Vectorscopes/Waveform Monitors

1720 Series * 1730 Series

Characteristics

1730 Series Waveform Monitors Characteristics

Signal Input (Video and External Reference)

Return Loss - >40 dB, 50 kHz to 6 MHz, power on or off.
Maximum Input - ±5 V DC + peak AC.
Loop-through Isolation - >80 dB at FSC.
Channel Isolation - >50 dB at FSC.
Impedance - >15 kilohm.

Vertical Deflection

Deflection Factor - Within 1% of 1 V.
Gain Range - Input signals between 0.8 V and 2 V can be adjusted to a 1 V display; (160 mV and 400 mV for X5 gain).
Position Range - 1 V signal can be positioned so that peak white and sync tip can be placed at blanking level regardless of gain range.

Frequency Response

Flat - 50 kHz to 6 MHz within 2% (X1), within 5% (X5).
Low Pass - 40 dB attenuation at FSC; Low pass response within 1% of flat response (1735: 30 dB).
Chroma - Nominal bandwidth 1 MHz; 2X FSC attenuation >20 dB; Chroma response within 1% of flat response.

Transient Response

Preshoot - <1%.
Overshoot - <2%.
Ringing - <2%.
Tilt - <1%.
Pulse-to-bar Ratio - 0.99:1 to 1.01:1.
Differential Gain - <1%.

DC Restoration

Clamp Time - Back porch.
Frequency Response - Attenuation of 60 Hz on input signal:
Slow mode: <20%.
Fast mode: >90%.
Blanking Level Shift - A 10% to 90% APL change will cause <1% of blanking level shift. Presence or absence of color burst will cause <1% of blanking shift.

PIX Monitor Output

Frequency Response - 50 kHz to 6 MHz within 3%.
Differential Gain - <1%.
Differential Phase - <1%.
DC Level on Output - <0.5 V into 75 Ohm load.
Intensification (Brightup) - 180 mV DC offset on select lines.
Output Impedance - 75 Ohm nominal.
Return Loss - >30 dB, 50 kHz to 6 MHz.
Input to Output (PIX MON) Gain Ratio Luminance - 1:1 ±5% at 15 kHz.

Calibrator

Frequency - 100 kHz ± 0.1 kHz.
Timing Accuracy - 10 μs, ±0.01 μs.
Amplitude - 1 V, ±1%.

Horizontal Deflection System

Sweep - Sweep will occur with or without input signal.
1-Line Repetition Rate - Equal to applied line rate, magnification equals 0.2 ms/div.
2-Line Repetition Rate - Equal to half applied line rate, magnification equals 1 ms/div.
2-Field Repetition Rate - Equal to applied frame rate, magnification equals approximately X25.
Timing Accuracy -
1 ms/div.: Within 2%.
0.2 ms/div.: Within 3%.
Linearity - Within 2%.
Differential Linearity - Within 2%.
Sweep Magnification Registration - Magnification occurs about the center of the screen.
Position Range - Any portion of a synchronized video sweep can be positioned on screen in all sweep modes.

Synchronization

Internal - Composite video or black burst with sync ±6 dB of nominal.
External - Sync amplitude of 143 mV to 4 V.
Remote Sync - 2.0 to 5.0 V square wave or 4.0 V comp sync (sync polarity can be internally inverted).
RGB/YRGB -
Repetition rate: Field rate and line rate with magnification of X25 and X10, respectively.
Sweep length:
3-Step (RGB): 3.4 to 4.1 divs.

4-Step (YRGB): 2.5 to 3.1 divs.

1720 Series Vectorscopes Characteristics

Signal Input (Video and External Reference)

Return Loss - >40 dB, 50 kHz to 6 MHz, power on or off.
Maximum Input - ±5 V DC + peak AC.
Loop-through Isolation - >70 dB at FSC.
Channel Isolation - >70 dB at FSC.
Impedance - >15 kilohm.

Chrominance Bandwidth

Upper - -3 dB point, FSC +500 kHz, ±100 kHz.
Lower - -3 dB point, FSC -500 kHz, ±100 kHz.
Vector Phase Accuracy - Within 1.25°.
Vector Gain Accuracy - Within 2.5%, typical.
Quadrature Phasing - Within 0.5°, typical.

Subcarrier Regenerator

Pull-in Range - FSC ±50 Hz.
Pull-in Time - Within 1 second.
Phase Shift with Subcarrier Frequency Change - 2° ±50 Hz.
Phase Shift with Burst Amplitude Change - <2° with ±6 dB change from nominal.
Phase Shift with Input Channel Change - <0.5°.
Phase Change with Variable Gain Control - ±1°.
Phase Control Range - 360° Continuous rotation.
Burst Jitter - <0.5°.
Display Differential Phase and Gain - ±1° and ±1%.
Center Dot Clamp Stability - <0.4 mm spot movement.

Synchronization

Internal - Composite video with sync ±6 dB of nominal.
External Reference - Composite video or CW subcarrier.

X Y Mode

Input - Differential, DC coupled.
Input Amplitude - 2 to 9 V p-p, adjustable full scale deflection 0 dBm to +12 dBm for 600 Ohm system, factory set to 0 dBm.
Maximum Input - ±15 V peak signal + DC.
Frequency Response - DC to 500 kHz (DC to 100 kHz high-gain mode).
X and Y Phase Match - Less than a trace width separation at 20 kHz.

SCH Mode (1720 SCH and 1721 SCH Only)

Accuracy -

Absolute: ±5° phase at 25°C.
Relative: ±2°.
Acquisition Time - Less than 1 second.

1720 and 1730 Series Common Characteristics

CRT Viewing Area - 80 x 100 mm.
Trace Rotation - 8° range, typical.
Graticule - Internal scale with variable illumination.

Power Source

Mains Voltage Ranges - 115 V, 90-132 V, 230 V, 200-250 V.
Mains Frequency Range - 48 Hz to 66 Hz.
Power Consumption - 25 watts (85 BTU/HR) maximum.

Environmental

Temperature -
Nonoperating: -55°C to +75°C.
Operating: 0°C to +50°C.
Altitude -
Nonoperating: To 18,000 M (50,000 ft.).
Operating: To 5,500 M (15,000 ft.).
Shock -
Nonoperating: 30 g's, 1/2 sine, 11 ms duration, 3 shocks per surface (18 total).
Transportation - Qualified under NSTA Test Procedure 1A, Category II (30-inch drop).
Humidity - Meets Tektronix Standard 062-2847-00.

Certifications

EMC - Certified to the EMC Directive 89/336/EEC.
Safety -
Approved to: UL1244, CSA231.
Complies with: EN61010-1, IEC61010-1.

Physical Characteristics

Dimensions mm in.
Height 133.4 5.25
Width 215.9 8.5
Length 460.4 8.125
Weight kg lbs.
Approximately 3.8 8.5