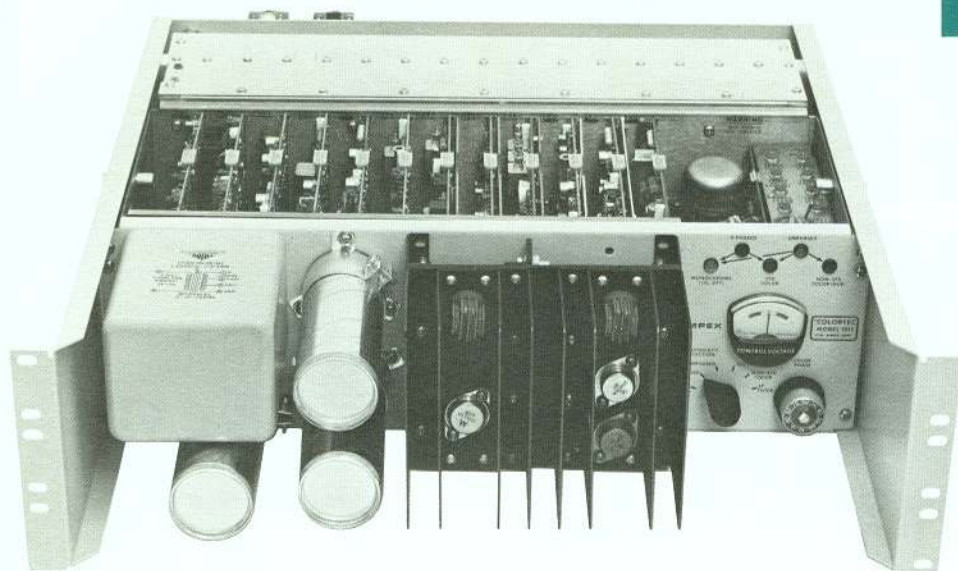


AMPEX

Model 1011 Colortec*

*compact, direct
color recovery system
for Ampex VR-2000
and VR-1200 Series
videotape recorders*



Features

- Standard NTSC output signal . . . with subcarrier interlace and full bandwidth
- Extremely simple operation . . . only two operating controls
- Fully automatic "signal seeking" operation as well as manual operation . . . indicator lamps show when unit is operating automatically
- Burst output may be derived from either original tape burst or station subcarrier . . . choice of burst may be split between playback and standby
- Novel 360° error detector circuit guarantees correct color phase under all conditions . . . even when correction range of the unit is exceeded
- Includes provisions for reproducing non-standard color tapes (dubs of earlier encode-decode or heterodyne playbacks) . . . automatically recognizes these signals
- Built-in low pass filter permits monochrome reproduction of color signals
- Compact, slide-drawer construction requires only 5¼" of vertical space in VTR

Description

Colortec is a compact, direct color recovery system applying ultra-precise time-base compensation to tape signals — so resultant color output signals are highly stable. VTR's equipped with Colortec record and reproduce 525/60 FCC NTSC color signals with

full bandwidth luminance and chrominance, with standard subcarrier interlace. Signals are synchronous, line-by-line, to an external 3.58MHz subcarrier signal source. Colortec works as an integral part of VR-2000 and VR-1200 Series recorders; it can be *factory* or *field* installed (recorders in these Series are prewired for Colortec). Alignment controls are factory-set and normally need no adjustment. Should alignment be needed, however, the entire unit slides out on rails to allow rapid, convenient access to plug-in boards and set-up adjustments. Each unit is furnished complete — including power connector, color circuit boards for processing amplifier, subcarrier test detector and test extension board.

Operation

Colortec provides line-by-line compensation of timing errors in composite color signals. It samples burst phase of the signal at each horizontal interval, with respect to an external 3.58MHz signal. Instantaneous phase difference between sampled and reference signals is converted to a proportional voltage which adjusts the delay time of the voltage control delay line in the video signal path. Colortec is inserted between the Amtec* compensator and processing amplifier of VR-2000 and VR-1200 Series recorders.

*TM AMPEX

Complete systems for closed-circuit and broadcast television

Colortec Operating Controls

There are two principal controls on the Colortec front panel, a FUNCTION SELECTOR and COLOR PHASE CONTROL. Directly above these controls, a control voltage meter indicates phase corrective action. Five indicator lamps above the meter show Colortec's mode of operation. A secondary control, located behind the front panel, selects burst signal source (either burst from tape or station subcarrier generator).

FUNCTION SELECTOR (6-POSITION SWITCH)

Control Off:

Removes control voltage. Unit operates as a unity gain amplifier only.

H-Phased:

Automatic mode. System is fully synchronous with external sync and subcarrier frequencies. Unit automatically selects appropriate mode for monochrome or standard color signals.

Unphased:

Automatic mode. System operates unphased to horizontal reference. Unit automatically selects appropriate mode for monochrome, standard color and non-standard color signals. This mode provides full compatibility with tapes dubbed from earlier non-NTSC color equipment of heterodyne or decode-encode type.

Standard Color:

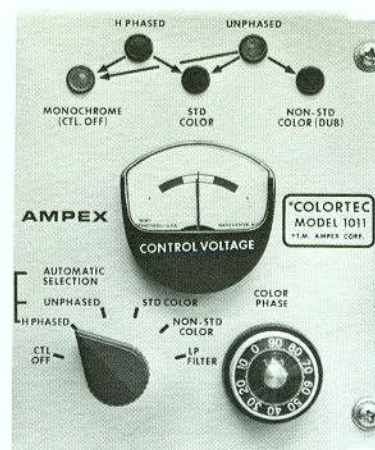
Manual mode for reproducing non-standard color signals. System not phased to horizontal reference.

LP Filter:

Removes control voltage and inserts low pass filter in video path. Removes all subcarrier components from color signal, thereby converting color to monochrome.

COLOR PHASE CONTROL

Sets the color phase of the system's output signal with respect to a 3.58MHz reference. This control is used in fully synchronous operation for matching color phase with that of external signal sources.



Colortec Control Panel

Colortec Specifications

PHYSICAL CHARACTERISTICS

Dimensions:

5.5" x 19" x 17.5" (13cm x 48cm x 44.5cm)

Operating Temperature:

32° to 122°F (0° to 50°C)

Input Power:

117 VAC, 50 or 60Hz, 60 watts continuous

INPUT SIGNALS

Standard Video (FCC NTSC 525 Line):

1.0V p-p, composite, sync negative, 75 ohms $\pm 2\%$ unbalanced

External Horizontal Reference:

2.5V to 8.0V p-p, negative, high impedance bridging; may be horizontal drive or reference sync

External Reference Subcarrier:

1.0V to 4.0V p-p, 75 ohms $\pm 2\%$ unbalanced

Vertical Gate:

4.0V p-p, negative, high impedance bridging

Proc Amp H Drive:

4.0V p-p, negative, 75 ohms $\pm 2\%$ unbalanced

OUTPUT SIGNALS

Standard Video (Two):

1.0V p-p, composite, sync negative, 75 ohms $\pm 2\%$ unbalanced

Delayed Horizontal Reference:

2.0 microseconds wide, negative pulse, 4.0V p-p into 75 ohms $\pm 2\%$ unbalanced

Color Burst:

0.286V p-p into 75 ohms $\pm 2\%$ unbalanced

Error Waveform Monitor:

1.0V p-p (equivalent to 280 nanoseconds $\pm 5\%$ p-p error) into high impedance load

VIDEO PERFORMANCE AT MID-DELAY

Video Gain:

Adjustable to unity with outputs terminated in 75 ohms

High Frequency Response:

Flat ± 0.25 dB to 6MHz, ± 0.4 dB from 6MHz to 7MHz (relative to 100kHz)

Low Frequency Tilt:

2% maximum on 50Hz square wave, with composite sync and blanking

Transient Response:

K factor is $\frac{1}{4}$ maximum with 0.2 microsecond H.A.D. sine-squared pulse

Differential Gain:

0.4% maximum at 3.58MHz, between 10% and 90% A.P.L.

Differential Phase:

0.5% maximum at 3.58MHz, between 10% and 90% A.P.L.

Signal Delay:

3.4 microseconds $\pm 10\%$

TIME-BASE COMPENSATION

Total Range of Correction:

280 nanoseconds

Total Remaining Timing Error:

± 2.5 nanoseconds at the end of the burst period (including all components of error referred to external subcarrier source)

AMPEX

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