Using the TCS “TVC e”
Tobin Videoframe Controller

Applications

The TVC e is used for double-system sound filming, for later transfer to USA format video tape on a Rank or Bosch (etc.) film scanner, in conjunction with audio on DAT (digital audio tape,) CD (compact disk,) MiniDisc, or Hi-Fi video tape such as 8mm, Hi-8, VHS, etc. that cannot be resolved or speed controlled. Since the speeds of the TVC e are the same as the USA NTSC video transfer speeds, that is 23.976 or 29.970 FPS (frames per second,) you are working in real time both filming and in the transfer. The audio is self-resolving and will play at the same speed as it was recorded, so synchronization will be maintained without the need to correct the speed of the audio reproducer with expensive time code chasing equipment. It is of course still necessary to use a clapstick to establish the start point of each shot. Since general purpose audio equipment is usually not adjusted as precisely as film sound crystal sync equipment, the best sync may result when playing back on the same machine you used in the field.

The 23.976 and 29.970 speeds are not HMI compatible, so if you are filming with regular HMI or fluorescent lights a slow pulsation of exposure may be noticed in the film. This can be reduced by setting your variable shutter to 144° for 23.976 or 180° for 29.970 FPS, and/or by using “flickerless” (square wave) ballast HMI lights. It can be totally eliminated by using daylight or high-wattage tungsten lights.

The TVC e is also useful for filming from NTSC (USA system) video monitors. Use the 29.970 speed, and ideally your camera should have a mirror shutter with a 180º shutter opening for the narrowest shutter bar. When you start filming, push the “Phase” button to move the shutter bar to the bottom or other desired place on the monitor screen. (If using an Arri 16-BL, the mirror shutter has an extra stripe on it that can be confusing. The true shutter bar is the narrow one; disregard the wider bar, which is the mirror stripe.)

For filming from computer screens, every one is a different odd speed according to the whim of the video card designer, so you should instead use the Milliframe Controller.

Attachment

Connect the DE-9F end of the cable to the TVC e. Plug the other end into the camera. Cables are available with several connectors to suit the various models of cameras and crystal controls. The TVC e uses the same cables* as the TMC and TMC2 Milliframe Controllers. The cables for the previous models TVC and TMC-55Aa will not fit and are wired differently, and thus cannot be used with the TVC e.

If your camera is an Arri 16-SR High Speed, it is necessary to change a jumper inside the TVC e to get the correct speeds.

NOTE: the circuitry inside is static sensitive. Ground your body to a water pipe and keep touching the metal shell of the DE-9F connector to equalize charge.

Remove the four corner lid screws and lift off the lid. You will note a jumper on the bottom of the circuit board is linking two of the three gold pins, with the center pin linked to either the 1600 or 3200 pin, to output either 1600 or 3200 pulses per frame of film respectively. For use with the 16-SR High Speed, pull the jumper straight out and re-attach it in the “1600” position. Replace the lid and lid screws.

To restore normal operation, replace the jumper in the “3200” position instead. If your other camera uses the Aaton, WPI or RJ-12 cable, or is equipped with the TXM-20 crystal motor, it is not affected by this jumper and it can be left in either position.

If you forget which position is which, the actual designations of “Normal” and “16SR-HS” are silk screened in white on the top of the board.

*The TVC e cannot be used with the TXM-22 crystal motor for the Arri 16-S and M since there is no provision for selecting the required 0.6X speed correction.

Operation

There are three user controls on the front of the unit. Two are flush or recessed to prevent accidental actuation.

Push the speed switch with your fingernail or a pointed but not sharp object, to select the running speed. Move it to the right for 23.976 FPS and to the left for 29.970 FPS. If filming from a video monitor, with the camera running push the “Phase” button with your fingertip until the shutter bar is where you want it, and then release the button.

The Run-Stop switch controls the running of compatible cameras. Push to start, and push again to stop.

The Sync Alarm light on the camera will show whether the desired speed is being maintained. There is no indication on the TVC e itself.

Note that some cameras must have the **camera** speed dial set to a specific speed, often 24 FPS, in order for an external speed reference such as from the TVC e to be correctly applied. Refer to your camera or crystal motor instructions. Correct running can be verified by selecting 29.970 FPS on the TVC e and watching for a stationary shutter bar on an NTSC (USA system) TV set that is tuned to a broadcast station.

Additional Information *(continued inside)*

can be verified by selecting 29.970 FPS on the TVC e and watching for a stationary shutter bar on an NTSC (USA system) TV set that is tuned to a broadcast station.

Additional Information *(for technicians)*

Apart from the Normal / 16SR-HS jumper there are no user adjustments inside. Do not disturb the trimmer capacitor used for making a fine adjustment of the crystal frequency, unless you are properly equipped to do so.

To make up your own cables, the following pins on the DE-9 connector (male in the TVC e, female on the cable end) are used for the following purposes: Pin 6 is +12 volts Power, 5 & 9 and the connector shell are negative Ground. Other pins are 5 V CMOS logic, pulses per frame (PPF) as shown: 1=no connection, 2=3200/1600PPF output according to the jumper, 3=100PPF output, 4=run switch, 7=run switch, 8=3200/1600PPF output according to the jumper. These connections are the same as on the TMC and TMC2 Milliframe Controllers, except that on the latter units the pin 8 output is not affected by the jumper setting, and pin 1 is the 5 V frame pulse input for the TMC2 footage counter function.

The only service adjustment is the crystal trim setting. Connect a frequency counter to 74HC4060 pin 9 and ground. Adjust the trimmer for 6137.861 kHz or 7672.327 kHz ±20 Hz according to the crystal marking. The lower frequency crystal must have jumper J6 installed, and the higher one has jumper J7 installed instead.

Tobin Cinema Systems, Inc.
http://www.tobincinemasystems.com