



The cabinet is sold separately.

Displays Analog Component Signals of Multiformat DTV Monitoring with Conversion Matrix (Y, P_B, P_R to GBR)

The LV 5152 Multiformat Waveform Monitor is designed to display analog component signals of multiformat DTV. This instrument features two analog component signal input systems. In addition to the waveform monitor function, vector, timing, and audio signal display functions are provided. Moreover, the full line selector function and control setting menus are provided.

Applications include production testing of multiformat HD/SD products, off-air transmitter monitoring of 1080/720/480 signals when used with a set top box and a color monitor. Post production and telecine rooms are supporting the increase in demand for multiformat testing including the increasingly common use of 1080/23.98p and 24p standard formats.

● Measurement Signal and Standards

Format	Full Line/ Frame	Standards
1080/60i	1125/29.97 (30)	SMPTE 274M
1080/50i	1125/25	SMPTE 274M
1080/24p	1125/23.98 (24)	SMPTE 274M
1080/24Psf	1125/23.98 (24)	SMPTE 274M
720/60p	750/59.94 (60)	SMPTE 296M
480/60p	525/59.94 (60)	SMPTE 293M
480/60i	525/29.97 (30)	SMPTE 253M
1080/50i	1250/25	SMPTE 295M
576/50p	625/50	ITU-R BT.1358
576/50i	625/25	ITU-R BT.601-4

FEATURES

- **Complies DTV For USA And Europe**
Seven video formats for DTV-USA and three video formats for DTV-Europe are observed.
- **Two Analog Signal Input Systems (YP_BP_R or GBR) Are Provided.**
- **Picture Monitor Output Is Provided In The Selected Format Required By The Monitor.**
- **Vectorscope Function (SMPTE 274M, 296M)**
Displays color difference signal of component signals in vector format. The analog GBR signal is converted into color difference signals with a matrix and displayed in vector format.
- **Conversion Matrix YP_BP_R Into GBR (SMPTE 274M, 296M)**
Simplifies signal level monitoring.
- **Measurements Using Cursors**
Cursor level, time and frequency measurements have a 0.5% accuracy.
- **Preset Memory Function**
Stores/recalls up to 10 front panel settings to reduce setup time by presetting complex and frequently used measurement conditions for one button recall.

● LV 5152 REAR PANEL



LV 5152 SPECIFICATIONS

Input System	
Signal Input	
Input Channel	CH1 (Y/G), CH2 (P _B /B), CH3 (P _R /R), 2-system
Input Connector	BNC
Return Loss	30 dB, 50 kHz to 30 MHz (both power on/off)
Impedance	75Ω passive loop-through
Maximum Input Voltage	± 2 V (DC + peak AC)
EXT REF Input	
Input Channel	EXT REF, 1-system
Input Connector	BNC
Return Loss	±30 dB, 50 kHz to 30 MHz (both power on/off)
Impedance	75Ω passive loop-through
Maximum Input Voltage	±12 V (DC + peak AC)
Sync	
Sync Amplitude	0.3 V _{p-p} ±6 dB
Picture Monitor Output	
Frequency Response	25 Hz to 30 MHz, within ± 5%
Output Impedance	75Ω
Output Connector	BNC, 1 system
Amplitude	1 V ± 5%
Vertical Axis	
Deflection System	
Deflection Sensitivity	Within ± 1%, GAIN x1 Within ± 3%, GAIN x5
Variable Range	At least 0.5 to 1.2 times (both GAIN x1 / x5)
GBR Matrix	
Deflection Sensitivity	Within ± 1%, GAIN x1 Within ± 3%, GAIN x5
Frequency Response	x1 GAIN
FLAT	Within ± 1%, 25 Hz to 30 MHz (50 kHz ref., GBR Matrix OFF mode)
LOWPASS	
Attenuation	≥ 20 dB, at 20 MHz (50 kHz ref.)
DIF'D STEP	
Attenuation	≥ 20 dB, at 30 kHz (1.6 MHz ref.) ≥ 20 dB, at 7 MHz (1.6 MHz ref.)
Step Response	For 2T pulse, 2T bar Within ± 1%, pulse/bar ratio Within ± 1%, overshoot Within ± 1%, preshoot Within ± 1%, ringing Within ± 1%, sag (vertical tilt)
DC Restorer	
Frequency Response	
Slow Mode	≤ 20%, attenuation at 60 Hz input
Fast Mode	≤ 80%, attenuation at 60 Hz input
Clamp	
Point	Back porch
Variable Range	At least 0.5 to 2μs, with respect to the sync pulse edge
Blanking Level Shift	≤ 1% (10 to 90% of APL variation, or color burst on/off)
Horizontal Axis	
Operation Mode	
Overlay	Displays waveforms overlay
Parade	Displays waveforms side-by-side
Timing	For bowtie signal* measurement * Use of bowtie has been authorized by Tektronix, Inc. Automatic sweep
Sweep Mode	
Display Method	
Line	1H, 2H, 3H
Line Magnified	1H MAG, 2H MAG, 3H MAG
Field	1V, 2V, 3V
Field Magnified	1V MAG, 2V MAG, 3V MAG
Time Base Accuracy	Within ±3% (0.1s/div)
Sweep Length	11.6 div±0.μ2 div (1080/60i 2H overlay mode)
Linearity	Within ±3%
Vectorscope Mode	
Frequency Range	≥1 MHz
Amplitude Accuracy	±2% (Y, P _B , P _R Input) ±2% (G, B, R Input)
Variable Range	At least 0.5 to 1.2 times (both GAIN x1 / x5) (for vertical and horizontal axes)
Graticule	Electronic graticule
Sync Blanking	Blanks sync dot
Picture Monitor Mode	Displays picture using the Y or G signal. The picture is horizontally reduced in size because the CRT aspect ratio is not 16:9.
Audio Mode	
Input System	Direct coupled balanced input
Input Impedance	≥20 kΩ
Calibration Accuracy	±0.5 dB of full scale
Full Scale	0,2,4 dBm (menu selectable)
Maximum Input Voltage	±12 V (DC + peak AC)

Bandwidth	Within -3 dB at 20 kHz
X-Y Phase Accuracy	Within 1° at 20 kHz
Calibration Signal	
Amplitude	1 V ± 0.5%
Time	Depends on SWEEP setting as follows. 1 cycle/2 div 1 cycle/10 div for 1 H MAG
Line Selector	
Operation Mode	WFM, VEC, PIC
Operation Field	FLD1, FLD2, ALL (at Interlace) Only ALL at 1080/50i (1250Line). The selected line is intensified
Display	
Line Window	Displays brighter by overlaying multiple lines resulting in higher effective refresh rate. 1 to 15 lines WFM, VEC, PIC FLD1, FLD2, ALL (at Interlace)
Window Range	
Operation Mode	
Operation Field	
Preset Function	
Number Of Items	Up to 10 panel settings can be preset / recalled. (Up to eight items of data can be recalled by using the remote controller)
Items	All front panel controls (except INTEN, READOUT INTEN, ROTATION, FOCUS, ILLUM, POWER)
Remote Control	
Control Signal	TTL (low active)
Control Input	D-sub, 25-pin (REMOTE), rear panel
Cursor Measurement	
Configuration	Two horizontal cursors (REF, Δ) Two vertical cursors (REF, Δ)
Amplitude Measurement	Voltage (V or %) between the REF and Δ cursors
Measurement Range	0-2000.0 mV, 0-280.0%
Accuracy	± 0.5%
Resolution	1 mV or 0.1%
Amplitude Ratio Measurement	When "R%" is selected from the menu, amplitude between the REF and Δ cursors with respect to the 100% REF is displayed in units of R%. Measures time between the REF and Δ cursors
Time Measurement	At least ± 6 div from graticule center
Measurement Range	± 3%
Accuracy	1/80 div
Resolution	When "R%" is selected from the menu, time between the REF and ± cursors with respect to the 100% REF is displayed in units of R%.
Time Ratio Measurement	Frequency of one cycle between the REF and Δ cursors
Frequency Measurement	
CRT	
Type	150 mm rectangular, P4 phosphor
Accelerating Potential	16.5 kV
Effective Display Area	80 × 100 mm
Graticule	Illuminated internal graticule (waveform monitor) Illuminated external graticule (vectorscope) Electronic graticule (vectorscope, audio)
General Specifications	
Power Requirements	90 to 250 VAC, 48 to 440 Hz 60W MAX
Fuse	2 A time-lag
Dimensions	215 (W) × 132 (H) × 429 (D) mm 8 1/2 (W) × 5 1/4 (H) × 16 3/4 (D) in. 5.5kg, 12.1 lbs.
Weight	
Environmental Conditions	
Operating Temperature	0 to 40°C
Operating Humidity	≤ 90% RH (without condensation)
Spec-Guaranteed Temperature	10 to 35°C
Spec-Guaranteed Humidity	≥ 80% RH (without condensation)
Operating Environment	Indoor use
Operating Altitude	up to 2,000m
Overvoltage Category	II
Pollution Degree	2
Supplied Accessories	Illumination lamp 5 D-sub 25-pin connector 1 D-sub 25-pin connector cover 1 Screw, rack mounting, inch size 2 Cover, inlet stopper 1 Power cord 1 Instruction manual 1
Optional Accessories	LR-2427 (Cabinet, with handle) LR-2404 (Cabinet, without handle) LR-2400 VI-02 (Rack-Mount Adapter, inch size) LR-2400 V-M (Rack-Mount Adapter, metric size)