



# APPLICATION

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Welcome to the new Videotek Application Notes series. We will provide you with useful information which will help you with all types of video and audio systems applications. We expect to be prejudiced towards Videotek products, but most of this information will apply universally. Speaking of universal, let's open up with establishing some common ground, another glossary of terms which are used in video and audio, and an explanation of what they mean and how they relate to each other.

## SYNC PULSE RELATIONSHIPS

**BLACK** also Color Black, Black Burst — A composite color video signal. This signal has composite sync, reference burst, and a black video signal which is usually at a level of 7.5 IRE (.05 volts) above the blanking level.

**BLANKING** also Composite Blanking — Related to composite sync, this signal has both horizontal and vertical components and is at its negative level whenever video is to be blanked or turned off. The most obvious use of blanking is turn video off as the scanning beam returns from the left side back to the right in a display monitor so you don't see the retrace.

**BURST FLAG** — Related to horizontal drive, this is a short duration pulse, usually 9 cycle of burst long. This pulse is used to "cut" a hole in the composite video signal and allow the insertion of reference subcarrier into that hole. The position of the burst flag pulse is .6 microseconds after the end of horizontal sync.

**COLOR FIELD IDENTIFICATION PULSE or CFID** — This is a pulse which is used to identify field 1 of 4 in a composite color video system and is used with any full bandwidth editing system.

**EQUALIZING PULSES** — These pulses are found in the vertical interval, and were used to help transmitters get ready for and recover from the electrically difficult process of sending vertical sync, the most energy consuming part of the transmitted signal. The equalizing pulses form the distinctive "hammer head" seen in the pulse cross mode.

**GENLOCK** — Genlock is a process of sync generator locking. This is usually performed by introducing a composite video signal from a master source to the subject sync generator. The generator to be locked has circuits to isolate vertical drive, horizontal drive and subcarrier. The process then involves locking the subject sync generator to the master subcarrier, horizontal, and vertical drives so that the result is that both sync generators are running at the same frequency and phase.

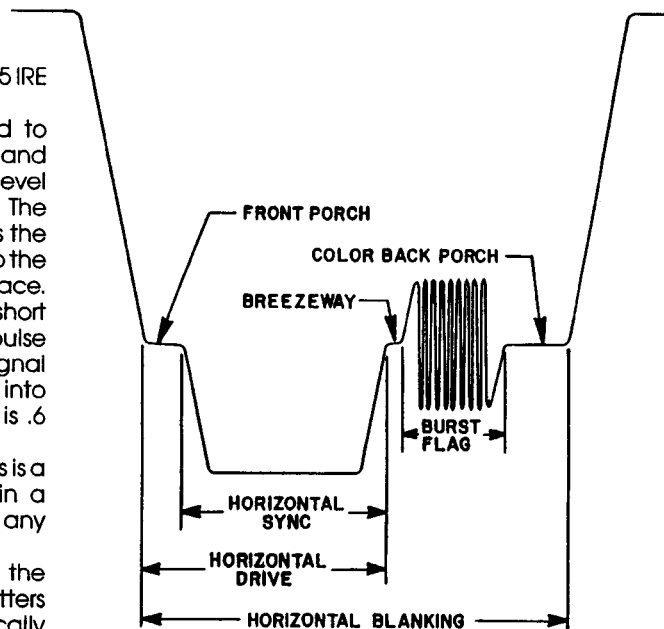
**HORIZONTAL DRIVE** or Horizontal Sync — This signal is derived by dividing subcarrier by 227.5 and then doing some pulse shaping. The signal is used by monitors and cameras to determine the start of each horizontal line.

**SC/H PHASE** — The issue of SC/H phase is a necessary worry only in systems which produce pictures which might be recorded on direct, full bandwidth video recorders. SC/H phase is the adjusting of subcarrier to horizontal phase. It has to be accomplished in every sync generator in the chain of picture generation in the system. The proper SC/H phase is accomplished when the subcarrier sine wave is at a zero crossing and going towards positive at the same moment in time that the leading, or negative going, edge of horizontal sync, at line 10, field 1 is at its half way point.

**SUBCARRIER** also SC, 3.58, 3.58 CW — This is the basic signal in all NTSC sync signals. It is a continuous sine wave, usually generated and distributed at 2 volts in amplitude, and having a frequency of 3.579545 MHz. Subcarrier is usually divided down from a primary crystal running at 14.3180 MHz, and that divided by 4 is 3.579545. All other synchronizing signals are directly divided down from subcarrier.

**SYNC** also Composite Sync — This signal derived from a composite or combination of horizontal and vertical drives, with some slightly narrowed and delayed pulses as well as the addition of equalizing pulses. It is one of the more popular signals used in video systems today, and when used, is usually accompanied by subcarrier.

**VERTICAL DRIVE** also Field Sync, or Vertical Sync — This timing signal is derived by dividing horizontal sync time by 262.5, and ends up at a frequency of almost 60 Hz. This is the vertical reset signal used by monitors, and capstan servos in video tape recorders.



We know that this list is not complete, and we will take care to define any questionable terms used in future issues. Your comments, suggestions, and questions are invited. Feel free to call or write Mark Everett with your input.