



# APPLICATION

**VIDEOTEK**  
INC.

243 Shoemaker Road, Pottstown, Pennsylvania 19464 / (610) 327-2292 FAX (610) 327-9295

## Frame Synchronizers, Part II

We left off last month, on the subject of frame syncs and the difference between two and four field devices. I guess we should first state what one, two and four field synchronizers have in the way of memory. Each one has a certain amount of "record" capacity. One, two or four fields depending on the size of the memory. We have all seen spec sheets and ads referring to window size. The "window" is the amount of possible error correction available in a unit and is measured in lines or fields depending on the unit. That window is, in fact, the amount of memory record space available. So one line, two lines, fifteen lines, one field, etc., refer to the amount of memory available. How much memory is in an infinite window device? Lots, but not an infinite amount. Four fields worth, because after that the loop is closed or has gone full circle and is back to where it started as far as sync is concerned. This issue is concerned with the differences between two and four field synchronizers. If a unit has less than one field of memory then it is not in the family of field or frame synchronizers, it is probably a Time Base Corrector. Remember any Time Base Corrector with more than one field of memory is also a synchronizer, but not all synchronizers are Time Base Correctors.

## Time Base Correctors

There is some confusion as to what a time base corrector is and what it does. A time base corrector fixes some of the errors a mechanical device (like a video tape recorder) introduces to an otherwise accurate video signal. Time base error is just like the wow and flutter in the play back of music from a record player or audio tape player. When you play a recording of the Boston Pops holding a high note, the sound will be distorted as the player goes a bit faster or slower than it should. None can make perfect speed all the time. Wow is long term speed variations, like going 7.48 ips instead of 7.5000 ips. Close but not quite there. Flutter is short term time variations in speed. Measure the speed and it is constantly fluctuating from 7.481 and 7.480. Video tape recorders have the same problems, only usually less severe. Time base error is most apparent when trying to mix or wipe from a VTR playback to a camera or another VTR playback. If the VTR in use has any time base error, then there is picture tear and roll because the switcher and monitor can not lock to two different sync rates or color rates at once. They must be exactly the same. The primary difference then between the function of a TBC and a synchronizer is a TBC is built to first fix any incoming errors in wow and flutter of the video signal.

## Two and Four Field Synchronizers

Since the only outward difference between two and four field synchronizers is memory, what's the functional difference? A two field unit is fully suited in any situation where the function is to receive a remote signal of active video and synchronize that signal to the local studio. They are perfect for Teleconference, Satellite, and Microwave applications which mix remote and local video for live uses and when recorded on  $\frac{1}{2}$ " or  $\frac{3}{4}$ " VTRs. A four field synchronizer is necessary for applications where the processed picture will be recorder on 1", D-1 or D-2 for future editing. A four field device is the only type of synchronizer which can absolutely maintain SC/H phase relationships in all situations. So, that's the poop. I hope this helps clear up some basic questions as to what to use where. The next issue will have to deal with some of the remaining issues like resolution, 4xSC, bits and so on.

The responses and requests are rolling in. I appreciate your help, suggestions and questions. Please write or call Mark Everett at Videotek with your input.