Single Channel Full Frame 4:2:2 Time Base Corrector

Refurbished with Low-Noise Modifications

TBC-1000 ModV1RevB

Instruction Manual

Items Included

- Modified TBC-1000 device
- 12V 1.5A power supply with ferrite bead
- 2x Male BNC to female RCA adapters for composite video
- 2x Male S-Video to female BNC adapters for S(Y/C) video
- 4x Male/Male BNC patch cables
- 2x BNC 75Ω terminators

Introduction (from the original TBC-1000 and TBC-100 documentation)

Make copies of your video without noticeable signal loss or noise. Now you can correct an unstable video source before you make copies. The TBC-1000 is a digital full frame synchronizer that replaces all sync signals from the source. The result is clean transfers and clear copies. With a built-in four output distribution amplifier for audio and video, you can quickly make multiple copies with professional results.

- Re-generates all the sync signals to stabilize the video
- Frame Synchronization with full frame memory
- Wide bandwidth, Y/C in 4.5 MHz, composite in 3.5 MHz
- S/N ratio > 50dB
- 8-bit video resolution, 4:2:2 sampling rate
- PAL/NTSC system auto detect
- Differential phase < 1°
- Differential gain < 2%

Shortcomings of the Original TBC-1000 Device

The TBC-1000 device is a standalone device built around the TBC-100 time base corrector. Every TBC-1000 unit contains a TBC-100 PCI board at its core. The TBC-100 produces some of the cleanest video of all the Datavideo time base correctors. Unfortunately, the design of the TBC-1000 degrades the TBC-100 signal quality in different ways:

- The signal passes through several cable-to-board header connections that are often under mechanical stress after assembly.
- Coax wiring is not always used properly. For example, the input selection switch inside of the S-Video connector on the front panel is wired using one of the coax cable's ground shield.
- Audio signals pass through the device as a convenience feature of the distribution amplifier.
- The distribution output amplifier is an elementary push-pull amplifier implemented from scratch with discrete BJT transistors. Even if you only need a single output from the device (which is the normal use case for this device these days), the distribution amplifier cannot be bypassed.

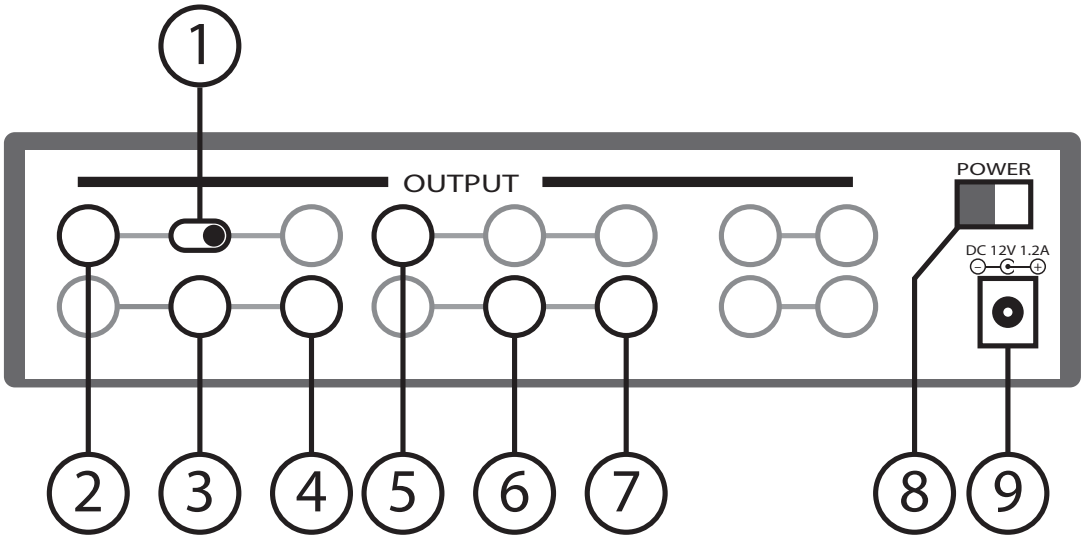
- The design of the power supply to the TBC-100 board went through several iterations to mitigate common failure scenarios. The final solution is more reliable than the original, but incorporates a bare-bones switch-mode voltage regulator that adds noise to the system via ripple voltage.
- The brand of electrolytic capacitors used (often Wendel brand) have some of the highest known failure rates. As these components age and begin to leak, large amounts of noise can be observed in the output signals.

Modifications Made in TBC-1000 ModV1RevB

The goal of the modifications we've made is to provide the high-quality, low-noise signal characteristic of the TBC-100 device, while maintaining the convenience of being a standalone device. The result is a device that is perfectly suited for incorporation into a modern analog video digitization workflow: the most common use case of the TBC-1000 device today. Modifications from the original device are as follows:

- Distribution amplifier board removed entirely.
- Power supply uses a linear voltage regulator—the same regulator used in the TBC-100 product.
- All electrolytic capacitors replaced with new Nichicon brand capacitors.
- BNC connectors are used for all inputs and outputs—for both composite and S-Video signals.
- New internal coax wire from connectors soldered directly to PCB, providing the cleanest possible signal path to the board.
- Input selector toggle switch added, allowing for input to be selected regardless of which cables are connected to the device.
- All inputs and outputs moved to the back of the unit.
- The status LED on the TBC-100 board (previously hidden from view inside of the case) is exposed as a blue LED on the front panel of the device, providing more insight into the operation of the device.

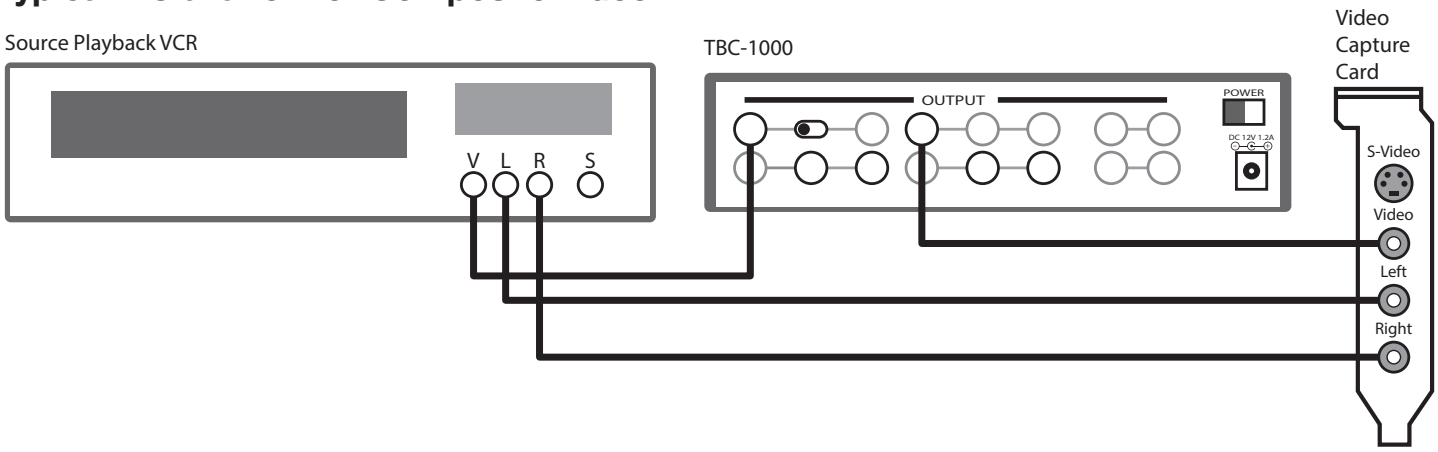
Rear Panel Connections



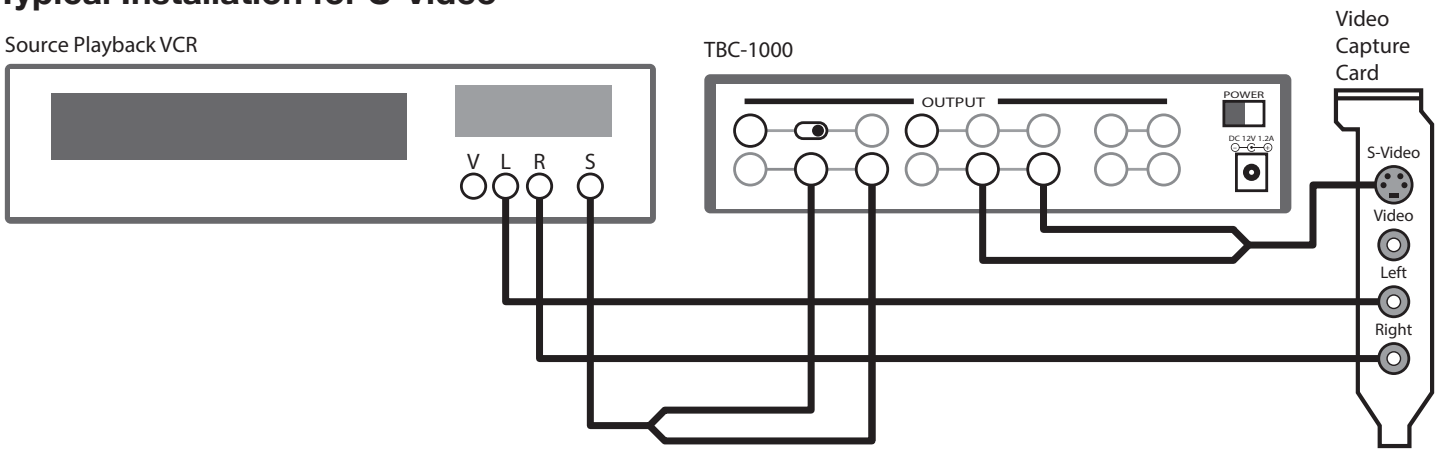
1. Input selector
2. Composite input
3. S-Video Y input
4. S-Video C input
5. Composite output

6. S-Video Y output
7. S-Video C output
8. Power ON/OFF switch
9. DC 12V 1.2A center-positive input jack

Typical Installation for Composite Video



Typical Installation for S-Video



Operation

1. Install equipment as shown in the installation diagrams. Add BNC terminators to unused output connectors.
2. Set the input selector switch to the desired input signal (composite vs. S-Video).
3. Turn the power switch on. Red power LED will illuminate and blue status LED will flash in regular 3-second intervals.
4. Signal will be output to both composite and S-Video outputs regardless of which input is used.
5. Unit is capable of running continuously for many hours. However, it is recommended to power off the unit using the power switch in the back when not in use to extend its lifetime.

Specifications

Inputs

- 75 ohm female BNC coax connectors
- Signal level: 1.0 Vp-p

Outputs

- 75 ohm female BNC coax connectors
- Signal level: 1.0 Vp-p

General

- Frequency response: S-Video 4.5MHz ± 3dB
- Differential gain: ± <2%
- Differential phase: < 1°
- Signal-to-noise ratio: > 50dB
- Component: YUV 4:2:2 8-bit, Y: 13.5 MHz
- Correction range: single channel full frame TBC
- Video system: NTSC/PAL auto detect
- Power requirement: DC +12V 1200mA
- Ambient temperature: 0°-55° C
- Ambient humidity: < 90%
- Dimensions: 210mm (W) x 210mm (D) x 55mm (H)

Contact

While we do not offer any warranty or guarantees, we're happy to assist whenever possible. Please contact us if you have any inquiries:

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