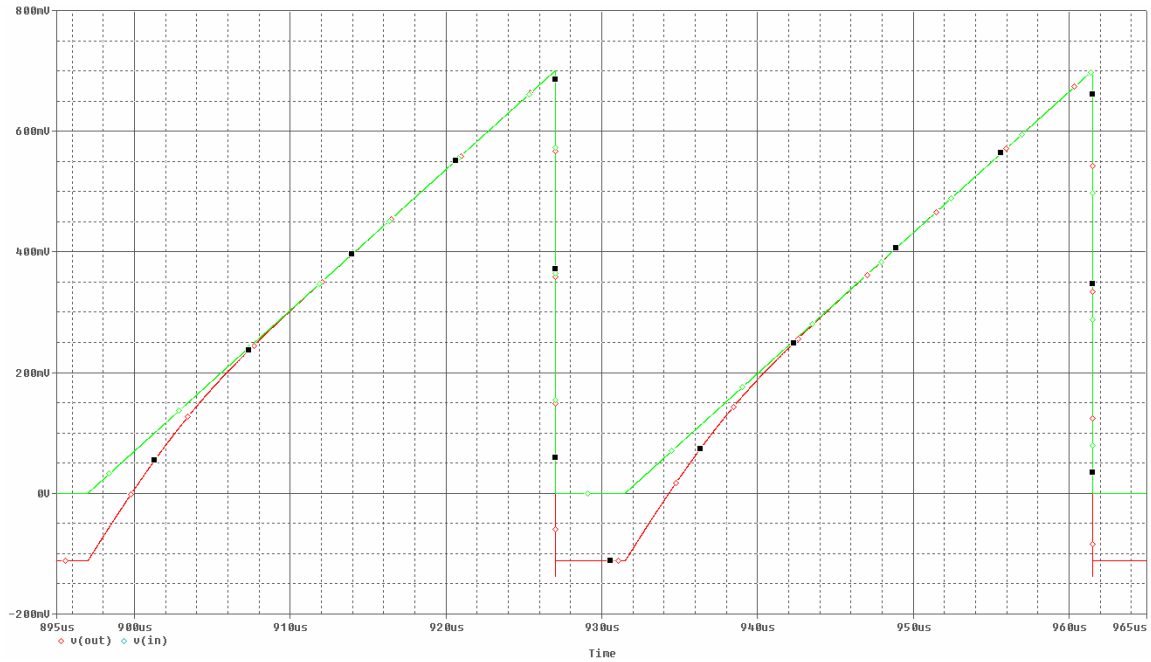
Figure 1 TC1600 gamma settings

Normally the full automatic mode should work in most cases. If it does not, all of the timing features mentioned above can be overruled manually. To do so the case has to be opened and a jumper changed. **Before opening the case please remove the power supply first.** Remove the four screws at the bottom of the **TC1600** and lift the top of the case. Inside is the printed circuit board of which an enlarged section is shown in figure 2 below. On the PCB is a single jumper block that can be used to enable the various sync timing options of the **TC1600**. A description of the settings is given below.
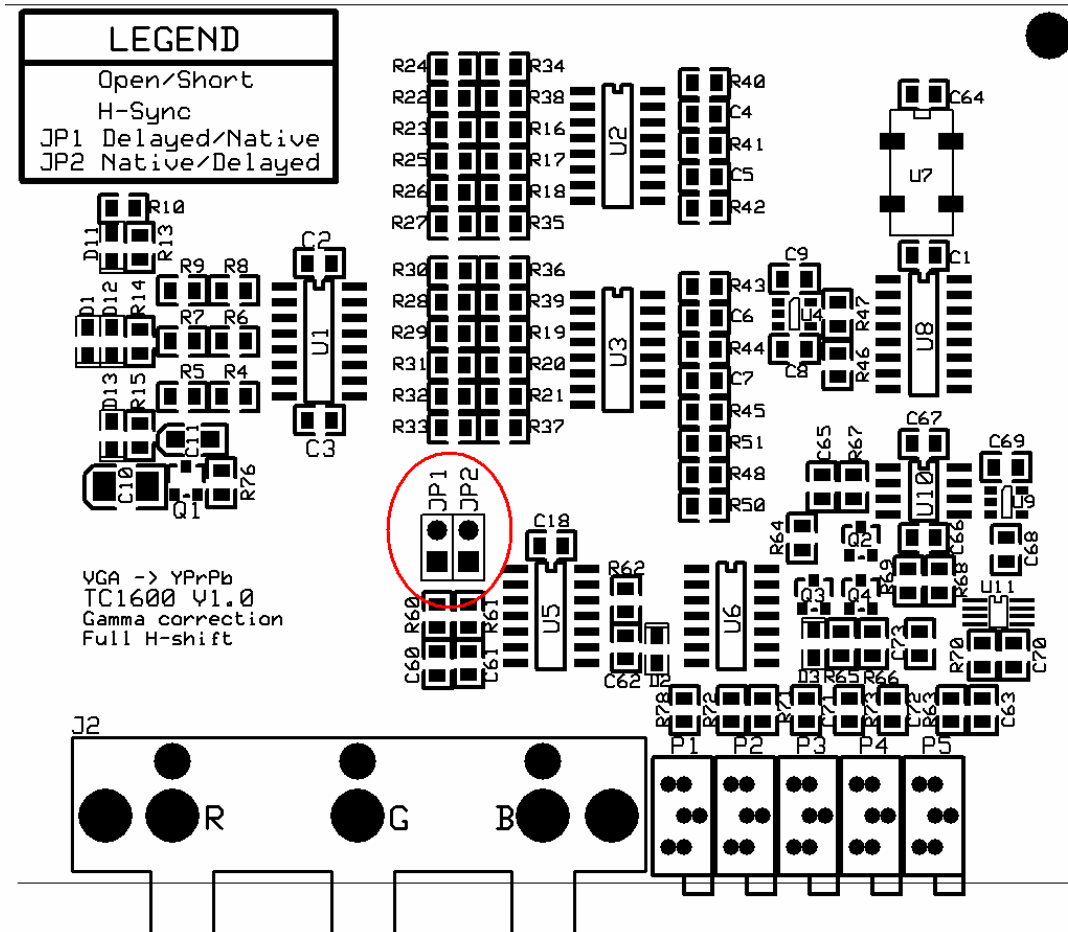
Figure 2 TC1600 printed circuit board

JP1: For automatic horizontal sync selection this jumper should be shorted, leave open to manually set the H-sync width and delay.

JP2: For manual horizontal sync selection this jumper should be shorted, leave open otherwise. The three 25-turn potmeters on the back labeled H-COURSE, H-FINE and H-WIDTH can now be adjusted with a small screwdriver in order to set the desired horizontal sync delay and horizontal sync width

The H-WIDTH is set at shipping to be compatible with most displays and rarely has to be changed. In case the display will not sync even in automatic mode the H-sync width may have to be increased. This is accomplished by turning the H-WIDTH potmeter on the back of the unit counter-clockwise.

Warning: Adjusting the delay or the width to its extremes may cause the black level clamp action of the display to intrude into the picture. This will cause the left side of the picture to disappear or the picture to change brightness and look hazy. In that case please reduce either the delay or the width.

In manual mode the H-COURSE and H-FINE controls can be used to correct any desired picture shift. At shipping the H-FINE control is set to off (fully counter-clockwise), it is

recommended to only use the H-COURSE control as that one is resolution and timing independent. Turning the H-COURSE potmeter clockwise will shift the picture to the right, turning it counter clockwise will shift the picture left.
Warning: Turning the H-COURSE and H-FINE control too much may cause the display to lose sync. For short periods this is generally not a problem, having some displays out of sync for too long may cause damage.

Warranty

Crescendo-Systems designs and builds all products with the highest of care and every product should operate trouble-free for many years when used under normal operating conditions. Therefore, every **TC1600** carries a 1-year no-hassle replacement warranty. Should a warranty replacement be needed, please contact sales@crescendo-systems.com first.