PC-TBC-Y/C
TBC/Frame Synchronizer

Operator's Manual

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PREFACE

This manual describes the Hotronic, Inc., PC-TBC/Frame Synchronizer. The manual provides familiarization, applications, installation and operation information for Hotronic product users and Customer Service Representatives.

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GENERAL DESCRIPTION

The Hotronic PC-TBC is a broadcast quality plug-in TBC/Frame Synchronizer. It corrects time base errors and synchronizes video signal originating from any heterodyne color video tape recorder (VTR), or camcoder that utilizes NTSC television standards. It also synchronizes satellite video signal to a house sync. The PC-TBC automatically changes its mode of operation to accept monochrome or heterodyne color video inputs. When processing the video signal from any heterodyne VTR, (either a capstan servo VTR or line-lock VTR) or camcoder, the PC-TBC produces a video output signal conforming to standards.

The PC-TBC contains a fully adjustable processing amplifier. With the Hotronic PC-TBC Remote Control Panel (optional), it allows adjustment of video level, chroma level, set-up level and hue. These four controls are preset to unity. Other controls on the remote control panel include adjustment of gen-lock horizontal and system phase, freezing frame or field, strobe, selecting strobe speed as well as selecting composite or S-VHS mode.

APPLICATION

The PC-TBC is used to increase the stability of a monochrome or a NTSC color video signal in broadcast, CATV, CCTV or other television production studios. Use of the PC-TBC optimizes price/performance ratio of existing studio equipment during all phases of television production without sacrificing quality. The operational flexibility of the PC-TBC increases the efficiency of most production tasks with simplification, and in many cases, increases the capabilities of the preset production equipment.

The PC-TBC operates with virtually any non-segmented VTR or VCR. It's compatible with capstan servo VTRs or power line-lock VTRs. It accepts monochrome or heterodyne color input without operator intervention. It doesn't matter whether the color video signal is from a vertically-locked VTR or from an inexpensive home VTR or camcoder; the output of the PC-TBC is color interlaced for immediate broadcast. Also, the gen-lock function allows users to totally synchronize video signals from different sources.

The PC-TBC is designed to work with any PC that has standard XT or AT bus. As it only draws power from the computer, it doesn't occupy any computer memory or hard disk space. Requiring very little power, the user can plug two or more PC-TBC's into the computer, gen-lock them together, and form a dual or multi-channel TBC.

INSTALLATION

When shipped, the Hotronic PC-TBC is fully assembled and ready for immediate use. Once removed from the packaging, the unit should be inspected for any shipping damage. Ensure that the circuit board (the card), is free of packing material.

The PC-TBC could be plugged into any slot available in the PC that has standard XT or AT bus. When plugged into an Amiga, make sure it is plugged into the PC slots. And because the PC-TBC requires so little power, it's well suited for most desktop systems.

WARNING!

MAKE SURE THE COMPUTER POWER IS OFF BEFORE THE PC-TBC IS PLUGGED IN **OR** OUT, OR BOTH THE COMPUTER AND THE PC-TBC CAN BE DAMAGED! FOR ELECTRICAL SHOCK PROTECTION, THE COMPUTER MUST BE CONNECTED TO EARTH GROUND. MOST COMPUTERS ARE SUPPLIED WITH A TRI-CONDUCTOR POWER CABLE THAT WHEN CONNECTED TO THE APPROPRIATE A/C OUTLET, GROUND THE COMPUTER.

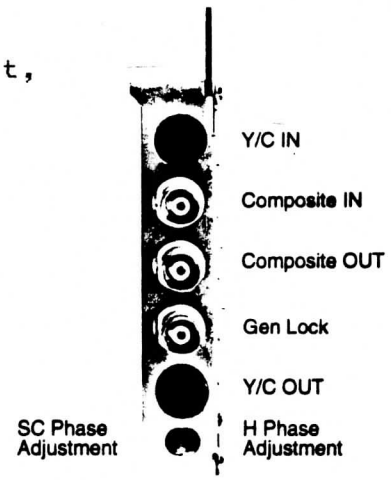
The PC-TBC Remote Control Panel (optional) is battery operated. Please insert four AAA batteries into the back of the PC-TBC Remote. On the front of the panel, there is a red LED (lamp) that will flash when any key from the remote is pressed. Change batteries if the indicator dims.

SYSTEM INTERCONNECTIONS

Signal connections for the PC-TBC will vary with the system in which it is used. 75 ohms coaxial cable with BNC connectors and/or S-VHS, (Y/C) 4-pin connectors should be used. Make sure there are no loose wires or connections to ensure proper operation of the PC-TBC.

There are six connectors on the board. They are:

1. S-VHS (Y/C) Input
2. Composite Input
3. Composite Output
4. Gen-lock Input
5. S-VHS (Y/C) Output
6. Remote Control Input, (phone-jack) or a Gen-lock adjustment switch



DESCRIPTION OF CONNECTORS

Video Input

These connectors accept video from VTR, satellite or camera. Either composite or S-VHS input signal is selected by the COMP/YC switch on the remote control unit.

Video Output

These connectors generate corrected output video signal (both composite and S-VHS). When no input signal is connected to the PC-TBC, the output will be the black burst.

Gen-lock

If a composite video signal or black burst is applied to this connector, the PC-TBC will automatically gen-lock to the incoming signal. If not, it will internally lock.

Remote Control

This should only be connected to the Hotronic Remote Control Panel (optional). Alternately, a gen-lock adjustment switch is installed for units that do not include the optional PC-TBC Remote Control Panel.

DESCRIPTION OF GEN-LOCK ADJUSTMENT WITHOUT USING A PC-TBC REMOTE CONTROL PANEL

Without using the PC-TBC Remote Control Panel, all the processing amplifiers are set to unity and they cannot be adjusted. The freeze and strobe functions are inaccessible.

However, the Gen-lock phasing can still be adjusted by using the gen-lock adjustment switch. By pushing left and releasing the switch, the SC phase will move a step backward. Pushing the switch right for to move forward. By pushing the switch and holding approx. 1 second, the SC phase will continuously move in that direction. The horizontal phase will move a step (70ns) in the same direction when the SC phase has moved 360 degrees.

Without the PC-TBC remote, the user cannot switch between composite and S-VHS (Y/C) mode. Instead, the PC-TBC detects this automatically when the power is turned on. When the power is on, the PC-TBC will check which input connector (composite or S-VHS) where video signal existed, and automatically switch to that connector. If both connectors have video input, the PC-TBC will select composite mode.

DESCRIPTION OF CONTROLS ON HOTRONIC PC-TBC REMOTE CONTROL PANEL

PROC AMP CONTROLS:

VIDEO

The video gain is increased when the left key is pressed, and the video gain is decreased when the right key is pressed. Press the key once and release; the video gain will increase/decrease one unit. Press and hold the key for about 2 seconds; the video gain will increase/decrease continuously until the key is released or the video gain reaches its maximum or minimum limit. This machinism applies to all the keys on the Remote Control Panel.

CHROMA

The chroma gain is increased when the left key is pressed, and the chroma gain is decreased when the right key is pressed.

HUE

The adjustable hue range is more than 90 degrees.

SETUP

The setup level is increased when the left key is pressed, and the setup level is decreased when the right key is pressed.

All the proc amp controls are set to unity when shipped. Yet, the PC-TBC has a permanent memory to remember what is changed by the user. Once any of the above proc amp controls are changed, the PC-TBC remembers its level and it will keep on this level even when the power is off, or the remote control unit is removed. All the proc amp controls will be reset to unity level when the preset key is pressed, (see below).

DESCRIPTION OF CONTROLS ON HOTRONIC PC-TBC REMOTE CONTROL PANEL

OTHER CONTROLS

F.FRM

This key is used to select between the Freeze Frame mode and the normal TBC/Frame Synchronizer mode. The TBC/Frame Sync mode default's when the power is turned on. It will change to Freeze Frame mode when this key is pressed once; press again to return to normal TBC/Frame Sync mode.

F.FLD

Similiar to the F.FRM control mentioned above, only Field is frozen instead of frame.

ON/OFF (STROBE)

The Strobe mode will be activated when the left key is pressed once, and will return to normal TBC mode if the left key is pressed again. Strobe speed (8 different steps) is adjustable. The strobe speed is decreased a step when the right key is pressed once. After reaching the slowest step, it will re-start from the fastest step.

LOCK/UNLOCK

The switch is located at the bottom of the Remote Control Panel. If the switch is in "Lock" position, the H.Phase, SC Phase, Comp/YC, and preset keys are inactive. Slide the switch to "Unlock" if you want to adjust these keys.

H.PHASE

These keys will adjust the horizontal gen-lock phasing of the PC-TBC with respect to the input gen-lock reference signal.

SC PHASE

These keys will adjust the phase of the burst and chroma of the PC-TBC with respect to the color phase of the reference signal applied to the gen-lock connector. The control is used to compensate for variations in cable length. In the course of adjusting the SC phase, it is normal that the output phasing may have some jump when it hits the 90 degree boundry. It will become steady once the adjustment is completed.

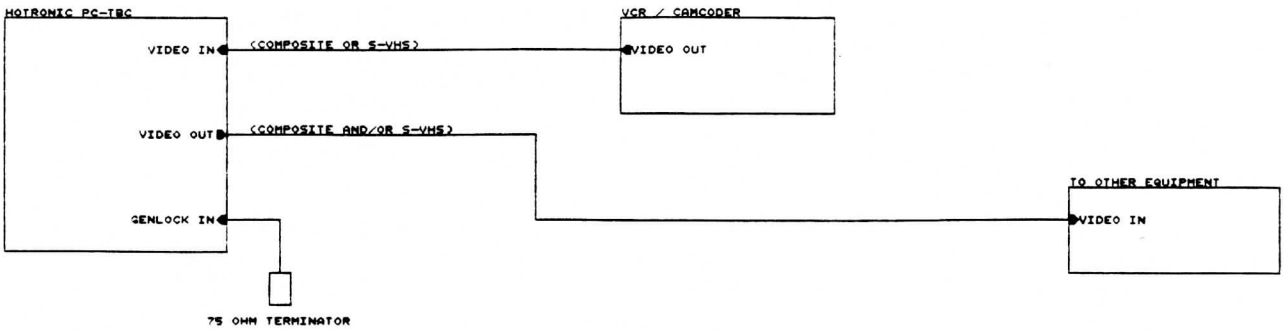
COMP/YC

This key is used to select between composite and S-VHS (Y/C) input signals.

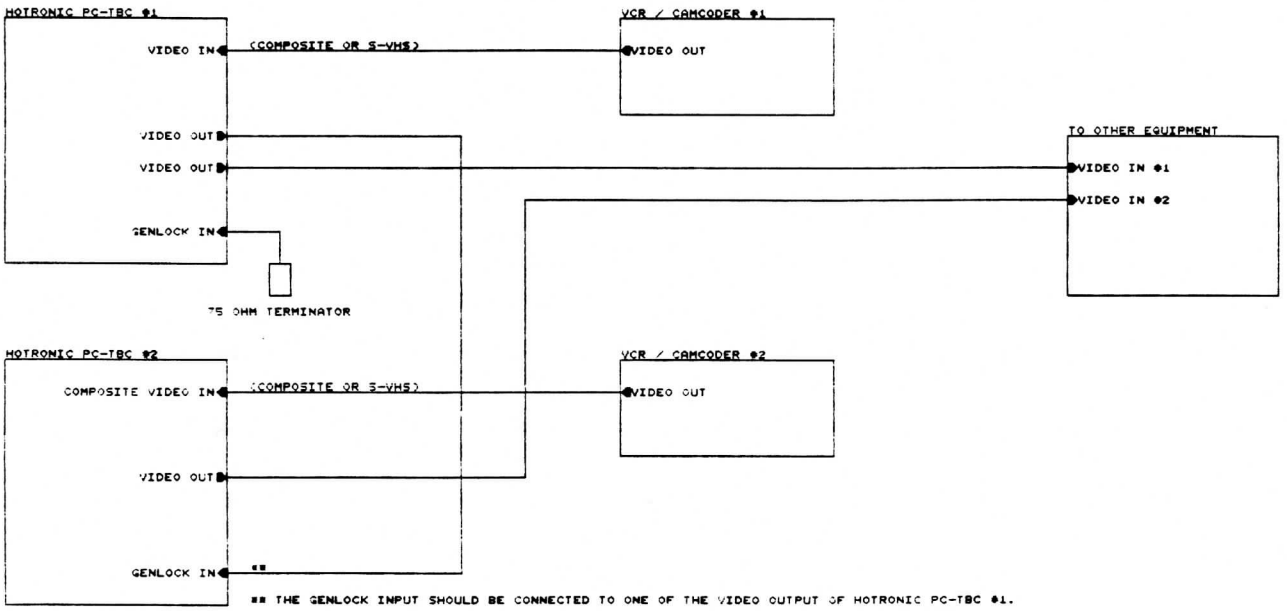
PRESET

Press this key once to make the PC-TBC return to normal TBC/Frame Sync mode, and the video, chroma, hue and setup levels to unity. The gen-lock phasing is not affected.

INSTALLATION DIAGRAM FOR ONE TBC



INSTALLATION DIAGRAM FOR TWO TBCs



** THE GENLOCK INPUT SHOULD BE CONNECTED TO ONE OF THE VIDEO OUTPUT OF HOTRONIC PC-TBC #1. HOWEVER, SINCE ONLY COMPOSITE BNC CONNECTOR IS AVAILABLE FOR GENLOCK INPUT, PLEASE USE A SVHS-TO-COMPOSITE CABLE IF IT IS CONNECTED TO THE S-VHS OUTPUT OF PC-TBC #1.

WARRANTY

Hotronic, Inc. warrants each PC-TBC against defective materials for a period of one year and workmanship for a period of ninety days. This warranty does not apply to any PC-TBC that has been repaired or altered by anyone other than an authorized factory representative. No other warranty is expressed or implied. Hotronic, Inc. specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

Hotronic reserves the right to make product or part improvement without assuming any obligation to install them in previously manufactured units.